BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS' REGULAR MEETING

January 4, 2006

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 **BOARD ROOM**
JANUARY 4, 2006 **7TH FLOOR**

9:45 A.M.

CALL TO ORDER

Opening Comments — Marland Townsend, Chairperson
Roll Call — Clerk of the Boards
Pledge of Allegiance

COMMENDATION/PROCLAMATION **Staff/Phone (415) 749-**

A. Recognition of Chairperson, Marland Townsend **J. Broadbent/5052** jbroadbent@baaqmd.gov

The Board of Directors will recognize Chairperson Townsend for his Leadership in 2005.

B. Acknowledgement of Incoming Chairperson Uilkema **J. Broadbent/5052** jbroadbent@baaqmd.gov

Chairperson Uilkema will discuss the Roles and Responsibilities of Board Members.

PUBLIC COMMENT PERIOD

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

CONSENT CALENDAR (ITEMS 1 - 4)

1. Minutes of December 21, 2005 Meeting **M. Romaidis/4965** mromaidis@baaqmd.gov

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

   Information only

3. Consider Approval of Hiring Recommendation at Step E of Salary Range 146 for Information Systems Manager Position **J. Broadbent/5052** jbroadbent@baaqmd.gov

   The Board of Directors will consider approval of hiring recommendation at step E of the salary range 146, which is $112,350 per year for the Information Systems Manager position.

4. Consider Approval of Recommendation for Salary Increase for the Classification of Human Resources Officer **J. Broadbent/5052** **jbroadbent@baaqmd.gov**

The Board of Directors will consider approval of salary increase for the Classification of Human Resources Officer.

PUBLIC HEARING

5. Public Hearing to Consider Adoption of Proposed Bay Area 2005 Ozone Strategy and Certification of Final Environmental Impact Report **J. Broadbent/5052** **jbroadbent@baaqmd.gov**

The Board of Directors will consider adoption of a proposed Bay Area 2005 Ozone Strategy and certification of a Final Environmental Impact Report.

CLOSED SESSION

6. 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 discuss existing litigation:

Bay Area Air Quality Management District Employees' Association v. Bay Area Air Quality Management District, PERB, Unfair Labor Practice Complaint, Case No. SF-CE-288-M.

OPEN SESSION

OTHER BUSINESS

7. Report of the Executive Officer/APCO

8. Chairperson's Report

9. 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)

10. Time and Place of Next Meeting – 9:45 a.m. Wednesday, January 18, 2006 – Waterfront Plaza Hotel, Regatta Room, Jack London Square, Ten Washington Street, Oakland, CA 94607

11. Adjournment

CONTACT CLERK OF THE BOARD - 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 Clerk's Office should be given at least 3 working days prior to the date of the meeting so that arrangements can be made accordingly.

AGENDA: 1

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Townsend and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 21, 2005

Re: Board of Directors' Draft Meeting Minutes

RECOMMENDED ACTION:

Approve attached draft minutes of the Board of Directors meeting of December 21, 2005.

DISCUSSION

Attached for your review and approval are the draft minutes of the December 21, 2005 Board of Directors' meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

AGENDA: 1

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 ELLIS STREET – SAN FRANCISCO, CA 94109

Draft Minutes: Board of Directors' Regular Meeting – December 21, 2005

Call To Order

Opening Comments:		Chairperson Marland Townsend called the meeting to order at 9:51 a.m.
Roll Call:	Present:	Marland Townsend, Chair, Roberta Cooper, Chris Daly (9:57 a.m.), Mark DeSaulnier, Erin Garner, Scott Haggerty, Jerry Hill, Liz Kniss, Patrick Kwok, Jake McGoldrick (9:57 a.m.), Nate Miley, Julia Miller, Mark Ross, Michael Shimansky, John Silva, Tim Smith, Pam Torliatt, Gayle B. Uilkema, Brad Wagenknecht.
	Absent:	Harold Brown, Dan Dunnigan, Shelia Young.
Pledge of Allegiance:		Director Ross led the Board in the Pledge of Allegiance.

Closed Session – The Board convened to Closed Session at 9:54 a.m.

Significant Exposure to Litigation:

Pursuant to Government Code Section 54956.9(b), a need existed to meet in Closed Session to discuss one potential litigation matter against the District.

Directors Chris Daly and Jake McGoldrick arrived at 9:57 a.m.

Open Session – The Board reconvened to Open Session at 10:08 a.m.

Brian Bunger, Legal Counsel, stated that the Board of Directors met in Closed Session regarding one potential litigation matter against the District. The Board of Directors heard a report from Counsel and provided general direction.

Public Comment Period: The following person came forward and spoke:

Dr. Michael Lipsett

Dr. Lipsett spoke about his concerns regarding woodsmoke and the emissions associated with burning.

Consent Calendar (Items 1 – 6)

1. Minutes of December 7, 2005 Meeting

2. Communications. Correspondence addressed to the Board of Directors

3. Report of the Advisory Council

4. Monthly Activity Report – *Report of Division Activities for the month of November, 2005.*

5. Considered Approval of Amendment to the Memorandum of Understanding, Section 7.13, Regarding Acting Appointments

   The Board of Directors considered approval of an amendment to Section 7.13 of the current Memorandum of Understanding between the Air District and the Employees' Association to replace "Acting Appointments" with "Acting Assignments."

6. Considered Approval of the Air District's Proposed 2006 Regulatory Calendar

   S*tate law requires each Air District to publish a list of potential regulatory measures for the upcoming year. No regulatory measures can be brought before the Board that are not on the list, with specified exceptions. Consequently, the list contains all measures that may come before the Board in 2006.*

   Board Action: Director Miller moved approval of the Consent Calendar; seconded by Director Wagenknecht; carried unanimously with the following Board members voting:

   AYES: Cooper, Daly, DeSaulnier, Garner, Haggerty, Hill, Kniss, Kwok, McGoldrick, Miley, Miller, Ross, Shimansky, Silva, Smith, Torliatt, Uilkema, Wagenknecht, Townsend.

   NOES: None.

   ABSENT: Brown, Dunnigan, Young.

   Adopted Resolution No. 2005-16: A Resolution to Approve an Amendment to Section 7.13 of the Memorandum of Understanding Regarding Acting Assignments

Committee Reports and Recommendations

7. Report of the Ad Hoc Committee on Climate Protection Meeting of December 14, 2005

   Chairperson Townsend presented the report and stated that the Ad Hoc Committee on Climate Protection met on Wednesday, December 14, 2005.

   Staff reported to the Committee on previous actions taken by the Board of Directors on climate change and also provided the Committee with an update on recent staff activities.

Ann Hancock and Mike Sandler of the Climate Protection Campaign, presented information on the two-part report that the Climate Protection Campaign prepared for the Air District.

Staff provided a report on additional opportunities to integrate air quality management and climate change. The Committee discussed the issues and provided direction to staff.

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

Board Action: Chairperson Townsend moved that the Board of Directors approve the report of the Ad Hoc Committee on Climate Protection; seconded by Director Uilkema; carried unanimously without objection.

8. Report of the Personnel Committee Meeting of December 15, 2005

Action(s): The Committee recommended approval of the following:
A) Appointment of Applicant to fill an unexpired term in the Public Health Member Category on the Advisory Council.

Director Ross presented the report and stated that the Committee met on Thursday, December 15, 2005.

The Committee discussed and considered its role relative to the Advisory Council Applicant Selection Working Group. The Committee decided to alter its current practice with respect to the recommendations of the Working Group and take a more active role in the appointment process of Advisory Council members.

The Committee discussed the possible re-appointment of ten Advisory Council members. Based on the active role the Committee will take regarding appointments to the Council, the re-appointment of ten Advisory Council members was deferred. Staff was directed to conduct an open recruitment for the ten Advisory Council positions. The Committee will consider the current members seeking reappointment along with outside applicants. Staff was directed to provide the Committee with additional information as discussed.

The Committee also considered the appointment of Steven Kmucha, M.D., for the Public Health Agency category on the Advisory Council. The Committee recommends that the Board of Directors appoint Steven Kmucha, M.D. to the "Public Health Agency" category on the Advisory Council to complete an unexpired term that began on January 1, 2005 and will end on December 31, 2006.

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

Board Action: Director Ross moved that the Board of Directors approve the recommend-dation for the Public Health Agency category on the Advisory Council; seconded by Director Miller; carried unanimously without objection.

Public Hearings

9. Continued Public Hearing to Consider Approval of Proposed Amendments to Regulation 8, Rule 28: Episodic Releases from Pressure Relief Devices in Petroleum Refineries and

Chemical Plants and approval of a California Environmental Quality Act (CEQA) Negative Declaration

The proposed amendments to Regulation 8, Rule 28 require that monitoring equipment be installed on each PRD, that a demonstration be made that this monitoring equipment is capable of detecting releases as defined by the rule, and that the required monitoring data is kept for two years and made available to District staff.

Jack Broadbent, Executive Officer/APCO briefly reviewed the amendments and urged the Board of Directors to adopt the staff proposal.

Chairperson Townsend continued the Public Hearing at 10:24 a.m.

Speakers: The following individuals spoke on this agenda item:

Richard Quiroz Chevron Richmond Refinery Richmond, CA 94802	Richard Drury Plumbers Local 342, IBEW 302 So. San Francisco, CA 94080
Alan Savage Tesoro Refinery Martinez, CA	Shana Lazerow CBE Oakland, CA 94612
Clark Hopper Valero Refinery	Wafau Aborashed EJAQC Oakland, CA 94577
Dennis Bolt WSPA Concord, CA 94518	A J Napolis CBE Oakland, CA 94612

Chairperson Townsend closed the Public Hearing at 10:56 a.m.

Board Action: Director DeSaulnier made the following motion: That the Board of Directors:

(A) Adopt the Negative Declaration; and

(B) Adopt the proposed amendments to Regulation 8, Rule 28 in their entirety, with the following exceptions:

1. Retain Section 8-28-208. This section currently contains the definition of "Parallel Service." It has been proposed for deletion, and it should be retained.
2. Do not adopt proposed new Section 8-28-216. This is the proposed definition of "Process Unit," and it should not be adopted.
3. Do not adopt the proposed clarifications to the language of Section 8-28-304. This section contains the substantive requirements to control existing pressure relief devices. The current language should be retained.
4. Substitute the term "source" for the term "Process Unit" in the proposed amendments to Section 8-28-405.2. This section contains a requirement to implement 3 Prevention Measures to prevent releases from pressure relief

devices. It should refer to Prevention Measures on a "source," not on a "Process Unit."

5. Do not move the Process Hazard Analysis requirement from Section 304.1 into a new section 406. This Motion would retain the current language in section 304.1. There is no need to create a new section 406, which would be redundant if Section 304.1 is retained in its current form. The requirements in proposed Section 406 should be moved back into Section 304.1.
6. Make appropriate typographical changes to the proposed amendments to reflect this Motion. This consists of (i) renumbering certain provisions to retain a consecutive numbering system; (ii) updating internal cross-references within the regulation to reflect the renumbering; and (iii) updating the Table of Contents so that it is consistent with all aspects of the regulation as amended by the Board.
7. The matter be referred to the Stationary Source Committee for a report from the APCO in March that would include a time line for a new cost effectiveness study and a full monitoring plan.

The motion was seconded by Director Garner.

Director Torliatt requested a friendly amendment to the motion to clarify that the motion included the gas recovery systems and that the venting to the gas recovery systems are part of the analysis being done and any other alternatives, with flaring as the last result. Director DeSaulnier stated that it is in the original recommendation, but accepted the amendment, as did Director Garner.

The motion then carried unanimously with the following Board members voting:

AYES: Cooper, Daly, DeSaulnier, Garner, Haggerty, Hill, Kniss, Kwok, McGoldrick, Miley,
Miller, Ross, Shimansky, Silva, Smith, Torliatt, Uilkema, Wagenknecht, Townsend.

NOES: None.

ABSENT: Brown, Dunnigan, Young.

Adopted Resolution No. 2005-17: A Resolution of the Board of Directors of the Bay Area Air Quality Management District

Amending: District Regulation 8, Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants; and

Adopting a CEQA Negative Declaration for this Project.

10. Public Hearing to Consider Report on Further Study Measure 8: Atmospheric Blowdown Systems

Staff has examined atmospheric blowdown systems at Tesoro Refinery and regulations applicable to various types of emissions and recommends no amendments to District regulations at this time.

Mr. Broadbent requested that the Board of Directors approve the staff recommendation that no regulatory amendments regarding atmospheric blowdown systems are necessary or appropriate at this time.

Chairperson Townsend opened the Public Hearing at 11:13 a.m.

There being no speakers, Chairperson Townsend closed the Public Hearing at 11:14 a.m.

Board Action: Director Miller moved that the Board of Directors approve the staff recommendation; seconded by Director Kwok; carried unanimously without objection.

Proclamation/Commendation

11. *The Board of Directors recognized Advisory Council Chairperson, Brian Zamora for his outstanding service to the Council this past year.*

The Board of Directors recognized Stan Bunger, Morning Anchor, KCBS All News 740, for his participation in moderating the Air District's 50th Anniversary Symposium.

The Board of Directors recognized the following employees who have completed milestone levels of 25 and 35 years of service during the last half of this year: 25 years: Steve Hill, Thomasina Mayfield, Lynn Miller, and Luna Salaver, 35 years: Jack Bean.

Other Business

12. Report of the Executive Officer/APCO – Mr. Broadbent reported on the following:
    1. The Environmental Protection Agency (EPA) announced a modification to the PM2.5 standard. The standard will be lowered from 65 micrograms per cubic meter to 35 micrograms per cubic meter. District staff will keep the Board informed.
    2. Recently, the *San Jose Mercury News* printed an article regarding burning and woodsmoke.
    3. On behalf of the staff, have a happy holiday.

13. Chairperson's Report: Chairperson Townsend reported on the following:
    1. The memorandum at each Board members' place that outlines a Brief History of the Bay Area Air Quality Management District.
    2. The Environmental Justice issue has come a long way over the last several years.
    3. Wished everyone a happy Solstice.

14. Board Members' Comments – There were none.

15. Time and Place of Next Meeting –9:45 a.m., Wednesday, January 4, 2006 - 939 Ellis Street, San Francisco, CA 94109.

16. Adjournment – The meeting adjourned at 11:44 a.m.

Mary Romaidis

Clerk of the Boards

AGENDA: 2

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Townsend and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 22, 2005

Re: Board Communications Received from December 21, 2005 through January 3, 2006

RECOMMENDED ACTION:

Receive and file.

DISCUSSION

A list of Communications received by the Air District from December 21, 2005 through January 3, 2006, if any, will be at each Board member's place at the January 4, 2006 Regular Board meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

AGENDA: 3

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Marland Townsend and
Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 22, 2005

Re: Consider Approval of Hiring Recommendation at Step E of Salary Range 146 for the Information Systems Manager Position

RECOMMENDED ACTION:

Approve hiring recommendation at Step E of Salary Range 146, which is $112,350 per year for the Information Systems Manager position.

BACKGROUND:

The position of Information Systems Manager is included in the FY 2005-2006 budget. The recruitment and selection process for the Information Systems Manager has been completed.

The Information System Manager has a critical impact on the Production System replacement to IRIS and Databank as well as on increasingly vulnerable risk factors such as data security. Therefore the District sought candidates with seniority, breadth of experience and, ideally, with deep knowledge of the Air Quality field. The District has been fortunate to find a candidate with this broad background.

DISCUSSION:

In order to make a competitive offer of employment, staff is recommending approval to offer the position at Step E of the corresponding salary range 146. This recommendation is supported by two factors. First, the desired candidate profile is at the high end of the class profile as reflected in the salary history of the qualified candidates. Second, a precedent exists for this recommendation in that the prior Information Systems Manager candidate was hired at Step E. This recommendation is pursuant to the District Administrative Code, Division III, Section 6.4 – Determination of Salary Rates.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jeffrey McKay

ag4093004

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Townsend and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 21, 2005

Re: Consider Recommendation of Salary Increase for the Classification of Human Resources Officer

RECOMMENDATION

Approve recommendation to increase the salary of the Human Resources Officer classification.

BACKGROUND

In March of 2005 the District's Human Resources Officer began reporting directly to the Executive Officer/APCO as part of a temporary reorganization of the Administrative Services Division. This reporting arrangement served the District well, and on October 12, 2005 I informed the Executive Committee of several organizational changes, including that I intended to make the reporting relationship between the Human Resources Officer and the Executive Officer/APCO permanent. At that time I informed the Committee that I would be making a recommendation on a salary increase for the Human Resources Officer classification in view of the change. Accordingly, I have conducted a compensation review of the classification to ensure that it is appropriately compensated.

DISCUSSION

The salary of the Human Resources Officer classification was reviewed in September of 2003 and was found to be significantly below market relative to similar job classifications in comparable agencies. At that time, salaries for all management classifications were increased approximately 3%. However, a comparison of salaries conducted by a consultant in September of 2005 indicated that the Human Resources Officer classification is still significantly below market when compared to similar classifications at comparable agencies in the region. In addition, the salary of the classification warrants adjustment to reflect that the position will now be reporting to the Executive Officer/APCO under general administrative direction. The position had previously reported to the Director of Administrative Services.

Accordingly, I recommend to the Board of Directors that the salary for the classification of Human Resources Officer be increased from pay range 148M ($8,087.72 to $9,830.68 per month) to pay range 154M ($9,300.74 to $11,305.11 per month). This will bring the salary for the classification of Human Resources Officer to the median of salaries for similar

classifications at comparable agencies in the region, and would amount to an approximate 15% increase over the current pay range. The incumbent would be placed at the same salary step in the higher pay range, with the actual monthly salary increasing from the current $9,362.55 to $10,766.77 effective with the pay period beginning January 8, 2006.

A copy of the consultant's report and salary survey are attached for your review.

BUDGET CONSIDERATION/FINANCIAL IMPACT

The financial impact of increasing the salary for the Human Resources Officer classification is approximately $9,056 for FY 2005-2006, including salary-driven benefit costs. For subsequent fiscal years, the financial impact is approximately $18,112, including salary-driven benefit costs. The calculation for subsequent fiscal years does not include annual cost-of-living increases granted to all unrepresented employees, which is consistent with the annual adjustment for represented employees.

Respectfully Submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Michael Rich
Reviewed by: Brian Bunger

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

RESOLUTION NO.

A resolution of the Bay Area Air Quality Management District Board of Directors increasing the salary of the Human Resources Officer job classification.

WHEREAS, the Human Resources Officer position began reporting to the Executive Officer/APCO in March 2005 as part of a temporary reorganization of the Administrative Services Division;

WHEREAS, this aspect of the temporary reorganization of Administrative Services Division served the District well;

WHEREAS, on October 12, 2005 the Executive Officer/APCO informed the Executive Committee of several organizational changes, including that the Human Resources Officer and the function should become part of the Executive Office and that the reporting relationship would be made permanent;

WHEREAS, the change in the reporting relationship provided an opportunity to review the salary of the Human Resources Officer;

WHEREAS, compensation surveys have indicated that the Human Resources Officer classification is currently paid below market relative to similar classifications at comparable agencies in the region;

WHEREAS, increasing the salary of the Human Resources Officer classification from pay range 148M to pay range 154M will bring the salary to the median of salaries for similar classifications at comparable agencies in the region;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Bay Area Air Quality Management District hereby approves increasing the monthly salary for the Human Resources Officer job classification as follows:

Step A	Step B	Step C	Step D	Step E
$9,300.74	$9,765.78	$10,254.06	$10,766.77	$11,305.11

BE IT FURTHER RESOLVED that the monthly salary for the job classification of Human Resources Officer as reflected above shall be effective on January 8, 2006, which is the beginning of the first pay period after approval of the Board of Directors of the Bay Area Air Quality Management District.

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 _____, 2006 by the following vote of the Board:

AYES:

NOES:

ABSENT:

_____
Marland Townsend
Chairperson of the Board of Directors

ATTEST:

_____
Mark Ross
Secretary of the Board of Directors

AGENDA: 5

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Townsend and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 22, 2005

Re: Public Hearing to Consider Adoption of Proposed Bay Area 2005 Ozone Strategy and Certification of Final Environmental Impact Report

RECOMMENDED ACTION:

Adopt the proposed *Bay Area 2005 Ozone Strategy* and certify the *Final Environmental Impact Report*.

BACKGROUND

The San Francisco Bay Area is a nonattainment area for the State one-hour ozone standard. The California Clean Air Act (CCAA) requires regions that do not meet the State ozone standard to prepare plans for attaining the standard and to update these plans every three years. These plans must include estimates of current and future emissions of the pollutants that form ozone and a control strategy that includes "all feasible measures" to reduce these emissions in order to attain the standard as expeditiously as practicable. The plans must also include measures to reduce transport of air pollutants to neighboring regions.

The first Bay Area plan for the State ozone standard was the 1991 Clean Air Plan. Subsequently, the Clean Air Plan was updated and revised in 1994, 1997, and 2000. Each of these triennial updates proposed additional measures to reduce emissions from a wide range of sources, including industrial and commercial facilities, motor vehicles, and area sources.

Ozone conditions in the Bay Area have improved significantly over the years. Ozone levels – as measured by peak concentrations and the number of days over the State one-hour ozone standard – have declined substantially as a result of aggressive programs by the District, the Metropolitan Transportation Commission (MTC) and our regional, State and federal partners. This represents great progress in improving public health conditions for Bay Area residents. However, there is still a need for continued improvement to meet the State one-hour ozone standard. Accordingly, the 2005 Ozone Strategy describes how the Bay Area will fulfill CCAA planning requirements for the State one-hour ozone standard and transport mitigation requirements through the proposed control strategy.

DISCUSSION

The District, in cooperation with MTC and the Association of Bay Area Governments (ABAG), has prepared the Bay Area 2005 Ozone Strategy. The Ozone Strategy is a roadmap

showing how the San Francisco Bay Area will make progress toward meeting the State one-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins.

The District's public involvement program for developing the 2005 Ozone Strategy has been extensive, and the 2005 Ozone Strategy has been improved because of public comments received through the public outreach process. Beginning in the Spring of 2003, the outreach process has included a variety of outreach techniques, including public presentations, ten Ozone Working Group (technical workgroup) meetings, fourteen evening community meetings, email notices, and an ozone planning website. In addition, in 2003 and 2004, the District conducted community training sessions to provide information on air quality planning to interested persons prior to community meetings. These efforts reflect the District's broad community outreach program to achieve the following goals:

- Include all the diverse stakeholders in the planning process (business and industry, community groups, environmental groups, local governments, neighboring air districts, the California Air Resources Board, U.S. EPA and concerned citizens)
- Address stakeholder needs, issues and concerns
- Provide timely and accurate information
- Enhance communication between the District and all stakeholders
- Build understanding and support for ozone planning and related air quality programs and projects

Throughout the ozone planning process, District staff sought ideas for new approaches to reduce emissions of ozone precursors, as well as ways to strengthen existing rules and programs. To satisfy the requirements under the CCAA that the region adopt all feasible measures to reduce ozone precursor emissions, the District investigated a wide range of potential control measure ideas from many sources, including:

- Ozone Working Group
- Community meetings
- Other air districts' regulations, programs, control measures and suggestions
- District Board members, Advisory Council and staff
- Members of the public
- Previous Bay Area air quality plans

District staff considered and evaluated 390 potential stationary source and mobile source control measure suggestions (not including transportation control measures) using the following criteria:

- Technological feasibility
- Likely emission reductions
- Public acceptability and community concerns
- Cost effectiveness
- Potential environmental and socioeconomic impacts
- Other factors

MTC took the lead in evaluating enhancements to the transportation control measures (TCMs), and the District and MTC worked together to revise and update the TCMs. The control measure review and evaluation process included a thorough review of potential TCM enhancements. MTC and District staff considered a wide range of new or enhanced TCM programs, including:

- New initiatives deriving from the Smart Growth Strategy/Regional Livability Footprint Project and MTC's Transportation 2030 process;
- Input from the Ozone Working Group and community meetings;
- Input from cities, counties and other public agencies;
- Input from environmental, business and community groups;
- Suggestions from staff and Advisory Council members;
- Review of TCM programs in other regions.

All of the TCMs have been revised to reflect this input.

Finally, based on input from the Ozone Working Group and members of the public, and on further evaluation by District and MTC staff, the potential control measures were distilled down to the measures described more fully in the 2005 Ozone Strategy and its appendices.

During September and October 2004, District staff presented a draft preliminary control strategy for the Ozone Strategy for public review. The draft preliminary control strategy was discussed at an Ozone Working Group meeting and at a series of community meetings. In September 2005, the District, in cooperation with MTC and ABAG, released the public review draft of the Bay Area 2005 Ozone Strategy. The District held two public meetings to present the strategy and to receive public comment before preparing the proposed final 2005 Ozone Strategy.

OZONE STRATEGY OVERVIEW

The 2005 Ozone Strategy is a comprehensive document that describes the Bay Area's strategy for compliance with State one-hour ozone standard planning requirements.

The Ozone Strategy provides background information on topics including the Bay Area's emission inventory, historical ozone trends and the implementation status of control measures proposed in previous State one-hour ozone plans. Section 2 of the Bay Area 2005 Ozone Strategy includes the control strategy, consisting of stationary, mobile and transportation control measures.

Because it is not possible to achieve a five percent per year reduction in ozone precursor emissions, the strategy relies on adoption of all feasible measures on an expeditious schedule. The "all feasible measures" control strategy includes stationary source control measures to be implemented through District regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with MTC, local governments, transit agencies and others. The Ozone Strategy identifies the following control measures as the most readily available and feasible measures that can be implemented at this time to satisfy State one-hour ozone planning and transport mitigation requirements:

Stationary Source Measures

- Auto Refinishing
- Graphic Arts Operations
- High Emitting Spray Booths
- Polyester Resin Operations
- Wood Products Coating
- Refinery Flares (ADOPTED 07/05)
- Gasoline Bulk Terminals and Plants
- Marine Loading Operations (ADOPTED 12/05)
- Organic Liquid Storage Tanks
- Pressure Relief Devices (ADOPTED 12/05)
- Refinery Wastewater Systems (ADOPTED 9/04)
- Industrial, Institutional and Commercial Boilers
- Large Water Heaters and Small Boilers
- Stationary Gas Turbines
- Promote Energy Conservation

Mobile Source Measures

- Diesel Equipment Idling Model Ordinance
- Green Contracting Model Ordinance
- Low Emission Vehicle Incentives
- Vehicle Buy Back Program

Transportation Control Measures

- Voluntary Employer Based Trip Reduction Programs
- Improve Local and Areawide Bus Service
- Improve Regional Rail Service
- Improve Access to Rail and Ferries
- Improve Interregional Rail Service
- Improve Ferry Service
- Construct Carpool/Express Bus Lanes on Freeways
- Improve Bicycle Access and Facilities
- Youth Transportation
- Install Freeway Traffic Management System
- Arterial Management Measures
- Transit Use Incentives
- Carpool and Vanpool Services and Incentives
- Local Land Use Planning and Development Strategies
- Public Education/Intermittent Control Measures
- Conduct Demonstration Projects
- Transportation Pricing Reform
- Improve Pedestrian Access and Facilities
- Promote Traffic Calming

Section 3 of the 2005 Ozone Strategy includes several other elements that are not required by the CCAA to attain the State one-hour ozone standard, but that are related to ozone and other air pollutant control efforts and are being included to highlight the relationship between ozone planning and other environmental programs, including:

- Climate change and programs to reduce greenhouse gas emissions;
- Fine particulate matter (PM), its sources and health effects, and programs to reduce fine PM emissions;
- The District's Community Air Risk Evaluation (CARE) program;
- Local benefits of ozone control measures;
- National ozone standards, attainment status and related planning requirements;
- Photochemical modeling.

In addition, this section addresses the public involvement process and environmental review of the control measures that are the core of the 2005 Ozone Strategy.

The Draft Bay Area 2005 Ozone Strategy was circulated to the public for a 60-day review and comment period from September 9, 2005 to November 9, 2005. The District received ten comment letters during the public review and comment period and additional comments were made via email and during two public meetings held on October 25 and 26, 2005. Responses to all comments were prepared by staff and are included in Attachment B of this memo.

Based on public comment received during the public comment period as well as consideration of updated information since the Draft Ozone Strategy was released in September 2005, the proposed final Bay Area 2005 Ozone Strategy has been amended to reflect this input and updated information.

The following are the notable changes that have been made to the document:

- Revisions to Emissions Inventory
- Updates to descriptions of ARB Mobile Source programs
- Revisions to control measure descriptions
- Other minor clarifications and updates

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The purpose of the 2005 Ozone Strategy is to benefit the environment and public health. However, the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., requires that the potential environmental impacts of proposed projects and plans be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the District has prepared a Program Environmental Impact Report (EIR) to address the potential environmental impacts associated with the proposed 2005 Ozone Strategy. The purpose of the EIR is to describe the Ozone Strategy and to identify and evaluate any potentially significant adverse environmental impacts that may result from adopting and implementing the control measures in the proposed 2005 Ozone Strategy. The Draft EIR was circulated to the public for a 45-day review and comment period from October 7, 2005 to November 21, 2005. The District received five comment letters during the 45-day public

review and comment period and additional comments were made during the public meetings and workshops. Responses to all comments were prepared and are included in the Final EIR (Attachment C of this memo).

The Draft EIR for the 2005 Ozone Strategy identified potentially significant adverse environmental impacts associated with aesthetics, local air quality, biological resources, cultural resources, hazard, traffic and utilities and service systems. No additional feasible mitigation measures or project alternatives, other than those already included in the Draft EIR, have been identified that can further mitigate the potentially significant adverse project impacts. The District has prepared a Statement of Overriding Considerations and a Mitigation Monitoring Plan to accompany the Final EIR (see Attachment D of this memo).

BUDGET CONSIDERATION/FINANCIAL IMPACTS

Staff resources will be necessary to develop the rules, regulations, and programs to implement the control measures in the 2005 Ozone Strategy. Some of these costs are included in the FY2005/06 budget, while other costs will be included in future budgets.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Suzanne Bourguignon
Approved by: Henry Hilken

Attachments:

Attachment A: Proposed Final Bay Area 2005 Ozone Strategy (Volumes I / II)
Attachment B: Comments and Reponses on Public Review Draft 2005 Ozone Strategy
Attachment C: Final Environmental Impact Report (Volumes I / II including Responses to Comments on Draft EIR)
Attachment D: Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan

Bay Area 2005 Ozone Strategy

METROPOLITAN TRANSPORTATION COMMISSION

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Association of Bay Area Governments

BAY AREA

2005 OZONE STRATEGY

PROPOSED FINAL

DECEMBER 2005

BAY AREA
AIR QUALITY
MANAGEMENT
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SUMMARY

The Bay Area Air Quality Management District (Air District or BAAQMD), in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), has prepared the Bay Area 2005 Ozone Strategy. The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the State one-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins.

Ozone conditions in the Bay Area have improved significantly over the years. Ozone levels – as measured by peak concentrations and the number of days over the State one-hour ozone standard – have declined substantially as a result of aggressive programs by the Air District, MTC and our regional, State and federal partners. This represents great progress in improving public health conditions for Bay Area residents. The 2005 Ozone Strategy provides useful background information on topics including the Bay Area's emission inventory, historical ozone trends and the implementation status of past control measures.

However, there is still a need for continued improvement to meet the State one-hour ozone standard. Accordingly, the Ozone Strategy describes how the Bay Area will fulfill California Clean Air Act (CCAA) planning requirements for the State one-hour ozone standard and transport mitigation requirements through the proposed control strategy. The control strategy includes stationary source control measures to be implemented through Air District regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with MTC, local governments, transit agencies and others. The Air District will continue to adopt regulations, implement programs and work cooperatively with other agencies, organizations and the public on a wide variety of strategies to improve air quality in the region and reduce transport to neighboring air basins.

The 2005 Ozone Strategy explains how the Bay Area plans to achieve these goals with regard to ozone, and also discusses related air quality issues of interest including our public involvement process, climate change, fine particulate matter, the Air District's Community Air Risk Evaluation (CARE) program, local benefits of ozone control measures, the environmental review process, national ozone standards and photochemical modeling.

The 2005 Ozone Strategy is a comprehensive document that describes the Bay Area's strategy for compliance with State one-hour ozone standard planning requirements, and is a significant component of the region's commitment to achieving clean air to protect the public's health and the environment.

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ABBREVIATIONS AND TERMINOLOGY

ABAG	Association of Bay Area Governments
AFM	All Feasible Measures
ARB	(California) Air Resources Board
ATCM	Airborne Toxic Control Measure
AQMD	Air Quality Management District
BAAQMD	Bay Area Air Quality Management District
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BAR	Bureau of Automotive Repair
BARCT	Best Available Retrofit Control Technology
BART	Bay Area Rapid Transit District
BURDEN	Computer program that uses vehicle activity data along with EMFAC to calculate motor vehicle emissions
CAA	(Federal) Clean Air Act
CAP	Clean Air Plan (for State ozone standard)
CAPCOA	California Air Pollution Officers Association
CARE	Community Air Risk Evaluation program
CCAA	California Clean Air Act
CCOS	Central California Ozone Study
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CMA	Congestion Management Agency
CMAQ	Congestion Management and Air Quality (Improvement Program)
CMP	Congestion Management Program
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CTC	California Transportation Commission
DV	Design Value
DMV	(California) Department of Motor Vehicles
EIR	Environmental Impact Report
EMFAC	ARB model (including emission factors) to calculate motor vehicle emissions
EPA	(United States) Environmental Protection Agency
EPDC	Expected Peak Day Concentration
Fed. Reg.	Federal Register
FS	Further Study measure
HC	Hydrocarbons
HOV	High-Occupancy Vehicle
hp	Horsepower
I & M	(Motor Vehicle) Inspection and Maintenance Program (“Smog Check” program)

LEV	Low Emission Vehicle
LRT	Light Rail Transit
MAC	(BAAQMD) Modeling Advisory Committee
MPG	Miles Per Gallon
MS	Mobile Source measure
MTC	Metropolitan Transportation Commission
MTOS	Metropolitan Traffic Operations System
MVEB	Motor Vehicle Emissions Budget
NAAQS	National Ambient Air Quality Standards
NO_x	Oxides of Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NSR	New Source Review
O_3	Ozone
OBD	On-Board Diagnostic program
OWG	(BAAQMD) Ozone Working Group
$PM_{2.5}$	Particulate Matter less than 2.5 microns in diameter
PM_{10}	Particulate Matter less than 10 microns in diameter
ppb	Parts per billion
pphm	Parts per hundred million
ppm	Parts per million
PSI	Pollutant Standard Index
RACC	Regional Agency Coordinating Committee
RACM	Reasonably Available Control Measure
RFG	Reformulated Gasoline
RFP	Reasonable Further Progress
RM2	Regional Measure 2
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
RVP	Reid Vapor Pressure (measure of gasoline volatility)
SIP	State Implementation Plan
SS	Stationary Source measure
TAC	Toxic Air Contaminant
TCMs	Transportation Control Measures
TDA	Transportation Development Act
TFCA	(BAAQMD) Transportation Fund for Clean Air
TIP	Transportation Improvement Program
TLC/HIP	(MTC) Transportation for Livable Communities / Housing Incentive Program
tpd	Tons per day
VMT	Vehicle Miles Traveled
VOC	Volatile organic compounds
ZEV	Zero Emission Vehicle

SECTION 1 - INTRODUCTION

The Bay Area Air Quality Management District (Air District or BAAQMD), in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), has prepared the 2005 Ozone Strategy for the San Francisco Bay Area. The 2005 Ozone Strategy is a roadmap showing how the region will continue to make progress toward meeting the State one-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins.

Ozone conditions in the Bay Area have improved significantly over the years. Ozone levels – as measured by peak concentrations and the number of days over the one-hour State standard – have declined substantially as a result of aggressive programs by the Air District, MTC and our regional, State and federal partners. This represents real progress in improving conditions affecting public health for Bay Area residents. However, the region has not attained yet the State one-hour ozone standard[1], and also must reduce pollution transported to downwind regions as required by the California Clean Air Act. Therefore, the region must continue its long-term progress in reducing ozone levels by reducing emissions of pollutants that form ozone. That is the objective of this 2005 Ozone Strategy.

OZONE HEALTH EFFECTS AND BACKGROUND

Ozone is the principal component of smog. It is highly reactive, and at high concentrations near ground level can be harmful to public health[2]. The San Francisco Bay Area air basin – consisting of all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo and Santa Clara counties, and the southern portions of Solano and Sonoma counties – periodically experiences ozone levels in excess of the standards.

Ozone is a highly reactive gas that can damage the tissues of the lungs and respiratory tract. High concentrations of ozone irritate the nose, throat and respiratory system and constrict the airways. Ozone also can aggravate other respiratory conditions such as asthma, bronchitis and emphysema. Repeated exposure to high ozone levels can make people more susceptible to respiratory infection and lung inflammation and permanently damage lung tissue. Children are most at risk, as they are active outdoors in the summer, when ozone levels are highest. Seniors and people with respiratory illnesses are also especially sensitive to ozone's effects. Even healthy adults, working or

[1] In April 2005, ARB established a new eight-hour average ozone standard of 0.070 ppm. The new standard is expected to take effect in 2006. ARB is currently working on designations and implementation guidance for the new standard. The one-hour state standard has been retained. Previously EPA adopted a new federal eight-hour standard of 0.08 ppm and after several years of litigation is currently finalizing planning requirements for the new standard including revocation of the federal one-hour ozone standard. The San Francisco Bay Area has not attained either the federal or State eight-hour standards, and will be taking action as necessary to address those standards as appropriate once the planning requirements have been established.

[2] While ground level ozone is a harmful air pollutant, ozone in the upper atmosphere is beneficial because it blocks the sun's harmful ultraviolet rays. The 2005 Ozone Strategy focuses on reducing ground level ozone only.

exercising outdoors during high ozone levels, can be affected. Ozone also damages trees, agricultural crops and other plants.

Ozone is not emitted directly from pollution sources. Instead, ozone is formed in the atmosphere through complex chemical reactions between hydrocarbons (or "reactive organic gases") and nitrogen oxides, in the presence of sunlight. Ozone levels are usually highest on hot, windless summer afternoons, especially in inland valleys. The main sources of hydrocarbons are motor vehicles and evaporation of solvents, fuels and other petroleum products. The main sources of nitrogen oxides are motor vehicles and combustion.

Ozone is a regional pollutant. Emissions of hydrocarbons and nitrogen oxides throughout the Bay Area contribute to ozone formation, and emissions in one part of the region can impact air quality miles away. Therefore, efforts to reduce ozone levels focus on reducing emissions of hydrocarbons and nitrogen oxides throughout the region.

STATE ONE-HOUR OZONE STANDARD

The State government has established ambient air quality standards (AAQS) for ground level ozone (and other air pollutants) that are intended to protect human health from adverse effects. Air quality standards define the maximum amount of a pollutant that can be present in outdoor air without harm to public health. The standards are generally set at levels low enough to protect even the most sensitive individuals in our communities. State standards are set by the California Air Resources Board (ARB). The California one-hour ozone standard is set at 0.09 parts per million (ppm). In April 2005, ARB established a new eight-hour average ozone standard of 0.070 ppm. ARB plans to retain the current one-hour State ozone standard and is currently working on designations and implementation guidance for the new eight-hour standard.

The Air District operates a network of air quality monitoring stations throughout the region to constantly monitor air quality conditions. Data from the air monitoring stations allow the Air District to determine whether the region meets ambient air quality standards and to track progress in improving air quality.

An exceedance of the State one-hour standard occurs if the average ozone concentration measured over a one-hour period at any Air District monitoring station is higher than the standard. In recent years, the State standard has been exceeded an average of 16 days per year.

Over time, as more research is conducted on ozone's health effects and more sophisticated analytical tools become available, scientists and health professionals learn more about ozone's effects and the concentrations that may be harmful. State law requires ARB to periodically review air quality standards to assure that they are sufficiently stringent to protect public health, particularly for those members of the public who are most sensitive to the effects of air pollution. Recent State legislation requires ARB, working with the State Office of Environmental Health Hazard Assessment to specifically consider exposure of and effects on infants and children when reviewing air quality standards.

PURPOSE AND ORGANIZATION OF THE 2005 OZONE STRATEGY

The most recent plan for the State ozone standard was the 2000 Clean Air Plan (or "2000 CAP"). With the 2005 Ozone Strategy the Air District is addressing the planning requirements for the State one-hour ozone standard.

Section 1 of the 2005 Ozone Strategy provides an introduction and general overview of the document. Section 2 addresses State one-hour ozone planning requirements and consists of the triennial update to the region's strategy to achieve the California one-hour ozone standard. Section 3 discusses various ozone-related air quality issues of concern to the Air District and the public. It also describes the environmental review process as well as the District's efforts to encourage and facilitate public involvement in the development of the ozone strategy. Appendices provide detail on the public involvement process, control measure review and evaluation process, control measure descriptions, further study measures, and other technical support information.

State Planning Requirements

Because the San Francisco Bay Area violates[3] the State one-hour ozone standard, the region is considered a nonattainment area for the State standard.[4] The California Clean Air Act requires regions that do not meet the State ozone standard to prepare plans for attaining the standard and to update these plans every three years. These plans must include estimates of current and future emissions of the pollutants that form ozone and a control strategy that includes "all feasible measures" to reduce these emissions. The plans must also include measures to reduce transport of air pollutants to downwind regions.

The first Bay Area plan for the State ozone standard was the 1991 Clean Air Plan. Subsequently, the Clean Air Plan was updated and revised in 1994, 1997, and 2000. Each of these triennial updates proposed additional measures to reduce emissions from a wide range of sources, including industrial and commercial facilities, motor vehicles, and "area sources" (scattered, individually small sources such as water heaters or paints and varnishes).

Section 2 of this 2005 Ozone Strategy is the latest triennial update to the Bay Area strategy to achieve the State one-hour ozone standard, including new control measures. The draft control measures (summarized in Section 2 and set forth in more detail in the appendices) are proposed to satisfy State ozone planning requirements.

[3] A violation is different than an exceedance. An exceedance is a day with a maximum ozone concentration that is higher than the standard. An exceedance does not necessarily cause a violation. A violation occurs when enough exceedances have occurred for the region to be considered not in attainment of the standard according to ARB methodology.

[4] Designating an area as nonattainment for a State standard indicates that air quality in that area violates the established State standard. Area designations for State standards are made using air quality data for the prior three year period. The highest measured value, excluding exceedances from "extreme concentration events" or "exceptional events," becomes the designation value. If the designation value is higher than the level of the State standard, the area is nonattainment.

Preparation of the Ozone Strategy and Public Involvement

The 2005 Ozone Strategy has been prepared by the Air District, in consultation with MTC and ABAG. The preparation of the 2005 Ozone Strategy has involved many methods of public involvement including extensive public outreach throughout which staff explained the ozone planning process and solicited input from the public. More detailed information on the public involvement process is provided in both Section 3 and Appendix A of this document. The Air District Board of Directors will consider adoption of the 2005 Ozone Strategy and, upon adoption, staff will transmit it to ARB for their review and approval.

Other Elements

The 2005 Ozone Strategy also includes several other elements that are not required to attain the State one-hour ozone standard, but are related to ozone control efforts and are being included to help the public understand the relationship between ozone planning and other environmental programs. The Air District implements numerous programs that are related in some way to ozone planning, or are otherwise of interest to the Air District and the public. The 2005 Ozone Strategy will discuss these related topics of interest, including:

- Public involvement process;
- Climate change programs to reduce greenhouse gas emissions;
- Fine particulate matter (PM), its sources and health effects, and programs to reduce fine PM emissions;
- Community Air Risk Evaluation (CARE) program;
- Local benefits of ozone control measures;
- National ozone standards, attainment status and related planning requirements;
- Photochemical modeling;
- Environmental review.

SECTION 2 - TRIENNIAL UPDATE OF STATE OZONE STRATEGY

INTRODUCTION

For over 15 years, the 1988 California Clean Air Act (CCAA), and subsequent amendments, have guided efforts throughout California to achieve State ambient air quality standards. This section of the 2005 Ozone Strategy for the San Francisco Bay Area addresses State ozone planning requirements of the CCAA (as amended).

CCAA PLANNING REQUIREMENTS

The basic goal of the CCAA is to achieve health-based State ambient air quality standards by the earliest practicable date. The CCAA requires regions that violate the State ozone standard to prepare attainment plans that identify a strategy to attain the standard. Regional air quality plans are required to achieve a reduction in district-wide emissions of 5 percent per year for ozone precursors (California Health and Safety Code Section 40914).[5] If an air district is unable to achieve a 5 percent annual reduction, the adoption of all feasible measures on an expeditious schedule is acceptable, as an alternate strategy (Sec. 40914(b)(2)).

California classifies ozone nonattainment areas based on their "expected peak day concentration," which is an ozone reading that the region should not exceed more than once per year, on average, excluding exceptional or extreme readings. Legal requirements vary according to the severity of a region's ozone problem. The Bay Area is subject to CCAA requirements for "serious" areas. (Secs. 40921.5(a)(2), 40919). The Bay Area's efforts to meet the applicable CCAA requirements for ozone include the following:

ALL FEASIBLE MEASURES

No non-attainment area in the state has been able to demonstrate a 5% reduction in ozone precursor pollutants each year. Consequently, most areas in the state, including the Bay Area, have opted to adopt “all feasible measures” as expeditiously as possible to meet the requirements of the CCAA. The CCAA does not define “feasible,” but the Health and Safety Code provides some direction to assist the District in making this determination. State law defines a related term, Best Available Retrofit Control Technology (BARCT), as “an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.” (sec. 40406) And the ARB defines “all feasible measures” in the Transport Mitigation Regulation, Section 70600 *et seq,* Title 17 California Code of Regulations, as “air pollution control measures, including but not limited to emissions standards and limitations, applicable to all air pollution source categories under a district's authority that are based on the maximum degree of reductions achievable for emissions of ozone precursors, taking into account technological, social, environmental, energy and economic factors, including cost-effectiveness.”

[5] All references to Section numbers are for the California Health and Safety Code, unless otherwise noted.

TRANSPORT MITIGATION REQUIREMENTS

The CCAA requires ARB to periodically assess transport of ozone and ozone precursors from upwind to downwind regions, and to establish mitigation requirements for upwind districts (Sec. 39610). The CCAA also requires air districts to address transport mitigation requirements in the triennial updates to strategies to achieve the State ozone standard (Sec. 40912).

ARB first adopted transport mitigation requirements in 1990, amended them in 1993, and further strengthened them in 2003. ARB's 2003 amended Transport Mitigation Requirements are in Title 17, California Code of Regulations, Sections 70600 and 70601. The requirements for transport mitigation state that upwind districts "shall include sufficient emission control measures in their attainment plans for ozone…to mitigate the impact of pollution sources within their jurisdictions on ozone concentrations in downwind areas commensurate with the level of contribution." Specifically, the Bay Area is required to:

1) adopt and implement all feasible measures as expeditiously as practicable;
2) adopt and implement best available retrofit control technology (BARCT) on all existing stationary sources of ozone precursor emissions as expeditiously as practicable;
3) implement, by December 31, 2004, a stationary source permitting program designed to achieve no net increase in the emissions of ozone precursors from new or modified stationary sources that emit or have the potential to emit 10 tons or greater per year of an ozone precursor, which the Bay Area Air Quality Management District Board of Directors adopted on December 21, 2004; and
4) include measures sufficient to attain the state ambient air quality standard for ozone by the earliest practicable date within the North Central Coast Air Basin, that portion of Solano County within the Broader Sacramento Area, that portion of Sonoma County within the North Coast Air Basin, and that portion of Stanislaus County west of Highway 33 during air pollution episodes, provided that:
    a) the areas are likely to violate the State ozone standard,
    b) the areas are dominated by transport from the Bay Area, and,
    c) the areas are not affected by emissions of ozone precursors within their borders.

In addition, the Air District is required to consult with downwind districts, review the list of control measures in the most recently approved attainment plan (2000 Clean Air Plan), make a finding as to whether the list of control measures meets the requirements of Section 70600 (b) and include the finding in the proposed triennial plan revision.

All of the above transport mitigation and consultation process requirements are addressed in "Addressing Transport Requirements" of the "Control Strategy" chapter in Section 2 of this document.

OTHER REQUIREMENTS

In addition to requirements concerning all feasible measures and transport mitigation, the CCAA requires that strategies to attain the State ozone standard contain other elements, including the following:

Emissions inventory system (Sec. 40918(a)(5)). The Air District maintains an emissions inventory system. The emission inventory is included in the "Sources of Air Pollution – Emission Inventory" section of this document.

A permitting program designed to achieve no net increase in emissions from permitted sources with a potential to emit greater than 15 tons per year of a nonattainment pollutant or their precursors and to require the use of best available control technology (BACT) on new and modified sources with a potential to emit greater than 10 pounds per day (Sec. 40919(a)(2)). The Air District's permitting program, as spelled out in BAAQMD Regulation 2, Rule 2 — New Source Review — complies with the requirements of Health and Safety Code Section 40919(a)(2). Sufficient offsets have been provided for all permits that have been issued by the Air District. Furthermore, the Small Facility Banking account has sufficient credits to sustain withdrawals into the foreseeable future at the current withdrawal rate. The Air District's no net increase threshold was reduced to 10 tons per year to comply with transport mitigation requirements in December 2004.

Best available retrofit control technology (BARCT) on all existing permitted stationary sources (Sec. 40919(a)(3)). BARCT is implemented through the Air District's rule development, enforcement and permit review programs. Air District staff perform an assessment of BARCT requirements when proposing new rules or rule amendments and ARB reviews Air District rules and proposed rule amendments to insure that BARCT standards are implemented. Additionally, the Air District evaluates existing sources during the annual permit review process to ensure BARCT requirements are being met. Finally, the Air District, facility advisories, compliance assistance and enforcement programs help to make sure that BARCT standards in rules are being implemented.

Measures to achieve use of a significant number of low-emission vehicles in motor vehicle fleets (Sec. 40919(a)(4)). The proposed mobile source control measures Low Emission Vehicle Incentives and Green Contracting Ordinance address low emission vehicles and motor vehicle fleet emissions. TCMs 3 and 10 include clean fuel transit and school buses, respectively, and TCM 17 includes demonstration projects to promote low emission vehicles. The Air District's Transportation Fund for Clean Air, Carl Moyer and Low Emission School Bus programs provide funding for these TCMs.

Transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip (Sec. 40918(a)(3)). It is expected that VMT and trips will grow at approximately 1.4% and 1.2% percent per year, respectively, a reduction from the previous rate of VMT and vehicle trip growth. These projected growth rates do not include the effects of the proposed TCMs; implementation of the 2005 Ozone Strategy TCMs are expected to result in even further reductions of past growth rates.

Indirect source and area source programs (Sec. 40918(a)(4)). TCM 15 — Local Land Use Planning and Development Strategies — addresses the indirect source requirement

by proposing a wide range of programs for promoting smart growth and reducing emissions through better coordination of land use and transportation planning. Management of area source emissions is addressed through existing Air District regulations, various proposed stationary source and mobile source control measures, and TCM 16 — Public Education/Intermittent Control Measures.

Regional public education programs (Sec. 40918(a)(6)). The Air District's "Spare the Air" public education program is aimed at curbing emissions from motor vehicles and other ozone precursor sources on days when weather conditions are conducive to high ozone levels. Other ongoing educational programs include the Bay Area Clean Air Partnership, Clean Air Cities and Counties, Clean Air Consortium, a youth campaign, a Speaker's Bureau, Smoking Vehicle Program and grassroots resource teams located throughout the Bay Area. The "Spare the Air Tonight" program is aimed at reducing emissions of particulate matter from woodburning during the winter.

An assessment of cost-effectiveness of proposed control measures (Sec. 40922). Cost-effectiveness is discussed in the Control Strategy section of this document.

Periodic requirements include the following:

An annual regulatory schedule (Sec. 40923). The Air District produces a regulatory schedule each December, listing regulatory measures scheduled or tentatively scheduled for consideration during the following year.

An annual progress report on control measure implementation and, every third year, an assessment of the overall effectiveness of the program (Sec. 40924). The Air District has submitted annual progress reports to ARB every year since 1993. Previous triennial assessments of overall plan effectiveness were submitted in 1994, 1997, and 2000. The 2005 Ozone Strategy provides the latest triennial assessment.

A review and update of the plan every three years to correct for deficiencies and to incorporate new data and projections (Sec. 40925). The 2005 Ozone Strategy incorporates new data and projections and updates the control strategy.

In addition, Health and Safety Code Section 40233 addresses TCMs in Bay Area ozone attainment plans. Section 40233 directs the Air District to estimate the quantity of emission reductions from transportation sources necessary to attain and maintain State and national ambient air quality standards. Section 40233 requires MTC to prepare and adopt a TCM plan to achieve that quantity of emission reductions. The TCM plan is then incorporated into the overall strategy for achieving the State ozone standard. The statute also requires MTC to develop and adopt a revised TCM plan whenever the Air District revises the emission reduction target.

The Air District and MTC complied with these requirements when preparing the first Bay Area plan for the State ozone standard, the 1991 Clean Air Plan, by adopting a TCM emission reduction target and plan in 1990. This triennial update to the strategy for the State ozone standard does not include a revised emission reduction target for transportation sources, and therefore, does not trigger a TCM plan revision.[6] The Air

[6] Under Health and Safety Code Section 40233, State law leaves to the Air District's discretion whether and when to revise the emission reduction target for transportation sources set in 1990.

District and MTC have, however, comprehensively reviewed and augmented the TCMs during preparation of the 2005 Ozone Strategy to maximize their effectiveness.

SOURCES OF OZONE PRECURSORS – EMISSION INVENTORY

Ozone is not emitted directly into the air we breathe. Instead, it is formed in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_X). Simply stated, in the presence of sunlight, oxygen (O_2) reacts with ROG and NO_X to produce ozone (O_3). There are literally millions of sources of ozone precursors in the Bay Area, including industrial and commercial facilities, motor vehicles, and consumer products such as household cleaners and paints. Even trees and plants produce ozone precursors. Sources of ozone precursors produced by human activity are called anthropogenic sources while natural sources, produced by plants and animals, are called biogenic sources. In the Bay Area, emissions from anthropogenic sources are higher than from biogenic sources.

The main sources of ROG are motor vehicles and evaporation of fuels, solvents and other petroleum products. NO_X is produced mainly through combustion, and the major sources are motor vehicles and combustion at industrial and other facilities. Figures 1 and 2 show the major sources of ozone precursors in 2005.

An emission inventory is a detailed estimate of air pollutant emissions from a range of sources in a given area, for a specified time period. Table 1 presents the emission inventory for ozone precursors, ROG and NO_X, for a typical summer day in the Bay Area in 2000, 2003 and 2005, and projections for 2010 and 2020. This inventory is referred to as a "planning inventory" because ozone levels are highest during the summer, and thus an estimate of typical summer emissions is needed for ozone planning purposes.

Anthropogenic sources can be broadly divided between stationary and mobile sources. Stationary sources can be further divided between point and area sources. Point sources are those that are identified on an individual facility or source basis, such as refineries and manufacturing plants. The Air District maintains a computer data base with detailed information on operations and emissions characteristics for nearly 4,000 facilities, with roughly 20,000 different sources, throughout the Bay Area. Data on the activity, seasonal variations, and hours of operation are collected at the process level from each facility. Parameters that affect the quantities of emissions are updated regularly. The emissions from general processes, such as combustion, are computed using generalized or specific emission factors. These factors are periodically reviewed and updated.

Area sources are stationary sources that are individually very small, but that collectively make a large contribution to the inventory. Many area sources do not require permits from the Air District, such as residential heating and the wide range of consumer products such as paints, solvents, and cleaners. Some facilities considered to be area sources do require permits from the Air District, such as gas stations and dry cleaners. Emissions estimates for area sources may come from the Air District's data base, be calculated by ARB using statewide data, or be calculated based on surrogate variables such as population.

In addition to anthropogenic sources, there are significant quantities of biogenic emissions from natural sources like plants and animals. Vegetation emits large amounts

of isoprene, terpenes and other organic compounds which are ozone precursors. Emission rates depend upon species, season, biomass density, time of day, local temperature, moisture and other factors. Total reactive organic gas emissions from natural sources in the Bay Area amounts to roughly 170 tons per day. Biogenic emissions are not included in the planning emissions inventory because they are not subject to control, but these emissions do contribute to ozone formation.

Mobile sources include on-road motor vehicles such as automobiles, trucks and buses, as well as off-road sources such as construction equipment; boats and ships, trains and aircraft; and small non-road engines including lawn and garden equipment. Estimates of on-road motor vehicle emissions include consideration of the number of vehicles and the fleet mix (vehicle type, model year, and accumulated mileage), miles traveled, ambient temperatures, vehicle speeds, and vehicle emission factors, as developed from comprehensive ARB testing programs. Some of these variables change from year to year, and the projections are based upon expected changes.

The on-road mobile source emission inventory includes motor vehicle activity assumptions provided by MTC based upon their regional travel demand model. In September 2003, MTC, the Air District and ARB reached an agreement on how the Bay Area's motor vehicle activity data would be used in the development of the Ozone Strategy and for federal transportation conformity emission budgets. ARB ran EMFAC 2002, version 2.2 (with April 2003 activity data) for the San Francisco Air Basin. In accordance with the agreement, MTC staff adjusted the EMFAC VMT data using growth rates developed from MTC's travel demand model data. The travel activity adjustments used in preparing the on-road mobile source inventory are the same as were used in the Transportation Air Quality Conformity Analysis for MTC's Transportation 2030. MTC's travel demand model utilizes regional demographic forecasts from ABAG's socio-economic and population projections, in this case, Projections 2003. The motor vehicle emissions estimates in Table 1 reflect this methodology and are based on ARB's latest emission factors (EMFAC 2002, version 2.2) and include the benefits of Enhanced Smog Check in the Bay Area.

Off-road mobile sources include boats, ships, trains, and aircraft, as well as garden, farm and construction equipment. Various methodologies are used for compilation of emissions for these mobile sources. Emission factors and methodologies for off-road mobile sources are calculated from information provided by ARB and EPA. Aircraft mix and activity data specific to each Bay Area airport were used in estimating airport emissions.

Future emissions of ROG and NOx will be considerably lower than the past and current inventory. Figures 3 and 4 show recent and future trends for ROG and NOx emissions, demonstrating that future emissions of ROG and NOx in the Bay Area will continue to decline in future years. These estimates provide further assurance that the region will continue to move towards attainment of the State one-hour ozone standard.

Figure 1: 2005 ROG Summer Emissions

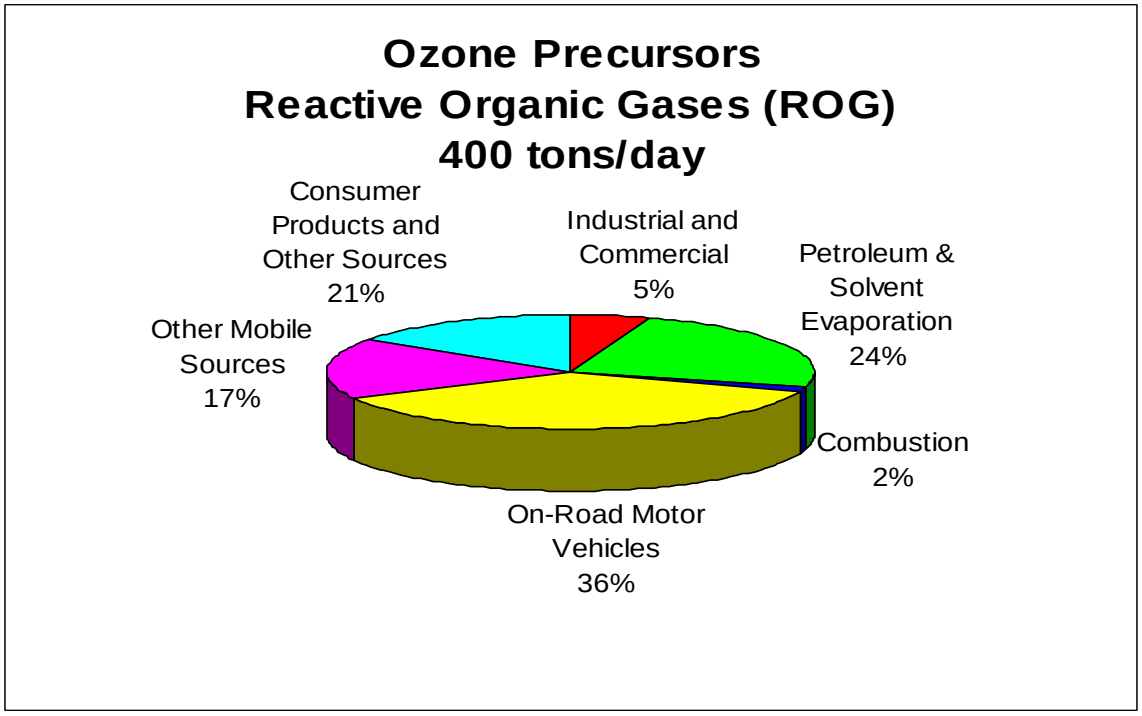


Figure 2: 2005 NOx Summer Emissions

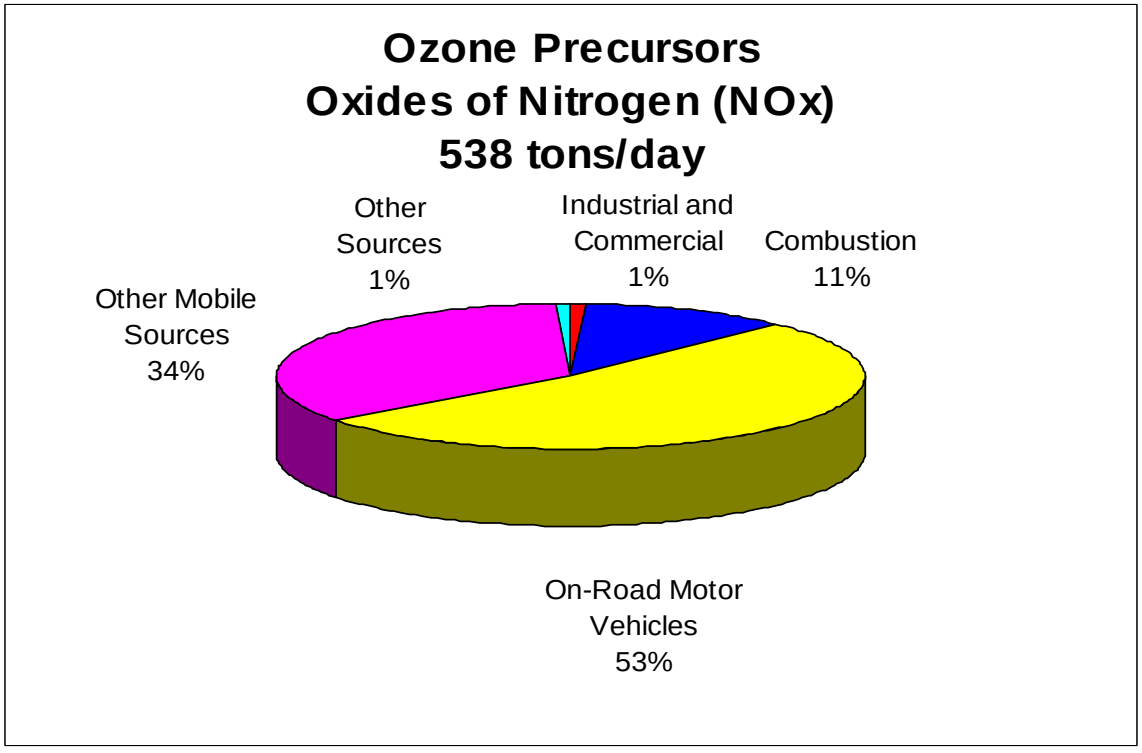


Table 1: Bay Area Baseline Emission Inventory Projections: 2000 – 2020
Planning Inventory (Tons/Day)

SOURCE CATEGORY	Reactive Organic Gases [4]					Oxides of Nitrogen [5]				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
INDUSTRIAL/COMMERCIAL PROCESSES										
PETROLEUM REFINING FACILITIES										
Basic Refining Processes	0.7	0.6	0.6	0.7	0.8	0.4	0.3	0.4	0.4	0.4
Wastewater (Oil-Water) Separators	5.3	4.0	3.6	1.7	2.0	--	--	--	--	--
Wastewater Treatment Facilities	0.1	0.2	0.2	0.2	0.3	--	--	--	--	--
Cooling Towers	1.7	0.4	0.5	0.5	0.6	--	--	--	--	--
Flares & Blowdown Systems	13.1	5.2	1.6	1.7	1.9	2.5	0.8	0.4	0.4	0.5
Other Refining Processes	0.3	0.3	0.3	0.3	0.4	--	--	--	--	--
Fugitives	5.3	1.9	1.9	2.0	2.4	--	--	--	--	--
Subtotal	**26.5**	**12.6**	**8.7**	**7.2**	**8.2**	**3.0**	**1.2**	**0.8**	**0.8**	**1.0**
CHEMICAL MANUFACTURING FACILITIES										
Coating, Inks, Resins & Other Facilitie	0.7	0.6	0.6	0.6	0.7	0.1	0.1	0.1	0.1	0.1
Pharmaceuticals & Cosmetics	0.9	0.8	0.9	0.9	1.0	1.9	1.8	1.8	2.0	2.3
Fugitives - Valves & Flanges	0.7	0.7	0.7	0.8	0.9	--	--	--	--	--
Subtotal	**2.3**	**2.1**	**2.2**	**2.3**	**2.6**	**1.9**	**1.8**	**1.9**	**2.0**	**2.4**
OTHER INDUSTRIAL/COMMERCIAL PROCESSES										
Bakeries	1.0	0.9	1.0	1.0	1.2	--	--	--	--	--
Cooking	1.0	1.1	1.1	1.2	1.3	--	--	--	--	--
Wineries & Other Food & Agr. Processes	1.3	1.1	1.2	1.2	1.5	--	--	--	--	--
Metallurgical & Minerals Manufacturing	0.3	0.2	0.2	0.3	0.3	1.0	1.0	1.0	1.0	1.2
Waste Management	2.6	2.8	2.9	3.0	3.1	--	--	--	--	--
Semiconductor Manufacturing	0.7	0.7	0.7	0.8	0.9	--	--	--	--	--
Fiberglass Products Manufacturing	0.4	0.4	0.4	0.4	0.4	--	--	--	--	--
Rubber & Plastic Products Manufacturing	0.4	0.5	0.5	0.5	0.6	--	--	--	--	--
Contaminated Soil Aeration	1.1	0.2	0.1	0.1	0.1	--	--	--	--	--
Other Industrial Commercial	1.4	1.3	1.4	1.5	1.6	0.1	0.1	0.1	0.1	0.1
Subtotal	**10.2**	**9.2**	**9.3**	**9.9**	**10.9**	**1.1**	**1.1**	**1.1**	**1.2**	**1.3**
PETROLEUM PRODUCT/SOLVENT EVAPORATION										
PETROLEUM REFINERY EVAPORATION										
Storage Tanks	3.6	3.8	3.9	4.2	4.8	--	--	--	--	--
Loading Operations	1.3	0.1	0.1	0.1	0.1	--	--	--	--	--
Subtotal	**4.9**	**3.8**	**4.0**	**4.2**	**4.9**	**--**	**--**	**--**	**--**	**--**

Table 1 (continued)
Bay Area Baseline [1] Emission Inventory Projections: 2000 – 2020
Planning Inventory [2] (Tons/Day) [3]

SOURCE CATEGORY	Reactive Organic Gases [4]					Oxides of Nitrogen [5]				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
FUELS DISTRIBUTION										
Natural Gas Distribution	0.5	0.5	0.6	0.6	0.7	--	--	--	--	--
Bulk Plants & Terminals	1.8	1.8	1.9	1.9	2.0	--	--	--	--	--
Gasoline Transport (Trucks)	3.3	3.4	3.4	3.6	3.8	--	--	--	--	--
Gasoline Filling Stations	15.4	10.0	7.9	6.6	6.3	--	--	--	--	--
Aircraft Fueling	3.0	3.0	3.0	3.0	3.0	--	--	--	--	--
Recreational Boat Fueling	0.9	0.9	1.0	1.0	1.1	--	--	--	--	--
Portable Fuel Container Spillage	18.5	11.9	7.6	5.0	5.0	--	--	--	--	--
Other Fueling	0.3	0.3	0.4	0.4	0.4	--	--	--	--	--
Subtotal	**43.7**	**31.8**	**25.7**	**22.1**	**22.3**	**--**	**--**	**--**	**--**	**--**
OTHER ORGANIC COMPOUNDS EVAPORATION										
Cold Cleaning	5.5	4.3	4.2	4.5	5.0	--	--	--	--	--
Vapor Degreasing	0.3	0.2	0.2	0.2	0.1	--	--	--	--	--
Handwiping	5.0	3.1	1.8	1.9	2.1	--	--	--	--	--
Dry Cleaners	0.1	0.1	0.1	0.1	0.1	--	--	--	--	--
Printing	5.7	3.8	3.9	4.0	4.3	--	--	--	--	--
Adhesives & Sealants	8.9	8.7	8.9	9.3	9.4	--	--	--	--	--
Structures Coating	26.1	25.6	25.5	26.6	28.3	--	--	--	--	--
Industrial/Commercial Coating	16.1	13.9	13.7	14.7	16.4	--	--	--	--	--
Storage Tanks	1.3	1.0	0.9	1.0	1.1	--	--	--	--	--
Lightering & Ballsting	1.3	1.7	1.8	2.0	2.5	--	--	--	--	--
Other Organics Evaporation	2.5	2.4	2.5	2.7	3.0	--	--	--	--	--
Subtotal	**72.8**	**64.8**	**63.3**	**66.8**	**72.3**	**--**	**--**	**--**	**--**	**--**
COMBUSTION - STATIONARY SOURCES										
FUELS COMBUSTION										
Domestic	2.3	2.3	2.4	2.4	2.6	9.1	8.3	8.5	8.9	9.4
Cogeneration	0.9	1.0	1.0	1.1	1.2	4.3	5.0	5.2	5.4	6.0
Power Plants	0.5	0.2	0.3	0.2	0.2	14.1	2.8	2.8	2.7	3.0
Oil Refineries External Combustion	0.4	0.4	0.4	0.5	0.5	24.4	16.5	14.0	14.8	16.3
Glass Melting Furnaces - Natural Gas	--	--	--	--	--	2.9	2.2	2.3	2.4	2.8
Reciprocating Engines	0.8	0.8	0.7	0.6	0.4	8.1	7.9	7.1	6.4	5.2
Turbines	0.1	0.1	0.1	0.1	0.1	1.6	1.7	1.7	1.8	2.0
Combustion at Landfills/Misc. Ext. Comb	1.1	1.0	1.0	1.1	1.2	17.2	17.6	18.0	19.1	21.1
Subtotal	**6.2**	**5.8**	**5.9**	**5.9**	**6.1**	**81.6**	**62.0**	**59.6**	**61.5**	**65.8**

Table 1 (continued)
Bay Area Baseline [1] Emission Inventory Projections: 2000 – 2020
Planning Inventory [2] (Tons/Day) [3]

SOURCE CATEGORY	Reactive Organic Gases [4]					Oxides of Nitrogen [5]				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
BURNING OF WASTE MATERIAL										
Incineration	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.4	0.4	0.4
Planned Fires	0.1	0.1	0.1	0.1	0.1	--	--	--	--	--
Subtotal	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Banked Emissions [6]	**0.0**	**11.2**	**11.2**	**11.2**	**11.2**	**0.0**	**8.1**	**8.1**	**8.1**	**8.1**
Alternative Compliance Allowance [7]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.5**	**7.2**	**4.3**	**4.3**
Subtotal (District Jurisdiction)	**166.7**	**141.6**	**130.5**	**129.8**	**138.8**	**87.9**	**78.0**	**78.9**	**78.2**	**83.2**
COMBUSTION - MOBILE SOURCES										
ON-ROAD MOTOR VEHICLES										
Passenger Cars	112.6	91.2	72.1	42.1	20.2	97.6	80.6	62.0	34.4	13.5
Light Duty Trucks<6000lbs	51.2	44.7	38.6	28.1	17.9	66.3	56.7	45.5	28.6	14.0
Medium Duty Trucks 6001-8500 lbs	14.5	12.5	10.9	8.9	6.5	24.3	21.0	17.5	12.5	6.5
Light Heavy Duty Trucks 8501-14000lbs	7.4	4.9	3.9	2.8	2.4	9.2	9.3	9.0	7.3	4.4
Medium Heavy Duty Trucks 14001-33000lbs	5.9	5.1	4.6	3.3	1.9	34.1	33.4	31.4	22.5	9.0
Heavy Heavy Duty Trucks>33000 lbs	7.0	6.6	6.1	4.3	2.4	97.6	92.0	86.9	58.0	21.9
School/Urban Buses	2.2	2.2	2.2	2.1	2.0	21.5	21.1	20.2	20.1	17.1
Motor-Homes	1.1	1.0	0.8	0.6	0.2	2.5	2.3	2.0	1.9	1.3
Motorcycles	5.6	4.5	3.9	2.7	1.6	1.0	0.9	0.9	0.7	0.5
Subtotal	**207.5**	**172.6**	**142.9**	**94.8**	**55.1**	**354.1**	**317.3**	**275.4**	**185.9**	**88.1**
OFF-HIGHWAY MOBILE SOURCES										
Lawn and Garden Equipment	31.7	25.1	20.6	15.5	13.6	2.8	3.0	3.1	1.9	1.3
Transportation Refrigeration Units	0.9	0.9	0.8	0.7	0.4	4.5	4.6	4.1	3.5	2.3
Agricultural Equipment	1.3	1.2	1.1	0.8	0.4	9.2	8.3	7.7	6.1	3.5
Construction and Mining Equipment	10.6	10.7	9.1	6.4	4.5	91.7	91.1	81.8	62.9	43.1
Industrial Equipment	3.2	3.3	2.8	1.6	1.0	20.6	20.2	16.7	10.8	7.8
Light Duty Commercial Equipment	6.6	6.6	5.6	4.4	3.6	10.8	10.9	10.0	9.1	7.8
Trains	0.6	0.7	0.7	0.6	0.6	14.9	13.1	11.3	9.7	9.5
Off Road Recreational Vehicles	0.8	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Ships [8]	0.6	0.6	0.6	0.7	0.8	10.5	10.0	10.4	11.4	13.7
Commercial Boats	0.7	0.8	0.8	0.9	1.1	5.8	6.2	6.3	6.7	7.3
Recreational Boats	22.0	19.5	17.0	12.1	7.1	3.3	4.1	4.8	5.0	4.4
Subtotal	**79.1**	**69.5**	**59.2**	**43.7**	**33.2**	**174.3**	**171.5**	**156.3**	**127.1**	**100.7**

Table 1 (continued)
Bay Area Baseline [1] Emission Inventory Projections: 2000 – 2020
Planning Inventory [2] (Tons/Day) [3]

SOURCE CATEGORY	Reactive Organic Gases [4]					Oxides of Nitrogen [5]				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
AIRCRAFT										
Commercial Aircraft	2.9	2.1	2.4	3.1	4.8	14.4	13.9	15.9	20.8	25.8
General Aviation	0.9	0.8	0.8	0.9	0.9	0.3	0.3	0.4	0.5	0.6
Military Aircraft	4.2	3.4	3.4	3.5	3.5	4.8	4.9	4.9	5.0	5.1
Airport Ground Support Equipment	0.4	0.4	0.4	0.4	0.5	2.3	2.6	2.7	2.9	3.2
Subtotal	**8.3**	**6.7**	**7.0**	**7.8**	**9.8**	**21.8**	**21.8**	**23.9**	**29.2**	**34.7**
MISCELLANEOUS OTHER SOURCES										
Construction Operations	--	--	--	--	--	--	--	--	--	--
Farming Operations	--	--	--	--	--	--	--	--	--	--
Entrained Road Dust-Paved Roads	--	--	--	--	--	--	--	--	--	--
Entrained Road Dust-Unpaved Roads	--	--	--	--	--	--	--	--	--	--
Wind Blown Dust	--	--	--	--	--	--	--	--	--	--
Animal Waste	5.5	5.5	5.5	5.5	5.5	--	--	--	--	--
Agricultural Pesticides	1.1	1.3	1.2	1.1	1.1	--	--	--	--	--
Non-Agricultural Pesticides	0.3	0.2	0.2	0.2	0.2	--	--	--	--	--
Consumer Products(Excluding Pesticides)	52.2	49.1	46.9	48.9	51.9	--	--	--	--	--
Other Sources	4.9	10.7	6.8	6.9	6.9	2.7	5.9	3.8	3.8	3.8
Subtotal	**63.9**	**66.7**	**60.6**	**62.5**	**65.6**	**2.7**	**5.9**	**3.8**	**3.8**	**3.8**
GRAND TOTAL EMISSIONS	**526**	**457**	**400**	**339**	**302**	**641**	**594**	**538**	**424**	**310**

1 Inventory and projections assume implementation of all control measures adopted as of December 31, 2004, including Smog Check II for the Bay Area.

2 The planning inventory represents average summer day emissions. ABAG Projections 2003 were used to project future emissions from on-road motor vehicles. ABAG Projections 2002 was the regional population projections used for the reminder of the planning inventory.

3 Entries are rounded to nearest whole number, totals may not equal to sums of column entries.

4 Photochemically reactive organic compounds excludes methane and other non-reactives and roughly 170 tpd of ROG emissions from natural sources.

5 Oxides of nitrogen (nitric oxide and/or nitrogen dioxide), NOx as NO2.

6 Banked Emissions show the total current deposits in the District's emissions banking program as allowed by BAAQMD Regulation 2, Rules 2 and 4. These emissions were reduced (beyond regulations) and banked, but may be withdrawn from the bank and emitted in future years.

7 Surplus emissions, voluntarily reduced, available for alternative compliance with BARCT requirements of selected rules, as prescribed by State law and BAAQMD Regulation 2, Rule 9.

8 These estimates account for ship activities within three miles from Golden Gate Bridge. California Air Resources Board (ARB) is developing statewide emissions estimates from ocean-going vessels (OGVs) occurring within 100 nautical miles of the California coastline. The District will update the inventory when finalized data is available from ARB.

Figure 3: ROG Emissions Trend, 2000 – 2020

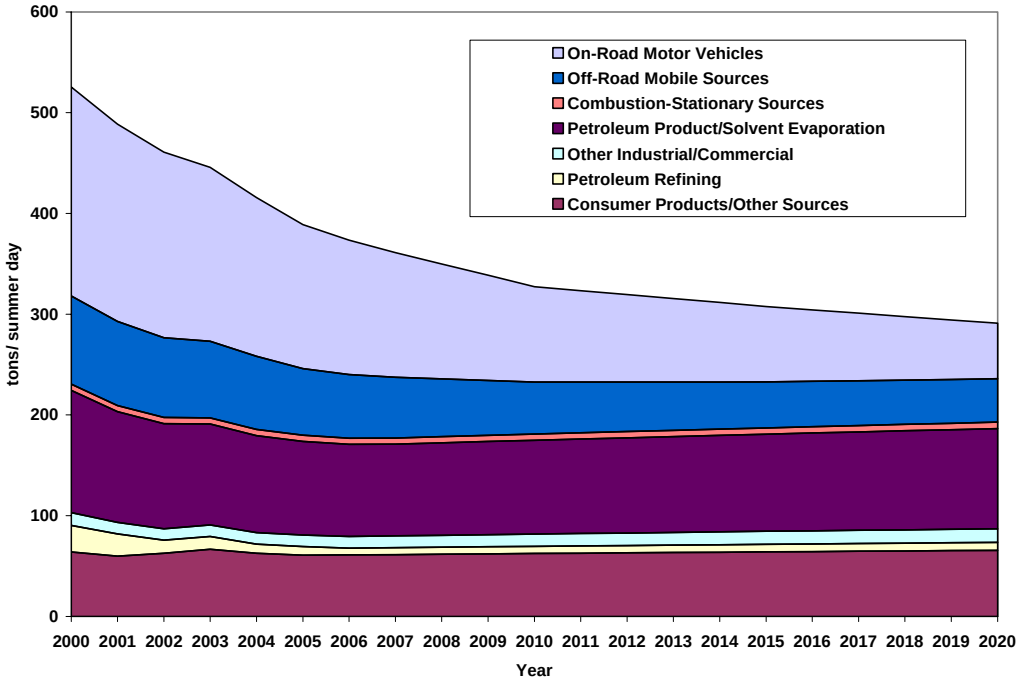
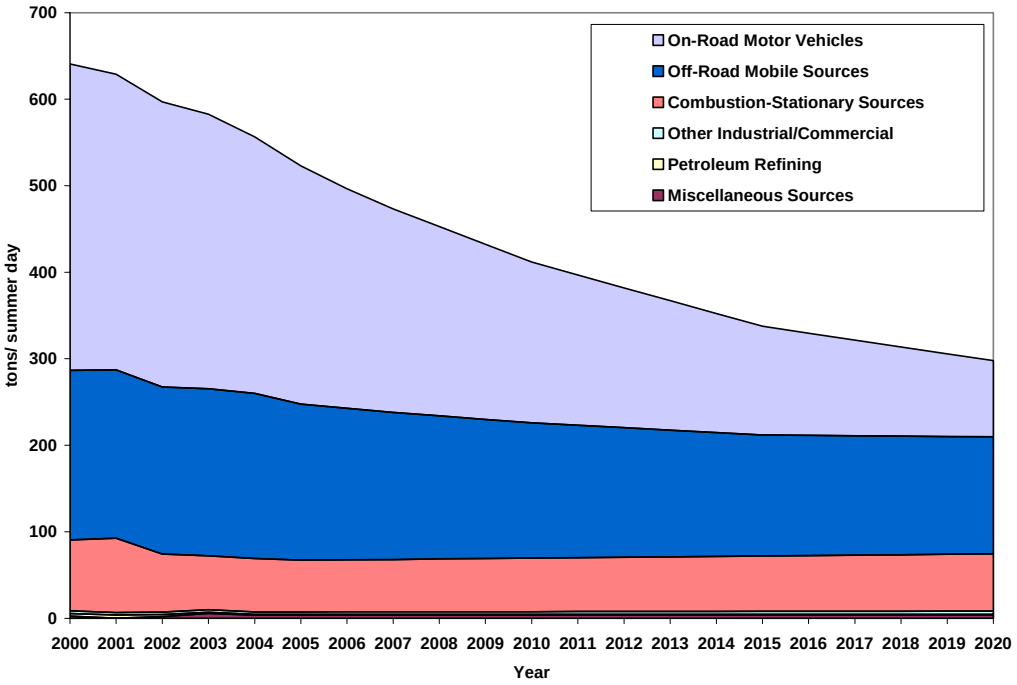


Figure 4: NOx Emissions Trend, 2000 – 2020



OZONE TRENDS

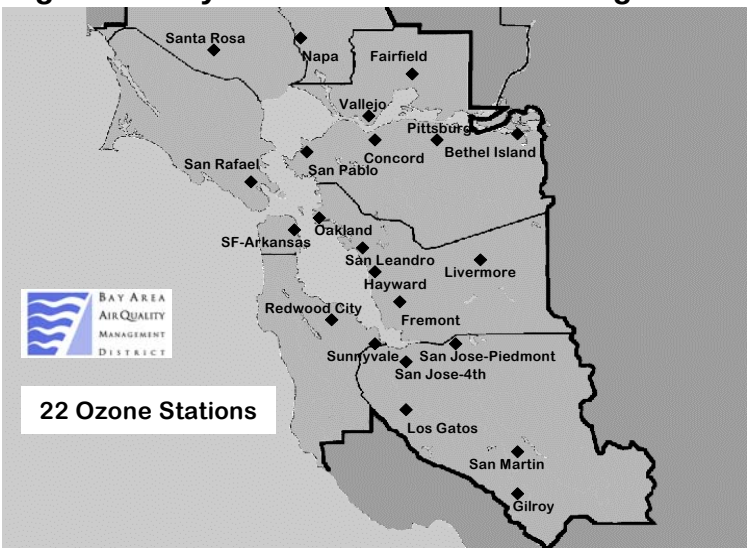
Health and Safety Code Section 40924(b)(1) requires the Air District to assess its progress toward attainment of the State ambient air quality standard for ozone during the most recent triennial period. The analysis in this section examines progress made during the triennial period, 2000[7] to 2002, and from 1988 (the base year) to 2004.

Monitoring Data

A very basic indicator of air quality trends is the number of days on which the region exceeded air quality standards. The Bay Area has an extensive network of monitoring stations to measure ambient air quality. There are 33 stations throughout the region that measure air quality conditions, 22 of which measure ozone. A map of the network is provided in Figure 5, "Air Monitoring Network." Ambient ozone levels are in compliance with the State standard more than 99% of the time. This analysis is focused on those days and hours when the standard has been exceeded.

Table 2 provides the number of exceedances of the State one-hour ozone standard at each monitoring station for 1985-2004. Figure 6 shows the number of days over the standard at any station for 1985-2004. Exceedances of the State ozone standard have diminished considerably since 1985. This improvement is due to substantial reductions in emissions of ozone precursors from stationary and mobile sources. For the three years considered in this triennial update, the Bay Area has had a fairly consistent number of exceedances of the State one-hour ozone standard. In 2000, the Bay Area recorded excesses of the State standard on 12 days. In 2001, the region recorded excesses of the State standard on 15 days. In 2002, the region recorded excesses of the State standard on 16 days.

Figure 5: Bay Area Ozone Air Monitoring Network



[7] Each yearly value presented in this analysis represents an average of the value for that year and for the previous two years. These running three-year averages are used in this analysis to smooth the fluctuations that occur on a year-to-year basis due to factors such as weather. For example, the triennial period of 1999 averages the data for the years 1997, 1998 and 1999.

Table 2: Bay Area Exceedances of the State 1-hr Ozone Standard by Monitoring Station, 1985 – 2004

STATIONS BY SUB-REGION	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04
North Counties																				
Santa Rosa	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0
Sonoma	3	1	2	2	3	0	3	0	0	0	0	0								
Napa	3	0	6	1	2	0	3	0	2	0	4	0	0	3	4	0	1	1	2	0
Vallejo	5	0	6	5	2	2	2	1	3	2	6	5	1	3	4	0	0	1	2	1
San Rafael	1	0	1	1	0	0	0	0	0	0	0	2	1	0	2	0	0	0	0	0
Coast and Central Bay																				
San Francisco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Richmond	0	0	0	2	1	0	0	0	2	0	0	0								
San Pablo													1	0	1	0	0	0	0	1
Oakland	1	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
South Central Bay																				
Fremont	8	3	17	7	11	3	6	5	5	4	10	2	2	7	3	2	3	3	4	0
Hayward**	5	1	12	9	1	0	2	1	0	1	7	2	2	4	4	1	2	0	3	0
Mountain View***	2	1	16	13	6	1	3	1	2	0	2	3	1	2	7					
San Leandro	0	0	0	0	0	0	2	2	3	0	6	2	3	2	3	1	0	1	2	1
Redwood City	5	1	2	2	1	0	0	0	1	0	5	1	0	0	0	0	1	0	1	1
Eastern District																				
Concord	10	5	20	10	6	3	4	3	7	4	9	11	2	13	8	2	6	5	5	1
Pittsburg	3	1	14	8	5	4	0	3	4	3	8	5	0	4	2	1	2	4	0	0
Bethel Island	8	8	14	7	11	5	3	7	3	5	6	6	1	10	5	1	3	5	0	1
Livermore	21	20	10	21	9	8	17	14	7	5	20	22	3	21	14	7	9	10	10	5
Fairfield	4	0	9	3	4	1	3	3	3	2	10	5	0	9	9	1	3	4	0	1
Santa Clara Valley																				
San Jose****	12	12	23	12	10	4	6	3	3	2	14	5	0	4	3	0	2		4	0
Los Gatos	20	21	25	12	1	5	7	3	8	2	13	10	1	5	4	0	2	4	7	0
San Jose East	16	5	22	13	9	1		5	5	3	15	5	1	5	2	1	0	0	2	0
Gilroy*	18	5	19	23	10	5	5	12	6	3	10	15	1	10	3		3	6	6	0
San Jose-Burbank						5	0	1	4	1										
San Martin										5	14	18	0	15	7	4	7	8	9	0
Sunnyvale																0	0	0	4	1
District Days	45	39	45	41	22	14	23	23	19	13	28	34	8	29	20	12	15	16	19	7

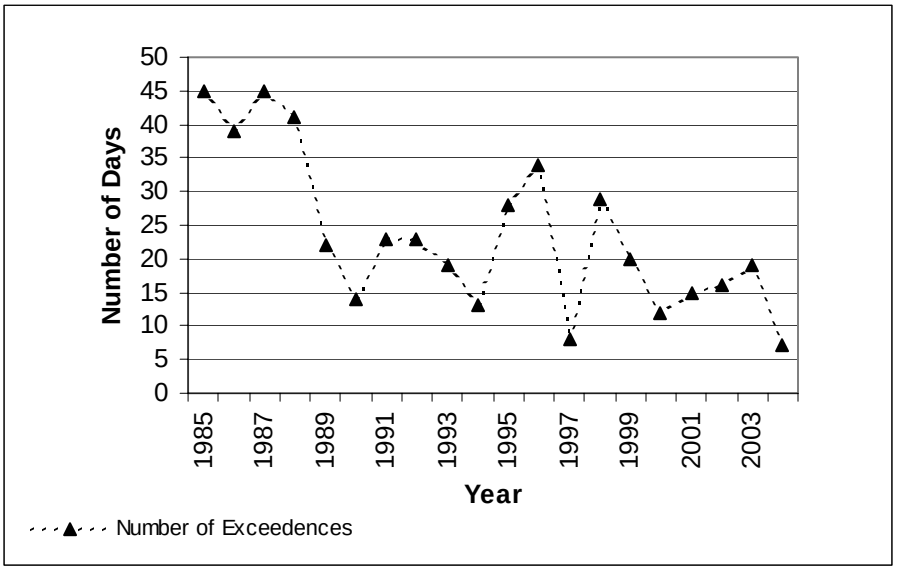
* Gilroy closed from 11/1/99 to 3/31/01

** Hayward closed from 4/96 to 8/23/96

*** Mountain View closed 12/3/99

****San Jose 4th St closed 4/30/02; reopened as San Jose Central 10/5/02

Figure 6: Exceedances of the State 1-hr Standard for Ozone in the Bay Area, 1985-2004



Peak Concentrations and Exposure

ARB guidance requires the use of three air quality indicators to assess the extent of air quality improvements achieved in the Bay Area: (1) Expected Peak Day Concentration, which is an estimate of the ozone concentration that would be exceeded once per year on average, (2) population-weighted exposure to ozone levels that exceed the State standard, and (3) area-weighted exposure to ozone levels that exceed the State standard. Each of these three indicators has been computed for the Bay Area, documenting changes from 1988 to 2002.

The hourly ozone levels recorded at Air District monitoring stations are used in this analysis, which focuses on those hours when the State standard[8] is exceeded. The following three air quality indicator analyses document significant progress toward improving the region's air quality:

Expected Peak Day Concentration

The Expected Peak Day Concentrations (EPDC) at Bay Area monitoring sites are listed in Table 3, from lowest to highest EPDC for 2002. Over the 14-year timeframe from 1988 to 2002, there has been an average annual reduction in EPDC of 1.4 percent. All the monitoring sites had lower EPDCs over this period with the exception of the monitoring site in San Leandro. While the San Leandro EPDC has increased slightly it is

[8] The calculation methodology assumes that an "exposure" occurs when a person experiences a one-hour ozone concentration outdoors that is greater than or equal to 9.5 pphm, the effective level of the State standard. The Population-Weighted Exposure and Area-Weighted Exposure consider both the level and duration of ozone concentrations above the State standard. The annual exposure is the sum of all the hourly exposures during the year. The results are presented as an average per exposed person or average per exposed unit land area.

still below the State one-hour standard. Overall, Table 3 shows steady improvement in reducing peak ozone concentrations.

From 1999 to 2002, the average annual reduction in EPDC was 3.1 percent. Over this shorter period, the EPDC fluctuates more dramatically ranging from an increase of 3.5 percent in Pittsburg to decreases of 6.2 percent in San Leandro and San Jose. Air quality trends, such as EPDC, have a tendency to fluctuate more over the short term because the number of ozone-conducive days may vary significantly from one year to the next and mask trends in the underlying potential for air pollution. One of the major factors influencing the number of ozone-conducive days in a year is weather – with high temperatures, strong inversions and relatively still air being major contributors.

Table 3: Expected Peak Day Concentrations

	Expected Peak Day Concentration (pphm)			Annual Percentage EPDC Change	
Monitoring Site:	**1988**	**1999**	**2002**	**1999 to 2002**	**1988 to 2002**
San Francisco	7.4	5.9	5.7	-1.0	-1.6
Oakland	8.2	6.1	5.8	-1.9	-2.1
Richmond/San Pablo	8.3	8.0	6.9	-4.5	-1.2
San Rafael	9.3	8.5	7.0	-5.8	-1.8
Santa Rosa	8.7	8.6	7.1	-5.8	-1.3
Redwood City	9.7	7.1	7.9	3.4	-1.3
San Leandro	8.2	10.6	8.6	-6.2	0.4
Vallejo	10.9	9.8	8.7	-3.8	-1.5
San Jose	13.1	10.7	8.7	-6.2	-2.4
Napa	10.7	10.6	8.9	-5.4	-1.2
Mt. View/Sunnyvale	14.0	10.6	9.2	-4.5	-2.4
San Jose - East	14.7	10.9	9.6	-4.0	-2.5
Hayward	12.9	11.2	9.7	-4.5	-1.7
Fremont	13.2	10.7	9.8	-2.6	-1.8
Fairfield	11.1	12.2	10.4	-4.7	-0.4
Pittsburg	11.7	9.5	10.5	3.5	-0.7
Los Gatos	13.9	11.3	10.8	-1.4	-1.6
Bethel Island	11.1	11.7	10.9	-2.3	-0.2
Concord	12.8	12.7	11.3	-3.7	-0.8
Gilroy	14.2	11.3	11.5	0.7	-1.4
San Martin	*	12.5	12.1	-1.0	*
Livermore	14.5	14.3	12.5	-4.3	-1.0
Averages	**11.4**	**10.2**	**9.3**	**-3.1**	**-1.4**

* The monitoring station at San Martin began collecting data on 4/30/1994; therefore, there is no 1988 or 1988 - 2002 annual percentage EPDC change data available for this site.

Population-Weighted Exposure to Ozone

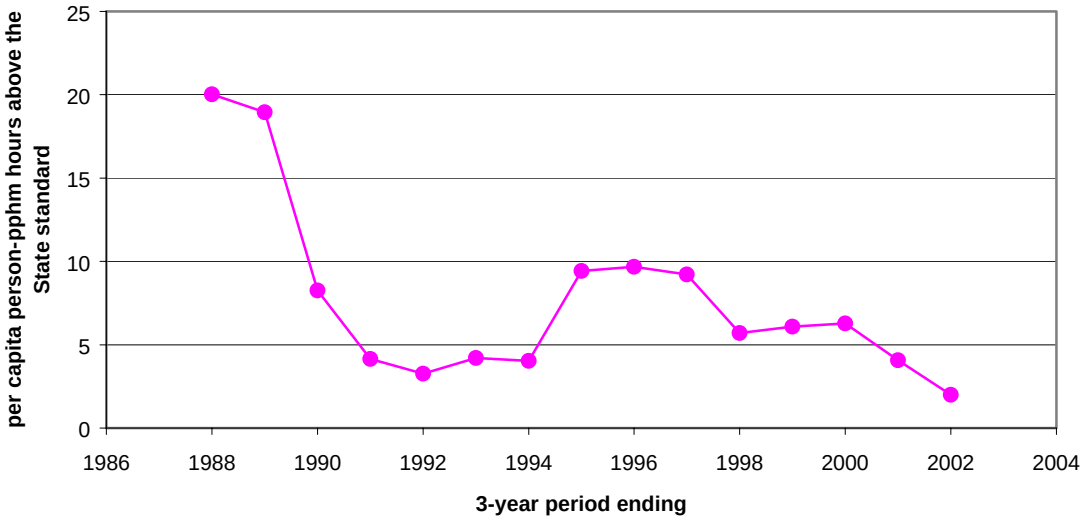
Data for peak ozone concentrations does not reflect how much of the Bay Area's population is exposed to high ozone levels. Population exposure provides a better indication of the extent and severity of ozone's impact on public health. Therefore, population-weighted exposure to ozone is another indicator used in assessing progress toward the State ozone standard. Table 4 shows that population-weighted exposure to unhealthful levels of ozone has decreased substantially everywhere in the Bay Area. The per capita exposure units (person-pphm-hours above 9.5 pphm/total population) show how many hours in a year each individual in a county is exposed to one pphm above the State ozone standard of 9.5 pphm. For example, a value of 5 pphm-hours might represent exposure for three hours at one pphm above the standard (i.e., 10.5 pphm) and one hour at 2 pphm above the standard (i.e., 11.5 pphm).

Population exposure to ozone in the Bay Area has decreased 90 percent on average between 1988 and 2002, as evidenced in Table 4 and Figure 7. From 1999 to 2002, the population exposure to ozone has declined 67 percent. The largest reduction in exposure to ozone from 1988 to 2002 occurred in Santa Clara County, with a 96 percent reduction.

Table 4: Population-Weighted Exposure to Ozone

	Per Capita Exposure (person-pphm-hours above 9.5 pphm/total population)			Percent Decrease	
County	**1988**	**1999**	**2002**	**1999 to 2002**	**1988 to 2002**
Alameda	18	7	3	54	83
Contra Costa	20	15	5	69	77
Marin	1	1	0	95	92
Napa	3	6	1	77	50
San Francisco	0	0	0	NA	NA
San Mateo	4	1	0	34	92
Santa Clara	48	7	2	71	96
Solano	8	10	2	84	80
Sonoma	1	1	0	81	83
Bay Area	**20**	**6**	**2**	**67**	**90**

Figure 7: Population Exposure to Unhealthy Ozone Levels in the Bay Area, 1988-2002



Area-Weighted Exposure to Ozone

The third indicator used in assessing progress toward the State ozone standard is area-weighted exposure to ozone. Reductions in area-weighted exposure are important because high ozone levels harm not only humans but also vegetation, animals, and most surfaces with which it comes in contact, such as architectural finishes and plastics. Table 5 indicates how many hours in a year each square kilometer in a county is exposed to one pphm above the State ozone standard. Table 5 shows that average Bay Area ozone exposure has decreased 82 percent from 1988 to 2002, and by 59 percent from 1999 to 2002.

Table 5: Area-Weighted Exposure to Ozone

	Area-Weighted Exposure (pphm-hours above 9.5 pphm / total km^2)			**Percent Decrease**	
County	**1988**	**1999**	**2002**	**1999 to 2002**	**1988 to 2002**
Alameda	41	19	10	47	75
Contra Costa	26	18	7	60	72
Marin	1	1	0	89	87
Napa	3	6	1	79	63
San Francisco	0	0	0	NA	NA
San Mateo	12	1	1	46	93
Santa Clara	54	12	6	49	88
Solano	12	11	3	77	79
Sonoma	1	2	0	82	77
Bay Area	**20**	**9**	**4**	**59**	**82**

IMPLEMENTED CONTROL MEASURES

The Air District has a long history of implementing control measures to reduce ozone precursor emissions from stationary, area, mobile and transportation sources. The Air District implements stationary source measures, and many area source measures, by adopting or amending Air District rules and regulations. Since the first Bay Area Clean Air Plan (prepared pursuant to the California Clean Air Act) was adopted in 1991, the Air District has adopted 55 rules and rule amendments to reduce ozone precursor emissions from stationary and area sources. Table 6 reports Air District rules adopted since 1991 and includes emission reductions.

Table 6: Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
SURFACE COATING AND SOLVENT USE			
COATINGS AND INK MANUFACTURING (b) Eliminate the small manufacturer exemption (c) Require reduced emissions from vat cleaning (Reg 8-35)	03/18/92	0.3-0.5	
ADHESIVES (a) Establish ROG limits for adhesives (b) Set transfer efficiency standards (c) Set standards for cleanup operations (Reg 8-51)	11/18/92	13.0	
AEROSPACE COATINGS (a) Set transfer efficiency standards (Reg 8-29)	02/03/93	0.02-0.03	
SURFACE COATING OF MISCELLANE-OUS METAL PARTS AND PRODUCTS (a) Set transfer efficiency standards (Reg 8-19)	02/03/93	0.06-0.13	
SURFACE COATING OF PLASTIC PARTS AND PRODUCTS (a) Set transfer efficiency standards (Reg 8-31)	02/03/93	negligible	

Table 6 (continued): Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
GRAPHIC ARTS PRINTING OPERATIONS (a) Lower ROG limits for fountain solutions (c) Lower ROG limits for inks (Reg 8-20)	10/06/93	1.3	
GENERAL SOLVENT AND SURFACE COATING (b) Modify mass emission limits (Reg 8-4)	06/01/94	unknown	
ELIMINATION OF COATINGS RULES ALTERNATIVE EMISSION CONTROL PLANS (a) Eliminate or modify AECP provisions in Reg. 8 Rules (Reg 8-12, 8-13, 8-14, 8-19, 8-23, 8-29, 8-30, 8-31, 8-32 & 8-38)	06/15/94	unknown	
SOLVENT AND SURFACE COATING (Reg 8-3)	05/15/96	unknown	
ADHESIVES (a) Establish ROG limits for adhesives (Reg 8-51)	06/05/96	6.0	
WOOD FURNITURE AND CABINET COATINGS (a) Establish ROG limits for coatings (b) Eliminate small user exemption (Reg 8-32)	06/19/96	5.8-6.5	
MOTOR VEHICLE AND MOBILE EQUIPMENT COATING & POLYESTER RESIN (Reg 8-45, 8-50)	11/06/96	unknown	
ADHESIVE AND SEALANT PRODUCTS (Reg 8-51)	11/06/96	unknown	

Table 6 (continued): Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
CAN AND COIL COATING (a) Lower ROG limits for some coatings (Reg 8-11)	11/19/97	0.35	
ADHESIVE AND SEALANT PRODUCTS (Reg 8-51)	01/07/98	unknown	
SEMICONDUCTOR MANUFACTURING (a) Abate emissions from positive photoresist operations (b) Abate emissions from solvent cleaning performed with coating-type applicators (Reg 8-30)	10/07/98	unknown	
ARCHITECTURAL COATINGS (Reg 8-3)	11/04/98	unknown	
SUBSTITUTE SOLVENTS USED FOR SURFACE PREPARATION / CLEAN-UP OF COATINGS (a) Set ROG / volatility limits for surface preparation solvents (b) Set ROG / volatility limits for clean-up solvents (Reg 8-16, 8-20 & 8-45)	Reg 8-16 adopted 09/16/98 Reg 8-20 adopted 03/03/99 Reg 8-45 adopted 01/09/99	2.9	
POLYSTYRENE, POLYETHYLENE AND POLYPROPYLENE MANUFACTURING (Reg 8-52)	07/09/99	0.3	
ADHESIVE AND SEALANT PRODUCTS (Reg 8-51)	05/02/01	unknown	
SURFACE COATING OF MARINE VESSELS (Reg 8-43)	04/18/01	unknown	
AQUEOUS SOLVENTS (Reg 8-16)	10/16/01	2.2	

Table 6 (continued): Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
ARCHITECTURAL COATINGS (Reg 8-3)	11/21/01	3.8	
ADHESIVE AND SEALANT PRODUCTS (Reg 8-51)	07/17/02	unknown	
SURFACE PREPARATION AND CLEAN-UP SOLVENTS (Reg 8-4, 14, 19, 31, 43)	10/16/02	2.1	
FUELS/ORGANIC LIQUIDS STORAGE AND DISTRIBUTION			
STORAGE OF ORGANIC LIQUIDS (c) Require better tank seals/more frequent inspections (g) Require emissions to be controlled during tank cleaning (Reg 8-5)	01/20/93	2.0-3.0	
ORGANIC CHEMICAL TERMINALS & BULK PLANTS (a) Reduce emission standard for non-gasoline bulk terminals and plants (Reg 8-6)	02/02/94	0.01	
GASOLINE DISPENSING FACILITIES (Reg 8-7)	11/17/99	3.8	
ORGANIC LIQUID STORAGE (h) Low emitting retrofits for slotted guide poles (Reg 8-5)	12/15/99	0.9	
GASOLINE DISPENSING FACILITIES (Reg 8-7)	11/06/02	unknown	
ORGANIC LIQUID STORAGE (Reg 8-5)	11/27/02	0.13	
REFINERY AND CHEMICAL PLANT PROCESSES			
PUMP AND COMPRESSOR SEALS AT REFINERIES AND CHEMICAL PLANTS (a) Require leakless seals (b) Adopt a more stringent leak definition (Reg 8-18)	03/04/92	6.5	

Table 6 (continued): Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
VALVES AND FLANGES AT REFINERIES AND CHEMICAL PLANTS (a) Require leakless valves (b) Improve inspection and maintenance requirements (c) Adopt a more stringent leak definition (Reg 8-22 & 8-25)	03/04/92	Emissions reduction included in above rule amendment.	
PRESSURE RELIEF DEVICES AT REFINERIES AND CHEMICAL PLANTS (a) Require venting to abatement devices and/or rupture disks with tell-tale indicators (Reg 8-28)	12/17/97 & 3/18/98	0.13	
EQUIPMENT LEAKS AT REFINERIES AND CHEMICAL PLANTS (b) Control of Fittings (Reg 8-18)	01/07/98	1.2	
EQUIPMENT LEAKS AT REFINERIES AND CHEMICAL PLANTS (Reg 8-18)	11/27/02	unknown	
PETROLEUM REFINERY FLARE MONITORING (Reg 12-11)	06/04/03	none	
LOW EMISSION REFINERY VALVES (Reg 8-18)	1/21/04	0.2	
PROCESS VESSEL DEPRESSURIZATION (Reg 8-10)	1/21/04	unknown	
REFINERY WASTEWATER (OIL-WATER) SEPARATORS (REG 8-8)	9/15/04	2.1	
PETROLEUM REFINERY FLARE CONTROL (Reg 12-12)	07/20/05	TBD	
COMBUSTION OF FUELS			
RESIDENTIAL WATER HEATING (a) Adopt NOx standards for new residential and commercial water heaters (Reg 9-6)	04/01/92		3.3

Table 6 (continued): Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
BOILERS, STEAM GENERATORS, AND PROCESS HEATERS (a) Adopt NOx controls similar to existing SCAQMD Rule 1146 (2) Smaller units (less than 100 MMBTU/hr.) (Reg 9-7)	09/16/92		14.9
NON-UTILITY RECIPROCATING ENGINES (a) Adopt NOx controls similar to existing SCAQMD Rule 1110.2 (Reg 9-8)	01/20/93		8.3
CONTROL OF EMISSIONS FROM STATIONARY GAS TURBINES (a) Adopt NOx controls similar to existing SCAQMD Rule 1134 (Reg 9-9)	05/05/93		7.0
BOILERS, STEAM GENERATORS, AND PROCESS HEATERS (a) Adopt NOx controls similar to existing SCAQMD Rule 1146 (1) Large units (100 MMBTU/hr. or larger) (Reg 9-10)	01/05/94		21.0
GLASS MANUFACTURING PLANT MELTING FURNACES (a) Adopt NOx controls similar to existing SCAQMD Rule 1117 (Reg 9-12)	01/19/94		1.2
ELECTRIC POWER GENERATING BOILERS (a) Adopt NOx controls based on add-on flue gas controls (Reg 9-11)	02/16/94		10.0-25.0
BOILERS, STEAM GENERATORS AND PROCESS HEATERS (Reg 9-10)	07/17/02		unknown
OTHER STATIONARY SOURCE CONTROL MEASURES			
ENHANCED COMPLIANCE THROUGH PARAMETRIC MONITORING (Reg 1)	10/07/98	unknown	unknown
SOLID WASTE DISPOSAL (Reg 8-34)	10/06/99	unknown	

Table 6 (continued): Air District ROG and NOx Rules Adopted Since 1991

District Regulation, Rule	Adoption Date	Emissions Reductions (tons/day)	
		ROG	NOx
PROHIBIT AERATION OF PETROLEUM CONTAMINATED SOIL (Reg 8-40)	12/15/99	2.7	
TOTAL EMISSION REDUCTIONS ACHIEVED		**58 – 60 tpd**	**66 – 81 tpd**

The Air District, in cooperation with partner regional and local agencies, continues to make progress in reducing ozone precursor emissions from stationary, area, mobile, and transportation sources. Progress occurs through various means, including adoption and implementation of Air District rules as noted above, implementation of Air District incentive programs and public education programs, and transportation planning and programming processes.

Stationary and Area Source Measures

The triennial update of the plan for the State ozone standard must report progress on implementing the control measures in the 2000 Clean Air Plan. Of the nine stationary source measures proposed in the 2000 Clean Air Plan, four were adopted (A1 Architectural Coatings, A5 Surface Preparation and Clean-Up Solvents, B2 Organic Liquid Storage, and C4 Process Vessel Depressurization), two are carried over in the control strategy in the 2005 Ozone Strategy (A21 Automobile Refinishing and A22 Wood Products Coating), and three are proposed for deletion (discussed below). Table 7 reports Air District rules adopted and implemented since 2000, with the associated emission reductions.[9]

[9] Note that some measures were included in the 2000 Clean Air Plan (for the State standard) and also in the 2001 Ozone Attainment Plan (for the national standard). Four measures in Table 7 were included only in the 2001 Ozone Attainment Plan. Even though these four measures were not included in the 2000 Clean Air Plan, they are included in Table 7 to provide a more complete picture of Air District rule development activity since 2000. Details on the history of Bay Area air quality planning for the national one-hour ozone standard can be found in Section 3 Other Issues.

Table 7: Air District Rules Adopted Since 2000

Control Measure (Reg. – Rule) Control Measure #[1]	Date Adopted	Emissions Reduced[2]
Architectural Coatings (Reg. 8-3) **A1**, SS-11	11/21/2001	3.8 tons/day
Organic Liquid Storage (Reg. 8-5) **B2**, SS-12	11/27/2002	0.1 tons/day
Surface Preparation and Clean-Up Solvents (Reg. 8-4, 13, 19, 31, 43) **A5**, SS-13	10/16/2002	2.1 tons/day
Aqueous Solvents (Reg. 8-16) SS-14	10/16/2001	2.2 tons/day
Petroleum Refinery Flare Monitoring (Reg. 12-11) SS-15	6/4/2003	none[3]
Low Emission Refinery Valves (Reg. 8-18) SS-16	1/21/2004	0.2 tons/day
Process Vessel Depressurization (Reg. 8-10) **C4,** SS-17	1/21/2004	unknown[4]
Refinery Wastewater (Oil-Water) Separators (Reg. 8-8), FS-9	9/15/2004	2.1 tons/day
10 Tons/Year No Net Increase Requirement (Reg. 2-2)	12/21/2004	unknown
Petroleum Refinery Flare Control (Reg. 12-12)	7/20/2005	unknown[3]
Total emission reductions		10.5 tons/day

1 Control Measure numbers in **bold** are from 2000 Clean Air Plan. Other control measure numbers are from the 2001 Ozone Attainment Plan.

2 All emissions are of ROG

3 The flare monitoring rule does not result in direct emission reductions although refineries did reduce flaring emissions substantially in response to the monitoring rule development and implementation. The flare control rule (Reg 12-12) will capture the emission reductions from flaring and make them enforceable.

4 The 2004 amendments greatly increase the number of refinery vessels subject to the rule requirements. Emission reductions have not been quantified.

Control Measures Proposed for Deletion

In some cases, control measures are not implemented through rules, either because: there are negligible emissions in the source category; there is negligible emissions reduction potential; it is found that prospective control technology is either infeasible or too costly; or because potential emissions reductions are captured under another control measure. Previous triennial updates have deleted control measures due to one or more of these reasons. If, in the future, more information becomes available which indicates the potential viability of these deleted control measures, they will be reevaluated for consideration as future control measures at that time.

Three stationary and area source control measures from the 2000 Clean Air Plan are proposed for deletion: control measures addressing VOC emissions from concrete coating (A-23); NO_x emissions from residential water heaters (D-8); and seasonal control

on cleaning of organic liquid storage tanks and wastewater separators and refinery shutdowns (G-3). The following is a summary evaluation of each of these control measures and the rationale for deletion:

- **A23: Concrete Coating Operations.** This measure was proposed because a review of the Air District's miscellaneous coatings inventory revealed a number of operations that coat concrete. At the time the 2000 CAP was developed, it appeared that some of these operations might be able to achieve emission reductions by using lower-VOC coatings and form release compounds. This control measure was evaluated again as part of the 2001 Bay Area Ozone Attainment Plan Reasonably Available Control Measure review. This review showed that emissions from concrete coating operations are currently less than 0.05 tons per day. Therefore, potential emission reductions from this control measure are de minimis.
- **D8: Improved Residential Water Heater Rule.** Residential water heaters are subject to the requirements of District Regulation 9, Rule 6: Nitrogen Oxide Emissions from Natural Gas Fired Water Heaters. The control measure recommended lower NO_x limits found in the comparable South Coast rule. In 1999, amendments to South Coast Rule 1121 established a 20 nanogram NO_x / joule of heat output standard effective in 2002 and a 10 nanogram / joule of heat output standard effective in 2005. These standards were described as technology forcing. The rule allowed manufacturers to pay a mitigation fee in lieu of meeting the 20 nanogram limit. On October 24, 2003, South Coast staff reported to the Stationary Source Committee of their Board on progress toward the new limits. All manufacturers paid a mitigation fee in lieu of meeting the interim rule limit. All four major manufacturers of water heaters were reported to be having difficulty meeting the final rule limit. The manufacturers cited competing federal requirements regarding safety and energy efficiency that they have had to meet for the national market. The competing requirements also affect NO_x levels. As a result, the manufacturers sought a delay in the effective date of the standard. Manufacturers are not be making water heaters to meet the 20 nanogram limit, and the feasibility of the 10 nanogram limit remains uncertain. On September 3, 2004, South Coast Rule 1121 was amended to delay the effective date of the 10 nanogram limit to various dates in 2006 through 2008, depending upon the size and design of the water heater.
- **G3: Seasonal Limitations on Organic Liquid Storage Tank and Wastewater Separator Cleaning and Refinery Shutdowns.** This measure would require that discretionary activities such as organic liquid storage tank cleaning, wastewater separator cleaning, and refinery unit shutdowns be controlled or conducted outside the summer ozone season. The 2001 Ozone Attainment Plan Reasonably Available Control Measure review also evaluated this control measure. This review found that refineries maximize production during the summer and schedule these activities at other times, so few emission reductions are likely during summer months. Also, amendments to Reg. 8-10: Process Vessel Depressurization adopted in January, 2004 achieve part of the emission reduction that would be produced by this measure. Amendments to Reg. 8-8: Wastewater (Oil-Water) Separators adopted in September 2004 achieve an additional portion. Finally, more stringent organic liquid storage tank cleaning requirements, which are currently being studied as part of 2001 Ozone Attainment Plan further study measure FS-10, would achieve yet another portion. These proposals will achieve these emissions reductions on a permanent basis, not

just seasonally. Any remaining emission reductions that could be achieved through seasonal prohibitions are de minimis.

Mobile Source Programs

Air District efforts to reduce emissions from mobile sources during the years 2001-03 have focused on incentive and education programs. The Air District's Transportation Fund for Clean Air (TFCA) program provides incentives for clean fuel buses, other clean air vehicle projects, retrofits and re-powers of on-road diesel engines, shuttle and feeder bus projects, ridesharing, bicycle facilities, smart growth, transit information and arterial management projects. The TFCA program also funds the Air District's Vehicle Buy Back program, the Smoking Vehicle program and the Spare the Air program. In coordination with the ARB, the Air District also administers the Carl Moyer program and the Lower Emission School Bus program. These programs are discussed in more detail in the Mobile Source Programs portion of the control strategy. Table 8 provides information on Air District mobile source programs during fiscal years 2000/01 - 2002/03.

Table 8: Funding and Emission Reductions from Incentive Programs

Fiscal Year	FY00/01		FY01/02		FY02/03	
Measure	Funding	Emission Reductions*	Funding	Emission Reductions*	Funding	Emission Reductions*
Smoking Vehicle	$508,490	36	$545,864	60	$522,008	61
Vehicle Buy Back	$2,326,588	643	$2,284,977	372	$3,753,850	582
Vehicle Incentive Program	$1,360,000	37	$1,311,000	42	$1,000,000	5
Spare the Air	$622,329	25	$649,426	20	$667,690	23
Lawnmower Buy Back	$125,000	5.3	$129,200	5.5	$158,800	6.7
Trip Reduction/Ridesharing	$3,028,770	268	$4,273,748	181	$5,932,746	239
Telecommuting	$41,496	2				
Smart Growth	$938,375	36	$550,000	13	$995,186	34
Arterial Management	$724,715	46	$1,899,000	62	$2,980,000	167
Bicycle Facilities	$2,368,051	78	$1,182,047	49	$3,470,763	123
Shuttle and Feeder Buses	$3,524,306	136	$3,369,273	111	$3,082,874	88
Transit Buses	$1,534,535	123	$3,921,396	248	$1,463,370	58
School Buses	$1,072,500	31	$3,920,000	80	$1,330,000	39
Natural Gas Vehicles	$4,734,000	267	$1,359,812	95	$2,846,153	129
Infrastructure for CNG	$895,544	N/A	$1,373,739	N/A	$375,615	N/A
Infrastructure for EV	$93,000	N/A	$9,000	N/A	$57,000	N/A
Lower Emission School Bus Program	$8,673,611	182	$4,238,607	89	$3,172,852	127
Carl Moyer Program	$4,340,000	2859	$1,570,344	906	$1,573,102	906
T O T A L	**$36,786,310**	**4,769**	**$32,458,233**	**2,328**	**$33,223,209**	**2,581**

* Emission reductions are total tons of ROG, NOx and PM combined over the life of the project.

Highlights from the Air District grants programs during FY 00/01, FY 01/02, and FY 02/03 include:

- 271 school buses purchased or retrofit
- 9,769 older vehicles retired through the Vehicle Buy-Back program
- 68 bicycle projects funded
- 37 shuttle projects funded
- 58 low emission vehicle projects funded through the Carl Moyer program

Transportation Control Measures

TCM implementation is ongoing, and significant progress was made during 2001-2003 in implementing the nineteen TCMs in the 2000 Clean Air Plan. The following discussion highlights significant TCM implementation efforts during the three-year period.

TCM 1: SUPPORT VOLUNTARY EMPLOYER-BASED TRIP REDUCTION PROGRAMS

- MTC continues to administer the Regional Ridesharing Program (trip reduction services were provided by RIDES for Bay Area Commuters during this period).
- Air District's Transportation Fund for Clean Air (TFCA) funds numerous regional and local voluntary ridesharing and trip reduction programs. TFCA funded approximately $17.8 million in trip reduction projects during FY 01/02 – 03/04. (Trip reduction category includes funding for transit use incentives (TCM 13), vanpool incentives (TCM 14), and educational programs (TCM 16)).
- Air District's Spare the Air Employer Program works with employers, cities and counties to provide assistance and tools to educate employees about air quality and commute alternatives.

TCM 3: IMPROVE AREAWIDE TRANSIT SERVICE

- In the 2003 Transportation Improvement Plan (TIP), MTC programmed $2.2 billion for public transit operations and capital expenses.
- AC Transit's enhanced rapid bus service on San Pablo Avenue started operation in 2003.
- MTC's Regional Express Bus program completed the purchase of 90 low emission buses, providing service on major commute corridors.
- TFCA funded approximately $6.6 million for clean-fuel transit buses during FY 01/02 – FY 03/04.
- In December 2001, MTC programmed $5 million in CMAQ funds, which were equally matched with local transportation and social service funds, to initiate the Low Income Flexible Transportation (LIFT) Program. The first round of LIFT funding supported 12 projects designed to implement projects identified in county plans. In December 2002, MTC programmed an additional 14 projects funded through a combination of Job Access and Reverse Commute funds ($3 million), STA funds and local social service funds. These projects funded expanded fixed route services, children's shuttles, vanpool services and car share services that directly serve low-income communities.

TCM 4: IMPROVE REGIONAL RAIL SERVICE

- BART extension to SF International Airport opened in June 2003.
- Caltrain Baby Bullet express service began in June 2004.
- Santa Clara VTA completed the first phase of the Tasman East Light Rail extension project in May 2001 with construction of a 1.9 mile segment from Baypointe Transfer Station to I-880 in Milpitas. The second phase of the Tasman East and the Capitol Light Rail Extension Projects began service in June 2004.

TCM 5: IMPROVE ACCESS TO RAIL & FERRIES

- TFCA funded $10.7 million for feeder bus and shuttle service to rail and ferries during FY 01/02 – FY 03/04.
- TFCA, TDA Article 3, and TEA-21 Enhancements funded bicycle access and bicycle storage facilities at BART, Caltrain, Muni, SCVTA LRT and AMTRAK stations. TFCA continued to fund attended bicycle parking at Palo Alto Caltrain and Downtown Berkeley BART stations and provided new funding at San Francisco Caltrain stations, and Fruitvale and Embarcadero BART stations.

TCM 6: IMPROVE INTERCITY RAIL SERVICE

- Five additional (for a total of twelve) Capitol trains began operation on weekdays between the Bay Area and Sacramento. Weekend service now includes nine roundtrips between Oakland and Sacramento.
- A third Altamont Commuter Express train began service between Stockton and San Jose in 2001.

TCM 7: IMPROVE FERRY SERVICE

- Since 2000, the Air District has provided approximately $3 million in Carl Moyer funds to purchase new, lower emission engines for 6 commuter ferries operating in the San Francisco Bay.
- In 2001, Golden Gate Transit initiated service of a new high-speed catamaran vessel, operating from Larkspur to San Francisco.
- In 2003, the Water Transit Authority's long-range plan to operate and expand comprehensive ferry service across San Francisco Bay was approved by the California Legislature.
- Vallejo Transit's Baylink began operation of a new high-speed low emission vessel in July 2004.

TCM 8: CONSTRUCT CARPOOL/EXPRESS BUS LANES ON FREEWAYS

- Since 2000, the following new HOV facilities were constructed: HOV lanes on SR 4 in eastern Contra Costa County, HOV lane from the Bay Bridge to I-80, HOV lane/flyover to the Bay Bridge toll plaza, HOV lane on I-880 northbound from West Grand Avenue to the Bay Bridge toll plaza, HOV lanes on I-680 southbound over Sunol, HOV lane on Hwy 101 between Bernal to Cochrane in Santa Clara County, HOV Lane on Hwy 101 between Wilfred to SR 12 in Sonoma County.
- In FY 02/03, TFCA provided funds for the construction of a park & ride lot in the City of Windsor.
- In 2003, MTC adopted the 2002 HOV Lane Master Plan Update for the Bay Area.

TCM 9: IMPROVE BICYCLE ACCESS & FACILITIES

- In FY 01/02 – FY 03/04, MTC funded over $21.2 million in bicycle and pedestrian projects through the TDA Article 3 program.
- TFCA funded $8.2 million in bicycle projects during FY 01/02 – FY 03/04, including bicycle routes, lanes, bridges and lockers.

TCM 10: YOUTH TRANSPORTATION

- In 2001, the Air District began implementing ARB's Lower Emission School Bus Program in the Bay Area. During FY 00/01 – FY 02/03, funding for the Bay Area totaled $8.2 million. All of the funding has been awarded, resulting in 172 low emission school buses in the Bay Area.
- In 2001, MTC committed up to $2 million in Low Income Flexible Transportation (LIFT) funds to support a 2-year pilot program to provide free bus passes for low-income students throughout AC Transit's service area. TFCA allocated $500,000 to support the program. TFCA also allocated $178,000 for student transit subsidies in Marin County.
- TFCA funded various programs at schools and universities, including transit pass subsidies, trip reduction and ridesharing services, transit information programs, and Safe Routes to School projects.

TCM 11: INSTALL FREEWAY/ARTERIAL METRO TRAFFIC OPERATIONS SYSTEM

- Freeway Service Patrols reduce incident related congestion and has expanded service to 80 vehicles, covering 450 miles of freeway.
- In 2003, ramp meters began operation on eastbound I-580 in Pleasanton, and at I-880/237 interchange.

TCM 12: IMPROVE ARTERIAL TRAFFIC MANAGEMENT

- TFCA has funded $6.7 million in signal prioritization and timing projects during FY 01/02 – FY 03/04.
- In FY 03/04, MTC programmed $1.2 million for signal retiming, and $250,000 in technical assistance to local jurisdictions to improve arterial operations.
- AC Transit's enhanced bus service on San Pablo Avenue started operation in 2003, relying on a number of arterial improvements to speed bus travel in the corridor.

TCM 13: TRANSIT USE INCENTIVES

- Over 80,000 Bay Area employees use pre-tax salary to pay for transit tickets. This service is provided by several vendors and annual sales through the Regional Transit Connection are approximately $36 million.
- TFCA awarded $365,000 for transit marketing projects in FY 02/03.
- VTA's EcoPass program continues to expand and now includes a residential component that provides transit passes for residents affiliated with housing developments. The EcoPass program currently includes 106 Employers and Residential Communities, and they represent about 120,000 employees and residents in Santa Clara County.
- Phase I of the TransLink® (universal fare card) program began in February 2002. More than 3,500 volunteers participated in a six-month pilot program in select stations and on select routes operated by six Bay Area transit

providers: AC Transit, BART, Caltrain, Golden Gate Transit, San Francisco MUNI and the Santa Clara VTA.

TCM 14: IMPROVE RIDESHARE/VANPOOL SERVICES AND INCENTIVES

- TFCA funds various vanpool incentive programs through the Regional Rideshare Program. The current vanpool fleet amounts to approximately 675 vans.
- In December 2002, MTC launched a regional on-line ridematching service.

TCM 15: LOCAL CLEAN AIR PLANS, POLICIES AND PROGRAMS

- In 2000, MTC created a new component of the Transportation for Livable Communities (TLC) program, the Housing Incentive Program (HIP), which provides incentives for the development of higher density housing near existing transit stations. Twenty-one cities have received HIP grants totaling $9 million.
- During FY 01/02 – FY 03/04, MTC funded 17 TLC planning projects totaling $911,000 and 12 capital projects totaling $9.5 million
- In December 2003, MTC reaffirmed their commitment to a tripling of TLC funding to $27 million/year for six years under the reauthorization of TEA-3.
- The Smart Growth Strategy/Regional Livability Footprint Project public workshops concluded in Spring 2002, and resulted in the development of a regionally approved Smart Growth Vision for the Bay Area. ABAG adopted policy-based demographic projections based on the Vision in March 2003. Population assumptions for the Regional Transportation Plan, Transportation 2030, are based on ABAG's Projections 2003.
- MTC created a new program for partnering with county Congestion Management Agencies (T-PLUS) to further the integration of transportation and land use decisions at the local level.
- In July 2000, AB 2864 created the Inter-Regional Partnership State Pilot Project, which was designed to develop, implement and evaluate incentive programs designed to change development patterns to improve the quality of life in the Bay Area and Central Valley by working to balance jobs and housing in the regions.

TCM 16: INTERMITTENT CONTROL MEASURE/PUBLIC EDUCATION

- Approximately 2,100 employers with over 1 million employees now participate in the Air District's Spare the Air program.
- Starting in 2003, the Air District partnered with Livermore Amador Valley Transit Authority to offer free service on all Spare the Air days. The program has continued in 2004. The Air District, BART and MTC funded a program to offer free morning commutes on BART on the first five weekday Spare the Air days between June 21 and Oct. 15, 2004. Free BART service was subsequently provided on September 7 and 8, 2004.
- In 2003, the Clean Air Consortium, comprised of 30 city and county agencies, formed to voluntarily curtail lawn and garden maintenance, painting, refueling and other polluting activities on Spare the Air Days.
- The Bay Area Clean Air Partnership (BayCAP) promotes voluntary actions to reduce emissions and meet the national ozone standard. In 2002, BayCAP undertook a comprehensive shuttles campaign to inventory existing

programs, provide coordination and assistance, and promote "best practices" among shuttle operators.

- Caltrans issues messages on freeway changeable message signs to cut down on high speed emissions by requesting that motorists observe the speed limit on Spare the Air days.

TCM 17: CONDUCT DEMONSTRATION PROJECTS

- TFCA has funded numerous clean fuel vehicle demonstration projects amounting to approximately $8.2 million during FY 01/02 – FY 03/04.
- All lanes on Bay Area bridges are now equipped for FasTrak electronic toll collections. In addition, all bridges have either one or two dedicated lanes for use exclusively by vehicles with FasTrak transponders.
- From 2000 through 2003, the Air District's Lawnmower Buyback programs resulted in approximately 1,200 – 1,300 gasoline-powered lawnmowers being exchanged for electric models each year. The program continued in 2004.
- In 2002, the Air District awarded $250,000 in Carl Moyer Infrastructure Demonstration funds for the development of a liquefied natural gas refueling station in Oakland. The Air District also awarded $57,000 to the Port of Oakland for a one-year demonstration of aqueous diesel fuel in Class 8 trucks.

TCM 18: TRANSPORTATION PRICING REFORM

- Regional Measure 2, a ballot measure to raise bridge tolls on state-owned Bay Area bridges by $1, was approved in March 2004 by Bay Area voters in seven (7) Bay Area counties. The additional toll revenue will raise an estimated $125 million each year to implement the Regional Traffic Relief Plan, a comprehensive strategy for addressing congestion in the transbay bridge corridors and enhancing the convenience and reliability of the Bay Area's public transit system.

TCM 19: PEDESTRIAN TRAVEL

- MTC's TLC program provides funding to assist pedestrian-friendly planning and projects (see TCM 15). TFCA also funded several pedestrian improvement projects (see TCM 20).
- MTC allocates TDA funds to pedestrian projects and provides incentives in the funding allocation process for capital improvements. About $6.5 million of TDA Article 3 funds in FY01/02 and over $67 million in the 2003 TIP were allocated to bicycle/pedestrian projects.
- The Regional Pedestrian Committee (formerly Pedestrian Safety Task Force) was established in early 2002 to provide support for pedestrian planning in five program areas: data analysis, technical assistance, educational programs, resource guide, and stable funding.

TCM 20: PROMOTE TRAFFIC CALMING

- MTC's TLC and the Air District's TFCA programs have funded numerous traffic calming projects. In FY 02/03, MTC awarded $2.6 million in TLC capital grants to traffic calming projects in Alameda, El Cerrito, East Palo Alto, and Vacaville. Since FY 00/01, approximately $1.7 million in TFCA regional funds have been awarded to traffic calming projects in the Bay Area.

CONTROL STRATEGY

The control strategy outlines a program for further reducing ozone precursor emissions in order to reduce ozone levels in the Bay Area and reduce transport to downwind regions. It is the central element of the 2005 Ozone Strategy.

The control strategy for the 2005 Ozone Strategy is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors. This is consistent with California Clean Air Act requirements in the Health and Safety Code and pollutant transport mitigation requirements in the California Code of Regulations.

This section describes the proposed strategy for further reducing ozone precursor emissions in order to reduce ozone levels in the Bay Area and reduce transport to downwind regions. A discussion of the process for identifying and evaluating potential control measures is followed by a description of the control strategy, which includes stationary source measures, mobile sources measures and transportation control measures. More detailed control measure descriptions are provided in the appendices.

Control Measure and Further Study Measure Development

To satisfy State requirements under the CCAA that the region adopt all feasible measures to reduce ozone precursor emissions, the Air District investigated a wide range of potential control measure ideas from many sources. Air District staff sought ideas for new sources to control, as well as ways to strengthen existing rules and programs. To identify potential control measures, the Air District:

- Participated in discussions as part of the Rule Development Managers subcommittee of the CAPCOA Engineering Managers Committee to develop a statewide “all feasible measures” list.
- Participated with staff from ARB, Yolo-Solano APCD, Sacramento Metropolitan AQMD, and San Joaquin Valley Unified APCD on a rule comparison project.
- Reviewed 39 suggested control measures developed by consultants for Sacramento Metropolitan AQMD.
- Investigated rules in other air districts throughout California.
- Investigated control measures and programs from plans in other districts and agencies, both within and outside the state.
- Considered comments and suggestions from the Ozone Working Group.
- Considered comments and suggestions from community meetings.
- Considered comments and suggestions from Air District Board members, Advisory Council members, and staff.

Additional detail on the Air District’s processes for identifying and evaluating potential control measures is provided in Appendix B, Control Measure Review and Evaluation Process.

MTC took the lead in evaluating transportation control measures, and MTC and the Air District worked together in revising the TCMs. This process is discussed below, in the TCM section of the control strategy.

In total, Air District staff considered 390 control measure suggestions, not including transportation control measure suggestions evaluated by MTC. In evaluating a control measure, staff considered a variety of factors, including:

- Technological feasibility of proposed controls;
- Emission inventory of the source category and total likely emission reductions from proposed controls;
- Cost-effectiveness in dollars per ton of emissions reduced;
- Enforceability, including whether emission reductions are real, quantifiable, permanent, enforceable, and surplus;
- Rate (and timing) of emissions reductions;
- Public acceptability, including interests and concerns of community members;
- Pollutant reduced (volatile organic compounds, nitrogen oxides or both);
- Any potential adverse environmental impacts;
- Socioeconomic impacts.

In some cases, not all of these elements could be analyzed from readily available information. For example, emissions data for some source categories or the emissions reduction potential of some control measure may be uncertain. In these cases, further study may be warranted if the other aspects of a suggested control, such as public acceptability and adverse environmental impacts appear positive. These measures are discussed further below, under Further Study Measures.

Of the 390 control measure suggestions considered, not including the transportation control measure suggestions evaluated by MTC, Air District staff made preliminary determinations and presented them for discussion at three Ozone Working Group meetings on January 6, 2004, January 20, 2004, and March 23, 2004. Finally, based on input from the Ozone Working Group and members of the public, and on further evaluation by Air District staff, the potential control measures were distilled down to the measures identified in Tables 9 and 12. (TCMs are summarized in Table 13.)

Addressing Transport Requirements

As noted above in the discussion of CCAA planning requirements, some of ARB's Transport Mitigation Requirements are also included among CCAA planning requirements for all nonattainment areas. To summarize the Transport Mitigation Requirements discussed above, the Air District must:

1. Adopt and implement all feasible measures.
2. Adopt and implement BARCT.
3. Adopt a no net increase permitting program for sources above 10 tons per year.
4. Include measures to attain the standard in specified downwind regions.

The 2005 Ozone Strategy addresses all of the above. The requirements to adopt all feasible measures, and implement BARCT on all existing stationary sources are necessary for the Bay Area to meet both attainment planning and transport mitigation requirements. These requirements are addressed in the control strategy as well as through Air District rule development and permitting processes. With respect to the no net increase requirement, the Air District adopted a 10 ton/year no net increase requirement for ozone precursors in District Regulation 2, Rule 2: New Source Review on December 21, 2004. Regarding measures sufficient to attain the State ozone

standard in specified transport areas, this is accomplished through the proposal to adopt all feasible measures as identified in the control strategy. As adoption of all feasible measures represents the most stringent control strategy that can be accomplished, this requirement is met with the approval of each triennial plan.

Regarding the consultation requirements in the transport mitigation requirements, the Air District has previously consulted with downwind districts, as discussed in Appendix A, and will conduct additional consultation meetings with downwind air districts.

Stationary and Area Source Measures

The following table outlines the stationary and area source measures proposed for the 2005 Ozone Strategy. Most of these control measures represent strengthening of existing Air District requirements, and would be adopted by amending existing Air District rules. SS-3, High Emitting Spray Booths would be adopted as a new Air District rule. More complete descriptions of the stationary source control measures are included in Appendix C.

Table 9: Proposed Stationary and Area Source Control Measures

CM #	BAAQMD Reg - Rule	Source Category	Description	Estimated ROG Reduction tons/day	Estimated NOx Reduction tons/day
Industrial – Commercial Processes					
SS-1	8-45	Auto Refinishing	Reduce VOC limits for some coating categories	0.7	
SS-2	8-20	Graphic Arts Operations	Reduce VOC limits for flexographic ink and clean up solvent	0.15	
SS-3		High Emitting Spray Booths	Require additional controls on spray booths that emit > 20 tons ROG/yr	0.5	
SS-4	8-50	Polyester Resin Operations	Reduce allowable monomer content for some types of polyester resins	0.3	
SS-5	8-32	Wood Coating Operations	Reduce VOC limits for some coating categories	0.68	
Petroleum Products Production and Distribution					
SS-6	12-12	Flares	Minimize flaring (ADOPTED 7/20/05)	TBD*	TBD*
SS-7	8-33, 39	Gasoline Bulk Terminals and Plants	Require automatic shutoff and backpressure monitors, set more stringent leak, emission standards	0.14	
SS-8	8-44, 46	Marine Loading Operations	Control additional cargoes, set more stringent leak standards and/or control housekeeping emissions (ADOPTED 12/7/05)	0.44	
SS-9	8-5	Organic Liquid Storage	Tighten existing requirements and/or control lower vapor pressure liquids	TBD*	
SS-10	8-28	Pressure Relief Devices	Improve enforceability of rule (ADOPTED 12/21/05)	0.001	

Table 9 (continued): Proposed Stationary and Area Source Control Measures

CM #	BAAQMD Reg - Rule	Source Category	Description	Estimated ROG Reduction tons/day	Estimated NOx Reduction tons/day
SS-11	8-8	Wastewater Systems	Control emissions from wastewater collection systems (ADOPTED 9/15/04)	2.1	
Combustion Processes					
SS-12	9-7	Industrial, Institutional and Commercial Boilers	Extend existing limits to smaller boilers and/or set a more stringent standard		0.5 – 1.0
SS-13	9-6, 7	Large Water Heaters and Small Boilers	Require new, small boilers and large water heaters to meet NOx limits		0.39
SS-14	9-9	Stationary Gas Turbines	Implement BARCT NO_x limits on existing turbines		1.2
Education Programs					
SS-15		Energy Conservation	Educate government, industry and the public in energy efficient choices	unknown	unknown

*TBD – emissions reductions to be determined

RULE DEVELOPMENT PROCESS

Most stationary source measures in the 2005 Ozone Strategy are implemented through the rule development process. The Bay Area Air District goes through a detailed process to adopt rules and regulations to impose standards on and limit emissions from Bay Area industry. The legal authority for these regulations and many of the requirements that establish the process are found in the California Health and Safety Code[10]. The Air District follows a set of guiding principles for the rule development program:

- Strengthen and refine our rules to do a better job of protecting the public health, environment and economy of the Bay Area
- Meet our environmental goals in the most efficient and effective manner
- Respect all different points of view and knowledge
- Identify every player with a stake in the outcome of our regulations
- Provide businesses maximum flexibility to meet air quality goals in a way that works best for them, allowing them to be cleaner at a lower cost

Air District staff take a number of steps to prepare a new rule or rule amendment for consideration by the Board of Directors. Following is a brief summary of the steps involved in developing a new or modified rule:

- **Internal Scoping Meeting** - staff conduct an internal meeting to discuss an identified air pollution problem, including divisions that may have relevant expertise. For example, the source test and laboratory departments in the Technical Services Division have input on appropriate test methods to create enforceable standards.
- **Technical Assessment Memorandum** - staff perform an analysis of the various options for addressing the problem, including technology available to achieve controls, cost effectiveness and potential environmental impacts. A technical assessment memorandum may precede or may be derived from a control measure.
- **Stakeholders Meetings** – staff conduct meetings with the affected businesses and other interested parties to discuss issues, exchange information, and ensure effective communication among the various parties. In some cases stakeholder meetings precede and assist in development of technical assessment memoranda. For example, for recent refinery further study measures, staff established technical workgroups consisting of representatives from the refineries, an environmental organization, Air District and CARB staff and other affected parties.
- **Initial Draft of the Proposed Rule** - if, after the technical assessment and stakeholders meetings, a new rule or rule amendment is warranted, the Air District, in consultation with the affected parties, develops a draft rule.
- **Workshops** - Air District staff conducts one or more public meetings for each new rule or rule modification so that all affected and interested parties can discuss, comment on, and ask questions about a proposed rule.
- **CEQA Determination** - as a draft rule is developed, a CEQA (California Environmental Quality Act) analysis is begun to determine whether a rule or rule amendment might have any adverse environmental impacts.

[10] See e.g. California Health and Safety Code § 40702, 40703, 40725 *et seq.*

- **Socioeconomic Impact Analysis** – staff researches and prepares cost estimates for implementation of the control strategy and calculates cost effectiveness on a dollars/ton of emissions reduced basis. An analysis of the socioeconomic impact of the rule proposal is prepared to assess the impact of the costs of the rule on the impacted industry and the Bay Area economy, including jobs.
- **Staff Report** – staff incorporate the results of the CEQA determination and socioeconomic analysis into a staff report. The staff report explains the technical basis for the rule. It contains emission estimates, a description of the industry, control requirements, as well as rule amendments, costs, incremental costs, impacts on Air District staff resources, and the rule development process, and makes legal findings necessary for rule adoption. Comments and responses on the rule proposal and on the CEQA analysis are also included.
- **Public Hearing** - staff present the rule or amendments to the Air District's Board of Directors at one of the Board's regularly scheduled meetings. These meetings are always open to the public, noticed 30 days in advance and anyone may comment on the proposed rule or amendments during the meeting. At the conclusion of the hearing, the Board decides whether to adopt the rule or amendments.

Subsequent to rule adoption by the Board, staff work to implement the rule by preparing inspection protocols, policies and procedures and issuing compliance advisories to notify affected parties of the rule and compliance dates. Staff also forward the rule to ARB and, if appropriate, prepare a State Implementation Plan (SIP) submittal to EPA.

ANNUAL REGULATORY AGENDA

For this strategy, control measures are scheduled according to expected time to complete the rule development process based on data needs and other technical factors, as well as the need for participation in the rule development process by affected and interested parties. The amount of potential emissions reductions is a primary factor in determining the schedule, as well as the public acceptability of control measures, with due consideration for cost effectiveness and any adverse environmental impacts. The schedule is as expeditious as practicable. Any particular control measure may be advanced or delayed based on information discovered in the rule development process or Air District staff allocation priorities. Also, during the rule development process, it may be determined that a measure may not provide sufficient emission reductions to warrant regulation or may not be cost effective.

Table 10 shows the proposed scheduled for regulation adoption during 2005, 2006 and 2007.

Table 10: Regulatory Agenda, 2005 - 2007

2005 Regulatory Agenda

CM #	Control Measure (Reg and Rule)	ER Potential
SS 6	Flares (Reg 12-12) (ADOPTED 7/20/05)	TBD
SS 8	Marine Loading Operations (Reg 8-44, 46) (ADOPTED 12/7/05)	0.44 tpd
SS 10	Pressure Relief Devices (Reg 8-28) (ADOPTED 12/21/05)	0.001

2006 Regulatory Agenda

CM #	Control Measure (Reg and Rule)	ER Potential
SS 2	Graphic Arts Operations (Reg 8-20)	0.15 tpd
SS 7	Gasoline Bulk Terminals and Bulk Plants (Reg 8-33, 39)	0.14 tpd
SS 9	Organic Liquid Storage (Reg 8-5)	TBD
SS 14	Stationary Gas Turbines (Reg 9-9)	1.2 tpd NOx
SS 15	Energy Conservation	unknown

2007 Regulatory Agenda

CM #	Control Measure (Reg and Rule)	ER Potential
SS 1	Auto Refinish Operations (Reg 8-45)	0.7 tpd
SS 3	High Emitting Spray Booths	0.5 tpd
SS 4	Polyester Resin Operations (Reg 8-50)	0.3 tpd
SS 5	Wood Products Coating (Reg 8-32)	0.68 tpd
SS 12	Industrial, Institutional and Commercial Boilers (Reg 9-7)	0.5 - 1.0 tpd NOx
SS 13	Large Water Heaters and Small Boilers (Reg 9-6, 7)	0.39 tpd NOx

* Emission Reduction, stated for VOC/ROG unless otherwise noted.

In addition to the control measures scheduled for adoption as listed above, two control measures from the 2001 Ozone Attainment Plan were adopted on January 21, 2004: amendments to Regulation 8, Rule 10: Process Vessel Depressurization and amendments to Regulation 8, Rule 18: Equipment Leaks. The amendments to Reg 8-10 require numerous additional refinery vessels to be controlled during depressurization. Emission reductions attributable to the new requirements have not yet been quantified. The amendments to Reg. 8-18 were calculated to reduce emissions of VOC/ROG by 0.2 tons/day. Additionally, amendments to Regulation 8, Rule 8 to reduce emissions from wastewater collection systems were adopted by the Air District Board of Directors on September 15, 2004. Further study of controls on refinery wastewater treatment systems was evaluated by staff and presented to the Air District Board of Directors on November 14, 2005, upon which the Board concluded that no further amendments to Reg. 8-8 were warranted at that time.

Mobile Source Programs

The term "mobile source," as used in the CCAA and by the Air District, refers collectively to vehicular sources and other non-stationary sources. Mobile sources are defined in the CCAA as self-propelled devices that may travel upon a highway, including automobiles, trucks, construction equipment, farm equipment, and off-road vehicles. "Non-vehicular" mobile sources, or "non-road" sources as they are defined in the federal Clean Air Act (CAA), include ships, boats, aircraft, locomotives, and lawn and garden equipment. Mobile sources are by far the largest sources of ozone precursors, as shown in the emission inventory, Table 1, and in Figures 1 and 2.

STATE AND NATIONAL MOBILE SOURCE PROGRAMS

The Air District does not have authority to regulate mobile sources. Mobile source regulatory authority is shared by the State and national governments. Hence, the State and national programs play a critical role in reducing air pollutant emissions from mobile sources.

Mobile source emissions are regulated by three general approaches: by establishing emission standards for equipment, by regulating the fuel used in the equipment, and through vehicle in-use performance standards. The federal CAA contains a special provision allowing California to set emission standards that are specific to the State. The California standards cover motor vehicles (including cars, motorcycles, and trucks), heavy industrial and construction equipment, off-highway vehicles such as dirt bikes and all-terrain vehicles, and lawn, garden and other utility engines. In California, these mobile sources are regulated primarily by the Air Resources Board (ARB). ARB is authorized to adopt standards, rules and regulations to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the State ambient air quality standards at the earliest practicable date.

Mobile source emissions are also controlled through fuel regulations. ARB adopts fuel specifications for motor vehicle fuels – gasoline, diesel and alternative fuels. The most current reformulated gasoline regulations went into effect on December 31, 2003, requiring Phase 3 reformulated gasoline standards and prohibiting the use of the fuel additive MTBE. Phase 3 Reformulated Gasoline (CaRFG3) regulations require refiners to produce gasoline that meets eight specifications to reduce air pollution from the gasoline used in motor vehicles. Recent amendments to the diesel fuel standards require that sulfur content of diesel fuel be reduced from the current 500 ppm to 15 ppm, beginning in June 2006.

Motor vehicle emissions are also controlled through in-use performance standards to ensure that the systems continue to operate properly. The State of California has had an inspection and maintenance (I&M) program since 1984 to test all on-road gasoline powered vehicles for compliance with the standards. The California Bureau of Automotive Repair (BAR) implements the I&M program. In 2002, AB 2637 (Cardoza) was signed into law and directed BAR to implement an Enhanced Area Smog Check Program in the urbanized regions of the San Francisco Bay Area. The program went into full effect in October 2003, and requires the use of a dynamometer to test the vehicle's emissions while in operation. In addition, the pass/fail cut points for emissions are more stringent for enhanced smog check areas and certain vehicles that tend to have higher emissions are directed to Test-Only stations.

The federal CAA prohibits all states, including California, from establishing emission standards for aircraft engines, new locomotive engines and new non-road engines less than 175 horsepower used in construction or farm equipment. Only EPA has authority to regulate these sources. EPA has promulgated regulations or otherwise established programs to control emissions from these important source categories. Gas turbines, used in almost all commercial aircraft, became subject to United Nations International Civil Aviation Organization (ICAO) NOx, hydrocarbons, CO and smoke standards in 1997.

In 1998, EPA adopted more stringent emission standards ("Tier 2" and "Tier 3") for NOx, hydrocarbons, and PM from new non-road diesel engines. This program includes the first set of standards for non-road diesel engines less than 50 hp, including marine engines in this size range. It also phases in more stringent "Tier 2" emission standards from 2001 to 2006 for all engine sizes and adds yet more stringent "Tier 3" standards for engines between 50 and 750 hp from 2006 to 2008.

In May 2004, as part of its Clean Diesel Programs, EPA finalized the Clean Air Non-road Diesel Rule, a comprehensive rule to reduce emissions from non-road diesel engines by integrating engine and fuel controls to optimize emission reductions. These fuel improvements will reduce PM from engines in the existing fleet of non-road equipment and makes it possible for engine manufacturers to use advanced emission control technologies.

State-established standards for motor vehicle engines and motor vehicles fuels have significant influence in reducing mobile source ozone precursor emissions in the Bay Area. Among mobile source categories, Passenger Cars and Light Duty Trucks are the two largest contributors to the ROG emission inventory and are also significant contributors to the NOx emission inventory. While federally established standards exist for these mobile source categories, ARB's more stringent regulations for new motor vehicle emission, reformulated gasoline and smog check are some of the most significant programs for reducing ozone precursor emissions in the Bay Area.

Other national and State programs which are also important in reducing ozone precursor emissions in the Bay Area include those aimed at off-road diesel construction equipment. Heavy Heavy Duty Diesel Trucks and Construction Equipment are the largest emitters of NOx in the Bay Area. ARB's diesel fuel regulations along with EPA's tiered emissions standards for non-road diesel engines will allow for significant emissions reductions over the next few years.

Table 11 below summarizes projected emissions reductions due to national and State-regulated mobile sources. Between 2005 and 2020, ROG emissions will experience a 111 ton per day decrease and NO_x emissions will experience a 232 ton per day decrease. Ninety eight percent of the ROG reduction will be in mobile sources regulated by ARB while over 87% of the NO_x reductions will be in mobile sources regulated by ARB.

Table 11: Mobile Source Emissions Reductions due to State (ARB) and National (EPA) Mobile Source Programs

SOURCE CATEGORY	Reduction 2005 to 2020	Reduction in ARB Regulated Sources	Reduction in EPA Regulated Sources
Reactive Organic Gases (tons/day)			
ON-ROAD MOTOR VEHICLES	87.8	87.8	0.0
OFF-HIGHWAY MOBILE SOURCES	26.0	20.8	5.2
AIRCRAFT (Emissions Increase)	-2.8	0.0	-2.8
Total Emissions Reductions	**111.0**	**108.6**	**2.4**
Oxides of Nitrogen (tons/day)			
ON-ROAD MOTOR VEHICLES	187.3	187.3	0.0
OFF-HIGHWAY MOBILE SOURCES	55.6	16.2	39.4
AIRCRAFT (Emissions Increase)	-10.8	0.0	-10.8
Total Emissions Reductions	**232.1**	**203.5**	**28.6**

Note: The following off-highway mobile sources are assumed to be EPA-regulated sources: Agricultural Equipment, Construction and Mining Equipment, Trains and Ships.

While emission reductions from all of ARB's ongoing and forthcoming mobile source programs may not be fully reflected in the emissions inventory, ARB's mobile source programs provide substantial emission reductions overall. A comprehensive list of ARB's mobile source programs follows below:

ARB PROGRAMS FOR ON-ROAD AND OFF-ROAD MOBILE SOURCES

Motor Vehicle and Engine Certification Program – Certifies new motor vehicles and engines for emission compliance before they are legal for sale, use, or registration in California. Certification is granted annually to individual engine families and is good for one model year. The following mobile sources are presently subject to ARB's emission certification: passenger cars (PC), light-duty trucks (LDT), medium-duty vehicles (MDV), on-road and off-road motorcycles (ONMC and OFMC, respectively), all-terrain vehicles (ATV), heavy-duty engines and vehicles (HDE and HDV, respectively), off-road heavy-duty diesel engine (OFHDDE) over 175 horsepower, small off-road engine (SORE) less than 25 horsepower, large spark-ignition engine (LSIE) greater than 25 horsepower, and spark-ignition marine engine (SIME).

Fuels Program – Adoption of standards, rules and regulations to achieve the maximum degree of emission reduction possible from vehicular and other mobile

sources in the following four categories: reformulated gasoline; diesel fuel; alternative gasoline fuels; and alternative diesel. ARB adopted a clean fuel regulation that became effective in January 2001. ARB conducts ongoing verification of alternative diesel fuel emission benefits.

Heavy-Duty Diesel In-Use Strategies Program – Reduces emissions from existing on- and off-road diesel engines, with a special emphasis on reducing particulate emissions through the following implementation programs: Retrofit Assessment and Implementation (solid waste collection vehicles and on-road heavy-duty public fleet vehicles); and Heavy-duty Testing and Field Support.

The Carl Moyer Program – Provides grants through participating air pollution control districts, including the Bay Area Air District, to cover the incremental cost of cleaner on-road, off-road, marine, and locomotive engines. Allocations to this program began in FY 1998/99.

Diesel Risk Reduction Program - Following diesel PM's identification as a toxic air contaminant in 1998, the ARB developed a plan to reduce emissions from diesel engines and vehicles. The program is made up of several strategies, like retrofits and control technology. Some of these strategies are part of other programs listed below.

Goods Movement Action Plan - Developed by the California Business, Transportation and Housing Agency and the California Environmental Protection Agency, the Goods Movement Action Plan is an effort to bring all stakeholders together to discuss and address the important issues regarding improving the movement of goods and reducing its environmental impacts in California. ARB staff has been developing a comprehensive emission reduction plan for goods movement, focusing on ports, rail yards, and major transportation corridors. ARB's comprehensive plan and the Goods Movement Action Plan will be finalized in early 2006 and both will be subject to a number of public workshops and hearings. The emission reduction plan will also be an essential component of California's effort to meet new federal air quality standards for ozone and fine particulate matter (PM2.5).

ARB PROGRAMS FOR ON-ROAD VEHICLES

Programs for Passenger Cars and Light Duty Vehicles

Low Emission Vehicle Program – Establishes improved emission reduction standards for automobiles. LEV II regulations are the most recent and are effective from 2004 through 2010. The new standards extend passenger car emission standards to heavier sport utility vehicles and pickup trucks (with gross vehicle weight up to 8,500 pounds) which formerly had been regulated under less-stringent emission standards.

On-Board Diagnostic (OBD) Program - OBD II systems monitor components in 1996 and newer vehicles less than 14,000 lbs to ensure that a vehicle remains as clean as possible over its entire life, and assists Smog Check repair technicians in diagnosing and fixing problems with the computerized engine controls. ARB is

currently developing OBD requirements for heavy-duty vehicles over 14,000 lbs.

On-Road Motorcycle Regulation - Standards adopted in December 1998. Apply to motorcycles with engines over 280cc manufactured for the 2004 model year and later.

Zero Emission Vehicle Program – Creates incentives to promote zero emission vehicles such as battery and fuel cell vehicles. Also certifies vehicles as such.

Climate Change Program – Requires reduction of greenhouse gas emissions from motor vehicles in California. The proposed regulation would be phased in between 2009 and 2014 and achieve CO_2 emission reductions of approximately 30%. New regulation adopted in September 2004 imposes stricter automobile engine standards to reduce greenhouse gas emissions beginning with the 2009 model year.

Smog Check – Operational in California since 1984, the Bureau of Automotive Repair tests all on-road gasoline powered vehicles for compliance with in-use standards. Since October 2003, the Bay Area has been subject to the Enhanced Area Smog Check Program, which tests vehicle emissions while the vehicle is running.

In-use Testing of Motor Vehicles - Tests in-use passenger cars and light duty vehicles for compliance with standards. In the event of violations, ARB works with the vehicle manufacturer to correct the problem, usually in the form of a recall or statewide repair. A protocol is being developed to test Heavy Duty Diesel Vehicles as well.

Smoking Vehicle Hotline - Contacts owners of reported smoking vehicles. Works in partnership with smoking vehicle programs in various districts.

California Hydrogen Highway - Program working toward a transition to a clean, hydrogen transportation economy in California

Carpool Lane Access - Allows single occupancy use of HOV lanes by zero-emission and alternative fuel vehicles.

Voluntary Accelerated Vehicle Retirement Program - Pays owners of eligible vehicles to voluntarily retire their older, higher-emitting vehicle.

Programs for Heavy Duty Vehicles

On-Road Heavy-Duty Diesel New Engine Program - Reduces emissions from new on-road heavy-duty diesel engines through emission control regulations and test procedures for these engines. Final approval for 2004 - 2005 and subsequent model year heavy-duty diesel engine standards were approved in 1999 and 2001.

Public Transit Bus Program - This program reduces criteria pollutant emissions and toxic air contaminants from urban buses. In October 2005, ARB aligned urban bus

standards for 2007-2009 with national standards for diesel truck engines.

School Bus Program - Provides criteria for the purchase of new school buses and retrofits of existing school buses to reduce particulate matter emissions and reduce school children's exposure to harmful diesel exhaust emissions. Proposition 40, approved by voters in 2002, provided allocation for this program for two years with distributions beginning in FY 2002/03.

Solid Waste Collection Vehicles - The proposed airborne toxic control measure for diesel particulate matter (PM) from on-road heavy-duty diesel-fueled residential and commercial solid waste collection vehicles is one in a series of rules designed to reduce diesel PM from most diesel-fueled heavy-duty vehicles in California.

South Coast Fleet Rules - In September 2005, ARB amended The Fleet Rules for Transit Agencies operating in the South Coast Fleet District, requiring transit agencies to follow the alternative-fuel path.

Diesel Engine Software Upgrade - ARB is working with the California Trucking Association (CTA) to get low oxides of nitrogen (NOx) software installed on every eligible, electronically-controlled engine registered in California.

Heavy Duty Vehicle Inspection Program – Inspection of trucks and buses for excessive smoke. In June 1998, ARB resumed the Heavy Duty Vehicle Inspection Program (roadside and unannounced inspections). In July 1998 ARB began the Periodic Smoke Inspection Program, where diesel and bus fleet operators are required to annually self-inspect their vehicles and repair those with excessive smoke emissions.

Border Inspection Program - ARB, in cooperation with the California Highway Patrol, will establish inspection protocols of heavy duty vehicles entering this state to ensure that each vehicle has a certified engine. While enforcement is expected to take place near California borders, the Bay Area will still benefit from this program.

Heavy-Duty Diesel Idling Control Measure – In July 2004, ARB adopted an idling control measure for heavy-duty diesel commercial motor vehicles, limiting idling to five minutes. In October 2005, this measure was extended to include trucks with sleeper cabs.

Idling Limits at Schools – Requires school buses and other heavy-duty diesel vehicles to turn off engines upon arriving at a school and prohibits restarting engines more than 30 seconds before departure from a school.

Mobile Source Emissions Reduction Credits - Allows for credit when emissions reductions from cars, buses or other mobile sources exceed those required by federal, State or local law. ARB provides guidelines, but each district can tailor guidelines.

ARB PROGRAMS FOR OFF-ROAD VEHICLES

Off-Road Mobile Sources Emission Reduction Program - Exhaust emission standards have been adopted by ARB and/or U.S. EPA for off-road engines included in the following categories: Small Spark-Ignition Off-Road Engines and Equipment Less Than 25 Horsepower (including Lawn and Garden Equipment, and Small Industrial Equipment); Off-Road Recreational Vehicles (including Motorcycles and All-Terrain Vehicles); Off-Road Compression Ignition (Diesel) Engines and Equipment; Off-Road Large Spark Ignition (Gasoline and LPG) Engines and Equipment 25 Horsepower and Greater (including Industrial Equipment, Forklifts, and Portable Generators); Airport Ground Support Equipment; Commercial Marine Vessels; and Recreational Marine (including Personal Water Craft, Ski boats, Inboards, and Outboards). Ultra-low sulfur diesel fuel is now required for harbor crafts, ferries, and in-state locomotives. A Memorandum of Understanding developed by ARB, Union Pacific Railroad and BNSF Railway became effective June 30, 2005 and is intended to reduce rail related emissions in California. At the December 2005 Board meeting, ARB will consider requiring low-sulfur fuel for marine auxiliary engines and cargo handling equipment.

Recreational Marine Engines – Reduces emissions of ROG and NOx for certain marine vessels with proposed regulations for other spark-ignition engines used in boats for propulsion. In 2001, all new outboards sold in California were required to meet the U.S. EPA 2006 emission levels. In 2002, ARB adopted regulations governing emissions for all 2003 model year and later inboard engines.

Portable Fuel Containers – Provides for the implementation of "spill-proof" portable refueling system (gas can) in order to reduce emissions associated with engine refueling spillage.

Aftermarket, Performance, and Add-On Parts Regulations - Regulates the installation of parts or modifications that are proven by their manufacturers and ARB not to increase vehicle emissions. This is an ongoing ARB program and includes certification of alternative fuel certified retrofit systems and verification of heavy-duty diesel retrofit device emission reduction systems. Regulations concerning certification procedures for all aftermarket part and conversion systems for off-road vehicles, engines and equipment became effective in September 2000.

ARB MOU with the Union Pacific and Burlington Northern Santa Fe Railroads – On June 30, 2005, ARB entered into a pollution reduction agreement with Union Pacific Railroad (UP) Railroad and Burlington Northern Santa Fe (BNSF) Railway. The agreement is expected to achieve a 20 percent reduction in locomotive diesel particulate matter emissions near 17 designated rail yards throughout the State. UP and BNSF have agreed to: phase out non-essential idling within 6 months and install idling reduction devices on California based locomotives within 3 years; identify and expeditiously repair locomotives with excessive smoke and ensure that at least 99 percent of locomotives operating in California pass smoke inspections; maximize the use of ultra low sulfur diesel fuel by January 1, 2007; conduct health risk assessments for 17 major rail yards and use these studies to identify risk reduction measures; and prepare a progress report on plans to implement feasible mitigation

measures at the 17 major rail yards. Participation from the Air District and local communities is an integral aspect of the MOU.

AIR DISTRICT MOBILE SOURCE PROGRAMS

The Air District does not have the authority to regulate mobile sources, but can take steps to reduce mobile source emissions by providing grants or incentives to encourage the use of cleaner vehicles and fuels. The Transportation Fund for Clean Air (TFCA) is an Air District grant program that funds both mobile source and transportation control measures implemented primarily by local public agencies. To fund these measures the State Legislature allows the Air District to impose a $4 surcharge on motor vehicle registration fees paid for vehicles registered in the District. Mobile source measures funded through the TFCA program include purchase or lease of clean fuel vehicles, primarily through the Vehicle Incentive Program (VIP), as well as engine retrofits and repowers. Another TFCA-funded program, the Vehicle Buy Back Program, accelerates the voluntary retirement of older, high emitting vehicles from the region's roadways by providing financial incentives to scrap them.

The Carl Moyer Program provides incentives that cover the incremental cost of cleaner heavy-duty engines with a primary focus of reducing NO_x emissions. Among the eligible projects are cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The Air District also has grant programs for low emission school buses and heavy-duty diesel PM_{10} filter retrofits.

The Air District also reduces mobile source emissions through the Spare the Air (STA) program. The STA program is an intermittent, voluntary control program in which the Air District encourages Bay Area residents, businesses and public agencies to reduce or postpone polluting activity on days when weather conditions are conducive to forming high ozone levels. STA advisories include recommendations to avoid discretionary driving, to use transit, carpooling, walking or cycling instead of driving alone, to link trips to avoid cold starts, and postpone refueling of vehicles.

In addition to State and federal regulations and Air District incentive and STA programs, the Ozone Strategy includes control measures that reduce emissions from on-road and off-road mobile sources. These control measures encourage the retirement of older, more-polluting equipment and the introduction of new, less-polluting equipment, or encourage operational changes (e.g. reduced idling) to reduce emissions. The measures would be implemented mainly through incentive programs and through development and promotion of model ordinances for cities and counties. Table 12 contains a summary of the proposed mobile source control measures, including their proposed implementation dates and estimates of the emission reductions they would achieve. While the focus of the Ozone Strategy is on reducing emissions of ozone precursors, many of the measures will also reduce emissions of fine particulate matter, and this additional benefit is noted as well. More detailed information on the control measures is available in Appendix C.

Table 12: Proposed Mobile Source Control Measures

Measure #	Source Category	Implementation Date	Estimated ROG Reduction (tpd)	Estimated NOx Reduction (tpd)
MS-1	Diesel Equipment Idling Model Ordinance	2006	0.13	1.96
MS-2	Green Contracting Model Ordinance	2006	N/A	N/A
MS-3	Low-Emission Vehicle Incentives	2005	0.03	0.6
MS-4	Vehicle Buy-Back Program	2005	0.48	0.31
Total			**0.64**	**2.87**

Transportation Control Measures

Motor vehicles are the largest source of ozone precursors in the Bay Area, and reducing these emissions is essential to regional efforts to attain the State ozone standard and reduce transport. Motor vehicle emissions have dropped substantially over the years thanks to State and national regulations on vehicles and fuels, and motor vehicle emissions are expected to continue to decrease in the future as the vehicle fleet becomes cleaner. TCMs play a critical role in complementing State and national regulatory efforts by reducing motor vehicle use.[11] TCMs also help achieve other goals, including improved mobility and reduced congestion.

CCAA TCM REQUIREMENTS

The California Clean Air Act (CCAA) emphasizes transportation control measures. CCAA legislative intent states that in developing attainment plans, air districts shall "focus particular attention on reducing the emissions from transportation and areawide emission sources." (Sec. 40910.) The CCAA specifically requires air districts to "adopt, implement and enforce transportation control measures." TCMs are defined as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions." (Sec. 40717.) TCMs must be sufficient to substantially reduce the rate of increase in vehicle trips and vehicle miles traveled. (Sec. 40918.) As noted previously in the discussion of CCAA legal requirements, Health and Safety Code Section 40233 lays out a process that was used for developing a TCM emission reduction target and TCM plan for the 1991 Clean Air Plan. The Air District and MTC in 1991 complied with the required process. Under the CCAA, revision to the TCM emission reduction target in subsequent planning cycles is discretionary. While the TCM emission reduction target has not been revised in subsequent plans, the TCMs have undergone extensive revision and expansion (as

[11] TCMs are distinguished from mobile source measures in that mobile source measures reduce vehicle *emission rates*, while TCMs reduce vehicle *use* by reducing vehicle trips and/or vehicle miles traveled.

described below) and represent the Bay Area's all feasible measures approach in compliance with State one-hour ozone standard planning requirements.

TCM DEVELOPMENT IN THE BAY AREA

The Bay Area has extensive experience with developing and implementing TCMs. The first regional plan prepared pursuant to the CCAA, the 1991 Clean Air Plan, included 23 TCMs to meet State planning requirements (State TCMs). Plan updates in 1994 and 1997 included revisions to the TCMs. The regional strategy for the State ozone standard now contains 19 TCMs that cover the full spectrum of transportation strategies, including:

- Bus transit
- Rail transit
- Ferry service
- Carpooling and vanpooling
- Bicycle and pedestrian enhancements
- Land use programs
- Pricing measures
- Traffic management
- Employer programs and youth programs
- Public education and episodic measures

The Air District, MTC and other regional and local partners have worked together over the years to develop one of the most comprehensive TCM plans to address the California ozone standard. This effort has continued during the preparation of the 2005 Ozone Strategy.

The control measure review and evaluation process included a thorough review of potential TCM enhancements (see Appendix B for more information). MTC and Air District staff considered a wide range of new or enhanced TCM programs, including:

- New initiatives deriving from the Smart Growth Strategy/Regional Livability Footprint Project and MTC's Transportation 2030 process;
- Input from the Ozone Working Group and community meetings;
- Input from cities, counties and other public agencies;
- Input from environmental, business and community groups;
- Suggestions from staff and Advisory Council members;
- Review of TCM programs in other regions.

All of the TCMs have been revised to reflect this input. The resulting TCMs take into consideration current fiscal and legal conditions but at the same time set an ambitious course for the future, particularly as additional revenues become available and land use changes occur over the long term.

TCMS IN THE CONTROL STRATEGY

The TCMs proposed for the 2005 Ozone Strategy are summarized in Table 13 and are described more fully in Appendix D. The TCMs are divided into Phases 1 and 2 to

reflect near-term and long-term implementation steps and benefits. Most projects in Phase 1 are either currently programmed or funding is otherwise expected to be available for full implementation. Some Phase 2 projects have substantial funding identified, while others are dependent on future funding sources. MTC estimated emission reductions for each phase. Phase 1 is defined as 2004-2006 and Phase 2 is defined as beyond 2006. 2015 was selected as an analysis year for emission reduction calculations, although many long-term TCM implementation steps will clearly occur before 2015, and continue beyond as well.

TCMs often have overlapping, complementary effects. For example, measures to enhance transit service, encourage development near transit, and improve bicycle and pedestrian safety all interact to make transit, walking and cycling more viable transportation options. Assumptions must be made about individual projects and programs when calculating emission reductions, but it is difficult to capture these synergistic effects.

TCMs have multiple benefits beyond air quality. In addition to reducing motor vehicle emissions, the projects and programs identified in the TCMs may improve mobility, especially for people with limited access to automobiles, and reduce traffic congestion. Other benefits include reduced gasoline consumption, reduced emissions of greenhouse gases, and reduced water pollution from urban runoff.

Table 13: Proposed Transportation Control Measures

TCM	Description	Implementing Agencies
TCM #1 SUPPORT VOLUNTARY EMPLOYER-BASED TRIP REDUCTION PROGRAMS	Phase 1 (2004 –2006): ■ Provide assistance to regional and local ridesharing organizations; advocate legislation to maintain and expand incentives (e.g., tax deductions/credits) ■ Provide assistance to employers, cities, counties: ▪ Assistance in developing/enhancing employer programs; recognition of outstanding programs ▪ Information and referral ▪ Employer networks	MTC, BAAQMD, CMAs, Cities, counties, MTC's Regional Rideshare Program, CMAs, MTC, BAAQMD
	Phase 2 (Beyond 2006): ■ Continue Phase 1 programs and enhance where feasible	Same as Phase 1
TCM #2 ADOPT EMPLOYER-BASED TRIP REDUCTION RULE	TCM deleted per Health and Safety Code Section 40929	N/A
TCM #3 IMPROVE LOCAL AND AREAWIDE BUS SERVICE	Phase 1 (2004 –2006): ■ Replace older transit buses with clean-fuel buses and retrofit existing diesel buses with diesel emission control technology ■ Sustain and expand the existing Regional Express Bus Program ■ Assist further planning work on enhanced bus and Bus Rapid Transit concepts ■ Sustain transit service to airports	MTC, Transit operators, BAAQMD MTC, Transit operators MTC, Transit operators MTC, Transit operators, Airports
	Phase 2 (Beyond 2006): ■ Restore local bus routes that were recently eliminated due to funding cutbacks ■ Implementation of new Enhanced Bus and Bus Rapid Transit services and additional Lifeline Transit services, and the expansion of Regional Express Bus Programs as funds become available	MTC, Transit operators MTC, Transit operators

TCM #4 UPGRADE AND EXPAND LOCAL AND REGIONAL RAIL SERVICE	Phase 1 (2004 –2006): ■ Implement MUNI Metro Third Street Light-Rail Project: light-rail extension to Bayview Hunters Point (Phase 1, initial operating segment) ■ Implement Caltrain Express/Rapid Rail Phase 1 ("Baby Bullet") to San Francisco ■ Vasona Corridor light-rail extension from downtown San Jose to Winchester Boulevard in Campbell	 MUNI Caltrain SCVTA
	Phase 2 (Beyond 2006): ■ Extend BART to Warm Springs, BART/East Contra Costa Rail Extension, BART extension into Santa Clara County and an Oakland International Airport Connector ■ Implement MUNI Metro Third Street Light-Rail Project: light-rail transit extension to Chinatown (Phase 2, Central Subway) ■ Implement Caltrain Downtown Extension/ TransBay Terminal Replacement ■ Implement Downtown/East Valley: Santa Clara/Alum Rock corridor and Capitol Expressway light-rail extension to Nieman Boulevard ■ Implement Sonoma Marin Area Rail Transit District (SMART) commuter rail project ■ Implement Capitol Corridor Phase 1 Intercity Rail Service: track capacity/frequency improvements from Oakland to San Jose designed to allow 16 daily round trips between Oakland and Sacramento/San Jose and Capitol Corridor Phase 2 ■ Implement Dumbarton Rail Corridor Phase 1 (diesel locomotive service connecting BART and Caltrain over a rebuilt Dumbarton rail bridge) ■ Implement Altamont Commuter Express (ACE) rail service expansion to 8 daily roundtrips	 BART MUNI Caltrain, TransBay Terminal JPA SCVTA MTC, SMART AMTRAK/Capitol Corridor MTC, transit operators MTC, San Joaquin Regional Rail, Alameda and Santa Clara County CMAs

TCM #5 IMPROVE ACCESS TO RAIL & FERRIES	Phase 1 (2004 –2006): ■ Develop demonstration program for station car and bike station concepts at select regional transit centers ■ Determine long term funding needs for existing shuttles, encourage better coordination between shuttles and transit operators, and examine funding options for new and existing shuttles ■ Implement Safe Routes to Transit to improve bicycle and pedestrian access ■ Complete Regional Transit Connectivity Plan	 Transit operators, MTC, BAAQMD MTC MTC, Transit operators MTC
	Phase 2 (Beyond 2006): ■ Continue and expand successful concepts from Phase 1 including Safe Routes to Transit improvements ■ Develop a master plan for innovative secure bicycle storage strategies at key transit hubs ■ Implement most cost effective new shuttles where funding is available	 MTC, Transit operators MTC MTC, BAAQMD, Transit operators
TCM # 6 IMPROVE INTER-REGIONAL RAIL SERVICE	Phase 1 (2004 –2006): No significant changes in interregional rail service are anticipated during this phase	 N/A
	Phase 2 (Beyond 2006): ■ Implement additional interregional rail service in Capitol (Auburn - Sacramento - Oakland - San Jose) Corridor and track enhancements ■ Implement Altamont Commuter Express (ACE) rail service expansion to 8 daily roundtrips and track enhancements ■ Implement High Speed Rail Service between Los Angeles and the Bay Area	 Capitol Corridor JPB, Amtrak, MTC, Southern Pacific MTC, San Joaquin Regional Rail Commission, Alameda and Santa Clara County CMAs CA High Speed Rail Authority
TCM #7 IMPROVE FERRY SERVICE	Phase 1 (2004 –2006): ■ Conduct initial planning for new ferry service including: ▪ Berkeley ▪ Hercules ▪ Richmond ■ Compliment existing high-speed ferry service from Vallejo to San Francisco with a new low emission ferry	 WTA Vallejo Baylink Ferry

	Phase 2 (Beyond 2006):	
	■ Expand existing ferry service between: ▪ Oakland/Alameda and San Francisco	WTA
	■ Expand existing ferry service between: ▪ Larkspur and San Francisco	Golden Gate Ferry
	■ Implement new ferry service between: ▪ Berkeley/Albany and San Francisco ▪ South San Francisco and Oakland ▪ Richmond and San Francisco	WTA
	■ Implement new intermodal transit hub at Vallejo Ferry Terminal	City of Vallejo & Vallejo Baylink Ferry
	■ Expand berthing capacity at the San Francisco Ferry Terminal	WTA & Port of San Francisco
	■ Implement hydrogen fuel cell ferry demonstration project from Treasure Island to San Francisco	WTA
	■ Assist ferry operators in converting vessel engines to lower emission engines	Various ferry operators, MTC, BAAQMD
	■ Study and potentially implement new service between: ▪ Martinez to San Francisco ▪ Redwood City to San Francisco ▪ Antioch/Pittsburgh to San Francisco ▪ Oakland and San Francisco Airports	WTA
	■ Study and potentially implement new service between Port Sonoma and San Francisco	North Bay Ferry Company, Golden Gate Ferry, WTA
	■ Future study of ferry service expansion to Moffett Field	WTA
TCM #8 CONSTRUCT CARPOOL / EXPRESS BUS LANES ON FREEWAYS	Phase 1 (2004 –2006):	
	■ Expand existing HOV network, based on 2005 Transportation Improvement Program	Caltrans, MTC
	■ Implement new HOV to HOV lane connector at Rt 101/85 interchange in Mountain View	Caltrans, MTC
	■ Implement HOV support facilities such as park & ride lots at various locations	Caltrans, MTC, Transit operators

	Phase 2 (Beyond 2006): ■ Implement additional HOV lanes and support infrastructure identified in the Regional Transportation Plan. Special attention should be paid to express bus operations to maximize benefits for transit. Monitor and adjust occupancy requirements and hours of operation to maximize air quality and mobility benefits.	Caltrans, MTC
TCM #9 IMPROVE BICYCLE ACCESS AND FACILITIES	Phase 1 (2004 –2006): ■ Fund Regional Bike Plan and Safe Routes to Transit improvements ■ Continue TDA Article 3, TLC and TFCA funding for bike improvements ■ Develop on-line bicycle mapping tool as part of the regional 511 traveler information number ■ Promote Bike to Work Week / Day ■ Encourage local jurisdictions to develop safe and convenient bicycle lane and route networks, provide secure bike racks and storage, and require bicycle access and amenities as conditions of approval of development projects ■ Explore innovative bicycle programs, such as “station bike” or bike sharing programs at transit stations, downtowns and activity centers	MTC, Cities, Counties, CMAs MTC, BAAQMD MTC MTC Cities, Counties, MTC, Transit operators, BAAQMD Cities, Counties, MTC, Transit operators, BAAQMD
	Phase 2 (Beyond 2006): ■ Continue Phase 1 programs ■ Encourage public education about bicycle safety for both bicyclists and motorists	Same as Phase 1 MTC

TCM #10 YOUTH TRANSPOR-TATION	Phase 1 (2004 –2006):	
	■ Encourage walking and bicycling to school through the Safe Routes to Schools Program	MTC's Regional Rideshare Program, School districts, Cities and Counties
	■ Encourage carpooling among high school students with cars	MTC's Regional Rideshare Program, School districts
	■ Establish special carpool formation services for parents, students and staff at Bay Area elementary and secondary schools	MTC's Regional Rideshare Program, School districts
	■ Purchase new, cleaner or alternatively fueled school buses, replace old diesel school buses with cleaner engines or retrofit older school bus engines	BAAQMD, School districts
	■ Encourage shuttle programs to provide service to schools	MTC, BAAQMD, School districts
	■ Target Bay Area schools for greater participation in the Spare the Air program	BAAQMD, School districts
	Phase 2 (Beyond 2006):	
	■ Continue Phase 1 programs	Same as Phase 1
	■ Support transit ride discounts to youth and students	Transit operators
TCM #11 INSTALL FREEWAY TRAFFIC MANAGE-MENT SYSTEMS	Phase 1 (2004 –2006):	
	■ Integrate traffic management features into new freeway construction projects	Caltrans
	■ Maintain current level of Freeway Service Patrol	Caltrans, MTC
	■ Maintain 511 transit information service and improve and customer convenience	MTC, Caltrans
	Phase 2 (Beyond 2006):	
	■ Extend ramp metering in major freeway corridors	Caltrans
	■ Seek funding for full deployment of Caltrans' Traffic Operation System / Traffic Management Center project	Caltrans
	■ Expand FSP to other routes and times of the day	Caltrans
	■ Require traffic management elements in Caltrans freeway projects	Caltrans

TCM #12 ARTERIAL MANAGE-MENT MEASURES	Phase 1 (2004 –2006): ■ Maintain current technical assistance program for local jurisdictions that seek to retime signals, including the evaluation of bus priority treatments ■ Continue TFCA program to fund arterial management projects	 MTC BAAQMD
	Phase 2 (Beyond 2006): ■ Coordinate the timing of an additional 1,200 signals and continue updating timing plans ■ Work with bus operators to provide priority treatment along major bus routes	 Cities, Counties, Transit operators, CMAs Cities, Counties, Transit operators, CMAs
TCM #13 TRANSIT USE INCENTIVES	Phase 1 (2004 –2006): ■ Implement Translink® (universal fare card) on transit systems throughout the region ■ Implement improvements to the 511 transit information service ■ Encourage employers, transit operators, local governments and others to promote and expand employer-based transit subsidy programs like the Commuter Check and EcoPass programs ■ Improve signage at transit transfer hubs	 MTC, Transit operators MTC, Transit operators MTC's Regional Rideshare Program, transit agencies, Commuter Check Corps, employers MTC, Caltrans
	Phase 2 (Beyond 2006): ■ Deploy real-time transit arrival information ■ Increase passenger amenities at transit hubs and stops ■ Complete Alameda and Contra Costa County transit centers identified in AC Transit's *Comprehensive Service Plan*	 MTC, Transit operators MTC, Transit operators AC Transit

TCM #14 CARPOOL AND VANPOOL SERVICES AND INCENTIVES	Phase 1 (2004 –2006): ■ Maintain current programs of the Regional Ridesharing Program and increase efficiency in delivering services ■ Explore innovative concepts such as real-time ridematching using the internet ■ Explore possible provision of a regional incentive to increase ridesharing by implementing a demonstration project offering a cash incentive for new vanpools ■ Explore options for expanding medium-distance (15 – 30 miles) vanpools	 MTC's Regional Ridesharing Program MTC's Regional Ridesharing Program MTC's Regional Ridesharing Program MTC's Regional Ridesharing Program
	Phase 2 (Beyond 2006): ■ Maintain Phase 1 programs and enhance where feasible	 MTC's Regional Ridesharing Program

TCM #15 LOCAL LAND USE PLANNING AND DEVELOP-MENT STRATEGIES	Phase 1 (2004 –2006): MTC will: Implement its 5-point transportation and land use platform including a new planning grant program to fund station area plans around major transit facilities Continue implementing the TLC planning and capital grant programs and HIP program Continue providing "T-PLUS" funding to CMAs to promote community revitalization projects Utilize a Caltrans grant to examine opportunities for transit-oriented development along major transit corridors. Develop incentives and conditions to promote supportive land use policies around major new transit investments	MTC
	BAAQMD will: Continue to fund bicycle projects, traffic calming, shuttles, low emission vehicles, trip reduction programs and other clean air projects through the TFCA program Continue to provide technical assistance to local jurisdictions on air quality analyses in the environmental review process Continue to encourage cities and counties to reduce emissions from sources other than motor vehicles including lawn and garden equipment, woodstoves and fireplaces, and residential and commercial uses	BAAQMD
	ABAG will: Periodically monitor and update its Smart Growth demographic projections Promote multi-jurisdiction planning along select transit corridors to encourage transit-oriented development	ABAG
	Develop financial and other incentives and technical assistance to encourage innovative parking strategies such as reduced parking, parking fees, parking cash-out, shared parking and other parking programs	MTC, BAAQMD, ABAG in collaboration with cities and counties
	Pursue legislative changes to remove barriers and provide incentives for smart growth	MTC, BAAQMD, ABAG in collaboration with cities and counties
	Promote carsharing as a way to reduce parking requirements	MTC, BAAQMD, ABAG, cities and counties
	Monitor indirect source mitigation programs in other regions for Bay Area feasibility	BAAQMD
	Provide technical assistance to local government agencies	MTC, BAAQMD, ABAG
	Publicize noteworthy examples of local clean air plans, policies and programs, as well as endorse noteworthy development projects	BAAQMD, MTC, ABAG
	Study opportunities to promote location efficient mortgages (LEMs) to encourage home purchases near transit	MTC, BAAQMD, ABAG

	Phase 2 (Beyond 2006): ■ Continue the programs in Phase 1 and refine and expand them as appropriate	MTC, BAAQMD, ABAG in collaboration with cities and counties
TCM #16 PUBLIC EDUCATION / INTERMIT-TENT CONTROL MEASURES	Phase 1 (2004 –2006): ■ Continue Spare the Air notices to media, employers, public agencies and individuals, with an emphasis on ROG reductions, obeying freeway speed limits in electronic freeway signs and other outreach efforts	BAAQMD
	■ Continue to expand the Spare the Air employer network	BAAQMD
	■ Provide free morning commutes to all riders of participating Bay Area transit providers up to 5 non-holiday, weekday Spare the Air Days	BAAQMD, MTC and Transit operators
	■ Expand STA notices to add emphasis on ROG reductions, obeying freeway speed limits, and discouraging use of pleasure craft	BAAQMD
	■ Expand the Clean Air Consortium to include more cities and counties, as well as other public agencies	BAAQMD
	■ Target major commercial airports and their tenants for greater participation in the Spare the Air program	BAAQMD, Airports
	■ Increase coordination between the Bay Area's Spare the Air program with the San Joaquin Valley STA Program	BAAQMD, San Joaquin Valley STA Program
	■ Continue public education program on the proper maintenance and operation of motor vehicles to reduce air pollution	BAAQMD
	■ Continue the Bay Area Clean Air Partnership (BayCAP) shuttle project to inventory existing shuttle programs, provide coordination and assistance, and promote "best practices" among shuttle operators	BAAQMD
	■ Discourage the use of recreational watercraft on STA days	BAAQMD
	■ Continue gasoline-powered lawnmower buyback incentive programs	BAAQMD
	■ Educate the public about ways to maintain and operate motor vehicles to reduce air pollution	BAAQMD

	Phase 2 (Beyond 2006): ■ Continue Phase 1 programs and expand depending on effectiveness and resources available ■ Study effectiveness and costs of free transit on all Spare the Air days ■ Explore possible legislative approaches to formalize and strengthen episodic approaches	 BAAQMD BAAQMD, MTC and Transit operators BAAQMD, MTC
TCM #17 CONDUCT DEMON-STRATION PROJECTS	Phase 1 (2004 –2006): Promote demonstration projects to develop new strategies to reduce motor vehicle emissions. Potential projects include ▪ Low and zero emission vehicles and LEV refueling infrastructure ▪ Hydrogen fuel cell technology ▪ Gas cap replacement program for older cars ▪ Heavy duty diesel vehicle idling ▪ Refuse truck control technology ▪ Carsharing	 BAAQMD, MTC, Caltrans, FHWA
	Phase 2 (Beyond 2006): ■ Monitor Phase 1 projects and expand depending on effectiveness and resources available	 Same as Phase 1
TCM #18 IMPLEMENT TRANSPOR-TATION PRICING REFORM	Phase 1 (2004 –2006): ■ Advocate for legislative authority to develop and promote measures to discourage driving, such as: ▪ Higher bridge tolls ▪ Congestion pricing ▪ Gas tax increase ▪ Parking pricing	 BAAQMD, MTC, business community and other stakeholders
	Phase 2 (Beyond 2006): ■ Advocate for legislative authority to develop and promote revenue measures for: ▪ Continuation of Phase 1 elements ▪ High Occupancy Toll lanes ▪ Gas tax increase / VMT fees ▪ Taxes on diesel fuel ▪ Emissions-based vehicle registration fees ▪ Parking fees	 BAAQMD, MTC, business community and other stakeholders

TCM #19 IMPROVE PEDESTRIAN ACCESS AND FACILITIES	Phase 1 (2004 –2006):	
	■ Review and comment on general/specific plan policies to promote development patterns that encourage walking and circulation policies	BAAQMD, MTC, cities and counties
	■ Emphasize pedestrian travel and encourage amending zoning ordinances to include pedestrian-friendly design standards	BAAQMD, MTC, ABAG, cities and counties
	■ MTC will continue to: ▪ Fund local pedestrian improvement projects through the TLC program ▪ Support the Regional Pedestrian Committee and associated pedestrian safety programs ▪ Support Safe Routes to Schools	MTC
	■ TFCA program will continue to fund pedestrian improvement projects to reduce motor vehicle trips and emissions	BAAQMD
	Phase 2 (Beyond 2006):	
	■ Continue to identify and fund planning projects that enhance pedestrian movement in neighborhoods, downtowns and near transit stops	MTC, BAAQMD in collaboration with cities and counties
	■ Continue funding specific improvements through a variety of funding sources	MTC, BAAQMD in collaboration with cities and counties
	■ Continue to support Safe Routes to Schools	MTC, BAAQMD in collaboration with cities and counties
TCM #20 PROMOTE TRAFFIC CALMING MEASURES	Phase 1 (2004 –2006):	
	■ Implement traffic calming projects such as: ▪ Pedestrian-exclusive streets ▪ Residential and neighborhood traffic calming measures ▪ Arterial and major route traffic calming measures	MTC, BAAQMD, Cities, Counties
	■ Include traffic calming strategies in the transportation and land use elements of general and specific plans	MTC, BAAQMD, Cities, Counties
	■ Encourage area-wide traffic calming plans and programs	MTC, BAAQMD, Cities, Counties
	■ Include traffic calming strategies in capital improvements programs	MTC, BAAQMD, Cities, Counties
	Phase 2 (Beyond 2006):	
	■ Continue the programs in Phase 1 and refine and expand them as appropriate	N/A

EMISSION REDUCTIONS

A summary of emission reductions for stationary, area and mobile source measures is provided in Table 14 and a summary of emissions reductions for transportation control measures is provided in Table 15.

Table 14: Emission Reductions for Stationary, Area and Mobile Source Control Measures

#	Title	ROG Reductions (tons/day)	NOx Reductions (tons/day)
STATIONARY AND AREA SOURCE MEASURES			
Industrial - Commercial Processes			
SS 1	Auto Refinishing	0.7	
SS 2	Graphic Arts Operations	0.15	
SS 3	High Emitting Spray Booths	0.5	
SS 4	Polyester Resin Operations	0.3	
SS 5	Wood Products Coating	0.68	
Petroleum Products Distribution and Processing			
SS 6	Flares (ADOPTED 7/20/05)	TBD*	TBD*
SS 7	Gasoline Bulk Terminals and Plants	0.14	
SS 8	Marine Loading Operations (ADOPTED 12/7/05)	0.44	
SS 9	Organic Liquid Storage Tanks	TBD*	
SS 10	Pressure Relief Devices (ADOPTED 12/21/05)	0.001	
SS 11	Wastewater Systems (ADOPTED 9/15/04)	2.1	
Combustion Processes			
SS 12	Industrial, Institutional and Commercial Boilers		0.5 – 1.0
SS 13	Large Water Heaters and Small Boilers		0.39
SS 14	Stationary Gas Turbines		1.2
Education Programs			
SS 15	Energy Conservation	Unknown	Unknown
MOBILE SOURCE MEASURES			
MS 1	Diesel Equipment Idling Model Ordinance	0.13	1.96
MS 2	Green Contracting Model Ordinance	TBD*	TBD*
MS 3	Low-Emission Vehicle Incentives	0.03	0.6
MS 4	Vehicle Buy-Back Program	0.48	0.31

* TBD – Emission reductions to be determined

Table 15: Emission Reductions of Transportation Control Measures

#	Title	ROG Reductions (tons/day) 2006	NO_x Reductions (tons/day) 2006
TRANSPORTATION CONTROL MEASURES			
TCM 1	Support Voluntary Employer Based Trip Reduction Programs	0.53	0.57
TCM 3	Improve Local and Areawide Bus Service	0.42	1.13
TCM 4	Improve Regional Rail Service	0.23	0.21
TCM 5	Improve Access to Rail and Ferries	0.17	0.15
TCM 6	Improve Interregional Rail Service	0	0
TCM 7	Improve Ferry Service	0	0
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	0	0
TCM 9	Improve Bicycle Access and Facilities	0.04	0.03
TCM 10	Youth Transportation	0.11	0.09
TCM 11	Install Freeway Traffic Management System	0.04	0.11-0.12
TCM 12	Arterial Management Measures	0.06-0.12	0.06-0.11
TCM 13	Transit Use Incentives	0.02-0.12	0.02-0.10
TCM 14	Carpool and Vanpool Services and Incentives	0.01	0.01
TCM 15	Local Land Use Planning and Development Strategies	0.09	0.14
TCM 16	Public Education/Intermittent Control Measures	1.9 *	2.0 *
TCM 17	Conduct Demonstration Projects	0	0
TCM 18	Transportation Pricing Reform	0	0
TCM 19	Improve Pedestrian Access and Facilities	0.04	0.02
TCM 20	Promote Traffic Calming	0	0

* Emissions reduction figures for TCM 16: Public Education/Intermittent Control Measures were calculated in tons per day based on emissions reduced on Spare the Air days, which occur approximately 7 days per year.

COST-EFFECTIVENESS ESTIMATES

Section 40922 of the CCAA requires an assessment of the cost-effectiveness of proposed control measures and a ranking of the control measures. Section 40913(b) requires a determination by the Air District Board that the Plan is a cost-effective strategy to achieve attainment of State standards by the earliest practicable date.

Cost-effectiveness can be estimated with confidence for some control measures where the source characteristics, pollution reduction technology, and economic factors are well known. Lacking any of these, the estimates are less certain. Best available estimates are provided in Table 16 below. In some cases, where uncertainties are great, the cost effectiveness is listed as “N/A.”

Transportation control measures are especially difficult to analyze for cost-effectiveness for a number of reasons. First, the effectiveness of TCMs is dependent upon people’s

travel choices, which are influenced by numerous factors and are often difficult to predict or measure. Second, the costs associated with each TCM may be significant, particularly if major capital investments and infrastructure improvements are included. Third, it is challenging to assign a cost to the emission reductions alone because TCMs are usually intended to meet multiple societal goals including congestion relief, mobility, safety, and other environmental and social benefits discussed in the section above. In addition, TCMs often have overlapping, complementary effects, and the rankings below cannot adequately reflect the synergistic outcomes of TCMs.

In calculating cost effectiveness for TCMs, assumptions were made about both emission reductions and costs for individual projects and programs. Cost effectiveness ratings for TCMs 3, 4, 5, 11, 12, 15 and 16 were calculated using specific project emission reduction and cost estimates as illustrative examples of each TCM. They do not include the fully array of potential transportation investments that could be funded under each TCM, and therefore may underestimate the impacts. Cost effectiveness ratings for TCMs 1, 9, 10, 13, 14 and 19 were assigned based upon a qualitative assessment of overall programmatic effectiveness. The remaining TCMs did not have emissions reduction or cost figures associated with their implementation; therefore, it was impossible to assign them cost effectiveness ratings.

Table 16: Cost Effectiveness Estimates

Measure		Ranking*	Cost Effectiveness
Stationary Source Measures			
SS 1	Auto Refinishing	2	Cost savings - $2,000 per ton
SS 2	Graphic Arts Operations	4	$800 per ton
SS 3	High Emitting Spray Booths	10	$5,500 per ton
SS 4	Polyester Resin Operations	4	$800 per ton
SS 5	Wood Products Coating	7	$2,000 - $3,700 per ton
SS 6	Flares (ADOPTED 07/20/05)	5	$800 - $1,600 per ton
SS 7	Gasoline Bulk Terminals and Plants	3	$700 per ton
SS 8	Marine Loading Operations (ADOPTED 12/7/05)	8	$2,800 per ton
SS 9	Organic Liquid Storage Tanks	N/A	TBD
SS 10	Pressure Relief Devices (ADOPTED 12/21/05)	12	$7,000 - $22,000 per ton
SS 11	Wastewater Systems (ADOPTED 9/15/04)	6	$1,900 - $2,400 per ton
SS 12	Industrial, Institutional and Commercial Boilers	9	$5,000 per ton
SS 13	Large Water Heaters and Small Boilers	1	Cost savings - $3,000 per ton
SS 14	Stationary Gas Turbines	11	$5,000 - $10,000 per ton
SS 15	Promote Energy Conservation	N/A	N/A

Table 16 (continued): Cost Effectiveness Estimates

Measure		Ranking*	Cost Effectiveness
Mobile Source Measures			
MS 1	Diesel Equipment Idling Ordinance	1	$500 per ton
MS 2	Green Contracting	N/A	N/A
MS 3	Low Emissions Vehicle Incentives	2	$5,000 per ton (Carl Moyer) $30,000 - $40,000 per ton (TFCA average)
MS 4	Vehicle Buy Back Program	3	$8,600 per ton
Transportation Control Measures			
TCM 1	Voluntary Employer Based Trip Reduction Programs	1	Good**
TCM 3	Improve Local and Areawide Bus Service	1	Good
TCM 4	Improve Regional Rail Service	1	Good
TCM 5	Improve Access to Rail and Ferries	1	Good
TCM 6	Improve Interregional Rail Service	N/A	N/A
TCM 7	Improve Ferry Service	N/A	N/A
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	N/A	N/A
TCM 9	Improve Bicycle Access and Facilities	2	Medium**
TCM 10	Youth Transportation	2	Medium**
TCM 11	Install Freeway Traffic Management System	1	Good
TCM 12	Arterial Management Measures	1	Good
TCM 13	Transit Use Incentives	1	Good**
TCM 14	Carpool and Vanpool Services and Incentives	2	Medium**
TCM 15	Local Land Use Planning and Development Strategies	2	Medium
TCM 16	Public Education/Intermittent Control Measures	2	Medium
TCM 17	Conduct Demonstration Projects	N/A	N/A
TCM 18	Transportation Pricing Reform	N/A	N/A
TCM 19	Improve Pedestrian Access and Facilities	1	Good**
TCM 20	Promote Traffic Calming	N/A	N/A

Notes:

* Cost Effectiveness for Stationary Source, Mobile Source and Transportation Control Measures has been ranked separately.

TCM Cost Effectiveness has been rated in dollars per ton of ROG and NOx emissions reduced using the following rating system:

Good = $0 to $1M/ton
Medium = $1M to $2M/ton
Poor = over $2M/ton

** Denotes cost effectiveness is qualitative.

FURTHER STUDY MEASURES

Further study measures are measures for which insufficient information was available during the development of the control strategy to allow the agencies to commit to them as control measures. A measure may be proposed for further study because of a lack of emissions data on the source targeted, because the cost effectiveness of control may be questionable, or because technology to control the source may not have been adequately demonstrated. The 2005 Ozone Strategy commits the Air District to continue to evaluate the further study measures. However, the Ozone Strategy does not commit the Air District to continue evaluation of a measure if it is determined to be technically infeasible, not cost-effective, or inappropriate for any other reason, nor is the Air District committing, as part of this Strategy, to move forward with further study measure(s) deemed feasible as a result of the study unless and until the Air District specifically commits to the measure(s).

2000 Clean Air Plan Further Study Measures

The 2000 Clean Air Plan contained six further study measures. Two measures have been adopted by the Air District, two measures have negligible emissions reductions, one has been incorporated into the rule development process and one is ongoing. The following is an evaluation of each further study measure from the 2000 Clean Air Plan.

- **A3: Improved Aerospace Coating Rule.** BAAQMD Regulation 8, Rule 29 has less stringent standards than the corresponding South Coast rule for several categories of coatings, specifically fuel tank coating, surface preparation and cleanup solvent, paint stripping, PC board fabrication, strippers and maskants for electronic component fabrication, and high temperature adhesive bonding primer. Coating usage in several of these categories is so small that it would be subject to low usage exemptions under both the SCAQMD and BAAQMD rules. With the closure of Bay Area military bases and the transfer of much of United Airlines' maintenance work to facilities outside the Bay Area, aerospace coating VOC emissions are only 0.05 ton/day. Emission reductions from this measure would further reduce emissions by less than 0.01 tons per day. This is de minimis, and does not justify moving forward to propose a revised standard.
- **A6: Improved Surface Coating of Plastic Parts and Products Rule.** Plastic coating in the Bay Area is controlled by Reg 8, Rule 31: Surface Preparation and Coating of Plastic Parts and Products. The comparable South Coast Rule 1145: Plastic, Rubber and Glass Coatings, has two general limits for plastic coating and two for military applications. The general limits are 275 g/l VOC for one component coatings and 420 g/l for two component coatings. For military applications, the limits are 340 g/l VOC for one component coatings and 420 g/l for two component coatings. The Bay Area has one limit for all these applications, 340 g/l VOC. "One component" coatings are water based and achieve the 275 g/l standard in practice. Therefore, setting a 275 g/l standard in the Bay Area rule for one component coatings would not produce any emission reductions. The Bay Area rule, then, is more stringent as it requires 340 g/l VOC for all applications. Both rules have VOC limits for specialty coatings that vary, but the inventory of these specialty applications is insignificant. No facilities coat rubber products and only one coats glass products. The glass coating facility, a mirror manufacturer, is subject to permit conditions that limit VOC emissions, and emits less than 0.05 tons/day. Emissions reductions are de minimis, and would not justify rulemaking to establish a more stringent standard.

- **C7: Control of Emissions From Refinery Flares.** This further study measure was further iterated in further study measure FS-8 in the 2001 Ozone Attainment Plan. A study on flaring was released in December 2002. A technical workgroup was convened to discuss issues related to flare control. A flare control rule was adopted by the Air District Board of Directors on July 20, 2005.
- **C8: Draining of Liquid Products / Sumps and Pits.** This further study measure is also further study measure FS-9 in the 2001 Ozone Attainment Plan. The study recommended emissions controls on refinery wastewater collection systems. The measure has been adopted through amendments to Reg. 8-8: Wastewater (Oil-Water) Separators, approved by the Air District Board of Directors September 15, 2004.
- **F7: Easing of Administrative Requirements of Use of Lower Emitting Technology.** This further study measure has been implemented in several rules, and is considered as rule amendments are developed. There are constraints on easing recordkeeping and/or monitoring requirements imposed by EPA policies. However, regulatory elements such as leak detection and repair incentives to encourage self-monitoring and permit exemptions for low-emitting technologies can help drive user choices of equipment.
- **F8: Limitations on Solvents Based on Relative Reactivity.** This further study measure is ongoing. See further study measure FS 7.

2005 Ozone Strategy Further Study Measures

Further study measures will be evaluated as expeditiously as practicable. If the results of the study indicate that the measures are viable control measures, they will be considered for implementation as regulatory amendments or programmatically (on a schedule to be determined). Table 17 shows the proposed schedule for completion of the further study measures included in the 2005 Ozone Strategy. Descriptions of the further study measures are provided in Appendix E. The results of the further study measures will be reported to ARB and to the Air District Board of Directors.

Table 17: 2005 Ozone Strategy Further Study Measures

2005 Further Study Measures

FS #	Further Study Measure (existing Reg. and Rule, if any)*
FS 10	Refinery Wastewater Treatment Systems (Reg 8-8)

2006 Further Study Measures

FS #	Further Study Measure (existing Reg. and Rule, if any)*
FS 3	Commercial Charbroilers
FS 5	Food Product Manufacturing and Processing
FS 6	Livestock Waste
FS 9	Emissions from Cooling Towers
FS 13	Wastewater from Coke Cutting Operations
FS 15	Stationary Internal Combustion Engines (Reg 9-8)
FS 19	Free Transit on Spare the Air Days

2007 Further Study Measures

FS #	Further Study Measure (existing Reg. and Rule, if any)*
FS 1	Adhesives and Sealants (Reg 8-51)
FS 2	Architectural Coatings (Reg 8-3)
FS 4	Composting Operations
FS 7	Limitations on Solvents Based on Relative Reactivity
FS 8	Solvent Cleaning and Degreasing (Reg. 8-16)
FS 11	Vacuum Trucks
FS 12	Valves and Flanges (Reg. 8-18)
FS 14	NO_x Reductions from Refinery Boilers (Reg. 9-10)
FS 16	Encourage Alternative Diesel Fuels
FS 17	Mitigation Fee for Federal Sources
FS 18	Indirect Source Mitigation Program
FS 20	Episodic Measures

* Indicates a source already subject to an Air District rule. Further study will evaluate the potential for additional emission reductions.

SECTION 3 - OTHER ISSUES

INTRODUCTION

This section of the Ozone Strategy summarizes various topics related to the ozone planning process or other Air District programs. Members of the public have expressed particular interest in these topics during the planning process. Specifically, this section discusses:

- Public involvement processes that have supported the preparation of the 2005 Ozone Strategy
- Climate change and potential benefits of ozone control measures on reducing emissions of global warming gases
- Fine particulate matter (PM), diesel PM, and current and future programs to reduce PM emissions
- Community Air Risk Evaluation (CARE) Program
- Local benefits of ozone control measures
- National ozone standards
- Photochemical modeling
- Environmental review process

PUBLIC INVOLVEMENT PROCESS

Introduction

The Air District's public involvement program for the 2005 Ozone Strategy has been very extensive. It has included a variety of outreach techniques, including public presentations, technical work group meetings, community meetings, email notices, and an ozone planning website. These efforts comprise the Air District's broad community outreach program to achieve the following goals:

- Include all the diverse stakeholders in the planning process (industry, community groups, environmental groups, local governments, neighboring air districts, and concerned citizens)
- Address stakeholder needs, issues and concerns
- Provide timely and accurate information
- Enhance communication between the Air District and all of the stakeholders
- Build understanding and support for ozone planning and related air quality programs and projects

Ozone Working Group

During 2003-2004, the Air District, in cooperation with MTC and ABAG, convened a technical group called the Ozone Working Group (OWG) to help develop the Bay Area 2005 Ozone Strategy. The group was established as a way for members of the public and interested parties to be involved in all stages of the ozone planning process. All OWG meetings have been open to the public.

At OWG meetings, staff has presented updates on various aspects of the planning process, answered questions, and solicited discussion and public comment. Topics have included public involvement efforts, modeling, development and evaluation of control measures, regulatory and rule-making updates, MTC's Transportation 2030 process, and other items. OWG meetings are held approximately bi-monthly, during business hours, at MetroCenter in Oakland. OWG meetings are conducted by professional facilitators, with presentations primarily by Air District and MTC staff. OWG meeting notices are sent both via mail and email to environmental and community groups, business and industry groups, elected officials, local and regional agencies, State and federal agencies, neighboring air districts, and other interested parties.

Community Outreach Meetings

The Air District has also conducted community meetings to discuss the 2005 Ozone Strategy. The first round of community meetings occurred in September 2003. Community meetings were held in the evening at community centers in Rodeo, East Palo Alto, Richmond, East San Jose, West Oakland, and southeast San Francisco. The community meetings were intended to provide background information on ozone health effects and regulatory programs, and to solicit suggestions on potential control measures. The Rodeo and East Palo Alto meetings also included Supplemental Environmental Projects (SEP) on the agendas.

The second round of community meetings occurred in September and October 2004. These community meetings were held in the evening at public facilities in Petaluma, Richmond, San Jose, Oakland, San Francisco, Livermore and Martinez. The second round of community meetings also provided background information on ozone health effects and regulatory programs, updates on the ozone planning process, and solicited input of draft ozone control measures and further study measures. The 2004 meetings also included discussion of the Air Districts new Community Air Risk Evaluation (CARE) program.

Professional facilitators assisted with both rounds of community meetings, and Spanish translation was provided. Outreach for the meetings included: mail and email notices to elected officials, other local and regional public agencies, community, environmental and business groups, and other interested parties; web posting by the Air District and MTC; flyer distribution through local schools; coordination with local community groups to help publicize the meetings; notices to local cable access and local newspaper community calendars; and press releases.

In addition to the community meetings, Air District staff worked with community groups to conduct "pre-meetings." Pre-meetings served as training sessions in which staff met with community members to provide background information on ozone planning, answered questions, and otherwise helped participants prepare for the community meetings. Two such pre-meetings were held in Richmond and San Jose prior to the 2003 community meetings, and one pre-meeting was held in Richmond prior to the 2004 community meetings.

Board of Directors Policy & Advisory Committees

Board of Directors
The Air District is governed by a 22-member Board of Directors. State law provides that the number of representatives from each county is determined by that county's population. Currently, the counties of Marin, Napa, and Solano have one representative; Sonoma, and San Mateo have two representatives; San Francisco has three representatives; and Alameda, Contra Costa, and Santa Clara each have four representatives. Occasionally through this planning process, Air District staff has made presentations to the Board and Board Committees to update them on the planning process and to receive comments and guidance from them about the Bay Area 2005 Ozone Strategy. All meetings of the Board and Board Committees are open to the public.

Policy Committees
The Air District Board of Directors Executive Committee meets quarterly. Throughout this planning process, Air District staff has briefed the Executive Committee and received comments and guidance from them about the Bay Area 2005 Ozone Strategy. Air District staff has briefed the Air District Board of Directors Stationary Source Committee and received comments from them on proposed stationary source control measures and rule development activities. Air District staff has also made presentations to and received comments from the Air District Board of Directors Public Outreach Committee on public outreach conducted for this planning process. Meetings of all three committees are open to the public.

The Regional Agency Coordinating Committee (RACC) consists of elected officials representing the three regional agencies (MTC, ABAG and the Air District), and provides direction to staff on regional planning and smart growth strategies. Representatives of other agencies and interests may attend RACC meetings. RACC meets on a bi-monthly basis and meetings are open to the public. Throughout this planning process, the Bay Area 2005 Ozone Strategy has been a discussion item at RACC meetings, and Air District staff have briefed and received comments from the group.

Advisory Committees
The Air District Advisory Council and its various committees advise and consult with the Board of Directors and the Air Pollution Control Officer (APCO). Throughout the planning process, Air District staff has briefed the Advisory Council as a whole as well as the Air Quality Planning and Technical Committees, and received comments from them about the 2005 Ozone Strategy. All Advisory Council meetings are open to the public.

The Air District has hired consultants to conduct photochemical modeling and to analyze meteorology and emissions on high ozone days in the Bay Area in order to better understand ozone formation within the region and transport of emissions between the Bay Area and downwind neighbors. To oversee the work that consultants are doing and to give feedback on modeling issues and protocol, the Air District has convened a technical working group called the Modeling Advisory Committee (MAC). The MAC meets bi-monthly and its membership includes staff from the Air District, ARB, other air districts, MTC, members of the scientific community, business and environmental representatives, and other interested parties with technical expertise in ozone modeling.

CAPCOA Engineering Managers Rule Development Subcommittee

In 2003, the Rule Development Managers subcommittee of the California Air Pollution Control Officers Association (CAPCOA) Engineering Managers identified a list of all feasible measures to assist local air districts in ozone strategy development. In August 2003, the subcommittee identified 27 source categories and identified the most stringent existing rule applicable to the source category. Bay Area Air District staff participated in the discussions and analyzed each measure for applicability and feasibility for the Bay Area 2005 Ozone Strategy. Of the 27, the Air District has committed to control measure development in eight of the source categories, and six additional source categories were identified for further study. Bay Area rules were defined as the most stringent available for five source categories and equivalent to the most stringent available for the remaining categories. This process is described in more detail in Appendix A, Control Measure Review and Evaluation Process.

ARB Rule Comparison Working Group

In 2003 and early 2004, ARB convened a workgroup of staff from the Bay Area Air Quality Management District, Sacramento Metro Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, the Yolo-Solano Air Quality Management District and ARB to participate in a rule comparison project. The project compared the relative stringency of district rules regulating 11 source categories and compared each respective district rule to the most stringent in California in order to identify opportunities for emission reductions for each of the air districts. This workgroup first met in August 2003, and most work was coordinated through conference calls and

email correspondence. The project concluded in February 2004 with the development of a report including a rule comparison summary table. Based on this work, emission reduction opportunities were identified for the Bay Area in five source categories. Further study measures for five additional source categories were also identified. This process is described in more detail in Appendix A, Control Measure Review and Evaluation Process.

Interagency Consultations

In February 2004, the Sacramento Metropolitan AQMD provided the Bay Area Air District with a list of control measures suggestions from TIAX Consultants, developed at the request of the Sacramento District. TIAX developed a list of 30 stationary, mobile and transportation control measure suggestions based on the inventory for the Central California Ozone Study, in addition to 19 measures under state or federal authority. Some suggestions were incorporated into existing measures proposed to be included in the Ozone Strategy or helped to make proposed control measures more stringent. In July 2004, the Bay Area Air District submitted a summary of the control measure evaluations to the Sacramento District and conducted a follow-up meeting to discuss the analysis.

The Bay Area Air District has continued to communicate with neighboring air districts about the Bay Area's ozone planning process. In October 2004, the Bay Area Air District held a consultation meeting inviting comments from neighboring air districts on the draft control measures proposed for the Ozone Strategy, as required by Transport Mitigation regulations. All neighboring air districts were invited to participate, and comments were received from the Sacramento Metro Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, Monterey Bay Unified Air Pollution Control District, and Northern Sierra Air Quality Management District.

Workshops

Pursuant to the California Environmental Quality Act (CEQA), the Air District is preparing a Draft Environmental Impact Report (DEIR) to evaluate potential environmental impacts of the Bay Area 2005 Ozone Strategy. The Air District held a public scoping meeting on April 20, 2004 at MetroCenter Auditorium in Oakland. The purpose of the meeting was to identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the DEIR.

On September 30, 2003, MTC held a Transportation Control Measure (TCM) Workshop at MetroCenter in Oakland. The TCM Workshop was intended to provide OWG participants and other interested parties with an opportunity to review MTC's progress on TCM evaluation and to suggest new transportation strategies for consideration. The TCM Workshop was open to the public.

2003-2004 Ozone Planning Website

Throughout the 2005 Ozone Strategy process, the Air District has maintained a webpage with specific links to ozone planning information, meeting notices and materials. Interested parties can easily learn more about the ozone planning process by visiting the 2003-2004 Ozone Planning website (http://www.baaqmd.gov/pln/plans/ozone/2003_04.asp), with a direct link from the Air

District's homepage (http://www.baaqmd.gov). The website includes detailed information about the Ozone Working Group, ozone modeling, the CEQA process and planning schedules. All OWG meeting materials can be downloaded through the website.

Rule Development

Separate from but closely related to the Ozone Strategy process, the Air District Rule Development program conducts public processes for the development of regulations to improve air quality and protect public health. The Air District's Rule Development program develops rules based on control measures and further study measures from air quality plans and strategies. The Air District also sometimes adopts rules that are not based on control measures in air quality plans. Rule Development workgroups meet to discuss technical aspects of proposed rules as they are being developed, and include representatives of industry, environmental groups and other stakeholders. Rule Development workshops and hearings also provide the public with opportunities to participate in and comment on Air District rule adoption.

Concurrent with the 2003-04 Ozone Strategy planning process, several technical workgroup meetings, workshops and public hearings were conducted as part of the Air District's rule development process. Rule development public processes were conducted for rules related to organic liquid storage tanks, wastewater separators, process vessel depressurization, equipment leaks, marine tank and marine vessel loading terminals, flare monitoring and refinery flares. All workshops and hearings are open to the public.

Outreach on the Draft 2005 Ozone Strategy and DEIR

The Air District conducted two public meetings to present, obtain input and receive public comment on the Draft 2005 Ozone Strategy and Draft EIR. An Ozone Working Group meeting was held on October 25, 2005, from 9:30-11:30am at the MetroCenter Auditorium in Oakland. An Ozone Strategy Community Meeting was held on October 26, 2005, from 6-8pm at the Richmond Memorial Auditorium in Richmond. Both meetings were open to the public and meeting notices were circulated to interested parties and posted on the Air District website.

Since the close of the public comment period on the Draft 2005 Ozone Strategy on November 9, 2005, staff have compiled public comments, drafted responses to comments, prepared the Proposed Final Bay Area 2005 Ozone Strategy and Proposed Final EIR, and released the documents for public review. The Air District Board of Directors will hold a public hearing to consider adoption of the Final 2005 Ozone Strategy and Final EIR at their December 21, 2005 meeting. Members of the public have been notified of these meetings and encouraged to attend and provide comment.

CLIMATE CHANGE

Continued warming threatens to potentially erode air quality improvements made in the Bay Area in the past 50 years and may make it more difficult for the region to meet ozone standards. This section on climate change is relevant to the 2005 Ozone Strategy because many of the proposed ozone strategy control measures have the additional benefit of also reducing harmful greenhouse gas emissions.

Background

The Earth's natural climate is constantly changing. However, the International Panel on Climate Change concludes that the global climate is currently changing at a rate unmatched in the past one thousand years and that this change is due to human activity. The last several years have been the hottest on record and the rise in temperature is closely correlated to human activities, primarily the combustion of fossil fuels that are altering the chemical composition of the atmosphere through the emission and buildup of greenhouse gases. Greenhouse gases allow the sun's ultraviolet radiation to penetrate the atmosphere and warm the Earth's surface, but prevent some of the infrared radiation emitted from the Earth to escape back into outer space thereby keeping the planet's surface warm. Higher concentrations of greenhouse gases magnify this effect and further increase surface temperature.

Emissions of carbon dioxide (CO_2) are the leading cause of global warming, with other air pollutants such as methane, nitrous oxide and hydrofluorocarbons also contributing. According to the California Energy Commissions, carbon dioxide concentrations, which ranged from 265 ppm to 280 ppm over the last 10,000 years, only began rising in the last two hundred years to current levels of 365 ppm, a 30% increase. California's CO_2 emissions in 1999 were approximately 356 million metric tons. In the last decade, transportation accounted for the largest portion of emissions, averaging 59% of total CO_2 emissions, followed by electricity generation at 16%, and industrial emissions of 12%.

In California, climate change indicators measured over the past 100 years such as air temperature, annual Sierra Nevada snow melt runoff, and sea level rise all indicate that California's climate is warming. Warming in the 21st century is expected to be much greater than in the 20th Century, with temperatures in the United States rising 5-9 degrees F. The climate change experienced in California so far has been gradual, as assumed in most climate change projections. However, paleoclimatological researchers, studying past changes in the climate system, are discovering that the Earth's climate has experienced sudden and violent shifts and that global warming may trigger thresholds resulting in dramatic changes in the climate.

Increased global warming is expected to result in more extreme precipitation and faster evaporation of water, disrupting water supplies, energy supply and demand, agriculture, forestry, natural habitat, outdoor recreation, air quality, and public health. Climate change affects public health because the higher temperatures result in more air pollutant emissions, increased smog, and associated respiratory disease and heart-related illnesses. According to one ARB report, 21 to 38% of the deaths occurring during a heat wave were attributed to elevated ozone and PM10 levels (Draft ARB Technical Support Document for Staff Proposal Regarding Reduction of Greenhouse Gas Emissions from Motor Vehicles, Climate Change Overview, July 21, 2004, pg 16-17).

Linkage to Existing Air District Programs

Certain chemical precursors, such as nitrogen oxides (NOx) and volatile organic compounds (VOCs), react in the atmosphere to produce ozone and ammonium nitrate (a form of particulate matter). NOx emissions have increased as a result of power generation processes for energy consumption. Higher temperatures increase precursor VOC emissions (from evaporation of petroleum-based products and from biogenic sources), and also increase photochemical reactions forming ozone.

Reports from the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), U.S. EPA, and other organizations highlight the co-benefits of "harmonizing" existing air quality rules, regulations, and programs that address criteria and toxic air pollutants with the goals of reducing greenhouse gas emissions. Existing District rules and programs are already reducing greenhouse gas emissions; those reductions can be quantified and documented. For example, programs to reduce vehicle miles traveled (VMT) and energy efficiency measures reduce NOx and PM emissions because they reduce emissions from fossil fuels and they also reduce emissions of greenhouse gases.

Statewide Programs

In response to growing concern about global warming, in July 2002, California legislation (AB 1493, Pavley) was enacted requiring ARB to adopt regulations that achieve the maximum feasible and cost-effective reduction in greenhouse gas emissions from on-road motor vehicles. In September 2004, ARB adopted regulations to control greenhouse gas emissions from passenger cars and light-duty trucks that will reduce emissions in 2009 model year and later vehicles. According to an ARB report, greenhouse gas emission reductions would be modest during the early phases of the regulation and would increase to 25 to 34% reduction in greenhouse gases by 2016 compared to a 2002 baseline (ARB Staff Report: Initial Statement of Reason for Proposed Rulemaking:, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, August 6, 2004, pg. 116). Implementation of this regulation would result in modest initial costs that ARB anticipates would be more than offset by operating cost savings over the life of the vehicle due to improved fuel economy.

The California Climate Action Registry (the Registry) was established by State law as a non-profit voluntary registry for greenhouse gas (GHG) emissions. The purpose of the Registry is to help companies and organizations with operations in the state to establish GHG emissions baselines against which any future GHG emission reduction requirements may be applied. The Registry encourages voluntary actions to increase energy efficiency and decrease GHG emissions. Using any year from 1990 forward as a base year, participants can record their GHG emissions inventory. The State of California, in turn, will offer its best efforts to ensure that participants receive appropriate consideration for early actions in the event of any future state, federal or international GHG regulatory scheme. Registry participants include businesses, non-profit organizations, municipalities, state agencies, and other entities.

On June 1, 2005, Governor Schwarzenegger signed Executive Order #S-3-05 establishing greenhouse gas emissions reduction targets in California: by 2010, reduce greenhouse gas emissions to 2000 levels; by 2020, reduce greenhouse gas emissions

to 1990 levels; and by 2050, reduce greenhouse gas emissions to 80% below 1990 levels. To meet these targets, the Governor has directed Cal EPA to lead a Climate Action Team made up of representatives from the Business, Transportation and Housing Agency, the Department of Food and Agriculture, the Air Resources Board, the Energy Commission, and the Public Utilities Commission. The strategies currently being considered by the Climate Action Team include mandatory reporting of greenhouse gas emissions, a cap and trade program, and a voluntary emission reduction program. The team will submit a report to the Governor and the Legislature in January 2006 and bi-annually thereafter.

Ozone Strategy Control Measures

Various control measures in the 2005 Ozone Strategy will reduce greenhouse gas emissions as well as reduce emissions of ozone precursors. Although not quantified, many of the mobile source measures and transportation control measures proposed in this Ozone Strategy will also reduce greenhouse gas emissions from motor vehicles. Those control measures that result in reducing or eliminating motor vehicle trips, or more efficiently operating motor vehicles, would help reduce greenhouse gas emissions in addition to reducing ozone precursor emissions. TCMs in particular aim to reduce vehicle trips and vehicle miles traveled, and thus reduce emissions of ozone precursors and greenhouse gases. In addition, the proposed Energy Conservation control measure (SS15) would directly target greenhouse gases while also reducing emissions of ozone precursors. This measure would reduce emissions of criteria pollutants and greenhouse gas emissions through the voluntary adoption and enforcement of a model ordinance by local government agencies to reduce energy consumption, and through new District programs and enhancements to existing District regulations to promote energy efficiency.

Other Bay Area Programs

A growing number of cities and counties in the Bay Area are participating in activities to reduce greenhouse gas emissions and combat climate change. Four counties and 14 cities in the Bay Area participate in the International Council for Local Environmental Initiatives' (ICLEI) Cities for Climate Protection campaign. This program provides a framework for local governments to develop a strategic agenda to reduce global warming and air pollution emissions. The table below lists the cities and counties in the Bay Area that are among the 500 local government agencies throughout the world participating in ICLEI's program.

Bay Area Communities Participating in Cities for Climate Protection Campaign

Counties	Cities		
Marin	Berkeley	Petaluma	Santa Rosa
Sonoma	Cotati	Rohnert Park	Sebastopol
Santa Clara	Fairfax	San Anselmo	Sonoma City
San Francisco	Novato	San Francisco	Windsor
	Oakland	San Jose	

The Cities for Climate Protection program consists of five milestones to reduce greenhouse gas and air pollution emissions throughout a community. These include:

- Conduct a greenhouse gas emissions inventory and forecast to determine the sources and quantity of greenhouse gas emissions in the jurisdiction;
- Establish a greenhouse gas emissions reduction target;
- Develop an action plan with both existing and future actions which, when implemented, will meet the local greenhouse gas reduction target;
- Implement the action plan; and
- Monitor to review progress.

The Air District is directly participating in a number of activities in support of local initiatives to address climate change. The Air District is currently working with Sonoma County to develop a model to help Sonoma and other counties in the Bay Area develop action plans for reducing greenhouse gases. Phase 1 of this project develops guidelines for conducting greenhouse gas emission inventories and identifies strategies to reduce those emissions. Phase 2 of this project will help in the development of model climate protection programs or ordinances and integration of current air quality planning efforts with climate protection.

In October 2004, the Santa Clara County Board of Supervisors passed a resolution to form a partnership with the Air District to achieve the Cities for Climate Protection Program goals of reducing both greenhouse gas and air pollution emissions. The Air District has also been in contact with the City and County of San Francisco and Marin County to offer assistance in implementing climate change action plans adopted in these counties. In 2002, the Marin County Board of Supervisors adopted a resolution that recognizes both the gravity of global warming and the responsibility for local action. In June 2003, Marin County completed the first of the five Cities for Climate Protection milestones: an analysis of greenhouse gas emission levels. The County is currently working on the second milestone, developing an emissions reduction target. In addition, Marin County provided planning guidance on climate change in the Marin County General Plan.

In 2002, the San Francisco Board of Supervisors passed the Greenhouse Gas Emissions Reduction Resolution, committing the City and County of San Francisco to a greenhouse gas emission reduction goal of 20% below 1990 levels by the year 2012. In September 2004, San Francisco released its Climate Action Plan, which provides an inventory and reduction target of greenhouse gas emissions. The Plan also contains actions and implementation strategies to reduce greenhouse gas emissions from the transportation and solid waste sectors and through energy efficiency and renewable energy programs.

The Contra Costa County Board of Supervisors are also engaged in local efforts to reduce greenhouse gas emissions in Contra Costa County. Contra Costa County is taking a “best practices” approach to climate change issues by addressing fleet vehicle emissions, creating green building standards, improving energy efficiency, and by investing in businesses that do not harm human health and the environment.

Local initiatives to address climate change are also being pursued by the Sustainable Silicon Valley (SSV) Project, founded by the California Environmental Protection Agency, the Silicon Valley Leadership Group and the Silicon Valley Environmental Partnership. One element of the SSV program is the CO_2 Emissions Reduction Program. Public and private organizations in the counties of Santa Clara, San Mateo,

and Alameda Counties are invited to participate in SSV's program, including businesses, government, educational institutions, and non-governmental organizations.

Air District Programs

The Air District is also developing a website focusing on climate change issues. The website will provide an overview of climate change, describe the pollutants that cause it and the potential impacts of climate change on California and the Bay Area, and summarize current programs to address climate change. The website will also provide links to local programs addressing climate change and links to other resources on the topic.

The Air District is also developing an emission inventory of greenhouse gas emissions from stationary, area and mobile sources to help determine the sources of greenhouse gases in the region. This data will be very useful to regional stakeholders for determining the sources of GHGs in their jurisdictions and for beginning to set targets for emission reductions. In addition, the inventory will provide a baseline for the region against which future reduction efforts can be measured.

On June 1, 2005 the Air District Board of Directors committed the District to playing a lead role in addressing Climate Change by adopting a resolution establishing a Climate Protection Program and acknowledging the link between climate protection and existing Air District programs to reduce air pollution in the Bay Area.

As part of its Climate Protection Program, the Air District expects to undertake the following activities in the near term:

- Establish an Ad Hoc committee from the District's Board of Directors to direct Staff in developing the Climate Protection Program.
- Host a regional conference to help coordinate local climate protection initiatives and create guidance for new initiatives, such as a model ordinance.
- Sponsor a symposium to discuss climate change issues for the region.
- Provide technical assistance to local stakeholders and creating an information clearinghouse to assist local initiatives.
- Develop public education and outreach campaigns about climate protection, energy efficiency, and ways to reduce greenhouse gas emissions at home and in the workplace.

As part of its educational and outreach program on Climate Change, the Air District has developed a web site focusing on climate change issues. The website provides an overview of climate change, describing the pollutants that cause it and the potential impacts of climate change on California and the Bay Area, and summarizing current programs to address climate change. The website also provides links to local programs addressing climate change and links to other resources on the topic.

The Air District is also developing an emission inventory of greenhouse gas emissions from stationary, area and mobile sources to help determine the sources of greenhouse gases in the region. This data will be very useful to regional stakeholders for determining the sources of greenhouse gas emissions in their jurisdictions and for

beginning to set targets for emission reductions. In addition, the inventory will provide a baseline for the region against which future reduction efforts can be measured.

The Air District will continue to collaborate with local stakeholders on climate change issues through existing local initiatives in Sonoma County, Marin County, Silicon Valley, and Contra Costa County. The Air District will continue to interface with statewide entities like California Climate Action Registry and the Climate Action Team, in anticipation of statewide measures. The Air District will continue to evaluate its role in assisting local efforts to address climate change and how to most effectively address climate change on a regional level.

FINE PARTICULATE MATTER

Introduction and Health Effects

Particulate matter (PM) is a complex mixture of substances that includes elements such as carbon and metals; compounds such as nitrates, organics, and sulfates; and complex mixtures such as diesel exhaust and soil. PM can be emitted directly and can also be formed in the atmosphere through reactions between different pollutants. Fine particulate matter (PM10) refers to particles with an aerodynamic diameter of 10 microns or smaller. Ozone precursors can also be precursors to fine PM.

Exposure to PM10 aggravates a number of respiratory illnesses and may cause early death in people with existing heart and lung disease. PM10 includes the subgroup of finer particles with an aerodynamic diameter of 2.5 microns and smaller (PM2.5). These finer particles pose an increased health risk because they can deposit deep in the lungs and contain substances that are particularly harmful to human health.

Sources and Trends

The State and national governments have set ambient air quality standards for fine particulate matter. These standards define the maximum concentrations of particles that can be present in outdoor air without threatening the public's health. The Bay Area is unclassified for the national PM10 standard, and EPA recently designated the Bay Area as an attainment area for the national PM2.5 standard.

The Bay Area does not meet California PM10 standards, which are much stricter than the national standards. In June of 2002, the California Air Resources Board (ARB) adopted new, revised PM standards for outdoor air, lowering the annual PM10 standard from 30 µg/m3 to 20 µg/m3 and establishing a new annual standard for PM2.5 of 12 µg/m3. Any exceedence of these levels constitutes a violation of the standard. Currently, the California Clean Air Act does not require nonattainment regions to prepare plans for attainment of the state PM standards (as it does for ozone). However, recently enacted legislation (Senate Bill 656) specifies certain requirements for ARB and local air districts with regard to addressing PM emission reductions, as described below.

The Bay Area experiences its highest PM concentrations in the winter, especially during evening and night hours. Based on analysis of the chemical composition of airborne PM, the main sources of PM are combustion of fossil fuels, wood burning, airborne dust entrained by motor vehicles and construction, and cooking. Fine PM results almost entirely from the combustion of fossil fuels and wood. Woodburning results in about 20% of total PM emissions on an annual basis and approximately 30% of wintertime PM. Although fossil fuels are burned year-round, winter weather conditions convert much more of the NO_x produced into particulate ammonium nitrate, representing a large fraction of wintertime PM. Finally, the lower levels of solar radiation in the winter lead to stronger temperature inversions that are conducive to the buildup of particulate matter in ambient air near ground level.

Direct emissions from fossil fuel combustion by on-road motor vehicles, construction equipment, ships, planes, refineries and power plants constitute about 35% the Bay Area's PM2.5 on an annual basis. Secondary ammonium sulfate and ammonium nitrate,

formed from reactions in the atmosphere of nitrogen oxides and sulfur oxides from motor vehicle exhaust and other combustion processes, constitute another 30% of PM2.5.

In the Bay Area, exceedances of the 24-hour State PM10 standard were recorded 22 times in the last three-year period, and 12 exceedances of the 24-hour national PM2.5 standard were recorded in the last three years (see Table 18). In order to meet the 24-hour national PM2.5 standard, ninety-eight percent of measured days at every monitoring site, over the most recent three-year period, must record a 24-hour average less than 65 μg/m3. The Bay Area met the national 24-hour standard for 1999-01, through 2002-04.

Table 18: PM_{10} and $PM_{2.5}$ Statistics for the Bay Area, 1999-2004

	PM_{10} ($\mu g/m^3$)			$PM_{2.5}$ ($\mu g/m^3$)		
Year	Measured days over state std *	Max 24-hour (CA Std = 50)	Maximum Annual average (CA Std = 20)	Days over Fed 24-hr std	Maximum 24-hour (F Std = 65)	Max Annual Average (F Std = 15, CA Std = 12)
1999	12	114	28.7	5	91	16.0
2000	7	76	26.7	1	67	13.6
2001	10	109	28.9	5	108	12.6
2002	6	80	25.4	7	77	13.8
2003	6	58	24.8	0	56	11.8
2004	5	63	25.3	1	74	11.6

* PM10 is only sampled every sixth day. Actual days over standard can be estimated to be six times the numbers shown.

The Bay Area has seen significant reductions in PM10 levels since 1990, with peak concentrations down by approximately half and annual average values down by about one-third. Average ammonium nitrate values have dropped faster than PM10 as a whole. This reduction is likely due to reductions in NO_x emissions, and this represents an additional benefit of efforts to reduce NOx as an ozone precursor. Particles emitted from combustion of fossil fuels and wood have dropped faster than PM10 as a whole also. PM2.5 has only been measured since 1999, so quantitative trend analysis is currently not possible. However, because fine PM is almost completely combustion-related, it is likely that PM2.5 has been reduced at least as much as PM10.

Recent reductions in motor vehicle emissions resulting from stricter national and State standards have resulted in lower tailpipe PM emissions as well. Also, there have been reductions in secondary PM pollutants, which appear to be the result of NO_x and SO2 reductions. However, because of fine PM's health effects, the Air District continues to be concerned about PM emissions from sources such as motor vehicles, woodburning, and other combustion processes.

Diesel Particulate Matter

Diesel engines emit a complex mixture of air pollutants, with a major fraction consisting of particulate matter. These emissions include many carbon particles, as well as other gases that become PM as they cool and undergo chemical reactions. Overall, emissions from diesel engines are responsible for the majority of the potential airborne cancer risk in California. In 1998, ARB identified particulate emissions from diesel-fueled engines (diesel PM) as a toxic air contaminant (TAC) based upon its potential to cause cancer and other chronic adverse health effects. In 2000, ARB approved a comprehensive Diesel Risk Reduction Program to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The Program aims to develop and implement specific statewide regulations designed to reduce diesel PM emissions and the associated health risk 75% by 2010 and 85% by 2020.

District PM Reduction Programs

The Air District implements a number of regulations and programs to reduce PM emissions. These include rules limiting direct PM emissions from open burning of agricultural and non-agricultural waste, controlling dust from earthmoving and construction/demolition operations, limiting emissions from various combustion sources such as cement kilns and furnaces, and reducing PM from composting and chipping activities. In addition, the Air District also enforces rules that limit indirect PM precursor emissions such as NOx from industrial and other combustion sources and VOCs from coatings and solvents, product manufacturing, solid waste landfills, and fuel storage, transfer and dispensing activities.

The Air District also administers programs that deal specifically with emissions from wood-burning appliances such as fireplaces, wood stoves and heaters. In 1998, the Air District, with stakeholder input, developed a model wood smoke ordinance for fireplaces and woodstoves as a guidance document for cities and counties to regulate sources of particulate matter in their communities. The model ordinance does not ban wood burning in fireplaces, but seeks to take advantage of new, cleaner technologies that have been developed to effectively reduce wood smoke pollution. Since the ordinance was promulgated, Air District staff have worked with health agencies and interested residents in the Bay Area to advocate for the adoption of the ordinance. To date, a woodsmoke ordinance has been adopted by 37 cities and seven counties in the region.

Air District programs to control motor vehicle emissions also represent a significant commitment to reducing PM. Heavy-duty diesel engines are a significant source of diesel particulate matter (PM10) in California. Through several incentive-based programs, the Air District offers grants to reduce particulate matter emissions from motor vehicles. For example, the District implements the Carl Moyer program to fund replacement of old, dirty diesel equipment with newer, cleaner technology. The Air District's Transportation Fund for Clean Air (TFCA) program funds repowers and retrofits of heavy-duty diesel engines in public fleets. In fall 2004, legislation was enacted which 1) significantly increases funding for the Carl Moyer Program, and provides a stable funding source through the year 2014, and 2) authorizes local air districts to impose an additional $2 per vehicle surcharge on motor vehicle registrations, to be used for projects to reduce emissions from heavy-duty vehicles and school buses, scrappage or repair of existing in-use vehicles, and agricultural sources. The new legislation will greatly increase the available funding to implement low-emission vehicle projects,

especially projects to reduce emissions of NO_X and particulate matter from heavy-duty diesel engines.

Another Air District grant program is the Low Emission School Bus Program in which the Air District provides funding to public school districts, private schools and private school busing contractors to purchase cleaner replacement school buses and to install particulate matter control devices on school buses with diesel engines manufactured since 1991. The Air District's TFCA program also funds school bus replacement and retrofit projects.

To reduce air pollution, the Air District also operates a vehicle buy-back program to provide financial incentives to remove the oldest and most polluting vehicles from our roadways. Currently, the Air District will pay $650 for an operating and registered 1985 and older vehicle, and vehicle dismantlers contracted by the Air District will scrap the vehicles. The vehicle buy-back program is a voluntary program that takes older vehicles off the road and is funded through the Air District's Transportation Fund for Clean Air.

In addition, the Air District's Smoking Vehicle Program began in December 1992 as a voluntary program for reporting smoking vehicles. Each year an average of 35,000 calls are received complaining about vehicles emitting excessive visible exhaust. The Air District sends letters to vehicle owners notifying them of the air quality consequences of smoking vehicles, warns them of the possibility of being cited, and encourages them to have their vehicle checked and repaired.

In 2004, the Air District launched a new program, the Community Air Risk Evaluation Program (CARE) that will help further the understanding of community level risk from air toxics in the Bay Area. The initial phase of the program is expected to last 2-3 years, and involves the development of a comprehensive gridded Bay Area air toxics inventory. This inventory will include stationary, area, and mobile sources and will provide new detailed information on diesel PM and other TACs. CARE will include the development of risk reduction measures for impacted communities. Community outreach and education are also important components of the CARE program. The CARE program is discussed in more detail below.

Discussion of PM benefits of Ozone Control Measures

While the 2005 Ozone Strategy is intended to reduce ozone precursor emissions and does not specifically address PM, many of the proposed control measures are expected have the additional benefit of helping to reduced overall PM and diesel PM emissions.

Several stationary source control measures will reduce PM emissions. The flare control measure (SS-6 Flares, adopted as Regulation 12, Rule 12 on July 20, 2005) will result in decreased PM emissions from a reduction in incineration. The control measures aimed at combustion processes (boilers, large water heaters and stationary gas turbines) primarily reduce NO_x emissions. NO_x emissions from stationary (and vehicular) source fuel combustion are precursors to nitrates, which comprise a significant portion of ambient PM10. Therefore, these NO_x measures will also lead to a reduction in PM.

All of the mobile source measures will help reduce PM emissions, with the diesel equipment idling ordinance measure (MS-1) and the low-emission vehicle incentives measure (MS-3) helping to reduce diesel PM in particular. All of the transportation

control measures, by reducing vehicle trips and vehicle miles traveled will have the additional benefit of reducing PM emissions from fossil fuel combustion and reentrained road dust.

SB 656

Senate Bill 656, sponsored by Senator Byron Sher, was enacted in 2003. SB 656 requires ARB, in consultation with local air districts, to develop and adopt a list of the most readily available, feasible, and cost-effective control measures that could be employed by ARB and the air districts to reduce PM10 and PM2.5. The goal of SB 656 is to ensure progress toward attainment of State and federal PM10 and PM2.5 standards. The list of control measures is to be based on rules, regulations, and programs existing in California as of January 1, 2004 to reduce emissions from new, modified, or existing stationary, area, and mobile sources. ARB approved the list of control measures in November 2004. The bill also requires air districts to review the ARB list and develop implementation schedules for feasible control measures appropriate for the respective air basins based on the nature and severity of local PM conditions. The implementation schedules are to be developed by prioritizing adoption and implementation based on the effect each control measure will have on public health, air quality, emission reductions, as well as each control measure's feasibility, cost-effectiveness, and appropriateness for the respective region.

District staff completed its evaluation of the 103 measures on the ARB list and the Air District Board of Directors approved the SB 656 PM Implementation Schedule for the Bay Area On November 16, 2005. District staff identified two control measures from the ARB list for new rulemaking: (1) combustion emissions from stationary and portable IC engines and (2) chain driven commercial broiling operations. Two other existing District programs were identified for amendment: the wood-burning public awareness program and the voluntary wood-burning curtailment program. An additional 10 items were identified for further study and evaluation. The remaining 89 items were found to have no Bay Area sources, insignificant potential emission reductions or are already being addressed through current district rules, programs, or the Draft 2005 Ozone Strategy.

COMMUNITY AIR RISK EVALUATION (CARE) PROGRAM

Toxic air contaminants (TACs) are an area of serious concern in the Bay Area. TACs are substances that are either known or suspected carcinogens or cause other non-carcinogenic health effects. The Air District has long been involved in the reduction of air toxics in the Bay Area through a number of different programs including the preconstruction review of new and modified sources (New Source Review); the Air District's Air Toxics "Hot Spots" program to identify industrial and commercial emitters of toxic air contaminants and to encourage reductions in these emissions; and air pollution control measures designed to reduce emissions from categories of sources of TACs. Many of the Air District's regulations and programs aimed at reducing TACs also can reduce emissions of ozone precursors.

In July 2004, the Air District initiated a new program to address air toxics in the region from a community perspective. The Community Air Risk Evaluation (CARE) program was launched to determine health risk associated with toxic air pollutants in the Bay Area. The program has been designed to evaluate and reduce health risks associated with toxic air pollution in the Bay Area. When completed, studies from the CARE

program will be tools the Air District can use to reduce toxic air pollution in areas with the highest health risk. The CARE program will address a variety of toxic air pollutants with an emphasis on diesel particulate matter, which is thought to be the major source of airborne cancer risk in California. The projected time frame for completion of the initial study phase of the CARE program is 2-3 years.

The Air District has formed a CARE Task Force to provide input to District staff throughout the term of the program. The Task Force will be composed of community and environmental representatives with experience working on air quality and/or health issues, representative of various sectors of the regulated community, representatives of academic institutions in fields relevant to CARE as well as public health experts.

The CARE program includes a public outreach component. In addition to the Task Force, Air District staff will conduct community meetings to provide health risk information, update Bay Area residents about the results of the CARE studies, and to receive public comment. Information on the CARE program will also continue to be posted on the Air District's website. Any future regulatory actions will also require public notices and public workshops to solicit public comment.

The CARE program includes a number of technical and analytical quality assurance aspects. For example, Air District staff are using a new Thermal Optical Carbon Analyzer to determine the ratio of organic carbon to elemental carbon from the Air District monitors' particulate matter filters. Such enhanced air monitoring will better determine the relative contribution of air pollution sources, including vehicles, industrial emissions and/or wood burning to ambient particulate levels.

A significant step in the CARE program involves the development of criteria pollutant and air toxics emission density maps for the nine-county Bay Area. The Air District will develop emission inventories that will be mapped on 2 km x 2 km grids of the region using geographic information system (GIS) software. The "gridded" emission inventory will include emissions data from the District's area and point source inventories as well as the on-road motor vehicle emission inventory.

The CARE program will include an evaluation of risk reduction opportunities as well as the development and implementation of a risk reduction plan. The CARE program will provide technical information, so that the Air District can focus on reducing toxic pollutants in areas with the highest health risk through incentives, grant program funding and regulatory controls.

LOCAL BENEFITS

Ground-level ozone is a regional air pollutant that affects public health in various locations in the nine-county Bay Area. The areas within our region that have historically exhibited higher local ozone levels include the Livermore-Amador Valley, Southern Santa Clara County and Eastern Contra Costa County. Demographically, these areas do not differ dramatically from the Bay Area as a whole, and residents in these areas tend to be of moderate to higher socio-economic levels. Reducing regional ozone formation will likely lead to lower localized ozone levels in these particular parts of the Bay Area. However, implementation of the proposed ozone control strategy will also

result in localized benefits to other Bay Area communities that reside in close proximity to sources of air pollution.

Communities near major stationary sources, like refineries and gasoline bulk terminals, tend to have higher percentages of minority and lower-income residents. These communities will benefit from new control measures focused on these sources, especially with regard to toxic air contaminants (TACs). Toxic organic chemicals are often controlled directly by local, State and federal rules and permits. TAC emissions can also be reduced indirectly through ozone control measures. In evaluating potential control measures for the 2005 Ozone Strategy, local community benefit was a consideration where ozone control measures additionally could reduce exposure of nearby residents to TACs. The majority of the petroleum products production and distribution stationary source control measures, such as those for flares, gasoline bulk terminals and plants, organic liquid storage tanks, pressure relief devices and wastewater systems, are examples of control measures that will result in such community benefits, as well as reducing regional emissions of ozone precursors.

Other stationary source measures aimed at reducing emissions from industrial and commercial processes will similarly have the additional benefit of reducing health risks to nearby residents. Control measures such as those for auto refinishing, graphic arts operations, polyester resin operations, and wood products coatings are aimed primarily at reducing emissions from smaller stationary sources, dispersed more evenly throughout the region. These sources are often located in light industrial areas, sometimes in close proximity to lower-income residential areas with sensitive receptors. Therefore, by reducing emissions from these sources, there will be an overall reduction in the health risk from toxics.

Increased particulate matter (PM) levels are highly correlated to areas with high traffic volumes, including freeways and heavily traveled roadways. Diesel PM is of particular concern because it has been identified by the California Air Resources Board as a toxic air contaminant. Sensitive receptors (residences, schools, hospitals, etc.) may be at higher risk of cancer and other adverse health effects if they are in close proximity to these roadways, as well as facilities with high volumes of diesel equipment such as ports and distribution centers. The 2005 Ozone Strategy's mobile source and transportation control measures should provide local benefit to these communities by reducing emissions of particulate matter and diesel PM.

NATIONAL OZONE STANDARDS

The 2005 Ozone Strategy describes how the San Francisco Bay Area will make progress toward the State one-hour ozone standard as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The 2005 Ozone Strategy is not intended to meet any requirements related to the national ozone standard or planning requirements; this chapter has been included for informational purposes only.

Background

The Bay Area has a complicated history with respect to national ozone standards. For many years, the region violated the national one-hour ozone standard. As significant

emission reductions from aggressive controls on stationary and mobile sources resulted in a substantial downward trend in ozone precursor emissions, the Bay Area enjoyed five years of low ozone levels in the early 1990's, and EPA redesignated the region as an attainment area in 1995. Following two years of very hot weather and numerous exceedances of the standard, EPA redesignated the region back to nonattainment status in 1998. Since that time, further emission reductions from ARB and Air District programs led to further progress and resulted in the region's achieving an attainment record for the national one-hour ozone standard. Recently, EPA has implemented a new national 8-hour ozone standard, and has revoked the national one-hour ozone standard.

Recent History of Bay Area Attainment Planning for the National One-hour Ozone Standard

Previous Bay Area elements of the State Implementation Plan (SIP) have included the 1982 Bay Area Air Quality Plan, the 1993 Redesignation Request and Maintenance Plan (amended 1994), and the 1999 Ozone Attainment Plan. The 2001 Ozone Attainment Plan is the most recent Bay Area portion of the SIP. The following is a brief summary of recent history of Bay Area planning efforts for the national one-hour ozone standard.

Redesignation to Attainment. EPA redesignated the Bay Area to attainment status for the one-hour national ozone standard on May 22, 1995. The agency did this because the Bay Area attained the ozone standard at the end of the 1992 ozone season (having three "clean" years – 1990, 1991 and 1992). The region maintained the standard in 1993 and 1994. At the same time EPA took action on the Bay Area's ozone redesignation, EPA also approved an Ozone Maintenance Plan submitted by the Air District, MTC and ABAG ("co-lead" agencies) in 1993 and revised in 1994.

Redesignation Back to Nonattainment. In the summers of 1995 and 1996, the Bay Area experienced a number of episodes of hot, stagnant weather. This led to exceedances of the one-hour standard. EPA received two petitions requesting redesignation of the Bay Area to nonattainment status. EPA determined that the "contingency measures" in the Maintenance Plan were not adequate to bring the region back into compliance with the standard and that the region's adopted and projected actions would not be sufficient to reestablish attainment of the standard.

EPA revoked the region's ozone attainment status. The final notice for the revocation (July 10, 1998) called for the region to submit three plan elements: (1) a 1995 emissions inventory for Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx), (2) an attainment assessment (an analysis, based on available information, showing the VOC and NOx reductions necessary for the region to re-attain the one-hour national ozone standard), and (3) a control strategy, comprised of control measures that provide sufficient emission reductions to attain the ozone standard.

1999 Ozone Attainment Plan. The co-lead agencies prepared the 1999 Ozone Attainment Plan to comply with these requirements. The 1999 Plan was submitted to EPA in August 1999.

The deadline EPA set for attaining the one-hour national ozone standard was November 15, 2000. The region continued to experience a few exceedances of the one-hour standard in 1999 and 2000. Emission reductions from control measures in the 1999

Ozone Attainment Plan were not sufficient to bring the Bay Area back into compliance in that timeframe.

In March 2001, EPA proposed to make a formal finding that the Bay Area had not attained the national one-hour ozone standard. EPA finalized the March notice on August 28, 2001. EPA's August 28, 2001 action approved some parts and disapproved other parts of the 1999 Plan.

EPA's finding that the region had failed to attain the one-hour standard established a requirement for a new ozone attainment plan. The new plan was required to be submitted by September 2002, and was required to show attainment of the one-hour standard by fall 2006.

The 2001 Ozone Attainment Plan. The co-lead agencies prepared the 2001 Ozone Attainment Plan to revise the elements of the 1999 Plan that EPA disapproved, and also added other elements triggered by the finding of failure to attain.

In July 2003, EPA proposed an interim final determination that the 2001 Plan corrected the deficiencies of the 1999 Plan and proposed approval of the 2001 Plan.

Finding of Attainment and Approval of the 2001 Ozone Attainment Plan. Following three years of low ozone levels (2001, 2002 and 2003), in October 2003, EPA proposed a finding that the Bay Area had attained the national one-hour standard and that certain elements of the 2001 Plan (attainment demonstration, contingency measures and reasonable further progress) were no longer required.

In April 2004, EPA made final the finding that the Bay Area had attained the one-hour standard and approved the remaining applicable elements of the 2001 Plan: emission inventory; control measure commitments; motor vehicle emission budgets; reasonably available control measures; and commitments to further study measures.

Revocation of the National One-hour Ozone Standard. EPA recently transitioned from the national one-hour standard to a more health protective 8-hour standard. In April 2004, EPA designated regions for the new national 8-hour standard (discussed below). The 8-hour standard took effect in June 2004. The one-hour standard was revoked on June 15, 2005.

National 8-hour Ozone Standard

In July 1997, EPA established a new national ozone standard. The new 8-hour standard became effective in June 2004. Defined as "concentration-based," the new national ozone standard is set at 85 parts per billion averaged over eight hours. The determination of whether a region attains the standard is based on the 3-year average of the annual 4th highest daily maximum 8-hour ozone concentration. The new national 8-hour standard is considered to be more health protective because it protects against health effects that occur with longer exposure to lower ozone concentrations.

In April 2004, EPA designated regions as attainment and nonattainment areas for the 8-hour standard. These designations took effect on June 15, 2004. EPA formally designated the Bay Area as a nonattainment area for the national 8-hour ozone

standard, and classified the region as “marginal” according to five classes of nonattainment areas for ozone, which range from marginal to extreme. Compliance with the standard is determined at each monitoring station using an average of the 4th highest ozone reading for three years. A violation at any monitoring station results in a nonattainment designation for the entire region because ozone is a regional pollutant. Monitoring data for the San Martin station for the years 2001, 2002 and 2003 show an average of the 4th highest ozone values of 86 parts per billion (one part per billion above the standard), hence the Bay Area’s “marginal” nonattainment classification. Marginal, nonttainment areas must attain the national 8-hour ozone standard by June 15, 2007.

While certain elements of Phase 1 of the 8-hour implementation rule are still undergoing legal challenge, EPA signed Phase 2 of the 8-hour implementation rule on November 9, 2005. It is not currently anticipated that marginal areas will be required to prepare attainment demonstrations for the 8-hour standard. Other planning elements may be required. The Bay Area plans to address all requirements of the national 8-hour standard in subsequent documents. In addition, in anticipation of the implementation rule, the Air District has continued to work in collaboration with ARB and other Northern California air districts through the Northern California Agencies SIP/Transport Working Group to address 8-hour planning requirements for other regions in Northern California.

PHOTOCHEMICAL MODELING

The Bay Area is not in attainment of the California one-hour ozone standard, but at present ARB is not requiring air districts to conduct photochemical ozone modeling as part of the plans for attaining the California one-hour ozone standard. Consequently, the 2005 Ozone Strategy does not include computer modeling to forecast future ozone levels. However, the Air District is committed to working with downwind air districts and ARB on developing and refining photochemical ozone modeling for northern and central California in order to evaluate transport of ozone and ozone precursors among air districts. These activities are important also because we expect ARB to require modeling for the State one-hour ozone standard in future plan updates once modeling capability and resources are available to conduct such modeling throughout the state. In addition, the Air District has continued to work in collaboration with ARB and other Northern California air districts through the Northern California Agencies SIP/Transport Working Group to address national 8-hour planning requirements for other regions in Northern California.

With the help of consultants, ARB, and members of our Modeling Advisory Committee (MAC), the Air District is developing a state-of-the-science photochemical ozone modeling system as a tool for future ozone planning for the Bay Area and for analyzing pollutant transport to downwind air basins. To date, the Air District has made significant progress in developing modeling results for recent periods of high ozone. This section provides an overview of our modeling progress and describes the Air District's future short-term objectives with respect to modeling ozone.

Background

Ozone is not emitted directly into the air, but rather is formed secondarily from other precursor pollutants through a series of complex chemical reactions that take place in the presence of sunlight. Important precursor emissions include ROG and NO_x. Further complicating the issue of understanding and reducing ozone is the fact that the chemical reactions that control ozone levels are nonlinear, which means that a reduction in precursor emissions under one set of background conditions could have a different effect on ozone than that same reduction with a different set of background conditions.

Previous modeling studies and analyses of observations have suggested that the production of ozone in the Bay Area is limited by the availability of ROG, which means ozone is most sensitive to reductions in ROG emissions. These studies further suggest that reductions in NO_x emissions will continue to produce smaller reductions in ozone until the total inventory of NO_x is significantly reduced. These studies also indicate that reductions in NOx emissions can increase ozone in areas near the source of those emissions. Previous studies have suggested that the air basins to the east and downwind of the Bay Area are more sensitive to NO_x reductions.

Because of these complexities, a computer modeling system is needed to link precursor emissions to ozone levels. The basic steps required for the computer modeling are as follows:

- Identify and collect a set of observations suitable for creating inputs to the modeling system and for evaluating the system's performance. This set of observations is used to form a database that includes meteorological

measurements both near the ground and aloft, day-specific activity data for determining emissions, and observations of ozone levels and levels of ozone precursor pollutants both near the ground and aloft. The observational database defines the historic period that is used for the modeling.

- For the historic period defined by the observations, apply a computer model to generate the meteorological inputs, such as winds and temperatures. Wind inputs are needed to specify how air pollution is transported within the Bay Area and throughout Central California; temperature inputs help determine the rates of atmospheric chemical reactions.

- For the historic period defined by the observations, apply a computer model to compile and assign emissions from all the various sources of air pollutants including cars and trucks, industrial sources, solvents, lawn mowers and many others.

- Using the meteorological inputs and the emissions inputs, apply a computer model to predict ozone levels. Field observations are used to evaluate the modeling system. If the modeling system is judged to be reliably representing the formation of ozone in the Bay Area and surrounding air basins, then the system can be used as a planning tool to predict future ozone levels given future growth and controls in the emissions of precursor pollutants.

Observations from the Field

The Central California Ozone Study (CCOS) was a large field study conducted during the summer of 2000. The study involved many sponsors and participants, with a budget of over $15 million for measuring meteorological parameters (e.g., temperature, winds), emissions (e.g. ROG, NO_x), and ozone concentrations throughout Central California. In addition, ARB and local air districts provided substantial in-kind contributions to the study. The CCOS field measurement program covered a domain that includes much of northern California, extending north of Redding, and all of central California, including the San Francisco Bay Area, and the Sacramento Area, and San Joaquin Valley. The study domain is similar to, but contained within, the domain used for modeling ozone shown in Figure 8. A summary report on the CCOS field operations has been completed and is available on-line: http://www.arb.ca.gov/airways/ccos/docs/ccosv3fdS0.zip.

The CCOS participants collected many special surface and upper-air meteorological and air quality measurements, in addition to the extensive permanent network of measurements that are routinely available. During the primary study period for CCOS, which extended from the beginning of July 2000 to the end of September 2000, there was one period, Monday July 31st, 2000, where ozone exceeded the national one-hour standard in the Bay Area. High ozone followed in the Sacramento Valley on August 1st and in the San Joaquin Valley on August 2nd (Table 19).

In general, one of the main problems with field studies is that, because the studies only occur during a limited window in time, the worst air quality episodes are often missed. One such episode occurred from July 11th to 12th in 1999. During this period, four sites in the Bay Area exceeded the national one-hour standard (Table 20). Because this was such an extreme event within the Bay Area and throughout Central California, these dates were also targeted for computer modeling. Since no special-study data were

collected during this period, the modeling relied on the extensive network of routinely collected field measurements. ARB routinely archives air quality data for the entire State and these data were used exclusively for 1999. ARB also collected and reformatted meteorological data from six different agencies within California for the 1999 episode. The Air District extensively reviewed and quality-assured these meteorological data.

Table 19: Observed High Ozone from July 31, 2000, to August 2, 2000, in Central California

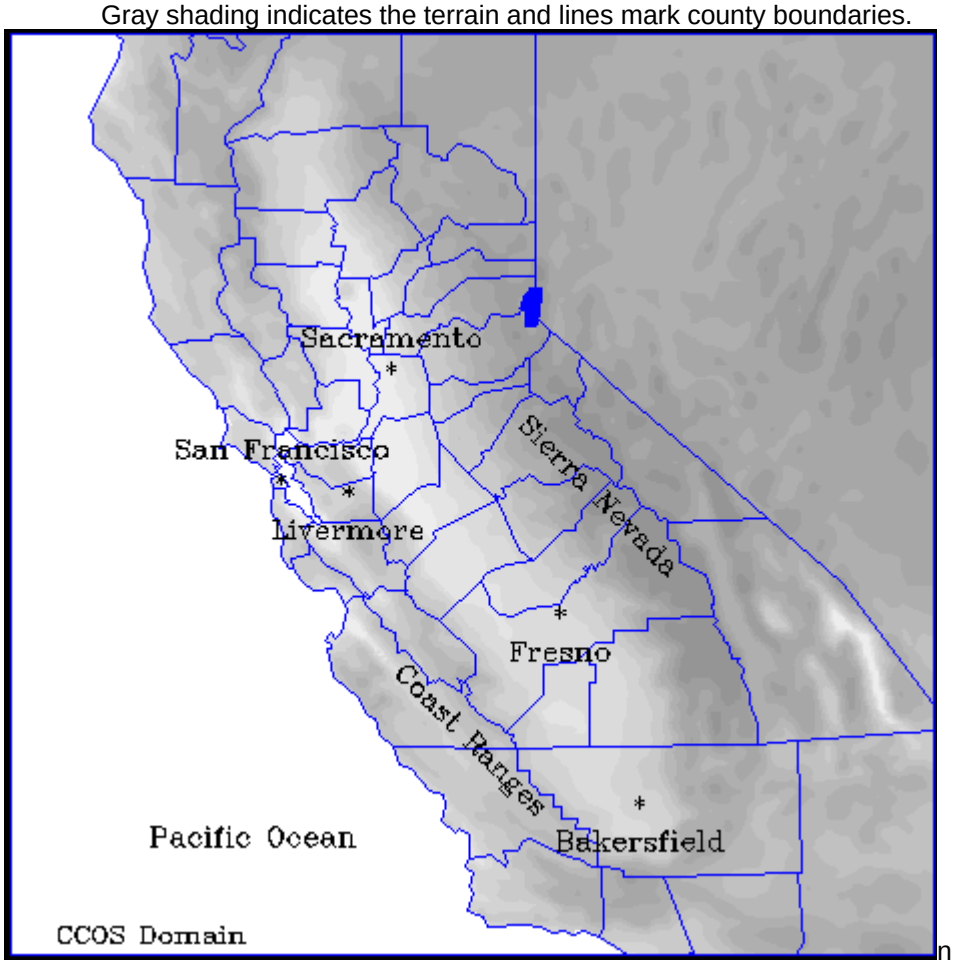
Day	7/31/2000								8/1/2000								8/2/2000							
Hour (PST)	12	13	14	15	16	17	18	19	12	13	14	15	16	17	18	19	12	13	14	15	16	17	18	19
SF Bay Area																								
Livermore - Old 1st	68	88	116	123	126	73	53	34	73	86	92	81	68	65	52	37	88	93	98	84	69	57	49	46
Sacramento																								
Sloughhouse		100	92	87	78	74	66	80	88	112	133	126	119	112	95	82	98	102	101	103	98	66	77	69
San Joaquin																								
Edison	115	110	106	94	81	74	38	19	113	109	93	102	102	96	83	73	129	151	139	121	76	51	45	39
Turlock	75	91	104	105	96	88	64	52	100	101	97	104	86	85	73	61	98	95	114	117	116	131	106	79
Modesto - 14th	74	87	94	90	84	81	60	41	80	84	99	87	94	91	70	53	90	94	95	113	131	128	85	64

Table 20: Observed High Ozone from July 11-12, 1999, in Central California

Day	7/11/1999								7/12/1999						
Hour (PST)	12	13	14	15	16	17	18	19	12	13	14	15	16	17	18
SF Bay Area															
Concord	113	115	126	120	126	99	102	81	134	156	149	129	104	93	99
Livermore	88	94	96	138	145	146	128	93	117	144	133	128	111	94	86
Fremont	79	111	133	117	101	66	43	14	93	98	90	88	80	73	59
San Martin	112	121	124	125	97	62	56	45	115	96	90	74	65	55	46
Sacramento															
Folsom	125	132	133	137	125	107	98	90	109	108	100	89	89	92	107
Vacaville	96	97	99	122	118	101	82	62	108	127	140	115	95	74	65
Auburn	85	90	91	93	111	133	118	112	89	93	90	89	99	95	82
Sacto - Del Paso	112	121	115	106	101	95	89	71	97	94	96	90	92	111	89
Sloughhouse	125	131	116	109	105	103	100	83	108	106	110	103	96	105	91
Roseville	108	120	128	128	119	108	100	81	96	90	82	78	78	81	108
Rocklin	99	115	128	123	119	111	105	92	99	96	85	79	80	82	104
San Joaquin															
Clovis	124	140	142	125	105	110	81	58	112	124	108	102	98	96	90
Fresno - 1st St	128	130	132	135	124	114	99	63	114	115	108	95	88	87	75
Tracy	84	94	91	97	97	97	95	94	102	106	117	118	132	121	113
Stockton - Hazelton	107	122	130	122	108	113	91	62	100	96	95	90	86	102	95
Merced	111	115	118	116	112	110	110	100	121	125	117	115	102	108	118

Figure 8: Central California Modeling Domain

Gray shading indicates the terrain and lines mark county boundaries.



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Description of the Meteorology

High ozone levels can occur on days with high temperatures and light winds. During the summer, when the sunlight is intense, ozone-conducive conditions result when the Pacific high-pressure system moves onshore and blocks the movement of weather systems into California and reduces the normal ventilating sea breeze. Two different kinds of high ozone days typically occur in the Bay Area: days with widespread ozone throughout the region and its surroundings, and days with high ozone only at isolated locations. The July 1999 days were found to fall into the first category (widespread ozone), whereas the summer 2000 period was found to belong in the second (isolated ozone). The Air District modeling study includes meteorological inputs for the July 1999 days and the July-August 2000 period, so both types of days will be represented.

Inventory of Pollutant Emissions

ARB, with assistance from the air districts and consultants, developed emissions inventories for all of Central California during each of the high-ozone periods described above. Separate, day-specific, modeling inputs were created for stationary point sources, for on-road motor vehicles, and for off-road vehicles and area-distributed

sources. There is also an emissions input for biogenic emissions, which include ROG from plants and trees and NO_x from soils, especially soils rich with nitrogen-containing fertilizers.

An important step in developing the modeling inventory is spatially distributing the emissions within the modeling grid. ROG emissions are found concentrated near urban centers and along roadways, but also in the foothills of the Sierra Nevada and Coast Ranges where some tree species are high emitters. NO_x emissions (reported as NO2) are highest along roadways since on-road motor vehicles are the largest source.

Computer Models Applied

The computer modeling required the application of a number of different models. The meteorological model applied for both the July 1999 and the July-August 2000 episodes was the MM5 model. The specific meteorological inputs applied for modeling the July 1999 episode were developed by ARB, while the inputs applied for modeling the July-August 2000 episode were developed by National Oceanic and Atmospheric Administration (NOAA), with assistance from the Air District.

The emissions processing of episode-specific emissions was conducted with the 1995 Emissions Modeling System (EMS-95), the same model used by ARB to generate emissions for past state implementation plans (SIPs)[12] in Central California. The EMFAC 2002 model was used to provide up-to-date emissions estimates of on-road motor vehicle emissions. The biogenic inventory estimates were generated by the ARB's BEGIS model, which includes the latest vegetation maps and updated algorithms for plant emissions. Area source emissions used the most recent available population and employment estimates.

The air quality model, the Comprehensive Air Quality Model with extensions (CAMx, version 4.03) was used to predict ozone, using inputs from the MM5 model and the EMS-95 model. All of the selected models have been, or are currently being, used nationally for various SIPs and/or regional regulatory analyses, and thus have been accepted by the EPA and many States for this purpose. CAMx uses the current best representation of photochemical reactions and it supports a suite of probing tools to conduct sensitivity studies and an analysis of processes within the model that can be used to help ensure the model is working correctly. The CAMx model was also used by ARB for modeling of the CCOS episodes.

Results to Date

The meteorological fields generated with MM5 were evaluated against wind, temperature, and humidity observations. For both the July 1999 and the July-August 2000 simulations, MM5 tended to underpredict temperatures in the Central Valley and overpredict moisture levels. Statistical performance criteria were defined and these were compared to statistics generated for meteorological simulations used for past air quality modeling efforts. For the July-August 2000 episode, the meteorological performance statistics within Central California suggested that performance was typical, while the

[12] A state implementation plan is a statewide plan to achieve national ambient air quality standards.

1999 performance was less successful, but still acceptable. For the Bay Area subregion, both simulations successfully represented important local flow patterns.

The modeling emissions inventory inputs are difficult to evaluate independently. However, an independent estimate of on-road motor vehicle emissions was available from a UC Berkeley study. That study used fuel sales, on-road measurements, and ambient pollutant ratios to derive emissions. In the Bay Area, the fuel-based method and EMFAC estimates agree to within about 25% for VOC and to within 10% for NO_x. In the San Joaquin Valley, the fuel-based estimates of both VOC and NO_x are higher by about 50%.

For assessing model performance for ozone predictions, EPA has developed a set of performance goals. The performance statistics for ozone predictions in the Bay Area from the CAMx model indicate that the model is meeting the performance goals on all Bay Area high ozone days. The model meets most performance goals for other regions as well. However, while the model captures the observed peaks in Sacramento, the model underpredicts on July 11, 1999, and on August 1, 2000. The model underpredicts peak ozone values in the San Joaquin Valley on July 12, 1999, and August 2, 2000.

Future Directions

The computer modeling work has produced reliable simulations of ozone production in the Bay Area and surrounding regions for most of the days and regions modeled. In the near future, the Air District expects to use the modeling system to:

- analyze the effects of reductions in Bay Area emissions on Bay Area ozone, and
- assess the impacts of ozone and ozone precursors transported between air basins on air quality in Central California.

These future modeling efforts will be focused on the national eight-hour ozone standard.

ARB has similar modeling efforts underway and has also modeled the July 1999 and the July-August 2000 episodes with results that are similar to the Air District's. ARB will also focus on modeling for the national eight-hour ozone standard. The Air District will coordinate with ARB and northern California air districts in this effort.

For the current modeling effort, we used multiple episodes and recent base years 1999 and 2000. Many improvements have been made in the emissions inventory modeling inputs. We expect that these updates and improvements will result in an improved modeling system compared to previous modeling efforts.

A technical report describing how the base-case modeling was conducted is available on the Air District’s website at the following address: http://www.baaqmd.gov/pln/plans/ozone/2003_modeling/baaqmdmodelingreport_jan05.pdf

ENVIRONMENTAL REVIEW

The 2005 Ozone Strategy is intended to and expected to benefit public health and the environment by reducing emissions of the air pollutants that form ozone. However, implementation of the proposed control measures could result in secondary environmental effects if, for example, any means used to reduce these emissions causes impacts to water, air quality, energy, hazards and hazardous materials, noise, public services and transportation. Therefore, the Air District, as the lead agency, has prepared an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA).

APPENDICES

Appendix A – Public Involvement Process

Appendix B - Control Measure Review and Evaluation Process

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Appendix C - Stationary Source and Mobile Source Control Measure Descriptions

Appendix D - Transportation Control Measure Descriptions

Appendix E - Further Study Measure Descriptions

APPENDIX A - PUBLIC INVOLVEMENT PROCESS

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INTRODUCTION

The Air District's public involvement program for the 2005 Ozone Strategy has been very extensive. It has included a variety of outreach techniques, including public presentations, technical work group meetings, community meetings, email notices, and an ozone planning website. These strategies comprise the Air District's broad community outreach program to achieve the following goals:

- Include all the diverse stakeholders in the planning process (industry, community groups, environmental groups, local governments, neighboring air districts, and concerned citizens)
- Address stakeholder needs, issues and concerns
- Provide timely and accurate information
- Enhance communication between the Air District and all of the stakeholders
- Build understanding and support for ozone planning and related air quality programs and projects

OZONE WORKING GROUP

During 2003-2004, the Air District, in cooperation with MTC and ABAG, convened a technical group called the Ozone Working Group (OWG) to help develop the Bay Area 2005 Ozone Strategy. The group was established as a way for members of the public and interested parties to be involved in all stages of the ozone planning process. All OWG meetings have been open to the public.

At OWG meetings, staff has presented updates on various aspects of the planning process, answered questions, and solicited discussion and public comment. Topics have included public involvement efforts, modeling, development and evaluation of control measures, regulatory and rule-making updates, MTC's Transportation 2030 process, and other items. OWG meetings are held approximately bi-monthly, during business hours, at MetroCenter in Oakland. OWG meetings are conducted by professional facilitators, with presentations primarily by Air District and MTC staff.

All meeting notices, agenda and handouts for the Ozone Working Group can be downloaded at http://www.baaqmd.gov/pln/plans/ozone/2003_workgroup/index.asp

The following list provides details on each OWG meeting held, to date:

Meeting #1:
March 23, 2003, 10 a.m. – 12 p.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Background
  - Ozone sources, health effects and trends
  - State and federal planning requirements
  - Components of an ozone plan/strategy
  - Current control measures & further study measures
  - Other outreach underway

- Public Involvement Process
  - Role of Ozone Working Group
  - Schedule and topics for future OWG meetings
  - OWG format, future meeting topics, location & time
  - Suggestions for additional outreach

Meeting materials:

- Ozone Fact Sheet
- Ozone Trends
- State & Natl. A.Q. Planning Requirements
- 2001 Plan Measure Status
- Community Outreach
- Potential Meeting Topics
- Ozone Strategy Draft Schedule

Meeting #2:
May 4, 2003, 2 p.m. – 4 p.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Control Measures
  - Criteria for evaluating potential control measures
  - Summary of existing control measures, previous control measure suggestions, and current control measure suggestions
  - Suggestions for new/revised control measures

Meeting materials:

- Ozone Working Group March 27, 2003 meeting notes
- Control measure evaluation criteria
- Existing control measures and current status
- Prior stationary source control measure suggestions
- Transportation Control Measure Review Process
  - Attachment A – Federal TCMs (from 2001 Ozone Attainment Plan)
  - Attachment B – TCM Further Study Measures
  - Attachment C – Reasonably Available Control Measure evaluation for TCMs in 2001 Ozone Attainment Plan
  - Attachment D – TCMs in 2000 (State) Clean Air Plan
- Summary of control measure suggestions received to date
- Bay Area baseline emission inventory projections: 1995 – 2006

Meeting #3:
August 5, 2003, 9:30 a.m. – 11:30 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Overview of Ozone Modeling
  - Summary of current ozone modeling
  - Q&A on ozone modeling presentation

- Control Measure Screening
  - Sources of suggested measures
  - Evaluation criteria
  - Suggested measures still under evaluation
  - Suggested measures already implemented
  - Suggested measures not passing screen
  - Suggested measures passing evaluation

Meeting materials:

- May 14 OWG meeting notes
- May 14 OWG responses to comments
- Modeling Overview
- Control Measure Evaluation Criteria
  - Stationary & Mobile Source measures
  - Transportation Control Measures
- Suggested Measures Still Under Evaluation
- Suggested Measures Already Implemented
- Suggested Measures not Passing Screen
- Suggested Measures Passing Evaluation
- Screening of TCMs

Meeting #4:
October 28, 2003, 9:30 a.m. – 11:30 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Status Reports
  - Community meetings
  - Modeling
  - Existing refinery measures
  - TCM workshop
- Transportation, Land Use and Air Quality
  - Transportation 2030 Plan – smart growth and air quality goals
  - MTC's transportation and land use initiatives
- Control measure evaluation
  - Status report
  - Discussion / feedback on suggested measures

Meeting materials:

- August 5 OWG responses to comments
- Status report on community meetings
- Status report on existing refinery measures
- Status report on TCM workshop
  - Status report and agenda
  - Powerpoint presentation
- Transportation 2030 and the transportation and land use connection
  - T-2030: Key issues and preliminary strategies
  - T-2030: Revised goals
  - Transportation and land use initiatives
- Status report on control measure evaluation

Meeting #5:
January 6, 2004, 9 a.m. – 11 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Status Reports
  - National 8-hour designations
  - Refinery measures
  - Transportation 2030
- Attainment of National one-hour Ozone Standard
  - Finding of attainment
  - Redesignation Request
  - Continuing ozone control efforts
- Control Measure Evaluation
  - Preliminary stationary, mobile and other source evaluations
  - Preliminary transportation control measures evaluations

Meeting materials:

- October 28 OWG responses to comments
- Attainment of national one-hour standard and redesignation requirements
- Control measures evaluations
  - Preliminary stationary, mobile and other source evaluations
  - Preliminary transportation control measure evaluations

Meeting #6:
January 20, 2004, 9 a.m. – 11 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Control Measure Evaluation - Continued Discussion
  - Preliminary stationary, mobile and other source evaluations
  - Preliminary transportation control measure evaluations

Meeting materials:

- January 6 OWG meeting notes
- Control measures evaluations
  - Preliminary stationary, mobile and other source evaluations
  - Preliminary transportation control measure evaluations

Meeting #7:
March 23, 2004, 9:30 a.m. – 11:30 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Status Reports
- Control Measure Evaluation
  - Revised stationary, mobile and other source evaluations
  - Revised transportation control measures evaluations
- Control Measure Descriptions

- Preliminary draft stationary, mobile and other source measures
- Preliminary draft transportation control measures

Meeting materials:

- January 20 OWG meeting notes
- Control measures evaluations
  - Revised stationary, mobile and other source evaluations
  - Revised transportation control measure evaluations
- Control Measure Descriptions
  - Preliminary draft stationary, mobile and other source measures
  - Preliminary draft transportation control measures

Meeting #8:
May 20, 2004, 9 a.m. – 11 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Status Reports
  - National one-hour ozone standard – finding of attainment
  - National 8-hour ozone designation & classification
  - Ozone Strategy / CEQA process and schedule
  - Health & Safety Code Section 40233 – TCM emission reductions
  - Modeling
  - Rule development schedule
- Control Measure Descriptions
  - Preliminary draft stationary source measures
  - Preliminary draft mobile source measures
  - Preliminary draft transportation control measures
  - Preliminary draft further study measures

Meeting materials:

- March 23 OWG meeting notes
- Control measure descriptions
  - Cover memo
  - Preliminary draft stationary source measures
  - Preliminary draft mobile source measures
  - Preliminary draft transportation control measures
  - Preliminary draft further study measures

Meeting #9:
September 28, 2004, 9:30 a.m. – 11:30 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Status Reports
  - Ozone Strategy and CEQA review - process and schedule
  - Rule development update
  - T2030 process and schedule
- Draft Ozone Control Measures
  - Draft stationary source measures

- Draft mobile source measures
- Draft transportation control measures
- Draft further study measures

Meeting materials:

- May 20 OWG meeting notes
- Draft Control Measure Descriptions
  - Cover memo
  - Summary of Draft Ozone Control Measures and Further Study Measures

Meeting #10:
October 25, 2005, 9:30 a.m. – 11:30 a.m.
MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Status Reports
  - National 1-hr and 8-hr ozone standards
  - Ozone Strategy and EIR – process overview and schedule
  - Rule development update
  - Regional transportation planning update
  - ABAG Regional Smart Growth activities update
- Draft Ozone Strategy and DEIR
  - Draft Ozone Strategy Presentation
  - Q&A / Comments
  - Draft Environmental Impact Report Presentation
  - Q&A / Comments
- Air District Grants & Incentive Programs

Meeting materials:

- Summary of Draft Ozone Strategy and Draft EIR findings

OUTREACH METHODS FOR OZONE WORKING GROUP

Mailing to interested parties list

Ozone Working Group meeting notices are typically sent three weeks prior to the meeting date to the Air District's mailing list of over 900 recipients. The mailing list includes individuals from environmental and community groups, business and industry groups, elected officials, local staff, state and federal agencies, neighboring air districts, and other interested parties. MTC also mails OWG meeting notices to their mailing list of interested parties.

Web Postings

The Air District has an Ozone Planning webpage that provides extensive technical information, status reports, announcements and meeting notices. Information on the website regarding the 2005 Ozone Strategy is regularly updated. The website can be reached at http://www.baaqmd.gov/pln/plans/ozone.

The Air District also maintains a website specifically for the Ozone Working Group where all meeting notices, agenda and handouts can be downloaded. The website can be reached at http://www.baaqmd.gov/pln/plans/ozone/2003_workgroup/index.htm
MTC has also included web postings for OWG meetings and links to the Air District webpage from their webpage, http://www.mtc.ca.gov.

Email notices
The Air District maintains an Ozone Working Group email distribution list of over 100 individuals. The email distribution list includes prior meeting attendees and other interested parties. OWG meeting notices and other pertinent information about the ozone planning process has been disseminated through this email list. ABAG also maintains an email list for distributing OWG notices. ABAG's list primarily consists of city and county planning directors, city managers, county administrators and public health officials from their own database.

Log of OWG Notifications

Date	Notice/Document	How Distributed
3/5/03 mail and website	Ozone Working Group 1st meeting announcement distributed	BAAQMD, MTC, ABAG mailing lists; BAAQMD website
4/14/03	Email to Save the date for May 14th OWG meeting	Ozone Working Group email list
4/22/03	Ozone Working Group 2nd meeting notice	BAAQMD mailing list, MTC mailing list
5/2/03	Email announcing that agenda and handouts are available on OWG website for May 14th OWG meeting	Ozone Working Group email list
7/11/03	Ozone Working Group 3rd meeting notice	BAAQMD, MTC, ABAG mailing lists
7/14/03	Email reminder and meeting notice attachment for Aug 5th OWG meeting	Ozone Working Group email list
9/24/03	Email announcing TCM workshop	Ozone Working Group email list
10/3/03	Ozone Working Group 4th meeting notice	BAAQMD, MTC, ABAG mailing lists
10/7/03	Email reminder and meeting notice attachment for Oct 28th OWG meeting	Ozone Working Group email list
10/17/03	Email announcing that agenda and handouts are available on OWG website for Oct 28th OWG meeting	Ozone Working Group email list
12/12/03	Ozone Working Group 5th meeting notice	BAAQMD, MTC, ABAG mailing lists
12/16/03	Email reminder and meeting notice attachment for Jan 6th OWG meeting	Ozone Working Group email list
12/29/03	Email announcing that agenda and handouts are available on OWG website for Jan 6th OWG meeting	Ozone Working Group email list
1/8/04	Notice for control measure evaluation continued discussion at Jan 20th Ozone Working Group meeting	BAAQMD mailing lists and OWG, ABAG email list
1/15/04	Email announcing that agenda and handouts are available on OWG website for Jan 20th OWG meeting	Ozone Working Group email list
3/2/04	Ozone Working Group March 23rd Meeting notice	BAAQMD mailing lists and OWG, ABAG email list
3/16/04	Email announcing that agenda and handouts are available on OWG website for March 23rd OWG meeting	Ozone Working Group email list
5/5/04	Ozone Working Group May 20th Meeting notice	BAAQMD mailing lists and OWG, ABAG email list
5/14/04	Email announcing that agenda and handouts are available on OWG website for May 20th OWG meeting	Ozone Working Group email list

Date	Notice/Document	How Distributed
9/3/04	Email notification to OWG list about community meetings and posted Draft Control Measures	OWG email list
9/15/04	Ozone Working Group Sept 28th Meeting notice	BAAQMD mailing lists and OWG, ABAG email list
9/21/04	Email announcing that agenda and handouts are available on OWG website for Sept 28th OWG meeting	Ozone Working Group email list
9/9/05	Notification about availability of Draft 2005 Ozone Strategy for public review and two upcoming public meetings	BAAQMD mailing lists and OWG email list, ABAG email list
10/7/05	Notification about availability of DEIR for public review and two upcoming public meetings	BAAQMD mailing lists and OWG email list, ABAG email list
10/24/05	Email announcing that agenda and handouts are available on OWG website for Oct 25th OWG meeting	Ozone Working Group email list

COMMUNITY MEETINGS

The Air District has also conducted multiple rounds of community meetings to discuss the 2005 Ozone Strategy. The first round of community meetings occurred in September 2003. Community meetings were held in the evening at community centers in Rodeo, East Palo Alto, Richmond, East San Jose, West Oakland, and southeast San Francisco. The community meetings were intended to provide background information on ozone health effects and regulatory programs, and to solicit suggestions on potential control measures. The Rodeo and East Palo Alto meetings also included Supplemental Environmental Projects (SEP) on the agendas.

The second round of community meetings occurred in September and October 2004. These community meetings were held in the evening at public facilities in Petaluma, Richmond, San Jose, Oakland, San Francisco, Livermore and Martinez. The second round of community meetings also provided background information on ozone health effects and regulatory programs, updates on the ozone planning process, and solicited input of draft ozone control measures and further study measures. The 2004 meetings also included discussion of the Air Districts new Community Air Risk Evaluation (CARE) program.

The final community meeting occurred on October 26, 2005 in Richmond. This meeting provided background information on ozone health effects and regulatory programs, presented the Draft 2005 Ozone Strategy and DEIR and solicited public comments on these two documents. This community meeting also provided information on the new national 8-hour ozone standard by ARB staff as well as information on upcoming Air District grants and incentive programs.

In addition to the community meetings, Air District staff worked with community groups to conduct “pre-meetings.” Pre-meetings served as training sessions in which staff met with community members to provide background information on ozone planning,

answered questions, and otherwise helped participants prepare for the community meetings. Two such pre-meetings were held in Richmond and San Jose prior to the 2003 community meetings, and one pre-meeting was held in Richmond prior to the 2004 community meetings.

2003 Richmond Pre-meeting
Co-sponsored by the Community Health Initiative, Communities for a Better Environment, the West County Toxics Coalition, Contra Costa Health Services, and the Bay Area Air Quality Management District.

Wednesday, September 3, 2003, 6:00 p.m. – 8:00 p.m.
Nevin Community Center Auditorium, 598 Nevin Avenue, Richmond, CA

Agenda topics:

- Controlling Air Pollution
  - Why does the BAAQMD develop these plans?
  - What is an ozone attainment plan?
  - What is ozone; how is it formed; good ozone vs. bad ozone
  - Where does air pollution come from?
- What Types of Control Measures Are Included in an Ozone Plan and Who Has Authority Over What Sources
- The Rule making Process: Flare Case Study
- How residents can get involved (next steps)

Meeting materials:

- Ozone Sources, Plans and Controls Fact Sheet
- Existing Control Measures and Current Status
- How the Rulemaking Process Works at the Air District
- Ozone Planning – Technical Terms

2003 San Jose Pre-meeting
Informational pre- meeting conducted with community members and Silicon Valley Toxics Coalition.

Tuesday, September 16, 2003, 6:00 p.m. – 8:00 p.m.
Mayfair Community Center, 2039 Kammerer Avenue, San Jose, CA

Agenda topics:

- Health Effects of Ozone
- Background on Ozone Planning
- What Types of Control Measures Are Included in an Ozone Plan and Who Has Authority Over What Sources

Meeting materials:

- Ozone Sources, Plans and Controls Fact Sheet
- Existing Control Measures and Current Status
- How the Rulemaking Process Works at the Air District
- Ozone Planning – Technical Terms

2003 Community Meetings
All 2003 Community Meeting agendas and handouts can be downloaded at http://www.baaqmd.gov/pln/plans/ozone/2003_meetings/2003CommunityMeetings.asp

Each 2003 Community Meeting included the following agenda topics and meeting materials:

Agenda topics:

- Health Effects of Ozone
- Background on Ozone Planning
- Discussion of Potential New Ozone Control Measures
- Supplemental Environmental Projects (Rodeo and East Palo Alto only)
- Discussion on Potential Supplemental Environmental Projects (Rodeo and East Palo Alto only)

Meeting materials:

- Ozone Sources, Plans and Controls Fact Sheet
- Existing Control Measures and Current Status
- How the Rulemaking Process Works at the Air District
- Ozone Planning – Technical Terms
- Supplemental Environmental Projects (Rodeo and East Palo Alto only)

The following is a list of the 2003 Community Meeting dates and locations:

Rodeo Community Meeting
September 4, 2003, 6:30 p.m. – 8:30 p.m.
Rodeo Senior Center, 189 Parker Avenue, Rodeo, CA

East Palo Alto Community Meeting
Wednesday, September 10, 2003, 6:30 p.m. – 8:30 p.m.
East Palo Alto Senior Center, 560 Bell Street, East Palo Alto, CA

Richmond Community Meeting
Thursday, September 11, 2003, 6:30 p.m. – 8:30 p.m.
Nevin Community Center Auditorium, 598 Nevin Avenue, Richmond, CA

Oakland Community Meeting
Tuesday, September 16, 2003, 6:30 p.m. – 8:30 p.m.
Jubilee West Community Center, 1485 Chester, Oakland, CA

San Jose Community Meeting
Wednesday, September 24, 2003, 6:30 p.m. – 8:30 p.m.
Mayfair Community Center, 2039 Kammerer Avenue, San Jose, CA

San Francisco Community Meeting
Tuesday, September 30, 2003, 6:30 p.m. – 8:30 p.m.
Southeast Community College Facility, 1800 Oakdale Avenue, San Francisco, CA

2004 Richmond Pre-meeting
Co-sponsored by the Community Health Initiative, Pacific Institute, the West County Toxics Coalition, Contra Costa Health Services, and the Bay Area Air Quality Management District.

Monday, September 13, 2004, 5:00 - 7:00pm
Community Heritage Senior Apartments, 1555 Third Street, Richmond, CA

Agenda topics:

- Background
  - Why does the BAAQMD develop these plans?
  - What is an ozone strategy?
  - What is ozone; how is it formed; good ozone vs. bad ozone
  - Where does air pollution come from?
- What Types of Control Measures Are Included in an Ozone Plan and Who Has Authority Over What Sources
- The Rule making Process: Case Studies
- What Residents Can Expect from BAAQMD Community Meetings
- How residents can get involved

Meeting materials:

- Ozone Sources, Plans and Controls Fact Sheet
- Ozone Control Strategy – Technical Terms
- How the Rulemaking Process Works at the Air District
- CARE Program Fact Sheet

2004 Community Meetings
All 2004 Community Meeting agendas and handouts can be downloaded at http://www.baaqmd.gov/pln/plans/ozone/2003_meetings/2004CommunityMeetings.htm

Each 2004 Community Meeting included the following agenda topics and meeting materials:

Agenda topics:

- Ozone Background – Health Effects, Sources, and Planning Process
- Draft Ozone Control Measures
  - Overview of the Control Measure Evaluation and Review Processes
  - Draft Stationary Source Control Measures
  - Draft Mobile Source Control Measures
  - Draft Transportation Control Measures
- Draft Further Study Measures
- CARE Program
- Other Air Quality Issues or Concerns from the Community

Meeting materials:

- Ozone Sources, Plans and Controls Fact Sheet
- Summary of Draft Ozone Control Measures and Further Study Measures
- Glossary of Technical Terms
- CARE Program Fact Sheet

The following is a list of the 2004 Community Meeting dates and locations:

Petaluma Community Meeting
Wednesday, September 22, 2004, 6:30 p.m. – 8:30 p.m.
Petaluma City Council Chambers, 11 English Street, Petaluma, CA

Richmond Community Meeting
Thursday, September 23, 2004, 6:30 p.m. – 8:30 p.m.
Richmond City Council Chambers, 1401 Marina Way South, Richmond, CA

San Jose Community Meeting
Wednesday, September 29, 2004, 6:30 p.m. – 8:30 p.m.
San Jose City Council Chambers
801 N. First Street, San Jose, CA

Oakland Community Meeting
Thursday, September 30, 2004, 6:30 p.m. – 8:30 p.m.
Elihu Harris Building, 1st Floor Auditorium, 1515 Clay Street, Oakland, CA

San Francisco Community Meeting
Wednesday, October 13, 2004, 6:30 p.m. – 8:30 p.m.
California State Building, Milton Marks Conference Center, 455 Golden Gate Avenue
San Francisco, CA

Livermore Community Meeting
Thursday, October 14, 2004, 6:30 p.m. – 8:30 p.m.
Livermore City Council Chambers, 3575 Pacific Avenue, Livermore, CA

Martinez Community Meeting
Thursday, October 21, 2004, 6:30 p.m. – 8:30 p.m.
Contra Costa County Board of Supervisors Chambers, 651 Pine Street, Room 107, Martinez, CA

2005 Community Meeting
An evening community meeting on the Draft Ozone Strategy and Draft EIR was held at:
Richmond Memorial Auditorium
Wednesday, October 26, 2005, 6:00 p.m. – 8:00 p.m.
403 Civic Center Plaza, Richmond, CA

Agenda topics:

- Draft Ozone Strategy and DEIR
  - Draft Ozone Strategy Presentation
  - Q&A / Comments
  - Draft Environmental Impact Report Presentation
  - Q&A / Comments
- National 8-hr Ozone Standard (ARB staff)
  - Presentation
  - Q&A
- Air District Grants & Incentive Programs

- Other Air Quality Issues or Concerns from the Community

Meeting materials:
- Ozone Sources, Strategies and Controls Fact Sheet
- Summary of Draft Ozone Strategy and Draft EIR findings
- Glossary of Technical Terms
- National 8-hr ozone standard planning materials (ARB)
- Carl Moyer Program Fact Sheet

OUTREACH METHODS FOR COMMUNITY MEETINGS

The Ozone Strategy Community Meetings included a variety of outreach methods including:

Meeting Notice Mailed to Interested Parties:
The Air District keeps a mailing list of individuals and organizations that have expressed interest in air quality planning. That mailing list includes over 900 different interested individuals including representatives from environmental organizations, industry, community groups, local government, elected officials, other agencies, and concerned citizens.

For the 2003 Ozone Strategy community meetings, meeting notices were mailed out to this mailing list on July 30, 2003.

For the 2004 Ozone Strategy community meetings, meeting notices were mailed out to this mailing list on September 3, 2004.

For the 2005 Ozone Strategy community meeting, meeting notices were mailed out to this mailing list on October 13, 2005.

Meeting notices for the community meetings were also sent through ABAG and MTC's mailing lists of interested parties.

Meeting Notice Emails:
Email notices for the 2003 Ozone Strategy community meetings were sent to the Air District's email distribution list of elected officials, industry representatives, community and environmental groups, and other interested parties on the following dates:
- July 20, 2003
- August 6, 2003
- August 13, 2003
- August 14, 2003

Email notices for the 2004 Ozone Strategy community meetings were sent in September 2004 to the following email distribution lists:
- Ozone Working Group email distribution list
- ABAG's list of city, county and municipal government officials and employees
- County Health Officials

Email notices for the 2005 Ozone Strategy community meeting were sent in October 2005 to the following email distribution lists:

- Ozone Working Group email distribution list
- ABAG's list of city, county and municipal government officials and employees
- County Health Officials

Web Postings:
Both Air District and MTC created weblinks to the community meeting notice from their homepages, http://www.baaqmd.gov and http://www.mtc.ca.gov, respectively.

All Community Meeting agendas and handouts can be downloaded at http://www.baaqmd.gov/pln/plans/ozone/2003_meetings/index.htm

Meeting Notice Flyer Distribution:

For the 2003 Community Meetings, community representatives posted meeting notice fliers and distributed them among the neighborhoods. Almost 10,000 fliers, in English and Spanish, were distributed to announce the 2003 Community Meetings at the following community centers:

- Mayfair Community Center, 2039 Kammerer, San Jose, CA
- City of East Palo Alto, 2415 University Avenue, East Palo Alto, CA
- Ravenswood Family Health Center, 1798 Bay Road, East Palo Alto, CA
- Community Development Institute, 321 Bell St, East Palo Alto, CA
- East Palo Alto Senior Center, 560 Bell St, East Palo Alto, CA
- Olinder Community Center, 848 William, San Jose, CA
- Roosevelt Community Center, 901 E. Santa Clara St., San Jose, CA
- Contra Costa Health Services, 597 Center Avenue, Martinez, CA
- Contra Costa Health Services, 597 Center Avenue, Martinez, CA
- Neighborhood House of North Richmond, 305 Chesley Avenue, Richmond, CA
- Nevin Community Center, 598 Nevin, Richmond, CA
- West County Toxics Coalition, 1019 Macdonald, Richmond, CA
- Bayview-Hunters Point Community Advocates, 5021 Third Street, San Francisco, CA
- Literacy for Environmental Justice, 6220 Third Street, San Francisco, CA
- Bayview-Hunters Point Project Area Committee (PAC), 1800 Oakdale, Rm. 8, San Francisco, CA
- Bayview-Hunters Point Southeast Health Center, 2401 Keith St., San Francisco, CA
- Coalition for West Oakland Revitalization (CWOR), 2485 W. 14th Street, Oakland Army Base, Oakland, CA
- Chester St. Block Club Association, 343 Chester St, Oakland, CA
- Jubilee West, 1485 Chester St., West Oakland, CA

For the 2004 Community Meetings, fliers were distributed primarily through local public school districts and city offices. Fliers, in English and Spanish, were distributed to announce the 2004 Community Meetings at the following locations:

- Petaluma Public Schools
- Santa Rosa Junior College

- Petaluma Public Library
- Petaluma City Hall
- Petaluma Community Center
- West Contra Costa County Unified School District
- San Jose Unified School District
- Oakland Unified School District
- San Francisco Unified School District
- Livermore Valley Joint Unified School District
- Livermore City Hall, Library & Police Department
- Livermore Multi-Service Center
- Fantasy Books & Games in Livermore
- Martinez Unified School District
- Martinez City Hall and Police Department
- Contra Costa County Board of Supervisors Offices
- St. Catherine of Siena Catholic Church & Parish Hall
- St Catherine of Siena Elementary School

Media Outreach:

Community Calendars

For the 2003 Community Meetings, the following public access channels included the community meeting notice on their community calendars:

San Jose:	Civic Center TV/Cable Channel 37A Public Access Cable TV
Martinez:	Contra-Costa TV (CCTV) Public Access TV
Oakland:	KTOP/Cable Channel 10 Public Access Cable TV
Palo Alto:	Mid Peninsula Community Media Center (includes East Palo Alto)
SF:	SFG-TV/Access SF/Cable Channel 26 Public Access
Richmond:	KCRT / City of Richmond Public Access Cable TV

For the 2004 Community Meetings, the following public access channels and local community newspapers included the community meeting notice on their community calendars:

Petaluma:	Petaluma Community Access/Channel 28 Public Access Cable TV
	Petaluma Argus-Courier
	Santa Rosa Press Democrat
Richmond:	KCRT / City of Richmond Public Access Cable TV
	West County Times
San Jose:	Civic Center TV/Cable Channel 37A Public Access Cable TV
	Silicon Valley Community Newspaper Group: Campbell Reporter, Cupertino Courier, Los Gatos Weekly Times, Saratoga News, Sunnyvale Sun, Willow Glen Resident
	Times Newspaper Group: Almaden Times, Blossom Valley Times, Cambrian Times, Campbell Times, Evergreen Times, Santa Teresa Times, Willow Glen Times
	Exodus Newsmagazine
	Jewish Community News
	Alianza Metropolitan News
Oakland:	KTOP/Cable Channel 10 Public Access Cable TV
	KDOL TV/Cable Channel 27 Oakland Public Schools

	Oakland Tribune
	Alameda Publishing Corp.: Berkeley Tri-City Post, El Mundo, Oakland Post, Richmond Post, San Francisco Post
	Berkeley Voice
	Montclarion
	Oakland Metro Reporter
SF:	SFG-TV/Access SF/Cable Channel 26 Public Access
	Bay City News
	San Francisco Bay View
	San Francisco Independent
	San Francisco Metro Reporter/The Sun Reporter
	Potrero View, Sunset Beacon, Visitacion Valley Grapevine, West of Twin Peaks Observer, West Portal Monthly, Richmond Review, The New Fillmore, North Beach Beat/North Beach Journal, Marina Times
	San Francisco Bay Times
	El Mensajero
Livermore:	Tri-Valley Community Television (CTV30) Public Access TV
	Las Positas Express
	The Valley Times
	Tri-Valley Herald
	The Independent
Martinez:	Contra-Costa TV (CCTV) Public Access TV
	Martinez News Gazette

Press release

Thursday, October 7, 2004 – A press release entitled, "Air District Seeks Input on Measures to Reduce Summertime Smog" was sent to Livermore media as well as Bay City News to announce the October 14, 2004 Livermore Community Meeting.

Publications

"Air Currents" is a newsletter published by the Air District's Public Information and Outreach office. It covers Air District activities as well as other air quality issues of interest to industry, government agencies, and the general public. "Air Currents" has a subscription of about 3,750 and is also posted to the BAAQMD website. Articles on the ozone planning process have periodically appeared in "Air Currents," including the following:

- Spring 2003 – article on the ozone planning process kick-off
- Summer 2003 - article about the 2003 Community Meetings
- Spring/Summer 2004 – articles on the ozone planning update, national one-hour ozone standard finding of attainment, and national 8-hour ozone standard designation.

Published by MTC, "Transactions" is a monthly newsletter detailing transportation news for the nine-county San Francisco Bay Area. The Calendar section of "Transactions" provides a list of upcoming transportation-related meetings, and Ozone Working Group meetings are often listed. In the September 2004 issue, "Transactions" included reference to the 2004 Community Meetings and a link to the Air District's website.

Outreach to County Health Departments:
For the 2003 and 2004 Community Meetings, the Air District conducted outreach specifically to local County Health Departments to encourage their participation. In the both rounds of community meetings, the Air District sent an invitation letter to each County's Public Health Director, emails to health department staff, and followed up with phone calls requesting their attendance. At the community meetings, Public Health Department staff participation was particularly helpful during discussions of the health impacts of ozone and other air pollutants.

Staff from County Health Departments attended the following Community Meetings:
September 3, 2003 – Richmond Pre-Meeting
September 4, 2003 – Rodeo Community Meeting
September 10, 2003 – East Palo Alto Community Meeting
September 11, 2003 – Richmond Community Meeting
September 16, 2003 – Oakland Community Meeting
September 30, 2003 – San Francisco Community Meeting
September 23, 2004 – Richmond Community Meeting
October 13, 2004 – San Francisco Community Meeting
October 21, 2004 – Martinez Community Meeting

Public Presentations:
Staff from the District's Public Information & Outreach Division gave presentations about the 2003 Community Meetings at the following meetings:
February 6, 2003 - East Palo Alto Environmental Justice Resource Team
February 19, 2003 - Contra Costa County EJ Air Quality Working Group
April 24, 2003 - East Palo Alto Environmental Justice Resource Team

POLICY BOARDS AND COMMITTEES

Board of Directors
The Air District is governed by a 22-member Board of Directors. State law provides that the number of representatives from each county is determined by that county's population. Currently, the counties of Marin, Napa, and Solano have one representative; Sonoma, and San Mateo have two representatives; San Francisco has three representatives; and Alameda, Contra Costa, and Santa Clara each have four representatives. Occasionally through this planning process, Air District staff has made presentations to the Board and Board Committees to update them on the planning process and to receive comments and guidance from them about the Bay Area 2005 Ozone Strategy. All meetings of the Board and Board Committees are open to the public.

Dates of Board of Directors meetings and discussion topic(s):
October 20, 2004 – Ozone Strategy outreach update

Executive Committee
The Air District Board of Directors Executive Committee meets quarterly. Throughout this planning process, Air District staff has briefed the Executive Committee and received comments and guidance from them about the Bay Area 2005 Ozone Strategy. Meetings are open to the public.

Dates of Executive Committee meetings and discussion topic(s):
January 29, 2003 – Ozone planning schedule
April 30, 2003 – Modeling and public involvement process
July 30, 2003 – Status report on ozone planning; 2001 Ozone Attainment Plan and EPA 8-hr designations
October 29, 2003 – Status report on monitoring record for national ozone standards; photochemical modeling; public involvement; control measure evaluations
December 18, 2003 - Status reports on EPA proposed finding of attainment; EPA action on 2001 Ozone Attainment Plan; redesignation request requirements; control measure evaluations
June 30, 2004 – Control measure development; public outreach; and CEQA
September 29, 2004 – Ozone Strategy status update
November 29, 2004 – Ozone Strategy status update
February 4, 2005 – Ozone Strategy status update
March 30, 2005 – Ozone Strategy status update

Stationary Source Committee
The Air District Board of Directors Stationary Source Committee meets bi-monthly. Air District staff has briefed the Air District Board of Directors Stationary Source Committee and received comments from them on proposed stationary source control measures and rule development activities. Meetings are open to the public.

Dates of Stationary Source Committee meeting and discussion topic(s):
January 26, 2004 - Status report on 2001 Ozone Attainment Plan ozone control measures and further study measures; status report on identifying new ozone control measures
September 26, 2005 – Ozone Strategy status update

Public Outreach Committee
The Air District Board of Directors Public Outreach Committee meets bi-monthly. Air District staff has briefed the Air District Board of Directors Stationary Source Committee and received comments from them on proposed stationary source control measures and rule development activities. Meetings are open to the public.

Dates of Public Outreach Committee meeting and discussion topic(s):
April 26, 2004 - Status report on the public outreach to date for the Ozone Strategy and plans for community involvement and future input.

Metropolitan Transportation Commission Planning and Operations Committee
MTC's Planning and Operations committee (POC) meets monthly to consider matters relating to MTC plans, and oversees MTC's activities to make the existing transportation network operate more efficiently. Meetings are open to the public.

Dates of MTC POC meeting and discussion topic(s):
March 4, 2005 – Status report on the Ozone Strategy

Regional Agency Coordinating Committee
The Regional Agency Coordinating Committee (RACC) consists of elected officials representing the three regional agencies (MTC, ABAG and the Air District), and provides direction to staff on regional planning and smart growth strategies. Representatives of other agencies and interests may attend RACC meetings. RACC meets on a bi-monthly

basis and meetings are open to the public. Throughout this planning process, the Bay Area 2005 Ozone Strategy has been a discussion item at RACC meetings, and Air District staff have briefed and received comments from the group.

Dates of RACC meetings and discussion topic(s):
February 21, 2003 - Ozone planning schedule
April 18, 2003 - Modeling and public involvement process
June 20, 2003 – Status report on control measure evaluation, public involvement process, and modeling
September 19, 2003 – Status report on modeling, control measure evaluation, public involvement
November 21, 2003 - Status report on EPA proposed finding of attainment; OWG meeting; control measure evaluations; photochemical modeling
January 23, 2004 - Status report on redesignation requirements and continuing ozone planning and control efforts
March 19, 2004 – Status report on Ozone Strategy

Joint Policy Committee
The Joint Policy Committee (JPC) coordinates the regional planning efforts of the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), and the Metropolitan Transportation Commission (MTC) and pursues implementation of the Bay Area's Smart Growth Vision as expressed in the Smart Growth Preamble and Policies and the Smart Growth Strategy / Regional Livability Footprint Project. The JPC meets monthly and all meetings are open to the public.

Dates of JPC meeting and discussion topic(s):
March 25, 2005 – Status report on the Ozone Strategy
November 23, 2005 – Draft Ozone Strategy presentation and discussion of its linkage to other regional planning concerns.

ADVISORY COMMITTEES

Advisory Council
The Air District Advisory Council and its various committees advise and consult with the Board of Directors and the Air Pollution Control Officer (APCO). Throughout the planning process, Air District staff has briefed the Advisory Council as a whole as well as the Air Quality Planning, Technical, Stationary Source and Public Outreach Committees to receive comments from them about the 2005 Ozone Strategy. All Advisory Council meetings are open to the public.

Dates of Advisory Council meetings and discussion topic(s):
March 12, 2003 – Ozone planning schedule and modeling presentation
November 12, 2003 - Status report on EPA proposed finding of attainment; photochemical modeling; public involvement; control measure evaluations
April 6, 2004 - Preliminary draft control measure descriptions
June 15, 2004 - Draft control measure descriptions
August 3, 2004 - Draft control measure descriptions
August 4, 2004 - Draft control measure descriptions
September 8, 2004 - Draft control measure descriptions

Modeling Advisory Committee
The Air District has hired consultants to conduct photochemical modeling and to analyze meteorology and emissions on high ozone days in the Bay Area in order to better understand ozone formation within the region and transport of emissions between the Bay Area and downwind neighbors. To oversee the work that consultants are doing and to give feedback on modeling issues and protocol, the Air District has convened a technical working group called the Modeling Advisory Committee (MAC). The MAC meets bi-monthly and its membership includes staff from the Air District, ARB, other air districts, MTC, members of the scientific community, business and environmental representatives, and other interested parties with technical expertise in ozone modeling.

Dates of MAC meetings:
May 23, 2002
July 11, 2002
September 11, 2002
October 30, 2002
December 18, 2002
January 21, 2003
February 25, 2003
March 25, 2003
April 29, 2003
June 10, 2003
August 14, 2003
September 16, 2003
October 21, 2003
October 27, 2003
December 4, 2003
February 10, 2004
March 16, 2004
June 3, 2004
July 20, 2004
September 15, 2004
November 17, 2004
January 11, 2005
March 22, 2005
May 24, 2005
August 9, 2005
October 18, 2005
December 15, 2005

CAPCOA ENGINEERING MANAGERS RULE DEVELOPMENT SUBCOMMITTEE MEETINGS

In 2003, the Rule Development Managers subcommittee of the California Air Pollution Control Officers Association (CAPCOA) Engineering Managers identified a list of all feasible measures to assist local Air Districts in ozone strategy development. In August 2003, the subcommittee identified 27 source categories and identified the most stringent existing rule applicable to the source category. Bay Area Air District staff participated in the discussions and analyzed each measure for applicability and feasibility for the Bay

Area Ozone Strategy. Of the 27, the Bay Area Air District has committed to control measure development in eight of the source categories, and six additional source categories were identified for further study. Bay Area rules were defined as the most stringent available for five source categories and equivalent to the most stringent available for the remaining categories. This process is described in more detail in Appendix A, Control Measure Review and Evaluation Process.

Dates of meetings:
January 14, 2003
March 4, 2003
August 20, 2003
September 2, 2003

ARB RULE COMPARISON WORKING GROUP

In 2003 and early 2004, ARB convened a workgroup of staff from the Bay Area Air Quality Management District, Sacramento Metro Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, the Yolo-Solano Air Quality Management District and ARB to participate in a rule comparison project. The project compared the relative stringency of district rules regulating 11 source categories and compared each district rules to the most stringent in California. This workgroup first met in August 2003, and most work was coordinated through conference calls and email correspondence. The project concluded in February 2004 with the development of a report including a rule comparison summary table. For the Bay Area Air District, emission reduction opportunities were identified for five source categories, and further study is proposed for five additional source categories. This process is described in more detail in Appendix A, Control Measure Review and Evaluation Process.

Dates of meetings:
August 27, 2003
October 24, 2003
November 5, 2003
February 3, 2004
February 17, 2004

INTERAGENCY CONSULTATIONS

In February 2004, the Sacramento Metropolitan AQMD provided the Bay Area Air District with a list of control measures suggestions from TIAX Consultants, developed at the request of the Sacramento District. TIAX developed a list of 30 stationary, mobile and transportation control measure suggestions based on the inventory for the Central California Ozone Study, in addition to 19 measures under state or federal authority. Some suggestions were incorporated into existing measures or helped to make proposed control measures more stringent. In July 2004, the Bay Area Air District submitted a summary of the control measure evaluations to the Sacramento District and conducted a follow-up meeting to discuss the analysis.

The Bay Area Air District has continued to communicate with neighboring air districts about the Bay Area's ozone planning process. In October 2004, the Bay Area Air

District held a consultation meeting inviting comments from the following neighboring air districts on the draft control measures proposed for the Ozone Strategy, as required by Transport Mitigation regulations:

- Northern Sonoma County Air Pollution Control District
- Monterey Bay Unified Air Pollution Control District
- Yolo-Solano Air Quality Management District
- Sacramento Metropolitan Air Quality Management District
- San Joaquin Valley Unified Air Pollution Control District
- Placer County Air Pollution Control District
- El Dorado County Air Quality Management District
- Feather River Air Quality Management District
- Amador County Air Pollution Control District
- Calaveras County Air Pollution Control District
- Northern Sierra Air Quality Management District
- Tuolomne County Air Pollution Control District
- Mariposa County Air Pollution Control District

Comments on the draft control measures proposed for the Ozone Strategy were received from the Sacramento Metropolitan Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, Monterey Bay Unified Air Pollution Control District, and Northern Sierra Air Quality Management District.

Dates of meetings:
February 18, 2004
July 29, 2004
October 7, 2004

PUBLIC WORKSHOPS

CEQA Scoping Meeting
Pursuant to the California Environmental Quality Act (CEQA), the Air District is preparing a Draft Environmental Impact Report (DEIR) to evaluate potential environmental impacts of the Bay Area 2005 Ozone Strategy. The Air District held a public scoping meeting in April 2004 to discuss the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in the DEIR. The CEQA scoping meeting was open to the public.

Tuesday, April 20, 2004, 9:00 a.m. – 11:00 a.m.
Joseph P. Bort MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:
- CEQA and the Purpose of Scoping Meeting
- Ozone Strategy Overview
- Proposed Control Measure Descriptions
  - Preliminary draft stationary, mobile and other source measures
  - Preliminary draft transportation control measures
- Scope of Environmental Impact Report
  - Potential Environmental Impacts and Mitigation Measures

Meeting materials:

- Control Measure Descriptions
  - Preliminary draft stationary, mobile and other source measures
  - Preliminary draft transportation control measures

MTC TCM Workshop

In September 2003, MTC held a Transportation Control Measure (TCM) Workshop to provide Ozone Working Group participants and other interested parties with an opportunity to review MTC's progress on TCM evaluation and to suggest new transportation strategies for consideration. The TCM Workshop was open to the public.

Tuesday, September 30, 2003, 9:00 a.m. – 11:00 a.m.
Joseph P. Bort MetroCenter Auditorium, 101 8th Street, Oakland, CA

Agenda topics:

- Types of TCMs in current federal and state ozone plans
  - Further Study Measures in the 2001 Ozone Attainment Plan
- Suggestions for new TCMs from the public to date
- Background on calculating emission reductions from TCMs
- Preliminary evaluation results for selected measures
  - Emission reductions
  - Cost effectiveness
- Other TCM suggestions

OUTREACH ON THE DRAFT 2005 OZONE STRATEGY AND DEIR

The Air District conducted two public meetings to present, obtain input and receive public comment on the Draft 2005 Ozone Strategy and Draft EIR. An Ozone Working Group meeting was held on October 25, 2005, from 9:30-11:30am at the MetroCenter Auditorium in Oakland. An Ozone Strategy Community Meeting was held on October 26, 2005, from 6-8pm at the Richmond Memorial Auditorium in Richmond. Both meetings were open to the public and meeting notices were circulated to interested parties and posted on the Air District website.

Since the close of the public comment period on the Draft 2005 Ozone Strategy on November 9, 2005, staff have compiled public comments, drafted responses to comments, prepared the Proposed Final Bay Area 2005 Ozone Strategy and Proposed Final EIR, and released the documents for public review. The Air District Board of Directors will hold a public hearing to consider adoption of the Final 2005 Ozone Strategy and Final EIR at their December 21, 2005 meeting. Members of the public have been notified of these meetings and encouraged to attend and provide comment.

APPENDIX B - CONTROL MEASURE REVIEW AND EVALUATION PROCESS

INTRODUCTION

To satisfy all feasible measures requirements in developing the control strategy for the 2005 Ozone Strategy, the Air District investigated a wide range of potential control measure ideas from many sources. Air District staff sought ideas for new sources to control, as well as ways to strengthen existing rules and programs. To identify potential control measures, the Air District:

- Participated with staff from ARB, Yolo-Solano APCD, Sacramento Metropolitan AQMD, and San Joaquin Valley Unified APCD on a rule comparison project.
- Participated in discussions as part of the Rule Development Managers subcommittee to the CAPCOA Engineering Managers Committee to develop a statewide all feasible measures list.
- Reviewed suggestions developed by consultants for Sacramento Metropolitan AQMD.
- Investigated rules in other districts throughout California.
- Investigated control measures and programs from plans in other districts and agencies, both within and outside the state.
- Considered comments and suggestions from the Ozone Working Group.
- Considered comments and suggestions from community meetings.
- Considered comments and suggestions Air District Board members, Advisory Council members and staff.

RULE COMPARISON PROCESSES

In 2003 and early 2004, Air District staff participated in a rule comparison project with Robert Fletcher, Chief of the Planning and Technical Support Division at ARB, Lawrence Green, APCO of Yolo-Solano APCD, and staff from ARB, Sacramento Metropolitan AQMD and San Joaquin Valley Unified APCD. The project compared the relative stringency of district rules regulating 11 source categories, and compared each district's rules to the most stringent in California. The report on the results noted, "Rule comparisons can be very difficult to accomplish. While there are basic elements to regulating any industry, specific industrial facilities and inventories differ between districts, rules are developed and updated on different timelines, and guidance from ARB and EPA differ over time. Moreover, individual district SIP needs and commitments have dictated different schedules for rule development." In spite of the difficulties, the project did identify opportunities for realizing additional emissions reductions for each of the air districts. For the Bay Area Air District, emission reduction opportunities were identified for the following source categories:

- Boilers
- Turbines
- Auto Refinishing
- Organic Liquid Storage
- Graphic Arts Operations

The control strategy in Section 2 of the 2005 Ozone Strategy includes a control measure for each of these source categories.

In addition, further study measures are included for the following source categories:

- Stationary Internal Combustion Engines
- Adhesives
- Solvent Cleaning
- Degreasing
- Valves and Flanges

An investigation of the Can and Coil Coatings source category did not reveal the opportunity for emissions reductions in any district.

Also during 2003, the Rule Development Managers subcommittee of the CAPCOA Engineering Managers Committee identified a list of all feasible measures to assist districts in ozone strategy development. Air District staff participated in the discussions and analyzed each measure for applicability and feasibility for the 2005 Ozone Strategy. The CAPCOA subcommittee identified 27 source categories and identified the most stringent existing rule applicable to the source category. Of the 27, the Bay Area has committed to control measure development in the following source categories:

- Wood Products Coating
- Polyester Resin Operations
- High Emitting Spray Booths
- Large Water Heaters and Small Boilers
- Automotive Refinish Coatings
- Graphic Arts Operations
- Boilers, Steam Generators and Process Heaters
- Organic Liquid Storage Tanks

In addition, the following source categories were identified for further study:

- Fugitive Leaks and Releases from Petroleum Refineries and Chemical Plants
- Food Product Manufacturing and Processing
- Commercial Charbroilers
- Architectural Coatings
- Solvent Cleaning and Degreasing
- Adhesives and Sealants

The remaining source categories – hydrogen plant processing vents, organic liquid transfer operations, soil decontamination, solid waste disposal sites, aerospace coating, residential water heaters, wood flat stock coating, general solvent usage, glass coating, lime kilns, metal parts coating, and gasoline dispensing – are not recommended for control measures, either because existing Bay Area rules are already the most stringent available or because the existing inventory in the Bay Area or potential reductions are nonexistent or very small (de minimis).

Staff also analyzed measures suggested for the Bay Area by TIAX Consultants, developed at the request of the Sacramento Metropolitan AQMD. TIAX developed a list of 30 stationary, mobile and transportation control measure suggestions based on the inventory for the Central California Ozone Study, in addition to 19 measures under state

or federal authority. Some of the 30 suggested measures analyzed contained more than one suggestion. Some suggestions were duplicative of others, some were already being considered as control measures and some were rejected due to a de minimis emission reduction potential. However, some suggestions were incorporated into measures proposed in the 2005 Ozone Strategy or helped to make proposed control measures more stringent. The following measures suggested by TIAX have been incorporated into proposed control measures in the 2005 Ozone Strategy:

- Refinery Wastewater Systems
- Flares
- Organic Liquid Storage
- Graphic Arts Operations
- Gas Turbines
- Boilers, Steam Generators and Process Heaters
- Indirect Source Control Incentive Measure for Construction Equipment
- Gasoline Lawnmower Replacement
- Energy Conservation
- Airport Ground Support Equipment
- Grant Programs for Vehicle Fleets
- Heavy Diesel Engine Retrofits
- Large Water Heaters and Small Boilers
- Spare the Air Program Enhancements
- Community Design Program
- Construction Equipment Idling Ordinance
- Work Trip Reduction Program

In addition, the following measures suggested by TIAX are incorporated into Further Study Measures in the 2005 Ozone Strategy:

- NO_x from Petroleum Refinery Boilers, Steam Generators and Process Heaters
- Adhesives and Sealants (as part of the CARB rule comparison)
- Solvent Cleaning and Degreasing (as part of the CARB rule comparison)
- Architectural Coating Clean-up and Surface Preparation
- Indirect Source Control for Operational Impacts
- Agricultural Pump Engines
- Free Gas Caps
- Catalytic Converter Replacement Programs

The remaining suggestions from TIAX regarding semiconductor manufacturing, NO_x from electric utility boilers, incentives to speed up replacement of portable gasoline cans with CARB certified containers, clean air labeling, private fleet requirements, oil and gas production fugitives, and asphalt concrete plants, produced de minimis emissions reductions, were not found to be cost effective or are not within the Bay Area's legal jurisdiction.

OTHER SOURCES OF CONTROL MEASURE IDEAS

In addition to the rule comparison processes, the Air District examined potential control measures from other sources. Efforts included:

- A January 23, 2003 request for control measure suggestions posted on the Air District website and mailed to over 1000 individuals, organizations, agencies and businesses who had previously expressed interest in air quality planning.
- Formation of the Ozone Working Group to facilitate public participation in the ozone planning process. The OWG has met roughly bimonthly since March 2003. Staff presents updates, answers questions, and solicits input. Control measure evaluations and descriptions have been topics at most OWG meetings.
- Staff review of other California air district plans and plan support documentation, including the draft and final 2003 South Coast Air Quality Management Plan, the San Joaquin Valley Unified APCD Amended 2002 and 2005 Ozone Rate of Progress Plan, and draft control measure suggestions prepared by consultants for the Sacramento Metropolitan AQMD.
- Staff review of rules and regulations from other California districts, particularly the South Coast AQMD.
- Review of air quality plans from Houston, TX and Atlanta, GA.
- Review of control measure suggestions made for the 1999 and 2001 San Francisco Bay Area Ozone Attainment Plans (for the national one-hour ozone standard) and for the 2000 Clean Air Plan.
- Review of suggestions submitted by:
    - Cities, counties and other public agencies
    - Environmental and community groups
    - Business and industry groups
- Consideration of comments and suggestions from six community meetings held in September 2003.
- Review of suggestions from Air District Board members, Advisory Council members, and staff.

CONTROL MEASURE EVALUATIONS

Staff developed a database for control measure suggestions, and evaluated each suggestion made. In evaluating control measure suggestions, staff consider a variety of factors, including:

- Technological feasibility of proposed controls;
- Emission inventory of the source category and total likely emission reductions from proposed controls;
- Cost-effectiveness in dollars per ton of emissions reduced;
- Public acceptability, including interests and concerns of community members;
- Whether the emission reductions are real, quantifiable, permanent, enforceable, and surplus;
- Whether reduction is of volatile organic compounds or nitrogen oxides or both;
- Rate of emission reduction;
- Any potential adverse environmental impacts;
- Socioeconomic impacts

In some cases, not all of these elements could be ascertained from readily available information. For example, emissions data for some source categories or the emissions reduction potential of some control measure may be uncertain. In these cases, further study may be warranted if the other aspects of a suggested control, such as public acceptability and adverse environmental impacts appear positive. These measures are discussed under Further Study Measures.

Of the 390 control measure suggestions considered, not including the transportation control measure suggestions evaluated by MTC, Air District staff made preliminary determinations and presented them for discussion at three Ozone Working Group meetings on January 6, 2004, January 20, 2004, and March 23, 2004. The following table represents the findings of the evaluations:

Summary of Air District Evaluations of Potential Control Measures for the 2005 Ozone Strategy

Category	Category Definition	Number
Potentially Viable Measures	Measures that meet the evaluation criteria and are recommended for the control strategy.	45
Potentially Viable Measures (Transport)	Measures that primarily control NO_x and may have limited benefit for the Bay Area, but are included to reduce transport to other regions.	12
Measures Already Implemented	Measures that already have been adopted as District regulations or have been implemented through regional or State programs.	52
Measures Needing Further Study	Measures that meet some evaluation criteria, but that require further analysis to determine whether they are potentially viable.	36
Measures Needing Funding	Measures that meet some evaluation criteria, but that require funding in order to be implemented. These are mostly incentive measures, primarily for mobile sources	18
Measures Needing Legislation	Measures that meet some evaluation criteria, but that require State or federal legislation in order to be implemented.	9
Measures That Are Not Technically Feasible	Measures for which the necessary technology is not currently available or foreseen in the reasonable future.	7
Measure That Are Not Enforceable	Measures for which there is no clear enforcement mechanism.	5
Measures That Are Not Cost Effective	Measures that meet some evaluation criteria, but for which the emission reductions are so small and/or the implementation costs are so high that the measure would not likely be cost effective.	14
Measures With Negligible Emission Reductions or No Bay Area Sources	Measures with extremely low or no emissions reductions or for which no applicable facilities exist in the Bay Area.	86
Measures Under Jurisdiction of Other Agencies	Measures for which other federal, State or local agencies have regulatory authority. These are mostly measures related to mobile sources and consumer products.	93

Note: Measures do not total 390 because they do not include all of the measures submitted by TIAX Consultants on behalf of the Sacramento AQMD, as discussed above. Those measures were received on Feb. 18, 2004, and were evaluated during Spring 2004.

Finally, based on input from the Ozone Working Group and members of the public, and further evaluation by Air District staff, the potential control measures were distilled down to the measures identified in the control strategy. Duplicate and similar suggestions were combined into control measures for applicable source categories. Control measure ideas requiring additional analysis are proposed as further study measures.

Based upon the aforementioned evaluation criteria, the proposed control measures in the 2005 Ozone Strategy appear to be technically feasible, cost effective and able to produce at least a de miminis amount of emissions reductions based on available data. However, further investigation into Bay Area sources and conditions during the rule development process could alter any of the above preliminary findings.

Bay Area 2005 Ozone Strategy

METROPOLITAN TRANSPORTATION COMMISSION

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Association of Bay Area Governments

BAY AREA

2005 OZONE STRATEGY

APPENDIX C - STATIONARY AND MOBILE SOURCE MEASURE DESCRIPTIONS

PROPOSED FINAL

DECEMBER 2005

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

939 Ellis Street
San Francisco, CA 94109
(415) 771.6000
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APPENDIX C - STATIONARY AND MOBILE SOURCE CONTROL MEASURE DESCRIPTIONS

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Stationary Source Control Measures

Mobile Source Control Measures

CONTROL MEASURE SS 1: AUTO REFINISHING

Control Measure Description

This control measure would reduce ROG emissions from automobile refinishing facilities through lower VOC limits for some categories of coatings based on the comparable South Coast Rule 1151.

Background and Regulatory History

The Air District regulates ROG emissions from auto refinish operations by setting volatile organic compound (VOC) limits on various types of paints and surface preparation solvents used in auto refinishing. In addition, the amount of some high-VOC coating is limited by a volume relationship with other coatings. This prevents "gaming" by using high-VOC coatings for general, rather than specialized purposes. Also, the rule requires the use of spray technology that is transfer efficient, to minimize the amount of paint that misses or bounces off the intended surface.

Regulation 8, Rule 45: Motor Vehicle and Mobile Equipment Coating Operations, which includes auto refinishing and new and used mobile equipment coating, was adopted in 1989. Auto refinish facilities were previously subject to the less stringent standards in Regulation 8, Rule 4: General Solvent and Surface Coating Operations, which limits facility emissions but not the VOC content of paints. The rule was also amended several times, most significantly in 1994. The emissions from auto refinishing operations (both coating and solvent) have been reduced from over 11 tons per day prior to the implementation of Rule 45 to approximately 3.3 tons per day today.

Emissions Subject to Control

The emissions from auto refinishing are included in the emission inventory as point sources. Any coating operation that uses 30 gallons of coating and solvent per year is required to have an Air District operating permit, and must submit usage information annually from which emissions are calculated. Auto refinish coating emissions are *Category 274* in the emissions inventory. *Category 275* is solvent used for surface preparation and clean up in auto refinishing and mobile coating operations.

	Emissions Subject to Control (TPD, Summer)	
Year	*Cat. 274*	*Cat. 275*
2003	2.12	1.21
2006	2.21	1.26

Proposed Method of Control

This proposal draws from two sources, South Coast Rule 1151: Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations, and a draft suggested control measure currently being developed by CARB staff that recommends 1) combining separate categories for automobiles and mobile equipment, 2) elimination of the averaging provision for compliance with VOC limits for multistage topcoats, 3)

combining other coating categories, 4) replacing the specialty coatings category with specific coatings with appropriate VOC limits, and 5) reducing VOC coating limits in a number of coating categories. In addition, the suggested control measure proposes a 25 g/l VOC limit on solvent surface preparation and cleaning operations, based on the South Coast rule.

Adoption of the South Coast limits was proposed for the 2000 Clean Air Plan and evaluated in the 2001 Ozone Plan for the One Hour Federal Standard RACM Analysis. At that time, an analysis of the lower South Coast limit for clear coatings showed a cost effectiveness of $35,000 per ton. However, as costs have come down since that analysis, the potential to reduce emissions at a reasonable cost should be re-examined.

Automobiles (motor vehicles) and mobile equipment (public transit buses, trains, bulldozers, golf carts, street cleaners, etc.) are subject to different sets of VOC limits, the more stringent for mobile equipment. Based on the suggested control measure, these would be combined and given VOC limits that would, overall, be more stringent. For multistage topcoats, the individual coatings consist of base coat (or color coat), and clear coat. Although there are often a number of base coats of varying translucency, the base coat/clear coat application form a coating system. Currently, Bay Area Regulation 8, Rule 45: Motor Vehicle and Mobile Equipment Coating Operations, allows averaging of VOC contents of the coatings in the system based on specified formulae for the number of layers of coating used. The VOC limit would be replaced by VOC limits for each type (or layer) of coating. Other coating categories, specifically in the primer stage, would be eliminated. Rule 45 currently has separate VOC limits for pretreatment wash primer, primer, precoat, and primer-sealer. The category specialty coating is proposed to be eliminated. Specialty coating is a catch-all category for typically minor use coating that does not fit within the iterated categories. It would be eliminated and replaced with two categories of coating, antiglare (safety) coating, and uniform finish coating. Both of these categories would have VOC limits significantly lower than the existing limit for specialty coatings, 840 g/l, but the existing rule constrains use of these coatings on a volume basis whereas the draft suggested rule does not. Also, some coatings would have a lower VOC limit. These, primarily topcoat and clearcoat, would make of the bulk of the emissions reduction. Finally, Rule 45 currently has an VOC limit for surface preparation solvent of 72 g/l, except for plastic parts. The proposal would set a VOC limit for all surface preparation and clean-up of 25 g/l.

Currently, staff of the Stationary Source Division of CARB have developed a draft suggested control measure in the form of a rule and have discussed it at public workshops on June 28, 2005 and June 30, 2005. CARB staff is waiting for more information from industry on a variety of topics related to the draft. CARB staff expects to present a proposal to their Board in Fall 2005. Because the auto refinish industry varies little between districts, coordination of statewide efforts is desirable.

Emission Reductions Expected

The emission reduction estimates consider only the implementation of a requirement to use high solids, low VOC clear topcoat. Additional reductions may be possible from the elimination of coating categories, however, they cannot be quantified at this time. Furthermore, a reduction in the emissions from associated solvent surface preparation and clean up should be considered. The emissions from implementation of a low-VOC clear coat standard would result in emissions reductions of 33%, or 0.7 tons per day.

Costs of Control

The control costs are based on the cost to the finisher of a high solids low-VOC clear coat, resulting in a reduction in the basecoat/clearcoat coating system or a reduction in the VOC attainable in individual coating categories. Currently, the Bay Area rule allows most coating companies to sell clear coat that has about 420 grams/liter VOC content (3.5 lbs/gal). There is also clear coat available at 250 – 265 g/l VOC content, used sometimes with higher VOC base coats to comply with the average VOC standard for basecoat/clearcoat systems. Due to increased production of low VOC clear coats because of South Coast Rule 1151 that mandates their use, the cost has come down since the 2000 investigation. High solids low-VOC clear coats are now available at lower cost than the conventional material used to meet Bay Area regulations, and the reducer or thinner used is also less expensive. Based on the clear coat alone, on which the emissions reductions are based, adoption of lower VOC standards could now save money. Some other elements of the rule could negate that cost savings, but the rule would still likely be cost effective.

Other Impacts

No significant adverse environmental impacts are expected as a result of the adoption of this control measure. The affected industry is already regulated and proposed changes in paint formulations will not be implemented in a way that will add to waste streams or impact other media.

References

South Coast Rule 1151: Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations, and staff report dated 12/11/98
2001 Ozone Plan for the One Hour Federal Standard RACM Analysis
Bay Area Regulation 8, Rule 45: Motor Vehicle and Mobile Equipment Coating Operations
CAPCOA Enforcement Managers' Automotive Coatings Model Rule, Final Draft, 7/19/02
e-mail communication with Barb Fry, ARB Stationary Source Division, 5/20/03
CARB workshop announcement, suggested control measure and summary, June, 2005

CONTROL MEASURE SS 2: GRAPHIC ARTS OPERATIONS

Control Measure Description

This control measure would reduce ROG emissions from printing operations by reducing the allowable VOC limit for flexographic ink used on porous substrates and by limiting the VOC content of clean up solvent used on flexographic presses.

Background and Regulatory History

The Air District regulates ROG emissions from graphic arts operations by setting volatile organic compound (VOC) limits on various types of inks and coating used in printing press operations. Also, fountain solutions used to wet image plates and solvents used to clean presses are limited by vapor pressure and/or VOC content. Regulation 8, Rule 20: Graphic Arts Printing and Coating Operations was first adopted in 1980. The initial rule was based on an EPA Control Techniques Guideline for rotogravure and flexographic presses. Amendments in 1984 established standards for both letterpress and lithographic printing, and subsequent amendments made the limits applicable to smaller facilities, lowered allowable VOC limits and implemented the Bay Area Stratospheric Ozone Policy. Approximately 1600 graphic art establishments operate in the Bay Area, ranging from small local printing operations to large newspaper, magazine, and packaging operations.

Emissions Subject to Control

The emissions from printing operations are included in the emission inventory. Any printing operation that uses 30 gallons of coating or ink and solvent per year is required to have an Air District operating permit, unless the materials have less than 1% VOC by weight. This exemption has been a driving force in the development of soy based lithographic printing inks that have less than 1% VOC. The emissions inventory lists categories for gravure printing, flexographic printing, letterpress printing, lithograhic printing, silk screening and small in-house printing. The emissions that are the subject of this control measure are in category # 109 in the emissions inventory, which are all point sources.

	Emissions Subject to Control (TPD, Summer)	
Year	*Cat. 109 ink*	*Cat. 109 cleanup*
2003	0.36	0.06
2005	0.36	0.06

Proposed Method of Control

The CAPCOA All Feasible Measures review found the Sacramento Metropolitan Air Quality Management District (AQMD) and South Coast AQMD graphic arts rules to be the most stringent rules considered feasible. In the South Coast, graphic arts (printing) operations are controlled by Rule 1130: Graphic Arts. In Sacramento, graphic arts operations are controlled by Rule 410: Graphic Arts Operations. Bay Area graphic arts

operations are controlled by Regulation 8, Rule 20: Graphic Arts Printing and Coating Operations.

South Coast Rule 1130: Graphic Arts has one ink VOC limit that is more stringent than the Bay Area limit. Flexographic ink used on porous substrates are subject to a VOC limit of 225 grams/liter. All flexographic inks used in the Bay Area are subject to a VOC limit of 300 grams/liter.

Sacramento Rule 410: Graphic Arts, has no VOC limits for inks, coatings or adhesives that are more stringent than the VOC limits in Bay Area Rule 20. In fact, several ink VOC limits for screen printing are less stringent than Bay Area limits. However, the Sacramento rule does have a more stringent clean up limit for solvent used to clean flexographic presses. The clean up solvents limits in both rules are expressed in terms of VOC content or vapor pressure or both, depending on the type of printing press or press component being cleaned. The Sacramento limit for flexographic press clean up solvent is 100 grams VOC/liter and 3 mm Hg vapor pressure. The Bay Area limit is 810 grams VOC/liter and 21 mm Hg vapor pressure. However, the South Coast has even more stringent VOC limits for graphic arts equipment clean up. The South Coast has adopted stringent VOC limits that become effective on 7/1/2005 and has no limits on the vapor pressure of solvents. The South Coast limits for clean up do not go into effect unless a technology review in 2004 finds them feasible. Among the South Coast VOC limits for clean up solvents, a 25 grams VOC/liter limit is in effect (SCAQMD Rule 1171) currently for clean up solvent used on flexographic presses, more stringent than the Sacramento limit.

The CAPCOA All Feasible Measures review process does not consider future effective VOC limits that require a technology review to be feasible. The feasibility, however, changes as the limits become effective and technology becomes available. Consequently, this control measure only analyzes the potential emissions reductions from the 25 gram per liter VOC limit for flexographic clean up solvent and 225 gram per liter VOC limit for flexographic ink, although additional emission reduction opportunities from the source category may be discovered during the rule development process.

Emission Reductions Expected

The Bay Area inventory for flexographic printing shows 0.36 tons per day organic emissions from printing and 0.06 tons per day organic emissions from solvent clean-up operations. A reduction in the allowable VOC content of flexographic ink could yield a 25% reduction [0.36 * (1 - 225/300) = 0.09 tons per day]. A reduction in the allowable VOC content of the flexographic clean up solvent would yield 0.058 tons per day [0.06 * (1-25/810)]. Combined emissions reductions are 0.15 tons per day. The emission reductions may be less, however, as the South Coast clean up solvent limit only affects flexographic printing on porous substrates. Under Rule 1130, non-porous substrates, such as food packaging film, are allowed to use ink of 300 grams VOC/liter, which is the same as the Bay Area standard.

The potential emission reductions from this control measure appear to be greater than de minimis. In addition, the South Coast technical evaluation of lower VOC lithographic press clean up solvent, scheduled for 2004, may add to the potential emission reductions. The emissions from clean up solvent from litho presses in the Bay Area is currently 0.75 tons per day.

Costs of Control

Lower VOC flexographic ink is priced comparably with 300 g/l ink. Costs for lower VOC clean up solvent have yet to be determined.

Other Impacts

No significant adverse environmental impacts are expected as a result of the adoption of this control measure. The affected industry is already regulated and proposed changes in ink or cleaning solvent formulations will not be implemented in a way that will add to waste streams or impact other media.

References

Sacramento Metropolitan AQMD Rule 410: Graphic Arts
South Coast AQMD Rule 1130: Graphic Arts Operations, and staff report dated Sept., 1999
South Coast AQMD Rule 1171: Solvent Cleaning Operations
Telephone conversation, Gerald Boneto, California Printing Industries Council, 2/25/2004
Telephone conversation, Duke Nickoley, Flint Ink, 3/1/2004

CONTROL MEASURE SS 3: HIGH EMITTING SPRAY BOOTHS

Control Measure Description

This control measure would reduce ROG emissions from coating operations that emit in excess of 20 tons of emissions per year. It would require a reduction beyond the use of coatings that comply with existing Air District rules. Spray booths or enclosed coating operations could be abated to meet a standard based on a percent reduction requirement, or alternative lower emitting coating technology could be sought.

Background and Regulatory History

The Air District regulates industrial and commercial coating through industry or substrate specific rules. Due to the vast number of coating applications, fifteen of the fifty Air District organic compound rules affect these types of coating applications. Each rule sets specific volatile organic compound (VOC) content limits on various types of inks, coatings or adhesives, although the option exists in each rule to meet the VOC limits by the use of add on control technology. In addition, Regulation 2, Rule 2: New Source Review, requires the use of Best Available Control Technology (BACT) for new or modified sources that emit more than 10 pounds of organic compounds per day. For larger coating sources, BACT has required installation of abatement technology. Consequently, some of the sources that would be subject to this control measure would already meet the mandates for additional control. The South Coast has already implemented this control measure. Rule 1132: Further Control of VOC Emissions from High Emitting Spray Booth Facilities, is derived from the South Coast's 1999 AQMP, control measure CTS-09. Rule 1132 requires coating facilities that emit 20 tons of VOC per year from spray booths to reduce emissions by 65% from a 2001 baseline, primarily through the installation of abatement equipment, although alternative compliance options exist.

Emissions Subject to Control

There are 12 facilities in the Bay Area that do surface coating that emit 20 tons VOC per year. Of these, 47% of the total emissions are from 2 facilities, New United Motors Manufacturing in Fremont and Ball Metal Beverage Container in Richmond. Five of the facilities, including New United Motors and Ball Metal, are already abated, with emissions are controlled to at least the extent required by the South Coast rule. Of the remaining seven facilities, one is a mobile equipment manufacturer, one is a can manufacturer, one a wood furniture company, two are metal parts manufacturers, and two are foundries that have significant coating emissions.

Because this rule is source specific rather than source category or industry specific, the emissions are found in several source categories in the emission inventory. It is more appropriate to look at specific facilities that would be subject to the rule. The following table shows emissions on a facility by facility basis. Emissions Subject to Control consists of the emissions from specific sources at Bay Area facilities that emit 20 tons or organic compounds per year in each of the source surface coating source categories from the emissions inventory.

Facility	*Emissions Subject to Control*	*Potential Reduction at 65%*
US Pipe and Foundry	297 lb/day	193 lb/day
McGuire Furniture	128 lb/day	83 lb/day
Gillig Corp.	198 lb/day	129 lb/day
Enclosures Engineering	185 lb/day	120 lb/day
Container Mgmt Serv.	140 lb/day	91 lb/day
Rexam Beverage Can	170 lb/day	110 lb/day
American Brass and Iron	436 lb/day	283 lb/day

The emissions total 0.78 tons per day and the reduction, assuming 65% control could be achieved on all operations, is approximately 0.5 tons/day.

Proposed Method of Control

The Bay Area, like the South Coast, has numerous rules that affect commercial and industrial coating operations. Some, such as Wood Products Coating and Automotive Refinish Coating, have already been identified for emission reductions (see Wood Products Coating and Auto Refinishing Control Measure Descriptions, respectively). Others, such as aerospace coating, have very small inventories or, such as can and coil coating, already have emissions largely controlled by abatement technology. For coating categories for which there is sufficient inventory and technical evidence that emissions can be further reduced, staff will continue to pursue emission reduction opportunities. However, this control measure is directed at various source categories at the highest emitting facilities. If emissions are sufficient, it is considered to be cost effective to abate emissions instead of reduce solvent content in coating materials. A 65% reduction requirement would also allow alternative coating technology such as ultraviolet cured coatings or very low VOC water based technology.

Several air pollution control devices are available to reduce VOC emissions from spray booths. They include commonly used control technologies such as carbon or zeolite adsorption, and thermal or catalytic oxidation, and newer technologies such as biofiltration, cryogenic condensation, ultraviolet oxidation, and hybrid concentrator/oxidation systems. A 65% reduction, as specified by the South Coast rule, could be achieved by any of these technologies.

Emission Reductions Expected

The South Coast rule only applies to emissions from spray booth operations, and exempts booths with air flows that have a low VOC concentration because control of these booths is much less cost effective. The South Coast staff report estimates that, due to this exemption, emission reductions are about 15% less than they would have been had all sources had to reduce emissions by 65%. Based on the seven currently unabated Bay Area facilities with coating emissions of 20 tons per year, and assuming a 15% of the emissions would be exempted from the requirement due to cost or technical problems, an emissions reduction of approximately 0.43 tons per day could be achieved.

Costs of Control

The South Coast estimates that the cost effectiveness for control of spray coating operations subject to the rule is about $5484 per ton of emission reduction. The 20 ton per year threshold may be adjusted to improve rule effectiveness and cost-effectiveness. The emissions from two of the facilities included, Rexam Beverage Can and American Brass and Iron, are from coating operations, but not from spray booths as specified in the South Coast rule. The emissions from Rexam Beverage Can are from tab lube applicators and the emissions from American Brass and Iron are from a dip tank. An examination of each of these facilities must be conducted to determine whether control would be cost effective for these operations.

Other Impacts

No significant adverse environmental impacts are expected as a result of the adoption of this control measure. The affected coating operations are part of existing industrial operations, so that an addition of emissions control equipment will not cause additional impacts. The proposed control option, however, will add emissions of NOx to the atmosphere if incineration is the preferred technology to comply with the proposal.

References

CST-10: Miscellaneous Industrial Coatings and Solvent Operations, South Coast 2003 Air Quality Management Plan, SCAQMD
Rule 1132: Further Control of VOC Emissions from High Emitting Spray Booth Facilities, and staff report, SCAQMD, 1/2001

CONTROL MEASURE SS 4: POLYESTER RESIN OPERATIONS

Control Measure Description

This control measure would reduce ROG emissions from polyester resin operations (fiberglass product manufacturing) by lowering some limits in Regulation 8, Rule 50: Polyester Resin Operations.

Background and Regulatory History

The Air District regulates ROG emissions from polyester resin operations by setting volatile organic compound (VOC) limits and monomer content limits. Monomers are relatively low molecular weight compounds that combine chemically to become a cured resin. Approximately 5% of resin monomers do not react, and are emitted. A reduction in allowable monomer content reduces ROG emissions. Also, for polyester resin spray-up applications, the rule requires the use of certain spray technologies that are relatively transfer efficient to minimize the amount of resin that misses or bounces off the intended surface. Regulation 8, Rule 50: Polyester Resin Operations, was adopted in 1990. Only minor amendments to the rule have been adopted since 1990.

Emissions Subject to Control

The emissions from polyester resin operations are included in the emission inventory as point sources. The emissions from this source category include organic emissions from mixing, pouring, impregnating, injecting, forming, spraying and curing with polyester resins. Any polyester resin operation is required to have an Air District operating permit, and must submit usage information annually. Emissions are calculated from the submitted information. Polyester resin operations are found in Category 45: Fiberglass Products Manufacturing in the emissions inventory. Clean-up solvent used in polyester resin operations is almost all acetone, a negligibly photochemically reactive solvent.

	Emissions Subject to Control (TPD, Summer)
Year	*Category 45*
2003	0.66
2006	0.69

Proposed Method of Control

South Coast Rule 1162: Polyester Resin Operations, amended in November 2001, sets monomer content standards for polyester resins used in a variety of applications. Currently, the Bay Area rule allows a monomer content of 35%, or 50% for materials used for corrosion-resistant or fire-retardant service. The South Coast rule allows from 10% to 35% for specified types of general purpose resins, 48% for resins used for corrosion-resistant service, 38% for fire-retardant service, and 40% for high strength service. The South Coast rule also sets monomer content standards for gel coats and requires the use of non-atomizing spray application equipment, which is stated to reduce emissions by 40%.

Emission Reductions Expected

The Bay Area emissions inventory shows that polyester resin (fiberglass) products manufacturing operations emit 0.66 tons organic compounds per day. The South Coast rule development staff report states that the amendments adopted in November 2001 reduce emissions by 68%. In the Bay Area, this would achieve a reduction of approximately 0.45 tons organic compounds per day, although the previous South Coast rule had some provisions slightly more permissive than the existing Bay Area rule. At this time, the South Coast has delayed the non-atomizing spray provisions for gel coats from July 2003 until July 2005.

Costs of Control

The staff report for the 2001 amendments to South Coast Rule 1162 estimates the cost effectiveness of this measure at approximately $800 per ton ROG emissions reduced. Typically, improvements in transfer efficiency can save operators money because less material is used.

Other Impacts

No significant adverse environmental impacts are expected as a result of the adoption of this control measure. Styrene, a toxic air contaminant, is the predominant organic compound emitted from polyester resin operations. A reduction in ROG emissions would also reduce exposure to styrene.

References

South Coast AQMD Rule 1162: Polyester Resin Operations, and staff report, SCAQMD, November, 2001
ARB-CAPCOA Suggested Control Measure For Polyester Resin Operations, CAPCOA Technical Review Group and CARB, September, 1990.

CONTROL MEASURE SS 5: WOOD PRODUCTS COATING

Control Measure Description

This control measure would reduce ROG emissions from wood coating facilities by lowering some VOC limits in Regulation 8, Rule 32: Wood Products Coating.

Background and Regulatory History

The Air District regulates ROG emissions from wood coating facilities by setting volatile organic compound (VOC) limits on various types of coatings used on wood, clear and pigmented topcoats, sanding sealers, penetrating sealers (wash coats), fillers and stains. Also, the rule requires the use of spray technology that is transfer efficient to minimize that the amount of paint that misses or bounces off the intended surface.

Rule 32 regulates coatings used in the manufacturing of furniture, kitchen cabinets, outdoor speakers, picture frames, bathroom vanities and other wood products. Rule 32 was adopted in 1983 and amended several times. The most significant amendments were in 1991 and 1995. The rule exempts certain types of products and operations for which low VOC technology is not appropriate, such as musical instruments, antique refinishing and foundry patterns. Emissions from wood product coating have been reduced by 50% through the implementation of VOC limits in the rule. A reduction in the number of facilities operating in the Bay Area has also reduced emissions from this source category.

Emissions Subject to Control

The emissions from wood coating operations are included in the emission inventory as point sources. Any coating operation that uses 30 gallons of coating and solvent per year is required to have an Air District operating permit, and must submit usage information annually from which emissions are calculated. Wood product coating emissions are found in Category 256 in the emissions inventory. Category 257 is surface preparation and clean up solvents used in wood finishing operations.

	Emissions Subject to Control (TPD, Summer)	
Year	*Cat. 256*	*Cat. 257*
2003	2.74	0.44
2006	2.78	0.46

Proposed Method of Control

Several other California districts have adopted VOC limits that are more stringent than the Bay Area's. Generally, the difference between rules is marginal currently, but the other rules become more stringent in July, 2005. The following table illustrates the major differences in the rules in four districts, expressed in allowable VOC content in grams/liter.

Coating	Bay Area current	South Coast[2] effective 7/05	Sacramento[2] effective 7/05	San Joaquin[2] effective 7/05
Clear topcoat	275/550[1]	275	275/550[3]	275
Sanding sealer	550	275	275	275
Color topcoat	275/550[1]	275	275	275
High solid stain	700	350	350	240
Low solid stain	480	120	120	120
Filler	500	275	275	275
Wash coat	480	120	120	120

Notes:
(1) The lower limits are for general wood products, the higher are for furniture.
(2) Other coating limits apply.
(3) The higher limit is for conversion varnish, a type of clear or colored topcoat.

The current Bay Area limits in Rule 32 are higher than the future limits in the other rules, 550 g/l for clear and colored topcoats and sealers, except for the Sacramento limit for conversion varnish, 700 g/l for high solids stains, and 480 g/l for low solids stains and washcoats. Based on the other districts adopted future limits, the following VOC limits are suggested for consideration, at a minimum:

High solids stain	350 g/l
Sealers	275 g/l
Filler	275 g/l
Low solids stains	120 g/l
Wash coats	120 g/l

Emission Reductions Expected

A 1998 study conducted by UC Davis under ARB contract 93-343 found that high solids stains were 15% of the volume of coatings used, sealers were 23%, fillers were 3% and low solids stains and washcoats were 6%. The following table illustrates potential emission reductions from the above suggested limits, assuming that the volume percentage coating used is equivalent to a percentage of emissions and that there was no reduction in volumes used due to a higher solids content of lower VOC materials.

Coating	**Current VOC (g/l)**	**Suggested VOC (g/l)**	**Calculation**	**Reduction tons/day**
High solid stain	700	350	2.74*0.15* (700–350)/700	0.21 t/dy
Sealers	550	275	2.74*0.23* (550–275)/550	0.31 t/dy
Fillers	500	275	2.74*0.03* (500-275/500	0.04 t/dy
Low solid stain	480	120	2.74*0.06* (480-120)/480	0.12 t/dy
Wash coat	480	120	Included with low solid stains	

Together, the potential emission reduction is 0.68 tons per day. This does not include potential reductions from clear topcoats, which represent 48% of the volume of coating

used. Because of the potential based on volume, and the lower limits in other rules, lower VOC limits should be investigated.

Costs of Control

In the staff report for the proposed amendments to South Coast Rule 1136, the cost effectiveness was estimated to range from $1900 to $2900 per ton for waterborne systems, and for acetone reformulated coatings to be slightly less, about $1600 per ton. At an inflation rate of 3%, this equates to a range of $2406 per ton to $3674 for waterborne coatings and $2026 per ton for acetone coatings. This is within the range of cost effectiveness of other surface coating control measures.

Other Impacts

During the course of rule development in 1990 and 1995 for Bay Area Regulation 8, Rule 32: Wood Products Coating, it was found that the Bay Area is home to a unique set of custom furniture and millwork manufacturers and antique refinishers, for which coatings designed for large factory environment applications would not be able to be employed. Consequently, coating technology that meets the requirements of wood product manufacturers in other districts may not be applicable to the Bay Area.

When the South Coast rule requirements came into effect, they found an increase in the use of an ozone depleting compound, 1,1,1 trichloroethane, of about 1 ton per day. Since that time, however, the Montreal Protocol and 1990 Clean Air Act amendments have phased out the production of this compound.

Many California districts have VOC limits on strippers. Most commercial furniture refinishers use methylene chloride for wood stripping. Methylene chloride is a toxic compound and has been declared negligibly photochemically reactive by EPA. It is exempt from controls as a VOC in those rules outside of the Bay Area that have stripper limits. In Bay Area Rule 32, methylene chloride is a VOC. Conseqently, a reduction in the allowable VOC content for strippers in the Bay Area may be technically infeasible. Methylene chloride emissions from stripping operations, however, may be limited either through the existing Bay Area risk reduction program or through the development of a statewide Air Toxic Control Measure.

Other than the minor impacts discussed above, no potential adverse environmental impacts are expected as a result of the adoption of this control measure.

References

Industrial Surface Coatings-Wood Furniture & Fixtures Emission Inventory Development, Robert P. Anex, et al, U.C. Davis Civil Engineering Department, June 1998, Air Resources Board Contract 93-343

Staff report, Proposed Amendments to Rule 1136 - Wood Products Coating, South Coast AQMD, May 10, 1996

CONTROL MEASURE SS 6: FLARES

Control Measure Description

This control measure will reduce ROG emissions from flares in petroleum refineries and chemical plants. Regulation 12, Rule 12: Flares at Petroleum Refineries, was adopted by the Board of Directors on July 20, 2005.

Background and Regulatory History

Flares in refineries provide for the safe disposal of liquid and gaseous hydrocarbons that are either automatically vented from process units through pressure safety valves, control valves or manually drawn from units. Blowdown systems gather hydrocarbon flow, separate liquid from gases, recover condensable oil and water, and discharge the gases to be combusted at the flare.

The 2001 Ozone Attainment Plan contained two measures related to flaring operations at petroleum refineries. Control measure SS-15 included a commitment to adopt a regulation requiring monitoring of flows to flares and calculation of emissions from flares. On May 21, 2003, the Bay Area adopted new Regulation 12, Rule 11: Flare Monitoring at Petroleum Refineries. Further study measure FS-8 in the 2001 Ozone Plan called for an assessment of the viability of controlling flare emissions at petroleum refineries. In December, 2002 a draft technical assessment document (TAD) was completed that recommended that routine flaring could be minimized by equipment control strategies or by pollution prevention strategies.

Following completion of the TAD, between August, 2003 and February, 2005 the District convened a technical working group that met ten times and conducted two public workshops to develop a regulatory approach to reduce flaring emissions. This rule development process led to the Regulation 12, Rule 12 adopted by the Board on July 20, 2005.

Emissions Subject to Control

Emissions from flares at petroleum refineries are reported in Category 15 in the emissions inventory, Flares and Blowdown Systems. The emissions inventory for this category is derived from the calculated emissions based on data analyzed during the development of the 2001 Ozone Plan and incorporated into the emissions inventory. The base year for these data is 1999.

	Emissions Subject to Control (TPD, Summer)
Year	*Cat. 15 Flares and Blowdown Systems*
2003	7.78
2006*	0.68

Current data based on the monitoring requirements of Reg. 12-11 shows that the volume of flare gas sent to flares has been reduced by over 50% from 2001 and 2002. This

reduction can be attributed to two factors: 1) the installation at one refinery of new compressors with sufficient capacity to provide recovery of gases to be used as fuel gas at that refinery, and 2) greater attention to operating practices at refineries that have minimized the need for flaring. Also, improvements in flow monitors and better gas composition information are helping to replace engineering assumptions made for the 2001 Ozone Plan with refined data and better emission estimates. Data collected since the monitoring requirements in Reg. 12-11 became effective in December, 2003 indicate that emissions from refinery flares in this time period have averaged about 0.68 tons reactive organic gases/day on average.

Method of Control

Flaring in refineries can be roughly categorized as being one of three types, routine flaring as part of petroleum product manufacturing, flaring during startups and shutdowns of process units, and flaring during process upsets and emergencies. The reductions already achieved in flaring are primarily the result of reduced routine flaring. Flares exist as emissions controls and safety devices that function during upsets, unanticipated breakdowns of pressurized equipment, or unforeseen events such as power outages. Either by carefully controlling processes, including startup and shutdown, or by equipment modifications, some flaring may be able to be eliminated.

Regulation 12, Rule 12 will reduce emissions from flares at petroleum refineries by minimizing the frequency and magnitude of flaring. The proposal includes a standard that prohibits the use of a refinery flare unless the use is consistent with an approved flare minimization plan ("FMP" or "Plan"). The rule is structured to capture reductions realized by the refineries, and to require refiners to identify and implement feasible prevention measures to further minimize flaring. In addition to the requirement to develop and implement plans, the rule will: 1) require annual updates to the FMPs; 2) require timely notification to the District when flaring occurs; 3) require refineries to conduct a causal analysis when flaring occurs; and require monitoring and recording of the pressure and water levels in the flare water seals. The flare minimization plans will be made available to the public for review and comment. A plan will only be approved if the APCO determines that all feasible flaring prevention measures have been identified, considered, incorporated and scheduled for expeditious implementation. Flaring will only be allowed in accordance with an approved FMP or for emergencies where necessary to prevent accident, hazard or release of flare vent gas into the atmosphere, based on a causal analysis. Regulation 12, Rule 12 will result in a continuous improvement process in refineries to reduce flaring.

Emission Reductions Expected

Emissions from flares fluctuate on a daily, monthly and yearly basis. The emission inventory estimates developed for the 2001 Ozone Plan are not expected to be consistent with present or future estimates. Overall, emissions are expected to continue their downward trend.

Costs of Control

Equipment control strategy costs can vary greatly depending on the specifics of each refinery. Flare gas compressors cost between one and eight million dollars depending on the size of the compressor. Also, additional gas storage capacity or equipment to

process the gas may need to be installed. Costs for operational controls or process changes that could minimize flaring may have economic benefits. The rule is structured to allow refiners to investigate and choose cost effective options for control.

Other Impacts

Flares act to burn gases released from process units to avoid fires or explosions. As long as safety considerations are not compromised, significant adverse environmental impacts are not expected as a result of adding equipment to process flare gas or making changes to minimize flaring. Large flaring events are of particular concern to communities around refineries. Implementation of this measure may reduce public exposure to emissions from these events. The affected flare systems are part of existing refinery operations, so that additional equipment added to these systems will not cause additional impacts. However, to the extent that additional control equipment is required, there may be an increase in incineration technology used to abate emissions. Incineration and flares both generate NOx emissions.

* Because flare emissions are variable and not predictable based on anticipated refinery production or material throughputs, 2004 average emission data from the flare monitoring has been used for the 2006 emissions estimate.

References

Staff Report, Proposed Regulation 12: Miscellaneous Standards of Performance, Rule 12: Flares at Petroleum Refineries, BAAQMD, July 8, 2005

Technical Assessment Document, Further Study Measure 8, Flares, BAAQMD, Dec. 2002

CONTROL MEASURE SS 7: GASOLINE BULK TERMINALS AND PLANTS

Control Measure Description

This control measure would reduce ROG emissions from gasoline bulk terminals and bulk plants by requiring backpressure monitors and alarms or controls to shut down loading when backpressure exceeds a set standard, setting more stringent liquid and vapor leak standards, increasing enforceability, and setting a more stringent emission standard.

Background and Regulatory History

The Air District regulates ROG emissions from gasoline terminals and bulk plants under Regulation 8, Rule 33, and Rule 39, respectively. Both rules also set standards for gasoline delivery vehicles. Gasoline terminals receive gasoline products by pipeline or barge and load it into trucks for delivery to gasoline dispensing facilities. Gasoline bulk plants receive gasoline products by truck and also load it into trucks for shipment to gasoline dispensing facilities. The principal difference is that bulk plants have the ability to balance or return gasoline vapors to the point of origin via truck, whereas gasoline bulk terminals must process them on site.

Rule 33 for bulk terminals was adopted in 1983 and Rule 39 for bulk plants was adopted in 1987. Rule 33 sets an emission standard of 9.6 grams per cubic meter gasoline loaded (0.08 lb/1000 gal loaded). Rule 39 sets an emission standard of 60 grams per cubic meter gasoline loaded (0.5 lb/1000 gal loaded). Both rules also require equipment maintenance, set liquid leak standards and set standards for gasoline delivery vehicles consistent with the requirements of the California Health and Safety Code. Section 41962 requires the ARB to set standards for gasoline delivery vehicles and pre-empts districts' authority to set standards or to certify vehicles.

Emissions Subject to Control

Gasoline bulk terminals and plants are considered point sources and emissions are calculated for each facility. Category 64 is for gasoline truck loading at gasoline bulk plants. Category 898 is for gasoline loading at bulk terminals. The evaporative emissions from trucks during transport and from storage tanks at bulk plants and terminals are not part of this source category and are not part of this control measure.

	Emissions Subject to Control Category, tons/day	
Year	*Category 64*	*Category 898*
2003	0.28	0.97
2006	0.28	0.97

Proposed Method of Control

This control measure, which targets gasoline bulk plants and terminals subject to Bay Area Regulation 8, Rule 33: Gasoline Bulk Terminals and Gasoline Delivery Vehicles,

and Regulation 8, Rule 39: Gasoline Bulk Plant and Gasoline Delivery Vehicles, has six specific elements:

1) A requirement to install backpressure monitors on loading racks during gasoline cargo tank loading at terminals and automatic shutoffs or alarms if backpressure exceeds 18" H20 to prevent emissions releases from cargo tanks.

2) A requirement for new vapor recovery piping from loading racks to the VRU to maintain pressure shutoff below 12" H20.

3) More stringent leak standards for liquid leaks than the current 3 drops/minute and disconnect leaks than the current 10 ml per disconnect, averaged over 3 disconnects. More stringent standards for vapor leaks than the current 100% LEL measured one inch from the leak source.

4) Incorporation of California Air Resources Board standards for bulk plant certification to clarify responsibility for compliance with the standards.

5) A prohibition on loading unless the cargo tank and terminal are compatible.

6) A reduction in the allowable emission standard for bulk terminals.

A requirement for alarms or automatic shutoffs at 12” backpressure at the loading racks would affect only new equipment installation. California standards and an incompatibility loading prohibition incorporate existing law to make the rules clearer and enforcement easier. Leak standards and disconnect standards would require increased maintenance and operator monitoring but would involve no new equipment installation.

Emission Reductions Expected

Emission estimates are derived from a reduction in the allowable emission rate from 0.08 lbs organic emissions per 1000 gallons loaded to 0.04 lbs/1000 gallons loaded. This is a 50% reduction, or 0.48 tons/day, although existing control equipment at some bulk terminals may already comply with this standard. Further reductions from backpressure monitors on vapor piping and automatic shutoffs, and more stringent leak standards are expected, but cannot be quantified at this time.

Costs of Control

Installation of a pressure monitoring and either alarms or an automatic shutoff system at the bulk terminal loading racks would eliminate excess emissions during loading from over-pressurizing cargo tanks. Estimated costs for a pressure monitoring and automatic shutoff system are between $20,000 and $35,000 initial costs, with ongoing maintenance costs after installation. An alarm system would cost less. The cost will vary depending on the number of lanes at the terminal. There are 14 bulk terminals currently operating in the Bay Area. The cost effectiveness of this proposal will be determined, along with an estimate of the potential emissions reductions from prevention of backpressure popping the cargo tank’s P/V valves. Vapor processing equipment that meets current BACT standards is expected to comply with a more stringent emission limitation without additional equipment installation.

Other Impacts

Any new equipment would be installed within existing gasoline bulk terminals. No adverse environmental impacts are expected.

References

Ken Kunaniec, personal conversations, 3/24/03, 5/1/03, 6/16/03
Bay Area Regulation 8, Rule 33: Gasoline Bulk Terminals and Gasoline Delivery Vehicles
Memo, Ken Kunaniec, BAAQMD, 10/06/03
Discussion, WSPA and bulk terminal operators, October 27, 2005

CONTROL MEASURE SS 8: MARINE LOADING OPERATIONS

Control Measure Description

This control measure will further reduce ROG emissions from marine loading operations by controlling currently unregulated cargoes, requiring more stringent emission limitations, and/or controlling housekeeping operations such as tank washing, tank venting or gas freeing aboard marine vessels that result in ROG emissions. On December 7, 2005, the Board of Directors adopted amendments to Regulation 8, Rule 44 and deleted Regulation 8, Rule 46 because the standards in Rule 46 are now incorporated into Rule 44.

Background and Regulatory History

Regulation 8, Rule 44: Marine Vessel Loading Terminals and Regulation 8, Rule 46: Marine Tank Vessel to Marine Tank Vessel Loading were both adopted in 1989. Reg 8-44 limits precursor organic emissions (ROG) that are emitted from the loading of specified organic liquids at marine terminals or emitted from the loading of tank vessels that previously contained these organic liquids. Reg. 8-44 affects mostly petroleum refineries, chemical plants, bulk terminal distribution facilities, and shipping companies. Prior to the December 7, 2005 consolidation of Reg. 8-46 requirements into Reg. 8-44, Reg. 8-46 applied to marine vessel to marine vessel loading operations, termed lightering. Reg. 8-44 (and until December 7, 2005, Reg. 8-46) requires control of specified organic liquids: gasoline, gasoline blending stocks, aviation gas, JP-4 aviation fuel, and crude oil. The existing emission standard in these rules for loading operations is 2 pounds of precursor organic compound emissions per thousand barrels of organic liquid loaded, or a 95% reduction in emissions.

In the 2001 Ozone Attainment Plan for the San Francisco Bay Area, Further Study Measure 11 called for an assessment of the viability of further controls on marine vessel loading and marine tank vessel activities. A draft technical assessment document (TAD) was completed in December, 2002. The document recommended several changes to Bay Area Reg. 8-44 and 46 and concluded that there are viable strategies to further control emissions from these operations. In addition, the TAD recommended changes to the emissions inventory to better account for emissions from unregulated cargo.

Following completion of the TAD, between June, 2002 and June, 2004 the District convened a technical work group that met six times and held three public workshops to discuss potential amendments to Reg. 8-44 and 8-46 to further reduce emissions from marine loading operations. This rule development process led to the amendments to Reg. 8-44 and 8-46 adopted by the Board on December 7, 2005.

Emissions Subject to Control

Emissions from marine vessels are divided into several categories in the emissions inventory. Categories 86 and 87 are ship and barge lightering, respectively. Categories 88, 89, and 90 are the emissions from vessel ballasting, the loading of water into a tank that contains organic vapors from crude oil, gasoline and other organic liquids, respectively. Category 91 is for cleaning and gas freeing of vessels. Categories 795 through 798 are the emissions at marine terminals at the refineries from the loading and unloading of crude oil and gasoline (including other products) in tankers and barges.

Categories 799 through 802 are the emissions from the loading and unloading of crude oil and gasoline in tankers and barges at locations other than the petroleum refineries.

ROG Emissions Subject to Control (TPD, Summer)
Categories

Year	*86, 87*	*88, 89, 90*	*91*	*795, 796, 797, 798*	*799, 800, 801, 802*
2003	0.07	1.40	0.56	0.25	0.36
2006	0.07	1.52	0.60	0.25	0.39

The reactive organic (ROG) emissions from these activities total 2.64 tons per day in 2003 and 2.83 tons per day in 2006.

The technical assessment document prepared in December, 2002 includes the results of source tests conducted on unregulated cargo. The results of these tests are not yet incorporated into the inventory data shown above.

Method of Control

The amendments to Regulation 8, Rule 44 continue to require controls for the five liquid categories listed in the current rules (gasoline, gasoline blending stock, aviation gas, JP-4 jet fuel, and crude oil) and add requirements to control other liquids with a flash point below 100 ˚F. This requirement applies to a group of volatile organic chemicals that are not listed in the current rule and are handled in relatively small quantities in the Bay Area. These cargoes produce relatively high emissions during loading or transfer. Emission reductions from controlling these cargoes would be cost effective because significant emission reductions can be achieved by controlling a relatively small volume of cargoes.

The amendments also clarify application of more stringent leak standards for the equipment that controls emissions; clarify and extend requirements for various activities such as ballasting, tank washing, purging, and gas freeing that can vent tank emissions to the atmosphere; and consolidate requirements in Regulation 8, Rule 46, concerning marine vessel to marine vessel tank loading, into Rule 44. On December 7, 2005, the Board conducted a public hearing and adopted the proposed amendments.

Emission Reductions Expected

It is estimated that ROG reductions of about 0.44 tons per day will be achieved from control of additional cargo and/or control to a more stringent level. In addition, unregulated venting emissions are estimated to be able to be reduced by 0.5 tons per day or more. However, due to Coast Guard directives, regulated venting activities may now be occurring largely outside of Bay waters. To the extent that this is the case, some venting emissions have already been reduced.

Costs of Control

The staff report for the December 2005 amendments to Reg. 8-44 and 8-46 estimated costs of control for these additional emissions reductions. Estimates of the cost to

control unregulated cargo are from $9000 to $15,000 per load. 8,500,000 barrels loaded yearly of currently unregulated cargo would cost about $448,000 yearly. Given the emission reduction estimates of 0.44 tons per year, the cost effectiveness for the control of currently unregulated cargo is approximately $2800 per ton of ROG reduced.

Control of housekeeping emissions is expected to be cost effective, because tank cleaning done under vapor recovery may speed up the process, resulting in fewer demurrage fees for shipping operators. A demurrage fee is a charge for detaining a ship beyond that necessary for loading or unloading cargo. As previously mentioned, the emissions may have largely already been transferred outside the Bay, so clarification of the standards does not have associated costs.

Other Impacts

Marine loading operations are part of existing industrial complexes, both part of and apart from refinery operations. The addition of control equipment and associated piping and hardware is not expected to result in adverse environmental impacts. However, to the extent that additional control equipment is required, there may be an increase in incineration technology used to abate emissions. Incineration generates NOx emissions.

References

Final Staff Report, Proposed Amendments to Regulation 8, Rule 44: Marine Vessel Loading Operations, Proposed Amendments to Regulation 8, Rule 46: Marine Tank Vessel to Marine Tank Vessel Loading, and Proposed Amendments to the Manual of Procedures, Volume IV, ST-34: Bulk and Marine Loading Terminals, Vapor Recovery Units, BAAQMD, November, 2005

Technical Assessment Document, Further Study Measure 11, Regulation 8, Rules 44 and 46, Marine Loading Operations, BAAQMD, Dec. 2002

Draft Staff Report, Proposed Revision and Consolidation of Regulation 8, Rule 44 and Rule 46: Marine Loading Operations, BAAQMD, Oct. 2003

CONTROL MEASURE SS 9: ORGANIC LIQUID STORAGE TANKS

Control Measure Description

This control measure would reduce ROG emissions from organic liquid storage tanks by supplementing existing requirements in Regulation 8, Rule 5: Storage of Organic Liquids.

Background and Regulatory History

Regulation 8, Rule 5: Storage of Organic Liquids, was adopted in 1978. The rule mandates equipment standards for large organic liquid storage tanks. The rule applies to tanks storing liquids with a vapor pressure of at least 0.5 psia. Larger tanks and tanks storing highly volatile liquids are required to meet more stringent standards. This control measure applies primarily to large, floating roof tanks that are typically found at petroleum refineries and chemical plants, and gasoline bulk plants and terminals. Amendments were made to strengthen Reg. 8-5 in 1985 and 1988. In 1993, amendments were made to the rule to satisfy EPA policy requirements. In 1999 and 2002, amendments were made based on Clean Air Plan measures to further reduce emissions.

The 2001 Ozone Attainment Plan included two commitments regarding organic liquid storage tanks. Control Measure SS-12 focused on inspection requirements and was implemented through an amendment to Regulation 8, Rule 5 in November 2002. Further Study Measure FS-10 focuses on enhanced control requirements for tanks. A draft technical assessment document (TAD) regarding FS-10 was released in January 2004. The TAD investigated the feasibility of requiring controls on lower vapor pressure liquids than Reg. 8-5 currently requires, retrofitting external floating roof tanks with domes to reduce evaporation from air movement across the tank, imposing more stringent tank cleaning standards, requiring external floating roof tanks to be retrofitted with vapor recovery, a provision to allow minor maintenance and encourage more frequent self-inspections, and phasing out riveted tanks currently in service.

Following the 2004 TAD, staff convened technical workgroup meetings in February, 2004 and May, 2005 and conducted tank inspections to better understand issues associated with storage tanks in May, 2004 and again in April, 2005.

Emissions Subject to Control

Emissions from storage tanks are included in the emissions inventory in Petroleum Refinery Evaporation, Storage Tanks. Categories 55, 56, 57, and 58 address cone roof tanks, external floating roof tanks, internal floating roof tanks, and other tanks, respectively. Category 940 addresses tank cleaning in petroleum refineries. Fuels Distribution contains the emission inventory categories for gasoline tanks in bulk terminals and bulk plants (Categories 62 and 63). Other organic liquid storage tanks are found in Categories 84 and 85, which address cone roof tanks and other types of tanks, respectively, in both point and area sources. This control measure focuses on point (permitted) sources.

Emissions are derived from AP-42 correlation equations. The technical assessment document recommends that several elements in the calculations change, because the

equations currently in use do not account for evaporative losses through deck fittings and do not account for "zero-gap" seals that are required on many tanks. Potential changes to the calculations are the subject of ongoing discussions with refinery representatives.

Emissions Subject to Control (TPD, Summer)
Categories

	55	*56*	*57*	*58*	*940*	*62 - 63*	*84*	*85*
2003	2.10	1.31	.08	.05	.05	.56	.78	.15
2006	2.19	1.36	.08	.05	.05	.56	.82	.15

The ROG emissions subject to control total 5.08 tons per day in 2003 and 5.26 tons per day in 2006.

Proposed Method of Control

The draft TAD has several recommendations to reduce emissions from organic liquid storage tanks: 1) a requirement for domes to reduce wind speed over floating roof tanks that store liquids with at least 3.0 psia vapor pressure, 2) improved standards for degassing and cleaning tanks and for storing and transporting removed sludges, and 3) implementation of an inspection and maintenance program that provides an incentive for more frequent tank inspections. Since the TAD was released, staff has received more information on tank seal criteria on external floating roof tanks in refineries. A more detailed review of the emissions and cost effectiveness of these tanks indicates that the proposal to require domes on external floating roof tanks does not appear to be cost effective.

The TAD did not recommend that three items be pursued as controls: 1) lowering the applicability of the rule to lower vapor pressure material, 2) requiring external floating roof tanks to be retrofitted to internal floating roofs or fixed roofs with vapor recovery, and 3) phasing out of riveted tanks.

Emission Reductions Expected

The overall emission inventory for tank cleaning is very small, although as tanks are cleaned infrequently, the emissions may be significant on days when tank cleaning occurs. Further work will quantify potential emission reductions from sludge handling. Also, emissions reductions for an inspection and maintenance program have not been determined.

Costs of Control

Cost effectiveness for the proposed amendments will be determined. Costs are expected to be reasonable. Standards for controlling degassing of tanks and handling sludges are already in effect in other air districts. Implementing an inspection and maintenance program is expected to be a cost benefit because such a program will enable tank owners to avoid District enforcement action while reducing emissions.

Other Impacts

Refinery and non-refinery tanks exist in industrial areas. Additional requirements related to tank cleaning or maintenance programs are not expected to have any adverse environmental impacts. No significant adverse environmental impacts are expected as a result of the adoption of this control measure.

References

Proposed Rule 1178: Further Reductions of VOC Emissions From Storage Tanks At Petroleum Facilities, Staff Report, South Coast AQMD, December 11, 2001
Technical Assessment Document, Further Study Measure 10, Organic Liquid Storage Tanks, BAAQMD, January, 2004
Conversation, Julian Elliot, February 26, 2004
e-mail and data submission, Ferry, Rob, The TGB Partnership, October 22, 2004
Conference call, WSPA and Rob Ferry, The TGB Partnership, November 15, 2004

CONTROL MEASURE SS 10: PRESSURE RELIEF DEVICES AND BLOWDOWN SYSTEMS

Control Measure Description

This control measure will further reduce ROG emissions from pressure relief devices in petroleum refineries and chemical plants through improved inspection, monitoring and recordkeeping. On December 21, 2005, the Board of Directors adopted amendments to Regulation 8, Rule 28 regarding pressure relief devices, and adopted the staff recommendation not to proceed with further regulatory amendments to address atmospheric blowdown systems at this time.

Background and Regulatory History

Pressure relief valves (PRVs) or pressure relief devices (PRDs) are safety devices installed in refinery and chemical plant process units on pressure vessels and tanks. They function to release overpressures that could threaten the integrity of the process vessel or tank. These devices are typically vented either directly to atmosphere through a PRV or PRD, or to atmosphere through a blowdown system. Some blowdown systems at one Bay Area refinery vent to atmosphere with limited controls; most are vented to a flare.

Episodic releases of ROG emissions from pressure relief devices are regulated in Regulation 8, Rule 28: Pressure Relief Devices at Petroleum Refineries and Chemical Plants. Reg. 8-28 was first adopted in 1980 and significantly amended on December 17, 1997. The amendments require refineries to conduct PRD monitoring, reporting, and release prevention planning. Prevention planning is designed to prevent releases from occurring and may include such measures as: flow, temperature, level and pressure indicators with interlocks, deadman switches, monitors, or actuators; routine inspection and maintenance programs; design changes; or deluge systems. The rule also requires controls for new PRDs and for PRDs that have repeat releases. In the 2001 Ozone Attainment Plan for the San Francisco Bay Area, Further Study Measure 8 called for an assessment of the viability of further controls on PRDs and blowdown systems in. A draft technical assessment document was completed in December, 2002. The document recommends several changes to Bay Area Regulation 8, Rule 28 and identifies two strategies to further control emissions from these devices.

Blowdown systems that vent to atmosphere are only found in one Bay Area refinery. These blowdown systems are not able to be easily or cost-effectively controlled directly, however, due to the variable flow to and from them. Many of the inputs are controlled by pressure relief valves; these are subject to the provisions of Reg. 8-28. Many of the other inputs are excess steam or water. The emissions from blowdown systems that are not episodic, those from other than pressure relief valves, are periodic. Periodic emissions occur from cleaning, maintenance, and start-up and shutdown activities. They occur from the blowdown systems because organic liquids and vapors flow into the blowdown systems through manually operated valves. These emissions are subject to various other District rules, such as Regulation 8 rules controlling miscellaneous operations, vessel depressurization or fugitive emissions.

District staff convened technical workgroup meetings in May, 2005 and again in October, 2005 to discuss issues related to PRDs. Staff also met separately with affected and

interested parties in October and November, 2005. Blowdown systems were addressed at a separate workgroup meeting in October, 2005. In addition, staff conducted a public workshop to discuss proposed amendments to Reg. 8-28 on September 14, 2005 and a public workshop to discuss the staff report for blowdown systems on October 27, 2005.

Emissions Subject to Control

Emissions from pressure relief devices are reported in Category 19 in the emissions inventory, *Pressure Relief Valves*. Emissions from blowdown systems are reported in Category 14, *Flares and Blowdown Systems*. Emissions from the inventory for Category 19 are shown here. The emissions inventory for these categories is derived from the annual updates submitted by the affected industries. The emission inventory for pressure relief devices since 1980 shows significant differences year to year, because of the episodic nature of the releases. For example, 2000 data shows ROG emissions of 0.6 tons per day. 2002 data, the most recent year for which plant submissions are available, shows ROG emissions of 0.18 tons per day. 2003 and future year emissions are calculated from 2002 data.

	Emissions Subject to Control (TPD, Summer)
Year	*Cat. 19 Pressure Relief Valves*
2003	0.19
2006	0.19

Regulation 8, Rule 28 also requires that emissions be calculated for releases and be submitted to the Air District. The highest calculated emission release from a single event since the 1997 amendments was 40,000 pounds (20 tons) organic compounds. This occurred during one day. The lowest calculated emission from a release event in the study was 6 pounds and the median calculated emission was between 3600 and 3700 pounds. The annual average emissions for the time period since the 1998 amendments is about 20.5 tons/year. The annual average emissions for the last five years, since the prevention measures requirements in Rule 28 took effect, is about 12.4 tons/year.

Proposed Method of Control

Based on the findings in the TAD, input from workgroup and workshop participants, and extensive staff analysis, staff proposed certain amendments to Reg. 8-28. The proposed amendments to Regulation 8, Rule 28 will:

1. Require facilities to ensure that they have the capability to detect and quantify all release events, including small releases of 10 pounds (the reporting threshold), and require facilities to demonstrate this capability to the District;
2. Require data recordings of emissions releases, inspections of pressure relief devices, and monitoring associated with pressure relief devices; and
3. Require facilities to report to the District a description of petroleum refinery process units.

Staff examined whether all PRDs should be required to be vented to control systems as a safety measure to reduce the chance of accidental releases of acutely hazardous materials. Although not justified as an ozone control measure, staff nevertheless investigated this option because of a strong concern for worker and community safety. A comprehensive overlapping web of industrial safety laws and regulations already exists, which requires operators to "design and maintain a safe facility taking such steps as are necessary to prevent releases," in the language of the federal Clean Air Act. Additional District regulation in the area of process safety would be duplicative of existing regulations and would not be well directed towards reducing community and worker risks. This conclusion reaffirms the determination of the Board of Directors' Ad Hoc Committee on Accidental Emissions in connection with the adoption of the 1997 amendments, that additional District requirements aimed at process safety would not be appropriate in Regulation 8, Rule 28.

Staff did not recommend additional regulatory control of atmospheric blowdown systems at this time because the existing District regulatory structure is sufficient to minimize emissions from these systems. On December 21, 2005, a public hearing was held on proposed amendments to Regulation 8, Rule 28 regarding pressure relief devices, and on the staff recommendation not to require further control on blowdown systems. At the hearing, the Board adopted amendments to Regulation 8, Rule 28 and adopted the staff recommendation not to proceed with rule-making on atmospheric blowdown systems at that time.

Emission Reductions Expected

Based on estimates by EPA and others, increased monitoring requirements can be expected to reduce emissions by about 20%. However, because Reg. 8-28 already requires monitoring and prevention measures, staff believes that emissions reductions would be only 5%. This would result in ROG emissions reductions of 0.62 tons per year (0.0017 tons per day). These potential emission reductions do not account for any emissions inventory adjustments based on data reported pursuant to the requirements of Reg. 8-28. The emissions reductions would be from preventing releases due to increased monitoring requirements.

The emissions on an annualized basis (tons per day annualized) are not sufficient to suggest development of a control measure. However, this control measure is recommended for inclusion in the Ozone Strategy because of the potential to reduce a large amount of organic emissions during release events curtailed because of increased monitoring. Since July, 1998 (the effective date of the Reg. 8-28 requirements) there have been 18 releases of between 0.5 tons and 5 tons ROG, and 9 between 5 and 50 tons ROG.

Costs of Control

The costs of implementing enhanced monitoring procedures are expected to be cost effective. It is estimated that the proposed amendments are expected to cost about $65,000 District-wide. These costs are considered to be reasonable. Costs of venting all PRD's to vapor recovery or disposal systems is expected to cost from about $50,000 to $1.5 million/ton annualized over 20 years depending on whether additional flares were required.

Other Impacts

The rule development effort regarding pressure relief devices recognized that the purpose of these devices is safety. PRVs and PRDs prevent over-pressurization of vessels to avoid fires or explosions. As long as safety considerations are not compromised, significant adverse environmental impacts are not expected as a result of either adding to the existing rule or requiring more control of emissions from these devices. When these devices release, there is the potential for a large amount of toxic compounds to be released in fairly close proximity to communities. Consequently, there may be a large reduction in potential acute exposure to those compounds from implementation of this control measure. To the extent that additional control equipment is required, there may be an increase in incineration technology used to abate emissions. Incineration generates NOx emissions. Except as noted above, no significant adverse environmental impacts are expected as a result of the adoption of this control measure.

References

Staff Report, Proposed Amendments to Regulation 8, Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants, BAAQMD, November, 2005

Technical Assessment Document, Further Study Measure 8, Pressure Relief Devices, BAAQMD, Dec. 2002

CONTROL MEASURE SS 11: WASTEWATER SYSTEMS

Control Measure Description

This control measure will reduce ROG emissions from refinery wastewater systems by requiring control, covers or water traps at various emission points such as open drains, sumps, junction boxes and manholes. Amendments to Regulation 8, Rule 8 to reduce emissions from wastewater collection systems were adopted by the BAAQMD Board of Directors on September 15, 2004. Further study of controls on refinery wastewater treatment systems was evaluated by staff and presented to the BAAQMD Board of Directors on November 14, 2005, upon which the Board concluded that no further amendments to Reg. 8-8 were warranted at that time.

Background and Regulatory History

The Air District regulates ROG emissions from refinery wastewater systems through Regulation 8, Rule 8 by setting equipment standards which require minimum gaps in seals around around oil-water separators, gauging and sampling wells, dissolved air flotation units, slop oil vessels, separator effluent channels and junction boxes. A 1000 ppm concentration limit for large oil-water separators is a regulatory option. Sludge de-watering units are required to have vapor recovery with a 95% destruction efficiency standard. The rule also allows vapor recovery as an option for oil-water separators, slop oil vessels and dissolved air flotation units. Regulation 8, Rule 8 was first adopted in 1979, significantly amended in 1989 and amended to address EPA policy issues in 1993 and 1994. In addition, Regulation 8, Rule 8 was amended in September, 2004. The amendments, developed as a result of Further Study Measure FS-9 in the 2001 Ozone Attainment Plan, imposed controls on the wastewater collection portion of the system.

Subsequent to the 2004 amendments, staff convened a technical workgroup to focus on wastewater treatment systems. The workgroup met in April, June, September and October of 2005 to develop testing and sampling methodology, review results of the emissions evaluation, and discuss potential controls for the refinery wastewater treatment sources. The resultant report was discussed at a public workshop on September 27, 2005.

Emissions Subject to Control

In December, 2002, the staff of the California Air Resources Board and Air District produced a technical assessment document (TAD) that characterized the emissions from refinery wastewater systems. Emissions as shown in the Air District's emission inventory are reported as point sources. Categories exist for refinery oil-water separators (Category 11), which includes fugitive emissions from process drains, and refinery wastewater treatment (Category 12), which includes the biological and/or chemical treatment, settling and clarification that occurs after the oil-water separator to meet water discharge standards. The emissions inventory is shown below

	Emissions Subject to Control (TPD, Summer)	
Year	*Cat. 11 separators*	*Cat. 12 treatment*
2003	3.63	0.13
2006	3.80	0.14

Category 11 consists of oil-water separators and process drains, as well as some other sources such as dissolved air flotation units. Process drains constitute most of the emissions, 2.43 tons/day in 2003 and 2.55 tons in 2006. The TAD estimated emissions by a combination of wastewater sampling to determine organic content, and industry and EPA emissions models to calculate emissions from refinery wastewater drains, junction boxes and manholes. These models estimate emissions to be at least 3.31 tons/day from the combination of these emission points.

In 2005, an assessment was made of emissions from the uncontrolled treatment units located at the five refineries. A total of 0.24 tons per day (tpd) of VOC emissions was estimated. Of that total, the dissolved air flotation unit vents and channel/weir at ConocoPhillips emit approximately 0.11 tpd. At the remaining four refineries, the biological treatment units cause most VOC emissions because of turbulent conditions in the units.

Method of Control

A variety of methods can provide controls for open process drains, junction boxes and manholes, such as installation of vapor recovery on emission points accompanied by a control device, seals or traps on drains and open points in junction boxes and manhole covers, and the installation of solid piping where openings to the atmosphere exist. The most cost effective option is to require the installation of water seals on these emission points and to promulgate an emission standard to verify their effectiveness along with a program to assure that the water seals are maintained. The 2004 amendments do this, or allow the option of upstream source control to reduce organic laden wastewater into the drains. This option requires periodic monitoring and controls if the source control fails to reduce emissions to the 500 ppm level, equivalent to a concentration limit from controlled drains.

In 2005, staff examined the potential to control emissions from the wastewater treatment operations. The District selected for evaluation several control technologies known to reduce VOC emissions from refinery wastewater streams. Staff considered installation of steam strippers and liquid phase carbon adsorption units to reduce the VOC content in the wastewater stream prior to its entry to secondary treatment and installation of aluminum domes over biological treatment tanks to reduce the wastewater stream's exposure to the atmosphere. District staff investigated the technical feasibility of installing these technologies at the specific refineries, the potential emission reductions to be achieved from these technologies, and the costs to install, operate and maintain them.

Emission Reductions Expected

Based on established emission reduction factors for water seals, emissions from drains, junction boxes and manholes could be reduced by 65%. The 2004 amendments to Reg. 8-8 reduced emissions by 2.1 tons per day.

Staff found that the control technologies available for wastewater treatment systems could also reduce emissions by about 65%. The technologies examined would reduce emissions by about 0.14 tons per day.

Costs of Control

Staff estimated costs for controls on collection system components for the 2004 amendments. The cost effectiveness for the drains, junction boxes and manholes ranged from $1100 to $8800 per ton reduced, depending on the component. Overall, cost effectiveness ranged from $1900 to $4200 per ton emissions reduced.

Costs are significantly greater for control of wastewater treatment systems. Assuming a VOC emissions reduction of 0.14 tons per day, cost-effectiveness based on the installation of either a steam stripper or liquid phase carbon adsorption unit was estimated from $1.42 million to $1.35 million per ton of VOCs removed, respectively. For the doming option, only ConocoPhillips and Valero refineries have their treatment systems in tanks that are suitable for doming. The other refineries have aeration lagoons and ponds that cannot accommodate a dome. The estimated cost-effectiveness to reduce emissions by doming the tanks is $25,000 per ton of VOCs reduced based on a total reduction of 0.025 tons per day, not including the costs of vapor control and construction of additional infrastructure to support the domes. Consequently, staff recommended that no further controls be required for the wastewater treatment systems. On November 16, 2005, the Board of Directors conducted a public hearing and approved the staff recommendation.

Other Impacts

No significant adverse environmental impacts are expected as a result of the adoption of this control measure. The affected wastewater systems are part of existing refinery operations, so that additional equipment added to these systems will not cause additional impacts. The proposed control option will not add to other atmospheric pollutants because additional incineration or adsorption of hydrocarbon vapors is not anticipated. In addition, the existing water treatment systems are designed to handle much greater influent than exists in normal flows. Consequently, additional hydrocarbons going into the treatment system will not result in exceedances of the refineries water discharge permits.

References

Staff Report, Proposed Amendments to Regulation 8, Rule 8: Wastewater (Oil – Water) Separators, BAAQMD, September, 2004
Staff Report, Further Study Measure 9: Refinery Wastewater Treatment Systems, BAAQMD, November, 2005

Draft Technical Assessment Document: Potential Control Strategies to Reduce Emisions from Refinery Wastewater Collection and Treatment Systems, CARB, and BAAQMD, Jan. 2003
SJVUAPCD Rule 4625: Wastewater Separators
South Coast AQMD Rule 1176: VOC Emissions from Wastewater Systems

CONTROL MEASURE SS 12: INDUSTRIAL, INSTITUTIONAL AND COMMERCIAL BOILERS

Control Measure Description

This control measure would reduce emissions of nitrogen oxides (NOx) from boilers by extending controls to boilers smaller than those currently regulated by Bay Area Regulation 9, Rule 7 and evaluating lower NOx limits consistent with those adopted by the San Joaquin Valley Unified APCD.

Background and Regulatory History

The Air District regulates NOx emissions from boilers under three separate rules, all of which were adopted pursuant to California Air Resources Board (CARB) pollution transport regulations (California Code of Regulations beginning at section 70600). Each BAAQMD boiler rule regulates a different category of boilers. BAAQMD Regulation 9, Rule 7 imposes a 30 ppm NOx limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million BTU/hr or more. Regulation 9, Rule 10 imposes a slightly more stringent NOx limit equivalent to 28 ppm on refinery boilers with a rated heat input of 10 million BTU/hr or more. Regulation 9, Rule 11 applies to extremely large boilers used to generate electricity and imposes a NOx limit equivalent to 15 ppm on boilers with a rated heat input of 250 million BTU/hr or more.

This control measure applies to boilers currently subject to Air District Reg 9-7: Nitrogen Oxides and Carbon Monoxide From Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters and those exempt by rated heat input. Smaller boilers exempt from Reg 9-7, with a rated heat of 10 million BTU/hr or less, are generally sold as “package boilers” that are equipped and shipped complete with burners, automatic controls and accessories, and mechanical draft equipment. They are generally used in high-rise office buildings, large hotels, and some industrial facilities to supply heat, steam, or hot water. A small number of boiler manufacturers – Ajax, Bryan, Cleaver-Brooks, Kewanee, Teledyne Laars, Parker, Peerless, Rite, and Thermo Pak – manufactured most of the boilers of this size installed in San Francisco.

Emissions Subject to Control

Boiler emissions are included in the BAAQMD inventory in several different categories. Emissions from boilers at power plants are found in the category called fuels combustion – power plants. Emissions from boilers at refineries are found in the category called fuels combustion – oil refineries external combustion.

The emissions from other boilers, including smaller boilers not already subject to the existing BAAQMD rules, are included in the emission inventory source category called *fuels combustion – other external combustion*. This category includes external combustion sources such as boilers, furnaces, space heaters, and ovens. Boilers subject to Regulation 9, Rule 7 (those fired on natural gas or LPG of at least 10 MM BTU/hr and those fired on other fuels of at least 1 MM BTU/hr) have air quality permits, and emissions from these boilers are included in the point source portion of this category. Most emissions from the smaller boilers are included in the area source portion of this inventory category (the exception would be small boilers located at facilities required to have a permit for other reasons). These area source emissions are

estimated by subtracting fuel usage by the point sources from total fuel usage as obtained from fuel consumption data. Emissions from both area and point sources are estimated to be 9.05 tons of NOx per day for 2003.

To determine more precisely the emissions within the other external combustion inventory category that are attributable to Bay Area boilers in the 5 to 10 million BTU/hr size range, data from a boiler database developed by the San Francisco Department of Building Inspection (DBI) was used. Although San Francisco's population represents about one-tenth of the Bay Area total population, it represents about one-fourth of the population in heavily urbanized areas. This is important because boilers are not generally found in suburban areas except at laundries, some light industrial locations, and some schools. The San Francisco boiler population was therefore multiplied by 5 and rounded to arrive at boiler population estimates for the entire Bay Area.

Based on the DBI database, there are an estimated 420 boilers with a capacity greater than 5 million BTU/hr and less than or equal to 10 million BTU/hr in the Bay Area. Total estimated NOx emissions from these boilers are set forth below. Future-year emissions in this small boiler sub-category have been derived using the same growth factors used in the broader *fuels combustion – other external combustion* inventory category. Emissions from boilers smaller than 5 million BTU/hr are calculated from the area source portion of the inventory minus the 1.9 tons/day (2003) for 5-10 million BTU/hr boilers.

	Emissions Subject to Control, TPD, Summer		
Year	*<5 MM BTU/hr*	*5–10 MM BTU/hr*	*>10 MM BTU/hr*
2003	3.07	1.90	4.08
2006	3.22	1.99	4.08

Note that these emission estimates are likely to change during rule development as better population and emissions information becomes available. For example, Bay Area boiler service companies have indicated that estimates based on the DBI database may significantly understate the numbers of boilers for this particular size range.

Proposed Method of Control

This measure would consider the limits adopted by the San Joaquin Valley Unified APCD in Rule 4306 to boilers already controlled by District Reg 9-7, extend these limits to smaller boilers in the 5 to 10 million BTU/hr range, and consider regulation of boilers in the 2 to 5 million BTU/hr range. Control would generally be achieved by installation of low-NOx burners. On smaller boilers, it may only be cost effective to implement controls on new boilers. Low-NOx burners are available on new boilers manufactured by most of the major boiler manufacturers. Low-NOx burners are available as retrofits for some models, and virtually all of these retrofits are claimed to achieve NOx levels of 30 ppm or less. For some models, however, low-NOx retrofits may be unavailable.

Emission Reductions Expected

Most of the reduction (11 tons/day of a total of 12.7 tons/day) attributable to Rule 4306 comes from large numbers of process heaters at crude oil production facilities and boilers at food processing facilities through retrofits with ultra low-NOx burners. This

indicates that the reduction in point source emissions (those boilers already subject to Reg 9-7) may be modest.

The estimated NOx emission reduction that could be achieved in the 5 to 10 million BTU/hr size range, assuming the population could be completely retrofitted, would be 1.44 tons per day. Actual emission reductions are likely to be significantly lower because many of the boilers in this size range are used for space heating. Annual usage of boilers used for space heating is relatively low, and installation of controls is not likely to be cost effective. For this reason, most boiler rules, including BAAQMD Regulation 9, Rule 7, exempt boilers with low annual usage (less than 90,000 therms). Up to 80% of boilers in this size range may be exempt, based on data developed by the Sacramento Metropolitan AQMD. Emission reductions could be higher if the number of boilers is found to be higher than currently estimated or if the standards imposed by the San Joaquin Air District are able to be implemented for a wide range of units. Any emission reductions could probably be achieved in a cost-effective manner only over a period of at least 5 years, given the likelihood that low-NOx burner retrofits will be unavailable for many existing boilers. Most air districts have allowed boiler operators at least 5 years to achieve similar emission limits.

Costs of Control

Installation of low-NOx burners is expected to have a cost effectiveness of $5000 per ton or better based on cost data developed by the South Coast AQMD during development of its Rule 1146.1 and by the Ventura County APCD during development of it Rule 74.15.1. For boilers with low annual usage, controls would be much less cost effective than $5000 per ton.

Other Impacts

Bay Area NOx reductions may reduce ambient levels of fine particulate pollution, because some fraction of the NOx emissions is ultimately converted to nitrate particles in the atmosphere. However, these reactions are not currently well understood and are difficult to quantify.

Minor adverse environmental impacts may occur as a result of this control measure. Photochemical modeling from the 1980's and 1990's and recent ambient measurements indicate that Bay Area NOx reductions are likely to cause an increase in localized Bay Area ozone levels. In addition, ambient measurements suggest an emerging "ozone weekend effect" in the Sacramento area that may mean Bay Area NOx reductions are counterproductive in reducing downwind ozone. Further information on the benefits and disbenefits of Bay Area NOx reductions may come from photochemical modeling associated with the Central California Ozone Study.

Some NOx technologies may adversely affect boiler turndown, capacity, CO levels, or efficiency. Rule provisions should be designed to avoid, for example, efficiency decreases and resulting increases in fuel use that might come from widespread use of boiler derating, water or steam injection, or burners modified to reduce flame temperatures.

Other than the minor impacts discussed above, no potential adverse environmental impacts are expected as a result of the adoption of this control measure. BAAQMD air

quality permits are not currently required for boilers with an input capacity smaller than 10 million BTU/hr unless they also fire liquid fuels. To implement this control measure, amendments to BAAQMD Regulation 2, Rule 1 to require permits for small boilers would probably be necessary. If boilers in the 5 to 10 million BTU/hr range are as numerous as boiler service companies suggest, the administrative burden for the Air District could be significant.

References

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CONTROL MEASURE SS 13: LARGE WATER HEATERS AND SMALL BOILERS

Control Measure Description

This control measure would reduce emissions of nitrogen oxides (NOx) from water heaters larger than those currently regulated by BAAQMD rules and boilers smaller than those currently regulated by BAAQMD rules. NOx limits would be imposed on units with a rated heat input capacity greater than 75,000 BTU/hr and less than or equal to 2 million BTU/hr.

Background and Regulatory History

The Air District regulates NOx emissions from water heaters under Regulation 9, Rule 6, which imposes a NOx limit of 40 nanograms NOx 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.

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, imposes a 30 ppm NOx limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million BTU/hr or more. Control measure SS-12 proposes to extend the Regulation 9, Rule 7 limits to smaller boilers with a capacity of less than 10 million BTU/hr.

The water heaters to which this measure applies are tank type water heaters similar in appearance, design, and construction to the smaller water heaters subject to Regulation 9, Rule 6. These large water heaters range in size between 75,000 and 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. The small boilers to which this measure applies are generally sold as “package boilers” that are equipped and shipped complete with burners and controls. 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.

Emissions Subject to Control

Emissions from these units along with emissions from many other types of combustion equipment are included in the BAAQMD inventory in two different categories. Some emissions from water heaters are included in the emission inventory source category called fuels combustion – domestic. Combined emissions from all types of equipment in this category are estimated to be 8.33 tons of NOx per day for 2003. Emissions from non-residential water heaters and boilers are included in the source category called fuels combustion – other external combustion, which includes external combustion sources such as boilers, furnaces, space heaters, and ovens. Emissions in this category are estimated to be 15.78 tons of NOx per day for 2003.

To determine more precisely the emissions attributable to Bay Area water heaters and boilers in the size range subject to this measure, data from a boiler database developed

by the San Francisco Department of Building Inspection (DBI) was used. Although San Francisco's population represents about one-tenth of the Bay Area total population, it represents about one-fourth of the population in heavily urbanized areas. This is important because large water heaters and boilers are not generally found in suburban areas except at laundries, some light industrial locations, and some schools. The San Francisco boiler population was therefore multiplied by 5 and rounded to arrive at water heater and boiler population estimates for the entire Bay Area.

Based on the DBI database, there are an estimated 12,300 water heaters with a capacity from 75,000 to 400,000 Btu/hr in the Bay Area. The number of boilers with a capacity over 400,000 BTU/hr and up to 2 million BTU/hr is estimated at 10,500. Total estimated NOx emissions from these water heaters and boilers are set forth below. Future-year emissions for these units have been derived using the same growth factors used in the fuels combustion – other external combustion inventory category.

Year	*Emissions Subject to Control (TPD, Summer)*
2003	5.30
2006	5.54

Note that these emission estimates are likely to change during rule development as better population and emissions information becomes available.

Proposed Method of Control

This measure would impose a NOx limit of 40 nanograms per joule of heat output as found in Regulation 9, Rule 6 on large water heaters with a capacity greater than 75,000 BTU/hr and less than or equal to 400,000 BTU/hr. For boilers larger than 400,000 BTU/hr and less than or equal to 2 million BTU/hr, the measure would impose the NOx limit of 30 ppm found in Regulation 9, Rule 7. All limits would apply to new units only. These limits would be identical to limits for new units adopted by the Santa Barbara County APCD (SBCAPCD Rule 360). Water heaters and boilers with burners capable of meeting these NOx limits are widely available from numerous manufacturers.

Rather than impose the limits only on new units, the South Coast AQMD adopted retrofit requirements (in Rule 1146.2) for units with a capacity between 400,000 BTU/hr and 2 million BTU/hr. However, because operators of the units were given approximately 10 years to comply, the requirements are similar in effect to those adopted by the Santa Barbara APCD. In addition, South Coast AQMD staff have reported a non-compliance rate of 80% with rule limits for units subject to RECLAIM. In addition, it appears that retrofits are unavailable for most of these smaller units.

Emission Reductions Expected

The total estimated NOx emission reduction that could be achieved, assuming a 10 year life expectancy for these units and replacement of all units with complying units by the end of the 10-year period, would be 3.9 tons NOx per day. This emission reduction

would be achieved year-by-year over the 10-year period as new units replace existing units.

Costs of Control

Based on cost data developed by the South Coast AQMD during development of its Rule 1146.1, cost effectiveness is expected to range from a net cost savings (due to higher efficiency of low-NOx units) to approximately $3,000 per ton of NOx reduced.

Other Impacts

Bay Area NOx reductions may reduce ambient levels of fine particulate pollution, because some fraction of NOx emissions is ultimately converted to nitrate particles in the atmosphere. However, these reactions are not currently well understood and are difficult to quantify.

Burners used to comply with the control measure may reduce energy usage. Low-NOx burners have higher thermal efficiencies than conventional units. Energy savings from use of low-NOx units may be as high as 20%.

Minor adverse environmental impacts may occur as a result of this control measure. Photochemical modeling from the 1980's and 1990's and recent ambient measurements indicate that Bay Area NOx reductions are likely to cause a localized increase in Bay Area ozone levels. In addition, ambient measurements suggest an emerging "ozone weekend effect" in the Sacramento area that may mean Bay Area NOx reductions are counterproductive in reducing downwind ozone. Further information on the benefits and disbenefits of Bay Area NOx reductions may come from photochemical modeling associated with the Central California Ozone Study.

Some NOx technologies may adversely affect boiler turndown, capacity, CO levels, or efficiency. Rule provisions should be designed to avoid, for example, efficiency decreases and resulting increases in fuel use that might come from widespread use of boiler derating, water or steam injection, or burners modified to reduce flame temperatures.

Except as noted above, no significant adverse environmental impacts are expected as a result of the adoption of this control measure. BAAQMD air quality permits are not currently required for these water heaters and boilers and would not be required for implementation of this measure. NOx limits for these units would be enforced through a sales and installation prohibition. The Air District would enforce the sales ban at the distributor level, and local building departments would prohibit installation of heaters that do not comply with rule requirements. Implementation of the measure is not expected to impose a significant administrative burden for the Air District.

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CONTROL MEASURE SS 14: STATIONARY GAS TURBINES

Background

This control measure would reduce emissions of nitrogen oxides (NOx) from stationary gas turbines through the revision of existing limits to reflect current best available retrofit control technology (BARCT).

Regulatory History

The Air District regulates NOx emissions from stationary gas turbines under Regulation 9, Rule 9. The rule was adopted in 1993 pursuant to California Air Resources Board (CARB) pollution transport regulations (California Code of Regulations beginning at section 70600). The CARB regulations required the BAAQMD to adopt by 1994 best available retrofit control technology (BARCT) for source categories that collectively amounted to 75% of the 1987 nitrogen oxides emission inventory. The BAAQMD standards for existing turbines are 9 to 42 ppm depending upon turbine size, with small turbines subject to less stringent limits.

The CARB transport regulations were amended in 2003 and now require adoption of "all feasible measures" to reduce ozone precursor emissions.

In 2002, the San Joaquin Valley Unified APCD adopted amendments to its gas turbine rule (Rule 4703) that impose turbine NOx standards more stringent than the standards found in the rules of most other air districts. The most significant of the SJVUAPCD amendments require larger turbines (greater than 10 megawatts) to meet standards of either 3 or 5 ppm, depending upon the installation date of NOx controls.

Emissions Subject to Control

Turbine emissions are included in the BAAQMD inventory in the category called fuels combustion – turbines. Estimated emissions for the category are set forth below.

Year	*Emissions Subject to Control (TPD, Summer)*
2003	1.77
2006	1.83

Staff investigating this proposal has determined that emissions from permitted stationary gas turbines from reported throughput data for 2004 is about 2.9 tons/day. The discrepancy may be due to increases in usage.

Proposed Method of Control

Most emission reductions would come from the installation of selective catalytic reduction (SCR) on large turbines (>10 MW) that do not currently use SCR to control NOx emissions.

There are 43 stationary turbines operating in the BAAQMD. Eleven of the turbines already meet 5 ppm limits, and the measure would not reduce emissions for those turbines. Another 20 large turbines currently meet 5 - 10 ppm limits using SCR. Emission reductions from requiring these turbines to meet a 5 ppm limit are likely to be minor, and cost effectiveness for controls is likely to be poor unless the limit can be achieved through catalyst resizing. Twelve large turbines are currently subject to a 15 ppm or higher limit, and adoption of the SJVUAPCD limits would require that they meet a 5 ppm limit. These turbines are all larger than 10 MW and do not use SCR for NOx control. Installation of SCR may not be feasible for all 12 turbines because of site-specific constraints.

Some very minor emission reductions might come from the installation of dry low-NOx combustors (DLN) on small tubines (<10 MW) currently subject to 42 ppm limits. The San Joaquin limits are 35 ppm limit if DLN is not available and 25 ppm if DLN is available. DLN appears to be available for less than half of the 13 Bay Area turbines in this size range. Emission reductions would be minor.

Emission Reductions Expected

Requiring turbines larger than 10 MW to meet a 5 ppm standard would reduce emissions by approximately 1.2 tons per day, assuming SCR installation is feasible and cost effective for all turbines in this category. Additional minor emission reductions may be achievable for some smaller turbines through the installation of DLN. Greater precision in the emission reduction estimate cannot be achieved without detailed investigation for each turbine.

Costs of Control

The SJVUAPCD found that cost effectiveness for the installation of SCR on turbines larger than 10 MW ranged from approximately $5,000 per ton to approximately $10,000 per ton. Cost effectiveness for the installation of DLN on smaller turbines was in this same range. The cost estimates used by SJVUAPCD for new SCR's appear to be three times higher than similar estimates from the EPA. Assuming these costs are valid, cost effectiveness of new SCR's for NOx reduction is at the high end of traditional cost effectiveness for District rules. Staff is working to refine cost estimates.

Other Impacts

Bay Area NOx reductions may reduce ambient levels of particulate pollution, because some fraction of the NOx emissions is ultimately converted to nitrate particles in the atmosphere. However, these reactions are not currently well understood and are difficult to quantify.

Minor adverse environmental impacts may occur as a result of this control measure. Photochemical modeling from the 1980's and 1990's and recent ambient measurements indicate that Bay Area NOx reductions are likely to cause localized increases in Bay Area ozone levels. In addition, ambient measurements suggest an emerging "ozone weekend effect" in the Sacramento area that may mean Bay Area NOx reductions are counterproductive in reducing downwind ozone. Further information on the benefits and disbenefits of Bay Area NOx reductions may come from photochemical modeling

associated with the Central California Ozone Study. The current assessment is that a reduction of 1.2 tons/day of NOx is below the sensitivity of the model.

Additional use of SCR would increase ammonia emissions and the hazards associated with the transportation and use of ammonia, since the SCR system relies on ammonia injection to reduce NOx.

Other than the minor impacts discussed above, no potential adverse environmental impacts are expected as a result of the adoption of this control measure.

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CONTROL MEASURE SS 15: PROMOTE ENERGY CONSERVATION

Control Measure Description

The purpose of this measure is to educate public and private entities about the link between air quality, greenhouse gas emissions and energy conservation. This measure would encourage local governments, businesses and the public to make choices that have a positive effect on energy conservation and air quality. Reduced combustion of fossil fuels through increased energy efficiency will reduce emissions of ozone precursors and other criteria pollutants, as well as reduce emissions of carbon dioxide and other pollutants contributing to global warming. This control measure would reduce emissions of criteria pollutants and greenhouse gas emissions through the voluntary adoption and enforcement of a model ordinance by local government agencies to reduce energy consumption. This measure may also include development of new Air District programs to increase energy conservation and strengthen existing Air District programs and measures already achieving some measure of energy conservation. Air District energy conservation programs may include education campaigns targeting the general public, businesses and industry through outreach programs and workshops. The Air District may also partner with local government agencies and other public agencies to encourage energy conservation.

Background and Regulatory History

Energy produced from the combustion of fossil fuels, such as gasoline or natural gas, results in air emissions of criteria air pollutants, such as those that form ozone, and greenhouse gases. According to the California Energy Commission (CEC), fossil fuel combustion provides Californians with 86 percent of the energy consumed in the State and results in the emissions of nitrogen oxides, an ozone precursor, and carbon dioxide, a greenhouse gas. Potentially large potential emission reductions from energy conservation exist in all sectors of the economy. The CEC, created in 1974, is the State's primary energy policy and planning agency, promoting energy efficiency through appliance and building standards, public education, and other programs. The CEC also is involved with developing energy technologies and supporting renewable energy programs.

The Air Resources Board, in response to AB 1493 (Pavley), has drafted a regulation to reduce greenhouse gas emissions from light-duty motor vehicles that will primarily be accomplished through increased vehicle efficiency. The draft regulation would increase the light-duty fleet fuel efficiency by approximately 30 percent, would be inexpensive to implement, could be easily achieved with current technology, and would result in a cost savings to the consumer. TCMs and mobile source measures proposed in the Ozone Strategy also achieve some measure of energy efficiency by encouraging people to drive less, use alternative and more energy efficient means of transportation, or operate vehicles more efficiently.

The Air District is currently funding a pilot project to inventory the greenhouse gas emissions in Sonoma County, make recommendations to reduce these emissions, and highlight the link between greenhouse gas emission reductions and Air District air quality programs. The pilot project will also provide valuable information on developing a model greenhouse gas emission reduction ordinance that links these emission reductions with Air District efforts to reduce emissions of other air pollutants. Many of the Air District's

efforts to reduce emissions of criteria air pollutants, such as ozone precursors, have the additional benefit of reducing carbon dioxide, the primary greenhouse gas that contributes to global warming. This measure will more strongly link energy conservation measures with carbon dioxide and ozone precursor reductions.

Market Affected

This measure would affect all sectors of the Bay Area economy including building energy and industrial/manufacturing processes, transportation and land use planning. Design and construction of residential, retail, office, commercial and industrial buildings would be affected. Building envelopes (i.e. exteriors) that reduce heating and cooling loads would be promoted, as well as more energy efficient building systems that consume less energy for heating, cooling, lighting and water heating. More energy efficient industrial and manufacturing processes would be encouraged. Land use planning that promotes alternatives to the automobile would be encouraged (see TCM 15). Transportation sectors affected would include private and public fleets and would promote more energy efficient and alternate means of transportation.

Proposed Method of Control

This measure would be implemented through a combination of efforts. The Air District will develop a model Energy Efficiency Ordinance and encourage voluntary adoption by local government agencies. Agencies may adopt the Air District's model ordinance or modify the ordinance prior to adoption. The Air District will encourage agencies adopting the Energy Efficiency Ordinance to promote the ordinance throughout the agency's jurisdiction. In addition, the Air District may conduct a public education program promoting energy efficiency that links energy efficiency with combating air pollution and global warming. The Air District may also explore potential incentives that could be provided to promote projects and programs that in addition to reducing air pollution are energy efficient and reduce global warming gases. The Air District may also promote measures to reduce temperatures in urban areas through tree planting and the use of building and paving materials with high reflectivity. These measures would reduce urban ambient temperatures, and thus reduce energy demand for building cooling as well as contribute to reduced photochemical production of ozone.

Emissions Reductions Expected

Quantification of emission reductions from this measure is very difficult and would depend on the breadth of implementation and the available funding for implementation. Based on the growing concern over global warming, adoption and implementation of Energy Efficiency Ordinances (or similar climate change or greenhouse gas ordinances) by local government agencies may accelerate and thereby increase the effectiveness of this measure. The emission reductions achieved through enhancing the effectiveness of TCMs and mobile source measures from activities such as mode shifts to less polluting forms of transportation and reduced equipment idling are addressed in those measures.

Costs of Control

The annual costs of this measure cannot be determined at this time. Air District costs would include staff time for developing and implementing a model Energy Efficiency Ordinance. Costs may also include staff time for developing a public education program,

including the printing and distribution of materials and media and advertising costs, as well as providing incentives for the implementation of energy conservation measures. Many energy efficiency measures promoted through existing local, State and national programs incorporate cost effective measures that provide a financial benefit to the participant (i.e. there is a savings). For example, walking, bicycling or taking transit, instead of owning or driving a car, can save an individual $5,000 -$6,000 a year in the Bay Area.

Other Impacts

This measure would also reduce:

- Peak energy demands at utilities thereby reducing the need for construction of power plants to meet peak demands,
- Emissions of carbon dioxide, a global warming gas, and
- Consumer utility bills and fuel costs,
- Exploration, extraction, transportation and use of fossil fuels that damage water and land resources (e.g. oil spills that destroy plant and animal life and leave waterways and their surrounding shores uninhabitable).

CONTROL MEASURE MS 1: DIESEL EQUIPMENT IDLING ORDINANCE

Background

This control measure would reduce emissions from the idling of diesel equipment through the voluntary adoption and enforcement of a model ordinance by local government agencies. Reducing diesel equipment idling will primarily reduce emissions of NOx, particulate matter and toxic air contaminants. The measure would limit the amount of time operators of diesel equipment, including heavy-duty trucks, buses and construction equipment, idle their engines. This measure would reduce emissions from heavy-duty trucks at warehouse/distribution centers, port terminals, truck stops and rest areas. This measure would also reduce emissions from idling diesel buses and heavy-duty diesel construction equipment. Diesel equipment idling for extended periods of time can produce localized high concentrations of emissions that affect the health of the operators and the neighboring communities.

Regulatory History

Anti-idling legislation has been enacted in at least 18 states across the country with some legislation targeting specific urban areas and others with statewide restrictions. The majority of the restrictions limit idling to 5 minutes. In December 2002, the ARB adopted its first anti-idling, airborne toxic control measure (ATCM) that would limit school bus idling at or near schools. That ATCM requires a driver of a school bus, urban bus, or other commercial motor vehicle to manually turn off the bus or vehicle engine upon arriving at a school and to restart it no more than 30 seconds before departing. Sections 40720 and 40720.5 of the California Health and Safety Code require coastal port authorities to limit truck idling at certain marine terminals to no longer than 30 minutes. The Air District has responsibility of enforcing this requirement at ports in the Bay Area. ARB has voluntary incentive and demonstration programs to reduce idling, such as the Carl Moyer Program, that promotes the introduction of auxiliary power units as an idle reduction device for heavy-duty vehicles. Placer County APCD has adopted regulations limiting idling to 5 minutes for diesel-powered trucks with a gross vehicle weight (GVW) of 26,000 lbs or greater and off-road diesel-powered equipment rated at 75 horsepower or greater. In July 2004, the California Air Resources Board adopted a heavy-duty vehicle idling emission reduction requirement.

Emissions Subject to Control

This control measure would potentially apply to all diesel-fueled medium and heavy heavy-duty trucks, heavy-duty urban buses and construction equipment rated at 75 horsepower or greater operating within the boundaries of the Air District. Preliminary estimates of the projected baseline ROG, NOx and PM emissions for vehicles and equipment subject to control are provided in the table below.

Emissions Subject to Control (Tons/Day) - Preliminary[1]

	ROG		NOx		PM	
	2005	2010	2005	2010	2005	2010
Medium Heavy Duty Diesel Trucks	0.04	0.04	1.36	1.03	0.04	0.04
Heavy Heavy Duty Diesel Trucks	0.18	0.14	3.90	2.85	0.09	0.07
Heavy Duty Diesel Urban Buses	0.04	0.04	0.79	0.81	0.02	0.02
School Buses	0.01	0.01	0.13	0.15	0.00	0.01
Off-Road Construction Equipment	0.40	0.28	3.61	2.78	0.25	0.20
Total	**0.67**	**0.51**	**9.79**	**7.62**	**0.40**	**0.32**

Proposed Method of Control

The Air District would develop a model diesel equipment idling ordinance and would encourage cities and counties to adopt it locally. Local governments choosing to adopt the ordinance would be responsible for enforcement. This measure would allow the use of alternative idle reduction devices such as automatic stop-start systems. Operators of diesel equipment without idle reduction devices would need to manually turn off their equipment. Diesel engine operators would not be subject to idling limitations under specified conditions in which idling would be necessary to accomplish the work for which the vehicle/equipment is designed. Compliance with this measure generally would be carried out by peace officers. General idling would be limited to 5 minutes per location for all applicable diesel equipment. Trucks with sleeper berths would be allowed to idle for more than 5 minutes only if an alternative means of providing power and heating or cooling to the berth were not available and the sleeping berth is in use. Devices such as fuel-fired heaters, auxiliary power units, and power inverter/chargers for use with batteries and grid-supplied electricity could be used to provide heating and air conditioning at truck stops for truck cab comfort. Outreach efforts to inform truck and bus operators could be carried out with signage at commercial fueling stations, Department of Motor Vehicles offices, transit stations, depots, truck stops and gateways to the Air District. Compliance by construction contractors could be promoted through informational materials provided by local governments, license renewals and/or mailings.

Emission Reductions Expected

The use of alternative idle reduction devices/strategies, in lieu of operating the heavy-duty diesel engine at idle, will result in significant NOx reductions. Reductions in ROG, PM, carbon monoxide and carbon dioxide are also expected, but to a lesser extent. The fleet average cost-effectiveness of this proposal is less than $500 per ton of NOx plus ROG reduced. Estimated emission reductions from this measure are presented in the following table.

[1] Emissions are from ARB database and are an annual average of grown and controlled emissions.

Emissions Reductions Expected (Tons/Day) - Preliminary[2]

	ROG		NOx		PM	
	2005	2010	2005	2010	2005	2010
Medium Heavy Duty Diesel Trucks	0.01	0.01	0.27	0.21	0.01	0.01
Heavy Heavy Duty Diesel Trucks	0.04	0.03	0.78	0.57	0.02	0.01
Heavy Duty Diesel Urban Buses	0.01	0.01	0.16	0.16	0.00	0.00
School Buses	0.00	0.00	0.03	0.03	0.00	0.00
Off-Road Construction Equipment	0.08	0.06	0.72	0.56	0.05	0.04
Total	0.13	0.10	1.96	1.52	0.08	0.06

Cost of Controls

This measure could save up to $1,600 in fuel costs and $2,000 in maintenance costs annually per heavy-duty truck. Idle shutdown systems are a standard feature on current electronically controlled on-road heavy-duty engines, but would need to be reprogrammed to shut the engine down after 5 minutes. Either engine manufacturers or vehicle owners would need to reset the idle shutdown time. The cost incurred to reset the idle shutdown time is not significant. There would be no cost to operators of vehicles or equipment that do not have idle shutdown systems and would therefore need to manually turn off their equipment.

Other Impacts

This measure would also reduce:

- Emissions of diesel particulate matter, which the California Air Resources Board has identified as a toxic air contaminant;
- Consumption of diesel fuel;
- Emissions of carbon dioxide, a global warming gas; and
- Noise and odor impacts to sensitive receptors near warehouses and distribution centers.

No significant adverse environmental impacts are expected as a result of the implementation of this control measure.

[2] Emission reductions are based on ARB's Staff Report: Initial Statement of Reasons, Public Hearing to Consider Adoption of Heavy-Duty Vehicle Idling Emission Reduction Requirement, December 5, 2003, that estimates 5% of emissions are from idling. Emission reductions in this table assume 1% emission reductions due to the voluntary nature of this measure and enforceability.

CONTROL MEASURE MS 2: GREEN CONTRACTING

Background

This measure would entail development and promotion of a model ordinance for local government agencies to use in amending local codes that govern public agency contracting. Public agencies can play an important role in improving air quality by encouraging contractors to operate low-emission vehicles, purchase clean fuels, promote ridesharing programs and curtail polluting activities on Spare the Air days. By adopting and implementing Green Contracting Ordinances, public agencies can encourage contractors to operate their businesses in ways that benefit air quality.

Regulatory History

The Air District does not have regulatory authority to require local government agencies to adopt Green Contracting Ordinances. Under this measure, adoption of Green Contracting Ordinances by public agencies in the Bay Area would be strictly voluntary. The Sacramento Metropolitan Air Quality Management District and the Yolo-Solano and Placer County Air Pollution Control Districts have developed a Model Green Contracting Ordinance for use by local agencies in their jurisdictions.

Emissions Subject to Control

This measure achieves emission reductions by encouraging contractors that do business with public agencies to increase the use of low-emission vehicles and equipment or implement other measures that reduce emissions, such as use of clean fuels or business practices supporting employee trip reduction. Emissions subject to control would include on road mobile sources and off road equipment operated by contractors that do business with public agencies, emissions from the employee commutes for these contractors, and emissions from activities discouraged on Spare the Air days, such as vehicle refueling, use of gasoline-powered lawn and garden equipment, and use of paints and solvents.

Proposed Method of Control

The Air District will develop a model Green Contracting Ordinance and encourage adoption by local government agencies. Agencies may adopt the Air District's model ordinance or modify the ordinance prior to adoption. The Air District will encourage agencies adopting a Green Contracting Ordinance to promote the ordinance with businesses that may contract with the agency. In implementing the ordinance, the agency would give preferential consideration in awarding contracts to contractors that procure and operate low-emission vehicles, purchase clean fuels, and achieve low-emission fleet status for off-road equipment and heavy-duty on-road fleets. Participating government agencies will also provide preferential consideration in awarding contracts to contractors that promote ridesharing programs and participate in the Spare the Air program. An agency would include contract bid language implementing the following contracting program requirements on contracts within the Air District:

- Contractor would submit to the local government agency a clean air plan for reducing air emissions. The plan may contain but would not be limited to emission reductions from on-going activities, such as low-emission fleet

operations and ridesharing programs, and/or intermittent emission reductions, such as participation in the Spare the Air program. This plan would be submitted to and approved by the contracting agency prior to the final execution of the contract. This plan would detail the types of actions the contractor would take to reduce air quality impacts while working within the jurisdiction.

- A contractor may submit their low-emission fleet status as a qualifying plan. Low-emission fleet status might be achieved by subcontracting to a registered low-emission fleet for the contracted work or using approved alternative fuels or devices on non-compliant equipment.
- Bidders that provide ridesharing program components could include those elements in their submitted plan. These components may include membership in a transportation management association, having a designated employee transportation coordinator, or some other type of effective employee alternative commute program.
- The contractor submits an acceptable plan to curtail emission-producing activities on Spare the Air days.
- The contractor meets with local agency staff and discusses suitable emission reduction strategies and future plans.

Emission Reductions Expected

Emission reductions expected from this measure are very difficult to quantify. Reductions would be achieved by the ability of contractors that meet Green Contracting requirements to win contracts with local government agencies. The volume of work, emission characteristics of the low emission fleet, volume of clean fuel used, level of participation of employee commute programs and number of Spare the Air days would all be factors affecting the level of emission reductions achieved by this measure.

Cost of Controls

Contractors may incur costs by purchasing, maintaining and/or operating a low emission fleet, providing employees with alternative commute benefits, purchasing clean fuels or curtailing activities on Spare the Air days. However, if local agencies favor contractors with such programs, they could improve the competitiveness of contractors in winning contract awards. Local government agencies may have higher costs if they award contracts to contractors that have higher costs but are selected because they meet Green Contracting requirements.

Other Impacts

Increased use of fuel efficient vehicles and equipment, reduced vehicle trips, and other energy saving measures implemented based on green contracting provisions would reduce emissions of pollutants that contribute to global warming. No significant adverse environmental impacts are expected as a result of the implementation of this control measure.

CONTROL MEASURE MS 3: LOW-EMISSION VEHICLE INCENTIVES

Background

The purpose of this measure is to encourage the purchase of new low-emission vehicles and to reduce emissions from existing vehicles. Low-emission vehicles can be defined as vehicles that emit significantly less pollution than the standards established for vehicles of similar make and model year. Low-emission vehicles typically have cleaner burning engines, fuels and/or exhaust treatment devices. The Air District currently funds low-emission vehicle projects through the Transportation Fund for Clean Air (TFCA), Carl Moyer Program and other funding sources. TFCA enabling legislation identifies "low-emission and zero-emission vehicle programs" as one of the project categories eligible for TFCA funding. The legislation further requires that to be eligible for funding, control measures such as low-emission vehicle programs must also be included in the plans for attainment of state or federal ambient air quality standards, such as this Ozone Strategy. This measure clarifies the types of low-emission vehicle projects that would be eligible for TFCA funds and other Air District grant programs.

Regulatory History

The Air District provides financial incentives to increase the use of low-emission vehicles. The Air District currently provides incentives to reduce mobile source emissions through the TFCA and Carl Moyer Programs. Section 44220 of the California Health and Safety Code allows the Air District to collect funds through a motor vehicle registration surcharge to carry out "low-emission and zero-emission" projects that are also contained in a State ambient air quality attainment plan, such as this Ozone Strategy. Chapter 9 of the California Health and Safety Code contains the enabling legislation for the Carl Moyer Program. Under the Carl Moyer Program, the California Air Resources Board (CARB) provides funding to local air districts, which award grants to reduce emissions from on-road and off-road engines and equipment in public and private fleets. In fall 2004, legislation was enacted which 1) significantly increases funding for the Carl Moyer Program, and provides a stable funding source through the year 2014, and 2) authorizes local air districts to impose an additional $2 per vehicle surcharge on motor vehicle registrations, to be used for projects to reduce emissions from heavy-duty vehicles, scrappage or repair of existing in-use vehicles, and agricultural sources. The new legislation will greatly increase the available funding to implement low-emission vehicle projects, especially projects to reduce emissions of NOx and particulate matter from heavy-duty diesel engines. The Air District's Low Emission School Bus Program provides funds for the conversion of school buses to clean fuels or the installation of particulate matter retrofit devices on school buses.

Emissions Subject to Control

This control measure would achieve emission reductions from low-emission vehicle programs that include all vehicle weights (i.e., light, medium and heavy-duty) and on-road and off-road sources. This control measure would allow TFCA funding of low-emission vehicles, engine repowers and retrofits, exhaust treatments, clean fuels or additives, and the infrastructure to supply alternative fuels. The projected ROG and NOx emissions subject to control are provided below.

	Emissions Subject to Control	
Year	*ROG (TPD)*	*NO_X (TPD)*
2003	163	305
2006	137	263
2009	115	223

Proposed Method of Control

This control measure is intended to increase the share of low-emission vehicles in on-road and off-road fleets. TFCA funds and other Air District grant programs would be used to provide an incentive to:

- Purchase low- or zero-emission vehicles or engines;
- Engine repowers, retrofits and replacements;
- Exhaust treatments and add-on equipment;
- Clean fuels or additives; and
- Infrastructure to supply alternative fuels.

Emission Reductions Expected

Estimated emission reductions are shown in the table below. Emission reductions would be limited by available TFCA and other Air District grant program funds, availability of vehicles and infrastructure, and the ability of projects to compete for the funds. With the increase in funding due to the legislation enacted in fall 2004, it is expected that the Air District will be able to distribute at least $20 million per year for low-emission vehicle projects beginning in 2005.

	Emission Reductions	
Year	*ROG (TPD, Summer)*	*NOx (TPD, Summer)*
2003	0.03	0.6
2006	0.03	1.6
2009	0.03	4.6

Cost of Controls

For the incremental cost of light-duty and medium-duty low-emission vehicles, the District typically provides between $1,000 and $4,000 per vehicle. For the incremental cost of new heavy-duty vehicles, the District typically provides between $15,000 - $50,000 per vehicle. Grants for repowers and retrofits of existing heavy-duty diesel engines typically range from $5,000 to $20,000 per vehicle. Projects funded by the Air District via the Carl Moyer Program typically achieve a cost-effectiveness of less than $5,000 per ton of NOx reduced. The cost-effectiveness of low-emission vehicle projects funded through the TFCA program can range from $5,000 to $90,000 per ton, with an average cost-effectiveness in the range of $30,000 to $40,000 per ton.

Other Impacts

It would be necessary to minimize leaks and losses of natural gas during handling, as methane is 30 times more potent than CO2 as a greenhouse gas. Increased use of natural gas and electric vehicles would reduce U.S. dependency on imported petroleum. Other than the minor impacts discussed above, no potential adverse environmental impacts are expected as a result of the implementation of this control measure.

CONTROL MEASURE MS 4: VEHICLE BUY BACK PROGRAM

Background

This control measure would accelerate the retirement of older, high emitting vehicles from the region's roadways by providing incentives to scrap them. The first vehicle scrapping program in the country was implemented in the South Coast Air Basin by UNOCAL in 1990. The BAAQMD has administered a voluntary vehicle scrapping program since 1996. Other California air districts that have conducted publicly funded buy back programs include the South Coast AQMD, Santa Barbara APCD, San Diego APCD, and San Joaquin Unified APCD.

Regulatory History

The federal 1990 Clean Air Act amendments required the EPA to issue guidance on a control measure that would "encourage the voluntary removal from use and the market place of pre-1980 model year light duty vehicles". Following the UNOCAL pilot project, numerous air districts throughout the state implemented vehicle buy back programs. The South Coast Air Quality Management District (SCAQMD) was the first to implement a vehicle buy-back program with their adoption of Regulation 1610 in 1993.

The Air District began its Vehicle Buy Back (VBB) Program in June 1996. The Air District's VBB Program purchases and scraps older vehicles that lack modern emission control systems and therefore produce more air pollution than newer cars. Since its inception in June 1996 through April 2004, the VBB Program has purchased and scrapped nearly 20,000 vehicles. The Air District funds the VBB Program through its Transportation Fund for Clean Air (TFCA). Section 44220 of the California Health and Safety Code allows the Bay Area Air District to collect funds through a motor vehicle registration surcharge to carry out specified clean air projects, including a vehicle scrapping program. The section further requires "an automobile buy-back scrappage program operated by a governmental agency" also be contained in a State ambient air quality attainment plan in order to be funded with TFCA funds. The Air District's VBB Program adheres to the California Air Resources Board's Voluntary Accelerated Light-duty Vehicle Retirement (VAVR) regulation.

Emissions Subject to Control

This control measure reduces emissions of reactive hydrocarbons, oxides of nitrogen and particulates from older model year light-duty motor vehicles. Currently, vehicles eligible for the VBB Program are light duty vehicles model year 1985 or older. There are approximately 327,225 model year 1985 and older vehicles in the Bay Area.[3]

Proposed Method of Control

The VBB Program is a voluntary program that provides a financial incentive to owners of eligible vehicles to scrap their vehicles. The Air District implements the VBB Program by contracting with vehicle dismantlers to screen, purchase, and destroy eligible vehicles. The purchase of vehicles to be scrapped adheres to the VAVR vehicle eligibility

[3] Number of 1985 and older vehicles is from DMV database provided to District through VBB contractor as of July 2005

requirements, which include the registration status of the vehicle, ability of the vehicle to pass a functional test, and an equipment inspection test. VAVR eligibility requirements are established to provide assurance that a vehicle would remain on the road and continue to produce emissions if it were not scrapped. Marketing of the program by the Air District and its contractors informs potentially eligible vehicle owners about the program through annual direct mailings, newspaper and radio advertisements, fliers and on-site advertisements at scrapping sites. The VBB Program was expanded in October 2004, increasing the eligibility of model years from 1981 to 1985 and increasing the incentive from $500 to $650. The Air District will continue to monitor the VBB Program and consider further revisions to the program, as necessary, to maximize the emission reductions and cost effectiveness.

Emission Reduction Expected

The emission reductions from this program depend upon the amount of funding available, the vehicle purchase price, vehicle eligibility requirements, the effectiveness of the marketing program, and the actual buy back rate. Increasing the purchase price, reducing the stringency of the vehicle eligibility requirements, and/or more intensive marketing increases the rate at which vehicles are purchased. Prior to October 2004, the Air District VBB Program offered $500 to eligible vehicle owners. At this funding level, the program purchased approximately 280 vehicles per month, or 3,360 vehicles per year. Scrapping 3,360 vehicles annually resulted in ROG reductions of 0.30 tons/day and NOx reductions of 0.15 tons/day, and a cost effectiveness of approximately $6,400/ton of ROG and NOx reduced. The expansion of the program in October 2004, to allow up through 1985 model years and increasing the incentive to $650, increased the rate at which vehicles are purchased and the emission reductions achieved by the program. Under the expanded VBB Program, approximately 600 vehicles per month are purchased. Emission reductions under the expanded program are approximately 0.48 tons/day of ROG and 0.31 tons/day of NOx.

Cost of Controls

The average cost of scrapping a vehicle under the expanded program is $890, which includes the $650 paid to the vehicle donor and $240 in program overhead costs. Program overhead consists of the cost of contractors to market the program, purchase and scrap the vehicles and Air District staff time. In FY 2003/04, the Air District spent approximately $3.7 million to purchase and scrap 4,573 vehicles. In FY 2004/05, the Air District's allocation remained unchanged. In FY 2005/06, the VBB Program budget was increased to $7.2 million to fund the expanded program. Cost effectiveness for the expanded program is approximately $8,600/ton.

Other Impacts

Scrapping older vehicles may potentially reduce the supply of affordable vehicles for the economically disadvantaged. This measure would also increase the amount of solid waste generated by scrapped vehicles, although some material from scrapped vehicles is recycled. Except as noted above, no significant adverse environmental impacts are expected as a result of the implementation of this control measure.

BAY AREA

2005 OZONE STRATEGY

APPENDIX D - TRANSPORTATION CONTROL MEASURE DESCRIPTIONS

PROPOSED FINAL

DECEMBER 2005

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

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APPENDIX D - TRANSPORTATION CONTROL MEASURE DESCRIPTIONS

TABLE OF CONTENTS

The transportation control measures (TCMs) in this appendix for the 2005 Ozone Strategy were designed to reduce emissions from motor vehicles by reducing vehicle trips and vehicle miles traveled. TCMs may also reduce vehicle use, vehicle idling or traffic congestion. These TCMs address State ozone planning requirements for the Bay Area. Some of the TCMs are included in local, regional and state transportation programs. We expect to see those measures implemented, and achieve the emissions reductions we have projected. Other measures have little or no funding, and may require legislative authorization and voter approval prior to implementation. One example is TCM 18, Implement Transportation Pricing Reform. While the Air District would also like to see the most effective TCMs implemented, we acknowledge that there are significant obstacles that first must be overcome. Public education efforts must be undertaken in order to gain acceptance of these often-controversial measures.

TCM 1: SUPPORT VOLUNTARY EMPLOYER-BASED TRIP REDUCTION PROGRAM

Purpose

TCM 1 will support and encourage voluntary efforts by Bay Area employers to promote the use of commute alternatives by their employees.

Background

The political and economic climate for employer-based trip reduction has changed since the early 1990's, when employer-based trip reduction programs received greater emphasis in Bay Area air quality plans. Major developments include 1) the enactment of SB 437, which prohibited mandatory employer trip reduction programs as of January 1, 1996, and 2) the reduction in public sector funding for transportation demand management programs.

Despite these developments, the need for trip reduction programs remains strong. Without continued trip reduction programs, increased traffic volumes in general could increase motor vehicle emissions, and congestion, in particular, increases auto emissions due to stop and go traffic and lower, congested average speeds. Employment growth in the Bay Area has been especially robust in suburban areas, which due to land use patterns and limited transit infrastructure, tend to have the highest drive alone rates. In the near term, carpool and vanpool programs are especially suited for many suburban locations.

Commute trips, which comprise 25 percent of daily trips, are still logical targets for employer-based trip reduction efforts due to: a) their key role in contributing to peak period traffic congestion and ozone formation, b) the long average distance of commute trips compared to other trip types, c) the repetitive nature of commute trips that occur on the same route and schedule each day, d) the pool of potential candidates for ridesharing at larger work sites, and e) the ability of employers to influence employee commute mode choice by means of the facilities, services, and incentives that they provide.

While the need for employer programs is undiminished, TCM 1 will focus on assessing employer needs and maintaining core support services to employers. Generally, most of this effort will be accomplished through the regional ridesharing program administered by MTC and through discussions between the Air District and employers involved in the Spare the Air program, the Bay Area Clean Air Partnership (BayCAP), and other outreach efforts.

Description

TCM 1 includes the following:

Phase 1 (2004-2006)

Generally maintain current efforts:

- Provide core support for employer programs, based on an assessment of employer needs and the level of employer interest. Potential support includes assistance in developing or enhancing employer programs, information and referrals, employer networks, and programs to recognize outstanding employer programs.

- Support legislation to maintain and expand incentives for employer programs, such as tax deductions and/or tax credits for employer efforts to promote ridesharing, transit, and other commute alternatives. (MTC, Air District, Congestion Management Agencies.)

- Implement employer elements of the *Spare the Air* program (see TCM 16).

- Provide information and assistance to employers in organizing transportation fairs and other marketing events at Bay Area work sites.

- Work with employers to implement regional promotions such as Rideshare Week, Bike to Work Day, etc.

- Work with employers to implement provisions of the State parking cash-out law, where certain employers who lease parking and provide subsidized parking to employees must offer their employees the choice of the subsidized parking or the equivalent value of the parking space as a cash payment to use for commute alternatives such as carpooling, transit, bicycling and walking, or to retain as additional income (see TCM 15).

- Promote *Commuter Check* transit subsidy program to employers (see TCM 13).

- Implement sub-regional or local programs to promote employer-based trip reduction in those cities and counties that choose to allocate local resources to such efforts. (Congestion Management Agencies, county transportation authorities, cities and counties).

- Work with cities, counties and other public agencies who are also employers to develop commute alternatives, including telecommuting, compressed work week schedules, guaranteed ride home programs, etc. (MTC and the Air District can make special efforts to work with governmental agencies to encourage their support for these types of programs and explore new funding opportunities).

- Continue to work with employers to support and encourage shuttle programs including the Bay Area Clean Air Partnership (BayCAP) comprehensive shuttles campaign to inventory existing programs, provide coordination and assistance, and promote “best practices” among shuttle operators. Support other efforts to coordinate shuttles with transit operators, improve shuttle marketing and provide additional shuttle funding opportunities.

Phase 2 (Beyond 2006)

- Continue programs listed above.

- Seek legislation to create incentives for stronger voluntary programs for all employers or to require certain minimum elements of a basic commute alternatives program for public employers.

Travel Market Affected

This TCM targets commute travel, which accounts for approximately 25 percent of trips and 33 percent of VMT on a typical weekday.

Effectiveness

Empirical results show that employer trip reduction programs can decrease vehicle trips to a typical worksite by as much as 5-10 percent. Results from a 1996 BayCAP survey showed that work sites with voluntary trip reduction programs reduced commute trips by about 8 percent compared to the average for large work sites in 1994-95 before implementation of mandatory employer-based trip reduction.

Maintenance of current efforts (and enhancements where feasible) is critical to assuring that voluntary trip reduction programs continue to reduce drive alone commute trips and emissions. Continued implementation of these voluntary programs is assumed to reduce work trips by 1% and yield the following emissions reductions:

	ROG	NOx
2006	0.53 tpd	0.57 tpd
2015	0.23 tpd	0.22 tpd

Cost

The costs of this TCM include the public sector costs to provide services to promote voluntary employer efforts as well as the costs to employers that choose to implement such programs. Much of the public sector costs are included in the cost of funding the regional rideshare program (see TCM 14).

Employer costs depend upon the number of employers that implement voluntary programs and the specific services and incentives that they offer to their employees. Data from studies of mandatory trip reduction programs indicate that employer costs typically ranged from $25 to $100 per employee per year. It is expected that employer costs for voluntary programs are lower, perhaps a maximum of $40-$50 per employee per year on average. Employer costs are offset to some extent by indirect gains such as increased productivity of employees due to less stressful commutes and improved recruitment and employee retention.

Impediments

The primary impediment is the reduced employer interest in trip reduction efforts given the cost of implementing these types of programs in a weakened economy and the lack of authority for the Air District to require these programs.

Other Impacts

In addition to reducing emissions, this TCM reduces auto trips in congested corridors and reduces fuel consumption and greenhouse gas emissions (CO2). Employees will benefit from reduced commute costs, such as vehicle operating and maintenance costs.

TCM 2: EMPLOYER BASED TRIP REDUCTION
(A summary description of this deleted TCM is provided below for reference only.)

The purpose of TCM 2 was to decrease motor vehicle emissions by reducing the use of single occupant vehicles for commuting to work sites and employment centers in the Bay Area. TCM 2 differs from TCM 1 in that it was a District-wide regulation through which employers were required to implement programs to reduce employee vehicle trips. TCM 1 consists of entirely voluntary efforts by Bay Area employers to promote the use of commute alternatives by their employees

During the mid-1980's, the Air Resources Board determined that employer-based trip reduction rules were a reasonably available transportation control measure in accordance with the California Clean Air Act (CCAA). In response to this CCAA mandate, the Air District adopted Regulation 13, Rule 1, Trip Reduction Requirements for Large Employers in December 1992.

Regulation 13, Rule 1 applied to all employers at work sites with 100 or more employees. The rule divided the region into four geographic zones and established annual performance objectives for each zone. A failure to achieve the performance objectives was not considered a violation of the rule; however, it did trigger the requirement to submit an Employer Trip Reduction Plan or an Alternative Emission Reduction Program. The conventional Plan included trip reduction measures to reduce the number of employees commuting to the work site in single occupant vehicles. An Alternative Emission Reduction Program achieved emission reductions through other means, such as a vehicle buy-back or scrappage program.

In addition to directly administering the rule, TCM 2 was also implemented by the Air District through multiple efforts to reduce commute trips to smaller work sites and employment centers that were not subject to Regulation 13, Rule 1. The Air District pursued this through informational and outreach efforts directed toward smaller employers and employment centers (i.e. multi-tenant facilities). The Air District also allocated Transportation Fund for Clean Air grants, as appropriate, to projects and programs that benefited trip reduction efforts at smaller work sites.

However, TCM 2 was suspended in 1995 by Senate Bill 437 (Lewis). SB 437 prohibited air districts from requiring mandatory employer-based trip reduction programs.

TCM 3: IMPROVE LOCAL AND AREAWIDE BUS SERVICE

Purpose

This TCM will help to reduce motor vehicle trips, vehicle miles traveled, and mobile source emissions by maintaining and improving the Bay Area's extensive bus system, and by funding replacement of diesel buses with clean fuel buses and retrofits of diesel buses with emission control devices.

Background

TCM 3 will increase the attractiveness of local and regional bus service by ensuring the system is well maintained, adding more service as revenues permit, and developing new service concepts (such as enhanced bus, Bus Rapid Transit and Regional Express buses) to better serve existing markets and fill in regional transit gaps. There are 26 transit operators in the Bay Area that provide local and regional bus service. Each operator must tailor its service to local conditions. Cumulatively, these operators provided about 94 million revenue miles of bus service in FY 2002-2003. Fixed route bus service accounts for approximately 66 percent of all transit riders in the Bay Area. Certain elements of this TCM – e.g., express bus, enhanced bus, clean fuel buses – will reduce motor vehicle emissions; elements regarding maintenance of the current system seek to assure that existing emission benefits continue.

MTC's long range Regional Transportation Plan (RTP) dedicates significant funding to maintaining existing bus facilities and vehicles, but capital and operating shortfalls will still remain to meet future needs. Also, transit operators will be hard pressed to expand service without new revenues. Recent financial conditions have caused many operators to curtail service and/or raise fares. Therefore, the RTP does not anticipate significant improvements to local bus routes at this time, other than some of the improvements discussed below.

Two examples of recent service improvements which would be continued and expanded under this TCM are the enhanced bus/BRT concepts being developed by AC Transit, Muni, and Santa Clara VTA and the Regional Express Bus Program funded with State transportation dollars.

Mobile source emissions are controlled through fuel and engine regulations. Recent amendments to the diesel fuel standards require that sulfur content of diesel fuel be reduced from the current 500 ppm to 15 ppm beginning in June 2006. In June 2004, ARB adopted modifications to the fleet rule for transit agencies to allow for the purchase of diesel hybrid electric buses by diesel-path transit agencies. Please refer to Section 2 of the main Ozone Strategy document for more information on state and national mobile source programs that impact transit buses.

The Air District funds replacement of diesel buses with clean fuel buses through the Transportation Fund for Clean Air. Clean fuel buses meet specified emission standards and do not use diesel as their primary fuel. The Air District also funds retrofits of diesel buses to reduce emissions from existing diesel bus engines.

Description

Improvements in local bus service are determined by the individual transit operator boards, based on revenues available. Decisions on expanding local service must address both the needs of commuters as well as low-income travelers who do not have access to a car. As part of the 2001 Regional Transportation Plan, MTC defined a Lifeline Transportation Network which addresses some of these needs.

The Regional Express Bus program was funded with $40 million in State transportation funds which were used to purchase about 90 buses serving 12 new regional express bus routes. Participating transit operators included: AC Transit, CCCTA, Fairfield/Suisun, Golden Gate Transit, LAVTA, Samtrans, Tri-Delta, Vallejo, and West Cat. These buses serve generally longer distance routes that fill in key transit gaps, and use freeway HOV lanes where possible to improve travel times and service reliability.

Several transit operators are considering or have implemented enhanced bus service on major arterials, most notably AC Transit's Route 72 along San Pablo Avenue. Enhanced bus service is a concept that can include a variety of improvements, including more frequent service, relocated bus stops and signal priority treatment for better schedule adherence, real time bus arrival information, improved signage, proof-of-payment fare system, multiple-door boarding, limited stops and other passenger amenities. San Francisco Muni has also developed a long range Vision Plan that would provide similar types of services along certain Muni routes. Bus Rapid Transit (BRT) includes most of the features of enhanced bus, and involves even more ambitious enhancements to bus service and would typically include dedicated lanes for bus operations as well.

Phase 1 (2004-2006)

- Continue to fund the timely replacement of worn out buses in local transit operator bus fleets; while providing flexibility to some operators to use federal funds for preventive maintenance (operating expenses) on a case-by-case basis.
- Sustain the existing Regional Express Bus Program (12 routes) and expand with Regional Measure 2 revenues
- Assist transit operators with further planning work on enhanced bus and Bus Rapid Transit concepts
- Continue to seek new funding for MTC's Lifeline Transportation Network, to serve low income communities and assist persons transitioning from Welfare to Work (to date, MTC has funded 32 projects through the Low Income Flexible Transportation (LIFT) program using federal, state, and local funds).
- Complete retrofitting of 1,700 public transit buses with particulate traps and NOx catalysts. Continue Air District programs to fund the replacement of diesel buses with clean fuel buses and retrofitting of existing diesel buses with emission control technology.
- Sustain current bus services to the three Bay Area commercial airports for air passengers and employees.

Phase 2 (Beyond 2006)

- Restoration of some local routes that were eliminated or where service was curtailed

- Additional lifeline service as new funds become available
- Implementation of new Enhanced Bus and Bus Rapid Transit (BRT) services consistent with the financial assumptions in MTC's long range Regional Transportation Plan
- Expansion of Regional Express Bus Programs in North and South Bay as defined in Regional Measure 2

Travel Market Affected

This measure would affect all intraregional travel, including commute travel, shopping, personal business, social and recreational travel, passenger and commute trips to airports, and school trips.

Effectiveness

Emission reductions are based on the new Enhanced Bus, BRT, and Regional Express bus services expected to be operational in 2006 and 2015. The calculations reflect the number of new transit riders expected to use the services, mode of access, and proportion of riders who are transit dependent and do not own cars. Additionally, the 2006 calculations include the reductions from MTC's efforts to retrofit the regional bus fleet with devices to lower NOx and particulates:

	ROG	NOx
2006	0.42 tpd	1.13 tpd
2015	0.15 tpd	0.13 tpd

Cost

The cost of restoring and expanding local bus service cannot be estimated at this time. Capital costs for the existing Regional Express Bus Program and various AC Transit, Muni and VTA enhanced bus and Bus Rapid Transit programs are shown below; operating costs cannot be estimated at this time:

- Regional Express Buses North and South Improvements: $19.5 million (funded by Regional Measure 2)
- AC Transit BRT and Enhanced Bus, Phase 1: Telegraph Avenue/International Boulevard Corridor: $167.0 million
- AC Transit BRT and Enhanced Bus, Phase 2: Telegraph Avenue/International Boulevard Corridor: $164.4 million
- Muni BRT/Transit Preferential Streets (TPS) Program (includes Geary Street Corridor BRT project, also may include BRT along Van Ness Avenue and Potrero Avenue corridors): $280 million
- VTA BRT Corridor: El Camino Real (Line 22) Phases 1 and 2: $7.0 million
- VTA BRT Corridor: Along Stevens Creek Boulevard, El Camino Phase IIIB and Monterey Highway: $46.0 million
- MTC Lifeline Transportation Program: $216 million committed over the 25-year horizon of the Transportation 2030 Plan

Impediments

According to MTC's latest financial estimates from the Transportation 2030 Plan, Bay Area transit bus operators will have combined funding shortfalls of approximately $1.3 billion in operating and $1.4 billion in capital replacement over the next 25 years (some of these transit operators operate both bus and rail service). Thus restoring service that has been cut and expanding service will require new funding. New revenues may be available in the future from higher gas taxes, bridge tolls, and voter approved sales tax revenues in individual counties.

Other Impacts

An improved bus system will offer more mobility choices for Bay Area travelers, provide a better transit network for those without a car, and reduce vehicle use. The Lifeline Transportation Network improves mobility options for low-income households. Reductions in vehicle travel will have corollary benefits in terms of saving energy, reducing greenhouse gases, and improving water quality through reduced runoff of oil laden water from roads.

TCM 4: UPGRADE AND EXPAND LOCAL AND REGIONAL RAIL SERVICE

Purpose

This TCM will reduce motor vehicle trips, vehicle miles traveled and mobile source emissions by upgrading and expanding existing rail systems (BART, MUNI, VTA and Caltrain) and developing new rail service in the North Bay. This TCM will be most effective if implemented in conjunction with transit-oriented development near new and existing rail stations that provides for high density and mixed use development (see TCM 15) and with transit access improvements (see TCM 5).

Background

The Bay Area rail system has been continuously expanded over the past several decades. Rail systems provide about 72 million revenue vehicle miles of service and carry 32 percent of Bay Area transit riders in FY 2002-03. This TCM includes new service expansions and upgrades that have been studied and included in local and regional rail programs. MTC's Resolution 3434 Regional Transit Expansion Program includes nine new rail extensions and significant rail service expansions and enhancements. If fully implemented, the Resolution 3434 program would create 160 new route miles of rail and other bus and ferry improvements at a cost of around $12 billion. (Note: Resolution 3434 was adopted as part of the 2001 Regional Transportation Plan, and then subsequently updated as part of the Transportation 2030 Plan.) Funding for Resolution 3434 is based on a combination of federal aid, state funding, local sales tax revenues, and other local sources. (For example, Regional Measure 2, approved by Bay Area voters in March 2004, provides funds from increased bridge tolls to several rail expansion projects.) The long-term capital replacement costs of sustaining the rail system are substantial and exceed those of the bus system due to the need to maintain the tracks and other fixed plant facilities. Addressing ongoing maintenance and operations costs presents significant challenges for Bay Area transit operators.

Description

Phase 1 (2004-2006)

- Muni Metro Third Street Light-Rail Project: light-rail extension to Bayview Hunters Point (Phase 1, initial operating segment)
- Caltrain Express/Rapid Rail Phase 1 ("Baby Bullet") to San Francisco
- Vasona Corridor light-rail extension from downtown San Jose to Winchester Boulevard in Campbell

Phase 2 (Beyond 2006)

- BART extension to Warm Springs
- BART-Oakland International Airport Connector
- Muni Metro Third Street Light-Rail Project: light-rail transit extension to Chinatown (Phase 2, Central Subway)
- Caltrain Express Tracks Phase 2
- Caltrain Downtown Extension/ Transbay Terminal Replacement
- Caltrain Rapid Rail Phase 2/ Electrification from San Francisco to Gilroy

- BART/East Contra Costa Rail Extension
- BART extension into Santa Clara County
- Downtown/East Valley: Santa Clara/Alum Rock corridor and Capitol Expressway light-rail extension to Nieman Boulevard
- Sonoma Marin Area Rail Transit District (SMART) commuter rail project
- Capitol Corridor Phase 1 Intercity Rail Service: track capacity/frequency improvements from Oakland to San Jose designed to allow 16 daily round trips between Oakland and Sacramento/San Jose
- Capitol Corridor Phase 2
- Dumbarton Rail Corridor Phase 1 (diesel locomotive service connecting BART and Caltrain over a rebuilt Dumbarton rail bridge)
- ACE service expansion to eight trains

MTC has adopted policies to encourage supportive local land use plans and policies for areas near rail transit extensions. As part of the Transportation 2030 Plan, MTC adopted transportation/land-use principles to encourage local development that makes these rail investments more cost effective.

Travel Market Affected

This measure would affect all types of intraregional travel, including commute travel, shopping, personal business, social and recreational trips, school trips, and travel to airports.

Effectiveness

Emission reductions are based on the new rail services expected to be operational in 2006 and 2015. The calculations reflect the number of new transit riders expected to use the services, mode of access to the rail stations, and proportion of riders who are transit dependent and do not own cars. The effectiveness of TCM 4 in reducing vehicle travel and emissions will be enhanced by implementing transit-oriented development near stations and station access improvements.

	ROG	NOx
2006	0.23 tpd	0.21 tpd
2015	0.15 tpd	0.12 tpd

Cost

The Phase 1 improvements are under construction and will be operational before 2006. The Phase 2 improvements are in various stages of implementation, and are mostly contained in MTC's Resolution 3434 program. Aggregate capital costs for the Phase 1 and Phase 2 programs are listed below as included in MTC's Transportation 2030 Plan:

Phase 1: $947.0 million

Phase 2: $12.0 billion (approximately $10.0 billion of this is committed funding)

Impediments

Upgrade and expansion of region's rail systems will require that operators first be able to continue to maintain and operate their existing systems. Therefore, given the transit capital and operating shortfalls projected in MTC's Transportation 2030 Plan, most of the new rail expansions will be contingent on new sources of capital and operating funds, such as Regional Measure 2 (approved by voters in March 2004); new local sales tax measures approved by voters in Contra Costa, Marin, Sonoma, and San Mateo counties in November 2004; and federal earmarks from the SAFETEA bill that was signed into law on August 10, 2005.

Other Impacts

Construction of various rail projects will have environmental impacts which are analyzed in the individual project level EIRs (including short term emissions from construction activities). Construction of new rail systems will create jobs and provide an economic stimulus to the Bay Area. Co-location of higher density development near rail systems will prove a benefit to overall regional mobility. Rail systems will generally improve the reliability of commute and other trips because they operate on their own dedicated right of way. Passengers accessing new rail stations by car could create localized congestion around the stations, but this can be mitigated by measures that promote the use of feeder buses, employer shuttles, walking, and bicycling to transit stations (e.g., TCM 5).

TCM 5: IMPROVE ACCESS TO RAIL AND FERRIES

Purpose

TCM 5 will reduce motor vehicle trips, vehicle miles traveled and mobile source emissions by reducing auto trips used to make short access trips to rail stations and ferry terminals and by increasing transit ridership by improving access to transit. This measure will expand feeder buses and shuttles, and improve bicycle and pedestrian access. By improving rail and ferry access options, these systems will become more convenient and there is a greater likelihood people will choose transit for their overall trip instead of a car. This measure will complement TCMs 3, 4, 6 and 7.

Background

The Bay Area's extensive investment in rail will be maximized if there is convenient access to the stations and terminals. Often access is constrained because of limited parking and because transit service to stations may be infrequent or not serve nearby destinations. Walking and bike access may be unsafe or difficult due to local traffic conditions, inadequate bicycle parking, terrain or other obstacles. The same issues apply to existing and potential new ferry terminals that would be developed by the Water Transit Authority in the future.

From the standpoint of air quality, short station access trips by autos present particular problems and opportunities. Motor vehicle emissions are much higher when a cold engine has just been started ("cold start emissions"). Therefore, much of the air quality benefit of transit is negated if riders drive to the station. On the other hand, since most users of transit generally live within a few miles of the transit service, there is considerable potential for alternative access options other than by car. Feeder bus and shuttles, walking, and biking are the principal options. Extensive feeder bus service already exists to many rail stations, so the opportunities for further improvement may be limited, and new service can be expensive. In the last ten years employers, cities, universities, hospitals, transit agencies and others have developed more than 150 shuttles directly linking rail stations with key nearby destinations. Walking and biking improvements have been a recent focus of public attention, including the Safe Routes to Transit concept. Currently only about 2 percent of BART's riders ride bikes to BART.

Another new station access concept that is currently being explored is the use of "station cars" for short trips. Station cars could be reserved in advance by transit riders and used for the "last mile" of a passenger's trips from the station to their destination, where bus service, walking, or other means of transportation would take too long or be too inconvenient. Ideally, the station cars themselves would be low emission vehicles to reduce air emissions.

Improved rail/bus connectivity at key transit hubs is another aspect of improved access. MTC is currently evaluating improvements to regional transit connectivity in an ongoing study, and it is likely that there will be station specific recommendations for these hubs addressing signage, transit information, or specific physical modifications.

Many of these station access concepts were recently evaluated by MTC as part of 2001 Ozone Attainment Plan Further Study Measure 5 (FSM 5), and findings from the study are included in this TCM.

Description

Bike/Walk Access: Improvements would include bicycle routes and lanes near transit stations, with connections to local and regional bike route networks; increased secure bicycle storage at transit, with bike stations at certain hubs; sidewalks, crosswalks, and direct pedestrian connections to nearby neighborhoods and activity centers, and better signage of bike/pedestrian access routes. This range of improvements is sometimes referred to as "Safe Routes to Transit".

Feeder Buses: Improvements would primarily focus on the transfer arrangements between rail and ferries and the buses to make the transfer more convenient. New ferry routes and terminals and new rail stations will need to be developed in collaboration with local transit operators who will provide the feeder bus service.

Station Cars: These are vehicles that could be located at rail stations for use by transit riders who need to travel to destinations near the stations, but which do not have good transit service or are too far or inconvenient for walking/biking. Station cars would be shared vehicles that could be checked out in advance. Transit riders would pay for the use of the vehicle depending on how far it is driven and how long it is checked out. Station cars would need to meet the most stringent vehicle emissions requirements for maximum air quality benefit.

Shuttles: Bay Area shuttles are operated by a diverse group of businesses, cities, schools and transit operators. In order to sustain successful shuttles over the long term, stable funding sources, particularly operating subsidies, will be pursued. There are additional opportunities to establish new shuttle services, where the required partnerships can be developed. MTC analyzed new shuttle service in the 2001 Ozone Attainment Plan (Further Study Measure 5) and will review "last mile" shuttle potential in the 2005 Regional Transit Connectivity Plan required by Regional Measure 2.

Phase 1 (2004-2006)

- Develop demonstration program for station car and bike station concepts at selected regional transit centers
- Determine long term funding needs for existing shuttles, encourage better coordination between shuttles and transit operators, and examine funding options for new and existing shuttles
- Begin implementation of Safe Routes to Transit to improve bicycle and pedestrian access (RM 2 to provide about $20 million)
- Complete Regional Transit Connectivity Plan (MTC is required to complete plan by May 2006 under RM2 (as revised pending legislative action)).

Phase 2 (Beyond 2006)

- Continue Safe Routes to Transit improvements
- Continue and expand other successful concepts from Phase 1

- Develop a master plan for implementation of bike stations or other innovative secure bicycle storage strategies at key transit hubs.
- Implement most cost effective new shuttles where funding is available.

The Air District's Transportation Fund for Clean Air (TFCA) funds public agency improvements to bicycle and pedestrian access, and local feeder bus or shuttle service to rail and ferry systems. The TFCA program funds several shuttle projects currently operating in the Bay Area. The amount of TFCA funds allocated to these routes generally decreases over time, and there is no guarantee these routes will continue to receive TFCA funding in the future. Efforts should be made to capture and retain the transit market created by the shuttle routes. The Air District will work with transit operators to develop TFCA applications for new shuttle and feeder bus service to rail and ferry stations that reduce emissions.

The Air District's TFCA program and MTC's Transportation for Livable Communities program fund bicycle and pedestrian improvements at transit facilities.

Cost

The cost of expanding fixed route feeder bus service is not known, and would depend on the operator and which routes would be expanded. Current operating costs vary between $76 and $114 per revenue service hour.

The cost of providing shuttles varies as well. Recent estimates for leasing a shuttle vehicle run between $35 and $75 per hour of service.

A very large station car program (1,000 cars) would cost approximately $25 million for the cars (assume hybrid/SULEV type vehicles) and about $5 million per year in administration costs.

The cost of adding bicycle storage at transit stations depends on whether the storage is provided as an enclosed locker or through a more substantial Bike Station arrangement. Lockers are fairly inexpensive, costing about $1,500. Bike Station costs vary considerably depending on the services provided, ranging from under $100,000 for the Berkeley BART bike station to over $700,000 for the downtown S.F. Caltrain bike station. Assuring long term operating costs for bike stations also must be considered. A comprehensive program of Safe Routes to Transit to BART stations could cost over $45 million, as estimated by one bicycle advocacy group.

Effectiveness

Emission reductions associated with TCM 5 are based on the following programs and assumptions.

1) An increase in feeder bus trips by riders who formally drove to rail/ferry
2) Additional bicycle access trips based on provision of new storage and safe routes to transit.
3) 24 new shuttle services to rail and ferries
4) 1000 car station car program

	ROG	NOx
2006	0.17 tpd	0.15 tpd
2015	0.06 tpd	0.05 tpd

Impediments

The ability of local transit operators to increase fixed route feeder bus service depends on availability of new operating funds, which are scarce. While employers could underwrite the cost of shuttles, most of the time the costs are prohibitively expensive unless the employee pays a large portion. Comprehensive efforts to improve bike and walk access to a number of rail stations, will require new funding sources. An initial demonstration program for station cars at 4-6 stations may be able to access existing fund sources (CMAQ, RM2)

Travel Market Affected

TCM 5 will affect all types of trips, including commute travel, shopping, personal business, social and recreational travel, and school trips.

Other Impacts

This measure will improve traveler safety for pedestrians and bicyclists. Additional feeder and shuttle services would produce emissions that could be mitigated by retrofitting vehicles with catalysts (if diesel powered), or by purchasing CNG or electric vehicles. The measure could reduce local auto traffic and congestion around stations and alleviate potential auto parking shortages.

TCM 6: IMPROVE INTERREGIONAL RAIL SERVICE

Purpose

TCM 6 will reduce motor vehicle travel and emissions for longer distance interregional trips by upgrading and expanding rail service in the Capitol Corridor (Sacramento-Oakland-San Jose) and the Altamont Corridor (Altamont Commuter Express between Stockton/Tracy and San Jose). It also includes initiation of new services as funding becomes available (e.g., potential High Speed Rail service between Los Angeles and the Bay Area).

Background

Capitol Corridor service between Sacramento and the Bay Area was initiated by the State in 1991 and management of the service was turned over to the Capitol Corridor Joint Powers Board in 1996. Currently there are 12 roundtrips a day between Sacramento and Oakland, with four continuing to San Jose. In recent years ridership growth on the Capitol Corridor has been among the highest in California for similar services.

The Altamont Commuter Express (ACE) from Stockton/Tracy, through Livermore/Pleasanton, to San Jose started operating in 1998. ACE provides three daily roundtrips a day, with the largest volume of passengers getting on and off at the Great America station serving Silicon Valley.

Another intercity service, Amtrak's San Joaquin trains, provides four daily roundtrips between Oakland and Bakersfield with two connecting feeder buses serving Stockton.

Description

MTC's Resolution 3434 Regional Transit Expansion Program includes funding for expanding existing intercity rail services as shown below. In addition, studies continue on a California High Speed Rail system between Los Angeles and the Bay Area, with potential funding pending a future statewide ballot measure. No significant changes in service are anticipated between now and 2006.

Phase 2 (Beyond 2006)

- Increase Capitol Corridor service to 16 daily roundtrips
- Increase Altamont Corridor Express service to 8 daily roundtrips.
- Track enhancements for both Capitol Corridor and ACE for more reliable service.
- Potential High Speed Rail Service between Los Angeles and the Bay Area

Additional services that may be studied and considered in the future include service from San Benito County and Monterey to the San Jose area**.**

Travel Market Affected

TCM 6 will affect mostly interregional trips, but will also serve intraregional travel over portions of the various corridors.

Effectiveness

Emission reductions are based on ridership estimates for the Phase 2 Capitol and ACE service improvements that would be implemented by 2015. NOx estimates take into account the offsetting emissions from the diesel locomotives that power the additional trains.

	ROG	NOx
2015	0.03 tpd	(0.30) tpd *increase*

Cost

The capital costs of the Capitol Corridor improvements in MTC's Resolution 3434 Transit Expansion Program are estimated to be $245 million (2004 dollars). The capital costs for ACE improvements are estimated to be $128 million (2004 dollars). Higher levels of service will be contingent on finding additional sources of operating revenues. The total cost of the statewide high-speed rail system is about $37 billion. The California High Speed Rail authority plans to seek voter approval of $9.9 billion in general obligation bonds to develop the initial Los Angeles, San Francisco, and Sacramento segment.

Impediments

As with other proposed transit improvements, there are funding shortfalls on the capital and operating side for intercity rail enhancements that are addressed in MTC's Transportation 2030 Plan. Because the intercity services use privately owned railroad tracks, increasing service can lead to lengthy negotiations with the railroad owner over the costs of making necessary track improvements in order to provide more capacity and allow for more scheduling flexibility.

Other Impacts

TCM 6 will improve travel options between the Bay Area and neighboring counties, and reduce auto trips in two of the region's most heavily congested corridors, I-80 and I-580. Diesel locomotive emissions can be reduced by conversion of the locomotives to clean diesel or alternative fuels, or possibly through the use of catalytic devices. (Electrification of intercity lines would not be cost effective at current ridership levels.) Reduced auto use will lower fuel consumption and decrease greenhouse gas emissions.

TCM 7: IMPROVE FERRY SERVICE

Purpose

TCM 7 will reduce emissions from Transbay auto trips, which tend to be longer in length, and will also reduce auto traffic in highly congested bridge corridors. New high-speed ferry service will offer a transportation alternative for crossing the Bay that is reliable, comfortable and provides a pleasant and relaxing travel experience. New ferry technology will result in overall emissions that are lower than those attributable to current passenger ferry service.

Background

Freeways and bridges that serve Transbay travel are already heavily congested in the peak periods, and during portions of the weekend. The number of trips crossing the Bay is projected to grow at a higher rate than the regional average over the next 25 years. Existing ferry services have all been expanded with newer, high-speed vessels on the Larkspur, Vallejo and Alameda/Oakland routes to San Francisco. In 1999 state legislation created the new Bay Area Water Transit Authority (WTA) to plan and operate new ferry routes beyond those currently in service. Their work produced an Implementation and Operations Plan in 2003, which recommended an expansion of existing ferry service and an initial set of routes shown below:

- Pittsburg/Antioch-Martinez-San Francisco
- Hercules/Rodeo-San Francisco
- Richmond-San Francisco
- Berkeley-San Francisco-Mission Bay
- Oyster Point (South San Francisco)-San Francisco
- Redwood City-San Francisco
- Treasure Island – San Francisco

Description

TCM 7 contains several elements. Phase 1 (2004-2006) primarily involves initial planning for new ferry service. A new low emission ferry is expected to start service between Vallejo and San Francisco during Phase 1. Phase 2 includes the start up of these services as well as further study into other possible new ferry service.

Phase 2 (Beyond 2006)

- Expansion of existing ferry service between Oakland/Alameda and San Francisco (two new vessels)
- New intermodal transit hub at Vallejo Ferry Terminal
- Expansion of service between Larkspur and San Francisco
- New Berkeley/Albany service to San Francisco (two vessels)
- New South San Francisco service to San Francisco (two vessels)
- New Richmond service to San Francisco
- Expand berthing capacity at the Ferry Building in San Francisco
- Feeder bus service to provide access to ferries (see also TCM 5)

- Expand carrying capacity for bicycles on ferries (see also TCM 9)
- Hydrogen fuel-cell ferry demonstration project
- Assist operators in converting vessels to lower emissions

Phase 2 will also include the continuing study of other new services, including:

- Potential new service between Martinez, Redwood City, Antioch/Pittsburgh, to San Francisco;
- Further study of using the Port of Sonoma
- Future study of ferry service expansion to Moffett Field
- Potential new service for passengers and cargo between Oakland and San Francisco airports

MTC has worked with ferry and other transit operators to develop transfer arrangements, including low cost transfers and joint passes (see TCM 13).

Travel Market Affected

Transbay trips across the Bay bridges are projected to increase by 40 percent over the next 25 years, higher than the Bay Area average. This measure will focus primarily on peak period commute travel, when congestion on bridges is greatest. It will also provide an additional transportation option for shopping, personal business, and social and recreational trips. Tourism is also expected to generate a number of new riders for many of the ferry services.

Effectiveness

TCM 7's emission reductions are based on MTC's analysis of the seven new services above. Emissions from the ferry vessels would be lower than those attributable to current passenger ferry service, given the WTA's commitment to the operate ferries that are 85 percent cleaner than the EPA's 2007 Tier 2 standards for marine vessels. Phase 2 improvements are expected to yield the following emission reductions:

	ROG	NOx
2015	0.06 tpd	0.06 tpd

Cost

New ferry service requires funding for vessels, terminals and parking, and feeder bus service. Funds for several new services (vessels and operating funds) were provided through voter approval of Regional Measure 2 in March 2004. In addition, the WTA received a $10.0 million federal earmark for capital investments from the SAFETEA bill that was signed into law on August 10, 2005. Local jurisdictions together with County Congestion Management Agencies will need to prioritize funding for terminals in their local funding process. Future expansion of existing ferry services is uncertain given current transit funding problems.

The capital cost of the seven new ferry routes (as estimated by WTA) is $175 million (plus the cost for fuel cell project to Treasure Island), and the net annual operating cost is estimated to be $90 million.

Impediments

Passage of Regional Measure 2 provides partial funding for the Oakland/Alameda/Harbor Bay, Berkeley/Albany, and South San Francisco routes. Planning for new ferry terminals, including environmental review and obtaining the necessary permits, could be lengthy depending on the site. Funding for feeder bus service to the new terminals will also need to be identified (see TCM 5).

Other Impacts

System level environmental impacts of an expanded ferry system were recently analyzed by the WTA in a comprehensive EIR; impacts of individual terminals would be assessed in separate project level EIRs. New ferry service could impact existing transit operators by shifting some existing passengers to water transit, resulting in some revenue diversion. New ferry terminals may result in traffic impacts on neighborhoods near the terminals. There could also be an increase in cold start emissions from the increase in passenger vehicles parked at ferry terminals during the workday.
An extensive system of ferries could add to the attraction of the Bay Area as a tourist destination and provide an economic stimulus.

Another major advantage of an expanded ferry system would be the role ferries would play in the event of a future earthquake that damaged one or more Bay bridges or BART. If an earthquake were to strike the Bay Area (highly probable over the next 30 years), ferries could play a vital role in post quake evacuation and in the immediate to longer term recovery period.

TCM 8: CONSTRUCT CARPOOL / EXPRESS BUS LANES ON FREEWAYS

Purpose

The California Air Resources Board considers an HOV lane network to be a "reasonably available" transportation control measure. This TCM could help reduce mobile source emissions by continuing the development of an integrated Bay Area HOV lane system that will encourage use of carpools, vanpools and other high occupancy vehicles (HOVs), such as express buses. Well-managed HOV lanes will encourage commuters and other trip makers to use high occupancy modes by providing faster more reliable travel compared to travel in the adjacent mixed flow freeway lanes. HOV lanes act in combination with other factors that influence carpooling and transit, such as free passage on the Bay bridges and limited or high cost parking in some areas.

Background

The Bay Area currently has 300 lane miles of HOV lanes (in 2000), including freeways and expressways (in Santa Clara County). Another 100 lane miles are programmed in MTC's current Transportation Improvement Program (2005 TIP). Monitoring of existing HOV lanes by Caltrans indicates that most all of these lanes carry considerably more people than the adjacent mixed flow lanes. Under state law, alternatively fueled vehicles identified with a sticker may also use the HOV lanes.

MTC periodically reviews HOV lane performance and updates the Bay Area HOV Lane Master Plan. Recommended HOV lane improvements are then included in the Regional Transportation Plan and programmed in the TIP. The latest HOV Master Plan would expand the system to 534 lane-miles. The HOV Master Plan also addressed other related issues, such as HOV lane occupancy requirements, hours of operation, and enforcement. The latest update (February 2003) also included a comprehensive analysis of regional emissions from different HOV lane configurations, including conversion of existing lanes to HOV lanes, raising occupancy requirements to 3+ on all HOV lanes, and providing exclusive lanes for express buses.

Description

The measure primarily addresses the physical configuration of the HOV lane system and operational requirements. Express bus service is addressed under TCM 3. The Phase 1 HOV lanes are those included in MTC's current TIP, whereas the Phase 2 lanes are those in the long range Regional Transportation Plan.
Phase 1 (2004-2006)

- 100 new miles of HOV lanes programmed in 2005 TIP
- New HOV to HOV lane connector at Rt 101/85 interchange in Mountain View
- New park and ride lots at various locations

Phase 2 (Beyond 2006)

The financially constrained element of the Transportation 2030 Plan includes funding for an additional 200 lane miles beyond those in the TIP, plus other park and ride lot projects. Another 200 lane miles is proposed in the vision element of the Transportation

2030 Plan as part of a proposed region-wide high-occupancy toll network. Special attention should be paid to express bus operations to maximize benefits for transit. Monitor and adjust occupancy requirements and hours of operation to maximize air quality and mobility benefits.

Phase 2 will also include the further development of HOV lane support infrastructure and programs, including strategically located park and ride lots, HOV bypass lanes at freeway on ramps, direct access HOV ramps ("slip ramps") for carpools and buses to major employment centers, HOV-to-HOV lane freeway connectors to better integrate the entire network, possible use of freeway shoulders by express buses to bypass bottlenecks, and active enforcement of occupancy and use restrictions.

Increases in certain express bus services will be considered to maximize person carrying capacity of HOV lanes. TCM 3 discusses regional express bus service, which would be operated on HOV lanes in the Bay Area.

Average vehicle occupancy of all HOV lanes should be carefully monitored. MTC's HOV Lane Master Plan predicts that by 2010, seven corridors will have HOV lane volumes in excess of the practical capacity of 1,600 vehicles per hour, and by 2025 15 out of 18 HOV corridors will exceed this volume. An increase in vehicle occupancy from 2+ to 3+ would normally be considered after other feasible corridor management strategies (Express Bus, expanded CHP enforcement, ramp metering, etc.) have been deployed.

As congestion continues to increase in the Bay Area and the length of the peak period expands, the Bay Area should consider moving toward a consistent regionwide set of hours (this would correspond to the current maximum spread of 5:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m.). Additionally, there may be selected corridors and travel directions where hours of operation could be extended to mid-day hours (10:00 a.m. to 3:00 p.m.) based on travel conditions in the mixed flow lanes and the number of transit, carpools and vanpool users who could take advantage of these lanes.

Travel Market Affected

TCM 8 is aimed primarily at commute trips, which account for the majority of trips during the morning and evening peak periods. In the future, HOV lanes should help to increase average vehicle occupancy for other types of trips as hours of operation are expanded (e.g., shopping, personal business, school, recreational).

Effectiveness

The emission estimates below are based on the new HOV lane miles programmed in the TIP.

	ROG	**NOx**
2015	0.37 tpd	0.39 tpd

Cost

The cost of the HOV lanes programmed in the 2005 TIP is $2.1 billion ($256.0 million is programmed in FY 2005-2007). The cost of additional lanes in the Transportation 2030 Plan is about $1.6 billion for HOV projects in the financially constrained element and over $600 million for HOV projects in the vision element. (Note: Many HOV projects are part of larger widening projects; total project costs are cited.) New county sales tax measures, as passed by voters in November 2004, will provide funding for new HOV lanes in some counties (e.g., Sonoma Route 101). Furthermore, federal earmarks from the SAFETEA bill that was signed into law on August 10, 2005 will also help fund I-80 HOV lanes in Solano County.

Impediments

A review of the history of HOV lane violation rates indicates that there has been a dramatic improvement in HOV lane compliance, with only one lane exceeding the national average. However, continuing monitoring is important to preserve public support, particularly in light of new legislation allowing hybrid vehicles to use HOV lanes. Evaluation of future HOV lane performance in the HOV Lane Master Plan indicates that some lanes could become overcrowded in the future, and it may be necessary to consider changing occupancy requirements to preserve travel time savings; however, public resistance to such changes may be difficult to overcome.

Other Impacts

Increasing the use of carpools, vanpool, and express buses will have significant payoffs in conserving fuel, reducing dependence on foreign oil, and lowering greenhouse gas emissions. TCM 8 may have a short term negative impact on air quality due to emissions generated during construction and increased localized congestion.

HOV lanes outside the urban core may have some marginal impact on land use by making longer distance commuting more attractive. However, development decisions involve many other factors as well, and ABAG's adoption of a Smart Growth land use scenario (see TCM 15) is intended to focus more population growth in the Central part of the Bay Area, where HOV lanes will provide an important augmentation to mobility.

A well-developed HOV lane network could serve as the foundation for conversion of these lanes to a High Occupancy Toll Network as discussed in TCM 18.

TCM 9: IMPROVE BICYCLE ACCESS AND FACILITIES

Purpose

Bicycles are a low cost, widely available (60 percent of Bay Area households have at least one bicycle) and pollution free mode of transportation. TCM 9 will reduce mobile source emissions by expanding bicycle facilities serving employment sites, educational and cultural facilities, residential areas, shopping districts, and other activity centers. Typical improvements would include bike lanes, routes, paths, and bicycle parking facilities. Accessibility of transit to bike riders is also part of this TCM.

Background

According to the 1995 Nationwide Personal Transportation Study, 40 percent of all trips are two miles or less, and two-thirds are five miles or less. One-third of Bay Area employees live within five miles of their worksite. These short and medium length trips are well suited to bicycle travel, especially in the Bay Area's mild climate.

While a number of factors influence people's decisions about whether to use bicycles for their trip, key obstacles are the lack of safe and convenient bicycle routes and storage. Currently bicycles are widely used for recreational riding, but are less used as a commute mode, with only 1 percent of total daily trips being made by bike (compared to 9 percent by walking), or for other trips such as shopping or school trips. Greater use could be expected with a variety of local and system-wide improvements. MTC's 2001 Regional Transportation Plan defined a regional bike network for the first time, and MTC has decided to set aside funding in the Transportation 2030 Plan to complete critical gaps in this network.

Experience in cities such as Palo Alto, Davis, Seattle, and Portland, Oregon shows that bicycles can play an important role in local transportation. To obtain TDA funding from MTC local jurisdictions must have a Bicycle Advisory Committee to plan and prioritize funding for bike projects. These plans can also address related bicycle mobility and safety features such as signage, bike detectors at signals, safe lane widths, etc. Also, a number of Bay Area cities routinely incorporate bicycle improvements when maintaining or upgrading local streets.

Bicyclists also use transit extensively for their longer trips, and most Bay Area transit systems currently accommodate bikes (though some have restrictions during peak commute times). Buses accommodate bikes either through front mounted racks or on board if they can be folded. BART and Caltrain accommodate bikes on their trains, but with some restrictions. The Regional Express buses accommodate bikes with front racks as well.

A special issue for the bicycle community has been the provision of bike lanes on the Bay bridges. Bay bridges with bicycle lanes currently include the Golden Gate, new Carquinez Bridge, Antioch, and Dumbarton bridges. New bridges under construction that will include bicycle lanes are the new eastern span of the Bay Bridge (Oakland to Treasure Island) and new Benicia Bridge. A feasibility study has been completed of installing bike lanes on the western portion of the Bay Bridge (costs range from $160

million to over $300 million), and a study is being conducted of bicycle access across the Richmond-San Rafael Bridge.

Description

TCM 9 would focus on improvements to the Regional Bike Network defined in MTC's 2001 Regional Transportation Plan. TCM 9 also supports local efforts to provide bicycle access and amenities and to better integrate bicycles into roadway improvement and Caltrans' efforts to consider non motorized travel in all of their plans, programs, and projects.

The TCM includes the following types of programs and activities:

- MTC's Regional Bike Plan consists of over 600 miles of bike routes. MTC's Transportation 2030 Plan commits $200 million in funding to complete critical links and to leverage local funds to construct even more facilities. This funding is allocated to both bicycle and pedestrian needs. As part of MTC's monitoring of the regional transportation system, MTC collects bike counts at a number of heavily traveled bike facilities.
- MTC and Air District grant programs fund bicycle improvements.
- Caltrans Deputy Director Order 64 requires Caltrans to incorporate non-motorized transportation options in design and construction of state highway facilities.
- Many local jurisdictions have developed bike plans and incorporate bike facilities when they repair or improve local arterials (for example, in Santa Clara County).

Improvements to bicycle access and facilities are also discussed in TCM 15, Local Land Use Planning and Development Strategies and TCM 20, Traffic Calming.

Phase 1 (2004-2006)

- Fund Regional Bike Plan improvements (specific projects TBD)
- Develop on-line bicycle mapping tool as part of the regional 511 traveler information number (MTC)
- Bike to work day promotion (MTC)
- Funding for bike improvements included in MTC's Transportation for Livable Communities (TLC) projects
- The Air District's TFCA program funds bicycle routes, storage and other facilities.
- Funding for other local bicycle improvements through local sales tax measures and state TDA Article 3 funds
- Fund Safe Routes to Transit improvements (see TCM 5).
- Encourage local jurisdictions to continue to develop safe and convenient networks of bicycle lanes and routes.
- Encourage local jurisdictions to provide bike racks or other secure storage in downtowns, shopping areas, and other activity centers.
- Encourage local jurisdictions to require bicycle access and amenities (e.g., bike storage, showers and lockers, etc.) as conditions of approval of development proposals (see TCM 15).
- Explore innovative bicycle programs, such as "station bike" programs or similar bicycle sharing programs at transit stations, town centers, other activity centers.

Phase 2 (Beyond 2006)

- Generally a continuation of the above activities, but with the potential for additional funding from passage of local sales tax measures for transportation in various counties.
- Additional emphasis on bicycle training and safety related projects, including public education for both bicyclists and motorists

Travel Market Affected

TCM 9 will promote bicycle use (or bicycles combined with transit) for the entire range of local trips, including commuting, shopping, personal business, and social and recreational travel. The potential market for TCM 9 is significant, given that short distance trips of less than five miles account for the majority of all trips in the region.

Effectiveness

The emission reductions below represent are based on increasing the regional bike mode share by 3% in 2006 (i.e., from 1.0% to 1.03% of regional trips) and 10% in 2015, and assume a higher bicycle mode share for regional trips, assuming an aggressive bicycle education and development program.

	ROG	NOx
2006	0.04 tpd	0.03 tpd
2015	0.06 tpd	0.04 tpd

Cost

The cost of completing MTC's Regional Bike Plan is estimated to be $1.0 billion, and as mentioned above, the Transportation 2030 Plan will provide a $200 million dedicated source of funding to help complete this network (includes pedestrian facilities). In addition, Alameda, Contra Costa, and San Francisco counties have committed close to $240 million in transportation sales tax funds for bicycle and pedestrian needs. With the passage of their sales tax measures in November 2004, Marin, Sonoma, Contra Costa and San Mateo counties pledge another $160 million. An estimated amount of $245 million in traditional funding sources is potentially available for nonmotorized needs over the next 25 years. These sources include the Transportation Development Act, the Air District's Transportation Fund for Clean Air, and Caltrans' Bicycle Transportation Account, and federal Transportation Enhancement funds. In addition, several bicycle and multi-use trail projects received federal earmarks from the SAFETEA bill that was signed into law on August 10, 2005, including $25.0 million for non-motorized transportation pilot program in Marin County.

Impediments

Widespread use of bicycles is limited by a number of factors, including the user's physical ability, terrain, weather, need to carry cargo or packages, etc. Personal safety is another concern for riders who may not have extensive experience in riding in different traffic conditions, but can be addressed through training and by providing bike lanes and other safety improvements. Public education for motorists and cyclists to obey traffic laws and "share the road" would also improve safety. While most transit operators have formulated workable arrangements for accommodation of bikes, increased accommodation of bikes during peak passenger loads will still present operational issues for some operators. Dedicated bike lanes across some bridges may be extremely expensive or operationally infeasible. Bicycle accommodation at work sites may create additional costs for employers.

Other Impacts

Bicycles have low impact on the environment across all resource categories. Some major bike facilities may have localized environmental impacts that would be addressed in project specific EIRs. Since bicycles are an excellent means of physical exercise, TCM 9 will also promote public health. Increased bicycle use may reduce the need for auto parking at some employment or residential sites and transit stations.

TCM 10: YOUTH TRANSPORTATION

Purpose

TCM 10 is designed to reduce motor vehicle travel and mobile source emissions related to the transportation of youths and students for school and other activities.

Background

Youth and students have special transportation needs. Because they have limited access to motor vehicles, they depend upon public transit, bicycles, walking, and being driven by adults.

Due to funding constraints, a number of school districts in the Bay Area are no longer able to operate school bus services. MTC conducted a recent study of re-instituting school district bus service in Alameda County, and determined that costs would be high in relation to air quality benefits. In addition, no funding sources for re-instituting service could be identified, unless new local revenues were somehow generated in the future.

MTC and AC Transit are participating in a program to reduce the cost of school bus passes for low income students within AC Transit's service area. The goals of the program are to increase school attendance and access to after school activities. The initial year's evaluation has been completed, but it does not appear that the air quality benefits are significant. (Future evaluations of a more mature program may yield different results.)

Recent State legislation (Safe Routes to Schools) provides for about $20 million per year statewide for certain projects to provide safer pedestrian access for school children. This legislation is currently pending renewal to extend the program for another five years.

The Air District's Low Emission School Bus Program provides funding to school districts for purchasing alternative fuel school buses, replacing old diesel engines with cleaner engines, or installing particulate matter retrofits.

Description

TCM 10 will improve youth and student mobility through a variety of means:

Phase 1 (2004-2006) - Primarily includes continuation of existing programs to:

- Encourage walking and bicycling to school (Safe Routes to Schools program).
- Encourage carpooling among high school students with cars (e.g., the Rides to School Program) (see TCM 14).
- Establish special carpool formation services for parents, students and staff at Bay Area elementary and secondary schools (see TCM 14).
- Encourage shuttle programs to provide service to schools.
- Target Bay Area schools for greater participation in Spare the Air program.
- Purchase new, cleaner or alternatively fueled school buses, replace old diesel school buses with cleaner engines or retrofit older school bus engines.

Phase 2 (Beyond 2006)

- Continue Phase 1 programs
- Support transit ride discounts to youth and students (contingent on transit operators ability to financially participate in the program)

Travel Market Affected

According to MTC travel data, school trips account for two to three percent of total vehicle miles traveled in the Bay Area. TCM 10 would address this market, as well as youth travel outside of school hours.

In addition to its direct impact on school trips, TCM 10 may also have an impact on commute trips. If additional school bus service is provided, parents who must now drop off their children at school while in route to work might be able to commute via ridesharing or transit.

Effectiveness

Emission reductions are largely based on reducing the number of regional auto trips made to schools by 2% in 2006 and 10% in 2015 due to the combined effects of the various programs above.

	ROG	NOx
2006	0.11 tpd	0.09 tpd
2015	0.22 tpd	0.16 tpd

Cost

MTC has provided $2 million in funds to AC Transit to test a student bus pass program for low income students. One year of the program has been completed. In 2003, the Air District had approximately $3.4 million available to assist school districts in reducing emissions from school buses. The emission reductions shown above for clean fuel school buses assume maintenance of this level of funding.

Impediments

Full implementation of this measure depends upon additional funding to re-institute school district provided bus service. The Safe Routes to Schools program will need to be reauthorized by the Legislature for funding to continue.

Other Impacts

In addition to reducing emissions, TCM 10 will mitigate local traffic congestion near schools and provide additional safety for children walking and cycling to and from school. Other benefits include reduced fuel consumption and the ability of some family members to carpool or take transit if they do not have to take children to school.

TCM 11: INSTALL FREEWAY TRAFFIC MANAGEMENT SYSTEMS

Purpose

TCM 11 will reduce emissions produced by stop and go congestion on Bay Area freeways by employing the latest traffic management technologies to improve the flow of vehicles throughout the day. TCM 11 is consistent with the State's statutory definition of a transportation control measure as a strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling or traffic congestion for purposes of reduction motor vehicle emissions (H&S sec 40233 (4)(d)).

Background

Over 60 percent of daily vehicle miles of travel (VMT) in the Bay Area occurs on freeways. Vehicles that are stuck in stop and go traffic conditions produce higher emissions than vehicles traveling at higher constant speeds. Stop and go conditions can result from either recurrent congestion (excess vehicle demand compared to roadway capacity) or accidents and other incidents (such as a disabled vehicle) that back up traffic for extended periods. Incidents during the peak period can be highly disruptive to traffic because of the greater traffic volumes at these times. Traffic flow conditions can be managed through measures to control the amount of traffic entering freeways as well as advanced incident detection and response systems. These traffic management strategies are critical since the projected growth in vehicle miles of travel will significantly exceed the expected growth in regional road capacity.

Description

Caltrans manages freeway operations through a comprehensive system of traffic advisory signs, traffic surveillance by closed circuit TV and metering of freeway on ramps. This traffic management system is gradually being expanded as funds are available. Full implementation of the Traffic Operations System (TOS) will cover approximately 450 miles of the Bay Area's freeways. The chief component of the system that will help with regular peak period congestion is ramp metering. With ramp metering, the flow of traffic onto the freeway can be controlled to predetermined rates to ensure that the vehicles entering the freeway do not overload the capacity of the freeway and create congested flow conditions downstream. Caltrans maintains a centralized Traffic Management Center (TMC), where the information is collected and processed.

Incident detection and response is also coordinated through Caltrans TMC. Detection is performed by freeway cameras, loop detectors in the freeway pavement, motorist calls, and other sources. MTC, Caltrans, and the CHP partner to provide roving tow truck services, called the Freeway Service Patrol (FSP) system to remove incidents as quickly as possible and prevent long periods of stop and go or blocked traffic. This system currently covers 450 miles of freeway and is mostly deployed to address commute conditions. FSP services include towing, gas, and accident removal. The system is popular with freeway users. Future expansion would include the addition of off peak routes and weekend service for heavily traveled recreational routes.

In addition, MTC has developed and maintains a traveler information phone number (511) to allow motorists to access current traffic information over their intended travel

route. This information system has secondary benefits in that it can allow travelers to change routes, travel times, or mode to avoid poor traffic conditions and thus reduce congestion-related emissions. (511 also provides extensive information on Bay Area transit routes and schedules.)

Phase 1 (2004-2006)

- Integrate traffic management features into new freeway construction projects
- Maintain current level of FSP service
- Maintain and improve 511 information and customer convenience

Phase 2 (Beyond 2006)

- Extend ramp metering in other major freeway corridors
- Obtain adequate funding for full deployment of Caltrans' TOS/TMC project
- Expand FSP to other routes and times of the day
- Continue to require traffic management elements in Caltrans freeway projects

Travel Market Affected

TCM 11 addresses all categories of vehicle trips, including inter-regional and commercial travel, as well as commute trips, shopping, recreation, personal business, etc.

Effectiveness

TCM 11 emission effects are based on a modest improvement in average freeway speeds of 13.5% to 27.0% due to the combined effects of all the programs above. Effectiveness was estimated using the following assumptions:

- FSP Service emission reductions updated from TCM D (from 2001 Ozone Attainment Plan) with adjustments from EMFAC2002, v2.2.
- Partial implementation of the TOS covering approximately 690 miles of 1,400 total centerline miles of Bay Area freeways (2.6% implemented in 2006 and 21.9% implemented in 2015).
- Assumed Bay Area peak period freeway speed is 37 MPH.

	ROG	**NOx**
2006	0.04 tpd	0.11-0.12 tpd
2015	0.04-0.05 tpd	(0.04) *increase* - 0.01 tpd

To maintain the effectiveness of ramp meters, the timing plans should be periodically updated.

Cost

The cost of Caltrans' high priority system management improvements is over $300 million. The cost of operating the current Freeway Service Patrol/callbox system is approximately $5 million per year). The cost of the 511 Traveler Information number is approximately $6 million per year.

Impediments

The cost of deploying the full Caltrans Traffic Operation System in the Bay Area is constrained by lack of funding at the state level to install the hardware and operate the system. Initiation of local ramp metering is often controversial, as local jurisdictions fear that ramp traffic will spill over onto local streets and disrupt their arterial operations (although these impacts are most often mitigated prior to the operation of the ramp meters through protocols for the ramp metering timing or local street improvements to accommodate the ramp queues). The main impediment to the expansion of the FSP program is the availability of funding.

Other Impacts

Emission reductions calculated for this TCM may be less than calculated due to the generation of offsetting emissions from vehicle idling at freeway on ramps and acceleration onto the freeway (although there is no specific methodology to perform these calculations). Ramp metering may benefit some communities by reducing the amount of cut through traffic that gets off the freeway to avoid congestion. Overall freeway safety will be improved with the FSP program.

TCM 12: ARTERIAL MANAGEMENT MEASURES

Purpose

Arterial traffic controls include signals, stop signs, and yield signs. Coordination of signals on major arterial routes can reduce vehicle idling and acceleration by dedicating extra "green" time to the major traffic direction and thereby reducing vehicle emissions. Bus operations will also benefit from these strategies through faster and more reliable travel times.

Background

About 40 percent of daily regional vehicle miles of travel (VMT) occurs on arterials/local roads and expressways. By coordinating the operation of multiple signals, vehicles can travel at fairly constant speed over a long route, reducing stop and go emissions. Close to 60 percent of 7000 signals in the Bay Area are currently subject to some kind of coordination. Advanced technologies allow signal timing plans to be reset based on actual traffic conditions at an intersection or group of intersections. Signals may also be adjusted from a central traffic management facility that manages large signal systems. For all signal systems it is important from an efficiency standpoint to ensure that their signal timing plans are periodically updated to reflect changes in local and areawide traffic conditions over time.

Additionally, most local bus routes use arterials, and their operations can be impeded due to local traffic congestion which slows buses and reduces schedule reliability. Improving the performance and reliability of buses on arterials can stimulate increased ridership. Slower bus travel times also results in more buses being required to provide the desired headways. Signals can be equipped with software to extend the green time or switch the signal to green earlier to move buses faster and help maintain the schedule.

Description

This measure includes both the coordination of signals that have not yet been coordinated as well as the periodic retiming of signals that are coordinated to update their timing plans based on current traffic conditions. Of the approximately 2,500 signals in the Bay Area that have not been coordinated, it is estimated that roughly 50 percent are near enough to another coordinated signal to merit coordination. Also, for the 4,400 signals that have already been coordinated, the basic feature of this TCM is the updating of their timing plans to ensure they are optimized for current traffic conditions.

Arterial management projects should pay careful attention to the needs of transit. Cities and counties should assure that retiming plans include discussions with transit operators to determine whether it is feasible and desirable to implement bus priority treatment on an arterial. Arterial management strategies that can enhance transit operations include dedicated transit-only lanes, queue jumper lanes at intersections, signal priority, bus bulbs, increased enforcement of bus loading zones, and relocation of bus stops. Reports on the effectiveness of transit signal priority systems indicate that they could provide up to 15 percent improvement in travel time along a given route.

MTC also provides technical assistance grants to local jurisdictions to update signal timing plans. Another intersection treatment that can be evaluated, if local conditions permit, is development of "roundabouts", which allow intersecting traffic streams to move in a circle around an intersection, thus eliminating vehicle stops and idling associated with traditional signalized intersections. (Roundabouts are employed extensively in the United Kingdom and throughout Europe.)

Phase 1 (2004-2006)

- Maintain current technical assistance program (MTC) for local jurisdictions that seek to retime signals; the program will also encompass evaluation of bus priority treatments as part of retiming plans.
- Continue Air District TFCA program to fund projects to improve arterial conditions where air quality benefits can be demonstrated.

Phase 2 (Beyond 2006)

- Coordinate additional 1,200 signals and continue updating timing plans
- Working with bus operators, provide priority treatment along major bus routes

Travel Market Affected

TCM 12 will affect the entire range of trips made on arterials, including commute travel, school travel, shopping, personal business, recreation, and commercial travel.

Effectiveness

The emission reduction calculations include two components: 1) coordination of an additional 1,200 new signals by 2006 which will improve traffic flow on local arterials, and 2) implementation of a select set of Transit Priority Streets (TPS) for the region's most heavily used bus routes by 2015. The TPS emission reductions assume that faster bus speeds and more reliable service would have a positive effect on bus ridership, increasing ridership by up to 5%. They also take into account mode of access to the bus route and the proportion of new riders who are transit dependent and do not own a car.

	ROG	NOx
2006	0.06-0.12 tpd	0.06-0.11 tpd
2015	0.01 tpd	0.01 tpd

Cost

The cost of coordinating/retiming signals is about $1,200 per signal. Advanced signal software and development of centralized traffic management centers would add to this cost and would vary depending on the sophistication of the installation.

Impediments

The main impediment to maintaining a well-coordinated signal system is the interest and level of effort required from local governments who have had to reduce staff resources due to financial pressures. Where signal coordination on an arterial requires cooperation of multiple jurisdictions, the negotiations can take time to resolve both technical and policy issues.

Other Impacts

Optimized signal timing plans have been shown to be potent strategies for reducing automobile fuel consumption, and the attendant greenhouse gas emissions (early interest in signal timing sprang up during the fuel crisis of the early 70's and 80's). To the extent that bus priority treatments improve travel times and schedule reliability, ridership and transit revenues could increase. Also consistent travel time savings could allow operators to serve a high volume route with fewer buses, saving capital and operating costs.

It is also critical that arterial management projects carefully consider pedestrian and bicyclist safety. Reducing idling and stop and go traffic can reduce emissions, but arterial improvements – particularly those that speed the flow of traffic – should also assure that pedestrian and bicycle safety is preserved and enhanced. Measures to enhance pedestrian and bicyclist safety include: prominent crosswalks and pedestrian signals; signage and striping; provision of or improvements to mid-block crossings; bicycle loop detectors for signals; and consideration of bicycle access in planning new arterial construction or modifications. Bike/ped safety on arterials is also discussed in TCM 20, Traffic Calming.

TCM 13: TRANSIT USE INCENTIVES

Purpose

TCM 13 will focus on programs that could potentially increase transit use and lower vehicle emissions, such as monetary incentives, better transit information, deployment of a universal fare card for transferring between operators, and better signage at transit stops and transfer locations.

Background

With 26 different transit operators in the Bay Area, transit users need convenient ways to plan trips, transfer between operators, and pay fares. Through cooperative efforts between MTC and the Bay Area transit operators, new technologies and strategies are being developed to make transit trips more convenient and to take less time.

Transit fare policies are determined by the policy boards of the individual operators, but MTC is developing a new universal fare card (Translink) to make fare collection easier and to make it easier for riders to transfer between systems. Under state law, MTC requires each transit agency in the region to maintain a fare/transfer revenue sharing agreement with every connecting agency. The ability of transit operators to stimulate ridership growth by providing discounted fares for different age groups or various trip purposes depends on the individual operator's revenue base and the ability of the operator to pay for ongoing operating costs as well as longer term capital replacement needs. Increasing fares can decrease ridership, and has a particularly adverse impact on low income transit users. (MTC is currently conducting a study of overall transportation affordability.)

Various operators have also designated key transit hubs or centers for improvement (e.g., AC Transit's Comprehensive Service Plan which is developing 11 transit centers, 6 at BART stations), and these improvements are being made as funding becomes available.

Description

TCM 13 includes the following:

Phase 1 (2004-2006)

- TransLink®. TransLink is a program that utilizes "smart card" technology for the collection of fares on all the region's transit systems. It will significantly improve the convenience of fare payment and collection. The universal fare card is being deployed on transit systems throughout the region, making it easier for riders to use multiple transit systems and providing an improved revenue tracking mechanism for transit operators. The initial phase will include deployment of Translink with the major transit operators.

- Improvements to the 511 transit information service. Information for trip planning can be obtained by calling 511, which connects people to the individual transit operator, or through web based information on the internet at

http://transit.511.org/. Web based transit information is also available for planning trips.

- Commuter Check/Ecopass. The Commuter Check program, which sells transit vouchers to employers who then give them to employees to purchase tickets and passes, continues to expand with over $12 million in annual sales. A similar type of program in Santa Clara County, called EcoPass, provides discounted tickets to employees through their employer. Residential EcoPass programs have also been implemented. MTC and the Air District will encourage employers, transit operators, local governments and others to promote and expand such programs. Encourage colleges and universities to include transit passes with student registration fees to encourage transit use by students. The Class Pass program at UC Berkeley provides an AC transit pass as a part of student registration fees.

- Improved signage at transit transfer hubs, including the provision of transit schedules and route maps. MTC's Transit Connectivity Report addresses the need for better signage and other information at transfer hubs, which would be a low cost improvement. The Report was completed in January 2005, and an expanded effort to address transit connectivity, utilizing Regional Measure 2 funds, will continue through 2005.

Phase 2 (Beyond 2006)

In addition to the continuation of the efforts above, additional activities would include:

- Deploy real time transit arrival information. Bay Area transit operators are in different stages of studying and deploying equipment to provide real time bus/train arrival information. (BART has electronic arrival information signs, Muni is planning on a systemwide application, and AC Transit has installed bus arrival information signs along the San Pablo Ave. enhanced bus route.) Real time information improves the transit experience by removing uncertainty in knowing the arrival time for the next vehicle, minimizing waiting time, and increasing a passenger's sense of security for late night trips.

- Increased amenities at transit hubs and stops. The purpose for providing new amenities at transit hubs would be to improve comfort and convenience for riders and create a sense of "place" by having food, retail activities, restrooms, improved shelters, lighting improvements, etc. These improvements enhance the transit experience for riders, particularly regarding the quality of service and ease in making transfers.

- Complete transit centers as identified in AC Transit's *Comprehensive Service Plan* in Alameda and Contra Costa Counties.

Travel Market Affected

TCM 13 will make transit a more attractive and convenient option for a wide range of trips. Measures to promote the sale and subsidy of transit passes through employers focus primarily on commute travel, whereas TCM 13 measures would improve convenience for all types of transit trips.

Effectiveness

Emission estimates are based on a 1% to 5% increase in transit ridership due to the combined effects of all of these programs.

	ROG	NOx
2006	0.02-0.12 tpd	0.02-0.10 tpd
2015	0.01-0.05 tpd	0.01-0.04 tpd

Cost

Annual costs for various types of programs are provided below:

TransLink® costs about $80 million over the next 5 years as program ramps up.

511 costs about $6 million per year.

The RTC Clearinghouse and Commuter Check program cost approximately $400,000 per year.

Real Time Transit Arrival Information - With the passage of Regional Measure 2 in March 2004, about $20 million in competitive grant funding is available to implement real time transit information systems (the cost of large scale deployment is unknown because of the different types of systems and applications which are being considered in the Bay Area by different transit operators). Priority will be given to projects identified in MTC's Transit Connectivity Plan mentioned above.

Impediments

Most of the key elements of this measure are already in a mature stage of deployment. Development of more ubiquitous transit arrival information will depend on resolution of technological issues among by different transit operators and new funding. Provision of enhanced transit amenities at hubs will require new funding.

Other Impacts

TCM 13 is likely to enhance the overall perception of the quality of transit service in the Bay Area, and would have indirect benefits for reduced auto fuel consumption and greenhouse gas emissions to the extent the combination of strategies above produce new transit riders. Deployment of real time transit information systems results in an unknown additional demand on transit operating funds.

TCM 14: CARPOOL AND VANPOOL SERVICES AND INCENTIVES

Purpose

The purpose of TCM 14 is to reduce motor vehicle emissions by promoting carpooling and vanpooling as an alternative to the single occupant vehicle.

Background

Organized efforts to promote ridesharing in the Bay Area began in response to the oil crises of the 1970's. These programs have grown steadily over the years due mainly to efforts by regional agencies, local governments and employers to reduce commute related congestion. The share of Bay Area commuters who carpool to work (about 13 percent) remained about the same between 1990 and 2000; this share is in the upper range compared to other major metropolitan areas. MTC administers the regional ridesharing program through its contract with Parsons Brinkerhoff, Quade & Douglas, Inc. MTC also provides funding to the Solano Napa Commuter Information (Solano and Napa counties), Peninsula Traffic Congestion Relief Alliance (San Mateo County), and 511 Contra Costa (Contra Costa County) to perform portions of the Regional Rideshare Program's work in their respective counties.

The Rideshare Program's primary focus is on carpool and vanpool matching services, but the program also promotes transit, biking, and walking. The program also coordinates with various county ridesharing agencies to help support their services and with employers who maintain commute alternatives programs. (Employer based trip reduction programs are discussed in TCM 1.)

MTC created a technical advisory committee (TAC) to provide strategic direction for the program. This TAC is made up of representatives of the nine county congestion management agencies (CMAs) and the Air District, since several CMAs also support local programs to promote carpooling and vanpooling. For example, Alameda County operates a guaranteed ride home program for employees who take transit or carpool to work and need to make emergency trips home during the day. Contra Costa, San Mateo, Solano and Napa counties also operate local TDM programs, including local incentive programs, local transit information and shuttle operations and community outreach. The Air District's TFCA program also provides financial support for the regional rideshare program and for some of the county trip reduction programs.

Description

MTC administers the regional rideshare program which provides the following core services to the Bay Area public: ridematching information; vanpool formation and support; information on other commute alternatives (transit, bicycling and telecommuting); outreach and promotion to generate new ridematching applications (e.g. Rideshare Week, transportation fairs, other special events, etc.). In 2003 the program initiated on-line ridematching to provide added convenience for those wishing to explore carpool options.

The rideshare program contractor is responsible for answering all telephone inquiries related to rideshare and bicycling, through the regional 511 Traveler Information system. The rideshare program also maintains the rideshare and bicycle pages of the 511.org website, where carpoolers can find maps showing carpool lanes and park and ride lot locations. Vanpool drivers can also post advertisements of available seats.

Phase 1 (2004-2006)

- Maintain current regional rideshare programs and services. Increase efficiency in delivering regional core by improving coordination with local programs.
- Examine other innovative concepts to promote carpooling, such as real time ridematching (using the internet).
- Explore possibility of providing a regional incentive to increase ridesharing by implementing a demonstration program offering a cash incentive for new vanpools.
- Explore options for expanding medium distance vanpools (i.e., 15-30 miles one-way), particularly since vanpools are able to take advantage of the extensive carpool lane system. Real-time vanpool matching could also be used to facilitate shared-ride van services. Such service could be based on the airport shuttle concept, but designed to serve multiple origins and destinations, rather than a single destination such as an airport.

Phase 2 (Beyond 2006)

- Maintain Phase 1 programs and enhance where feasible.

Travel Market Affected

This TCM focuses on commute travel; however, the ridematching system has potential applications for other types of trips, such as trips to and from transit stations, home-to-school trips, as well as trips to airports and other major activity centers.

Effectiveness

Due to recent changes to the approach to the regional ridesharing program, the program is expected to become more effective in the future. Emission reductions are based on a 2% increase in ridesharing by 2006 and a 10% increase by 2015. Since this measure does not substantially increase the current level of effort by local and regional agencies or the private sector, or involve new concepts that are untested, very minimal emissions reductions are assumed. However, without maintaining current efforts, commute carpool and vanpool trips would likely decrease.

	ROG	NOx
2006	0.01 tpd	0.01 tpd
2015	0.01 tpd	0.01 tpd

Cost

The cost to implement the regional rideshare program is approximately $4 million per year. Air District TFCA funding for regional and county trip reduction programs in FY 03/04 was approximately $4.4 million.

Impediments

Surveys and focus groups have found that many people want flexibility in their daily trips due to the need to have flexibility in their work hours, conduct errands, or pickup and drop off children at daycare. This lifestyle directly impacts the markets for carpooling and vanpooling which are dependent on fixed schedules among participants. Strategies such as guaranteed ride home programs and real-time ridematching can help address these concerns. A secondary impediment is the decline in employer/private sector interest due to other financial priorities. This has led to a decline in promotional activities such as on-site commute fairs and dissemination of on site trip reduction information. The potential market for the real time ridematching concept and/or shared-ride van concept is large, but difficult to quantify until the specific approach is better defined. MTC rideshare program staff will participate on a task force for an instant ridematching demonstration project, sponsored by the Alameda County CMA.

Other Impacts

Increased use of carpools and vanpools for commuting is a highly effective strategy for reducing fuel consumption and CO_2 emissions, and lowering dependence on foreign oil. Commuters who carpool and vanpool save money by reducing their expenditures for maintaining and operating their vehicles. In heavily traveled corridors, carpools using HOV lanes significantly improve the person carrying capacity of a freeway. Ridesharing programs can provide critical services in emergencies. After the Loma Prieta earthquake, the rideshare program served as a source of information for large numbers of employees seeking help in finding commute options to get to work.

TCM 15: LOCAL LAND USE PLANNING AND DEVELOPMENT STRATEGIES

Purpose

Land use patterns directly affect how we travel between homes, jobs, schools, shops and services, and other destinations. Motor vehicles are a major source of ground-level ozone precursors, fine particulates, toxic air contaminants, carbon monoxide, and other air pollutants. TCM 15 seeks to reduce motor vehicle use and emissions by promoting land use patterns and development projects that facilitate walking, bicycling and transit use for a higher percentage of personal trips.

Background

The Air District has encouraged local governments to address the air quality impacts of all local activities by incorporating air quality elements or sections into their general plans since 1986. The District, ABAG, MTC and the Bay Area Alliance for Sustainable Communities undertook the Smart Growth Strategy/Regional Livability Footprint Project in 1999. The goal of the Smart Growth Project is to develop and implement a preferred land use vision for the region to promote environmental quality, economic vitality and social equity. During an extensive public workshop process, workshop participants identified a vision for the region that favors compact, mixed use development near transit stations, transit corridors and town centers. The Smart Growth vision is reflected in ABAG's Projections 2003, and informs the Regional Transportation Plan (Transportation 2030), air quality strategies, and implementation programs of the regional agencies.

The California Clean Air Act (CCAA) requires regional clean air plans to include indirect source control programs to encourage developments, as well as local and regional plans, that:

- Minimize dependence on motor vehicles and, thereby, reduce air contaminant emissions;
- Require mitigation of adverse air quality impacts of facilities that do attract a significant volume of motor vehicle traffic.

TCM 15 responds to the indirect source requirements of the CCAA and the increasing understanding of the connection between land use, transportation and environmental quality as reflected in the Smart Growth Project and related programs.

Description

The location, mix, intensity and design of development influence travel choices. Communities can promote transit, walking and cycling by encouraging compact, infill development providing a mix of uses at moderate or high densities.

Local governments can address the land use/transportation/air quality connection through planning and development policies and programs. Cities and counties can integrate air quality-beneficial policies and programs into general plans and related implementation programs such as subdivision regulations, zoning ordinances, capital improvement programs, parking benefit districts, parking requirements, and development design guidelines. Localities can produce separate air quality elements, or

can incorporate air-quality beneficial policies into the land use, circulation/transportation, and other required elements of the general plan.

Local governments and transit districts can prepare specific plans for downtowns, transit stations, and other activity centers. Development patterns can support transit, walking and cycling in various ways, including:

- Focusing higher density development near transit stations and corridors
- Encouraging compact development with a mix of uses that locates housing near jobs, shops and services, schools, and other community facilities
- Encouraging infill development
- Locating shops and services near employment centers
- Designing streets, sidewalks and bike routes to ensure safe and convenient access for pedestrians and bicyclists
- Designing development projects to provide safe, convenient pedestrian access to transit stops and nearby services
- Reducing parking requirements and the land area occupied by parking

Phase 1 (2004-2006)

MTC will implement its 5-point transportation land use platform that was adopted as part of the Transportation 2030 plan process. Included in the platform are a transportation/land use policy and a new planning grant program to fund specific plans around transit stations and corridors, which was approved by MTC in July 2005.

MTC's Transportation for Livable Communities (TLC) planning grants fund local planning programs to promote community revitalization.

MTC's TLC capital grants fund local projects that promote transit, walking and cycling.

MTC's Housing Incentive Program (HIP) provides financial incentives to cities to provide high-density housing near transit stations and corridors.

MTC's "T-Plus" program will provide funding to each county congestion management agency to promote community revitalization projects.

The Air District's Transportation Fund for Clean Air (TFCA) funds bicycle projects, traffic calming, shuttles, low emission vehicles, trip reduction programs, and other clean air projects. Funding levels average approximately $20 million/year.

ABAG will periodically update and monitor its Smart Growth demographic projections.

MTC will develop incentives and conditions to promote supportive local land use policies around major new transit investments that generate sufficient transit ridership and make new transit investments economically viable.

Starting in 2006, MTC, ABAG, and the Air District will be conducting a parking study to assess strategies to reform parking policies to support smart growth and to demonstrate the applicability of those strategies in a series of case studies.

MTC, ABAG and the Air District could develop financial and other incentives to encourage innovative parking strategies to promote reduced amounts of parking, parking fees, and other parking programs. Cities and counties have authority over parking policies. Local governments could take various actions to promote innovative parking strategies, including:

- Reduce or eliminate parking requirements. Reduce parking requirements, particularly at transit oriented and infill development, mixed use projects, senior and affordable housing, and other appropriate locations. Utilize market-based measures to determine the appropriate amount of off-street parking.
- Parking maximums / caps. Limit the number of off-street spaces in areas with good transit service. Encourage using cost savings to enhance transit services.
- Unbundled parking. Consider allowing developers and property owners to unbundle the price of parking spaces from the rent for tenants.
- Shared parking. Promote shared parking at mixed use projects and other appropriate locations.
- On-street parking. Price on-street parking in commercial districts according to market demand and with consideration to adjacent off-street parking facilities. Consider implementing parking benefit districts that use revenue generated from on-street parking fees to fund pedestrian-supporting infrastructure and programs in the area.
- Parking fees. Charge market-value for off-street parking, and consider residential permit programs to alleviate spillover concerns.
- Parking cash out. Promote parking cash out through outreach, financial assistance, and requirements through CEQA processes or conditions of approval.
- Parking design. Adopt design guidelines and local ordinances that minimize land area dedicated to off-street parking. Locate parking underground or behind developments to reduce land area used for parking and/or increase pedestrian accessibility. Encourage parking structures with ground-floor uses to enhance pedestrian access.

MTC, ABAG and the Air District will provide technical assistance to local agencies by maintaining examples of best practices for innovative parking strategies. Highlight and publicize through workshops, guidance documents, awards, and other methods.

MTC, in cooperation with transit operators and local governments, will examine promising opportunities for transit oriented development.

ABAG will promote multi-jurisdictional planning along selected transit corridors to encourage transit oriented development.

MTC, ABAG and the Air District will pursue legislative changes to remove barriers and provide incentives for smart growth.

MTC, ABAG and the Air District will engage in outreach and public involvement processes to build support for smart growth programs.

The Air District, MTC and ABAG will explore ways to promote carsharing as a way to reduce parking requirements. The regional agencies and cities and counties could

support carsharing through financial incentives, helping secure additional parking, assistance with marketing, and pilot programs. Emphasis should be placed on hybrid and SULEV vehicles to maximize air quality benefits.

The Air District will monitor implementation of indirect source mitigation programs in other regions for potential feasibility in the Bay Area.

The Air District, MTC and ABAG will consult with and provide technical assistance to local jurisdictions interested in pursuing smart growth strategies, including highlighting best practices from throughout the Bay Area and other parts of the country.

The Air District, MTC, and ABAG will highlight and publicize noteworthy examples of local clean air plans, policies and programs, as well as noteworthy development projects.

Cities and counties are encouraged to require the provision of bicycle access and facilities (e.g., bike lanes/routes, secure parking and showers/lockers, where appropriate) at developments such as employment centers, shopping centers, and residential complexes (see TCM 9).

Cities and counties should assure that local plans, policies and programs encourage walking and promote a safe and convenient pedestrian environment (see TCM 19).

Cities and counties, in cooperation with transit providers, should prepare transit station area plans for appropriate transit stations and transit centers, with the goal of promoting higher density, mixed use development, multimodal connections and convenient pedestrian access in order to increase transit use, walking and other alternative modes.

Cities and counties are encouraged to require developer-based trip reduction programs.

The Air District encourages cities and counties to develop strategies to reduce emissions from sources other than motor vehicles, such as lawn and garden equipment, woodstoves and fireplaces, and residential and commercial energy consumption.

The Air District, ABAG and MTC will study opportunities to promote location efficient mortgages (LEMs) to encourage home purchases near transit.

The Air District will continue to provide technical support to local jurisdictions and other lead agencies on air quality analyses and mitigations through the BAAQMD CEQA environmental review program in the following ways:

- Review and comment on CEQA documents for major projects and plans.
- Provide a guidance document on best practices for assessing and mitigating air quality impacts.
- Answer questions via telephone and email from planners, consultants and the public about all aspects of air quality analysis of the environmental review process under CEQA.
- Encourage the incorporation of air quality beneficial policies and programs as CEQA mitigation measures into local projects and plans through comment letters, phone calls and email.

Phase 2 (Beyond 2006)

Implementation of smart growth strategies will occur over many years. MTC, ABAG and the Air District will continue the programs listed above, and refine and augment them as appropriate, in future years. Budgetary and legislative constraints may influence long-term programs.

Travel Market Affected

Local planning and development to improve air quality and reduce motor vehicle travel will address all types of trips–commute, shopping, school, recreation, social, and personal business.

Effectiveness

TCM 15 emission reductions in 2006 are based upon expected growth in funding smart growth projects through the Air District's TFCA program and MTC's TLC/HIP programs. This TCM would reduce emissions over the long term by promoting better integration of land use and transportation at the local level and by supporting the implementation of the other TCMs in the Ozone Strategy.

	ROG	**NOx**
2006	0.09 tpd	0.14 tpd
2015	N/A*	N/A*

* Note that for 2015, emission reductions associated with TCM 15 are not yet determined. The Ozone Strategy mobile source inventory is based upon ABAG's Projections 2003, which is a smart growth policy-based regional population forecast. Therefore, the emissions benefits associated with many of the programs and policies in TCM 15 have already been accounted for in the emissions inventory baseline.

Cost

It is impossible to quantify costs associated with this measure. Costs would include preparation of general and specific plans, development review and environmental clearance, public capital investments, private investment in development projects, and other costs. Costs would be offset by rents and tax revenue from new development.

Impediments

Because Smart Growth land use patterns result in accommodating more people in the urban core with more infill development, there sometimes may be jurisdictional and neighborhood concerns with increased density, traffic, parking, localized air pollution and other impacts. Providing appropriate levels of transit service for this new development will require additional funding. A full range of incentives will need to be developed, which will take time and possible legislative action. Local governments may have limits to the staff resources available to making major changes in their plans and zoning to reflect Smart Growth principles.

Other Impacts

Local plans, policies and programs that effectively integrate land use, transportation and air quality considerations can help cities and counties achieve the following benefits:

- Preserve open space, agriculture and other land resources
- Improve housing supply and affordability
- Reduce long distance commuting
- Increase accessibility
- Increase mobility
- Conserve energy
- Improve water quality
- Use infrastructure and land more efficiently
- Increase transit ridership
- Improve economic competitiveness
- Enhance community attractiveness and quality of life

The Smart Growth Strategy/Regional Livability Footprint Project preferred land use vision will provide emission benefits in neighboring counties as more housing is provided in the Bay Area, cutting down on long distance commute trips. MTC analyzed effects in neighboring counties and estimated roughly a 2.8% decrease in VMT and ozone precursor emissions.

TCM 16: PUBLIC EDUCATION/INTERMITTENT CONTROL MEASURES

Purpose

The purpose of this measure is to educate the public about air quality in the Bay Area and encourage residents, employers and local governments to make choices that have a positive effect on air quality, particularly regarding transportation and consumer activities. Special emphasis is placed on the need to curtail polluting activities on the relatively infrequent days when meteorological conditions could lead to poor air quality and possible exceedances of federal and state air quality standards. This latter element of the region's air quality program is called *Spare the Air (STA)*.

Background

Educating the public about the health effects of air pollution, the sources of air pollution, and ways to reduce air pollutant emissions is a critical component of efforts to improve air quality in the Bay Area. Increased awareness can lead to changes in personal behavior. The Air District administers a wide variety of public education campaigns. The Air District encourages voluntary actions that reduce air pollution throughout the year, but particular emphasis is focused on days when pollution levels are expected to be highest.

Since motor vehicles are the leading source of ozone forming emissions in the Bay Area, efforts to reduce vehicle travel, particularly on Spare the Air Days, can help in avoiding exceedances of federal and state standards. The Air District also encourages the public to reduce other types of polluting activities including use of paints, solvents and consumer products, use of gasoline-powered lawn and garden equipment, and woodburning. The Air District attempts to inform the public of actions they can take through public announcements in the media, through employers and local governments, and through various promotional activities. Surveys indicate that the public is willing to alter behavior in response to air quality goals. Because the Spare the Air program is voluntary in nature, its effectiveness depends on the cooperation of the general public.

Description

Spare the Air is an intermittent, voluntary control program in which Bay Area residents, businesses and public agencies are asked to reduce or postpone polluting activity on days when weather conditions are conducive to high ozone levels. It focuses on the 5 to 15 days per year when air quality is expected to be poor. *Spare the Air* days are declared when any part of the Bay Area is predicted to have 92 or greater (parts per million) on the Pollutant Standards Index (PSI) scale - approaching the new federal 8-hour standard for ozone. Predictions are made the previous afternoon by Air District meteorologists. STA advisories are then sent to participating individuals, employers and agencies, as well as press and media outlets.

On these days, the Air District issues *Spare the Air* advisories and asks Bay Area residents to curtail or postpone activities that pollute. This includes eliminating discretionary driving and substituting driving trips with biking, walking, telecommuting, taking public transit or carpooling instead. The strategy also includes linking motor vehicle trips together ("trip-linking") to avoid excessive engine cold start emissions. To

inform the public of these days, the Air District sends e-mail notices, contacts television news bureaus, publishes announcements in newspapers and makes public service announcements on the radio. Caltrans posts messages on their variable message signs on Bay Area freeways letting motorists know of *Spare the Air* days. Residents are also asked to avoid activities that generate pollution such as use of hair sprays, pesticides, gasoline-powered lawn and maintenance equipment, use of oil-based paints and solvents, and the use of recreational boats. Together these activities generate over 200 tons per day of organic gases in the Bay Area.

The Air District also works very closely with Bay Area employers to implement the *Spare the Air* program. Employers who participate in the program pledge to educate their employees on air quality and *Spare the Air*, and to notify employees of *Spare the Air* days. The Air District provides numerous educational materials to the employers including brochures, a video, posters, signs, sample newsletter articles, and training sessions. Approximately 2,250 employers representing over a million employees now participate.

Topics addressed in the public outreach effort of this TCM include:

- Health effects of air pollution,
- Connection between air pollution and motor vehicle usage,
- Benefits of reducing single-occupant motor vehicle use, particularly on poor air quality days,
- Benefits to the environment of carpooling, vanpooling, taking public transit, biking, walking, or telecommuting,
- Air pollution effects of motor vehicles that are not properly tuned,
- Benefits of trip-linking,
- Air quality advantages of avoiding consumer products that pollute on high ozone days and using electric or hand-powered lawn mowers and leaf blowers instead of gasoline powered models.

In addition to expanding outreach efforts and enrolling increasing numbers of participants, the STA program has added other elements over the years, including:

- Bay Area Clean Air Partnership (BayCAP) – Partnering with business groups and employers to promote voluntary action to reduce air pollution.
- Clean Air Cities and Counties – Engaging local governments to educate residents about the STA program and ways to reduce air pollution.
- Clean Air Consortium – Partnering with cities, counties and other public agencies to minimize polluting activities on STA days, i.e., postponing activities such as lawn maintenance, building painting, vehicle refueling, etc.
- A youth outreach campaign and educational materials.
- Coordination with San Joaquin Valley Unified APCD and Sacramento Metropolitan AQMD Spare the Air programs.
- Spare the Air Tonight – Expansion of the STA program to wintertime, to discourage woodburning when high levels of fine particulate are predicted.

Several recent efforts to examine new Spare the Air strategies have included free fares on the Livermore Amador Valley Transit system during the 2003 and 2004 ozone seasons, free morning BART rides on the first two weekday STA days during the 2004

ozone season, providing “Observe the Speed Limit” messages on Caltrans’ freeway signs to reduce emissions from vehicles traveling at high speeds, conducting surveys of older vehicle owners to determine the interest and ability of owners of these cars to not use them on Spare the Air Days, and conducting meetings with employers to examine telecommuting opportunities on these days. During the 2005 ozone season, morning commutes will be free on participating Bay Area transit during the first five non-holiday weekday Spare the Air Days.

Phase 1 (2004-2006)

- Continue *Spare the Air* notices to media, employers, public agencies and individuals.
- During the 2005 ozone season starting June 14, 2005 and ending October 14, 2005, free morning commutes are offered on participating Bay Area transit during the first five non-holiday weekday Spare the Air Days.
- Place greater emphasis on discouraging use of pre-1985 cars in Spare the Air advisories, outreach to employers and public agencies, STA website, and other outreach efforts.
- Expand Clean Air Consortium to include additional cities and counties, as well as other public agencies such as park districts, school districts, colleges and universities, etc.
- Place greater emphasis on ROG reductions (e.g., consumer products, paints and solvents, vehicle refueling, barbecue lighter fluid) in Spare the Air advisories, outreach to employers and public agencies, STA website, and other outreach efforts.
- Target major commercial airports and airport tenants for greater participation in the Spare the Air program.
- Place greater emphasis on obeying freeway speed limits in electronic freeway signs, STA advisories, outreach to employers and public agencies, STA website, and other outreach efforts. Explore opportunities to increase enforcement of freeway speed limits on Spare the Air days.
- Increase efforts to coordinate Bay Area Spare the Air program with Sacramento and San Joaquin Valley STA programs and provide additional outreach to Sacramento and Central Valley commuters to the Bay Area.
- Discourage use of recreational watercraft on STA days.
- Continue gasoline-powered lawnmower buyback incentive programs.
- Continue to expand the STA employer network.
- Target Bay Area schools for greater participation in Spare the Air program.
- Educate the public about ways to maintain and operate motor vehicles to reduce air pollution, such as keeping vehicles properly tuned, using synthetic motor oil, observing speed limits, and avoiding aggressive acceleration and deceleration.
- Continue the Bay Area Clean Air Partnership (BayCAP) shuttle project to inventory existing shuttle programs, provide coordination and assistance, and promote “best practices” among shuttle operators.

Phase 2 (Beyond 2006)

- Continue Phase 1 programs, and expand depending on effectiveness and resources available.
- Study effectiveness and costs of free transit service on all Spare the Air days.
- Possible legislative approaches to formalize and strengthen certain episodic approaches, as required.

Travel Market Affected

The Spare the Air program is aimed at the general public with special emphasis on employers and morning commuters, since reductions in early morning emissions are important to avoid exceedances that occur later in the day as ozone precursors "cook" in hot sunlight. However, all motorists should attempt to reduce discretionary vehicle trips or better link trips to avoid excess emissions throughout the day, particularly when an ozone episode may extend for several days at a time.

Effectiveness

Efforts have been made to quantify emission reductions on Spare the Air days through follow up surveys. The Air District's current estimate is that the *Spare the Air* program reduces ROG by about 1.9 tons per day and NOx by about 2.0 tons per day.[1] The estimated emissions reductions for the 2005 ozone season free morning commute for the first five non-holiday weekday STA days is estimated to be 0.21 tpd of ROG and 0.20 tpd of NOx. Likely emission reductions from all the proposed Spare the Air enhancements are unknown, but collectively they could contribute additional reductions on STA days.

Cost

The annual cost of the *Spare the Air* program is approximately $2 million, which includes staff and consultant time for the public and employer program, the printing and distribution of materials, media advertising, and other costs. MTC and the Air District has committed $4.0 million towards a Spare the Air/Free Morning Transit Commute Program for the 2005 ozone season.

Impediments

The Air District has worked with employers and the general public through a voluntary framework, which relies on cooperation of all parties. Some enhancements to the Spare the Air program would require additional resources to initiate and maintain the programs. Free transit service on all Spare the Air days would require additional funding in the future.

Other Impacts

[1] Because the STA program is an episodic program, these emission reductions are assumed to occur only on STA days.

This measure raises the awareness of the public about the causes of and solutions to the air pollution problem. Although this TCM mainly addresses intermittent controls, it may have a broader impact. People who choose to change their travel or other behaviors in response to a voluntary request may continue to reduce vehicle use or change other polluting activity on a regular basis.

TCM 17: CONDUCT DEMONSTRATION PROJECTS

Purpose

This measure will promote demonstration projects to develop innovative approaches to reduce mobile source emissions.

Background

Additional work is needed to test new approaches and monitor their effectiveness, quantify emission reductions and travel benefits, and evaluate the synergistic effects of complementary measures. It is important to encourage demonstration projects that can serve as models for trip reduction and travel demand efforts and clean fueled vehicles and infrastructure throughout the region.

Description

This measure would undertake various demonstration projects and studies to further develop strategies that will ultimately be needed to help achieve State air quality standards. While these demonstration projects are not all strictly TCMs, they do impact mobile source emissions. The Air District, MTC, ARB and Caltrans will cooperate in developing demonstration projects. Examples are as follows:

- Additional demonstration projects will be developed to promote the use of low and zero emission vehicles by public and private sector fleets, as well as by individuals. (Current Air District programs to encourage low emission vehicles are discussed under MS-3, Low Emission Vehicle Incentives.) Forthcoming demonstration projects may include both on-road vehicles (e.g. battery electric and hybrid school buses) and off-road vehicles (e.g. retrofit devices for diesel marine engines and construction equipment) with a variety of uses and fuels (e.g. compressed natural gas, hybrid engines, biodiesel).

- Hydrogen technology. Continue working with automobile manufacturers and other interested parties on the testing of hydrogen fuel cell vehicles for use in local public fleets. Work with local and statewide hydrogen fuel cell partnerships on ways to improve fuel cell technology and to develop demonstration projects that improve the state's hydrogen fueling infrastructure, especially exploring possible renewable sources for hydrogen.

- Gas cap replacement program for older cars. Preliminary District analysis suggests that replacing gas caps in vehicles exempt from Smog Check may be a cost-effective emission reduction strategy. Currently, the enhanced Smog Check program in the Bay Area includes a test of a vehicle's evaporative control system through which missing or malfunctioning gas caps must be repaired. A gas cap replacement program could target pre-1976 model year vehicles that are not required to submit to Smog Check. The Air District is considering a pilot program to swap older leaking gas caps for new gas caps in pre-1976 vehicles. Further analysis from a short-term pilot program in one Bay Area County would help to determine emission reductions, implementation mechanisms, costs, and funding sources for a possible more comprehensive program.

- Heavy duty diesel vehicle idling. Extended vehicle idling of diesel vehicles can be a source of significant NOx and fine particulate emissions. This measure would explore the use of electric hookups at locations with high numbers of heavy-duty trucks to reduce the use of the vehicle's diesel engine to produce on board power, and other techniques for reducing diesel vehicle idling. This demonstration project could complement efforts to reduce diesel idling under MS-1, Diesel Equipment Idling Model Ordinance.

- Refuse truck incentive program. A new ARB regulation, which took effect in July 2004, requires all refuse vehicle fleets to equip their trucks with the best available control technology to reduce emissions of particulate matter. The Air District and MTC plan to make incentive funds available to encourage fleets subject to the ARB regulation to install control technology to reduce NOx emissions, in addition to particulate matter.

- Carsharing. Membership in carsharing organizations is increasing. Preliminary data from surveys to date show reduced auto ownership and reduced emissions from participants. There may be greater potential over the long term as carsharing allows households to reduce auto ownership. The data is very limited, however, and further experience with carsharing will allow better analysis of the program's air quality impact and suggest ways to increase its effectiveness. This demonstration project would explore carsharing projects that have greatest potential to be air quality beneficial and then promote these opportunities, particularly at BART stations. MTC and the Air District plan to partner with UC Berkeley's Institute of Transportation Studies to fund a hybrid and hydrogen fuel cell carshare vehicle demonstration project at the Pleasant Hill BART station. Notably, the City and County of San Francisco received a $1.6 million federal earmark from the SAFETEA bill that was signed into law on August 10, 2005 to expand its carsharing pilot program to serve low- and moderate-income neighborhoods.

Travel Market Affected

Demonstration projects generally would directly affect a small percentage of travel in the region. However, the experience gained through these projects will be of great benefit in developing longer term policies and programs that affect all types of travel in the region, including commuting, shopping, recreation and personal business, and commercial travel.

Effectiveness

Demonstration projects are intended to test, sometimes at a limited scale, concepts that appear promising but whose cost effectiveness is uncertain. Because the success of future demonstration projects is unknown, no direct emission reductions have been identified. However, results from demonstration projects should contribute to reduced emissions by providing tested models to use in crafting effective future programs with possible broader implementation.

Cost

Specific elements of demonstration projects have not yet been fully developed, and thus estimating costs is not feasible at this time.

Impediments

Demonstration projects are generally supported by the public and funding agencies as a reasonable way to gain valuable information about the feasibility and cost of new approaches to problems without making large scale investments up front. Depending upon the demonstration project, new funding may be required from the Air District and MTC (federal CMAQ funds).

Other Impacts

If found to be effective, the demonstration projects in TCM 17 could have beneficial impacts in terms of reducing certain other air pollutants (such as particulates from diesel engines) and could have positive economic impacts if the projects are developed and implemented by companies in the Bay Area.

TCM 18: IMPLEMENT TRANSPORTATION PRICING REFORM

Purpose

Strategies to price the use of the region's transportation system could have long-term implications for improving air quality and addressing persistent congestion issues. Pricing of transportation facilities would not only affect travel behavior, but would generate new revenues for future transportation improvements and for TCMs in this plan. Sound economic principles require a link between the cost of providing transportation facilities and services and the cost of using them; however, recent transportation funding decisions have decreased the proportion of funding from user based charges (such as gas taxes and tolls) and increased reliance on non user charges (such as local county sales). A variety of pricing strategies have been suggested to restore and better link the price of transportation with user demand and with the indirect costs of transportation consumption related to air and water quality impacts.

Background

Gas taxes have been the historic means for paying for transportation improvements, and as prices increase motorists generally will curtail some of their travel. Federal and state taxes currently amount to about 36 cents per gallon, and have not increased in over a decade. Increases in fuel efficiency and increased use of alternative fuels also reduce revenues from gas taxes. The arguments for new transportation fees are based on the need to provide enhanced transportation choices as much as they are on providing near term emission reductions. In order to affect the number of trips and amount of travel made by autos, pricing strategies would need to significantly increase the cost of gas, tolls, parking, etc., to levels that probably are not currently acceptable to the public (particularly given the already high cost of living in the Bay Area). Public surveys of interest in increasing the gas tax, even at modest levels, show significant public opposition. Efforts to secure legislative interest in strategies such as congestion pricing on the Bay Bridge also have failed to garner enough support to advance this concept, even as a demonstration project. Thus, the theory and implementation of new strategies must be coupled together in a pragmatic approach, and include outreach to business and environmental organizations and the public at large to build support for these measures.

Specific traffic management fees include congestion pricing (fees change by time of day), High Occupancy Toll (HOT) lanes (solo drivers pay to access freeway carpool lanes where they would otherwise be prohibited), and cordon pricing (such as the fee paid to drive in central London).

Vehicle based fees that could encourage motorists to purchase low or zero emission cars include registration fees and fees based on the emission characteristics of the car and amount of mileage driven.

Parking availability and the pricing of parking are also key determinants in how often people use their vehicles and are discussed under TCM 15.

With all of the above pricing concepts, the new revenue could be applied to transit, carpooling, bicycle facilities, pedestrian improvements, and other programs to enhance alternatives to driving alone. Or they could be used for some system management programs that lead to more efficient vehicle operations, or approaches to reduce emissions from more polluting vehicles, such as diesel vehicles.

Although pricing measures offer potential for reducing air pollution and congestion, certain aspects of these fees could have disproportionately large effects on low income households, and would have to be designed with remedies in mind.

Description

Pricing measures under this TCM would require close cooperation between the Air District, MTC, the business community and other stakeholders to develop legislative support. This TCM would consist of the following pricing options:

Phase 1 (2004-2006)

- **Higher Bridge Tolls** - Regional Measure 2 increased bridge tolls by $1 as of July 1, 2004. Higher bridge tolls will have a modest impact on shifting Transbay trips to various modes of transit. Bridge tolls are still relatively inexpensive compared to similar tolls on other bridges around the country.

- **Congestion Pricing** - MTC and the Air District will continue to test legislative support for congestion pricing on the Bay bridges. If authorized by the legislature, MTC and Caltrans will begin a demonstration of congestion pricing. If this demonstration is successful, congestion pricing may be expanded to other bridges in the region.

- **Gas Tax Increase** - MTC has authority for placing a regional gas tax measure on the ballot for up to a $0.10 increase over 20 years. Through periodic polling, MTC will continue to investigate the viability of proposing a regional gas tax to Bay Area voters (which would currently require a 2/3 margin of approval). This measure would include building legislative and public support for higher federal and state gas taxes, either through a tax increase or indexing current taxes to keep up with inflation.

- **Parking Pricing** - MTC and the Air District will continue to work with cities and counties and transit agencies to encourage local parking pricing strategies such as the implementation of market-based on-street and off-street parking fees, and parking cash-out programs. More detailed descriptions of parking strategies are included in TCM 15.

Phase 2 (Beyond 2006)

- **Continuation of Phase 1 elements**

- **High Occupancy Toll (HOT lanes)** - The most likely lane to be developed for testing this concept would be in the I-680 corridor (Sunol Grade), and would allow single occupant vehicles to pay for using the carpool lane to avoid congestion in

the adjacent mixed flow lanes. Notably, a $2.0 million federal earmark from the SAFETEA bill that was signed into law on August 10, 2005 was directed towards the construction of the I-680 HOT project. Additionally MTC will be investigating the concept of a much more extensive system of HOT lanes, using the existing HOV system as a foundation for this network. Surplus revenues (those available after paying for the direct operating costs) generated by a HOT lane could be used to pay for expanding the HOT network or for commute options in congested corridors. Real time pricing would also be considered, which would factor in the value of the travel time savings compared to slower travel in the more congested mixed flow lanes. A preliminary evaluation by MTC of the air quality benefits shows decreases in VOC and increases in NOx. Any HOT lanes pursued under this TCM should be those showing the greatest emission reduction benefit.

- **Gas Tax Increase/VMT Fees** - This measure would consist of a significant increase in the cost per mile of driving, either imposed as higher gas taxes or direct taxes on the amount of driving (Vehicle Miles of Travel). This TCM assumes gas prices (in real terms) would approach current levels in Europe and Japan. People who own more fuel efficient cars would pay less annually than others. Alternatively, VMT fees would directly relate to wear and tear on the roads and the amount of running emissions generated by on-road travel (but not cold start emissions). VMT would be less susceptible to revenue loss due future increases in fuel efficiency of cars and would have some impact on moderating the amount of vehicle travel conducted. A portion of the fee could be based on the air pollution characteristics of the vehicle (i.e., cleaner vehicles would pay less). With either fee, revenues could be used for a broad array of transportation and air quality programs. (Also see Vehicle Registration Fees below.)

- **Taxes on Diesel Fuel** - A higher diesel fuel tax would be used to reduce NOx and particulate matter emissions from older heavy duty diesel trucks, which can stay on the road for many years due to the durability of their engines. Funds could go to help offset the cost of purchasing new vehicles, repowering existing vehicles with cleaner engines, or retrofitting trucks with catalytic converters that significantly reduce NOx and particulate matter.

- **Emissions-based Vehicle Registration Fees** - Vehicle registration fees would be used to influence the purchase choices of new vehicles. Annual fees would be based on vehicle emission characteristics and the amount of annual driving that is conducted (which would be assessed at the time the vehicle undergoes a Smog Check). The fees would be used in turn to pay for various air quality programs, such as vehicle buy back, fixing emission controls on mid-aged vehicles, incentives to tune up vehicles prior to the next smog season, financial assistance to low income families that would face hardships with costly tune-ups, and other programs.

- **Parking Fees** – This measure would establish $3 daily parking fees for all work-related parking sites, including public and privately provided spaces. The fees would be used in turn to pay for various employer-sponsored programs to expand transit, carpooling, bicycling, walking and telecommuting and to administer residential parking permit programs to reduce spillover effects.

Travel Market Affected

Market-based measures would affect all types of travel, including commuting, commercial trips, shopping, personal business, and social and recreational travel.

Effectiveness

Different pricing strategies will produce different emission reductions, which are shown separately for each strategy. Emission reductions for most pricing measures are based on demand elasticity factors from the MTC travel demand forecast model which indicate how changes in automobile travel costs would affect regional vehicle trips and miles of travel. Emission estimates for HOT lanes are based on changes in freeway speeds resulting from allowing single occupant vehicles in the mixed flow lanes to use the HOT lanes for a fee. The emission estimates do not include the effects of investing the new revenues in other programs that would lower automobile emissions.

- **Congestion Pricing on Bay Bridges**

	ROG	NOx
2015	0.01 tpd	0.01 tpd

* Emission reductions would vary, depending on whether program is revenue neutral.

- **Regional and State Gas Tax / VMT Fees**

	ROG	NOx
2015	0.45 tpd	0.34 tpd

- **High Occupancy Toll (HOT lanes)**

	ROG	NOx
2015	0.03 tpd	(0.04) tpd *increase*

- **Parking Fees**

	ROG	NOx
2015	0.03 tpd	0.02 tpd

Cost

Different fees would generate different amounts of revenue. Pricing measures would obviously entail out-of-pocket expenses for many drivers, in some cases substantial expenses, especially those who are either unable or unwilling to shift to alternatives to the single occupant vehicle. However, most of these expenses represent transfers within the region's economy that could be directed to enhanced transportation alternatives and vehicle emission reduction programs. Increased costs to households and businesses would be offset to a certain degree by reduced costs of vehicle ownership, operations and maintenance.

Impediments

Bay Area business associations, government agencies and environmental organizations have historically expressed support for consideration of new pricing measures. Their support will be needed to secure legislation authorizing pricing measures. New fees would, however, have significant impact on business related costs and household expenditures, and therefore would continue to be unpopular with the public and Legislature. To obtain approval of new pricing strategies directed at improving air quality, there will need to be compelling reasons for their implementation based on tangible and near term improvements in traffic and air quality. Programs involving substantial pricing increases will need to mitigate the impacts on low income households.

Other Impacts

Pricing strategies that reduce the number of vehicle trips by modest amounts in congested corridors could produce relatively large improvements in delay. Revenues from pricing strategies could also provide new transportation options that provide faster or more convenient travel and save users considerable amounts of time. Reduced travel demand could lead to considerable savings in fuel consumption, dependence on foreign oil, and greenhouse gas emissions. Reduced vehicle use could extend the useful life of vehicles, and may stimulate consumers into purchasing more fuel-efficient and lower polluting vehicles.

TCM 19: IMPROVE PEDESTRIAN ACCESS AND FACILITIES

Purpose

Implementing measures to make pedestrian travel safer, more convenient and more attractive will promote walking, reduce the need to use autos, and therefore reduce mobile source emissions.

Background

Virtually all travel, regardless of mode, entails some walking at some point in the trip. Many trips are very short in length. Approximately 14 percent of all trips are one-half mile or less in length, and 28 percent of all trips are one mile or less. These trip lengths are a reasonable walking distance for most people and represent an enormous opportunity to reduce motor vehicle use and emissions. Eliminating short vehicle trips is especially beneficial to air quality because vehicle emissions are highest at the beginning of a trip. In many parts of the Bay Area the share of trips made by walking is very small, as many people rely on the car. Much of this low level of pedestrian travel can be attributed to low density, single-use land use patterns and development of streets and roads and development projects that lack adequate attention to the pedestrian environment. MTC has recently focused more attention on pedestrian safety issues by creating a Regional Pedestrian Committee in 2002 to address the gamut of pedestrian planning and education issues of interest to local communities. Pedestrian improvements proposed in this TCM complement measures in other TCMs, particularly TCM 15 and TCM 20.

Description

Numerous actions can be pursued in order to increase pedestrian travel, including the following:

- Local general plans, specific plans and zoning ordinances should promote land use patterns that facilitate walking, such as increased densities, mixed land uses, focusing development around transit stops, strengthening downtowns and community centers, infill development and reuse/redevelopment of underutilized land.
- The design and placement of buildings in new development should encourage walking, for example by providing sidewalks/paths, minimizing setbacks, locating entrances near sidewalks and transit stops, etc.
- Locate and design parking so that pedestrians have direct, attractive access.
- An integrated street network with direct routes for pedestrians and ensuring easy pedestrian access between neighboring developments, as well as downtowns, commercial areas and community centers, should be provided.
- Pedestrian amenities such as sidewalks, benches, landscaping, etc. should be provided at new development.
- Existing development and streets should be retrofitted to incorporate pedestrian-friendly improvements.
- Street design standards should enhance pedestrian safety and comfort through measures such as reduced street width, reduced turning radii, crosswalks with activated signals, curb extensions/bulbs, buffers between sidewalks and traffic

lanes, street trees, etc. Traffic calming strategies are discussed in greater detail in TCM 20.

Cities and counties can undertake a variety of actions to promote pedestrian travel, including the following:

- Review and revise general and specific plans to assure that land use policies promote development patterns that encourage walking and circulation policies that emphasize pedestrian travel.
- Review and revise zoning ordinances, subdivision ordinances, parking requirements and other local programs to include pedestrian-friendly design standards/guidelines.
- Review and revise street design standards to promote pedestrian access, safety and comfort.
- Include pedestrian improvements (e.g. sidewalks, lighted crosswalks, traffic medians and better signage) in local capital improvement programs.
- Designate a staff person to be pedestrian or non-motorized (pedestrian/bicycle) program manager.
- Require developers to provide pedestrian amenities in new projects.
- Identify and implement pedestrian-friendly improvements to existing streets and developments.
- Emphasize pedestrian safety in enforcement of local traffic codes and public education campaigns.

Phase 1 (2004-2006)

- The Air District and MTC will comment on pedestrian improvements in related elements of city and county general plans, policies and programs, and in CEQA documents to encourage local actions to promote pedestrian travel.
- MTC will continue to fund the Transportation for Livable Communities (TLC) program, which includes funding for projects in local communities that improve pedestrian mobility.
- MTC will continue to support the Regional Pedestrian Committee, develop pedestrian safety programs, collect data on pedestrian safety issues, and report on safety trends in the annual State of the System Report.
- The Air District's TFCA program funds certain pedestrian improvements (those that support development projects that reduce motor vehicle emissions).
- MTC will continue to support Safe Routes to Schools (see TCM 10).

Phase 2 (Beyond 2006)

- MTC and the Air District will continue to identify and fund planning projects to identify ways to enhance pedestrian movement in neighborhoods, downtown centers, and near transit stops.
- Continue funding specific improvements through a variety of programs, including TLC, TDA Article 3, local sales tax measures, etc.
- Continue to support Safe Routes to Schools (also see TCM 10)

Travel Market Affected

Pedestrian improvements will tend to have a greater impact on trips for shopping, school, recreation and personal business since these trip types generally are shorter in length than work trips.

Effectiveness

Emission reductions estimates for TCM 19 assume a 1% increase in regional walk trips by 2006 (i.e., an increase from 11% to 11.3% of all regional trips) and a 5% increase by 2015 due to the various programs described above:

	ROG	NOx
2006	0.04 tpd	0.02 tpd
2015	0.08 tpd	0.04 tpd

Cost

MTC's current TIP provides $69 million for bike and pedestrian projects. Owing to the very localized nature of a large number of small projects, it is difficult to develop a comprehensive estimate of pedestrian funding needs.

Impediments

Pedestrian improvements tend to have a lower priority in communities than improvements for autos and bicycles; therefore there is a need to raise the general awareness of the importance of pedestrian issues in communities and the need to integrate pedestrian improvements into street upgrade and maintenance projects.
Safety concerns related to crime as well as conflicts with motor vehicles sometimes dissuade people from walking. Pedestrian improvements and related programs, e.g., enforcement of traffic laws, should enhance pedestrians' actual and perceived safety.

Other Impacts

In addition to reducing motor vehicle emissions, pedestrian improvements will decrease the chance of personal injury, benefit health and fitness, and generally foster a greater sense of community vitality.

TCM 20: PROMOTE TRAFFIC CALMING MEASURES

Purpose

"Traffic calming" is the combination of mainly physical measures that slow vehicle traffic and improve conditions for pedestrians and bicyclists in residential and retail areas. These measures are often desired by communities that experience excessive cut through traffic or that want to slow vehicle speeds to protect pedestrians and cyclists. Children and older adults are often considered particularly vulnerable. Motor vehicle emissions are reduced to the extent that walking and cycling increase and overall vehicle travel in an area is reduced.

Background

Traffic calming modifies the streetscape to reduce the number and speed of motor vehicles, smooth speeds and increase the attractiveness of transit, bicycling and walking. Traffic calming has been most extensively implemented in Western Europe. Traffic calming has grown fastest in Germany, with one province reporting over 8,000 traffic calming projects in 1989. Many of the traffic calming techniques used in Europe are implemented on an areawide basis, which is generally not the case in the US. Areawide traffic calming strategies are preferable because they improve pedestrian and cycling conditions throughout an entire neighborhood or district, rather than shifting traffic from one street to another.

Many communities in the Bay Area are developing traffic calming plans and installing traffic calming devices. Berkeley is developing a residential traffic calming program, and has installed numerous traffic diverters, speed humps, and other devices. Palo Alto has a Neighborhood Traffic Calming Program and has implemented traffic calming improvements in many parts of the city. Cotati completed a traffic calming plan for the downtown area. Oakland constructed a traffic median on International Blvd. in the Fruitvale district. San Francisco's traffic calming program is implementing a variety of site specific and areawide projects.

Description

There are many traffic calming strategies that cities and counties may consider. The most effective programs generally involve thorough consultations with residents and merchants, as well as public safety officials.

MTC's Transportation for Livable Communities program and the Air District's Transportation Fund for Clean Air fund traffic calming projects.

The following actions can be taken to implement traffic calming in the Bay Area:

- **Pedestrian Streets -** Pedestrian streets exclusively reserve streets for use by pedestrians. Consider converting streets to pedestrian streets where:
    - Streets have significant pedestrian activity, and
    - Pedestrians are able to access the area via transit, bicycle or walking and the area is difficult to access by motor vehicle.

- **Residential and Neighborhood Traffic Calming -** Implement traffic calming on residential and neighborhood streets through:
    - Road humps and speed tables which raise the surface of the road,
    - Traffic circles/mini-roundabouts that replace traffic signals and stop signs at intersections,
    - Narrowing of motor vehicle lanes, introduction of dedicated bike lanes and wider sidewalks,
    - Chicanes, which place physical obstacles or parking bays, staggered on alternate sides of the street so that motor vehicles must slow down to maneuver through the street,
    - Traffic throttles/pinch points that restrict a two-way road over a short distance to a single lane,
    - "No Entry" signage restricting through motor vehicle access,
    - Surface treatments including textured surfaces such as brickwork, paving and rumble strips designed to warn drivers of excessive speed or of an approaching hazard where speeds should be lowered, and
    - Merging the street/sidewalk to the same height and use of the same paving materials so that there is no distinction between the road and sidewalk.

- **Arterial and Major Route Traffic Calming -** Arterial traffic calming generally limits motor vehicle speeds to 33 mph on arterials and major routes, with the recognition that bicycle and pedestrian activity can still be enhanced. Implement traffic calming on arterials and major routes by:
    - Installing sidewalk bulbouts and traffic medians.
    - Replacing traffic signals and stop signs with modern roundabouts,
    - Improving pedestrian amenities and safety through making wider and attractive sidewalks, adequately marking crosswalks and installing count-down pedestrian signals. Strategies to facilitate pedestrian travel are discussed in greater detail in TCM 19.
    - Reduced speed limits and/or increased enforcement of speed limits and other traffic laws.

Travel Market Affected

TCM 20 will affect the entire range of motor vehicle, transit, bicycle and pedestrian trips, including commute travel, school travel, shopping, personal business, recreation, and commercial travel.

Effectiveness

Traffic calming techniques are most effective when implemented on an area-wide basis. By improving safety for pedestrians and bicyclists, traffic calming encourages walking and cycling. Some of these reductions may be captured in TCMs 9 and 19. It is uncertain how much additional emission reductions can be attributed specifically to traffic calming. To be conservative, no additional reductions are claimed, but traffic calming is considered an important support program for other bike/ped programs.

Cost

The cost of traffic calming ranges from $9 per square yard to $18 per square yard of street/sidewalk. These costs are outweighed by the benefits of reduced traffic accidents and congestion. In 1990, traffic accidents alone cost the nation up to $137 billion a year in directs costs, lost time and productivity. Surveys of local jurisdiction by the Institute of Traffic Engineers indicate that traffic calming projects reduce injury accidents by 20 - 50 percent, depending on the type of treatment.

Impediments

If traffic calming is not implemented area wide but only in select and isolated streets, there is the potential for an increase in traffic in the surrounding areas due to trip diversion.

Police and fire protection agencies may have concerns with barriers and other devices that slow their response times. However, experience in many communities has shown that close coordination between transportation planners and public safety officials can resolve most of these potential conflicts. Also, some studies have shown that when traffic calming leads to fewer traffic accidents, there are fewer emergencies needing a response.

Cities and counties can include area-wide traffic calming policies in general or specific plans, or develop traffic calming plans, to ensure effective traffic calming measures in the overall area and minimize potential adverse affects.

Other Impacts

Traffic calming results in fewer vehicle and pedestrian accidents and injuries in areas where it is implemented. Lower traffic volumes on residential streets results in lower community noise levels. Traffic reductions on some streets may lead to more traffic on other streets without any traffic calming measures as diverted vehicles use alternative routes. Traffic calming can contribute to more livable neighborhoods and vibrant shopping areas.

BAY AREA

2005 OZONE STRATEGY

APPENDIX E - FURTHER STUDY MEASURE DESCRIPTIONS

PROPOSED FINAL

DECEMBER 2005

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street
San Francisco, CA 94109
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APPENDIX E - FURTHER STUDY MEASURE DESCRIPTIONS

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FURTHER STUDY MEASURE FS 1: ADHESIVES AND SEALANTS

Further Study Measure Description

In 2003 and early 2004, the ARB, San Joaquin, Sacramento and Bay Area districts jointly undertook a rule comparison project for a number of source categories, including adhesives and sealants. The South Coast AQMD rule for adhesives appears to be the most stringent, particularly for architectural adhesives. Architectural adhesives encompasses a wide variety of adhesives used in residential and commercial construction: carpet adhesives, flooring adhesives, subfloor adhesives, tile adhesives, drywall adhesives, and multipurpose construction adhesives. The South Coast VOC limits range from 50 to 150 grams per liter (g/l) for various categories of architectural adhesives.

In 1998, the ARB and California districts developed Reasonably Available Control Technology/Best Available Retrofit Control Technology (RACT/BARCT) VOC limits for adhesives and sealants. RACT/BARCT VOC limits range from 100 to 250 g/l for various categories of architectural adhesives. The Bay Area rule, Regulation 8, Rule 51: Adhesive and Sealant Products, meets the BARCT limits in the ARB document.

Generally, most adhesive and sealant products that meet the RACT/BARCT limits will also meet the SCAQMD limits. VOC content for these products is dictated by formulation technology. Solvent-based products generally have a VOC content of 300-400 g/l, and water-based products generally have a VOC content of 0-50 g/l. Reducing the VOC limits in rules will have little effect because most currently available solvent-based products do not comply with either set of limits, and most water-based products comply with both sets of limits, so reducing the allowable VOC limits would not produce any emission reductions. A small subset of architectural adhesives are solvent-based products that have VOC contents in the 100-150 g/l liter range. These products generally use a mixture of water and hydrocarbon solvents and were typically formulated to meet the California RACT/BARCT limits.

The largest category of architectural adhesives is subfloor adhesives formulated with solvent to allow bonding to wet or frozen lumber. These products meet the BAAQMD and BARCT VOC limit of 200 g/l. However, they would not comply with the South Coast AQMD limit of 50 g/l. In California, most wood frame construction relies upon green (wet) lumber. The South Coast 2000 staff reports states that the lower limits are feasible because of the warm climate of the Los Angeles area. The report also notes that relatively low-VOC polyurethane adhesives can bond wet and frozen lumber but fails to discuss the role of isocyanates from polyurethanes in allergic sensitization and asthma. In areas outside the Los Angeles basin, lower temperatures and higher humidity will cause curing difficulties for products meeting the SCAQMD limits. Consequently, a 50 g/l VOC limit for the Bay Area is not feasible.

In the rule comparison discussions, significant differences in inventory between the districts emerged. Specifically, the San Joaquin District has almost no area source adhesive emissions, which includes the architectural adhesives, whereas the Bay Area inventory has over 9 tons organic emissions per day from area source adhesives. When Bay Area staff developed Regulation 8, Rule 51: Adhesives and Sealants, the area source inventory was derived from the Rauch Guide to the US Adhesives and Sealants Industry, by the Rauch Associates, Inc., originally the 1990 edition. The Rauch Guide

breaks down adhesives and sealants into nine categories, which allows some categories to be eliminated because they are either consumer uses and likely subject to the ARB's consumer products standards, or used in sources that require a permit and would be included in the point source inventory. From the US totals, the Bay Area population percentage and control factors based on the rule requirements are applied to produce an area source inventory. Because of the discrepancy between inventories, joint further study among districts is recommended to reconcile these differences.

References

California Air Resources Board. 1998. "Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Adhesives and Sealants."
Koressel, T., Charles McMurray Co. 2003. Personal communication.
South Coast AQMD. 2002. "Final Staff Report: Proposed Amended Rule 1168-Adhesives and Sealants"
South Coast AQMD. 2000. "Staff Report: Proposed Amended Rule 1168-Adhesives and Sealant Applications"
TIAX. 2003. Sacramento Regional Clean Air Plan Update: Control Measure D3.
Walnut, F., TACC International. 2003. Personal Communication.

FURTHER STUDY MEASURE FS 2: ARCHITECTURAL COATINGS

Further Study Measure Description

The District amended Regulation 8, Rule 3: Architectural Coatings in 2001 based on the CARB Suggested Control Measure (SCM) for Architectural Coatings (June, 2000). The SCM was the product of nationwide surveys of available coatings conducted by CARB and discussion among districts, architectural and industrial maintenance coatings manufacturers, infrastructure owners and painting contractors. The Sacramento district was the first district to adopt amendments in June 2001, and the Bay Area adopted amendments in November 2001.

The development of the SCM on which the amendments were based was directed by the California Air Pollution Control Officers Association (CAPCOA). CAPCOA further directed that CARB and the districts evaluate South Coast's future (later than 2004) VOC limits and/or other limits to achieve the maximum possible reductions from the architectural coatings category. CARB is currently evaluating new survey data, and investigating feasible VOC standards both on a mass basis and also on a reactivity basis following the same CARB/districts workgroup format. Districts are awaiting the results of the CARB surveys and data analysis and will work together to develop future reductions in VOC emissions from architectural coatings. The CARB/districts efforts are expected to be completed in 2005.

References

CAPCOA Statement of Principles and Positions on Architectural Coatings Regulations (10/28/99)
SCAQMD Rule 1113: Architectural Coatings

FURTHER STUDY MEASURE FS 3: COMMERCIAL CHARBROILERS

Further Study Measure Description

In 1997, the South Coast AQMD adopted Rule 1138: Control of Emissions from Restaurant Operations. Rule 1138 requires that chain driven charbroilers install catalytic oxidation equipment to control emissions. The catalytic oxidizers control particulate matter and volatile organic compounds that are emitted from the cooking process. The South Coast determined that chain driven charbroilers to be the only type of restaurant operation for which control is cost effective, although further research is being conducted on under-fire charbroilers. In 2002, the San Joaquin Valley adopted Rule 4692: Commercial Charbroiling. Both rules have the same exemption criteria: charbroilers that cook less than 875 lbs of meat per week or emit less than 1 lb of emissions per day are not subject to the rule.

The South Coast originally projected a cost effectiveness for this control measure of $4650 per ton for a combination of VOC and particulate matter. More recently, the San Joaquin APCD estimated a cost effectiveness of $3070 per ton combined VOC and PM reduced. However, for VOC alone, the cost effectiveness rises to $13,070. The South Coast assumed a control effectiveness of 90% and the San Joaquin APCD used figures for control efficiency of 83% and 86% for PM and VOC, respectively. Some additional research indicates that the emission reductions may be closer to 62%, which would raise the cost of pollutants reduced per ton 38%.

The current inventory for VOC emissions from all cooking operations in the Bay Area is 1.29 tons/day. Of that, based on a population-weighted comparison between the Bay Area and the San Joaquin Districts, emissions estimates from chain driven charbroilers are 0.08 tons/day VOC and 0.26 tons/day PM. A comparable rule would reduce emissions by 0.066 tons/day VOC and 0.22 tons/day PM. This is a de minimis amount for VOC alone.

This control measure may not be justified for VOC alone, however, considering the potential to control particulate matter, it may be justified. Also, the South Coast's efforts regarding under-fire charbroilers, scheduled to be completed this year, may increase the potential emission reductions.

References

South Coast Rule 1138: Control of Emissions from Restaurant Operations and staff report, 11/7/1997, SCAQMD
San Joaquin Rule 4692: Commercial Charbroiling and staff report, 3/21/2002, SJVAPCD

FURTHER STUDY MEASURE FS 4: COMPOSTING OPERATIONS

Further Study Measure Description

In January, 2003 the South Coast AQMD adopted Rule 1133.2: Emission Reductions from Co-composting Operations, to limit emissions of both VOC and ammonia. Co-composting is the mixing of biosolids or manure with bulking agents to produce compost. Rule 1133.2 requires new co-composting operations to be enclosed and emissions controlled by 80%, and existing co-composting operations be enclosed and emissions controlled by 70%. Existing operations are given compliance dates between 2007 and 2009, depending on throughput capacity. The rule does not apply to agricultural composting, greenwaste (gardening, agriculture and landscaping) composting, woodwaste composting, co-composting operations of less than 1,000 tons throughput per year or 35,000 tons per year throughput if no more than 20% biosolids. The rule is expected to reduce the South Coast composting emissions by 17.6%.

The Bay Area does not have a specific category in the emission inventory for composting or greenwaste. Emissions are included within the category of "waste management, landfills, point or area sources" or "waste management, other." The Bay Area requires a permit of a composting facility that processes 500 tons/year, lower than the South Coast exemption level for Rule 1133.2. The source code assigned to these operations varies, making an emissions estimate based on permitted sources uncertain. Based on the South Coast control measure and rule development staff report, the Bay Area inventory for composting operations is about 3.4 tons/day VOC and 2.35 tons/day ammonia (South Coast inventory numbers * 0.5). Consequently, this measure applied to the Bay Area would be expected to reduce VOC emissions by 0.6 tons/day.

The South Coast Rule 1133.2 staff report indicates that the cost effectiveness for this rule ranges from $8700 to $10,000 per ton of ammonia and VOC reduced and from $23,000 to $26,500 per ton of VOC reduced. This is not very cost effective compared to most Bay Area rules for VOC, but within the range of acceptable costs for VOC and ammonia combined. However, as the South Coast AQMD gains experience in implementation of this rule, cost effectiveness may be found to be less. Also, additional benefits of particulate control from the reductions in ammonia (which reacts to form secondary particles) may make the cost effectiveness more attractive as a particulate control measure.

References

SCAQMD Rule 1133.2: Emission Reductions from Co-composting Operations and staff report, Jan. 10, 2003

FURTHER STUDY MEASURE FS 5: FOOD PRODUCT MANUFACTURING AND PROCESSING

Further Study Measure Description

The South Coast AQMD adopted Rule 1131: Food Product Manufacturing and Processing Operations, in September, 2000. The rule addresses any facility that emits more than 440 pounds of organic compound emissions per month that produces, formulates or configures food or food products, including spices, extracts, flavorings and colorings. Bakeries, wineries and breweries are not subject to the rule. VOC emitting processes found in food product manufacturing include distillation, extraction, reaction, blending, drying, crystallization, separation, granulation, filtration and extrusion. The South Coast rule limits solvents used in food processing to 120 grams VOC/liter or requires capture and control of emissions. Solvent used for sterilization of food products is limited to 400 grams VOC/liter and, after 2005, 200 grams VOC/liter.

The South Coast rule projects an emission reduction of about 2 tons from an inventory of 2.47 tons/day. In the Bay Area, the emissions from food preparation are contained in the emission inventory categories, "Other Food and Agricultural Processing," which includes coffee roasting, grain milling, sugar refining and pet food processing. The emission inventory lists organic emissions from this category at 0.3 tons/day. However, some operations subject to the South Coast rule, such as sterilization, reaction or distillation, may have source codes that put them into other categories in the Bay Area. The South Coast staff report notes that food processing operations were exempt from the South Coast permit system. In the Bay Area, some food processing operations are exempt, including non-restaurant cooking operations of less than 1000 tons per year throughput, dry food milling, grinding, handling and packaging equipment, and small coffee, cocoa and nut roasters. Because other food processing equipment is subject to permit requirements, it may already be controlled, reducing the potential emissions reductions.

Based on the difference between the South Coast emission inventory and the Bay Area emission inventory, the differences in permitting regulations and the possibility that some sources in the Bay Area are already controlled, this measure is recommended for further study.

References

South Coast AQMD Rule 1131: Food Product Manufacturing and Processing Operations, and staff report, September, 2000.

FURTHER STUDY MEASURE FS 6: LIVESTOCK WASTE

Further Study Measure Description

The South Coast AQMD has proposed Rule 1127: Emission Reductions from Livestock Waste, based on control measure WST-01 in their 2003 Air Quality Management Plan. The proposed rule would control emissions from livestock waste (primarily dairies) by requiring wastes to be transported out of the district, controlled in an approved composting operation, processed in a controlled anaerobic digestor, or spread on agricultural land approved for the spreading of manure. In 1997, the SCAQMD adopted Rule 1186 that requires livestock operations to take certain measures to reduce particulate matter, but the rule does not address livestock waste. South Coast proposed Rule 1127 is designed to reduce emissions of particulate, ammonia (which forms aerosol particulate matter) and VOC. The measure estimates that a reduction in ammonia of 50% is possible at a cost effectiveness of from $2000 to $5000 per ton ammonia. The ammonia concentration is approximately three times the VOC concentration, so as a VOC only control measure, cost effectiveness would range from $6000 to $15,000 per ton.

The Bay Area emission inventory for livestock waste is 29.81 tons/day total organic compounds. Most of that is methane. Reactive organic emissions are 8% of that total, 2.38 tons/day. Of that inventory of emissions from total livestock waste, approximately 13% (0.31 tons/day) is from dairy cattle, the basis of the South Coast measure. The ARB has raised questions about the emissions estimates, so ROG (VOC) emissions may be lower. Accordingly, the capital costs associated with control of VOC emissions would make the measure less cost effective.

The focus of the South Coast measure is to control particulate and ammonia. The measure has more utility for control of particulate and ammonia, a fine particulate precursor, than for VOC, and particularly so in the South Coast where dairy farms are concentrated in an area that is upwind from monitoring stations that record high PM10 levels. The South Coast control measure notes that a decrease in ammonia and VOC emissions of 2 to 3% per year is likely due to the increased urbanization of the region (which will decrease the number of dairies) and water quality control regulations that require manure to be removed from dairies bi-annually, or incorporated into soil at agrometric rates as quickly as possible. In the Bay Area, many farms may already comply with the proposal by segregating waste and incorporating manure into soil at agronomic rates. In addition, incentives already exist to sell electricity generated by a methane digester into the power grid. Any study should investigate these incentives as a cost effective means of control. Due to uncertainty in the VOC inventory for this category, and the cost effectiveness of a command and control measure, this measure is not recommended as a control measure at this time. However, because of the potential particulate matter benefits, it is recommended for further study.

References

"PG&E vs Cow Power Dairy Farmers Say the Utility Opposes Energy from Methane Gas" Martin, Glen, SF Chronicle, June 27, 2004

SCAQMD Final 2003 Air Quality Management Plan, Control Measure #2003 WST-01, SCAQMD, August, 2003

Air Emissions Action Plan For California Dairies, ad hoc Dairy subcommittee of the SJVUAPCD, May, 2003

FURTHER STUDY MEASURE FS 7: LIMITATIONS ON SOLVENTS BASED ON RELATIVE REACTIVITY

Further Study Measure Description

Further Study Measure F8 in the 2000 Clean Air Plan suggested the potential to make regulations more effective by replacing VOC limits, measured in mass VOC per volume of product, with limits based on the relative contribution to ozone formation of each of the organic species that make up the VOC of a product, or the "relative reactivity." This further study measure would examine whether a relative reactivity approach would be either more cost effective than mass reductions in VOC content or allow reductions where further reductions in mass might not be technically feasible.

The differences in ozone produced by different species of organic compounds have been recognized for many years, however, the ability to quantify the relative contributions to ozone formation of the vast number of organic species has only recently been developed. The California Air Resources Board, working with scientists and representatives of industry and air agencies, have developed a scale of incremental reactivities that is used in their aerosol paint regulation (Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions). Currently, CARB staff have requested speciation data for architectural and automotive refinish coatings to consider whether a relative reactivity approach might be advantageous for these two source categories. US EPA staff is involved in CARB's processes to consider relative reactivity based regulations, but they have yet to approve CARB's consumer product rules into the SIP, including the aerosol paint rule. District staff participate in discussions of reactivity as it relates to potential regulatory activity. At this time, however, because the potential for emission reductions (or ozone formation reductions) cannot be assessed for any source category, this control measure is recommended for further study.

References

17 California Code of Regulations, Section 94520, 94700, Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions, and Table of Maximum Incremental Reactivity
Further Study Measure 8, 2000 Bay Area Clean Air Plan, BAAQMD, December, 2000

FURTHER STUDY MEASURE FS 8: SOLVENT CLEANING AND DEGREASING

Further Study Measure Description

In 2003 and early 2004, the ARB, San Joaquin, Sacramento and Bay Area districts jointly undertook a rule comparison project for a number of source categories, including solvent cleaning and degreasing. The discussion included vapor degreasing, cold cleaning and wipe cleaning. The joint conclusion was that vapor degreasing, done largely with negligibly photochemically reactive solvents, was not a source category that was likely to produce any significant emissions reductions. Cold cleaning and wipe cleaning are discussed below.

Cold Cleaning

Cold cleaning describes the use of cleaning solution in a tank or container into which a part to be cleaned is immersed, or a remote reservoir cleaner that pumps some cleaning solution over a part to be cleaned that then drains back into the reservoir. All districts except the South Coast have adopted a 50 gram/liter VOC standard for cleaning solutions, and the South Coast has adopted a 25 g/l VOC standard. The South Coast, in adoption of a 50 g/l VOC standard in 1997, used an EPA emission factor of 1.45 pounds VOC/day/cold cleaner. In 2002, the South Coast staff report assumed a 50% reduction in the remaining emissions because of the adoption of a 25 g/l VOC standard.

Bay Area staff believe that the EPA emission factor used by South Coast for rule adoption, and subsequently by other districts for control measures, is too high because it did not account for the low volatility of the mineral spirits blends used in most mineral spirits cold cleaners and remote reservoir cleaners at the time the rule was adopted. In 1998, the Bay Area adopted a 50 g/l VOC standard except for one cold cleaner in each facility. At that time, Bay Area staff estimated emissions from these cleaners based on information provided by the Safety Kleen Corporation, the dominant cold cleaner solvent provider. Emissions were estimated by a mass balance approach, considering 1) the percent market share that Safety Kleen had in 1998; 2) the number of mineral spirit cold cleaners Safety Kleen leased and serviced in the Bay Area; 3) the amount of solvent they supplied and recycled; and; 4) an estimation of the sludge and foreign substance in their return solvent. From that data, we developed an emission factor of 0.6 pounds VOC/day/cold cleaner, significantly less than the 1.45 lb/day factor used by the South Coast and other districts. In 2002, the Bay Area District amended the standards so that all cold cleaners, with some exceptions for specific substrates consistent with other districts, would have to meet the 50 g/l VOC limit.

Using the methodology in the 2002 Bay Area staff report to calculate emissons reductions for a 25 g/l VOC standard, the additional emissions reductions to be gained from a rule amendment would be 0.0743 tons per day, less than de minimis. In addition, the South Coast, in their staff report, estimated that 70% of cleaning solutions available to comply with their 50 g/l VOC standard would also meet their 25 g/l VOC standard. Consequently, the potential emissions reductions would be only 30% of the above total, or 0.022 tons/day. However, because of the discrepancy in how emissions are calculated between districts, joint further study is needed to examine emissions calculations for cold cleaners within California.

Wipe Cleaning

Wipe cleaning involves wetting a rag, cloth or paper with a cleaning solution and wiping grease or soils from a part by hand. The South Coast AQMD adopted a 25 g/l VOC standard for wipe cleaning concurrent with their adoption of a 25 g/l VOC standard for cold cleaning.

In 2002, the Bay Area District amended 5 rules to incorporate a 50 gram/liter VOC standard for wipe cleaning operations. These rules regulate the surface preparation and coating of metal parts, metal furniture and large appliances, plastic parts, marine vessels and general solvent and surface coating.

In calculation of the emissions attributable to wipe cleaning in Bay Area facilities, staff recalculated the emission inventory for area sources because it was developed from 1993 data and did not account for the subsequent impact of the Montreal Protocol on Ozone Depleting Substances and EPA's finding that acetone was a negligibly photochemically reactive. These two factors have led to a surge in the development of water-based cleaning applications, and a shift to the use of solvents such as MEK or alcohol to acetone, significantly reducing reactive organic emissions.

The adoption of a 25 g/l VOC standard for wipe cleaning has been calculated to reduce emissions by 0.0756 tons per day, not including any cleaning solutions that would already meet the 25 g/l standard. If, as South Coast staff estimated for cold cleaners, 70% of the solutions in use already meet a 25 g/l VOC standard, the emissions reductions could be only 0.023 tons per day. This is less than de minimis, however, further study is needed on a statewide basis to update the study on which the area source inventory was derived.

References

BAAQMD Analysis of SMAQMD Suggested Changes to BAAQMD Rules, attachment to letter, B. Norton to N. Covell, Nov. 12, 2002

South Coast AQMD Proposed Amended Rule 1122 Staff Report, South Coast AQMD, July, 2001

Staff report, Proposed Amendments to Regulation 8, Rules 4, 14, 19, 31, 43, BAAQMD, Oct. 2002

Staff Report, Proposed Amendments to Reg. 8, Rule 16: Solvent Cleaning Operations, BAAQMD, Sept. 2002

Staff Report, Proposed Amendments to Reg. 8, Rule 16: Solvent Cleaning Operations, BAAMQD, Sept. 1998

FURTHER STUDY MEASURE FS 9: EMISSIONS FROM COOLING TOWERS

Further Study Measure Description

The emission inventory for refinery cooling towers shows 0.45 tons/day organic emissions, based on cooling water throughput from cooling towers with District permits. AP-42 emission factors of 6 lbs organic emissions per million gallons water throughput were used in this calculation. This assumes organic compound leaks into the cooling water system are not minimized. However, if leaks are minimized, the AP-42 emission factor is 0.7 lb organic emissions per million gallons water. Further study is needed to determine whether leaks from cooling towers are currently minimized and whether there is any potential for emission reductions from regulations.

References

Compilation of Air Pollution Emission Factors (AP-42), US EPA, 1995

FURTHER STUDY MEASURE FS 10: REFINERY WASTEWATER TREATMENT SYSTEMS

Further Study Measure Description

Emissions from refinery wastewater systems were being studied through further study measure FS-9 from the 2001 Ozone Attainment Plan. Refinery wastewater systems basically consist of collection systems to collect and transport hydrocarbon-containing process water, physical separation systems to separate oil and water by mechanical means, and finally, biological and chemical processes to treat effluent. District staff studied emissions from the wastewater collection systems. The physical separation systems, including oil-water separators and dissolved air floatation units, are already controlled by Regulation 8, Rule 8. An amendment to Regulation 8, Rule 8: Wastewater (Oil-Water) Separators was adopted in September 2004 resulting in an estimated reduction in ROG emissions by 2.1 tons/day from this portion of the wastewater system. This further study measure focused on the effluent treatment systems, including wastewater ponds.

Water entering the treatment systems after physical separation tends to have low organic content, but most of these organic compounds must be removed by biological degradation. Some of these compounds are volatilized and emitted to the atmosphere. Reg. 8-8 does not require control of biological or chemical treatment portions of wastewater systems. Water is treated until it meets the San Francisco Bay Regional Water Quality Control Board discharge requirements.

Emissions for one refinery's large treatment pond with a flow rate of 10 million gallons per day have been estimated, using EPA's WATER8 model, to be approximately 150 pounds per day. Total refinery wastewater treatment system emissions for the Bay Area refineries were estimated to be 0.24 tons per day, including emissions from dissolved air or nitrogen flotation units, biological treatment units, clarifiers, and equalization ponds. The emissions estimates were made by a combination of water sampling, flux chamber testing and calibrated models. A emissions study was initiated through a cooperative workgroup process that includes refinery personnel, ARB, District and SF Bay Regional Water Quality Control Board staff, environmental groups and consultants with expertise in developing emissions models for wastewater systems. The workgroup met in April, June, September, and October 2005.

In addition to developing emissions estimates, staff estimated potential emissions reductions and costs of available controls. Staff estimated that emissions could be reduced by about 65%, or 0.14 tons per day. Available control technologies reviewed were steam strippers, liquid phase carbon adsorption units, and doming treatment tanks. Steam strippers and carbon adsorption would remove hydrocarbons from the wastewater, but would require emissions to be vented into new or existing control equipment. Doming tanks is applicable to only two facilities. Doming would capture emissions above the treatment tanks, but would also require use of new or existing emissions control equipment. It was found that the costs would be over $1 million per ton VOC reduced for the steam stripper or carbon adsorption. Doming would be less expensive, at $25,000 per ton of emissions, not considering costs of controls, but, because of limited applicability, would only reduce emissions by 0.025 tons per day.

Based on the limited emissions reductions and high costs, staff did not recommend further regulatory controls for refinery wastewater systems at this time. A public workshop to discuss the report was held on October 27, 2005 and a public hearing before the District's Board of Directors was held on November 16, 2005. The Board adopted the staff recommendation.

References

Staff Report, Further Study Measure 9: Refinery Wastewater Treatment Systems, BAAQMD, Nov. 2005

Draft Technical Assessment Document: Potential Control Strategies to Reduce Emissions from Refinery Wastewater Collection and Treatment Systems, CARB and BAAQMD, Jan., 2003

FURTHER STUDY MEASURE FS 11: VACUUM TRUCKS

Further Study Measure Description

This measure was analyzed in the 1994 Clean Air Plan as Control Measure B6: Control of Emissions from Cleaning Up Organic Liquids. The analysis concluded that the measure would not be cost effective. However, in addition to cleaning up spills, vacuum trucks have been observed in frequent use as part of some refinery operations, such as removing water from tank surfaces, cleaning of oil-water separators, and transport of sludges, slop oils and tank bottoms. At one refinery, it was estimated that over 1,000,000 gallons of hydrocarbon containing liquids were put in vacuum trucks per month, which is the equivalent of approximately 145,000 gallons of hydrocarbons per month. On a volume basis, at least 1.5 gallons of air is emitted for every gallon of vacuum tank capacity.

In some cases, emissions from the tanks are controlled by the use of a carbon canister that adsorbs organic vapors as they are emitted from the truck tank, primarily to control odors. Further study can determine the emissions from these activities and whether control of emissions is more cost effective than the 1994 analysis found.

References

1994 Clean Air Plan Control Measure B6: Control of Emissions from Cleaning Up Organic Liquids

FURTHER STUDY MEASURE FS 12: VALVES AND FLANGES

Further Study Measure Description

In 2003 and early 2004, the ARB, San Joaquin, Sacramento and Bay Area districts jointly undertook a rule comparison project for a number of source categories, including valves and flanges. Valves and flanges are typically found at refineries and chemical plants, but also found in other petroleum and gas production facilities. The review found that the Bay Area's existing Regulation 8, Rule 18: Equipment Leaks, is the most stringent regulation in the state. Reg. 8, Rule 18 was amended on January 21, 2004 to fulfill the provisions of control measure SS-16 from the 2001 Ozone Attainment Plan. During the rule development, staff identified a number of different areas for potential future study to further reduce emissions from valves and flanges. These areas include: 1) setting a maximum leak limit for components; 2) targeting minimization and repair periods; 3) accelerating equipment replacement for equipment found leaking frequently; 4) requiring inaccessible equipment to be replaced by superior technologies; 5) quantifying mass emissions and imposing emissions caps; 6) increasing inspection frequencies; and 7) incorporating remote sensing technologies to identify the largest leaking components.

References

Staff Report, Proposed Amendments to Regulation 8, Rule 18: Equipment Leaks, January, 2004, BAAQMD

FURTHER STUDY MEASURE FS 13: WASTEWATER FROM COKE CUTTING OPERATIONS

Further Study Measure Description

Refineries operate high pressure water pumps to remove or "cut" coke from coking drums. During the investigation of Further Study Measure FS 9: Refinery Wastewater Systems in the 2001 Ozone Plan, it was noted that coke cutting operations at some facilities generated significant quantities of wastewater. This wastewater, at elevated temperatures, is often recycled. The wastewater from coke cutting is not part of the refinery wastewater collection and treatment system. One possible method of control would be to include coke cutting wastewater in the existing collection and treatment system. Additional research needs to be conducted to determine whether coke cutting wastewater contains significant quantities of VOC and whether there is any potential for emissions reductions from these operations. Because of these unknowns, it is recommended that coke cutting operations be studied.

References

Draft Technical Assessment Document: Potential Control Strategies to Reduce Emissions from Refinery Wastewater Collection and Treatment Systems, CARB and BAAQMD, Jan., 2003

FURTHER STUDY MEASURE FS 14: NOX REDUCTIONS FROM REFINERY BOILERS

Further Study Measure Description

The measure is based on the San Joaquin Valley Unified APCD's Rule 4306 – Boilers, Steam Generators, and Process Heaters – Phase 3: a five-ppm NOx limit corrected to 3% O2, or 0.0062 lb/MMBtu standard for large refinery boilers and process heaters (larger than 110 MMBtu). This limit is much lower than that allowed in Bay Area Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries. The Bay Area limit of 0.033 lb/MM BTU (approximately 30 ppm) was adopted in 1994. The San Joaquin limit in Rule 4306 was adopted in 2003 and represents the most stringent rule in California.

The Bay Area Rule 9-10 applies only to refinery boiler units. When the rule was adopted, averaging among units was considered the only cost effective way to achieve the regulatory standards. Many of the units are old, low-NOx burner technology did not exist for some, and some are in locations where there is not enough space to add selective catalytic reduction (SCR) units. Newer units, however, are subject to lower BACT limits for NOx and are not part of the average. To properly determine the feasibility and appropriateness of implementing a lower NOx limit on refinery boilers in the Bay Area, at a minimum, several factors need to be evaluated:

- A precise inventory of refinery boilers;
- A determination of the type, age, retrofit ability of; and the nature of the emissions from these boilers;
- The cost effectiveness of retrofits and replacement technologies;
- The contribution to emissions of the boilers that are currently exempt from Rule 9-10; and
- The inventory of non-refinery boilers of similar size in use in the District.

References

San Joaquin Valley Unified APCD Rule 4306 – Boilers, Steam Generators, and Process Heaters – Phase 3.
Staff Report, Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries.

FURTHER STUDY MEASURE FS 15: STATIONARY INTERNAL COMBUSTION ENGINES

Further Study Measure Description

Gaseous Fuel Fired Engines

The District regulates NOx emissions from internal combustion engines under Regulation 9, Rule 8, which imposes NOx limits on engines fired with gaseous fuels. Reg 9-8 was adopted in 1993 pursuant to CARB pollution transport regulations (California Code of Regulations beginning at section 70600). Those regulations required the BAAQMD to adopt by 1994 BARCT for source categories that collectively amounted to 75% of the 1987 nitrogen oxides emission inventory. Because the majority of IC engine emissions came from approximately 60 large engines fired with gaseous fuels located at wastewater treatment facilities, landfills, and refineries, Reg 9-8 imposed controls only on gaseous-fueled engines. Collectively, these engines were estimated to emit 9 tons per day of NOx, and the rule was estimated to reduce emissions by 8.1 tons per day.

Under Reg 9-8, engines fired with fossil-derived fuels must meet a NOx limit of 56 ppm if rich burn and 140 ppm if lean burn. (Current BARCT limits would be, respectively, 25 ppm, or alternatively 96% reduction, and 65 ppm, or alternatively 90% reduction.) Engines fired with waste-derived fuel must meet a 140 ppm limit if lean burn and 210 ppm if rich burn. Current BARCT limits would be 65 ppm and 50 ppm respectively, or alternatively, 90% reduction for either. The inventory currently shows that NOx emissions from stationary IC engines fired with gaseous fuels are 2.37 tons per day, including engines subject to Reg 9-8 as well as smaller engines not subject to the rule. District BACT for engines requires gaseous fuel except where impractical.

Emission reductions from engines fired with gaseous fuels cannot be easily estimated. The CARB BARCT limits include alternative percentage reduction limits that allow compliance through a demonstration that, though an engine may not meet a specified exhaust concentration limit, emissions have been reduced by a specified percentage. Many of the engines are likely to comply with the BARCT alternative percentage reduction requirements so that the BARCT limits would produce no emission reduction. For other engines, emission reductions cannot be easily estimated: engine-by-engine calculations would be required, and emission reductions may be minor.

Liquid Fuel Fired Engines

NOx emissions from stationary liquid-fueled IC engines in the Bay Area are shown in the most recent BAAQMD inventory to be 4.6 tons per day. Virtually all stationary liquid-fueled engines in the BAAQMD are compression-ignited engines, almost all of which are fueled with diesel oil. The BAAQMD inventory for these engines is based on the inventory developed by CARB for the stationary diesel ATCM. The CARB/BAAQMD inventory shows approximately 4100 diesel engines rated 25 hp or higher in the BAAQMD, of which approximately 3800 are used to drive backup generators or backup pumps. These are emergency standby engines which are exempt from the requirements of Reg 9, Rule 8. These 3800 engines account for about one-fourth of all NOx emissions from stationary sources under the District's jurisdiction. Many of the backup engines in the BAAQMD have been installed since 2000, when permits became mandatory for existing and new backup engines of at least 50 hp. New engines have been required to meet BACT NOx limits set at CARB's Tier 1 limit of 6.9 g/bhp-hr.

Based on BAAQMD permit data, the CARB inventory appears to be fairly reliable in its population estimates for backup engines.

According to the CARB inventory, approximately 300 diesel engines are used to drive prime generators, prime pumps, or for other purposes. These engines account for approximately three-fourths of all NOx emissions (3.3 tons per day) from liquid-fueled engines and would be the primary target for controls. We believe this number greatly overstates the number of such engines in the Bay Area. This discrepancy arises because CARB, in determining how many engines should be classified as prime engines, relied on data from four air districts, including two (San Joaquin and South Coast) that have large numbers of these engines in operation in petroleum production, an activity of no significance in the Bay Area.

BAAQMD permit data shows that there are 495 engines flagged as non-standby engines. However, an examination of the data shows that some are, in fact, standby engines and a much larger number are used only intermittently. The permit data show that cities and counties have a large number of diesel generators that may run temporary lights for street repair, etc. Of the 495 non-standby engines, 70 of them have emissions of at least 1 pound of NOx per day, and only 47 of them have emissions of 10 pounds of NOx per day. These are the prime engines that are of concern. The collective emissions estimate for those engines of greater than one pound NOx per day is 1294 lbs per day, 0.65 tons/day, confirmation that the CARB inventory overstates the number of diesel-fired prime engines.

The California Air Resources Board adopted the stationary diesel ATCM on January 20, 2004. District imposed NOx controls on liquid-fueled engines may not produce emission reductions beyond those that are likely to be achieved through the implementation of the ATCM. The ATCM will result in the replacement of virtually all existing prime engines by 2011. All new engines will have to meet BACT both for particulate matter and for ozone precursors (VOC and NOx). If modifications to existing District Regulation 9, Rule 8 is recommended and will not cause regulatory conflict with the ATCM, it will be included for further study.

References

California Air Resources Board. 2001. "Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Stationary Spark-Ignited Internal Combustion Engines."
California Air Resources Board. 2003. "Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Adoption of the Proposed Airborne Toxic Control Measure for Stationary Compression-Ignition Engines."
Marr, L.C., Harley, R.A. 2002. "Spectral analysis of weekday-weekend differences in ambient ozone, nitrogen oxide, and non-methane hydrocarbon time series in California." Atmospheric Environment 36, 2327-2335.
Sacramento Metropolitan AQMD. Rule 412.
San Joaquin Unified APCD. 2003. "Final Draft Staff Report: Proposed Amendments to Rule 4701 (Internal Combustion Engines - Phase 1) and Rule 4702 (Internal Combustion Engines - Phase 2)"
San Joaquin Unified APCD. Rules 4701 and 4702.
South Coast AQMD. Rule 1110.2.
Ventura County APCD. Rule 74.9.

FURTHER STUDY MEASURE FS 16: ENCOURAGE ALTERNATIVE DIESEL FUELS

Further Study Measure Description

Biodiesel

The District is currently conducting a feasibility study and pilot project to explore the potential air quality benefits of using biodiesel fuel in place of conventional petroleum diesel. The study will quantify the recoverable biodiesel feedstock from Bay Area sources, assess the environmental benefits (including air emission benefits) from these sources, identify production technology and costs, prepare a marketing plan, and identify obstacles and corresponding solutions to increasing biodiesel use in the Bay Area. The pilot project would demonstrate conversion of local feedstocks to biodiesel, use of the biodiesel in local fleets, and compare air pollutant emissions resulting from the use of the pilot project biodiesel to emissions from use of petroleum diesel in local fleets. While biodiesel has been shown to reduce emissions of particulates, reactive organic gases and toxic air contaminants, it can increase emissions of oxides of nitrogen. One important element of the District's feasibility study and pilot project is to explore ways to achieve emission reductions for oxides of nitrogen. The District will evaluate results of the study and project before determining whether and how to promote biodiesel use in the Bay Area.

Water/Diesel Emulsion

The ARB verified the emission reductions of Lubrizol's PuriNOx water/diesel emulsion in January 2001. In March 2004, the ARB released a report assessing the emission characteristics of PuriNOx. On average, emissions of NOx and PM were reduced 14% and 58 %, respectively, while hydrocarbon emissions increased by 87%. A significant contribution to air quality from PuriNOx is in the reduction of diesel PM. ARB identified diesel PM as a toxic air contaminant that accounts for 70% of the toxic risk from all identified toxic air contaminants. While PuriNOx was shown to increase emissions of some toxic air contaminants, such as formaldehyde, acetaldehyde, BTEX, 1,3-butadiene, and some polycyclic hydrocarbons, the benefits from reducing diesel PM were significantly greater than the risks posed by the increase in other toxic air contaminants. The District will consider appropriate methods to promote the use of water/diesel emulsified fuels in the Bay Area.

FURTHER STUDY MEASURE FS 17: MITIGATION FEE PROGRAM FOR FEDERAL SOURCES

Further Study Measure Description

The regulation of emissions from ships, aircraft, trains, and off-road farm and construction equipment less than 175 hp is under exclusive federal jurisdiction and therefore pre-empted from State and local air district authority. Existing and projected Federal regulations for these pre-empted sources are not expected to achieve significant emission reductions in the near term. The ARB's emission inventory for ships, aircraft and trains in the Bay Area is estimated to be approximately 51.9 tpd of NOx and 9.0 tpd of ROG in 2005.

The Mitigation Fee Program, adopted into the South Coast AQMD's 2003 AQMP, but not yet implemented, would charge an air quality impact fee to sources pre-empted from State and local air district authority under the federal Clean Air Act. The proposed method of control would first require the EPA or other federal agencies to appropriate funds or enable collection of fees by the SCAQMD in lieu of controlling these sources through more stringent federal regulations. The SCAQMD has the authority to collect fees based on emissions under the Lewis Presley Air Quality Management Act; however, implementation of this control measure by the SCAQMD may require additional legislation. The SCAQMD would use the impact fees to fund and/or implement cost-effective emission reduction projects from both federal and non-federal sources. The District will monitor SCAQMD's progress in implementing this program, and will evaluate the feasibility of implementing such a program in the Bay Area. The cost effectiveness of this measure in the Bay Area has not been determined.

A second opportunity for mitigation of federal sources may occur through the implementation of the State of California's Goods Movement Action Plan currently being developed by the Business, Transportation and Housing Agency and the California Environmental Protection Agency. The Action Plan will identify statewide priorities for infrastructure improvements and environmental mitigations that will simultaneously and continually improve freight movement and reduce impacts on local communities. A main goal of this effort is to ensure adequate funding to reduce emissions from ships, trains, trucks and other sources is part of major infrastructure projects. The Air District and MTC are active participants in the development of the Action Plan. The initial plan will be available by the end of 2005, with additional development work taking place during the first half of 2006.

FURTHER STUDY MEASURE FS 18: INDIRECT SOURCE MITIGATION PROGRAM

Further Study Measure Description

Indirect sources are development projects that generate vehicle trips and thus indirectly cause air pollutant emissions. Health & Safety Code Section 40716 states that air districts may "...adopt and implement regulations to…reduce or mitigate emissions from indirect and areawide sources of air pollution," but also states, "Nothing in this section constitutes an infringement on the existing authority of counties and cities to plan or control land use, and nothing in this section provides or transfers new authority over such land use to a district."

Some small, single-county California air districts have implemented limited indirect source control (ISC) requirements. Most California air districts currently limit their indirect source control activities to review of CEQA documents and, occasionally, technical guidance. No multi-county, regional air districts currently have ISC programs beyond CEQA commenting and limited technical assistance.

San Joaquin Valley Unified APCD staff has evaluated the option of adopting indirect source rules to reduce emissions of PM10 and ozone precursors. Rule 9510 establishes provisions for review of development projects and require implementation of mitigation measures and/or payment of fees. Rule 3180 establishes the fee schedule. SJVUAPCD Board of Directors adopted Rules 9510 and 3180 at a hearing on December 15, 2005. Implementation of the rules is pending likely litigation.

In October 2005, Sacramento Metro AQMD adopted a new CEQA policy to implement an EIR mitigation fee program. Lead agencies whose projects exceed SMAQMD's adopted significance threshold for construction emissions and who cannot mitigate these impacts to a less-than-significant level on-site are required to pay a mitigation fee that funds off-site mitigation projects, such as construction equipment engine retrofits, engine repowers, and the purchase of alternatively-fueled construction equipment.

The Air District currently implements various programs to reduce emissions from indirect sources, including: review and comment on CEQA documents; promotion of air quality elements in local plans; Transportation Fund for Clean Air grants for bicycle facilities, traffic calming, shuttles and other projects; cooperation with other regional agencies and stakeholder groups in the Smart Growth Strategy/Regional Livability Footprint project.

The Air District will evaluate ways to enhance these programs and study other options to further reduce emissions from new and existing land uses. The primary goal of the program would be to encourage land use development projects located and designed in such a way as to reduce vehicle use. Examples include infill development, mixed uses, increased densities near transit facilities, street design to encourage walking and cycling, etc. A secondary goal could potentially include providing funds (e.g., from air quality mitigation fees) for air quality mitigation measures such as transit improvements, shuttles, bicycle and pedestrian facilities, retrofitting or repowering heavy-duty diesel vehicles, etc. Potential program options that could be evaluated include Air District rules, enhanced outreach to local government, expanded CEQA review, or other programs. The Air District will monitor the progress of SJVUAPCD and SMAQMD with developing indirect source rules and fees in order to determine the viability of such a program in the Bay Area.

FURTHER STUDY MEASURE FS 19: FREE TRANSIT ON SPARE THE AIR DAYS

Further Study Measure Description

Various transit districts around the United States have implemented free or reduced transit fares on ozone alert days. In the Bay Area, the Air District and MTC have implemented several pilot programs involving free transit service on Spare the Air (STA) days: a 1996 program with Santa Clara VTA, a 2003 and 2004 program with LAVTA, a 2004 program with BART, and a 2005 program with many additional Bay Area transit providers.

The 1996 VTA program involved distribution of VTA transit vouchers at participating worksites on STA days. The program was moderately successful, and also identified a number of enhancements to improve effectiveness, particularly the need for better marketing and more simplified implementation. Under the 2003 LAVTA program, all rides on all of LAVTA's Wheels routes were free on STA days. Survey data showed increases in ridership on STA days. The program continued in 2004.

Under the BART program, BART agreed to provide free rides during the morning commute for up to the first five weekday Spare the Air days in 2004. $2 million in CMAQ and TFCA funding were committed to the project in 2004, which provided roughly $312,000 per day for BART's costs and approximately $450,000 for marketing and program evaluation. During the 2005 ozone season, the Air District and MTC have committed $4 million to provide free morning transit service on 19 transit operators in the region, including all major operators, on the first five, non-holiday, weekday Spare the Air Days.

In 2002, Air District staff calculated rough estimates of the costs and potential emission reductions of providing free rides on all Bay Area transit systems (excluding ferries) on STA days. Approximate costs were estimated to be $1.1 million - $1.3 million per day. Approximate emission reductions, assuming 5% and 15% increases in ridership, were as follows: ROG, 1.2 - 3.5 tpd; NOx, 1.5 - 4.6 tpd. MTC also evaluated such a program in 2002 and estimated costs to be $1.5 million per day and emission reductions (15% ridership increase) to be: ROG, 0.7 tpd; NOx, 1 tpd. Thus, emission reductions from free transit on STA days could be significant (particularly for a TCM), but costs would be very high.

The Air District and MTC will study the feasibility of providing free transit service on STA days, focusing particularly on: 1) identifying the most cost-effective routes, and 2) identifying federal, State, regional, local and/or private funds that could potentially pay for the program. Since the cost of region-wide implementation is so high, pilot programs on selected transit systems may be warranted as alternatives to region-wide implementation. Further study would be needed to identify the most cost-effective transit systems for pilot programs. Other, more limited options that may be studied include reduced fares (rather than free fares) and free transfers between systems. Effective marketing programs for free transit on STA days will also need to be studied. The current limited-day STA free transit program will provide valuable information to evaluate this concept.

FURTHER STUDY MEASURE FS 20: EPISODIC MEASURES

Further Study Measure Description

Episodic measures are measures that are not implemented year-round, but instead are implemented only at times when pollution levels are expected to be highest. The Air District's Spare the Air program (STA), described in TCM 16, is a long-standing episodic measure aimed at discouraging polluting behavior by businesses, government agencies, and members of the public on days when weather conditions are conducive to high ozone levels.

The Air District and MTC have previously examined enhancements to episodic measures. The STA program has expanded significantly over the years. TCM 16 proposes further enhancements to the STA program. Further study measure 20 proposes to examine opportunities for and benefits of providing free transit service on STA days, possibly leading to expansion of several pilot programs the Air District and MTC have implemented in previous years.

The Air District and MTC will study additional potential episodic measures. Key considerations will include emission reduction potential, costs, technical and administrative viability, and public acceptability. Potential episodic measures that could be examined include, but are not limited to, the following:

Reduce high-speed travel on freeways. Cars and trucks produce higher emissions when traveling at high freeway speeds (e.g., above posted speed limits). TCM 16 proposes to emphasize (voluntary) compliance with freeway speed limits on STA days through STA advisories and outreach. MTC and the Air District could examine additional measures, such as expanded California Highway Patrol enforcement of freeway speed limits on STA days.

Limit use of pre-1981 vehicles. Older vehicles produce much more pollution than newer vehicles because they lack current emission control devices. The Air District's Vehicle Buy Back program offers owners of pre-1981 cars a cash incentive to voluntarily retire their vehicle, which is subsequently scrapped. TCM 16 proposes to place greater emphasis on discouraging use of pre-1981 vehicles in STA advisories and outreach. MTC and the Air District could examine additional measures to discourage use of pre-1981 vehicles on STA days, such as targeted outreach to owners of pre-1981 vehicles or providing incentives.

Reschedule processes at stationary sources. Some Air District rules limit polluting activity – such as repair and maintenance, cleaning, and other shutdowns of production equipment – at industrial facilities on STA days. Examples include prohibiting tank cleaning or process vessel depressurization at refineries on STA days. As Air District rules are adopted or amended, the District will continue to investigate such STA limitations to polluting activity that is infrequent and thus could be easily rescheduled.

Comments and Responses on Public Review Draft 2005 Ozone Strategy

WRITTEN COMMENTS RECEIVED

#	ISSUE	COMMENT	STAFF RESPONSE
1	Cost Effectiveness Estimates (Table 16)	**William J. Quinn / CCEEB** (letter November 7, 2005): Table 16 provides cost effectiveness calculations for each proposed control measure. Through meetings with District staff, CCEEB has learned that many of these cost effectiveness estimates were based largely on data provided by other air districts. Because of the potential difference in emissions baselines, calculation methods or design features between facilities, CCEEB suggests the addition of clarifying language to the Ozone Strategy to make it clear that the District will be performing its own cost effectiveness analysis before advancing each control measure to rule making.	During the rule development process, District staff will carefully analyze cost-effectiveness in more detail than is possible for a control measure. The District will also prepare a cost effectiveness determination as required by state law. Appendix B of the 2005 Ozone Strategy has been revised to include additional language stating that the proposed control measures appear to be technically feasible, cost effective and able to produce at least a de minimis amount of emissions reductions based on available data but that additional information about Bay Area sources and conditions developed or presented during the formal rulemaking process could alter any of the above preliminary findings.
2	Emissions Inventory – Oil Refineries External Combustion line item	**Tery Lizarraga / Chevron** (email October 17, 2005): Consider revision to the Emissions Inventory line item, "Combustion – Stationary Sources; Oil Refineries External Combustion" or else explain the increase in NOx emission between this source category in the 2001 Ozone Attainment Plan and the Draft 2005 Ozone Strategy for 2003 and 2005 analysis years, respectively.	In the Bay Area 2001 Ozone Attainment Plan, 8.6 tons/day of NOx emissions was forecasted for year 2003 for the Refineries External Combustion category (which covers primarily boilers, steam generators, and process heaters). This number was estimated based on a 1999 year inventory and took into account District Regulation 9, Rule 10. Staff estimated that the rule would significantly reduce NOx emissions (overall 72%) between 2000

#	ISSUE	COMMENT	STAFF RESPONSE
			and 2003. The inventory in the Draft 2005 Ozone Strategy was based on a 2002 inventory and our records showed 2002 emissions at 18.85 tons/day NOx. From this data, staff assumed that all emission reductions from Regulation 9, Rule 10 had occurred prior to 2002. However, further review of current 2004 data indicates that emissions are being further reduced from 2002 levels. District Engineering Division staff made changes to emission factors for the oil refineries external combustion categories. Some of the changes were based on CEM data obtained during 2004. Current 2004 NOx estimates are now estimated at about 14 tons/day. Therefore, the 2005 Ozone Strategy's inventory for the Refineries External Combustion category has been revised to show NOx emissions (tons/day) as follows: 2000 2003 2005 2010 2020 24.4 16.5 14.0 14.8 16.3
3	Integrate Potential PM Reductions	**Adrienne Bloch / CBE** (letter November 9, 2005): The Ozone Strategy should consider PM impacts as well as the ozone impacts when adopting control measures, particularly for emissions from cooling towers, boilers, stationary internal combustion engines, and alternative diesel fuels. Failure to	While the 2005 Ozone Strategy is intended to reduce ozone precursor emissions and does not, therefore, specifically address PM, many of the proposed control measures are expected have the additional benefit of helping to reduce overall PM and diesel PM emissions. PM and PM benefits of

#	ISSUE	COMMENT	STAFF RESPONSE
		analyze such sources for potential measures to reduce smog and PM may lead to a biased control analysis. Also, any modeling should consider possible PM reductions because this most comprehensively addresses the impacts of ozone and is the most cost-effective approach since the Air District is charged with regulating both PM and ozone.	ozone measures are discussed in the Other Issues Section 3 entitled "Fine Particulate Matter." This section includes a discussion of the PM benefits of NOx reductions from stationary and mobile sources. Two of the further study measures in the 2005 Ozone Strategy (FS 3 Commercial Charbroilers and FS 15 Stationary Internal Combustion Engines) were included in the District's PM Implementation Schedule which was adopted on November 16, 2005. Several stationary source control measures in the ozone strategy will also reduce PM emissions. The flare control measure (SS-6 Flares, Regulation 12, Rule 12 adopted on July 20, 2005) will result in decreased PM emissions from a reduction in incineration. The control measures aimed at combustion processes (boilers, large water heaters and stationary gas turbines) primarily reduce NOx emissions. NOx emissions from stationary (and vehicular) source fuel combustion are precursors to nitrates, which comprise a significant portion of ambient PM2.5. Therefore, these NOx measures will also lead to a reduction in PM. All of the mobile source measures will help reduce PM emissions, with the diesel equipment idling model ordinance measure (MS-1) and the low-emission vehicle incentives measure (MS-3) helping to reduce diesel PM in particular. All of the transportation control measures, by reducing vehicle trips and vehicle miles traveled will have the

#	ISSUE	COMMENT	STAFF RESPONSE

additional benefit of reducing PM emissions from fossil fuel combustion and re-entrained road dust.

Moreover, the fact that the ozone strategy does not specifically address PM does not mean that the Air District is not taking steps to address particulate matter pollution. SB 656, (stats. 2003. ch.738), authored by Senator Byron Sher, requires ARB, in consultation with local air districts, to develop and adopt a list of the most readily available, feasible, and cost-effective control measures that could be employed by ARB and the air districts to reduce PM10 and PM2.5. The goal of SB 656 is to ensure progress toward attainment of State and federal PM10 and PM2.5 standards. The list of control measures is to be based on rules, regulations, and programs existing in California as of January 1, 2004 to reduce emissions from new, modified, or existing stationary, area, and mobile sources. ARB approved the list of control measures in November 2004. The bill requires air districts to review the ARB list and develop implementation schedules for feasible control measures appropriate for the respective air basins based on the nature and severity of local PM conditions. The implementation schedules are to be developed by prioritizing adoption and implementation based on the effect each control measure will have on public health, air quality, emission reductions, as well as each control measure's feasibility, cost-effectiveness, and appropriateness for the respective region. The District evaluated the ARB

#	ISSUE	COMMENT	STAFF RESPONSE
			list of control measures, analyzed Bay Area PM sources, and approved an implementation schedule in November 2005.
4	Apply the Precautionary Principle to Evaluating Control Measures	**Adrienne Bloch / CBE** (letter November 9, 2005): The factors stated as control measure evaluation criteria weigh cost and the economic cost to industry, but do not consider the benefits of any proposed measure to the communities who suffer adverse health impacts from the current operations. A precautionary approach is necessary to recognize that low income communities and communities of color face higher exposures to air pollution because of proximity to stationary & mobile sources, increased sensitivity to those sources due to constant high exposure, and because many pollutants concentrate locally. The factors considered include "concerns of community members" but that is only relevant to the extent that the community members are fully informed and actually involved in the planning process. A precautionary approach must be included in the Ozone Strategy to ensure that these facts are taken into account when evaluating a control measure.	As discussed in Section 3 of the 2005 Ozone Strategy in "Local Benefits," the local benefits of ozone control measures are an important consideration in the control measure evaluation process. Most of the proposed stationary, mobile and transportation measures are expected to have local benefits in addition to contributing to lower ozone levels. In addition, as described in the Ozone Strategy, the District has initiated the Community Air Risk Evaluation (CARE) program (also discussed in Section 3 of the 2005 Ozone Strategy) to identify parts of the region most impacted by toxic air contaminants and to develop risk reduction programs.
5	Reanalyze Projected Emissions To Reflect Economic Changes and Meteorology	**Adrienne Bloch / CBE** (letter November 9, 2005): The Ozone Strategy projects that future emissions of ozone precursors – reactive organic gases and nitrogen oxides – will be considerably lower than the past inventory. This conclusion seems based on the decline seen starting in 2001. As CBE has	The District has developed the emissions inventory for the Ozone Strategy with the best available data. The CCAA does not require the Air District to analyze economics or meteorology in the 2005 Ozone Strategy, as the Strategy relies upon an all feasible measures approach to reducing ozone. It

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		explained in earlier comments, the District uses changes rooted in the serious economic downturn seen in the Bay Area and favorable meteorological conditions to justify less aggressive and effective regulations. The final Plan should reassess its estimates of future emissions on more realistic projections.	is not accurately described as less aggressive and effective. Please see response to Comment 39.
6	Include Specific Enforcement Mechanisms for Diesel Idling Rules	**Adrienne Bloch / CBE** (letter November 9, 2005): CBE appreciates that CARB and the District are taking diesel idling seriously. Over the past couple of years, CARB has adopted diesel idling rules for school buses, trucks, and for Port areas. The Air District has supported community members and organizations in educating truck drivers and residents about the harms of diesel idling and of the new rules. Nevertheless, CBE still believes that the enforcement mechanisms for these rules are currently inadequate. CBE strongly encourages the Plan to include a specific vision for enforcing idling rules through citizen enforcement or other specific local enforcement so that reductions may actually be achieved.	The District's intent with MS 1 Diesel Equipment Idling Ordinance is to target emissions from diesel equipment that are currently not included in the ARB regulation, such as lighter duty trucks and off-road equipment. The District is currently in the process of developing a sample idling ordinance and the public will have an opportunity to comment at public workshops. MS 1 will also address enforcement issues.
7	Developer-based Trip Reduction Ordinances	**Hillary P. Heard / Contra Costa County** (letter November 22, 2005): The Air District should examine the ability of Developer-based trip reduction ordinances to mitigate the secondary environmental effects of land use and development. If analysis shows such ordinances can be effective, they should be included in the Draft Ozone Strategy.	TCM 15 includes the following text which responds to the commenter's suggestion: "Cities and counties are encouraged to require developer-based trip reduction programs." This text was previously added during the preparation of the 2005 Ozone Strategy in response to this commenter's April 2004 letter.

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8	HOV Occupancy Requirements in TCM 8	**Hillary P. Heard / Contra Costa County** (letter November 22, 2005): The Air District should evaluate the potential to increase the ability of TCM 8 (Construct Carpool / Express Bus Lanes of Freeways) to mitigate additional environmental effects by changing the existing and proposed High Occupancy Vehicle (HOV) facilities to have a standard occupancy requirement, on both the Bay Area Bridges and the roadways. Currently the standards vary, which may discourage some motorists from using these facilities to their full potential.	TCM 8 includes a statement that the Bay Area should consider moving toward a consistent region-wide set of operation hours for HOV lanes, which would correspond to the current maximum spread of 5am to 10am and 3pm to 7pm. An encouragement of consistency of vehicle occupancy requirements would generally be air quality beneficial if consistent occupancy requirements were made higher than existing requirements (such as 2+ to 3+). TCM 8 includes a statement that "an increase in vehicle occupancy from 2+ to 3+ would normally be considered after other feasible corridor management strategies (Express Bus, expanded CHP enforcement, ramp metering, etc.) have been deployed."
9	Sewer Gas/Particle Emissions Through Building Plumbing Vents	**Jack G. Ohringer** (letter September 20, 2005): Suggests District consider a "normally closed vent system" that addresses sewer gas/particle emissions for building plumbing vents.	Staff has considered this measure and found it to have low effectiveness for reducing ozone. Sewer gas has few constituents that are ozone precursors, but may cause health effects in unusual cases due to ammonia or hydrogen sulfide concentrations. Staff also determined that the measure was not feasible for reasons of safety. Trapping methane, a constituent of sewer gas, in vent lines may create an explosive hazard.
10	Review CEQA Documents for Local Developments	**Tiffany Schauer / Our Children's Earth** (letter November 9, 2005): The District has acknowledged its responsibility to reduce VMT growth in the Ozone Strategy. In order to be more proactive, the District should commit to the review of CEQA documents for local	As part of our partnership with Bay Area cities and counties, District staff assist lead agencies with CEQA in the following ways: • Review and comment on CEQA documents for major projects and plans.

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		developments so that they comply TCM policies.	• Provide a guidance document on best practices for assessing and mitigating air quality impacts. • Answer questions via telephone and email from planners, consultants and the public about all aspects of air quality analysis of the environmental review process under CEQA. • Encourage the incorporation of air quality policies and programs into local projects and plans through comment letters, phone calls and email. District comment letters to lead agencies encourage local jurisdictions to implement policies and programs included in our TCMs, particularly smart growth policies found in TCM 15 where appropriate. TCM 15 has been amended to provide the above information about the District's existing CEQA assistance.
11	Improve Public Process	**Tiffany Schauer / Our Children's Earth** (letter November 9, 2005): Improve public outreach process so that communities most affected by air pollution can be represented and actually participate in person in the process. There needs to be a dialogue between workshop participants and presenters for the purpose of finding common ground about what constitutes a "feasible measure" to address air pollution.	The District's public involvement program for the 2005 Ozone Strategy has been extensive. It has included a variety of outreach techniques, including public presentations, technical work group meetings, community meetings, community training sessions prior to community meetings, email notices, and an ozone planning website. These strategies reflect the District's broad community outreach program to achieve the following goals: • Include all the diverse stakeholders in the planning process (industry, community groups,

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			environmental groups, local governments, neighboring air districts, and concerned citizens) • Address stakeholder needs, issues and concerns • Provide timely and accurate information • Enhance communication between the Air District and all of the stakeholders • Build understanding and support for ozone planning and related air quality programs and projects The District will continue to evaluate our public involvement processes, and revise them as necessary to assure they are as effective as possible.
12	SS 6 Flares	**Brigette Tollstrup / Sacramento Metropolitan AQMD** (letter November 7, 2005): Both Santa Barbara and San Joaquin air district rules require ground-level enclosed flares to meet NOx and VOC standards and incorporate the operating/design requirements of NSPS (40 CFR 60.18) as well as an opacity limit of Ringelmann 1. If not already included, the Bay Area refinery flare measure should include these additional restrictions and limits.	The District adopted Regulation 12, Rule 12 in July 2005 to reduce flaring from emergency service flares at petroleum refineries. These elevated, high-pressure, open-air flares are much different from the enclosed, ground-level low-pressure flares in oil-field and landfill service in Santa Barbara and San Joaquin. Emergency service flares in the Bay Area have always been subject to a Ringelmann 1 limitation. However, NOx and VOC limitations are neither feasible nor measurable for these flares. Instead, Regulation 12, Rule 12 requires Bay Area refineries to prepare Flare Minimization Plans unique to each facility to reduce flaring emissions.
13	Refinery Fugitive Emissions	**Brigette Tollstrup / Sacramento Metropolitan AQMD** (letter November 7, 2005):	Comment noted.

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		SMAQMD supports the Bay Area District's effort to evaluate and propose enhancing the inspection/detection monitoring requirements for refinery fugitive emissions through SS 10 Pressure Relief Devices and Blowdown Systems and FS 12 Valves and Flanges.	
14	Agricultural Engines	**Brigette Tollstrup / Sacramento Metropolitan AQMD** (letter November 7, 2005): The commenter suggests that FS 15 Stationary Internal Combustion Engines include the investigation of an accurate inventory of agricultural pumps in the Bay Area.	Part of the ARB inventory includes emissions from agricultural pumps. District staff believes that those emissions estimates may be more representative of some of the large farming operations in the Central Valley than in the Bay Area. The District is currently reviewing the inventory for agricultural sources as part of the implementation of SB 700 (stats. 2003, ch. 479). The analysis of FS 15 will include development of an inventory of and potential emissions reductions from agricultural pumps as well as other IC engines.
15	Indirect Source Mitigation Program	**Brigette Tollstrup / Sacramento Metropolitan AQMD** (letter November 7, 2005): Suggest that the BAAQMD join with the SMAQMD and SJVUAPCD in developing Indirect Source Rules and to help evaluate rule proposals on this control method.	The Bay Area will closely monitor the SJVUAPCD's progress on implementing an indirect source rule and plans to evaluate the feasibility of such a rule for the Bay Area. FS 18 Indirect Source Mitigation Program was amended to also mention SMAQMD's recent efforts to develop a CEQA mitigation fee program related to construction impacts.
16	Measures Proposed for Deletion – Improved Residential Water Heater Rule	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): Consider state-level legislative advocacy to implement an achievable statewide regulation on residential water heaters.	A previous residential water heater control measure has been proposed for deletion because it is a technology-forcing standard that is not feasible at this time. New measures SS 12 and SS 13 both propose additional controls on other water heaters

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			and boilers. District staff agree with the commenter's suggestion that regulation on residential water heaters may be useful at the state government level but do not believe it is necessary or appropriate to include a commitment to advocate for legislative change as part of the strategy which focuses on inclusion of all feasible measures.
17	Funding and Emissions Reductions from Incentive Programs (Table 8)	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): The inclusion of this table is inappropriate because it draws unnecessary attention to the cost effectiveness of these programs and could undermine the intent of the TFCA program.	The California Clean Air Act (CCAA) requires that the District include information on the cost-effectiveness of control measures included in each triennial plan. That information is provided in Table 16 of the Ozone Strategy. It is a District policy that all TFCA-funded projects demonstrate an overall cost-effectiveness of $90,000 per ton or better. However, Table 8 is not intended to reflect cost-effectiveness but rather to summarize District grant programs and illustrate the many air quality beneficial grants and programs that the Air District has funded over this three year period.
18	Feasibility of Estimating Emissions Reductions from Implemented TCMs	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): Consider including an estimation of emissions reductions from implemented TCMs (if feasible).	An accurate calculation of emissions reductions from TCMs is very difficult. Many TCM elements have synergistic relationships making individual emissions reductions calculations challenging. In addition, many of the TCMs from the 2000 Clean Air Plan are on-going, so many of the emissions reductions will be realized over the life of individual projects, and it would be difficult to aggregate them in any meaningful way and, therefore, possibly misleading. The State does not require the District to include a report of emissions reductions achieved

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			from TCM implementation for a strategy that relies on the adoption of all feasible measures as allowed under the CCAA. Therefore, in triennial plan updates and annual reports to ARB, the District and MTC have reported on implementation milestones.
19	Congestion Management Program Deficiency Plans	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): District should review adopted congestion management program deficiency plans, adopted by CMAs, to identify additional implemented TCM's.	This has been done. MTC assists the District in reporting the status of implementing adopted TCMs from earlier plans. MTC staff use a number of different sources for determining TCM implementation status. MTC staff is aware of the projects included in CMA adopted congestion management program deficiency plans. Information on TCM implementation efforts on pages 38-42 are highlights of significant implementation efforts during the triennial period.
20	Hybrid Railroad Locomotives	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): "Green Goat" hybrid railroad locomotives should be considered by ARB and other regulatory agencies. Are incentives for such technology included in ARB's Off Road Mobile Sources Emissions Reductions Program?	The "Green Goat" technology mentioned by the commenter refers to battery-powered switcher engines that operate in rail yards, sorting out rail cars from inbound trains and assembling outbound trains. At this time, the purchase and deployment of such technology is eligible for District grant funding through either the Carl Moyer program or a new District grant program funded through an additional $2 surcharge on motor vehicle registration; although, to date, there has not been an application for such a Bay Area project submitted. The District also participates in the EPA Regions 9 &10 West Coast Diesel Collaborative. This

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			collaborative is working to identify additional resources to reduce diesel PM, and hybrid locomotive switcher engines may be eligible for such incentive funds. Regulation of emissions of air pollutants from locomotives is primarily the responsibility of the federal government; under the federal Clean Air Act, states and their political subdivisions are preempted from establishing emissions standards for these sources. Because of these limitations, ARB has been working on reducing emissions from locomotives through an incentive/voluntary approach and through fuel standards applicable to intrastate locomotives. On November 18, 2004, ARB approved new requirements for fuel used in intrastate diesel-electric locomotives. Beginning January 1, 2007, diesel fuel sold for use in these locomotives must meet the specifications of CARB diesel fuel. Intrastate (diesel-electric) locomotives are defined as those locomotives that operate and fuel primarily (at or greater than 90% of annual fuel consumption, mileage, and/or hours of operation) within the boundaries of the state of California. Diesel-electric locomotives use electric power provided by a diesel engine that drives a generator or alternator; the electric power produced then drives the wheels using electric motors.
21	ARB Railroad MOU	**Jack Witthaus / City of Sunnyvale** (letter October	The final version of the 2005 Ozone Strategy

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		10, 2005): Consider additional discussion of ARB's MOU with Union Pacific and Burlington Northern Railroads and the potential reduction of locomotive emissions in the Bay Area.	includes additional discussion of the MOU. The MOU process occurred concurrent with the release of the public review draft of the document in September 2005. ARB's Railroad MOU provides a path to real, near-term reductions of diesel particulates and other air pollutants from locomotives operating within the District and statewide. The District is participating with ARB in implementing the MOU, and anticipates conducting a series of community outreach meetings in the Bay Area in early 2006.
22	WTA Ferry Service Expansion to Moffett Field	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): TCM 7 should be revised to include the future study of ferry service expansion to Moffett Field in Phase 2.	The WTA's Final Implementation and Operations Plan includes a reference to future study of ferry service post-2006 to Moffett Field. Consequently, "Future study of ferry service expansion to Moffett Field" has been added to TCM 7.
23	"Best Practices" for Land Use and Transportation Integration	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): TCM 15 should be revised to encourage efforts to adopt "best practices" for land use and transportation integration, such as the VTA's Community Design and Transportation Program.	The District, MTC and ABAG are aware of the VTA's Community Design and Transportation Program and agree that it is a helpful tool for promoting land use and transportation integration in Santa Clara County. Many of the program items listed in TCM 15 either explicitly or implicitly include the encouragement of best practices. TCM 15 has been amended to include the following: "The Air District, MTC and ABAG will consult with and provide technical assistance to local jurisdictions interested in pursuing smart growth strategies, including highlighting best practices from throughout the Bay Area and other parts of the

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			country." In addition, under the promotion of innovative parking strategies, the regional agencies will maintain examples of best practices and innovative parking strategies as part of a technical assistance program to local agencies.
24	Goods Movement	**Jack Witthaus / City of Sunnyvale** (letter October 10, 2005): Consider the addition of a TCM related to goods movement that would encourage the use of the cleanest modes of transport for goods, or efficient transfer of goods at ports and airports, and other intermodal facilities.	Several of the proposed Ozone Strategy control measures are related to goods movement, District staff does not believe there is a need to include an entirely separate TCM for this same purpose. Those related control measures include MS 1 Diesel Equipment Idling Ordinance, MS 3 Low-Emission Vehicle Incentives, and FS 17 Mitigation Fee Program for Federal Sources. FS 17, in particular, is relevant to the Goods Movement and has been amended to reflect the District's and MTC's involvement in the Goods Movement planning process. A major goal is to ensure adequate funding to accelerate the reduction of impacts from ships, trains, trucks and other diesel equipment used in the handling and movement of freight. In addition to these control measures and further study measure, the District's Community Air Risk Evaluation (CARE) Program has implications for goods movement. In 2004, MTC completed a Regional Goods Movement Study for the San Francisco Bay Area which generated key information that will: 1) help MTC allocate transportation funds for transportation infrastructure; 2) provide local decision-makers with economic impact information for planning economic

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			development strategies or making infrastructure, zoning and other land-use decisions affecting this industry; and 3) prepare a common freight platform for MTC and its partners for federal advocacy and regional planning efforts. Currently, ARB staff are developing a new emission reduction plan for goods movement, focusing on ports, rail yards, and major transportation corridors. This effort is the next step in implementing the Goods Movement Action Plan developed by the California Business, Transportation and Housing Agency and the California Environmental Protection Agency. The emission reduction plan will also be an essential component of California's effort to meet new federal air quality standards for ozone and fine particulate matter (PM2.5). The 2005 Ozone Strategy has been amended to include reference to the Statewide Goods Movement Action Plan in both the main document and in FS 17.
25	California 8-hour Ozone Standard Missing from Executive Summary	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The Executive Summary should note that the California 8-hour ozone standard is applicable to the Bay Area. The region's historical data indicates the Bay Area will be classified as a nonattainment area for the 8-hour ozone standard, necessitating additional emissions reductions. In order to be the comprehensive document it purports to be, the Executive Summary of the 2005 Ozone Strategy should reference the existence of the 8-hour	These topics are discussed in the 2005 Ozone Strategy. They are not mentioned in the Executive Summary because this document is the Bay Area's strategy for compliance with the State 1-hour ozone standard. Emission reductions resulting from Ozone Strategy control measures will make progress towards attaining the State 8-hour ozone standard. The California 8-hour ozone standard will not be in effect until 2006. ARB has not yet development

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		California ambient air quality standard and the need for substantial further emissions reductions to achieve attainment. Similarly, toxics and the federal 8-hour ozone standard should also be referenced for comprehensiveness.	planning requirements or guidance for the State 8-hour ozone standard, but ARB staff expects to do so prior to the next plan update.
26	Contingency Measures Are Lacking	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The 2005 Ozone Strategy lacks contingency measures required by the California Clean Air Act. Health and Safety Code § 40915.	The requirement to include contingency measures is fundamentally inconsistent with the use of the "all feasible measures" alternative authorized under Health and Safety Code § 40914(b) and used by the District in preparing the 2005 Ozone Strategy. A contingency measure has to be feasible to be a meaningful contingency measure, but all feasible measures have been included in the strategy; therefore, there are no measures available to serve this purpose. We also note that contingency measures are required under § 40915 for implementation upon a finding by the State board that the District is failing to achieve interim goals or maintain adequate progress toward attainment. Neither of those situations is applicable to implementation of an "all feasible measures" plan. While different from contingency measures, further study measures can be considered potential additional measures which rely upon further investigation. Further study measures are measures for which insufficient information was available during the development of the control strategy to allow the agencies to commit to them as control measures. A measure may be proposed for further study because of a lack of emissions data

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			on the source targeted, because the cost effectiveness of control may be questionable, or because technology to control the source may not have been adequately demonstrated. The 2005 Ozone Strategy commits the District to continue to evaluate the further study measures. However, the Ozone Strategy does not commit the District to continue evaluation of a measure if it is determined to be technically infeasible, not cost-effective, or inappropriate for any other reason, nor is the District committing, as part of the Strategy, to move forward with further study measure(s) deemed feasible as a result of the study unless and until the District specifically commits to the measure(s).
27	Lack of Complete Explanation of how "All Feasible Measures" Standard Has Been Achieved for TCMs	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The District has failed to provide a complete explanation of how the California Clean Air Act All Feasible Measures standard has been achieved for transportation control measures (TCMs). While the 2005 Ozone Strategy references the regulatory definition of All Feasible Measures, 17 CCR 70600, et seq., the document does not detail the basis for its failure to include additional TCMs in the control strategy. Each TCM that was rejected should be listed and an explanation of the factors and weighting employed by the District and MTC that led to the rejection of each such measure. It is very difficult to understand what aspects of each TCM are existing and what elements are new.	Transportation Control Measures (TCMs) have been extensively analyzed as part of past planning activities associated with state and federal plans. As part of this 2005 Ozone Strategy effort, the District and MTC not only solicited suggestions of potential measures from agency staffs and the public, but also set-up a review, screening and evaluation process for existing and new TCMs. While the titles for the Ozone Strategy TCMs are similar to those included in the 2000 Clean Air Plan, all of the TCMs have been thoroughly reviewed, revised and updated. The 2005 Ozone Strategy TCMs include a very broad range of transportation measures including transit, bicycle, pedestrian, ridesharing, public education, demonstration projects, pricing and land use measures.

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			The TCM evaluation process was discussed at length through the Ozone Working Group. Refer to memos and reports on the TCM Review Process, Screening of TCMs, Control Measure Evaluation Criteria – Transportation Control Measures, TCM Workshop Memo, Preliminary Stationary/Mobile/Other Control Measure Evaluations, and other related reports discussed at the Ozone Working Group meetings on May 14, 2003, August 5, 2003, October 28, 2003, January 6, 2004, January 20, 2004, March 23, 2004, May 20, 2004, September 28, 2004.
28	Indirect Source Review	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The 2005 Ozone Strategy repeats previous plans in making passing mention of indirect source review. While this recital has been included in every known Bay Area state plan since 1991, no such rules or program has ever been adopted. The California Clean Air Act mandates the inclusion of indirect source controls. Health and Safety Code § 40716 directs that "a District may adopt and implement regulations to accomplish . . . indirect . . . sources of air pollution" while § 40918(a)(4) directs that state plans shall contain "[p]rovisions to develop . . . indirect source control programs." Despite this mandate, the District has never adopted an indirect source review program or rule. The 2005 Ozone Strategy must terminate this pattern of delay and contain specific steps to	State law does authorize the District to adopt and implement regulations to reduce or mitigate emissions from indirect sources of air pollution without infringing on the traditional authority of cities and counties to plan or control land use. (Health & Safety. Code § 40716. Further, areas with moderate or worse ozone pollution, including the Bay Area, are directed to include "*provisions to develop* … indirect source control programs." (Emphasis added.) But these two statutes – one authorizing adoption and implementation of an indirect source rule and the other requiring the District to make provision to develop an indirect source program, do not amount to a "mandate" to adopt an indirect source rule. The District currently implements various programs to reduce emissions from indirect sources, including: review and comment on CEQA

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		advance this essential Clean Air Plan element. The 2005 Ozone Strategy should set a specific schedule to begin the process of developing and adopting an indirect source review rule. This is essential to capture increases in emissions that regularly occur as a result of land use decisions by the multitude of jurisdictions within the District.	documents; promotion of air quality elements in local general plans; Transportation Fund for Clean Air grants for bicycle facilities, traffic calming, transit, shuttles and other projects; cooperation with other regional agencies and stakeholder groups in the Smart Growth Strategy/Regional Livability Footprint project. The District will continue to evaluate ways to enhance these programs and further reduce emissions from indirect sources. The primary goal of such programs would be to encourage land use development projects located and designed in such a way as to reduce vehicle use. The District will continue to monitor the progress of SJVUAPCD and SMAQMD with implementing indirect source rules and fees in order to evaluate the feasibility of such a rule for the Bay Area through FS 18 Indirect Source Mitigation Program.
29	2005 Ozone Strategy Should Include Results of Modeling to Show Effect of Emissions Reductions Realized	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): In addition, the legislature anticipated CAPs would routinely include models (ARB to develop "methods for the validation of air quality models," Health and Safety Code § 40916(b)) as part of attainment planning. The District has acknowledged it has developed a model capable of demonstrating the effects of emissions reductions upon ambient air quality, and in so doing, must now utilize that tool, least the resources used in its development be	The CCAA does contemplate the use of models to assess improvements in air quality as part of the ongoing effort to attain and maintain the state ambient air quality standards as part of the triennial plan updates. However, as the District is currently pursuing an "all feasible measures" planning effort, modeling to demonstrate the effect of emissions reductions is not necessary or required. ARB has confirmed that modeling is not required for such plans.

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		squandered and to help advance future attainment planning processes, including the two upcoming 8-hour plans.	As stated in the 2005 Ozone Strategy, the District has been modeling two ozone episodes as part of the Central California Ozone Study. The original purpose of that modeling was to demonstrate attainment for the federal 1-hour standard. Because the EPA revoked the 1-hour standard in June 2005, such modeling is no longer necessary. The episodes that the model was being developed to simulate would not be representative for the State 1-hour standard and therefore could not be used to demonstrate attainment of the State 1-hour standard or to estimate carrying capacities. No air district in California or the ARB has conducted modeling studies for the State 1-hour standard. The modeling work to date will not be "squandered." Bay Area District modeling staff is working intensely with staff at ARB and Northern California air districts to develop modeling for attainment demonstration SIPs for the Sacramento and San Joaquin federal non-attainment areas for the national 8-hour ozone standard. This work includes analysis of transport between the Bay Area and other Northern California districts.
30	1991 Clean Air Plan Does Not Contain An Estimation of Emission Reductions Necessary for Attainment	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The District claims that since it followed a process that it asserts complied with the mandated Health and Safety Code § 40233 process in 1991, it may choose to ignore these requirements in the 2005 Ozone Strategy. In fact, the 1991 Clean Air Plan	In 1988, Assembly Bill 3971 (stats. 1988, ch. 1569, §2), was enacted, adding section 40233 to the Heath and Safety Code. Section 40233 directed the Bay Area District to estimate the quantity of emissions reductions from transportation sources necessary to attain and maintain state and federal ambient air quality standards. This task was to be

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		makes no express reference to Health and Safety Code § 40233, and includes no estimation of the emissions reductions necessary for attainment. The 1991 Clean Air Plan does contain a robust list of TCMs, and for that reason alone stands as a positive example of what the District has done in the past. As demonstrated by the text at page 21 of the 1991 Clean Air Plan, the emissions reductions calculations in that plan were calculated by estimating the potential emissions reductions associated with the TCMs, then totaling them, and were not the product of a District estimate followed by MTC's development of a transportation source plan. Even had the 1991 Clean Air Plan adequately addressed Health and Safety Code § 40233's transportation source plan process, that alone does not exempt the District from § 40233 compliance for the next 15 years.	completed by June 30, 1989. In June of 1989, in compliance with § 40233, the District estimated the level of emissions reductions from transportation sources necessary to attain and maintain state and federal standards. On the basis of information available at that time, the District estimated that a reduction of 25 tons per day of hydrocarbons was necessary for this purpose. This was the amount of emissions reductions that, together with anticipated reductions from State, federal and other District regulations and programs would provide for attainment of the state one-hour ozone standard. The target represented a reduction from TCMs of 35 percent of the projected 1997 mobile source emissions inventory. (Bay Area '91 Clean Air Plan (CAP), Issue Paper #1, June, 1989; see also BAAQMD Staff Report: Transportation Control Measures Plan, September 19, 1990, Transmittal Memorandum, p.2; and BAAQMD Staff Report: Final Transportation Control Measures Plan, January 16, 1991, p. 1.) During the development of the 1991 Clean Air Plan, the District worked closely with MTC to develop a TCM plan to achieve the targeted emission reductions. The TCMs included in the 1991 Clean Air Plan, when implemented, were expected to achieve the emissions reductions target. (Bay Area 1991 Clean Air Plan, Vol. 1, p. 21.) In June of 1991, the District and MTC submitted a

joint report to the Legislature regarding steps taken to comply with AB 3971. (Letter from Lawrence Dahms, Executive Officer, MTC, and Milton Feldstein, Air Pollution Control Officer, BAAQMD, to the Honorable Willie L. Brown, Jr., Speaker, California State Assembly, dated June 12, 1991.) The report included both the District's target for emissions reductions from TCMs and a description of the steps taken to develop the transportation control measures to meet that emissions reduction target.

The emissions reduction target was used to guide the process of developing the TCMs detailed in the report to the Legislature and various technical memos prepared in conjunction with the development of the 1991 CAP. And, as the commenter notes, the 1991 CAP contained a robust list of TCMs intended to achieve the emissions reductions target. In fact, the emissions reductions from TCMs included in the 1991 CAP exceeded the target, ameliorating to some extent concerns about the considerable uncertainties attendant to the quantification of emissions reductions to be realized from TCMs. (Bay Area 1991 Clean Air Plan, Vol. 1, pp. 21 – 23.)

Since that time, the District and MTC have continued to strengthen and refine the TCMs and emissions reductions estimates for these complex measures. The target established in 1989 and first reflected in the 1991 CAP continues to drive this

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			ongoing improvement effort; consequently, the District has not determined that the emissions reduction target has needed to be revised since that time. (Letter from Jack P. Broadbent, Executive Officer/APCO, Bay Area Air Quality Management District, to Steve Heminger, Executive Director, Metropolitan Transportation Commission, dated April 12, 2004.) See also response to Comment 31.
31	Need for Updating the Transportation Source Plan per Health and Safety Code § 40233 and 40717	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The District advances an irrational and arbitrary interpretation of the requirements of Health and Safety Code § 40233 and 40717 that overtly defeats the Act's purposes and is injurious to public health. Health and Safety Code § 40233 references the need for updating the transportation source plan in coordination with each triennial update, since the updates are clearly part of the District's periodic revisions of emissions reductions necessary for attainment. The District claims Health and Safety Code § 40233 is discretionary, but this is correct only if the District is free to ignore the duty to achieve prompt attainment. The California Clean Air Act contains numerous other references to the purposes of District state plans, which include: "Districts shall endeavor to achieve and maintain state ambient air quality standards . . . by the earliest practicable	Health and Safety Code § 40233 directs the District to estimate the emissions reductions from transportation sources necessary to attain and maintain state and federal air quality standards. The District completed this task in 1989. See response to Comment 30. Section 40233 further provides that "as the bay district periodically revises its estimate of the emissions reductions from transportation sources necessary to attain state and federal ambient air standards … the plan for transportation control measures shall also be revised, adopted, and enforced according to the procedure established [for adopting and enforcing the initial estimate]." The commenter reads this provision as a directive to revise the estimate as a part of the triennial update required under Health and Safety Code § 40924. That reading of the statute is incorrect. The purpose of the quoted language is to set out the process for revising the estimate of emission

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		date." "[P]riority should be placed upon expeditious progress toward the goal of healthful air." Health and Safety Code § 40910.	reductions needed from transportation sources when the District determines that such a change is necessary and to require the revision of the transportation control plan whenever the District revises the estimate; it does not require that the estimate be revised on a certain time line. This is a decision left to the District based on a determination of the appropriate allocation of responsibility for emissions reductions necessary to attain and maintain air quality standards. This determination is quite complex and involves consideration of many factors. The District must take into account the relative contributions of a wide range of source categories, including traditional stationary sources both large and small and less discrete source categories such as area, indirect and transportation sources, as well as source categories controlled at the State and federal level. The District must consider the emission reduction potential of these source categories and explore the means by which the needed emissions reductions can be most effectively achieved. In carrying out this complex task the District must consider a myriad of factors including the availability of technologically feasible and cost-effective control measures. Additional concerns – quite apt in regards to transportation control measures – include such considerations as whether and to what extent emissions reductions from a source category can be quantified and assured.

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			In this context, it is not surprising that the District's ability to quantify and, therefore, its willingness to rely prospectively on emissions reductions from a complex source category such as transportation sources will have a significant impact on the level of emission reductions formally attributed to the category in a planning context. Moreover, under a planning regime that requires the adoption of all feasible measures on an expeditious schedule, the need to revise the estimate of emission reductions from this source category will not arise often. Unless and until the District determines that the estimate of emission reductions from transportation sources must be revised in order to attain and maintain state and federal ambient air quality standards, the District has no duty to revise the estimate. The District has not made such a determination in preparing the 2005 Ozone Strategy. While the 2005 Ozone Strategy does not set a revised emission reduction target for transportation sources, the TCMs intended to achieve that target have by no means remained static. During preparation of the 2005 Ozone Strategy, the District and MTC reviewed all of the TCMs in detail and augmented them substantially. The TCMs in the 2005 Ozone Strategy are among the most comprehensive of any air quality plan in California.

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32	Health and Safety Code § 40233	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): Health and Safety Code § 40233 requires estimates of emissions necessary from transportation sources to achieve attainment. The District and its partner agencies have engaged in a pattern and practice of avoiding compliance with the substantive and procedural requirements of Health and Safety Code § 40233 from the first Clean Air Plan under the California Clean Air Act to the current 2005 Ozone Strategy.	The District and MTC have complied with the requirements of § 40233. See responses to Comments 30 and 31.
33	Failure to Meet CCAA Mandated Triennial Update	**Marc Chytilo / on behalf of TRANSDEF** (letter November 9, 2005): The District has failed to meet the California Clean Air Act's mandated triennial update requirement. The most recent Bay Area Clean Air Plan was adopted in 2000, and no plan was prepared in 2003 or 2004. The 2005 Ozone Strategy should explain the reasons for this lapse, and include measures to remediate any harm to the public and restore all lost progress towards air quality improvement that may be reasonably attributed to this failure. At a minimum, all reporting in the 2005 Ozone Strategy should include the period up to 2004, and not stop at 2002 (eg, VMT, population exposures, etc.).	The 2005 Ozone Strategy describes how the San Francisco Bay Area will make progress toward the State one-hour ozone standard as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. At the beginning of this ozone planning process, the Ozone Strategy was also intended to address requirements related to the national one-hour ozone standard; however with the revocation of the national one-hour standard in June 2005, the District has decided to move forward with this Strategy solely as a state triennial update as required by the CCAA. Because the triennial update was not submitted in the regular 3 year cycle does not mean that rule development and mobile source and TCM implementation has not occurred, however. To the contrary, the District and MTC have continued to move forward with rule development, mobile source

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			incentive programs, TCM implementation and other program implementation activities. The District has worked closely with ARB throughout the planning process, seeking their input on the Draft Ozone Strategy and keeping them apprised of control measure implementation.
34	Ozone Strategy Provides No Projected Future Attainment Date	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The California Clean Air Act requires each area to attain by the earliest practicable date. Since 1991, the District has failed to develop a plan that achieves attainment, and the region routinely violates the California ambient air quality standard for ozone. The 2005 Ozone Strategy continues the trend by providing no projected future attainment date, or even an estimation of the emissions reductions necessary to get there. The District has chosen to rely on a weakness in the California Clean Air Act (as compared to the federal Clean Air Act) to the detriment of the residents of the Bay Area. This demonstrates both an important gap in the CCAA necessitating amendment, as well as a lack of commitment on the District's part to demonstrate to Bay Area residents that it is addressing air quality problems with the appropriate levels of commitment and resources. Attainment modeling to date indicates that substantial additional emissions reductions are needed for attainment of the 1-hour state ozone standard, notwithstanding the emissions reductions likely to be required to meet the 8-hour state ozone standard.	The District agrees that additional emissions reductions are needed to attain the State one-hour ozone standard. Indeed, the District is pursuing an attainment strategy that requires implementation of "all feasible measures" to meet this need. This means that the District has included in the plan every feasible control measure with an expeditious adoption schedule. This is specifically authorized under the CCAA (§40914(b)) and is used by all districts that have planning obligations under the act. A plan that includes all feasible measures on an expeditious adoption schedule is not only legally sufficient, it represents the maximum level of public health protection possible and ensures that the Bay Area will attain the one-hour ozone standard by the earliest practicable date.

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35	District Has Ozone Modeling Capabilities	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The 2005 Ozone Strategy states that the District has prepared and calibrated its attainment demonstration model, and the Modeling Group reports that projections of various percentage emissions reductions have been run. Thus it is clear that the District has modeling capability, but is unwilling to use it for any purpose in the 2005 Ozone Strategy. As noted supra, TRANSDEF believes that the District has a duty under Health and Safety Code § 40233 to make the best estimates of the emissions reductions necessary for attainment, even though the confidence may be less than a federal attainment demonstration. The District has an obligation to achieve attainment "by the earliest practicable date." In the absence of a modeled attainment demonstration, the District is incapable of identifying the magnitude of emissions reductions necessary for attainment. Even a less accurate attainment demonstration would inform decision-makers and the public of the magnitude of emissions reductions necessary for attainment. The District will approach the need to reduce emissions by 50% differently from approaching a 15% necessary emissions reductions to achieve attainment. In the absence of even a qualitative estimate of necessary emissions reductions, the effectiveness of this plan is impossible to judge.	Please see response to Comment 29.

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		As with several other elements of the 2005 Ozone Strategy, the District defers addressing challenging issues by falling back on past practices of avoidance and deferral. Prior Clean Air Plans also recited the challenges of modeling and the expectation that the next Clean Air Plan would require attainment demonstration modeling. But so long as the State does not mandate it, the Bay Area District appears content to avoid such modeling, even when it is technically feasible.	
36	Increased NOx Emissions from Marine Vessels Should Be Reflected in the Emissions Inventory	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The District's emissions inventory should be amended to quantify and reflect the increasing contribution of NOx emissions from marine shipping in waters off the coast of California. In other coastal California air districts, projected future coastal marine shipping threatens future air quality improvements. See, for example, the Santa Barbara County 2004 Clean Air Plan at http://www2.sbcapcd.org/sbc/cap04.htm. The Bay Area's ports contribute to these emissions, and must quantify the current and future emissions from this source category, including controls that may be exercised during port stops that could benefit other areas, such as making available clean fuels, requiring offsets, incentivizing air pollution control technology upgrades, etc.	Currently the District's emissions inventory accounts for ship activities within three miles from the Golden Gate Bridge. ARB is currently developing a statewide emission estimating methodology for ocean-going vessels (OGVs) operating in California coastal waters and California ports and inland waterways. The ARB emissions inventory will include all OGV emissions occurring within 100 nautical miles of the California coastline. The 100 nautical mile boundary is generally consistent with the California Coastal Waters (CCW) boundary except along the south central coast (Ventura and Santa Barbara Counties) where the CCW boundary is approximately 30 nautical miles offshore. The District will update the inventory when finalized data is available from ARB. The 2005 Ozone Strategy inventory Table 1 includes a footnote with the above information. The District, in conjunction with other coastal air

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			districts, local ports, and state and federal agencies, is participating in demonstration projects to test emission reduction technology on an ocean-going vessel and local harbor craft. The Port of San Francisco is currently offering incentives for cruise ships to utilize low sulfur marine fuel while in port and is considering the use of shoreside power as part of a new cruise ship terminal. We also anticipate increased use of clean fuels and other emission reduction technologies at local ports in response to ARB regulations on marine auxiliary engines, harbor craft and off-road container-handling equipment.
37	Cost-Effectiveness Analysis of TCMs Inadequate	**Marc Chytilo /** on behalf of **TRANSDEF** (letter November 9, 2005): The California Clean Air Act mandates ranking measures by cost effectiveness and consideration of those costs in developing the adoption and implementation schedule. Although the 2005 Ozone Strategy makes a generalized assessment of this factor for TCMs, the analysis omits valuation of pricing strategies, which are expected to have high cost effectiveness. The analysis should be further expanded to evaluate the relative cost effectiveness of the individual projects within the TCM. The District has chosen to lump categories of projects and programs into aggregate TCMs, however this masks a comparison of the cost effectiveness of individual measures which would be useful (and required) information for decision-makers and the public.	The 2005 Ozone Strategy uses the best information available and appropriate techniques to assess cost effectiveness as required by Health and Safety Code § 40922. The approach to calculating TCM cost effectiveness was to analyze examples of measures that would be implemented under the various TCMs and their cost effectiveness, not provide a cost-effectiveness number for the TCM as a whole. The broad range of TCMs in the Ozone Strategy have complex, synergistic effects that make it very difficult to precisely quantify specific cost-effectiveness figures for each of the TCMs. Instead, an estimate was made for representative projects within each of the TCMs. While the use of cost-effectiveness estimates for individual projects may not be the ideal approach to assessing the cost effectiveness of a rule or program, in some instances – and most TCMs fall into this category –

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		For example, TCM 4, improve regional rail service, includes some projects that are highly cost effective, and some that are not. Health and Safety Code § 40922 requires a detailed assessment and consideration of several factors in scheduling adoption and implementation. The 2005 Ozone Strategy should provide a project-specific level of analysis within each TCM that includes numerous projects involving capital construction funding.	the complexities of calculating the cost effectiveness of a measure requires the use of an alternative approach.
38	Ozone Strategy Fails To Reduce the Region's Growth in VMT	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): We see that the District is still unwilling to create a comprehensive strategy to reduce the region's growth in vehicle miles traveled ("VMT"), despite the 29% increase projected between 2000 and 2020. The Strategy clearly recognizes the significance of this increase: "These traffic management strategies are critical since the projected growth in vehicle miles of travel will significantly exceed the expected growth in regional road capacity." (p. D-33). Yet the Strategy fails to set VMT growth reduction as a critical goal.	The 2005 Ozone Strategy is a comprehensive document describing the Bay Area's strategy for compliance with State one-hour ozone standard planning requirements. It is an air quality document, not a transportation plan. The District and MTC understand that reducing VMT can help to reduce emission from motor vehicles, as indicated by the menu of TCMs included in the Ozone Strategy. The TCMs in the Ozone Strategy – and more broadly, the smart growth efforts of ABAG, MTC and the District – are intended to reduce historic VMT growth.
39	Adequacy of District Efforts	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): TRANSDEF remains unconvinced that recent low ozone levels have anything to do with the programs of the respective agencies. The Plan is devoid of anything tying its air quality efforts back to results in the real world. Please note that Figure 7 shows that	The information and data provided in Tables 2 through 5 and Figures 6 & 7 in the 2005 Ozone Strategy demonstrate real improvements in Bay Area air quality since 1985, which track reductions in the District's emission inventory during the same period of time. The District believes this demonstrates that District rules and programs,

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		the population exposed to unhealthy levels of ozone actually increased between the plateau periods of 1990-1994 and 1998-2000! One possible interpretation of these data is that the District's efforts are not keeping up with increases in emissions. Nothing in the Plan demonstrates that recent low ozone levels are anything but the result of favorable meteorology (cool summers) coupled with an economic slowdown caused by recession that has reduced VMT, traffic congestion and industrial emissions. We think the District should prove that recent low ozone levels are the result of its regulatory efforts, and not simply a replay of the pseudo-attainment years of the 1990s. This could involve cranking up the new photochemical model or simply comparing ozone levels for years of similar meteorology and economic activity, as a cross-check of the reasonableness of the emissions inventories for the respective years.	together with regional, State and federal programs that reduce emissions from mobile and other statewide sources, are responsible for the positive effect on regional air quality over this period. The number of days of exceedances of the State ozone standard, the expected peak day concentrations and population-weighted exposure have declined substantially since 1988. Exactly how much of this improvement can be attributed to the District, State and federal rules and programs adopted and implemented during this period and how much is the result of changes in meteorology or changes in one or more of the numerous variables that affect ozone formation and air quality is not easy to discern. The stability of atmospheric conditions, solar radiation, strength and direction of winds, localized and regional topography, and the vertical mixing depth of the atmosphere play a significant part in the formation of ozone.
40	Public Outreach Efforts	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The District still has not learned to conduct public outreach. TRANSDEF had a representative at almost all the community outreach meetings of 2004 and 2005. Almost all the attendees were representatives of organizations already known to the District, who were already participating in the public involvement process. Very few residents of	The District's public involvement program for the Draft Ozone Strategy has been extensive, and District staff believe the 2005 Ozone Strategy has been greatly improved because of public comments received through the public outreach process. Beginning in the Spring of 2003, the outreach process has included a variety of outreach techniques, including public presentations, technical work group meetings, community

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		the local communities actually showed up. The District's process failed to actually involve local community members. Other agencies, such as MTC, have been able to partner with local organizations to bring in local people of color and low-income people to get their input. At least part of that success comes from ensuring that the attendees get paid for their time. Until the District reorganizes how it reaches out for public input, it is obvious from the record that the input it does receive will not include the voices of these impacted communities.	meetings, email notices, and an ozone planning website. In addition, in 2003 and 2004 the District conducted community training sessions prior to the community meeting. These efforts reflect the District's broad community outreach program to achieve the following goals: • Include all the diverse stakeholders in the planning process (industry, community groups, environmental groups, local governments, neighboring air districts, and concerned citizens) • Address stakeholder needs, issues and concerns • Provide timely and accurate information • Enhance communication between the District and all of the stakeholders • Build understanding and support for ozone planning and related air quality programs and projects
41	Ozone Working Group	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The Ozone Working Group, while superficially a top-of-the-line facilitated stakeholder process, was in reality a slightly updated version of the same-old same-old. "Announce and Defend" has evolved to "Listen, Announce and Defend." It was an agency information dissemination process coupled with a one-way information collection process, functioning the same as previous plan's workshops. The OWG never actually became a Working Group.	During 2003-2005, the District, in cooperation with MTC and ABAG, convened a technical group called the Ozone Working Group (OWG) to help develop the Draft Ozone Strategy for the Bay Area. The OWG was a sincere effort to involve the public in the ozone planning process. All OWG meetings were open to the public and many different stakeholder groups and individuals participated. Throughout the Ozone Strategy development process, ten OWG meetings were held. At these meetings, staff presented updates on various

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		The whole point of a stakeholder process is to help a divided group achieve a tolerable agreement on a difficult but important decision. For the OWG, the issue was the extent to which the District's would go to reduce emissions. Because District Staff was unwilling to engage in dialogue about this key point of contention, no Working and no agreement took place. Instead of collaborating on the basis of shared goals, Staff shut out the public from the very heart of the Plan process: the determination of control measure feasibility--determining how far to push to achieve air quality and health benefits. Instead of acting as a neutral party to help staff and attendees find common ground, the facilitator merely called on people in turn, as an appendage of the District. Neither he nor Staff demonstrated any understanding of the significant differences between a stakeholder process and a conventional agency-led input session. For the past 3 Plans, TRANSDEF has submitted detailed control measure proposals. The OWG had been touted as a forum for a back-and-forth dialogue on proposals such as ours, but never worked that way in reality. Our proposals disappeared into a black hole, never to return, except for a few elements which showed up in TCMs. We were never offered a dialogue about the inner workings of feasibility determinations: the weighting of the various criteria and the constraints within which the District works. Above and beyond the loss of innovative ideas, such behavior sends a	aspects of the planning process, answered questions, and solicited discussion and public comment. Background material, agendas and meeting handouts were available at the meetings and beforehand on the District website. At least half of the meetings were devoted to discussions of control measure screening, evaluation and development. There was even an additional January 2004 OWG meeting held in order to finish earlier discussion of control measure evaluations. All comments and questions at OWG meetings were recorded and meeting notes with responses were distributed at subsequent OWG meetings. Numerous comments from OWG meetings were incorporated into the 2005 Ozone Strategy.

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		strong message that the District does not collaborate with clean air activists, that it views them with suspicion, and would rather be left alone to go about its business. Staff exhibited a bunker mentality in seemingly not being able to talk about what they were directed to do by Senior Management and the Board. That kind of secretive agency culture leads directly to frustration, conflict and eventually to litigation. TRANSDEF found little positive about the Ozone Working Group format. More could have been accomplished if we simply had been invited to Ellis Street.	
42	Adopt a Legislative Program to Support the Rescission of SB 437	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The fourth paragraph of TCM 1 (p. D-3) offers excellent reasons for the feasibility of employer-based trip reduction programs. With the higher levels of congestion found on the roads today, mandatory trip reduction ordinances would offer enhanced benefits to the region, both in air quality and congestion mitigation. The justification of such a program would be even stronger than when it was first adopted. To receive the full benefits of what is likely to be the most effective TCM in the Plan, the District should adopt as part of this TCM a legislative program supporting the rescission of SB 437. The fact that the Legislature revoked the District's authority to mandate such a program was not a criticism of the program's air quality benefits.	Whether or not the commenter is correct about the Legislature's continued acceptance of the air quality benefits of mandatory employer-based trip reduction programs, the legislation created a clear and present barrier to such mandates. If the opportunity were to arise, the District would consider supporting efforts to rescind SB 437. Unless and until SB 437 is rescinded, the District and MTC support a wide range of trip reduction activities, including the Regional Rideshare Program, county and city-level programs, programs at schools and universities, programs at transportation management associations and business groups, and other activities. TCM 15 encourages cities and counties to require developer-based trip reduction programs. In

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		The District needs to make the case that major employers receive significant benefits from the regional highway system, and need to do their part to keep it functioning. Employers complain mightily about congestion harming their ability to do business. Now the District needs to make the case that business has a responsibility to support trip reduction programs, especially in these times of reduced state infrastructure investment.	addition, FS 18 Indirect Source Mitigation Program includes an evaluation of ways to enhance existing Air District programs to reduce emissions from indirect sources, including: review and comment on CEQA documents; promotion of air quality elements in local plans; Transportation Fund for Clean Air grants for bicycle facilities, traffic calming, shuttles and other projects; cooperation with other regional agencies and stakeholder groups in the Smart Growth Strategy/Regional Livability Footprint project; and study of other options to further reduce emissions from new and existing land uses.
43	Revise TCM 1 Support Voluntary Employer-Based Trip Reduction Program	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The fifth bullet on page D-4 is not specific enough to generate implementation activities. Rather than "Work with employers..." the TCM should identify the specific actions to be taken by the District, such as "identify employers subject to the provisions of the State Parking Cash out law, send them letters explaining their legal responsibilities, provide technical support to assist compliance, and publicize the program to employees." The word "certain" is too vague, given that the main eligibility criteria are identified immediately after. Either delete it or provide the full set of criteria.	We disagree. The language used is broad enough to encompass the activities described by the commenter but flexible enough to ensure that the District and MTC can focus on the types of programs and other activities that will result in efficient and effective efforts to encourage employer-based trip reduction. Also, as noted in TCM 1 and TCM 15, the District, MTC and ABAG will work with employers and with local governments to encourage innovative parking strategies, including parking cash out.
44	Lower Average Speeds Can Lower Emissions	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Please note that "lower average speeds" (p. D-3) may in fact lower emissions rather than raise them,	We agree with the commenter's note that, depending on the circumstances, reducing average speeds (i.e. from 55 mph to 35 mph), can also lead to a reduction in emissions.

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		if the congestion is on freeways. Tunnel studies found that moderate speeds of 30-35 mph provided the lowest emissions.	Therefore, TCM 1 has been amended to describe the more specific scenario with regards to stop and go traffic. The sentence now reads "Without continued trip reduction programs, increased traffic volumes in general could increase motor vehicle emissions, and congestion, in particular, increases auto emissions due to stop and go traffic and lower, congested average speeds".
45	Revise TCM 4 Upgrade and Expand Local and Regional Rail Service	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Add a bullet to Phase 1 of TCM 4 (p. D-16): "Have developers enter into long-term agreements to pay for shuttles from new employment and residential developments."	Please note that page D-16 refers to TCM 5. The second bullet under Phase 1 (p. D-16) addresses examination of funding options for and coordination of new and existing shuttles and, unlike the suggestion laid out in this comment, is clearly consistent with current legal authorities of MTC, ABAG and the District. In addition, District CEQA comment letters often encourage local lead agencies to require developers to provide shuttles.
46	Revise TCM 8 Construct Carpool / Express Lanes on Freeways	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Add the following bullet to TCM 8 on page D-24: "The Air District and MTC shall advocate for the conversion of selected mixed flow freeway lanes to high occupancy vehicle lanes." This highly cost-effective strategy has significant air quality benefits, as well as congestion benefits for HOV users, and is especially appropriate in this time of weak State financial commitment to infrastructure. This may require a legislative program to seek authorization.	As referenced in TCM 8 background (p. D-24), the March 2003 update to the Bay Area HOV Lane Master Plan included a comprehensive analysis of regional emissions from different HOV lane configurations, including conversion of existing lanes to HOV lanes. One of the findings was that the conversion of some mixed flow lanes to HOV lanes with express bus service yielded lower NOx emissions, which result from slowing traffic down in the mixed flow lanes as these lanes become more congested. However, this slowing of traffic in the mixed flow lanes can also lead to significant and

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		The costs of new HOV lanes are extremely high (TCM 8, p. D-26) Add the following: "Ensure that the use of scarce funds achieves maximal air quality benefits by committing to not approve any new HOV lane projects unless accompanied by a funded operational plan for express bus service."	potentially unacceptable levels of delay for motorists traveling these corridors. The suggestion that new HOV lanes only be approved if accompanied by new express bus service, would be problematic since some corridors may not support this kind of service from a ridership or financial standpoint. However, TCMs 3 and 8 acknowledge the important link between Express Bus Service and the HOV network, and TCM 8 states, with respect to HOV lanes, "special attention should be paid to express bus operations to maximize benefits to transit."
47	Revise TCM 13 Transit Use Incentives	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Add the following to TCM 13's EcoPass description on page D-40: "Encourage cities and counties to make a contribution to air quality and congestion relief by requiring developers of Transit Oriented Development to purchase a monthly residential EcoPass for each resident, as a condition of approval." This would be an excellent way to communicate that TOD means transit. Add the following to TCM 13's EcoPass description on page D-40: "Encourage cities and counties to make a contribution to air quality and congestion relief by requiring employers to purchase a monthly business EcoPass for each on-site employee as a condition of permit approval."	TCM 13 references Santa Clara County's EcoPass Program as an existing program that could potentially increase transit use and lower vehicle emissions, as well as similar university-based programs (p. D-40). It is noted that MTC and the District will encourage employers, transit operators, local governments and others to promote and expand such programs. The program enhancements suggested by this comment could be considered by these entities when they develop and expand such programs. District CEQA comment letters often encourage local lead agencies to require EcoPass-type programs.

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48	Revise TCM 15 Local Land Use Planning and Development Strategies	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Add the following bullet to TCM 15's Phase 1, just before the last paragraph on page D-46: "MTC will amend these incentives and conditions into this TCM on an on-going basis." This will make it possible to review the regional program linking land use, transportation and air quality all in one place. Add language to TCM 15 at the top of page D-48, precisely paralleling the language of the first bullet of Phase 1 of TCM 19, page D-65: "The Air District and MTC will comment on local land use planning and development strategies in related elements of city and county general plans, policies and programs, and in CEQA documents." To have an appropriate context for policy action, substitute "the largest source" for "a major source" in TCM 15's preface on page D-45. The footnote to page D-49 incorrectly asserts that Projections 2003 is a smart growth policy-based regional population forecast. The forecast is ABAG's attempt to create a feasible real world projection, so it is more conservative in its land use than the Smart Growth Scenario. Because Smart Growth was assumed to only start being implemented in 2008, the emissions reductions calculations and assumptions about the baseline appear to be incorrect.	The District and MTC will update and modify this TCM and others as part of future triennial reviews and updates of the Ozone Strategy. The District and MTC recognize the importance of local land use planning on transportation and air quality. The regional agencies are currently working with the MTC-ABAG-Air District Joint Policy Committee, which coordinates regional planning efforts, to determine our role and level of involvement in local land use planning. TCM 15 has been amended to provide additional information about the District's existing CEQA assistance. Please see response to Comment 10. Projections 2003 are policy-based projections. Although they are not based solely on the Smart Growth Strategy "Preferred Vision," they assume increased housing production in the Bay Area, and reflect underlying goals of the Vision. Because implementation of the Vision will occur over many years and require many local land use decisions, a conservative estimate of long-term effects is warranted.

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49	Parking Strategies in TCM 15	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): We suggest using a phrase that occurs later in TCM 15 for the first sentence at the top of page D-47: "*Cities and counties are encouraged to* take various actions to promote innovative parking strategies, including:" Because the parking section of TCM 15 is already based on encouraging local government rather than on mandates, we urge the elimination of the soft language, which turns program concepts into mush: For the third bullet on page D-47, change "Consider allowing developers…" to "Require developers …." Append to that bullet: "or the price for ownership housing." The revised bullet becomes: "*Require* developers and property owners to unbundle the price of parking spaces from the rent for tenants *or the price for ownership housing*." Similarly, change the fifth bullet of TCM 15, page D-47, to "Implementing parking benefit districts that use revenue generated from on-street parking fees to fund pedestrian-supporting infrastructure and programs *benefiting the neighborhood*." Similarly, change the sixth bullet of TCM 15, page D-47, to "Charge market-value for off-street parking and *institute* residential permit programs to alleviate spillover concerns." Why does the seventh bullet of TCM 15, page D-47,	The menu of parking strategies included in TCM 15 is very broad and ambitious. MTC, ABAG and the Air District do not have authority to implement parking requirements. Cities and counties have this authority. The regional agencies will continue to work with local governments to encourage the implementation of innovative parking strategies. In addition, starting in 2006, MTC, ABAG, and the Air District will be conducting a parking study to assess strategies to reform parking policies to support smart growth and to demonstrate the applicability of those strategies in a series of case studies.

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		include “financial assistance” in a parking cash out program? How would financial assistance be involved? We propose adding to the bullet: “Encourage cities and counties to permit the conversion of surplus parking lot areas to economically productive uses, as an incentive when employers and landowners provide permanent parking cash out to employees.” For consistency, add relevant language from the seventh bullet of TCM 15, page D-47, to the last paragraph on that page: “The regional agencies … parking assistance with marketing, pilot programs *and requirements through CEQA processes or conditions of approval*.”	
50	Indirect Source Mitigation Programs	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): There is no legitimate justification in TCM 15 (p. D-48) for merely “monitor[ing] implementation of indirect source mitigation programs in other regions for potential feasibility in the Bay Area.” San Joaquin Valley APCD is adopting an indirect source mitigation rule and fee program, Control Measure D, New Rules 9510 and 3180. Clearly, these programs are feasible. The Bay Area, as a non-attainment area, is thus required to do so as well. This item must instead be written: “The Air District will develop and adopt an indirect source mitigation program to reduce the growth in regional VMT.”	As authorized by Health and Safety Code § 40716 and directed by § 40918(a)(4), the 2005 Ozone Strategy includes provisions to develop an indirect source control program. Many of the elements of TCM 15, as well as elements of other TCMs, are intended to promote land use and transportation decisions that encourage alternatives to driving alone and reduce emissions from indirect sources. In addition, we are monitoring San Joaquin’s and Sacramento Metro AQMD’s processes for implementing an Indirect Source Rule and Mitigation Fee Program. Specifically, implementation of an indirect source control program is included in the Ozone Strategy as a further study measure (FS 18).

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			See also response to Comment 28.
51	Location Efficient Mortgages in TCM 15	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): There is no reason that the last item for Phase 1 of TCM 15 (p. D-48) should only be "to study opportunities to promote LEMs." The words "study opportunities to" should be deleted.	We disagree. The question of how best to encourage Location Efficient Mortgages (LEMs) requires further study.
52	Parking Fees in TCM 18 Implement Transportation Pricing Reform	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): A parking fee of $3.00 seems very arbitrary on page D-61. Why was this selected? The TRANSDEF Smart Growth Alternative for the RTP had a $5.00 parking charge as a surrogate for parking cash out. $3.00 not only seems low, it is not market-oriented to respond to local conditions.	Any dollar amount selected would be arbitrary in some sense. TRANSDEF selected a $5.00 per day parking charge for its sensitivity analysis in the TRANSDEF Smart Growth Alternative evaluated in the EIR for the Transportation 2030 Plan. However, no particular basis for using this amount is evident other than this level is higher than for previous MTC analyses. While MTC reasonably assumed a $3.00 per day charge as the basis for the emission reductions in the Ozone Strategy, staff note, for purposes of comparison only, that a $5 per day parking charge would represent a 40% increase in costs while resulting in just an additional 4% reduction in vehicle trips. Regardless of the specific dollar figure analyzed, the underlying concept is consistent – workplace parking fees can reduce drive-alone commute trips.
53	Revise TCM 19 Improve Pedestrian Access and Facilities	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Insert the first two sets of bulleted lists for TCM 19 (pp. D-64 & 65) as elements of Phase 1	The bulleted lists in TCM 19 are descriptions of the kinds of actions that could be pursued by cities, counties and developers. The programmatic elements being proposed in the 2005 Ozone

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		implementation. None of the other TCMs have programmatic lists like these that are not part of the implementation plan. These two lists have no standing as programmatic elements unless they are incorporated into Phases 1 and 2. Add to the end of the second bullet of the first TCM 19 list on page D-64: "requiring street facades to be interesting to pedestrians, etc."	Strategy are more specifically set out in the Phase 1 and 2 lists. The first bullet of Phase 1 (p. D–65) has been revised to clarify the intent of the regional agencies to encourage local actions to promote pedestrian travel. Many of the bullets already address the goal of providing more attractive, not to mention safer, pedestrian environments.
54	Seek Legislative Authority to Convert Sales and Use Taxes into Gas Taxes in TCM 18	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Add to TCM 18, page D-59: "Seek legislation authorizing transportation sales tax authorities to convert voter-approved sales and use taxes into gas taxes raising the same amount of revenues. The level of the gas tax would be recalculated frequently enough to account for changes in the volume of gasoline sales and changes in the sales and use tax revenue that would have been received. This swap is revenue-neutral to the public as a whole, and would be net positive to lower-income people who don't drive. It would serve as a stronger pricing signal than currently exists, for those that drive a great deal." As such, this proposal is consistent with the goals of TCM 18. Because of its revenue neutrality, this proposal may be more politically viable and implemented sooner than the other elements of TCM 18. Should the legislation pass, the region's counties would be well-advised to all swap at the same time, to avoid big differences in gas prices between counties.	TCM 18 includes several elements related to fuel taxes. If the opportunity were to arise, the District would consider supporting efforts to change transportation sales tax into gas taxes. Any such measure would require legislative approval, and would surely be very controversial.

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55	Revise MS 2 Green Contracting Model Ordinance	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): TRANSDEF thinks the District is taking an overly reticent approach with its proposed MS 2: Green Contracting (p. C-51). The effectiveness of the measure is limited by the voluntary cooperation of local government. Through its ability to set the threshold of significance in its CEQA Guidelines, the District could create a strong regulatory regime that would result in dramatic reductions in NOx and Diesel PM. Under current guidelines, the addition of any quantity of toxic air contaminants (TACs) beyond a de minimus amount requires Best Available Control Technology for toxics, or T-BACT. The District should set the threshold of significance for diesel PM, a TAC, at the level emitted when diesel equipment is used for more than a de minimus amount, say an hour. The impacts of more than de minimus use would then be identified in a project's CEQA document as significant impacts, triggering the required use of T-BACT as mitigation. The District would then confirm that for on-road and off-road diesel equipment, TBACT means meeting the current ARB standard for diesel engines. To avoid having to provide further mitigations, all contractors involved in projects that trigger CEQA review would find it necessary to upgrade their equipment to models meeting the latest standards. This proposal would mean that both public sector and private sector contracting were subject to	Separate from the 2005 Ozone Strategy, the District will be considering revisions to the BAAQMD CEQA Guidelines, especially with regard to impact evaluation methodology, thresholds of significance and mitigation measures for all project activities. Mitigation of diesel emissions will be addressed. In addition, Further Study Measure 18 also provide an opportunity to incorporate the type of suggestions made in this comment into an indirect source rule or program if it is found to be feasible and warranted.

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		control, thereby resulting in much more reductions than MS 2 as written, and would be much less burdensome to implement for municipalities.	
56	Restructure TCM Implementation Through Cost-Effectiveness System	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The vast majority of the TCMs (3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 15, 16, 17) explicitly state that more could be accomplished to improve air quality, if only limitations on funding could be overcome. For almost all of the rest, it is clear that more money would allow more emissions reductions to be achieved. Thus, given the identification of unfulfilled potential for emissions reductions, further emissions reductions could be achieved through a means independent of the aforementioned TCMs. The new TCM would create a system to ensure consistent cost-effectiveness in the selection of projects and programs to implement TCMs, and would include the following elements: 1). The three co-lead agencies for this Plan agree in an MOU to use cost-effectiveness as the central criterion in selecting amongst alternatives to implement TCMs; 2). Cost effectiveness shall be calculated using the procedures set forth by the FTA New Starts program or the FHWA paper "Mainstreaming Pricing Alternatives in the NEPA Project Development Process" available at http://www.ltrc.lsu.edu/TRB_82/TRB2003-000941.pdf 3). Any highway or transit project must meet FHWA or FTA cost-effectiveness standards	The commenter suggests a process for evaluating TCMs, rather than a new transportation control strategy. The cost-effectiveness calculations for many TCMs are not straightforward, and where MTC has had sufficient information for proposed TCMs in the Ozone Strategy, a cost-effectiveness calculation was made and is available to decisionmakers. Similar calculations can be made for other TCMs that may arise in the future. As mentioned above in Response 17, the TFCA program already incorporates cost effectiveness as a key criterion. Further, as now constituted in the 2005 Ozone Strategy, the TCMs mirror the entire range of transportation investments contemplated in the latest Regional Transportation Plan. Making air quality cost effectiveness the sole criteria for advancing these improvements would ignore the public process used to develop the RTP and the wide ranging factors that were considered in incorporating various transportation projects and programs into the RTP, including sources and availability of funding, consistency with local plans, local and regional economic benefits, degree of public support, etc. Thus, this process and the range of considerations for including projects and

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		before it can be approved by any of the co-lead agencies; 4). An agency may write a Statement of Overriding Considerations explaining the reasons it selected an alternative that was not the most cost-effective. Reasons may include the anticipated economic development impacts of an alternative. Emissions reductions lost by spending more money than necessary would have to be mitigated; 5). The exemption of a project by Congress from FTA's application of its cost effectiveness standards shall have no bearing on this TCM.	programs in the region's long term transportation investment strategy should not have to be continuously repeated in Statements of Overriding Considerations. Finally, studies of major transit investments, whether funded by the FTA or other sources, typically include information on ridership forecasts and costs, so a separate requirement through a state air quality plan is not needed.
57	Revise BAAQMD CEQA Guidelines to Establish New Significance Thresholds for Increased Vehicle Trips	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): CEQA offers an excellent method of achieving the mitigation of indirect source emissions. Because the Bay Area is a non-attainment area for ozone, every indirect source that leads to the creation of new auto trips can be identified as having a significant impact on the environment. That additional trip delays the attainment of the air quality standards. If the District's CEQA Guidelines were modified to acknowledge this basic reality, that could trigger a mitigation fee for each new project. The Guidelines could be structured such that mitigation fees would not be required if the project proposed enough TOD features, including the provision of permanently funded transit itself. The new TCM language: "Revise the Air District's CEQA Guidelines to identify the addition of new vehicle trips to the region as a significant impact to	Please see responses to Comments 10 and 55.

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		the environment, because it will delay attainment of federal and State air quality standards. Develop a mitigation fee program, whose revenue stream would fund TCMs. The fee will be based on the number of trips generated, and will be coupled with a discount program designed to provide incentives for Transit Oriented Development and other regionally beneficial features of development."	
58	Ozone Strategy Lacks Contingency Measures	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The Plan is entirely lacking in contingency measures. See our attorney's explanatory comments, under separate cover.	See response to Comment 26.
59	On-Road Mobile Source Baseline Emissions Inventory Projections	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): TRANSDEF has no confidence in the on-road mobile source baseline emissions inventory projections. Despite a 29% increase in VMT from 2000 to 2020, emissions for the same time period are reduced by 73% for ROG and 75% for NOx. Dr. John Holtzclaw has provided a History of Bay Area Mobile Source Emissions Inventories, (attached), which makes it clear that in twenty years of air quality planning, ROG levels have remained roughly the same. History shows that there is no reason to believe these inventory projections.	We do not agree with the commenter's interpretation of the motor vehicle emissions inventory trends. For the past twenty years, ARB has been updating the on-road motor vehicle emissions inventory to reflect new information and findings. As a result, it has been necessary for the emission estimate for a given year to be updated and, when necessary, increased. For example, chase car studies in the 1990s found that there were more high-speed (over 55 mph) and aggressive driving than had been accounted for in the on-road motor vehicle emissions estimates. ARB increased baseline emissions estimates to reflect this finding. On-road motor vehicle emissions show a downward trend due to California's stringent emissions

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			standards and the Inspection/Maintenance program. Generally, California's vehicle fleet has become cleaner as older vehicles with older control technologies are replaced with newer vehicles with more advanced emission control systems. Remote sensing studies, tunnel studies and fuel based inventories carried out in the past decade have all shown and confirmed that the newer vehicles are becoming much cleaner and remain clean for longer periods of time, compared with the older fleet. The projections in the 2005 Ozone Strategy reflect these facts, and assume that the downward trend will continue into the future.
60	ARB Approval of Reasonably Available Measures	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Ask ARB to approve the list of measures proposed in this plan as reasonably available. If ARB can approve HOV lanes as reasonably available (p. D-24), they can approve some socially and environmentally beneficial measures as well.	After adoption by the District Board of Directors, the 2005 Ozone Strategy will be forwarded to ARB for approval.
61	Validity of Adding Emissions Reductions in Table 8	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): We are unclear whether it is meaningful to simply add the total tons of ROG, NOx and PM emissions reductions together in Table 8 (p. 37). If the emissions reductions were, instead, weighted by their respective health impact prior to their aggregation, then the grand total would be proportional to improvements to health.	The District agrees that public health impacts are important, but the commenter's suggestion of weighting Table 8's emissions reductions with some undetermined health impact factor is overly complex and not part of the CCAA requirements. Table 8 is intended simply to summarize District mobile source incentive programs and provide a general indication of air quality benefits.

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62	Clarification of Table 8 Funding and Emission Reductions from Incentive Programs	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): It is unclear what "over the life of the project" means in the footnote to Table 8, when each column represents one year. The three columns are not cumulative.	Projects that are funded through District grant and incentive programs (such as the TFCA Program) have unique implementation timeframes that do not coincide with the three year analysis for the CCAA-mandated triennial update.
63	Recent History of Bay Area Attainment Planning for the National One-hour Ozone Standard	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The "Recent History" on page 96 is incomplete and one-sided without mention of the 2001 OAP rejection by ARB, the conformity freeze, the conformity lapse, and the challenge to the motor vehicle emissions budget adequacy determination.	The 2005 Ozone Strategy focuses on attainment of the State one-hour ozone standard. In this context the discussion of the Bay Area's history with regard to the plan for attaining the national 1-hour ozone standard, which was revoked in June of 2005, summarizes the milestones in the planning process for that standard. In this context, nothing more is needed.
64	Photochemical Modeling	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The statement on page 99 that "... at present, ARB is not requiring air districts to conduct photochemical modeling as part of the plans for attaining the California one-hour ozone standard" cannot be the reason why "... the 2005 Ozone Strategy does not include computer modeling to forecast future ozone levels. ARB certainly does not prevent districts from modeling in their plans. The District should explain its decision to not present modeling.	Please see response to Comment 29.
65	MS 1 Diesel Equipment Idling Ordinance	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Please explain how MS 1 (p. C-48) pertains to	The District's intent with MS 1 is to target emissions from diesel equipment that are currently not included in the ARB regulation, such as lighter duty

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		vehicles not covered by ARB's diesel idling rule. Please clarify whether MS 1 still covers heavy duty trucks and buses, now that ARB has adopted a diesel idling rule.	trucks and off-road equipment. The District is currently in the process of developing a model idling ordinance and the public will have an opportunity to comment.
66	Clarification of TCM 3 Improve Local and Areawide Bus Service	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Is the last bullet of Phase 1 on page D-9 meant to include the SamTrans service to SFO that was cut when the BART extension opened? Low-income workers were hurt when it was discontinued.	The last bullet of Phase 1 does not include the SamTrans service between Colma BART and SFO. There are no plans to reinstate this service.
67	ACE Service Expansion in TCM 6 and TCM 4	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The interregional Altamont Commuter Express service expansion should be included in TCM 6 but not in TCM 4 (pages 61, 62, D-13, D-19). This looks like double counting.	Some projects are listed in more than one TCMs (as with the mention of the ACE service expansion in TCM 4 and 6). This does not constitute double-counting of emissions reductions rather it illustrates the inter-relationship between TCMs and the need to implement particular projects for several reasons.
68	Land Use Assumptions for TCM 4 Upgrade and Expand Local and Regional Rail Service	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The effectiveness of TCM 4 (p. D-13) is based on what land use assumptions? Is it Projections 2003, with no station access improvements, to avoid double counting?	The emissions reductions calculations for TCM 4 are independent of land use assumptions. The emission calculations are based on vehicle emissions and trip rates from EMFAC2002 v2.2 (April 23, 2003) and the calculations would be the same regardless of whether Projections 2003 was used.
69	Revision to TCM 4	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Add to the mitigations for local congestion on page D-14: reduced or no parking at stations.	MTC has determined that the proposed mitigation would not help address local congestion.

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70	Revise TCM 5 Improve Access to Rail and Ferries	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The station car concept appears to be much less cost-effective than shuttles or feeder buses. The TCM 5 language (p. D-15) should identify the access costs on a per-passenger basis. The aggregate costs are unhelpful in determining whether the concept is feasible. This concept also seems to raise serious environmental justice concerns, as it is meant to provide a comfortable suburban experience to the user at what seems to be an unreasonable public cost: "…where bus service, walking, or other means of transportation would take too long or be too inconvenient." Such criteria for expensive services are not commonly applied to low-income communities and communities of color.	TCM 5 falls into the "good" cost-effectiveness category as shown Table 16 of the Ozone Strategy. When isolating out the various components of this measure, the station car program is less cost-effective compared to the other components. Further, this TCM proposes the 1,000 station car program but does not specify at which transit stations this program would be implemented. Community concerns will be considered when locations for these station car programs are selected.
71	TCM 7 Improve Ferry Service	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): TRANSDEF is unaware of any data that support the claim that ferries can "reduce auto traffic in highly congested bridge corridors." (p. D-21) About the most that can be expected is to slow the rate of growth.	Comment noted.
72	Clarification of TCM 10 Youth Transportation	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): The projected TCM 10 reductions of auto trips to school (p. D-32) of 2% and 10% seem exceedingly	MTC used the assumption of 10% in reduction of auto trips based on analysis of home-to-school bus service in Alameda County school districts. The 2% percent assumption seems reasonable as part of

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		high, given the low levels of funding identified.	Phase 1, and the 10% may be ambitious but reasonable for Phase 2 implementation.
73	Clarification of TCM 11 Install Freeway Traffic Management Systems	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): If "Over 60 percent of daily vehicle miles of travel (VMT) occurs on freeways" (p. D-33), can it also be true that "Over 40 percent of daily vehicle miles of travel (VMT) in the Bay Area occurs on arterials" (p. D-36)? Perhaps both of these figures are wrong, because VMT on local roads needs a share of the total too.	The sentence stating that "over 60 percent of daily vehicle miles of travel (VMT) occurs on freeways" (p. D-33) is correct. However, the sentence on p. D-36 has been revised as follows: "<u>About</u> 40 percent of daily regional vehicle miles of travel (VMT) occurs on <u>arterials/local roads and expressways</u>."
		Please clarify whether the "Assumed Bay Area peak period freeway speed [of] 37 mph" (p. D-34) represents the pre-measure or post-measure assumption. Given the tunnel studies referenced above, why would it be good for air quality to move vehicles faster than 37 mph? Should TCMs be constrained to only seek to move traffic at air quality beneficial speeds? Given that exhibits at the recent San Francisco ITS convention demonstrated cutting edge real time systems designed to lower freeway speeds to increase capacity, can we still assume that faster is better?	MTC's 2000 base year model validation shows that the Bay Area average peak period freeway speed is 37 mph. TCM 11 does assume a 13.5% improvement in Phase 1 and a 27.0% improvement in Phase 2 over the 2000 base year average freeway speed. Motor vehicle emissions are calculated by knowing the number of vehicle trips, amount of vehicle travel that takes place, and the speed of travel. Given that TCMs may affect one or more of these factors to reduce motor vehicle emissions, constraining TCMs based only on speeds as suggested by this comment would not be beneficial. Furthermore, emission rates tend to increase under stop-and-go conditions, therefore,TCM 11 provides for strategies to improve freeway operations and reduce stop-and-go conditions. The intent here is to facilitate travel at moderate, steady speeds instead.

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74	Signal Timing Not Recommended by ARB	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Signal timing is not recommended by CARB. In its March 15, 2000 letter to the Fresno COG, (attached), CARB wrote that "There are several reasons why signal timing projects are not cost-effective from an air quality perspective." Signal timing/retiming should be deleted from TCM 12, p. D-37, because the State's experts don't believe CMAQ funds should be used to implement it. To retain this part of the TCM, the Plan would need to demonstrate that signal timing/retiming is not counterproductive for air quality--by increasing average vehicle speeds, emissions could go up and traffic calming efforts could be hurt.	MTC's report on Evaluation of TCMs that was reviewed with the Ozone Working Group shows air quality benefits for signal retiming. CARB's own guidance for TCM evaluation shows air quality benefits. In addition, MTC recently conducted a program evaluation of the 2004 Cycle of the Regional Signal Timing Program and found that the program provides a 35:1 benefit:cost ratio. Significant benefits include 13% reduction in travel time, 13% reduction in fuel consumption, and 7% reduction in mobile source emissions. The travel time savings when aggregated over the number of vehicles served and over the five-year effective life of a signal timing project, translate to significant reductions in time, fuel consumption, and mobile source emissions. See October 7, 2005 memo from MTC Executive Director to Planning and Operations Committee.
75	Confirm MTC's Transportation Affordability Study	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Is it still true that "MTC is conducting a study of overall transportation affordability" (p. D-39)? As an active participant in MTC's Minority Citizens Advisory Committee, TRANSDEF is generally aware of programs in that area. MTC partnered with PPIC on a deeply flawed study that concluded that affordability was not a barrier to transportation for low-income residents. That study concluded that more research was needed, but it was never clear whether further funding had been found.	In July 2004, the Public Policy Institute of California prepared the "Transportation Spending by Low-Income California Households: Lessons for the San Francisco Area" for MTC. This study can be found at http://www.ppic.org. No further research on this topic is anticipated for the immediate future.

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76	Clarification of TCM 14 Carpool and Vanpool Services and Incentives	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): Please explain why MTC is devolving the sub-regional rideshare program to the counties. (p. D-42) Please explain the shared-ride van service concept on page D-43.	In 2002, MTC conducted a performance audit of the Regional Rideshare Program to examine the performance and effectiveness of the contractor and implementation plan. The audit recommended delegating employer outreach and services to counties willing and able to accept the responsibility. MTC is implementing the recommendation beginning in FY 2005-06 and will provide funding from the Regional Rideshare Program budget to Napa, Solano, Contra Costa and San Mateo counties. A shared-ride van service is essentially a door-to-door vanpool that provides service to multiple destinations, which may include stops at multiple job sites, airport, and the like. This service would go beyond the more common vanpools which typically provide service from one central location (e.g., a park and ride lot) directly to an employment site.
77	TCM 17 Conduct Demonstration Projects	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): TCM 17 (p. D-56) does not belong in the Strategy as a TCM. It should be broken up into Further Study Measures. The elements of TCM 17 simply do not qualify as feasible on-going measures. The fact that most of them are mobile source measures only further muddies the TCM list.	TCM 17 will promote demonstration projects to develop innovative approaches to reduce mobile source emissions. Additional work is needed to test new approaches and monitor their effectiveness, quantify emission reductions and travel benefits, and evaluate the synergistic effects of complementary measures. It is important to encourage demonstration projects that can serve as models for trip reduction and travel demand efforts and clean fueled vehicles and infrastructure throughout the region. While some of the proposed

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			demonstration projects appear to be more akin to mobile source control measures, some are also aimed at travel behavior and in order to reduce confusion over many new further study measures, staff have recommended keeping the compiled list of demonstration projects into one TCM for organizational purposes.
78	Editorial Comments on the Ozone Strategy	**David Schonbrunn / TRANSDEF** (letter November 9, 2005): 1. TRANSDEF suggests that all bulleted lists be converted to numbered lists. The Plan will be much easier to use if it is possible to refer to specific program elements by number. 2. While much of the Plan was written in 2004, it is likely to be adopted in early 2006. Narratives should include what happened in 2005. e.g., page 42, TCM 18, bullet #3: What happened with lawnmowers in 2005? 3. It is unclear what the third implementation program is for the Heavy-Duty Diesel In-Use Strategies Program on page 53. 4. p. 56: please fix the phrase "... governing emissions from all for all 2003 model year and later inboard engines." 5. p. 90: The meaning is not clear here: "The Bay Area met the national 24-hour standard for 1999-01, through 2002-04." Would the following be accurate and more understandable?: "The Bay Area met the national 24-hour standard for all the three year periods starting in 1999 and ending in 2004." 6. C-58: "material" should be singular so as to	Comments noted. Editorial changes were incorporated wherever necessary and appropriate.

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		agree with the singular "is." 7. D-5: choose one: "... expected assumed..." 8. D-9: suggest adding "… which addresses some of these latter needs." 9. D-9: add "limited stops" to the attributes of enhanced bus. 10. D-20: clean up: "… the costs of making it necessary to track improvements 11. D-31: replace "Purchase older school buses with alternatively fueled vehicles" (p. D-31, last bullet) with something that makes sense. 12. D-33: add " … to improve the flow …" 13. D-46: Several words are apparently missing in the next to last paragraph on this page. The phrase "that generate ridership sufficient and make new transit investments economically viable" is incomplete. 14. D-47: The last bullet item in the list does not belong with actions by local government. This is action by regional agencies. Move it to the bottom of the page. 15. D-59: change "included registration fees" to "include registration fees" 16. D-61: add a hyphen to "on road" in the first bullet. 17. D-65: strike "on" from the first bullet of Phase 1.	
79	Economic Impacts and Cost-Effectiveness Discussion Lacking	**David Farabee /** Pillsbury Winthrop on behalf of **Valero Refining Company** (letter November 9, 2005):	For the 2005 Ozone Strategy, District staff used reasonably available information to estimate the cost effectiveness of the proposed control

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		Valero is concerned that the District has not properly taken into account the economic impacts and cost-effectiveness of the Ozone Strategy, as a whole, and for particular control measures. The Strategy does not provide a detailed basis for its cost estimates, making it impossible to determine if the proposed measures are achievable when economic impacts are taken into account. The Strategy does not contain a list "which ranks the control measures from the least cost-effective to the most cost-effective," per Health and Safety Code § 40922(a).	measures. The Ozone Strategy does not obviate the need to meet the statutory requirements for rule development, including consideration of the cost effectiveness and socio-economic impacts of each control measure. If new or additional information is developed by the District or otherwise made available during rule development for a specific control measure that demonstrates that the economic impact of a proposed rule is excessive for Bay Area sources or not considered feasible for other factors, staff may alter a rule development proposal. An overall cost-effectiveness determination for the control measures in the Ozone Strategy will be made by the District Board upon approval of the plan per Health and Safety Code § 40913(b). The final Ozone Strategy contains a ranking of control measures by cost effectiveness.
80	Cost-Effectiveness Estimates for SS 8 and SS10	**David Farabee /** Pillsbury Winthrop on behalf of **Valero Refining Company** (letter November 9, 2005): The District's high estimate for cost effectiveness for two of the stationary source measures (SS 8 - $21,600/ton and SS 10 - $28,000/ton) is well over twice the cost per ton of the next highest measure, and is more than four times higher than the cost per ton for the rest of the measures. Hence, these measures can't be considered cost effective at this time and should not be included in the Strategy.	Concurrent with the development of the Draft Ozone Strategy, staff initiated rule development for SS 8 Marine Loading Operations and SS 10 Pressure Relief Devices and Blowdown Systems, as these measures were Further Study Measures in the 2001 Ozone Attainment Plan. The respective rule development staff reports estimate the cost-effectiveness for SS 8 to be $2,800 per ton and for SS 10 to be from $7,000 - $22,000 per ton. While the CCAA directs the District to rank available control measures based on cost effectiveness,

#	ISSUE	COMMENT	STAFF RESPONSE
			there is no cost effectiveness "standard" for rulemaking. The factors taken into consideration when evaluating a potential control measure for inclusion in a plan are listed in the Control Strategy section of the 2005 Ozone Strategy. All of these factors, including cost effectiveness, will be more closely evaluated during the rule development process.
81	Obligations Pertaining to Cost-Effectiveness Evaluations per Health and Safety Code § 40920.6(a)	**David Farabee /** Pillsbury Winthrop on behalf of **Valero Refining Company** (letter November 9, 2005): Health and Safety Code § 40920.6(a) sets forth five obligations pertaining to cost-effectiveness evaluations that a district must satisfy when adopting rules to implement BARCT and all feasible measures. These requirements are not addressed in the draft Strategy. To meet these obligations, the District must prepare more detailed analyses for these measures than it has in developing the Strategy. In situations where this detailed analysis shows that a proposed measure in fact is not cost-effective, the District should promptly stop any related rule development activities and remove that measure from the Strategy.	Health and Safety Code § 40920.6(a) requires an analysis of cost effectiveness prior to adoption of a rule or regulation to carry out a control measure or implement best available retrofit control technology. The 2005 Ozone Strategy provides a list of control measures that a preliminary analysis indicates will be cost effective. The Ozone Strategy in part represents the District's decisions about what additional rulemaking efforts should be undertaken in the future to meet air quality standards. The approval of the planning document is a starting point and does not obviate the need meet all applicable legal requirements during the subsequent rule development process.
82	TCM 7 Improve Ferry Service Revisions/Updates	**Mary Frances Culnane / WTA** (email October 25, 2005): The commenter submitted a revision to TCM 7 with updated information on WTA activities and revisions to implementing agencies	The suggested revisions to TCM 7 have been incorporated.

#	ISSUE	COMMENT	STAFF RESPONSE
83	FS 12 Valves and Flanges	**Dennis Bolt / WSPA** (letter November 9, 2005): WSPA opposes this further study measure. BAAQMD's Regulation 8, Rule 18 regulates leaks from valves and flanges. This rule was just amended on January 21, 2004. These sources are a very minor source of emissions. The changes that were made in January 2004 need time to work so that data can be gathered and evaluated and the emission inventory adjusted before the rule is reviewed again.	This measure is proposed for further study in 2007. This timing will allow the effects of recent amendments to Regulation 8, Rule 18 to be considered in the analysis. If further study reveals that potential emissions reductions are negligible, staff may recommend no further action at that time.
84	Continuous Quality Improvement Principle	**Dennis Bolt / WSPA** (letter November 9, 2005): The repetitive churning of refinery rules for little or no emissions reductions retards both BAAQMD and refinery efforts to reduce emissions from ALL sources. Distracting staff from activities that identify and reduce meaningful sources of emissions in an effort to find miniscule reductions from these valves and flanges effectively increases rather than reduces emissions. It is contrary to the principles of Continuous Quality Improvement.	The five petroleum refineries operating in the Bay Area are large and complex sources with significant emissions and myriad emissions points. It is not surprising, therefore, that the District would often consider rules affecting refineries. The Air District will continue to use best efforts to identify potential emissions reductions from all sources and to focus on the most promising and cost-effective opportunities available to improve air quality in the region.
85	Avoid Regulatory Overlap of Stationary Internal Combustion Engines in FS 15	**Dennis Bolt / WSPA** (letter November 9, 2005): FS 15 requires study of new controls on emissions of VOCs and NOx from IC Engines. In addition, the control strategy for particulate matter (PM) adopted by the BAAQMD calls for controls of PM on these same sources. At the same time, the California Air Resources Board (ARB) has adopted a Toxics Control Measure that already requires retrofitting or replacement of these same sources. WSPA is concerned that after having expended considerable	During the rule development process for potential amendments to District rules concerning IC engines, District staff will work closely with all stakeholders to ensure that affected sources are not penalized for taking actions necessary to comply with ARB's Air Toxics Control Measure (ATCM).

#	ISSUE	COMMENT	STAFF RESPONSE
		capital, time, and effort to comply with the requirements of ARB's stationary IC engine rule, the BAAQMD will adopt controls that require those same engines to be retrofitted again, or even replaced, within the 2006 to 2007 timeframe. This overlapping regulatory scheme is very problematic and should be avoided. WSPA encourages the BAAQMD to accelerate and finalize its study of VOC, NOx, and PM emissions from Stationary IC Engines in the first quarter of 2006 to enable owners of those sources to consider the study findings in preparation for their report to ARB as to plans to comply with the ARB TCM. By ensuring an accelerated timeline, owners will at least be able to minimize risks of unnecessary costs of controls.	
86	Refinery NOx Emissions	**Dennis Bolt / WSPA** (letter November 9, 2005): NOx emissions from the Refineries External Combustion category are believed to be overestimated in the Ozone Strategy and should be corrected. BAAQMD staff has advised WSPA that emission factors used in the 2004 inventory update are the correct calculations to estimate emissions. BAAQMD should backcast and forecast the emissions estimates for 2000 through 2020 with the accurate emission factors. We believe the correct estimates to be: 2000 -- 24.3 TPD 2003 -- 16.4 TPD	District staff revised these figures. Please see response to Comment 2. Finalized NOx emissions are shown here for completeness: 2000: 24.4 2003: 16.5 2005: 14.0 2010: 14.8 2020: 16.3

#	ISSUE	COMMENT	STAFF RESPONSE
		2005 -- 13.99 TPD 2010 -- 14.7 TPD 2020 -- 16.24 TPD	
		It is also believed that the projected increases are based on vehicle miles traveled (VMT), and not on actual refinery emissions. Refinery NOx emissions are regulated and increases are prohibited, except through permitting and offsets of emissions when requested. BAAQMD should clearly indicate that refinery emissions are not expected to increase except through approved permit processes.	Projected refinery growth is not based on VMT data. It is based on a Purvin & Getz Incorporated energy report (Dec. 1990) and from ARB's statewide data on projected refinery emissions. Current projected refinery growth is estimated to be approximately 1 percent per annum from year 2004 – 2020.
87	SS 7 Gasoline Bulk Terminals and Plants	**Dennis Bolt / WSPA** (letter November 9, 2005): The commenter suggested language to be included in SS-7 concerning gasoline bulk terminals and bulk plants.	The control measure description for SS 7 has been amended to incorporate some of the commenter's suggestions.

VERBAL COMMENTS RECEIVED DURING PUBLIC MEETINGS
OAKLAND - OCTOBER 25, 2005 AND RICHMOND - OCTOBER 26, 2005

A	MS 1 Diesel Equipment Idling Ordinance	**Walt Gill / Chevron** (Community Meeting, October 26, 2005): How will MS 1 Diesel Equipment Idling Ordinance differ or be consistent with the new ARB regulation on diesel truck idling?	Please see response to Comment 65.
B	2000 CAP Control Measures Proposed For Deletion – Concrete Coating Operations	**Johnny White /Community Health Initiative** (Community Meeting, October 26, 2005): The concrete coating control measure proposed for deletion should remain in the Ozone Strategy. A cement crushing project is currently proposed to operate 24/7 in Richmond with lots of associated truck traffic. The impact will be bad for the community.	The control measure that is proposed for deletion is for concrete coating operations not for concrete crushing operations, which are currently subject to District regulations and permitting requirements. The analysis of the earlier concrete coating operations rule was that there would be de minimis emissions reductions achieved by such a regulation.
C	ARB Railroad MOU	**Johnny White / Community Health Initiative** (Community Meeting, October 26, 2005): CHI sent a letter to ARB about the Railroad MOU, voicing our concerns about the lack of public participation. Where does the Air District stand on that?	There have been many concerns about the lack of public involvement during the development of this agreement. The District agrees that ARB should have conducted a more open process, but we also believe that the agreement can result in air quality benefits. District staff have testified at ARB hearings that we will work with ARB staff, the railroads, and affected communities to implement relevant MOU provisions. Staff anticipate conducting a series of community outreach meetings in the Bay Area in early 2006. Also please see response to Comment 21.

D	Central Valley Ozone Trends	**Robert Rayburn / East Bay Bicycle Coalition** (Ozone Working Group Meeting, October 25, 2005): If part of the Ozone Strategy involves a consideration of transport to neighboring regions, then the District should include a graph for the Central Valley that shows their ozone trends over time.	The transport mitigation requirements require the Bay Area to reduce transport of ozone precursors to neighboring regions that are designated as non-attainment. The 2005 Ozone Strategy provides data and information on ozone trends for the Bay Area air basin. Information or graphs on ozone trends for the downwind air districts in the Central Valley can be obtained from either ARB or each individual air district.
E	Cost-Effectiveness Measures	**Irvin Dawid / Sierra Club** (Ozone Working Group Meeting, October 25, 2005): When calculating cost-effectiveness for transit projects, the District should use the cost per new transit rider as a criteria (e.g. cost per rider for the BART to SFO extension is very high).	Cost-effectiveness in the CCAA is defined as the cost of the control measure per ton of emissions reduction achieved. By definition, only those emission reductions attributed to a control measure would be included in the cost effectiveness calculation. Also, please see response to Comment 56.
F	Indirect Source Rule	**Irvin Dawid / Sierra Club** (Ozone Working Group Meeting, October 25, 2005): District should also look at San Joaquin's indirect source rule which charges fees based on numbers of new trips generated. The Bay Area can learn from them to encourage new infill as opposed to exurban development.	Please see response to Comment 50.
G	Comparison of Ozone Levels Over Time Between Years with Similar Meteorology and VMT	**David Schonbrunn / TRANSDEF** (Ozone Working Group Meeting, October 25, 2005): Commenter would like to see a comparison of peak ozone levels, number of exceedances, and the emission inventories between years of comparable meteorology and vehicle miles traveled (VMT), District needs to cross check the emissions	Please see response to Comment 39.

		inventory to see how they change over time. Feel that favorable meteorology and downturn in economy has resulted in reduced ozone levels. Ozone Strategy should include an analysis of the magnitude of those influences. Need to demonstrate that the strategy has had an actual effect.	
H	Cost-Effectiveness of TCMs	**David Schonbrunn / TRANSDEF** (Ozone Working Group Meeting, October 25, 2005): Cost effective projects will allow for a larger number of projects to be implemented and more emission reductions can be accomplished for amount of money being spent. Using cost-effectiveness as a means to prioritize TCMs could increase the effectiveness of these measures.	Cost effectiveness is an important factor in evaluating whether a TCM is considered feasible to implement, but it is not the only factor. Making cost effectiveness the sole criteria for advancing TCMs would ignore the public process used to develop the Regional Transportation Plan (RTP) and the wide ranging factors that were considered in incorporating various transportation projects and programs into the RTP, including sources and availability of funding, consistency with local plans, local and regional economic benefits, degree of public support, etc. Table 16 in the 2005 Ozone Strategy includes a qualitative assessment of the cost-effectiveness for the proposed TCMs. Also see response to Comment 56.
I	Revise MS 2 Green Contracting Model Ordinance	**David Schonbrunn / TRANSDEF** (Ozone Working Group Meeting, October 25, 2005): District's CEQA guidelines have not taken seriously that every project that increases VMT, vehicle trips, or consists of off-road construction activities can cause air quality impacts in a region that is already exceeding the ozone standards. The BAAQMD CEQA guidelines should identify the addition of any new trips or off-road activities as a significant impact	Please see response to Comments 10 and 55.

thereby triggering best available control technology (BACT). Instead of a voluntary program that goes to each city for adoption, District should use the existing legal structure of CEQA to tell cities that when you develop, contractors must use construction equipment that meets current ARB standards. By employing a regulatory approach, the District would be more effective. In past, the District hasn't looked seriously enough at the impacts of growth and adding more vehicle trips to a system that is already unhealthy. The recommended approach would differ from the current plan consistency threshold (comparing the increase in VMT to the rate of population growth) by determining an absolute number of new trips as a significance threshold because any new trips can delay attainment.

Bay Area 2005 Ozone Strategy

Final Program Environmental Impact Report

December 21, 2005

Volume I

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PREFACE

This document constitutes the Final Program Environmental Impact Report (EIR) for the 2005 Ozone Strategy AQMP. The Draft EIR was released for a 45-day public review and comment period from October 7, 2005 to November 21, 2005. Five comment letters, and email comment and several comments during public meetings were received from the public. The comment letters and responses are in Appendix D of this document. Modifications to the Draft EIR have been made, due to comments received and revisions to the draft 2005 Ozone Strategy EIR, such that it is now a Final EIR. Additions to the text of the EIR are denoted using underline. Text that has been deleted is shown using ~~strike through~~.

BAY AREA 2005 OZONE STRATEGY

~~DRAFT~~ FINAL PROGRAM ENVIRONMENT IMPACT REPORT

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Bay Area Air Quality Management District (BAAQMD or Air District) was established in 1955 by the California Legislature to control air pollution in the counties around San Francisco Bay, to attain air quality standards by the dates specified in State and federal law. There have been significant improvements in air quality in the Bay Area over the last several decades. Ozone conditions in the Bay Area have improved significantly over the years. Ozone levels – as measured by peak concentrations and the number of days over State or national standards – have declined substantially as a result of aggressive programs by the Air District, MTC and other regional, State and federal partners. In fact, in April 2004 the U.S. Environmental Protection Agency (U.S. EPA) determined that the region had attained the national one-hour ozone standard. U.S. EPA recently transitioned from the national one-hour standard to a more health protective 8-hour standard. The 8-hour standard took effect in June 2004, and the federal one-hour standard was revoked on June 15, 2005.

However, there is still a need for continued improvement of air quality in the Bay Area. The Air District is required to meet State standards by the earliest date achievable through the implementation of all feasible measures. Therefore, in order to attain the more stringent State ozone standard, the region must continue its long-term progress in reducing ozone levels. The Air District will continue to adopt regulations, implement programs and work cooperatively with other agencies, organizations and the public on a wide variety of strategies to improve air quality in the region. The 2005 Ozone Strategy provides a detailed description of how the Bay Area plans to achieve these goals.

The California Clean Air Act (CCAA), adopted in 1988, requires the BAAQMD to develop and periodically update, a plan to achieve and maintain State ambient air quality standards for ozone, CO, sulfur dioxide (SO_2), and NO_2 by the earliest practicable date (Health & Safety Code §40910). The Bay Area has attained the CO, SO2 and NO2 standards. Because the region violates the State one-hour ozone standard, the Bay Area is considered a nonattainment area for the State standard. The CCAA requires regions that do not meet the State ozone standard to prepare plans for attaining the standard and to update these plans every three years. These plans must include estimates of current and future emissions of the pollutants that form ozone (ozone precursors) and a control strategy that includes "all feasible measures" to reduce these emissions. The plans must also include measures to reduce transport of ozone and ozone precursors to downwind regions.

The 2005 Ozone Strategy is the latest triennial update to the Bay Area strategy to achieve the State ozone standard, including new control measures. The control measures are proposed to satisfy State ozone planning requirements. The requirements for meeting the State and national standards are separate and distinct, and this document does not in any way merge the two standards or the requirements under each standard.

The 2005 Ozone Strategy has been prepared by the Air District, in consultation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). The Air District Board of Directors will consider adoption of the 2005 Ozone Strategy and, upon adoption, will transmit it to the California Air Resources Board for their review and approval.

1.1.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified.

To fulfill the purpose and intent of CEQA, the BAAQMD has prepared this Program Environmental Impact Report (EIR) to address the potential environmental impacts associated with the proposed 2005 Ozone Strategy. Prior to making a decision on the 2005 Ozone Strategy, the BAAQMD Board of Directors must review and certify the EIR as providing adequate information on the potential adverse environmental impacts of implementing the proposed 2005 Ozone Strategy.

1.1.2 NOTICE OF PREPARATION

A Notice of Preparation for the Bay Area 2005 Ozone Strategy EIR (included as Appendix A of this EIR) was distributed to responsible agencies and interested parties for a 30-day review on May 1, 2004. A notice of the availability of this document was distributed to other agencies and organizations and was placed on the BAAQMD's web site, and was also published in newspapers throughout the area of the BAAQMD's jurisdiction. Nine comment letters were submitted on the NOP and are included in Appendix B of this EIR.

1.1.3 TYPE OF EIR

CEQA provisions for program EIRs in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, including adoptions of broad policy programs are separate from the provisions of EIRs prepared for specific types of projects (e.g., land use projects) (CEQA Guidelines §15168). The EIR for the 2005 Ozone Strategy is a program EIR because it examines the environmental effects of proposed control measures that will ultimately be implemented through rules, or regulations and related programs promulgated as part of a continuing ongoing regulatory program.

A program EIR allows consideration of broad policy alternatives and program-wide mitigation measures at a time when an agency has greater flexibility to deal with basic problems of cumulative impacts. A program EIR also plays an important role in establishing a structure within which CEQA reviews of future related actions can be effectively conducted. This concept of covering broad policies in a program EIR and

incorporating the information contained therein by reference into subsequent EIRs for specific projects is known as "tiering" (CEQA Guidelines §15152). A program EIR will provide the basis for future environmental analyses and will allow project-specific CEQA documents to focus solely on the new effects or detailed environmental issues not previously considered. If an agency finds that no new effects could occur, or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required (CEQA Guidelines §15168(c)[5]).

The degree of specificity required in an EIR corresponds to the degree of specificity involved in the underlying activity described in the EIR (CEQA Guidelines §15146). Because the level of information regarding potential impacts from control measures recommended in the 2005 Ozone Strategy is relatively general at this time, the environmental impact forecasts are also general or qualitative in nature. In certain instances, such as future ambient air quality concentrations, impacts are quantified to the degree feasible.

1.1.4 INTENDED USES OF THIS DOCUMENT

In general, a CEQA document is an informational document that informs a public agency's decision-makers, and the public generally, of potentially significant adverse environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines §15121). A public agency's decision-makers must consider the information in a CEQA document prior to making a decision on the project. Accordingly, this EIR is intended to: (a) provide the BAAQMD Board of Directors and the public with information on the environmental effects of the proposed project; and, (b) be used as a tool by the BAAQMD Board to facilitate decision making on the proposed project.

Additionally, CEQA Guidelines §15124(d)(1) requires a public agency to identify the following specific types of intended uses of a CEQA document:

1. A list of the agencies that are expected to use the EIR in their decision-making;

2. A list of permits and other approvals required to implement the project; and

3. A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

Local public agencies, such as cities, and counties could be expected to tier off this EIR when considering land use and planning decisions related to projects that implement a control measure in the 2005 Ozone Strategy, pursuant to CEQA Guidelines §15152. There is no State, federal or local permits required to adopt the 2005 Ozone Strategy. However, implementation of some of the control measures will require various permits from all levels of government. The Notice of Preparation (NOP) for this EIR was

distributed to a comprehensive list of affected parties, including federal, state and local environmental agencies and other interested stakeholders.

1.1.5 AREAS OF POTENTIAL CONTROVERSY

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency including issues raised by agencies and the public shall be identified in the EIR. Table 1-1 highlights the areas of controversy raised by the public during the NOP public comment period. Specific issues raised by the public on compliance, attainment or maintenance for the federal one-hour ozone standard have not been included in Table 1-1 because the 2005 Ozone Strategy does not address compliance with the federal one-hour ozone standard.

TABLE 1-1

Areas of Controversy

AREA OF CONTROVERSY		TOPICS RAISED BY PUBLIC	BAAQMD EVALUATION
1.	Land Use	Developer based trip reduction ordinances should be reviewed to mitigate impacts on land use.	TCM 15 is included in the Ozone Strategy and would provide local land use planning and development strategies that would include indirect source mitigation.
		Air District should do more to promote smart growth principles and enhance public transit opportunities.	TCM 15 includes local land use planning and development strategies to encourage smart growth. A number of TCMs will enhance public transit opportunities (see TCMs 1, 3, 4, 5, 6, 7, 8, 13, 14, 18 and 19).
2.	Transportation	TCM 8 should be reviewed to determine the feasibility for revising the occupancy requirements and time restrictions for HOV lanes.	The MTC periodically reviews HOV lane performance and updates the Bay Area HOV Lane Master Plan. Recommended HOV lane improvements are then included in the RTP. The MTC will continue to review HOV lane performance data and make adjustments, as needed.
3.	Air Quality	All reasonably available NOx controls should be included.	All feasible NOx controls have been included in the 2005 Ozone Strategy. See Chapter 2, Subchapter 2.3.1 for a further discussion.
		The EIR must identify the potential environmental consequences of exceedences during the 2004 ozone season.	This comment was made prior to the completion of the 2004 ozone season. The 2005 Ozone Strategy now includes monitoring data for the State 1-hr ozone standard during the 2004 ozone season.
		Secondary impacts of pursuing a VOC only control strategy and not controlling NOx emissions should be evaluated.	Secondary impacts of the Ozone Strategy have been addressed in Chapter 3 of this EIR. The 2005 Ozone Strategy includes both VOC and NOx controls so the impact of a VOC only control strategy is not relevant.

TABLE 1-1 (Cont.)

AREA OF CONTRO-VERSY		TOPICS RAISED BY PUBLIC	BAAQMD EVALUATION
	Air Quality (cont)	Ozone Strategy must include all feasible measures.	As required by the CCAA, all feasible control measures have been included. The process for identification of control measures is included in Chapter 2 of the EIR.
		Consider the reasons that the federal 1-hr ozone standard was met in the early 1990's but then increases in ozone were observed.	The 2005 Ozone Strategy addresses the Bay Area's planning requirements with regards to the State 1-hr ozone standard. This comment was made when the District was preparing a combined State and federal report.
4.	Cumulative Impacts	The Air District should broaden the scope of the EIR to ensure that cumulative effects and public health effects are disclosed.	Cumulative impacts are discussed for each environmental topic in the EIR. Public health impacts are not identified separately but are included under the discussion of air quality. Further reduction in ozone concentrations are expected to provide beneficial health impacts.
5.	Environmental Impacts	The CEQA document must address the full range of impacts associated with the Ozone Strategy	All environmental resources included in the CEQA checklist form are included in this EIR.
6.	Baseline	The EIR should look at a "normal baseline"	The environmental setting used in the EIR is consistent with the CEQA Guidelines §15125(a).
7.	Alternatives	The EIR must evaluate a range of alternatives.	Chapter 4 of this EIR includes an alternatives analysis.
8.	Ozone Transport	All feasible control measures must be included in the Ozone Plan to minimize the downwind impacts on other air basins.	All feasible controls have been included in the 2005 Ozone Strategy. See Chapter 2, Subchapter 2.3.1 for a further discussion.
		Include analysis of the impacts of ozone transport into downwind areas.	The impacts on transport into downwind areas has been included in Chapter 3 of the EIR.
9.	Environmental Justice	Environmental Justice issues must be specifically addressed.	Environmental justice issues are not specifically addressed in the EIR, and they are not required to be included. The potential impacts of the Ozone Strategy have been evaluated for all environmental resources required under the CEQA Guidelines. The overall impact of the Ozone Strategy is reduced NOx and ROG emissions and a subsequent decrease in ozone concentrations and reduce public exposure to unhealthy ozone levels
10.	Project Description	The Project description must include a discussion of the control measures.	The control measures are summarized in Chapter 2 of this EIR.

It should be noted that a number of the comments received in response to the NOP raise issues regarding the content of the Strategy, and will be addressed in that context; they do not raise CEQA issues. That is, they do not address potential significant adverse environmental impacts of the Strategy or the individual control measures; do not suggest or raise other issues regarding mitigation of those impacts; do not suggest or raise other issues regarding alternatives to eliminate or reduce those impacts; or otherwise raise issues related to the adequacy of the environmental review.

1.1.6 PROJECT OBJECTIVES

CEQA Guidelines §15124(b) requires an EIR to include a statement of objectives, which describes the underlying purpose of the proposed project. The purpose of the statement of objectives is to aid the lead agency in identifying alternatives and the decision-makers in preparing a statement of findings and a statement of overriding considerations, if necessary. The objectives of the proposed 2005 Ozone Strategy are summarized in the following bullet points.

- Comply with the 1988 California Clean Air Act requirements including:
  1. Apply best available retrofit control technology (BARCT);
  2. Implement all feasible measures through an expeditious implementation schedule;
  3. Reduce population exposure to ozone and its precursors according to a prescribed schedule;
  4. Provide for the attainment of the State ozone ambient air quality standard at the earliest practicable date.
- Comply with transport mitigation requirements in Health and Safety Code §40912.

1.1.7 DOCUMENT FORMAT

State CEQA Guidelines outline the information required in an EIR, but allow the format of the document to vary [CEQA Guidelines §15120(a)]. The information in the EIR complies with CEQA Guidelines §15122 through §15131 and consists of the following:

Chapter 1: Introduction

Chapter 2: Project Description

Chapter 3: Environmental Setting, Impacts and Mitigation Measures

Chapter 4: Alternatives

Chapter 5: Other CEQA Topics

Chapter 6: References

Chapter 7: Acronyms

Appendix A: Notice of Preparation/Initial Study

Appendix B: Comments Received on the Notice of Preparation (NOP)/Initial Study and Responses to Comments

Appendix C: Landfill Information

1.2 EXECUTIVE SUMMARY OF ~~DRAFT~~ FINAL EIR

1.2.1 EXECUTIVE SUMMARY – CHAPTER 2: PROJECT DESCRIPTION

Implementation of the 2005 Ozone Strategy requires a cooperative partnership of governmental agencies at the federal, state, regional and local level. At the federal level, the U.S. EPA is charged with regulation of on-road motor vehicles; trains, airplanes, and ships; certain non-road engines; and off-shore oil development. The California Air Resources Board (CARB) also regulates on-road mobile sources and the fuel used in those sources, some off-road sources, and consumer products. At the regional level, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) would be responsible for implementing transportation control measures and or recommending land use control measures to reduce vehicle emissions throughout the Bay Area. In addition, the BAAQMD has primary responsibility for the development of the 2005 Ozone Strategy and is responsible for regulating stationary sources and implementing programs focused on some mobile sources. At the local level, cities and counties would be responsible for implementing various control measures through the adoption of model ordinances or through their discretionary land use authority.

When the Air District (and other California air districts) adopts plans to meet State air quality planning requirements, these plans are then submitted to CARB to be included in the statewide program to achieve air quality standards. Thus, upon adoption of the 2005 Ozone Strategy by the Air District, the document will be submitted to CARB for review and approval.

The control strategy for the 2005 Ozone Strategy is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors. This is consistent with CCAA requirements in the Health and Safety Code and pollutant transport mitigation requirements in the California Code of Regulations. The control strategy includes stationary source measures, mobile sources measures and transportation control measures.

There are 15 stationary source measures proposed for the 2005 Ozone Strategy. Most stationary source measures in the 2005 Ozone Strategy will be implemented through rule making. The BAAQMD goes through a detailed process to develop and adopt rules and

regulations to impose standards on, and limit emissions from, stationary sources of emissions in the Bay Area.

The term "mobile source", as used in the CCAA and by the Air District, refers collectively to vehicular sources and other non-stationary sources. Mobile sources are defined in the CCAA as self-propelled devices that may travel upon a highway, including automobiles, trucks, construction equipment, farm equipment, and off-road vehicles. "Non-vehicular" mobile sources or "non-road" sources as they are defined in the federal CAA, include ships, boats, aircraft, locomotives, and lawn and garden equipment. Mobile sources are by far the largest sources of ozone precursors. Four mobile source control measures are included in the 2005 Ozone Strategy.

The CCAA places great emphasis on transportation control measures. The CCAA's legislative intent states that in developing attainment plans, air districts shall "focus particular attention on reducing the emissions from transportation and areawide emission sources" (Sec. 40910). The CCAA specifically requires air districts to "adopt, implement and enforce transportation control measures." Transportation Control Measures (TCMs) are defined as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions." (Sec. 40717). TCMs must be sufficient to substantially reduce the rate of increase in vehicle trips and vehicle miles traveled (Sec. 40918). Nineteen TCMs are included in the 2005 Ozone Strategy.

1.2.2 EXECUTIVE SUMMARY – CHAPTER 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

CEQA Guidelines §15125(a) requires that an EIR include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the NOP is published. This environmental setting will normally constitute the baseline of physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed project and its alternatives.

The CEQA Guidelines also require EIRs to identify significant environmental effects that may result from a proposed project [CEQA Guidelines §15126.2(a)]. Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible (CEQA Guidelines §15126.4).

Chapter 3 describes the existing environmental setting, analyzes the potential environmental impacts, and recommends mitigation measures, when significant environmental impacts have been identified. In addition, cumulative impacts and

mitigation are also addressed. Each of the resources identified in the CEQA checklist (CCR Title 14, Chapter 3, §15000 et seq., Appendix G) are analyzed in Chapter 3.

Every control measure in the 2005 Ozone Strategy was evaluated to determine whether or not it has the potential to generate adverse environmental impacts. A potentially significant impact related to hazards and hazardous materials was identified due to the possible use of anhydrous ammonia with the implementation of stationary source control measure SS 14 – Stationary Gas Turbines. Potentially significant impacts (after mitigation) were identified for a number of the TCMs including aesthetics, localized air quality, biological resources, cultural resources, transportation and traffic, and utilities and service system. TCM impacts on hazards and hazardous materials, hydrology and water quality, and noise were determined to be less than significant following mitigation. Most of the potentially significant impacts are associated with the construction and operation of new transit stations and facilities for rail, bus and ferries. A summary of the potential impacts for each control measure is provided in Table 1-2 included at the end of this chapter. The impacts on other environmental resources were determined to be less than significant.

1.2.3 EXECUTIVE SUMMARY – CHAPTER 4: ALTERNATIVES

This EIR provides a discussion of alternatives to the proposed project as required by CEQA. According to the CEQA guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide means for evaluating the comparative merits of each alternative (CEQA, Guidelines, § 15126.6(a)). In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines §15126.6(a)).

The possible alternatives to the proposed 2005 Ozone Strategy are limited by the nature of the project. The CCAA requires the BAAQMD to reduce pollutants contributing to non-attainment to the maximum extent feasible. As such, the proposed 2005 Ozone Strategy, and any acceptable project alternatives, must comply with this criterion to attain the basic objectives of the project. Consequently, all viable project alternatives must include at a minimum all the control measures identified in the 2005 Ozone strategy.

CEQA requires a No Project Alternative to be evaluated. A No Project Alternative consists of what would occur if the project were not approved. In this case, the no project alternative refers to the BAAQMD taking no further action to meet its one-hour ozone obligations under the CCAA with the exception of continuing to adopt rules and regulations contained in the 2000 CAP. Of course, individual control measures can be adopted at any time as long as the required environmental review is completed before the project is implemented.

The No Project Alternative would not ultimately achieve the long-term benefits of the 2005 Ozone Strategy, and is not a legally viable alternative as it would violate portions of the CCAA.

Under Alternative 2, the BAAQMD would implement a Transit Access and Low Emission Vehicle Emphasis Alternative. Significant impacts were identified for some TCMs in the proposed project related to access to transit stations, including ferry and railroad stations. The potential localized air quality impacts identified in the DEIR could result from CO emissions during congested rush hours and diesel exhaust from idling buses and diesel engines accessing the transit facilities. While localized CO impacts are unlikely due to statewide use of oxygenated fuels and declining trends in background CO concentrations, the level of analysis provided in this Program DEIR prevented the District from concluding the impact would be less than significant. Transportation impacts would occur from congestion during rush hours in the vicinity of the transit facilities. All of these impacts could be compounded by TCM 15 – Local Land Use Planning and Development Strategies, that would encourage higher densities around transit facilities resulting in increased generation and exposure to air pollutants and increased traffic congestion.

Some aspects of the TCMs in the 2005 Ozone Strategy in part mitigate the localized air quality and traffic impacts, including TCM 3 – Improve Local and Areawide Bus Service, which would reduce exposure to diesel exhaust by replacing diesel buses with clean fuel buses and retrofit of existing buses with emission control devices. TCM 5 – Improve Access to Rail and Ferries would improve access to rail and ferries by expanding feeder buses and shuttles and improving bicycle and pedestrian access. TCM 9 – Improve Bicycle Access and Facilities would increase bicycle access to transit. TCM 15 – Local Land Use Planning and Development Strategies includes parking strategies that would reduce this impact, such as reduced parking, shared parking and parking pricing. TCM 19 - Improve Pedestrian Access and Facilities, would increase pedestrian access to transit facilities. Measure MS 1- Diesel Equipment Idling Ordinance, would reduce bus emissions by limiting bus idling times. MS 3 – Low Emission Vehicle Incentives would reduce diesel exhaust and other mobile source emissions by increasing the number of low emission buses, as well as other light and heavy-duty vehicles. Alternative 2 would place greater emphasis on implementing these TCMs.

Under Alternative 2, Transit Access and Low Emission Vehicle Emphasis Alternative, the potential significant air quality and transportation and traffic impacts associated with the proposed project could be reduced. The level to which these TCMs could be effective in reducing air emissions and transportation and traffic impacts is unknown at this time. Therefore, the air quality and transportation and traffic impacts remain essentially the same as the proposed project.

1.2.4 EXECUTIVE SUMMARY – CHAPTER 5: OTHER CEQA TOPICS

1.2.4.1 Relationship Between Short-term Uses and Long-Term Productivity

Implementing the 2005 Ozone Strategy is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the 2005 Ozone Strategy is to set forth a comprehensive control program to demonstrate

that the Bay Area will make progress towards attaining the State one-hour ozone standard. By attaining the State ambient air quality standard, the Ozone Strategy is expected to enhance short and long-term environmental productivity in the region.

Of the potential environmental impacts discussed in Chapter 3, only those related to aesthetics, air quality, biological resources, cultural resources, transportation and traffic, and utilities and service systems are considered potentially significant after mitigation.

1.2.4.2 Significant Irreversible Environmental Changes

Implementation of the 2005 Ozone Strategy is not expected to result in significant irreversible adverse environmental change. The Ozone Strategy would place only a minor incremental demand on nonrenewable and limited resources, such as energy and water supplies, relative to the accelerated rate of use of these resources due to population growth and increased consumer demand. Some of the transportation control measures (e.g., TCM 7 – Improve Ferries) in the Ozone Strategy could result in significant impacts to aesthetics, localized air quality, biological resources, cultural resources, transportation and traffic and utilities and service systems. Mitigation measures have been identified to minimize some of these potentially significant impacts. The largely irretrievable conversion of undeveloped/agricultural land to urban uses is a function of the growing population and local land use authority, not the 2005 Ozone Strategy. The 2005 Ozone Strategy is expected to result in long-term benefits associated with improved air quality.

1.2.4.3 Growth-Inducing Impacts

Growth-inducing impacts can generally be characterized in three ways: (1) a project includes sufficient urban infrastructure to result in development pressure being placed on less developed adjacent areas; (2) a large project affects the surrounding community by producing a "multiplier effect," which results in additional community growth; and (3) a new type of development is allowed in an area, which subsequently establishes a precedent for additional development of a similar character. None of the above scenarios characterize the project evaluated in the EIR.

TABLE 1-2
2005 Ozone Strategy Control Measure Analysis

Control Meas. No.	Control Measure Description	Pollutant	Control Measure	Potential Impact
SS 1	Auto Refinishing	VOC	Reformulated low-VOC coatings/solvents	**Less than significant impacts:** air quality; hazards/hazardous materials; hydrology/water quality; and utilities/service systems.
SS 2	Graphic Arts Operations	VOC	Reformulated low-VOC coatings/solvents	**Less than significant impacts:** air quality; hazards/hazardous materials; hydrology/water quality; and utilities/service systems.
SS 3	High Emitting Spray Booths	VOC	Reformulated low-VOC coatings/solvents, add on control equipment	**Less than significant impacts:** air quality; hazards/hazardous materials; hydrology/water quality; and utilities/service systems.
SS 4	Polyester Resin Operations	VOC	Reformulated low-VOC coatings/solvents	**Less than significant impacts:** air quality; hazards/hazardous materials; hydrology/water quality; and utilities/service systems.
SS 5	Wood Products Coating	VOC	Reformulated low-VOC coatings/solvents	**Less than significant impacts:** air quality; hazards/hazardous materials; hydrology/water quality; and utilities/service systems.
SS 6	Flares	VOC	Most likely through control of operations but could include incineration	**Less than significant impacts:** air quality.
SS 7	Gasoline Bulk Terminals and Plant	VOC	More stringent standards, emission controls (e.g. flares)	**Less than significant impacts:** air quality.
SS 8	Marine Loading Operations	VOC	Add-on control equipment	**Less than significant impacts:** air quality; and utilities/service systems.
SS 9	Organic Liquid Storage Tanks	VOC	Add domes to tanks, improved standards for tank cleaning, I&M programs	**Less than significant impacts:** aesthetics; and air quality.
SS 10	Pressure Relief Devices	VOC	Add-on control equipment	**Less than significant impacts:** air quality; and utilities/service systems.

TABLE 1-2 (cont.)
2005 Ozone Strategy Control Measure Analysis

Control Meas. No.	Control Measure Description	Pollutant	Control Measure	Potential Impact(s)
SS 11	Wastewater Systems	VOC	Installation of vapor recovery devices, seals/traps on drains, installation of solid piping, installation of water seals	**Less than significant impacts:** hydrology/water quality.
SS 12	Industrial, Institutional and Commercial Boilers	NOx	Low NOx Burners	**Less than significant impacts:** air quality; hazards/hazardous materials; and utilities/service systems.
SS 13	Large Water Heaters & Small Boilers	NOx	Low NOx burners, lower standards for new heaters/boilers	**Less than significant impacts:** air quality; hazards/hazardous materials; and utilities/service systems.
SS 14	Stationary Gas Turbines	NOx	Add-on control equipment	**Significant impact:** hazards/hazardous materials. **Less than significant impacts:** air quality; hazards/hazardous materials; and utilities/service systems.
SS 15	Promote Energy Conservation	NOx VOC	Add-on control equipment	**None:** 1.
MS 1	Diesel Equipment Idling Ordinance	NOx VOC	Encourage local government to adopt idling ordinance	**None:** 1; 2.
MS 2	Green Contracting	NOx VOC	Encourage local government to voluntary adoption of green contracting	**None:** 1.
MS 3	Low-Emission Vehicle Incentives	NOx VOC	Purchase low or zero-emission vehicles or engines, engine repowers, retrofits and replacements; add-on control equipment; clean fuels or additives; and use of alternative fuels	**Less than significant impacts:** air quality; hazards/hazardous materials; and utilities/service systems.

TABLE 1-2 (cont.)
2005 Ozone Strategy Control Measure Analysis

Control Meas. No.	Control Measure Description	Pollutant	Control Measure	Potential Impact(s)
MS 4	Vehicle Buy Back Program	NOx	Provide financial incentives to scrap vehicles	**Less than significant impacts:** utilities/service systems.
TCM 1	Voluntary Employer-Based Trip Reduction Programs	NOx VOC	Support and encourage employers to promote the use of commute alternative programs	**Significant impacts after mitigation:** air quality; and transportation/traffic.
TCM 3	Improve Local and Areawide Bus Service	NOx VOC	Add on control devices (particulate traps and NOx catalysts), alternative clean fuels	**Significant impacts after mitigation:** air quality; and transportation/traffic. **Less than significant impacts:** utilities/service systems.
TCM 4	Upgrade and Expand Local and Regional Rail Service	NOx VOC	Construction of additional rail facilities, electrification of rail services	**Significant impacts after mitigation:** aesthetics; air quality; cultural resources; and transportation/traffic. **Less than significant impacts following mitigation:** hydrology/water quality; and noise. **Less than significant impacts:** aesthetics; air quality; hydrology/water quality; noise; and utilities/service systems.
TCM 5	Improve Access to Rail and Ferries	NOx VOC	Construction of new facilities, use of low emission vehicles	**Significant impacts after mitigation:** air quality. **Less than significant impacts following mitigation:** hydrology/water quality; and noise. **Less than significant impacts:** hydrology/water quality; noise; transportation/traffic; and utilities/service systems.
TCM 6	Improve Interregional Rail Service	NOx VOC	Construction of new rail facilities	**Significant impacts after mitigation:** aesthetics; air quality; cultural resources; and transportation/traffic. **Less than significant impacts following mitigation:** noise. **Less than significant impacts:** noise.

TABLE 1-2 (cont.)
2005 Ozone Strategy Control Measure Analysis

Control Meas. No.	Control Measure Description	Pollutant	Control Measure	Potential Impact(s)
TCM 7	Improve Ferry Service	NOx VOC	Construction of new facilities, use of low emission ferries, and add-on controls	**Significant impacts after mitigation:** aesthetics; air quality; biological resources; cultural resources; transportation/traffic; and utilities/service systems. **Less than significant impacts following mitigation:** hydrology/water quality; and noise. **Less than significant impacts:** hazards/hazardous materials; hydrology/water quality; land use/planning; noise; and utilities and service.
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	NOx VOC	Construction of new HOV lanes	**Significant impacts after mitigation:** aesthetics; and cultural resources. **Less than significant impacts following mitigation:** noise. **Less than significant impacts:** air quality; and noise.
TCM 9	Improve Bicycle Access and Facilities	NOx VOC	Construction of additional bicycle lanes	**Less than significant impacts:** air quality; and transportation/traffic.
TCM 10	Youth Transportation	NOx VOC	Promote safe routes to school & carpooling programs, support transit ride discounts programs; convert school buses to clean fuels/install particulate matter retrofit devices	**None:** 1.

TABLE 1-2 (cont.)
2005 Ozone Strategy Control Measure Analysis

Control Meas. No.	Control Measure Description	Pollutant	Control Measure	Potential Impact(s)
TCM 11	Install Freeway Traffic Management Systems	NOx VOC	Integrate traffic management features into new freeway construction; maintain and expand level of freeway service patrol and 511 traffic information service; extend ramp metering; require traffic management elements in Caltrans projects	**Significant impacts after mitigation:** air quality; and transportation/traffic.
TCM 12	Arterial Management Measures	NOx VOC	Coordinate traffic controls on major arterial routes; provide priority bus treatment along major bus routes	**None:** 1.
TCM 13	Transit Use Incentives	NOx VOC	Promote various transit use programs	**Significant impacts after mitigation:** air quality; and transportation/traffic.
TCM 14	Carpool and Vanpool Services and Incentives	NOx VOC	Promote carpooling and vanpooling	**None:** 1.
TCM 15	Local and Land Use Planning and Development Strategies	NOx VOC	Includes various indirect source mitigation measures	**Significant impacts after mitigation:** air quality; and transportation/traffic. **Less than significant impacts:** land use/planning.
TCM 16	Public Education/Intermittent Control Measures		Maintain and expand outreach programs in educating public about health effects of air pollution	**None:** 1.

TABLE 1-2 (cont.)

2005 Ozone Strategy Control Measure Analysis

Control Meas. No.	Control Measure Description	Pollutant	Control Measure	Potential Impact(s)
TCM 17	Conduct Demonstration Projects		Promote demonstration projects that can serve as models for trip/ travel demand reductions and promote the use of low or zero emission vehicles	**None:** 4.
TCM 18	Implement Transportation Pricing Reform	NOx VOC	Implement pricing reform measures that would better link the cost of providing transportation facilities and services with the cost of using them	**None:** 3.
TCM 19	Improve Pedestrian Access and Facilities	NOx VOC	Promote pedestrian travel by making sidewalks and pathways safe and convenient for travel	**None:** 1; 2.
TCM 20	Promote Traffic Calming Measures		Includes various measures to increase pedestrian traffic and decrease the use of mobile sources	**Less than significant impacts:** transportation/traffic.

1. Control technologies do not generate adverse impacts.
2. Changes in operating practices with no impact identified.
3. Control measure is aimed at increasing fees with no specific impact identified.
4. Environmental impacts determined to be speculative.

CHAPTER 2

PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

Ozone is the principal component of photochemical "smog". Ozone is highly reactive, and at high concentrations near ground level, can be harmful to public health.[1] The Bay Area 2005 Ozone Strategy is a strategy to continue to reduce emissions of the pollutants that form ground-level ozone, and to assure that the region attains and maintains compliance with State ozone standards.

Ozone is not emitted directly from pollution sources. Instead, ozone is formed in the atmosphere through complex chemical reactions between hydrocarbons (also known as "reactive organic gases" or "volatile organic compounds"), and nitrogen oxides, in the presence of sunlight. Ozone levels are usually highest on hot, windless summer afternoons, especially in inland valleys.

Ozone can damage the tissues of the lungs and respiratory tract. High concentrations of ozone irritate the nose, throat and respiratory system and constrict the airways. Ozone also can aggravate other respiratory conditions such as asthma, bronchitis and emphysema. Repeated exposure to high ozone levels can make people more susceptible to respiratory infection and lung inflammation, and permanently damage lung tissue. Children are most at risk, as they are active outdoors in the summer, when ozone levels are highest. Seniors and people with respiratory illnesses are also especially sensitive to ozone's effects. Even healthy adults, working or exercising outdoors during high ozone levels, can be affected. Ozone also damages trees, agricultural crops and other plants.

The State and national governments have established ambient air quality standards (AAQS) for ground level ozone (and other air pollutants) that are intended to protect human health from ozone's adverse effects. Air quality standards define the maximum amount of a pollutant that can be present in outdoor air without harm to public health. The standards are generally set at levels low enough to protect even the most sensitive individuals in our communities. National ambient air quality standards are set by the U.S. Environmental Protection Agency (U.S. EPA), while State standards are set by the California Air Resources Board (CARB).

The Bay Area Air Quality Management District (BAAQMD or Air District) operates a network of air quality monitoring stations throughout the region to constantly monitor air quality conditions. Data from the air monitoring stations allows the Air District to determine whether the region meets State and national ambient air quality standards and to track progress in improving air quality.

The one-hour national ambient air quality standard for ozone is 0.12 parts per million (ppm). The California one-hour ozone standard is more stringent than the national

[1]While ground level ozone is a harmful air pollutant, ozone in the upper atmosphere is beneficial because it blocks the sun's harmful ultraviolet rays. The 2005 Ozone Strategy focuses on reducing *ground level* ozone only.

standard, and is set at 0.09 ppm. An exceedance of the national or State standard occurs if and when ozone concentrations at any Air District monitoring station equal or exceed the national or State standard, respectively, over a one-hour period. In 2004, the national one-hour ozone standard was not exceeded, while the State standard was exceeded on seven days.

In July 1997, EPA established a new national ozone standard. The new 8-hour standard became effective in June 2004. Defined as "concentration-based," the new national ozone standard is set at 85 parts per billion averaged over eight hours. The determination of whether a region attains the standard is based on the 3-year average of the annual 4th highest daily maximum 8-hour ozone concentration. The new national 8-hour standard is considered to be more health protective because it protects against health effects that occur with longer exposure to lower ozone concentrations.

In April 2004, EPA designated regions as attainment and nonattainment areas for the 8-hour standard. These designations took effect on June 15, 2004. EPA formally designated the Bay Area as a nonattainment area for the national 8-hour ozone standard, and classified the region as "marginal" according to five classes of nonattainment areas for ozone, which range from marginal to extreme. Specific planning requirements for 8-hour marginal nonattainment areas are not yet fully established, as EPA has not issued Phase 2 guidance of the 8-hour implementation rule and certain elements of the Phase 1 guidance are subject to legal challenge. As 8-hour planning requirements become clear, the Bay Area will address the requirements in subsequent documents.

Purpose and Organization of the 2005 Ozone Strategy

The most recent plan for the State ozone standard was the 2000 Clean Air Plan (or "2000 CAP"). With the 2005 Ozone Strategy, the Air District is addressing the planning requirements for the State one-hour ozone standard.

Section 1 of the 2005 Ozone Strategy provides an introduction and general overview of the document. Section 2 addresses State one-hour ozone planning requirements and consists of the region's triennial update to our strategy to achieve the California one-hour ozone standard. Section 3 discusses various ozone-related air quality issues of concern to the Air District and the public. It also describes the environmental review process as well as the District's efforts to encourage and facilitate public involvement in the development of the ozone strategy. Appendices provide detail on the public involvement process, control measure review and evaluation process, control measure descriptions, further study measures, and other technical support information.

State Planning Requirements

The California Clean Air Act requires regions that do not meet the State one-hour ozone standard to prepare plans for attaining the standard, and to update these plans every three years. In summary, these plans must include estimates of current and future emissions of the pollutants that form ozone, and a control strategy, including "all feasible measures",

to reduce these emissions. The plans must also propose measures to reduce transport of air pollutants to downwind regions.

The first Bay Area plan for the State one-hour ozone standard was the 1991 Clean Air Plan. Subsequently, the Clean Air Plan was updated and revised in 1994, 1997, and 2000. Each of these triennial updates proposed additional measures to reduce emissions from a wide range of sources, including industrial and commercial facilities, motor vehicles, and "area sources". The 2005 Ozone Strategy includes the latest triennial update to the Bay Area strategy to achieve the State one-hour ozone standard.

The 2005 Ozone Strategy has been prepared by the Air District, in consultation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). The Air District Board of Directors will consider adoption of the 2005 Ozone Strategy and, upon adoption, will transmit it to CARB for their review and approval.

2.2 PROJECT LOCATION

The BAAQMD has jurisdiction of an area encompassing 5,600 square miles. The Air District includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties, and portions of southwestern Solano and southern Sonoma counties. The San Francisco Bay Area is characterized by a large, shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast. The Basin is bounded by the Pacific Ocean to the west and includes complex terrain consisting of coastal mountain ranges, inland valleys and bays (see Figure 2-1).

2.3 PROPOSED CONTROL STRATEGY

This section presents the proposed control measures that address State one-hour ozone planning requirements to achieve the California one-hour ozone standard. The measures constitute a roadmap for how the Bay Area proposes to comply with the State one-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary source measures, mobile sources measures and transportation control measures.

The control strategy for the 2005 Ozone Strategy is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors. This is consistent with California Clean Air Act requirements in the Health and Safety Code and pollutant transport mitigation requirements in the California Code of Regulations.

2.3.1 CONTROL MEASURE DEVELOPMENT

To satisfy California's "all feasible measures" requirements, the Air District investigated a wide range of potential control measures from many sources. The Air District sought ideas for new sources to control, as well as ways to strengthen existing rules and programs. To identify potential control measures, the Air District:

- Participated in discussions as part of the Rule Development Managers subcommittee of the CAPCOA Engineering Managers Committee to develop a statewide "all feasible measures" list.
- Participated with staff from CARB, Yolo-Solano APCD, Sacramento Metropolitan AQMD, and San Joaquin Valley Unified APCD on a rule comparison project.
- Reviewed suggestions developed by consultants for Sacramento Metropolitan AQMD.
- Investigated rules in other districts throughout California.
- Investigated control measures and programs from plans in other districts and agencies, both within and outside the state.
- Considered comments and suggestions from the Ozone Working Group (a technical working group of stakeholders in the ozone planning process).
- Considered comments and suggestions from community meetings.
- Considered comments and suggestions from Air District Board members, Advisory Council members and staff.

In total, Air District staff considered 390 control measure suggestions, not including transportation control measures. In evaluating a control measure, staff considered a variety of factors, including:

- Technological feasibility of proposed controls;
- Emission inventory of the source category and total likely emission reductions from proposed controls;
- Cost-effectiveness in dollars per ton of emissions reduced;
- Enforceability, including whether emission reductions are real, quantifiable, permanent, enforceable, and surplus;
- Rate (and timing) of emissions reductions;
- Public acceptability, including interests and concerns of community members;
- Pollutant reduced (volatile organic compounds, nitrogen oxides or both);
- Any potential adverse environmental impacts; and
- Socioeconomic impacts.

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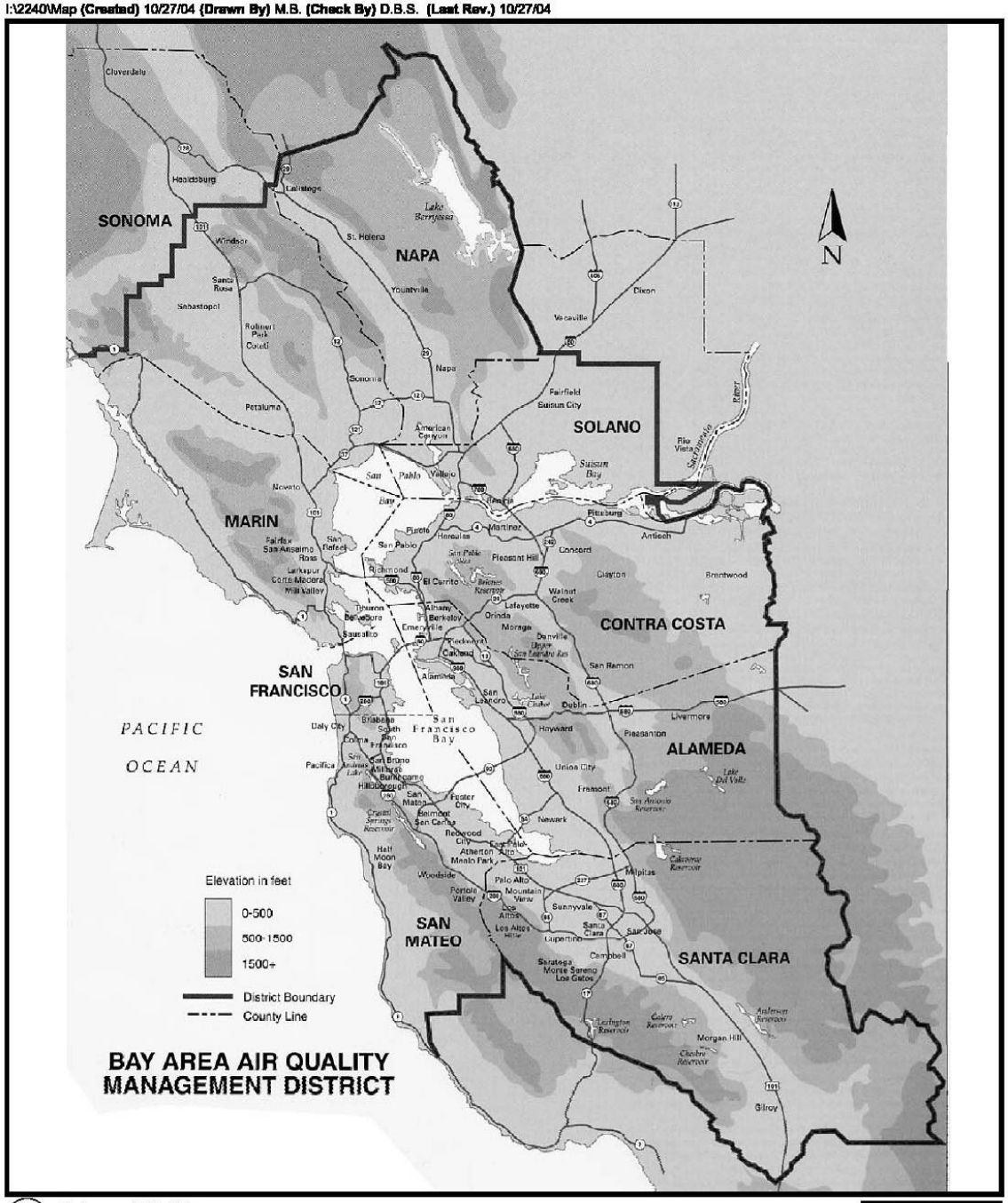

Environmental Audit, Inc.

NOT TO SCALE

LOCATION OF BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Figure 2-1

2.3.2 ADDRESSING TRANSPORT REQUIREMENTS

The CCAA requires CARB to periodically assess transport of ozone and ozone precursors from upwind to downwind regions, and to establish mitigation requirements for upwind districts (Sec. 39610). The CCAA also requires air districts to address transport mitigation requirements in the triennial updates to strategies to achieve the State ozone standard (Sec. 40912). To summarize the transport mitigation requirements, the Air District must:

1. Adopt and implement all feasible measures;
2. Adopt and implement Best Available Retrofit Control Technology (BARCT);
3. Adopt a no net increase permitting program for sources above 10 tons per year;
4. Include measures to attain the standard in specified downwind regions.

The 2005 Ozone Strategy addresses all of the above. The requirements to adopt all feasible measures, and implement BARCT on all existing stationary sources are necessary for the Bay Area to meet both attainment planning and transport mitigation requirements. These requirements are addressed in the control strategy as well as through Air District rule development and permitting processes. With respect to the no net increase requirement, the Air District adopted a 10 ton/year no net increase requirement for ozone precursors in District Regulation 2, Rule 2: New Source Review on December 21, 2004. Regarding measures sufficient to attain the State ozone standard in specified transport areas, this is accomplished through the proposal to adopt all feasible measures as identified in the control strategy. As adoption of all feasible measures represents the most stringent control strategy that can be accomplished, this requirement is met with the approval of each triennial plan.

2.3.3 STATIONARY SOURCE MEASURES

Table 2-1 outlines the 15 stationary and area source measures proposed for the ~~Draft~~ Final 2005 Ozone Strategy.

TABLE 2-1
Proposed Stationary and Area Source Control Measures

CM #	BAAQMD Reg - Rule	Source Category	Description	Estimated VOC Reduction tons/day	Estimated NOx Reduction tons/day
Industrial – Commercial Processes					
SS-1	8-45	Auto Refinishing	Reduce VOC limits for some coating categories	0.7	
SS-2	8-20	Graphic Arts Operations	Reduce VOC limits for flexo-graphic ink and clean up solvent	0.15	
SS-3		High Emitting Spray Booths	Require additional controls on spray booths that emit > 20 tons VOC /yr	0.5	
SS-4	8-50	Polyester Resin Operations	Reduce allowable monomer content for some types of polyester resins	0.3	
SS-5	8-32	Wood Products Coating	Reduce VOC limits for some coating categories	0.68	
Petroleum Products Production and Distribution					
SS-6	12-12	Flares	Minimize flaring (ADOPTED 7/20/05)	TBD*	TBD*
SS-7	8-33, 39	Gasoline Bulk Terminals and Plants	Require automatic shutoff and back-pressure monitors, set more stringent leak, emission standards	0.14	
SS-8	8-44, 46	Marine Loading Operations	Control additional cargoes, set more stringent leak standards and or control housekeeping emissions (ADOPTED 12/7/05)	0.7 - 1.0	
SS-9	8-5	Organic Liquid Storage Tanks	Tighten existing requirements and/or control lower vapor pressure liquids	TBD*	
SS-10	8-28	Pressure Relief Devices	Improve enforceability of rule	0.001	
SS-11	8-8	Wastewater Systems	Control emissions from wastewater collection systems (ADOPTED 9/15/04)	2.1	

TABLE 2-1 (continued)
Proposed Stationary Source Control Measures

CM #	BAAQMD Reg - Rule	Source Category	Description	Estimated VOC Reduction tons/day	Estimated NOx Reduction tons/day
Combustion Processes					
SS-12	9-7	Industrial, Institutional and Commercial Boilers	Extend existing limits to smaller boilers and/or set a more stringent standard		0.5 - 1.0
SS-13	9-6, 7	Large Water Heaters and Small Boilers	Require new, small boilers and large water heaters to meet NOx limits		0.39
SS-14	9-9	Stationary Gas Turbines	Implement BARCT NOx limits on existing turbines		1.2
Education Programs					
SS-15		Promote Energy Conservation	Educate government, industry and the public in energy efficient choices	unknown	unknown

*TBD – emissions reductions to be determined

A brief description of each stationary source control measure is provided below. Refer to Appendix C of the Bay Area 2005 Ozone Strategy for full descriptions and evaluations of each individual stationary and mobile source control measure.

SS-1 AUTO REFINISHING: This control measure seeks to reduce VOC emissions from automobile refinishing facilities through the implementation of a lower VOC limit for topcoats. This control measure also considers the elimination of two coating categories (multi-stage topcoats and specialty coatings) as well as a reduction in the emissions from solvent used during surface preparation and clean up.

SS-2 GRAPHIC ARTS OPERATIONS: This control measure seeks to reduce VOC emissions from printing operations by reducing the allowable VOC limit for flexographic ink used on porous substrates, and by limiting the VOC content of clean up solvent used on flexographic presses. This control measure proposes a 25 grams per liter (g/l) VOC limit for flexographic clean up solvent and 225 g/l VOC limit for flexographic ink.

SS-3 HIGH EMITTING SPRAY BOOTHS: This control measure seeks to reduce VOC emissions from coating operations that emit in excess of 20 tons of emissions per year by setting percentage reductions or by requiring abatement technology. This control measure is directed at various source categories at the highest emitting spray booth facilities. Several air pollution control devices are commonly available to reduce VOC

emissions from spray booths including carbon or zeolite adsorption; thermal or catalytic oxidation; and newer technologies such as biofiltration, cryogenic condensation, ultraviolet oxidation, and hybrid concentrator/oxidation systems.

SS-4 POLYESTER RESIN OPERATIONS: This control measure seeks to reduce VOC emissions from polyester resin operations (fiberglass product manufacturing) by lowering some limits in existing Air District Regulation 8, Rule 50: Polyester Resin Operations. This control measure could revise the allowable monomer content to an amount lower than the current 35 percent for standard polyester resin materials and 50 percent for materials used for corrosion-resistant or fire-retardant service.

SS-5 WOOD PRODUCTS COATING: This control measure seeks to reduce VOC emissions from wood coating facilities by lowering some VOC limits in existing Air District Regulation 8, Rule 32: Wood Products Coating. This control measure proposes lower VOC limits on the following types of wood products coatings: high solids stain (350 g/l), sealers (275 g/l), filler (275 g/l), low solids stains (120 g/l) and wash coats (120 g/l).

SS-6 FLARES (REGULATION 12, RULE 12 ADOPTED 7/20/2005): This control measure will reduce VOC emissions from flares at petroleum refineries and chemical plants. Flares in refineries provide for the safe disposal of liquid and gaseous hydrocarbons that are either automatically vented from process units through pressure safety valves, control valves or manually drawn from units. The new regulation uses an approach that requires each refinery to develop a comprehensive plan to minimize flare use. Significant differences in refinery configurations and capacities to process and use gas in other processes require the rule to provide flexibility to implement the most appropriate flaring prevention measures for each refinery. The minimization plans will be developed in active consultation with Air District staff and will require annual updates to ensure that new technologies and practices will be identified and implemented in a process of continuous improvement.

SS-7 GASOLINE BULK TERMINALS AND BULK PLANTS: This control measure seeks to reduce VOC emissions from gasoline bulk terminals and bulk plants through the following control methods: requiring backpressure monitors and alarms on controls to shut down loading when backpressure exceeds a set standard, setting more stringent liquid and vapor leak standards, increasing enforceability, and setting a more stringent emission standard.

SS-8 MARINE LOADING OPERATIONS (AMENDMENTS TO REGULATION 8, RULE 44 AND RULE 46 ADOPTED 12/7/05): This control measure ~~seeks to~~ will further reduce VOC emissions from marine loading operations by controlling certain currently unregulated cargoes. The current Air District regulation ~~only~~ applies to five types of petroleum products. This ~~proposed~~ control measure extends current requirements to certain additional volatile organic liquids. ~~would apply to any loading or housekeeping activity on ships or barges that would emit organic compounds above a set emission limit.~~ This measure ~~would~~ will also ~~consider~~ control~~ling~~ housekeeping

operations such as tank washing, tank venting or gas freeing aboard marine vessels. This control measure has three ~~potential~~ methods for control: 1) a requirement that cargoes be controlled based on emissions determined by flash point; ~~rather than type of cargo and the development of methodology to easily determine applicability of the standards to any given load;~~ 2) a reduction in the fugitive emission standards to 1000 parts per million (ppm); and 3) a requirement to control emissions from ballasting into non-segregated tanks where a regulated cargo was previously stored.

SS-9 ORGANIC LIQUID STORAGE TANKS: This control measure seeks to reduce VOC emissions from organic liquid storage tanks typically found at petroleum refineries, chemical plants, gasoline bulk plants and terminals by supplementing existing requirements in Air District Regulation 8, Rule 5: Storage of Organic Liquids. This control measure has three potential methods for control: 1) a requirement for domes to reduce wind speed over floating roof tanks that store liquids with at least 3.0 pounds per square inch in absolute (psia) vapor pressure; 2) improved standards for degassing and cleaning tanks and for storing and transporting removed sludges; and 3) implementing an inspection and maintenance program that provides an incentive for more frequent tank inspections.

SS-10 PRESSURE RELIEF DEVICES AND BLOWDOWN SYSTEMS: This control measure seeks to reduce VOC emissions from pressure relief devices (PRDs) in petroleum refineries and chemical plants. This control measure has the following potential methods for control: 1) to require facilities to demonstrate the ability to detect and quantify Release Events (10 pounds of pollutants), 2) to require data recording and recordkeeping requirements for venting and emissions verification, 3) to require reporting of root cause analysis to prevent recurrence of release, ~~3~~4) to add a definition for a term in lieu of "source" to ensure the rule applies to individual process components and related PRDs. ~~, and 4) to require "tell-tale indicators" or the equivalent for all atmospheric PRDs, and add a definition of "tell-tale indicator."~~

SS-11 WASTEWATER SYSTEMS (AMENDMENTS TO REGULATION 8, RULE 8 ADOPTED 9/15/04): This control measure ~~seeks to~~ reduces VOC emissions from refinery wastewater collection systems by requiring control, covers or water traps at various emission points such as open drains, sumps, junction boxes and manholes. The District regulates VOC emissions from wastewater systems by setting equipment standards which require minimum gaps in seals around oil-water separators, gauging and sampling wells, dissolved air flotation units, slop oil vessels, separator effluent channels and junction boxes. A variety of methods can provide controls for open process drains, junction boxes and manholes, such as installation of vapor recovery on emission points accompanied by a control device, seals or traps on drains and open points in junction boxes and manhole covers, and the installation of solid piping where openings to the atmosphere exist. Control of emissions from refinery wastewater treatment systems is addressed in Further Study Measure 10. On November 14, 2005 the District Board of Directors concluded that no further regulatory amendments regarding wastewater treatment systems were warranted at that time.

SS-12 INDUSTRIAL, INSTITUTIONAL AND COMMERCIAL BOILERS: This control measure seeks to reduce NOx emissions from boilers by extending controls to boilers smaller than those currently regulated by Air District Regulation 9, Rule 7. This measure could extend the current NOx limit of 30 ppm to smaller boilers in the 5-10 million BTU/hr range as well as the 2-5 million BTU/hr range. This control measure also includes considering lower NOx limits than those in existing Air District Regulation 9, Rule 7. Control would generally be achieved by the installation of low-NOx burners, many of which may be installed through the retrofit of existing models.

SS-13 LARGE WATER HEATERS AND SMALL BOILERS: This control measure seeks to reduce NOx emissions from water heaters larger than those currently regulated by existing Air District regulations, and from boilers smaller than those currently regulated by existing Air District regulations. This control measure proposes a NOx limit of 40 nanograms per joule of heat output for large water heaters with a capacity greater than 75,000 BTU/hr and less than or equal to 400,000 BTU/hr. This control measure also proposes a NOx limit of 30 ppm for boilers larger than 400,000 BTU/hr and less than or equal to two million BTU/hr.

SS-14 STATIONARY GAS TURBINES: This control measure seeks to reduce NOx emissions from stationary gas turbines through the revision of existing limits to reflect current BARCT. Most emission reductions would come from the installation of selective catalytic reduction (SCR) on large turbines (>10 MW) that do not currently use SCR to control NOx emissions. Some additional emission reductions could come from the installation of dry low-NOx combustors (DLN) on small turbines (<10 MW). This control measure proposes NOx limits of 35 ppm limit if DLN is not available, and 25 ppm if DLN is available.

SS-15 PROMOTE ENERGY CONSERVATION: This measure would seek to educate public and private entities about the link between air quality, greenhouse gas emissions and energy conservation. This control measure would reduce emissions of criteria pollutants and greenhouse gas emissions through the voluntary adoption, implementation and enforcement of a model ordinance by local government agencies to reduce energy consumption. This measure could also develop new Air District programs or strengthen existing Air District programs including education campaigns targeting the general public, businesses and industry through outreach programs and workshops.

2.3.4 BAY AREA RULE DEVELOPMENT PROCESS

Most stationary source measures in the Ozone Strategy are implemented through the rule development process. The Bay Area Air District goes through a detailed process to adopt rules and regulations to impose standards on, and limit emissions from, Bay Area industry.

Subsequent to rule adoption by the Board, BAAQMD staff work to prepare inspection protocols, policies and procedures to interpret the rule as necessary, and to prepare compliance advisories to notify affected parties of the rule and compliance dates. Staff also forward the rule to CARB.

Each December, the Air District Board of Directors approves an annual regulatory schedule and notifies CARB of its expected rule development schedule for the following calendar year, as required by the CCAA. Table 2-2 shows the proposed scheduled for regulation adoption during 2005, 2006 and 2007.

TABLE 2-2
Regulatory Agenda, 2005 – 2007

2005 Regulatory Agenda

CM #	Control Measure (Reg and Rule)	ER Potential
SS 6	Flares (Reg 12-12) (ADOPTED 7/20/05)	TBD
SS 8	Marine Loading Operations (Reg 8-44, 46) (Adopted 12/7/05)	0.7 – 1.0 tpd
SS 10	Pressure Relief Devices (Reg 8-28)	0.001

2006 Regulatory Agenda

CM #	Control Measure (Reg and Rule)	ER Potential
SS 2	Graphic Arts Operations (Reg 8-20)	0.15 tpd
SS 7	Gasoline Bulk Terminals and Bulk Plants (Reg 8-33, 39)	0.14 tpd
SS 9	Organic Liquid Storage (Reg 8-5)	TBD
SS 13	Large Water Heaters and Small Boilers (Reg 9-6, 7)	0.39 tpd NOx
SS 14	Stationary Gas Turbines (Reg 9-9)	1.2 tpd NOx
SS 15	Energy Conservation	unknown

2007 Regulatory Agenda

CM #	Control Measure (Reg and Rule)	ER Potential
SS 1	Auto Refinish Operations (Reg 8-45)	0.7 tpd
SS 3	High Emitting Spray Booths	0.5 tpd
SS 4	Polyester Resin Operations (Reg 8-50)	0.3 tpd
SS 5	Wood Products Coating (Reg 8-32)	0.68 tpd
SS 12	Industrial, Institutional and Commercial Boilers (Reg 9-7)	0.5 - 1.0 tpd NOx

* Emission Reduction, stated for VOC/ROG unless otherwise noted.

2.3.5 MOBILE SOURCE PROGRAMS

The term "mobile source", as used in the CCAA and by the Air District, refers collectively to vehicular sources and other non-stationary sources. Mobile sources are defined in the CCAA as self-propelled devices that may travel upon a highway, including automobiles, trucks, construction equipment, farm equipment, and off-road vehicles. "Non-vehicular" mobile sources or "non-road" sources as they are defined in the federal Clean Air Act (CAA), include ships, boats, aircraft, locomotives, and lawn and garden equipment. Mobile sources are by far the largest sources of ozone precursors.

State and national programs play a critical role in reducing air pollutant emissions from mobile sources. Mobile source emissions are regulated by establishing equipment emission standards and by regulating the fuel used in the equipment. The federal CAA contains a special provision allowing California to set motor vehicle emission standards that are specific to the State. The California standards cover motor vehicles (including

cars, motorcycles, and trucks), heavy industrial and construction equipment, off-highway vehicles such as dirt bikes and all-terrain vehicles, and lawn, garden and other utility engines. In California, these mobile sources are regulated primarily by CARB.

To ensure that motor vehicle emission control systems continue to operate properly they are regulated through in-use performance standards. The State of California has had an inspection and maintenance (I&M) program since 1984, and responsibility for the State's I&M program implementation rests with the California Bureau of Automotive Repair (BAR). In 2002, AB 2637 (Cardoza) was signed into law and required BAR to implement an Enhanced Area Smog Check Program in the urbanized regions of the San Francisco Bay Area. The program went into full effect in October 2003, and requires the use of a dynamometer to simulate the vehicle's emissions while in motion. In addition, the pass/fail cut points for emissions are more stringent for enhanced smog check areas and certain vehicles suspected of higher emissions are directed to Test-Only stations.

The Air District does not have the authority to regulate mobile sources but reduces mobile source emissions by providing grants or incentives to encourage the use of cleaner vehicles and fuels. The Transportation Fund for Clean Air (TFCA) is a grant program that funds both mobile source and transportation control measures implemented by local public agencies. To fund these measures the State Legislature allows the Air District to impose a $4 surcharge on motor vehicle registration fees paid for vehicles registered in the Bay Area. Mobile source measures funded through the TFCA program include purchase or lease of clean fuel vehicles, primarily through the Vehicle Incentive Program (VIP), as well as engine retrofits and repowers. Another TFCA program, the Vehicle Buy Back program, accelerates the retirement of older, high emitting vehicles from the region's roadways by providing incentives to scrap them.

The Carl Moyer Program provides incentives that cover the incremental cost of cleaner heavy-duty engines with a primary focus of reducing NOx emissions. Among the eligible projects are cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The Air District also has grant programs for low emission school buses and heavy-duty diesel PM10 filter retrofits.

In addition to State and federal regulations and Air District incentive programs, the Ozone Strategy includes control measures that reduce emissions from on-road and off-road mobile sources. These control measures encourage the retirement of older, more-polluting equipment and the introduction of new, less-polluting equipment, or encourage operational changes (e.g. reduced idling) to reduce emissions. The measures would be implemented mainly through incentive programs and through development and promotion of model ordinances for cities and counties. Table 2-3 contains a summary of the proposed mobile source control measures, including their proposed dates of adoption and estimates of the emission reductions they would achieve.

TABLE 2-3
Proposed Mobile Source Control Measures(1)

Measure	Source Category	Implementation Date	Estimated VOC Reduction (tpd)	Estimated NOx Reduction (tpd)
MS-1	Diesel Equipment Idling Ordinance	2006	0.13	1.96
MS-2	Green Contracting Ordinance	2006	NA	NA
MS-3	Low-Emission Vehicle Incentives	2005	0.03	0.6
MS-4	Vehicle Buy-Back Program	2005	0.48	0.31
Total			**0.64**	**2.87**

(1) While the focus of the Ozone Strategy is on reducing emissions of ozone precursors, many of the measures will also reduce emissions of fine particulate matter and this additional benefit is noted as well.

A brief description of each of the mobile source control measures is provided below. Refer to Appendix C of the Bay Area 2005 Ozone Strategy for full descriptions and evaluations of each individual stationary and mobile source control measure.

MS-1 DIESEL ENGINE IDLING ORDINANCE: This control measure seeks to reduce emissions from the idling of diesel equipment through the voluntary adoption and enforcement of a model ordinance by local government agencies. Reducing diesel equipment idling will primarily reduce emissions of NOx, particulate matter and toxic air contaminants. The measure would limit the amount of time operators of diesel equipment, including heavy-duty trucks, buses and construction equipment, idle their engines. This measure would reduce emissions from heavy-duty trucks at warehouse/distribution centers, port terminals, truck stops and rest areas.

MS-2 GREEN CONTRACTING ORDINANCE: This control measure seeks to develop and promote a model ordinance for local government agencies to use in amending local codes that govern public agency contracting. By adopting and implementing Green Contracting Ordinances, public agencies can play an important role in improving air quality by encouraging contractors to operate their businesses in ways that benefit air quality such as by operating low-emission vehicles, purchasing clean fuels, promoting ridesharing programs and curtailing polluting activities on Spare the Air days.

MS-3 LOW-EMISSION VEHICLE INCENTIVES: This control measure seeks to encourage the use of low-emission vehicles. Low-emission vehicles are those that have emissions which are significantly lower than the established vehicle standards of similar makes and model years and that typically have cleaner burning engines, fuels and/or exhaust treatment devices. This control measure is intended to increase the share of low-emission vehicles in the region's on-road and off-road fleet through Air District incentives like the Transportation Fund for Clean Air (TFCA), the Carl Moyer Program and other funding sources. Air District grant programs would be used to provide an incentive to purchase low or zero emission vehicles or engines, engine repowers, retrofits and replacements, exhaust treatments and add-on equipment, clean fuels or additives, and infrastructure to supply alternative fuels.

MS-4 VEHICLE BUY-BACK PROGRAM: This control measure seeks to accelerate the retirement of older, high emitting vehicles from the region's roadways by providing incentives to scrap them through the Air District's Vehicle Buy-Back Program. This control measure seeks to reduce emissions of VOC, NOx and PM from older model year light-duty motor vehicles. The Air District implements the Vehicle Buy-Back Program by contracting with vehicle dismantlers to screen, purchase, and destroy eligible vehicles. The purchase of vehicles to be scrapped is dependent on established eligibility requirements to provide assurance that a vehicle will not remain on the road or continue to produce emissions.

2.3.6 TRANSPORTATION CONTROL MEASURES

Motor vehicles are the largest source of ozone precursors in the Bay Area, and so reducing these emissions is essential to regional efforts to attain the State ozone standard and reduce transport. Motor vehicle emissions have dropped substantially over the years thanks to State and national regulations on vehicles and fuels, and motor vehicle emissions are expected to continue to decrease in the future as the vehicle fleet becomes cleaner. TCMs play a critical role in complementing State and national regulatory efforts by reducing motor vehicle use[2]. TCMs also help achieve other goals, including improved mobility and reduced congestion.

CCAA TCM Requirements

The California Clean Air Act (CCAA) emphasizes transportation control measures. CCAA legislative intent states that in developing attainment plans, air districts shall "focus particular attention on reducing the emissions from transportation and areawide emission sources" (Sec. 40910). The CCAA specifically requires air districts to "adopt, implement and enforce transportation control measures." TCMs are defined as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions" (Sec. 40717). TCMs must be sufficient to substantially reduce the rate of increase in vehicle trips and vehicle miles traveled (Sec. 40918). Health and Safety Code Section 40233 lays out a

[2] TCMs are distinguished from mobile source measures in that mobile source measures reduce vehicle *emission rates*, while TCMs reduce vehicle *use* by reducing vehicle trips and/or vehicle miles traveled.

process for developing a TCM emission reduction target and TCM plan when developing the 1991 Clean Air Plan. The Air District and MTC in 1991 complied with the required process. Under the CCAA, setting a TCM emission reduction target in subsequent planning cycles is discretionary. While a TCM emission reduction target was not set in subsequent plans, the TCMs have undergone extensive revision and expansion, as described below.

TCMs in the Control Strategy

The TCMs proposed for the 2005 Ozone Strategy are summarized in Table 2-4. The TCMs are divided into Phases 1 and 2 to reflect near-term and long-term implementation steps and benefits. Most projects in Phase 1 are either currently programmed or funding is otherwise expected to be available for full implementation. Some Phase 2 projects have substantial funding identified, while others are dependent on future funding sources. MTC estimated emission reductions for each phase. Phase 1 is defined as 2004-2006 and Phase 2 is defined as beyond 2006. 2015 was selected as an analysis year for emission reduction calculations, although many long-term TCM implementation steps will clearly occur before 2015, and continue beyond as well.

TABLE 2-4
Proposed Transportation Control Measures

TCM	Description	Implementing Agencies
TCM #1 SUPPORT VOLUNTARY EMPLOYER-BASED TRIP REDUCTION PROGRAMS	Phase 1 (2004 –2006): ■ Provide assistance to regional and local ridesharing organizations; advocate legislation to maintain and expand incentives (e.g., tax deductions/credits) ■ Provide assistance to employers, cities, counties: ▪ Assistance in developing/enhancing employer programs; recognition of outstanding programs ▪ Information and referral ▪ Employer networks	MTC, BAAQMD, CMAs, Cities, counties, MTC's Regional Rideshare Program, CMAs, MTC, BAAQMD
	Phase 2 (Beyond 2006): ■ Continue Phase 1 programs and enhance where feasible	Same as Phase 1
TCM #2 ADOPT EMPLOYER-BASED TRIP REDUCTION RULE	TCM deleted per Health and Safety Code Section 40929	N/A
TCM #3 IMPROVE LOCAL AND AREAWIDE BUS SERVICE	Phase 1 (2004 –2006): ■ Replace older transit buses with clean-fuel buses and retrofit existing diesel buses with diesel emission control technology ■ Sustain and expand the existing Regional Express Bus Program ■ Assist further planning work on enhanced bus and Bus Rapid Transit concepts ■ Sustain transit service to airports	MTC, Transit operators, BAAQMD MTC, Transit operators MTC, Transit operators MTC, Transit operators, Airports
	Phase 2 (Beyond 2006): ■ Restore local bus routes that were recently eliminated due to funding cutbacks ■ Implementation of new Enhanced Bus and Bus Rapid Transit services and additional Lifeline Transit services, and the expansion of Regional Express Bus Programs as funds become available	MTC, Transit operators MTC, Transit operators

TCM #4 UPGRADE AND EXPAND LOCAL AND REGIONAL RAIL SERVICE	Phase 1 (2004 –2006):	
	■ Implement MUNI Metro Third Street Light-Rail Project: light-rail extension to Bayview Hunters Point (Phase 1, initial operating segment)	MUNI
	■ Implement Caltrain Express/Rapid Rail Phase 1 ("Baby Bullet") to San Francisco	Caltrain
	■ Vasona Corridor light-rail extension from downtown San Jose to Winchester Boulevard in Campbell	SCVTA
	Phase 2 (Beyond 2006):	
	■ Extend BART to Warm Springs, BART/East Contra Costa Rail Extension, BART extension into Santa Clara County and an Oakland International Airport Connector	BART
	■ Implement MUNI Metro Third Street Light-Rail Project: light-rail transit extension to Chinatown (Phase 2, Central Subway)	MUNI
	■ Implement Caltrain Downtown Extension/ TransBay Terminal Replacement	Caltrain, TransBay Terminal JPA
	■ Implement Downtown/East Valley: Santa Clara/Alum Rock corridor and Capitol Expressway light-rail extension to Nieman Boulevard	SCVTA
	■ Implement Sonoma Marin Area Rail Transit District (SMART) commuter rail project	MTC, SMART
	■ Implement Capitol Corridor Phase 1 Intercity Rail Service: track capacity/frequency improvements from Oakland to San Jose designed to allow 16 daily round trips between Oakland and Sacramento/San Jose and Capitol Corridor Phase 2	AMTRAK/Capitol Corridor
	■ Implement Dumbarton Rail Corridor Phase 1 (diesel locomotive service connecting BART and Caltrain over a rebuilt Dumbarton rail bridge)	MTC, transit operators
	■ Implement Altamont Commuter Express (ACE) rail service expansion to 8 daily roundtrips	MTC, San Joaquin Regional Rail, Alameda and Santa Clara County CMAs

TCM #5 IMPROVE ACCESS TO RAIL & FERRIES	Phase 1 (2004 –2006): ■ Develop demonstration program for station car and bike station concepts at select regional transit centers	Transit operators, MTC, BAAQMD
	■ Determine long term funding needs for existing shuttles, encourage better coordination between shuttles and transit operators, and examine funding options for new and existing shuttles	MTC
	■ Implement Safe Routes to Transit to improve bicycle and pedestrian access	MTC, Transit operators
	■ Complete Regional Transit Connectivity Plan	MTC
	Phase 2 (Beyond 2006): ■ Continue and expand successful concepts from Phase 1 including Safe Routes to Transit improvements	MTC, Transit operators
	■ Develop a master plan for innovative secure bicycle storage strategies at key transit hubs	MTC
	■ Implement most cost effective new shuttles where funding is available	MTC, BAAQMD, Transit operators
TCM # 6 IMPROVE INTER-REGIONAL RAIL SERVICE	Phase 1 (2004 –2006): No significant changes in interregional rail service are anticipated during this phase	N/A
	Phase 2 (Beyond 2006): ■ Implement additional interregional rail service in Capitol (Auburn - Sacramento - Oakland - San Jose) Corridor and track enhancements	Capitol Corridor JPB, Amtrak, MTC, Southern Pacific
	■ Implement Altamont Commuter Express (ACE) rail service expansion to 8 daily roundtrips and track enhancements	MTC, San Joaquin Regional Rail Commission, Alameda and Santa Clara County CMAs
	■ Implement High Speed Rail Service between Los Angeles and the Bay Area	CA High Speed Rail Authority
TCM #7 IMPROVE FERRY SERVICE	Phase 1 (2004 –2006): ■ Conduct initial planning for new ferry service	WTA
	■ Implement new high-speed low emission ferry to service Vallejo to San Francisco route	Vallejo Transit

	Phase 2 (Beyond 2006):	
	■ Expand existing ferry service between: ▪ Oakland/Alameda and San Francisco ▪ Larkspur and San Francisco	WTA, Oakland/Alameda Ferry, Golden Gate Ferry,
	■ Implement new ferry service between: ▪ Berkeley/Albany and San Francisco ▪ South San Francisco and San Francisco	WTA
	■ Implement new intermodal transit hub at Vallejo Ferry Terminal	WTA, City of Vallejo, Vallejo Baylink Ferry
	■ Expand berthing capacity at the San Francisco Ferry Terminal	WTA, Port of San Francisco
	■ Implement hydrogen fuel cell ferry demonstration project from Treasure Island to San Francisco	WTA, Treasure Island Redevelopment Authority
	■ Assist ferry operators in converting vessel engines to lower emission engines	WTA, Ferry operators, MTC, BAAQMD
	■ Study and potentially implement new service between: ▪ Richmond, Hercules/Rodeo, Martinez, Redwood City and San Francisco ▪ Port Sonoma and San Francisco ▪ Oakland and San Francisco Airports	WTA
TCM #8 CONSTRUCT CARPOOL / EXPRESS BUS LANES ON FREEWAYS	Phase 1 (2004 –2006):	
	■ Expand existing HOV network, based on 2005 Transportation Improvement Program	Caltrans, MTC
	■ Implement new HOV to HOV lane connector at Rt 101/85 interchange in Mountain View	Caltrans, MTC
	■ Implement HOV support facilities such as park & ride lots at various locations	Caltrans, MTC, Transit operators
	Phase 2 (Beyond 2006):	
	■ Implement additional HOV lanes and support infrastructure identified in the Regional Transportation Plan. Special attention should be paid to express bus operations to maximize benefits for transit. Monitor and adjust occupancy requirements and hours of operation to maximize air quality and mobility benefits.	Caltrans, MTC

TCM #9 IMPROVE BICYCLE ACCESS AND FACILITIES	Phase 1 (2004 –2006):	
	■ Fund Regional Bike Plan and Safe Routes to Transit improvements	MTC, Cities, Counties, CMAs
	■ Continue TDA Article 3, TLC and TFCA funding for bike improvements	MTC, BAAQMD
	■ Develop on-line bicycle mapping tool as part of the regional 511 traveler information number	MTC
	■ Promote Bike to Work Week / Day	MTC
	■ Encourage local jurisdictions to develop safe and convenient bicycle lane and route networks, provide secure bike racks and storage, and require bicycle access and amenities as conditions of approval of development projects	Cities, Counties, MTC, Transit operators, BAAQMD
	■ Explore innovative bicycle programs, such as "station bike" or bike sharing programs at transit stations, downtowns and activity centers	Cities, Counties, MTC, Transit operators, BAAQMD
	Phase 2 (Beyond 2006):	
	■ Continue Phase 1 programs	Same as Phase 1
	■ Encourage public education about bicycle safety for both bicyclists and motorists	MTC
TCM #10 YOUTH TRANSPOR-TATION	Phase 1 (2004 –2006):	
	■ Encourage walking and bicycling to school through the Safe Routes to Schools Program	MTC's Regional Rideshare Program, School districts, Cities and Counties
	■ Encourage carpooling among high school students with cars	MTC's Regional Rideshare Program, School districts
	■ Establish special carpool formation services for parents, students and staff at Bay Area elementary and secondary schools	MTC's Regional Rideshare Program, School districts
	■ Purchase older school buses with alternatively fueled vehicles, replace old diesel school buses with cleaner engines or retrofit older school bus engines	BAAQMD, School districts
	■ Encourage shuttle programs to provide service to schools	MTC, BAAQMD, School districts
	■ Target Bay Area schools for greater participation in the Spare the Air program	BAAQMD, School districts

	Phase 2 (Beyond 2006): ■ Continue Phase 1 programs ■ Support transit ride discounts to youth and students	 Same as Phase 1 Transit operators
TCM #11 INSTALL FREEWAY TRAFFIC MANAGE-MENT SYSTEMS	Phase 1 (2004 –2006): ■ Integrate traffic management features into new freeway construction projects ■ Maintain current level of Freeway Service Patrol ■ Maintain 511 transit information service and improve and customer convenience	 Caltrans Caltrans, MTC MTC, Caltrans
	Phase 2 (Beyond 2006): ■ Extend ramp metering in major freeway corridors ■ Seek funding for full deployment of Caltrans' Traffic Operation System / Traffic Management Center project ■ Expand FSP to other routes and times of the day ■ Require traffic management elements in Caltrans freeway projects	 Caltrans Caltrans Caltrans Caltrans
TCM #12 ARTERIAL MANAGE-MENT MEASURES	Phase 1 (2004 –2006): ■ Maintain current technical assistance program for local jurisdictions that seek to retime signals, including the evaluation of bus priority treatments ■ Continue TFCA program to fund arterial management projects	 MTC BAAQMD
	Phase 2 (Beyond 2006): ■ Coordinate the timing of an additional 1,200 signals and continue updating timing plans ■ Work with bus operators to provide priority treatment along major bus routes	 Cities, Counties, Transit operators, CMAs Cities, Counties, Transit operators, CMAs

TCM #13 TRANSIT USE INCENTIVES	Phase 1 (2004 –2006): ■ Implement Translink® (universal fare card) on transit systems throughout the region ■ Implement improvements to the 511 transit information service ■ Encourage employers, transit operators, local governments and others to promote and expand employer-based transit subsidy programs like the Commuter Check and EcoPass programs ■ Improve signage at transit transfer hubs	 MTC, Transit operators MTC, Transit operators MTC's Regional Rideshare Program, transit agencies, Commuter Check Corps, employers MTC, Caltrans
	Phase 2 (Beyond 2006): ■ Deploy real-time transit arrival information ■ Increase passenger amenities at transit hubs and stops ■ Complete Alameda and Contra Costa County transit centers identified in AC Transit's *Comprehensive Service Plan*	 MTC, Transit operators MTC, Transit operators AC Transit
TCM #14 CARPOOL AND VANPOOL SERVICES AND INCENTIVES	Phase 1 (2004 –2006): ■ Maintain current programs of the Regional Ridesharing Program and increase efficiency in delivering services ■ Explore innovative concepts such as real-time ridematching using the internet ■ Explore possible provision of a regional incentive to increase ridesharing by implementing a demonstration project offering a cash incentive for new vanpools ■ Explore options for expanding medium-distance (15 – 30 miles) vanpools	 MTC's Regional Ridesharing Program MTC's Regional Ridesharing Program MTC's Regional Ridesharing Program MTC's Regional Ridesharing Program
	Phase 2 (Beyond 2006): ■ Maintain Phase 1 programs and enhance where feasible	 MTC's Regional Ridesharing Program

TCM #15 LOCAL LAND USE PLANNING AND DEVELOP-MENT STRATEGIES	Phase 1 (2004 –2006): MTC will: Implement its 5-point transportation and land use platform including a new planning grant program to fund station area plans around major transit facilities Continue implementing the TLC planning and capital grant programs and HIP program Continue providing "T-PLUS" funding to CMAs to promote community revitalization projects Utilize a Caltrans grant to examine opportunities for transit-oriented development along major transit corridors. Develop incentives and conditions to promote supportive land use policies around major new transit investments	MTC
	BAAQMD will: Continue to fund bicycle projects, traffic calming, shuttles, low emission vehicles, trip reduction programs and other clean air projects through the TFCA program Continue to provide technical assistance to local jurisdictions on air quality analyses in the environmental review process Continue to encourage cities and counties to reduce emissions from sources other than motor vehicles including lawn and garden equipment, woodstoves and fireplaces, and residential and commercial uses	BAAQMD
	ABAG will: Periodically monitor and update its Smart Growth demographic projections Promote multi-jurisdiction planning along select transit corridors to encourage transit-oriented development	ABAG
	Develop financial and other incentives and technical assistance to encourage innovative parking strategies such as reduced parking, parking fees, parking cash-out, shared parking and other parking programs	MTC, BAAQMD, ABAG in collaboration with cities and counties
	Pursue legislative changes to remove barriers and provide incentives for smart growth	MTC, BAAQMD, ABAG in collaboration with cities and counties
	Promote carsharing as a way to reduce parking requirements	MTC, BAAQMD, ABAG, cities and counties
	Monitor indirect source mitigation programs in other regions for Bay Area feasibility	BAAQMD
	Provide technical assistance to local government agencies	MTC, BAAQMD, ABAG
	Publicize noteworthy examples of local clean air plans, policies and programs, as well as endorse noteworthy development projects	BAAQMD, MTC, ABAG
	Study opportunities to promote location efficient mortgages (LEMs) to encourage home purchases near transit	MTC, BAAQMD, ABAG

	Phase 2 (Beyond 2006): ■ Continue the programs in Phase 1 and refine and expand them as appropriate	MTC, BAAQMD, ABAG in collaboration with cities and counties
TCM #16 PUBLIC EDUCATION / INTERMIT-TENT CONTROL MEASURES	Phase 1 (2004 –2006): ■ Continue Spare the Air notices to media, employers, public agencies and individuals, with an emphasis on ROG reductions, obeying freeway speed limits in electronic freeway signs and other outreach efforts	BAAQMD
	■ Continue to expand the Spare the Air employer network	BAAQMD
	■ Provide free morning commutes to all riders of participating Bay Area transit providers up to 5 non-holiday, weekday Spare the Air Days	BAAQMD, MTC and Transit operators
	■ Expand STA notices to add emphasis on ROG reductions, obeying freeway speed limits, and discouraging use of pleasure craft	BAAQMD
	■ Expand the Clean Air Consortium to include more cities and counties, as well as other public agencies	BAAQMD
	■ Target major commercial airports and their tenants for greater participation in the Spare the Air program	BAAQMD, Airports
	■ Increase coordination between the Bay Area's Spare the Air program with the San Joaquin Valley STA Program	BAAQMD, San Joaquin Valley STA Program
	■ Continue public education program on the proper maintenance and operation of motor vehicles to reduce air pollution	BAAQMD
	■ Continue the Bay Area Clean Air Partnership (BayCAP) shuttle project to inventory existing shuttle programs, provide coordination and assistance, and promote "best practices" among shuttle operators	BAAQMD
	■ Discourage the use of recreational watercraft on STA days	BAAQMD
	■ Continue gasoline-powered lawnmower buyback incentive programs	BAAQMD
	■ Educate the public about ways to maintain and operate motor vehicles to reduce air pollution	BAAQMD

	Phase 2 (Beyond 2006): ■ Continue Phase 1 programs and expand depending on effectiveness and resources available ■ Study effectiveness and costs of free transit on all Spare the Air days ■ Explore possible legislative approaches to formalize and strengthen episodic approaches	 BAAQMD BAAQMD, MTC and Transit operators BAAQMD, MTC
TCM #17 CONDUCT DEMON-STRATION PROJECTS	Phase 1 (2004 –2006): Promote demonstration projects to develop new strategies to reduce motor vehicle emissions. Potential projects include ▪ Low and zero emission vehicles and LEV refueling infrastructure ▪ Hydrogen fuel cell technology ▪ Gas cap replacement program for older cars ▪ Heavy duty diesel vehicle idling ▪ Refuse truck control technology ▪ Carsharing	 BAAQMD, MTC, Caltrans, FHWA
	Phase 2 (Beyond 2006): ■ Monitor Phase 1 projects and expand depending on effectiveness and resources available	 Same as Phase 1
TCM #18 IMPLEMENT TRANSPOR-TATION PRICING REFORM	Phase 1 (2004 –2006): ■ Advocate for legislative authority to develop and promote measures to discourage driving, such as: ▪ Higher bridge tolls ▪ Congestion pricing ▪ Gas tax increase ▪ Parking pricing	 BAAQMD, MTC, business community and other stakeholders
	Phase 2 (Beyond 2006): ■ Advocate for legislative authority to develop and promote revenue measures for: ▪ Continuation of Phase 1 elements ▪ High Occupancy Toll lanes ▪ Gas tax increase / VMT fees ▪ Taxes on diesel fuel ▪ Emissions-based vehicle registration fees ▪ Parking fees	 BAAQMD, MTC, business community and other stakeholders

TCM #19 IMPROVE PEDESTRIAN ACCESS AND FACILITIES	Phase 1 (2004 –2006): ■ Review and comment on general/specific plan policies to promote development patterns that encourage walking and circulation policies ■ Emphasize pedestrian travel and encourage amending zoning ordinances to include pedestrian-friendly design standards ■ MTC will continue to: ▪ Fund local pedestrian improvement projects through the TLC program ▪ Support the Regional Pedestrian Committee and associated pedestrian safety programs ▪ Support Safe Routes to Schools ■ TFCA program will continue to fund pedestrian improvement projects to reduce motor vehicle trips and emissions	 BAAQMD, MTC, cities and counties BAAQMD, MTC, ABAG, cities and counties MTC BAAQMD
	Phase 2 (Beyond 2006): ■ Continue to identify and fund planning projects that enhance pedestrian movement in neighborhoods, downtowns and near transit stops ■ Continue funding specific improvements through a variety of funding sources ■ Continue to support Safe Routes to Schools	 MTC, BAAQMD in collaboration with cities and counties MTC, BAAQMD in collaboration with cities and counties MTC, BAAQMD in collaboration with cities and counties
TCM #20 PROMOTE TRAFFIC CALMING MEASURES	Phase 1 (2004 –2006): ■ Implement traffic calming projects such as: ▪ Pedestrian-exclusive streets ▪ Residential and neighborhood traffic calming measures ▪ Arterial and major route traffic calming measures ■ Include traffic calming strategies in the transportation and land use elements of general and specific plans ■ Encourage area-wide traffic calming plans and programs ■ Include traffic calming strategies in capital improvements programs	 MTC, BAAQMD, Cities, Counties MTC, BAAQMD, Cities, Counties MTC, BAAQMD, Cities, Counties MTC, BAAQMD, Cities, Counties
	Phase 2 (Beyond 2006): ■ Continue the programs in Phase 1 and refine and expand them as appropriate	 N/A

2.3.7 EMISSION REDUCTIONS

A summary of emission reductions from the control measures proposed in the 2005 Ozone Strategy is provided in Table 2-5.

TABLE 2-5

Emission Reductions of Proposed Control Measures

CM#	Title	VOC Reductions (tons/day) 2006	NOx Reductions (tons/day) 2006
STATIONARY AND AREA SOURCE MEASURES			
Industrial – Commercial Processes			
SS-1	Auto Refinishing	0.7	-
SS-2	Graphic Arts Operations	0.15	-
SS-3	High Emitting Spray Booths	0.5	-
SS-4	Polyester Resin Operations	0.3	-
SS-5	Wood Products Coating	0.68	-
Petroleum Products Distribution and Processing			
SS-6	Flares (ADOPTED 7/20/05)	TBD*	TBD*
SS-7	Gasoline Bulk Terminals and Plants	0.14	-
SS-8	Marine Loading Operations (Adopted 12/7/05)	0.7 – 1.0	-
SS-9	Organic Liquid Storage Tanks	TBD*	-
SS-10	Pressure Relief Devices	0.001	-
SS-11	Wastewater Systems (ADOPTED 9/15/04)	2.1	-
Combustion Processes			
SS-12	Boilers Rated Between 5 and 10 MM BTU/hr	-	0.5 – 1.0
SS-13	Large Water Heaters and Small Boilers	-	0.39
SS-14	Stationary Gas Turbines	-	1.2
Education Programs			
SS-15	Energy Conservation	Unknown	Unknown
MOBILE SOURCE MEASURES			
MS-1	Diesel Equipment Idling Ordinance	0.13	1.96
MS-2	Green Contracting	TBD*	TBD*
MS-3	Low-Emissions Vehicle Incentives	0.03	0.6
MS-4	Vehicle Buy-Back Program	0.48	0.31
TRANSPORTATION CONTROL MEASURES			
TCM-1	Support Voluntary Employer Based Trip Reduction Programs	0.53	0.57
TCM-3	Improve Local and Area-wide Bus Service	0.42	1.13
TCM-4	Improve Regional Rail Service	0.23	0.21
TCM-5	Improve Access to Rail and Ferries	0.17	0.15
TCM-6	Improve Interregional Rail Service	-	-
TCM-7	Improve Ferry Service	-	-

TABLE 2-5 (CONTINUED)
Emission Reductions of Proposed Control Measures

CM#	Title	VOC Reductions (tons/day)	NOx Reductions (tons/day)
TCM-8	Construct Carpool/Express Bus Lanes on Freeways	-	-
TCM-9	Improve Bicycle Access and Facilities	0.04	0.03
TCM-10	Youth Transportation	0.11	0.09
TCM-11	Install Freeway Traffic Management System	0.04	0.11-0.12
TCM-12	Arterial Management Measures	0.06 – 0.12	0.06 – 0.11
TCM-13	Transit Use Incentives	0.02-0.12	0.02-0.10
TCM-14	Carpool and Vanpool Services and Incentives	0.01	0.01
TCM-15	Local Land Use Planning and Development Strategies	0.09	0.14
TCM-16	Public Education/Intermittent Control Measures	1.9**	2.0**
TCM-17	Conduct Demonstration Projects	-	-
TCM-18	Transportation Pricing Reform	-	-
TCM-19	Improve Pedestrian Access and Facilities	0.04	0.02
TCM-20	Promote Traffic Calming	-	-

* TBD – Emission reductions to be determined

** Emissions reduction figures for TCM 16: Public Education/Intermittent Control Measures were calculated in tons per day based on emissions reduced on Spare the Air days, which occur approximately seven days per year.

2.3.8 FURTHER STUDY MEASURES

Further study measures are measures for which insufficient information was available during the development of the control strategy to allow for a comprehensive review. For example, emissions data for some source categories or the emissions reduction potential of some control measures may be uncertain. In these cases, further study may be warranted if the other aspects of a suggested control, such as public acceptability and adverse environmental impacts appear positive. The Ozone Strategy includes the description of Further Study Measures that have been identified and commits staff to follow up on and continue to evaluate the further study measures, and move forward with any that are deemed feasible as a result of the study. Therefore, the potential environmental impacts associated with Further Study Measures are not evaluated in this EIR as they are not included as commitments in the Ozone Strategy. Additional CEQA review would be required if any of the Further Study Measures are proposed to be implemented.

CHAPTER 3

ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Introduction
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/Traffic
Utilities and Service Systems

3.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

3.1 INTRODUCTION

CEQA provisions for program EIRs in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, including adoptions of broad policy programs are separate, from the provisions of EIRs prepared for specific types of projects (e.g., land use projects) (CEQA Guidelines §15168). The EIR for the 2005 Ozone Strategy is a program EIR because it examines the environmental effects of proposed control measures that will ultimately be issued as rules or regulations and promulgated as part of a continuing ongoing regulatory program.

The degree of specificity required in an EIR corresponds to the degree of specificity involved in the underlying activity described in the EIR (CEQA Guidelines §15146). Because the level of information regarding potential impacts from control measures recommended in the 2005 Ozone Strategy is relatively general at this time, the environmental impact forecasts are also general or qualitative in nature.

CEQA Guidelines §15125(a) requires that an EIR include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to gain an understanding of the significant effects of the proposed project and its alternatives.

The CEQA Guidelines also require EIRs to identify significant environmental effects that may result from a proposed project [CEQA Guidelines §15126.2(a)]. Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible (CEQA Guidelines §15126.4).

This chapter describes the existing environmental setting, analyzes the potential environmental impacts, and recommends mitigation measures, when significant environmental impacts have been identified. Each of the resources identified in the CEQA checklist (CCR Title 14, Chapter 3, §15000 et seq., Appendix G) has been analyzed in this chapter.

Included for each impact category is a discussion of the environmental setting, significance criteria, project-specific impacts, feasible project-specific mitigation (if necessary and available), impacts remaining after mitigation (if any), cumulative impacts (if any) and feasible cumulative impact mitigation (if necessary and available).

In order to address the full range of potential environmental impacts several assumptions were made for purposes of evaluation. All control equipment that could be used to comply with a particular control measure were evaluated. In practice, there are typically a number of ways to comply with rule requirements.

Every control measure in the 2005 Ozone Strategy was evaluated to determine whether or not it has the potential to generate adverse environmental impacts (see Appendix C & D of the 2005 Ozone Strategy). A table has been prepared in each subchapter where control measures have been identified that have the potential to generate significant adverse impacts to that environmental resource. Table 3.1-1 lists the various control measures which were evaluated and determined not to have significant adverse impacts on the environment.

TABLE 3.1-1

Control Measures with No Significant Adverse Environmental Impacts

Control Measure	Control Measure Description	Reason Not Significant
SS 15	Promote Energy Conservation	1
MS 1	Diesel Equipment Idling Ordinance	1,2
MS 2	Green Contracting	1
TCM 10	Youth Transportation	1
TCM 12	Arterial Management Measures	1
TCM 14	Carpool and Vanpool Services and Incentives	1
TCM 16	Public Education/Intermittent Control Measures	1
TCM 18	Implement Transportation Pricing Reform	3
TCM 19	Improve Pedestrian Access and Facilities	1,2

1. Control technologies do not generate adverse impacts.
2. Changes in operating practices with no impact identified.
3. Control measure is aimed at increasing fees to decrease travel and related emissions with no specific impact identified.

There are several reasons why the control measures in Table 3.1-1 are not expected to generate significant adverse impacts. First, the primary control methods of compliance do not involve control equipment that would generate any adverse secondary or cross media impacts. For example, SS 15 - Promote Energy Conservation would promote energy conservation primarily through education, which is not expected to generate secondary impacts.

Another reason control measures in Table 3.1-1 were determined to have no significant adverse impacts is because they consist primarily of changes in operating practices, and are primarily administrative in nature. For example, TCM 10 – will improve youth mobility by encouraging walking and bicycling to school, encouraging carpooling, and supporting transit ride discounts to youth and students. Better education or increased

incentives would not generate physical secondary impacts. TCM 18 – Implement Transportation Pricing Reform would increase fees for certain transportation activities (e.g., higher bridge tolls, congestion pricing and gas tax increases) to discourage travel in single occupancy vehicles. The imposition of fees would not generate environmental impacts.

In addition, there is insufficient information on one control measure proposed in the 2005 Ozone Strategy to determine whether it would have any significant adverse environmental impacts. TCM 17 – Conduct Demonstration Projects, would undertake various demonstration projects and studies to further develop strategies that will ultimately be needed to help achieve State air quality standards. Demonstration projects will be aimed at mobile sources and examples of demonstration projects that might be explored include promotion of the use of low and zero emission vehicles, parts replacement for middle aged cars, reduced heavy duty diesel idling, and car-sharing. Because the demonstration projects have not been identified, it is difficult to determine what, if any, impacts could be expected from these projects. Therefore, the impacts of this control measure identified in Table 3.1-2 would be considered speculative and no further environmental analysis is required at this time (CEQA Guidelines §15145).

TABLE 3.1-2

Control Measure Whose Impacts are Speculative

Control Measure	Control Measure Description
TCM 17	Conduct Demonstration Projects

3.2 AESTHETICS

3.2.1 ENVIRONMENTAL 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 views of the San Francisco Bay Area are varied, unique, and recognized by many in the region and beyond. The basin formed by the coastal range, East Bay Hills, and the Bay itself, are prominent physical features of the region. To the west, the Pacific Ocean and the Coastal Range stretching from Mt. Tamalpais in the north to the Santa Cruz Mountains in the south, dominate the visual setting. To the east the Diablo Range dramatically punctuated by Mount Diablo provides a much different character. In the north, the vineyards of Napa and Sonoma counties are unique and draw visitors from

around the world. Many man-made features in the Bay Area, e.g., the Golden Gate and Bay Bridges and the San Francisco skyline in particular, also provide aesthetic resources.

The variety of natural features, their topographic variation and the different types of development within them provide the Bay Area with significant visual resources. The Bay Area sits along the Pacific coast with several branches of the Coast Range dividing it into valleys, plains, and water bodies. The largest of these valleys contains San Francisco Bay while at the eastern edge of the region is the Central Valley, an extremely flat plain lying between the Coast Range and the Sierra Nevada Mountains. The hills of the Coast Range provide expansive views of the valleys and plains, revealing a variety of development types, including urban areas along the Bay plains and inland valleys, agricultural lands, and protected open space, and natural areas.

3.2.2 SIGNIFICANCE CRITERIA

The proposed project impacts on aesthetics will be considered significant if:

> The project will block views from or damage views of a scenic highway or corridor.
>
> The project will adversely affect the visual continuity of the surrounding area.
>
> The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

3.2.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates aesthetic impacts that could occur as a consequence of efforts to improve air quality. Table 3.2-1 lists the control measures with potential aesthetic impacts.

The proposed stationary source control measures in the Bay Area 2005 Ozone Strategy are not expected to adversely affect scenic vistas in the Air District; damage scenic resources, including but not limited to trees, rock outcroppings, or historic buildings within a scenic highway; or substantially degrade the visual character of a site or its surroundings. Stationary source control measures typically affect industrial, institutional, or commercial facilities located in appropriately zoned areas which are not usually located in areas with scenic resources. Further, modifications typically occur inside the buildings at the affected facilities, or because of the nature of the business (e.g., commercial or industrial) can easily blend with the facilities with little or no noticeable effect on adjacent areas. The 2005 Ozone Strategy may have a beneficial effect on scenic resources by improving visibility as well as improving air quality.

TABLE 3.2-1

Control Measures with Potential Aesthetic Impacts

Control Measures	Control Measure Description	Control Methodology	Aesthetic Impact
SS 9	Organic Liquid Storage Tanks	Add domes to tanks, improved standards for tank cleaning, I&M programs	Increased tank height could result in aesthetic impacts
TCM 4	Upgrade and Expand Local and Regional Rail Service	Construction of additional rail facilities, electrification of rail services	Construction of new rail facilities could impact undeveloped areas
TCM 6	Improve Interregional Rail Service	Construction of new rail facilities	Construction of new rail lines could impact undeveloped areas
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Impacts to scenic waterfront areas
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	Construction of new High Occ-upancy Vehicle (HOV) lanes	Construction of new freeway lanes could impact views

Control Measure SS 9 – Organic Liquid Storage Tanks, focuses on enhanced control requirements for storage tanks. Control measures for tanks include retrofitting external floating roof tanks with domes to reduce evaporation from air movement across the tank, imposing more stringent tank cleaning standards, requiring external floating roof tanks to be retrofitted with vapor recovery, encouraging more frequent self-inspections, and phasing out riveted tanks currently in service. The addition of domes to organic liquid storage tanks may have an effect on some views in the area surrounding the tanks due to increased height of the existing tanks. The increased height of existing tanks is not expected to result in significant aesthetic impacts because the storage tanks are generally located in existing commercial or industrial areas. Commercial and industrial areas generally are not located in areas with scenic resources.

The proposed stationary source control measures in the 2005 Ozone Strategy are not expected to create additional demand for new lighting or exposed combustion that could create glare that could adversely affect day or nighttime views in any areas. Facilities affected by BAAQMD control measures for stationary sources typically make modifications in the interior of an affected facility, so any new light sources would typically be inside a building or not noticeable because of the presence of existing light sources. Further, affected commercial or industrial facilities would be located in appropriately zoned areas that are not usually located next to residential areas, so new light sources, if any, would not be noticeable to residents. There would be some increase in lighting for construction associated with the transportation control measures, since construction of traffic improvements is often done at night to avoid the peak traffic hours during the day. These construction activities would be temporary and the lighting would cease following completion of construction activities, so that no significant adverse impacts would be expected.

Construction of some of the transportation control measures could result in adverse visual impacts. Construction of additional ferry terminals under TCM 7 – Improve Ferry Service could have potentially significant impacts on views of the Bay or the visual character of waterfront areas, after mitigation. The expanded and enhanced ferry terminals and services could result in significant light and glare impacts throughout the San Francisco Bay Area [Water Transportation Authority (WTA), 2003]. However, most of the proposed terminal sites have existing maritime uses, with the exception of the Hercules/Rodeo site. Other TCMs, e.g., TCM 4 – Upgrade and Expand Local and Regional Rail Service and TCM 6 – Improve Interregional Rail Service, would expand local and regional rail service and could result in construction of new rail lines and new rail stations that could change the visual character of scenic areas. TCM 8 – Construct Carpool/Express Bus Lanes on Freeways, would construct additional carpool and express bus lanes on freeways that could significantly affect visual resources by adding or expanding transportation facilities in rural or open space areas, blocking views from adjoining areas, blocking or intruding into important vistas along roadways, and changing the scale, character, and quality of designated or eligible scenic highways.

Conclusion: Based upon the above considerations and the impact evaluation criteria, potentially significant adverse aesthetics impacts could occur due to implementation of the 2005 Ozone Strategy associated with TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 6 – Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways.

3.2.4 MITIGATION MEASURES

The visual impacts associated with some of the TCMs in the 2005 Ozone Strategy are potentially significant. The mitigation measures developed by the WTA (2003) for construction of ferry terminals include the following:

A1 Where feasible, the following shall be included in ferry terminal design:

- Locate terminal facilities so as not to obstruct or detract from views of the Bay from nearby public thoroughfares;
- Design terminals and layout to integrate with the surrounding landscape and historical structures to preserve, and take advantage of, existing views of the Bay and shoreline;
- Design terminal facilities to provide new or enhanced point access areas or view areas such as piers, platforms, and walkways;
- Design and site terminals so as to maintain and enhance the visual quality of the shoreline and visual public access to the Bay; and
- Vessels should be standardized to support system-wide operations and to work interchangeably at all terminals. Vessel berthing should be configured so as to allow maximum feasible visual access to the Bay.

A2 The WTA established Intermodal and Architectural Design Guidelines shall be considered in the planning and design of new and enhanced ferry terminals.

Mitigation measures for other transportation projects should include the following:

A3 Design projects to minimize contrasts in scale and massing between the project, and surrounding natural forms and development. Site or design projects to minimize their intrusion into important view sheds.

A4 Use natural landscaping to minimize contrasts between the project and surrounding areas. Wherever possible, develop interchanges and transit lines at or below grade of the surrounding land to limit view blockage. Contour the edges of major cut and fill slopes to provide a more natural looking finished profile.

A5 Design landscaping along highway and transportation corridors to add significant natural elements and visual interest to soften the hard edged, linear travel experience that would otherwise occur.

A6 Complete design studies for projects in designated or eligible Scenic Highway corridors. Consider the complete highway system and develop mitigation measures to minimize impacts on the quality of the views or visual experience that originally qualified the highway for scenic designation.

It is not expected that these mitigation measures would eliminate all visual impacts and the implementation of some transportation improvements may result in visual changes that will block or damage views of scenic resources or adversely affect visual continuity in some areas following mitigation.

3.2.5 CUMULATIVE AESTHETIC IMPACTS

Implementation of the various transportation improvement projects and regional growth in general could result in indirect visual impacts by serving urban development that could significantly change the visual character of some areas adjacent to the region's existing urban limits, especially where new development would occur on visually prominent hillsides or in existing, open rural lands. These types of control measures in aggregate would serve new urban development and add to cumulative regional impacts. In addition, other transportation control measures may result in individually minor visual impacts locally. Collectively, these individually minor visual impacts may become significant over time. Local land use agencies are responsible for the approval of urban development. These agencies would usually apply development standards and guidelines to maintain compatibility with surrounding natural areas, including site coverage, building height and massing, building materials and color, landscaping, site grading, etc., in visually sensitive areas to minimize visual impacts.

It should be noted that the 2005 Ozone Strategy and other air quality plans, rules and regulations may have a beneficial effect on scenic resources by improving visibility as well as improving air quality.

3.2.6 CUMULATIVE AESTHETIC MITIGATION MEASURES

Mitigation measures for aesthetic impacts would be the responsibility of local land use agencies and would vary by agency and type of project. No additional feasible mitigation measures, other than the development standards and guidelines imposed by local land use agencies, have been identified. Therefore, mitigation measures are not expected to reduce this potentially significant adverse cumulative impact on visual resources to less than significant, since the cumulative effect of development would be to alter the visual character of many parts of the Bay Area for a number of years.

3.3 AGRICULTURAL RESOURCES

3.3.1 ENVIRONMENTAL SETTING

Land uses in the Air District vary between commercial, industrial, residential, agricultural and open spaces. Agricultural land uses are located in the less urbanized portions of the Bay Area, including the vineyards in Napa and Sonoma counties and include agricultural lands under Williamson Act contracts.

The facilities affected by the proposed control measures are expected to be located in the commercial and industrial areas within the Bay Area. Agricultural resources are generally not located in the vicinities of or within the affected commercial and industrial areas.

3.3.2 SIGNIFICANCE CRITERIA

Proposed project impacts on agricultural resources will be considered significant if any of the following conditions are met:

> The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
>
> The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
>
> The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural uses.

3.3.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates agricultural impacts that could occur as a consequence of efforts to improve air quality. No control measures are expected to result in impacts to agricultural resources.

BAAQMD stationary source control measures typically affect existing commercial or industrial facilities, so they are not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use or conflict with zoning for agricultural uses or a Williamson Act contract. There are no provisions in the proposed 2005 Ozone Strategy which would affect or conflict with existing land use plans, policies, or regulations or require conversion of farmland to non-agricultural uses. Land use, including agriculture-related uses, and other planning considerations are determined by local governments and no land use or planning requirements will be altered by the proposed project.

Some of the traffic control measures could require construction of traffic improvement projects. These construction activities would be expected to occur along existing transportation corridors and within existing right-of-ways, minimizing impacts into undeveloped lands (e.g., agricultural lands). Construction of new transportation facilities and terminals are expected to be sited in urban areas to provide service to a large population as opposed to more rural, agricultural areas. TCM 15 – Local Land Use Planning and Development Strategies would attempt to influence land use patterns and reduce the time and distance traveled between home, jobs, schools, shops and services. TCM 15 would also encourage compact, mixed use infill development near transit stations, transit corridors and town centers and discourage urban sprawl into non-urban areas, including agricultural lands, providing a potential benefit to agricultural properties.

Conclusion: Based upon the above considerations and significance criteria, significant adverse impacts to agricultural resources are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

3.3.4 MITIGATION MEASURES

No significant impacts to agricultural resources were expected so no mitigation measures are required.

3.3.5 CUMULATIVE AGRICULTURAL RESOURCES

The 2005 Ozone Strategy and other air quality programs generally provide reduction in emissions from stationary and mobile sources providing a regional air quality benefit. On a cumulative basis, these programs are not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use or conflict with zoning for agricultural uses or Williamson Act contracts. TCM 15 – Local Land Use Planning and Development Strategies would encourage

compact, mixed use infill development near transit stations, transit corridors and town centers and discourage urban sprawl into non-urban areas, including agricultural lands, providing a potential benefit to agricultural properties. General population growth in the area has lead to development and conversion of agricultural land to urban development. However, this development is related to general growth and not air quality controls or plans. No cumulative impacts on agricultural resources are expected.

3.3.6 CUMULATIVE MITIGATION MEASURES FOR AGRICULTURAL RESOURCES

No significant cumulative impacts to agricultural resources are expected so no mitigation measures are required.

3.4 AIR QUALITY

3.4.1 ENVIRONMENTAL SETTING

3.4.1.1 Criteria Air Pollutants

3.4.1.1.1 Ambient Air Quality Standards and Health Effects

It is the responsibility of the BAAQMD to ensure that State and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM), sulfur dioxide (SO_2) and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The State standards (SAAQS) are more stringent than the federal standards, and in the case of PM10 and SO_2 far more stringent. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride.

The State and National Ambient Air Quality Standards (NAAQS) for each of these pollutants and their effects on health are summarized in Table 3.4-1.

Since the Bay Area 2005 Ozone Strategy focuses on ozone, the inventory discussion is focused on ozone and "ozone precursors." Ozone is not emitted directly from pollution sources. Instead ozone is formed in the atmosphere through complex chemical reactions between hydrocarbons, or reactive organic gases (ROG, also commonly referred to as volatile organic compounds or VOC), and nitrogen oxides (NOx), in the presence of sunlight. ROG and NOx are referred to as ozone precursors.

TABLE 3.4-1

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.>	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	20 $\mu g/m^3$, ann. arithmetic mean > 50 $\mu g/m^3$, 24-hr average>	50 $\mu g/m^3$, annual arithmetic mean > 65 $\mu g/m^3$, 24-hr avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter (PM2.5)	12 $\mu g/m^3$, ann. Arithmetic mean	15 $\mu g/m^3$, annual arithmetic mean> 150 $\mu g/m^3$, 24-hour average>	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 $\mu g/m^3$, 24-hr avg. >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 $\mu g/m^3$, 30-day avg. >=	1.5 $\mu g/m^3$, calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)		Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

U.S. EPA requires CARB and BAAQMD to measure the ambient levels of air pollution to determine compliance with the NAAQS. To comply with this mandate, the BAAQMD monitors levels of various criteria pollutants at 26 monitoring stations within the San Francisco Bay Area. A summary of the 2004 maximum concentration and number of days exceeding State and federal ambient air standards at the BAAQMD monitoring stations are presented in Table 3.4-2.

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 3.4-3). The Air District is in attainment of the State and federal ambient air quality standards for CO, nitrogen oxides (NOx), and sulfur oxides (SOx). The Air District is unclassified for the federal 24-hour PM10 standard. Unclassified means that the monitoring data were incomplete and at the time of designations did not support a designation of attainment or non-attainment. However, the Air District does not comply with the State 24-hour PM10 standard.

The 2004 air quality data from the BAAQMD monitoring stations are presented in Table 3.4-2. All monitoring stations were below the State standard and federal ambient air quality standards for CO, NO_2, and SO_2. The Bay Area is designated as a non-attainment area for the California 1-hour ozone standard. The State 1-hour standard was exceeded on seven days in 2004 in the Air District, most frequently in the Eastern District (Livermore) (see Table 3.4-2).

All monitoring stations were in compliance with the federal PM10 standards. The California PM10 standards were exceeded on seven days in 2004, most frequently in San Jose. The Air District exceeded the federal PM2.5 standard on one day (at Concord) in 2004 (see Table 3.4-2).

TABLE 3.4-2
Bay Area Air Pollution Summary 2004

MONITORING STATIONS	Ozone							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM10				PM2.5				
NORTH COUNTIES	Max 1-Hr (pphm)	Nat Days	Cal Days	3-Yr Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr (ppm)	Max 8-Hr	Nat/ Cal Days	Max 1-Hr (pphm)	Ann Avg	Nat/ Cal Days	Max 24-Hr (ppb)	Ann Avg	Nat/ Cal Days	Ann Avg ($\mu g/m^3$)	Max 24-Hr	Nat Day	Cal Days	Max 24-Hr ($\mu g/m^3$)	Nat Days	3-Yr Avg	Ann Avg ($\mu g/m^3$)	3-Yr Avg
Napa	9	0	0	0.0	7	0	6.6	3.7	2.0	0	6	1.1	0	--	--	--	20.7	60	0	1	--	--	--	--	--
San Rafael	9	0	0	0.0	6	0	4.9	3.2	2.0	0	6	1.5	0	--	--	--	17.9	52	0	1	--	--	--	--	--
Santa Rosa	8	0	0	0.0	6	0	5.1	2.7	1.6	0	5	1.1	0	--	--	--	18.0	48	0	0	27	0	32	8.3	9
Vallejo	10	0	1	0.0	7	0	6.5	4.0	3.4	0	5	1.2	0	5	1.3	0	19.6	51	0	1	40	0	39	11.1	11
COAST & CENTRAL BAY																									
Oakland	8	0	0	0.0	6	0	4.0	3.5	2.6	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Richmond	--	--	--	--	--	--	--	--	--	--	--	--	--	5	1.6	0	--	--	--	--	--	--	--	--	--
San Francisco	9	0	0	0.0	6	0	4.7	2.9	2.2	0	6	1.7	0	8	1.4	0	22.5	52	0	1	46	0	41	9.9	11
San Pablo	11	0	1	0.0	7	0	5.2	3.2	1.8	0	6	1.3	0	5	1.6	0	21.2	64	0	1	--	--	--	--	--
EASTERN DISTRICT																									
Bethel Island	10	0	1	0.0	8	0	7.5	1.2	0.9	0	3	0.8	0	6	1.6	0	19.5	42	0	0	--	--	--	--	--
Concord	10	0	1	0.0	8	0	7.9	2.7	2.0	0	7	1.2	0	10	1.0	0	18.6	51	0	1	74	1	40*	10.7*	11*
Crockett	--	--	--	--	--	--	--	--	--	--	--	--	--	7	1.7	0	--	--	--	--	--	--	--	--	--
Fairfield	10	0	1	0.0	8	0	7.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Livermore	11	0	5	1.0	8	0	8.3	3.5	1.8	0	6	1.4	0	--	--	--	20.0	49	0	0	41	0	37	10.3	11
Martinez	--	--	--	--	--	--	--	--	--	--	--	--	--	7	1.5	0	--	--	--	--	--	--	--	--	--
Pittsburg	9	0	0	0.0	8	0	7.3	4.1	1.9	0	5	1.1	0	7	2.0	0	21.7	64	0	1	--	--	--	--	--
SOUTH CENTRAL BAY																									
Fremont	9	0	0	0.0	7	0	6.4	3.0	1.7	0	6	1.5	0	--	--	--	18.6	49	0	0	40	0	32	9.4	10
Hayward	9	0	0	0.0	7	0	6.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Redwood City	10	0	1	0.0	7	0	6.0	4.8	2.1	0	6	1.5	0	--	--	--	20.5	65	0	1	36	0	32	9.3	9
San Leandro	10	0	1	0.0	7	0	5.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SANTA CLARA VALLEY																									
Gilroy	9	0	0	0.0	8	0	7.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Los Gatos	9	0	0	0.0	8	0	7.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Jose Central*	9	0	0	*	7	0	*	4.4	3.0	0	7	1.9	0	--	--	--	23.1	58	0	4	52	0	*	11.6	*
San Jose East	9	0	0	0.0	7	0	6.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
San Jose, Tully Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	26.0	65	0	3	45	0	35	10.4	10
San Martin	9	0	0	0.0	8	0	8.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sunnyvale	10	0	1	0.0	8	0	6.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Bay Area Days over Standard		**0**	**7**			**0**				**0**			**0**			**0**			**0**	**7**		**1**			

(ppm) = parts per million, (pphm) = parts per hundred million, (ppb) = parts per billion

*

TABLE 3.4-3

Ten-Year Bay Area Air Quality Summary
Days over standards

YEAR	OZONE			CARBON MONOXIDE				NO_X	SULFUR DIOXIDE		PM10		PM2.5
	1-Hr		8-Hr	1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*		24-Hr**
	Nat	Cal	Nat	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal	Nat
1995	11	28	-	0	0	0	0	0	0	0	0	7	-
1996	8	34	-	0	0	0	0	0	0	0	0	3	-
1997	0	8	-	0	0	0	0	0	0	0	0	4	-
1998	8	29	16	0	0	0	0	0	0	0	0	5	-
1999	3	2	9	0	0	0	0	0	0	0	0	12	-
2000	3	12	4	0	0	0	0	0	0	0	0	7	1
2001	1	15	7	0	0	0	0	0	0	0	0	10	5
2002	2	16	7	0	0	0	0	0	0	0	0	6	5
2003	1	19	7	0	0	0	0	0	0	0	0	6	0
2004	0	7	0	0	0	0	0	0	0	0	0	7	1

* 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.

Ozone

Ozone (O_3), a colorless gas with a sharp odor, is a highly reactive form of oxygen. High ozone concentrations exist naturally in the stratosphere. Some mixing of stratospheric ozone downward through the troposphere to the earth's surface does occur; however, the extent of ozone mixing is limited. At the earth's surface in sites remote from urban areas ozone concentrations are normally very low (0.03-0.05 ppm).

While ozone is beneficial in the stratosphere because it filters out skin-cancer-causing ultraviolet radiation, ground level ozone is harmful, is a highly reactive oxidant, which accounts for its damaging effects on human health, plants and materials at the earth's surface.

The BAAQMD began ozone monitoring in a few places in 1959. A large ozone monitoring network was established in 1965. The monitoring data in Figure 3.4-1 illustrates the improvement in air quality that has occurred during the past twenty years when measured by the decrease in the number of days the Bay Area exceeded the State one-hour ozone standard annually. This is also reflected in Table 3.4-3, which provides the number of days per year that the Bay Area exceeded the State and federal ozone standards. However, ozone concentrations in the BAAQMD still exceed the State one-hour ozone standard on occasion and the Bay Area is therefore designated as nonattainment for the State one-hour ozone standard.

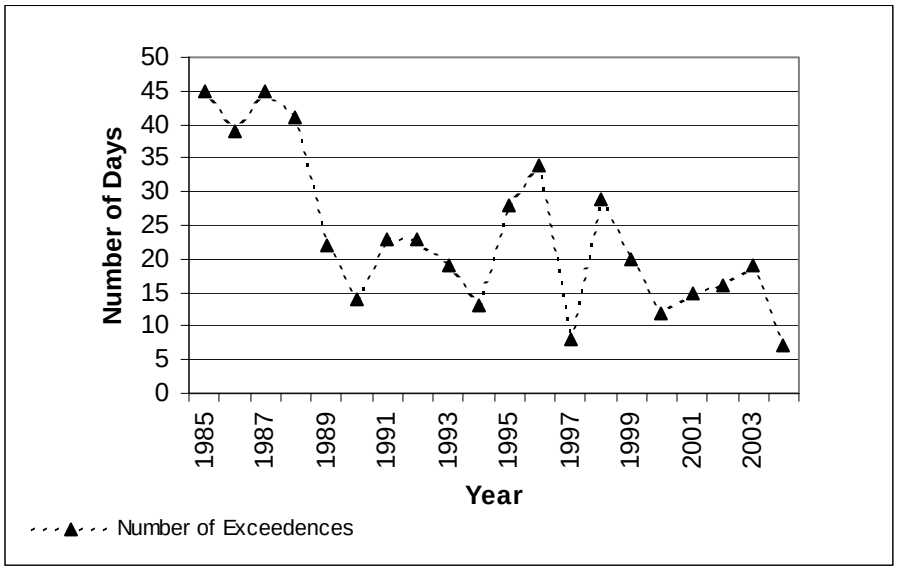

FIGURE 3.4-1
Exceedances of the State 1-hr Standard for Ozone in the Bay Area, 1985-2004

Ozone Precursors

NOx and VOC emissions are decreasing state-wide and in the San Francisco Bay Area since 1975 and are projected to continue declining through 2010 (CARB, 2004). Most NOx emissions are produced by the combustion of fuels. Mobile sources of NOx include motor vehicles, aircraft, trains, ships, recreation boats, industrial and construction equipment, farm equipment, off-road recreational vehicles, and other equipment. Stationary sources of NOx include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Area-wide sources, which include residential fuel combustion, waste burning, and fires, contribute only a small portion to the total NOx emissions. NO_2 is a component of NOx, and its presence in the atmosphere can be correlated with emissions on NOx.

VOC emissions result primarily from incomplete fuel combustion and the evaporation of paints, solvents and fuels. Mobile sources are the largest contributors to VOC emissions. Stationary sources include processes that use solvents (such as manufacturing, degreasing, and coating operations) and petroleum refining, and marketing. Area-wide VOC sources include consumer products, pesticides, aerosol and architectural coatings, asphalt paving and roofing, and other evaporative emissions.

NOx and VOC emissions have been reduced for both stationary and mobile sources. Stationary source emissions of VOC and NOx have been substantially reduced due to stringent District regulations. Mobile source emissions of VOC and NOx have been

substantially reduced because of stricter State and federal standards, despite an increase in vehicle miles traveled in the Bay Area.

Adverse Health Effects

The propensity of ozone for reacting with organic materials causes it to be damaging to living cells, and ambient ozone concentrations in the Bay Area are occasionally sufficient to cause health effects. Ozone enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, reducing the respiratory system's ability to remove inhaled particles and fight infection while long-term exposure damages lung tissue. People with respiratory diseases, children, the elderly, and people who exercise heavily are more susceptible to the effects of ozone.

Plants are sensitive to ozone at concentrations well below the health-based standards and ozone is responsible for significant crop damage. Ozone is also responsible for damage to forests and other ecosystems.

3.4.1.1.2 Current Emissions Inventory

Emission inventories developed for the 2005 Ozone Strategy use 2000 as the base year. An emission inventory is a detailed estimate of air pollutant emissions from a range of sources in a given area, for a specified time period. Figure 3.4-2 presents the total ROG and NOx emissions for the base year inventory for 2000. Future projected emissions incorporate current levels of control on sources, growth in activity in the Air District and implementation of future programs that affect emissions of air pollutants.

There are literally millions of sources of ozone precursors in the Bay Area, including industrial and commercial facilities, motor vehicles, and consumer products such as household cleaners and paints. Even trees and plants produce ozone precursors. Sources of ozone precursors produced by human activity are called anthropogenic sources while natural sources, produced by plants and animals, are called biogenic sources. In the Bay Area, emissions from anthropogenic sources are much higher than from biogenic sources.

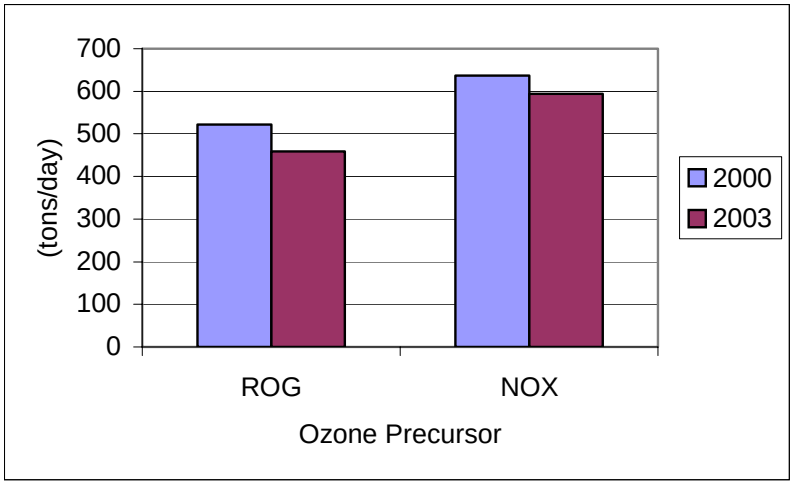

FIGURE 3.4-2
Ozone Precursor
Current Emissions Inventories (2000 & 2003)

The main sources of ROG are motor vehicles and evaporation of fuels, solvents and other petroleum products. NOx is produced mainly through combustion, and so the major sources are motor vehicles, off-road mobile sources and combustion at industrial and other facilities. Figures 3.4-3 and 3.4-4 show the major sources of ozone precursors in 2000.

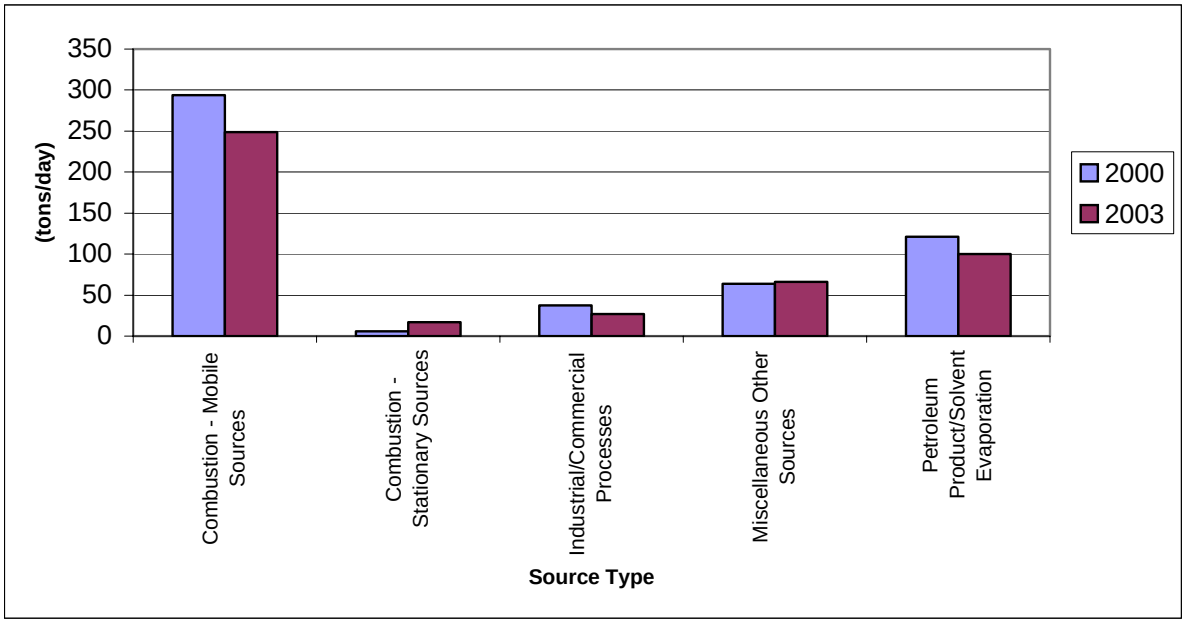

FIGURE 3.4-3
VOC Emission Inventories By Source Type

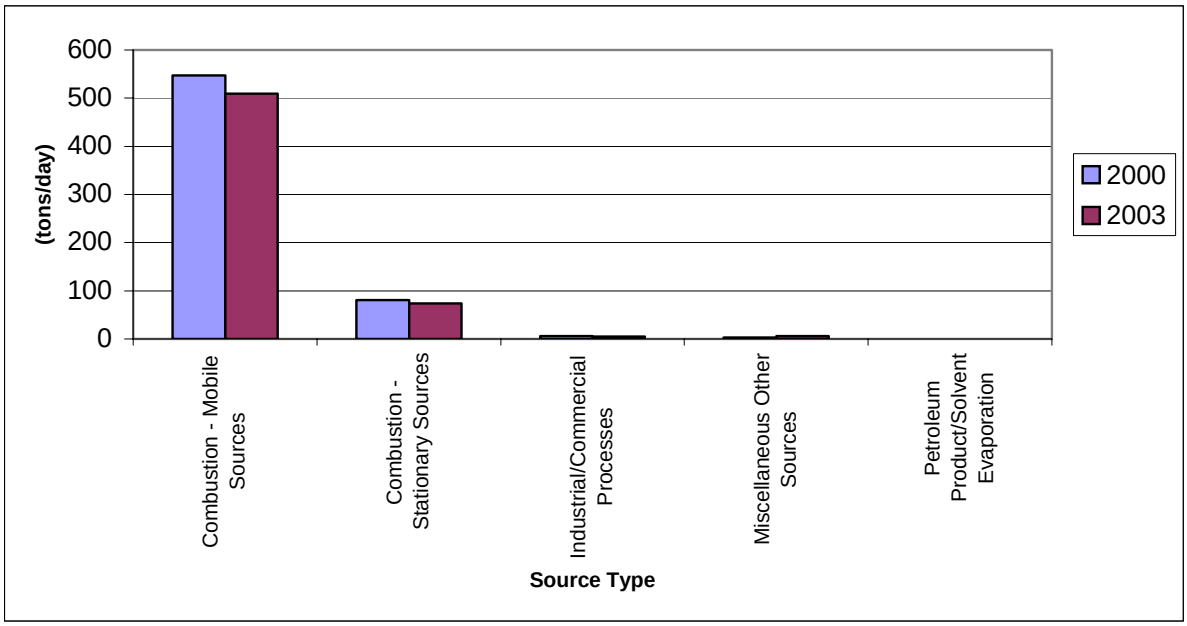

FIGURE 3.4-4
NOx Emission Inventories By Source Type

Table 3.4-4 presents the emission inventory for ozone precursors, ROG and NO_X, for the Bay Area in 2000 and 2003, and projections for 2005, 2010, and 2020. This inventory is referred to as a "planning inventory" because ozone levels are highest during the summer, and thus an estimate of typical summer emissions is needed for ozone planning purposes.

Anthropogenic sources can be broadly divided between stationary and mobile sources.

Stationary Sources

Stationary sources can be further divided between point and area sources.

Point Sources

Point sources are those that are identified on an individual facility or source basis, such as refineries and manufacturing plants. BAAQMD maintains a computer data bank with detailed information on operations and emissions characteristics for nearly 4,000 facilities, with roughly 20,000 different sources, throughout the Bay Area. Parameters that affect the quantities of emissions are updated regularly.

TABLE 3.4-4: Bay Area Baseline[1] Emission Inventory Projections: 2000 – 2020
Planning Inventory[2] (Tons/Day)[3]

SOURCE CATEGORY	Reactive Organic Gases *4*					Oxides of Nitrogen *5*				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
INDUSTRIAL/COMMERCIAL PROCESSES										
PETROLEUM REFINING FACILITIES										
Basic Refining Processes	0.7	0.6	0.6	0.7	0.8	0.4	0.3	0.4	0.4	0.4
Wastewater (Oil-Water) Separators	5.3	4.0	3.6	1.7	2.0	--	--	--	--	--
Wastewater Treatment Facilities	0.1	0.2	0.2	0.2	0.3	--	--	--	--	--
Cooling Towers	1.7	0.4	0.5	0.5	0.6	--	--	--	--	--
Flares & Blowdown Systems	13.1	5.2	1.6	1.6	1.6	2.5	0.8	0.4	0.4	0.4
Other Refining Processes	0.3	0.3	0.3	0.3	0.4	--	--	--	--	--
Fugitives	5.3	1.9	1.9	2.0	2.4	--	--	--	--	--
Subtotal	**26.5**	**12.6**	**8.7**	**7.1**	**7.9**	**3.0**	**1.2**	**0.8**	**0.8**	**0.9**
CHEMICAL MANUFACTURING FACILITIES										
Coating, Inks, Resins & Other Facilitie	0.7	0.6	0.6	0.6	0.7	0.1	0.1	0.1	0.1	0.1
Pharmaceuticals & Cosmetics	0.9	0.8	0.9	0.9	1.0	1.9	1.8	1.8	2.0	2.3
Fugitives - Valves & Flanges	0.7	0.7	0.7	0.8	0.9	--	--	--	--	--
Subtotal	**2.3**	**2.1**	**2.2**	**2.3**	**2.6**	**1.9**	**1.8**	**1.9**	**2.0**	**2.4**
OTHER INDUSTRIAL/COMMERCIAL PROCESSES										
Bakeries	1.0	0.9	1.0	1.0	1.2	--	--	--	--	--
Cooking	1.0	1.1	1.1	1.2	1.3	--	--	--	--	--
Wineries & Other Food & Agr. Processes	1.3	1.1	1.2	1.2	1.5	--	--	--	--	--
Metallurgical & Minerals Manufacturing	0.3	0.2	0.2	0.3	0.3	1.0	1.0	1.0	1.0	1.2
Waste Management	2.6	2.8	2.9	3.0	3.1	--	--	--	--	--
Semiconductor Manufacturing	0.7	0.7	0.7	0.8	0.9	--	--	--	--	--
Fiberglass Products Manufacturing	0.4	0.4	0.4	0.4	0.4	--	--	--	--	--
Rubber & Plastic Products Manufacturing	0.4	0.5	0.5	0.5	0.6	--	--	--	--	--
Contaminated Soil Aeration	1.1	0.2	0.1	0.1	0.1	--	--	--	--	--
Other Industrial Commercial	1.4	1.3	1.4	1.5	1.6	0.1	0.1	0.1	0.1	0.1
Subtotal	**10.2**	**9.2**	**9.3**	**9.9**	**10.9**	**1.1**	**1.1**	**1.1**	**1.2**	**1.3**
PETROLEUM PRODUCT/SOLVENT EVAPORATION										
PETROLEUM REFINERY EVAPORATION										
Storage Tanks	3.6	3.8	3.9	4.2	4.8	--	--	--	--	--
Loading Operations	1.3	0.1	0.1	0.1	0.1	--	--	--	--	--
Subtotal	**4.9**	**3.8**	**4.0**	**4.2**	**4.9**	**--**	**--**	**--**	**--**	**--**

TABLE 3.4-4 (continued)

SOURCE CATEGORY	Reactive Organic Gases 4					Oxides of Nitrogen 5				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
FUELS DISTRIBUTION										
Natural Gas Distribution	0.5	0.5	0.6	0.6	0.7	--	--	--	--	--
Bulk Plants & Terminals	1.8	1.8	1.9	1.9	2.0	--	--	--	--	--
Gasoline Transport (Trucks)	3.3	3.4	3.4	3.6	3.8	--	--	--	--	--
Gasoline Filling Stations	15.4	10.0	7.9	6.6	6.3	--	--	--	--	--
Aircraft Fueling	3.0	3.0	3.0	3.0	3.0	--	--	--	--	--
Recreational Boat Fueling	0.9	0.9	1.0	1.0	1.1	--	--	--	--	--
Portable Fuel Container Spillage	18.5	11.9	7.6	5.0	5.0	--	--	--	--	--
Other Fueling	0.3	0.3	0.4	0.4	0.4	--	--	--	--	--
Subtotal	**43.7**	**31.8**	**25.7**	**22.1**	**22.3**	**--**	**--**	**--**	**--**	**--**
OTHER ORGANIC COMPOUNDS EVAPORATION										
Cold Cleaning	5.5	4.3	4.2	4.5	5.0	--	--	--	--	--
Vapor Degreasing	0.3	0.2	0.2	0.2	0.1	--	--	--	--	--
Handwiping	5.0	3.1	1.8	1.9	2.1	--	--	--	--	--
Dry Cleaners	0.1	0.1	0.1	0.1	0.1	--	--	--	--	--
Printing	5.7	3.8	3.9	4.0	4.3	--	--	--	--	--
Adhesives & Sealants	8.9	8.7	8.9	9.3	9.4	--	--	--	--	--
Structures Coating	26.1	25.6	25.5	26.6	28.3	--	--	--	--	--
Industrial/Commercial Coating	16.1	13.9	13.7	14.7	16.4	--	--	--	--	--
Storage Tanks	1.3	1.0	0.9	1.0	1.1	--	--	--	--	--
Lightering & Ballsting	1.3	1.7	1.8	2.0	2.5	--	--	--	--	--
Other Organics Evaporation	2.5	2.4	2.5	2.7	3.0	--	--	--	--	--
Subtotal	**72.8**	**64.8**	**63.3**	**66.8**	**72.3**	**--**	**--**	**--**	**--**	**--**
COMBUSTION - STATIONARY SOURCES										
FUELS COMBUSTION										
Domestic	2.3	2.3	2.4	2.4	2.6	9.1	8.3	8.5	8.9	9.4
Cogeneration	0.9	1.0	1.0	1.1	1.2	4.3	5.0	5.2	5.4	6.0
Power Plants	0.5	0.2	0.3	0.2	0.2	14.1	2.8	2.8	2.7	3.0
Oil Refineries External Combustion	0.4	0.4	0.4	0.5	0.5	37.9	19.2	19.7	20.9	23.8
Glass Melting Furnaces - Natural Gas	--	--	--	--	--	2.9	2.2	2.3	2.4	2.8
Reciprocating Engines	0.8	0.8	0.7	0.6	0.4	8.1	7.9	7.1	6.4	5.2
Turbines	0.1	0.1	0.1	0.1	0.1	1.6	1.7	1.7	1.8	2.0
Combustion at Landfills/Misc. Ext. Comb	1.1	1.0	1.0	1.1	1.2	17.2	17.6	18.0	19.1	21.1
Subtotal	**6.2**	**5.8**	**5.9**	**5.9**	**6.2**	**95.2**	**64.6**	**65.2**	**67.6**	**73.3**

TABLE 3.4-4 (continued)

SOURCE CATEGORY	Reactive Organic Gases *4*					Oxides of Nitrogen *5*				
	2000	**2003**	**2005**	**2010**	**2020**	**2000**	**2003**	**2005**	**2010**	**2020**
BURNING OF WASTE MATERIAL										
Incineration	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.4	0.4	0.4
Planned Fires	0.1	0.1	0.1	0.1	0.1	--	--	--	--	--
Subtotal	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Banked Emissions 6	**0.0**	**11.2**	**11.2**	**11.2**	**11.2**	**0.0**	**8.1**	**8.1**	**8.1**	**8.1**
Alternative Compliance Allowance 7	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.5**	**7.2**	**4.3**	**4.3**
Subtotal (District Jurisdiction)	**166.7**	**141.6**	**130.4**	**129.7**	**138.5**	**101.5**	**80.6**	**84.6**	**84.4**	**90.6**
COMBUSTION - MOBILE SOURCES										
ON-ROAD MOTOR VEHICLES										
Passenger Cars	112.6	91.2	72.1	42.1	20.2	97.6	80.6	62.0	34.4	13.5
Light Duty Trucks<6000lbs	51.2	44.7	38.6	28.1	17.9	66.3	56.7	45.5	28.6	14.0
Medium Duty Trucks 6001-8500 lbs	14.5	12.5	10.9	8.9	6.5	24.3	21.0	17.5	12.5	6.5
Light Heavy Duty Trucks 8501-14000lbs	7.4	4.9	3.9	2.8	2.4	9.2	9.3	9.0	7.3	4.4
Medium Heavy Duty Trucks 14001-33000lbs	5.9	5.1	4.6	3.3	1.9	34.1	33.4	31.4	22.5	9.0
Heavy Heavy Duty Trucks>33000 lbs	7.0	6.6	6.1	4.3	2.4	97.6	92.0	86.9	58.0	21.9
School/Urban Buses	2.2	2.2	2.2	2.1	2.0	21.5	21.1	20.2	20.1	17.1
Motor-Homes	1.1	1.0	0.8	0.6	0.2	2.5	2.3	2.0	1.9	1.3
Motorcycles	5.6	4.5	3.9	2.7	1.6	1.0	0.9	0.9	0.7	0.5
Subtotal	**207.5**	**172.6**	**142.9**	**94.8**	**55.1**	**354.1**	**317.3**	**275.4**	**185.9**	**88.1**
OFF-HIGHWAY MOBILE SOURCES										
Lawn and Garden Equipment	31.7	25.1	20.6	15.5	13.6	2.8	3.0	3.1	1.9	1.3
Transportation Refrigeration Units	0.9	0.9	0.8	0.7	0.4	4.5	4.6	4.1	3.5	2.3
Agricultural Equipment	1.3	1.2	1.1	0.8	0.4	9.2	8.3	7.7	6.1	3.5
Construction and Mining Equipment	10.6	10.7	9.1	6.4	4.5	91.7	91.1	81.8	62.9	43.1
Industrial Equipment	3.2	3.3	2.8	1.6	1.0	20.6	20.2	16.7	10.8	7.8
Light Duty Commercial Equipment	6.6	6.6	5.6	4.4	3.6	10.8	10.9	10.0	9.1	7.8
Trains	0.6	0.7	0.7	0.6	0.6	14.9	13.1	11.3	9.7	9.5
Off Road Recreational Vehicles	0.8	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Ships	0.6	0.6	0.6	0.7	0.8	10.5	10.0	10.4	11.4	13.7
Commercial Boats	0.7	0.8	0.8	0.9	1.1	5.8	6.2	6.3	6.7	7.3
Recreational Boats	22.0	19.5	17.0	12.1	7.1	3.3	4.1	4.8	5.0	4.4
Subtotal	**79.1**	**69.5**	**59.2**	**43.7**	**33.2**	**174.3**	**171.5**	**156.3**	**127.1**	**100.7**

TABLE 3.4-4 (concluded)

SOURCE CATEGORY	Reactive Organic Gases 4					Oxides of Nitrogen 5				
	2000	2003	2005	2010	2020	2000	2003	2005	2010	2020
AIRCRAFT										
Commercial Aircraft	2.9	2.1	2.4	3.1	4.8	14.4	13.9	15.9	20.8	25.8
General Aviation	0.9	0.8	0.8	0.9	0.9	0.3	0.3	0.4	0.5	0.6
Military Aircraft	4.2	3.4	3.4	3.5	3.5	4.8	4.9	4.9	5.0	5.1
Airport Ground Support Equipment	0.4	0.4	0.4	0.4	0.5	2.3	2.6	2.7	2.9	3.2
Subtotal	**8.3**	**6.7**	**7.0**	**7.8**	**9.8**	**21.8**	**21.8**	**23.9**	**29.2**	**34.7**
MISCELLANEOUS OTHER SOURCES										
Construction Operations	--	--	--	--	--	--	--	--	--	--
Farming Operations	--	--	--	--	--	--	--	--	--	--
Entrained Road Dust-Paved Roads	--	--	--	--	--	--	--	--	--	--
Entrained Road Dust-Unpaved Roads	--	--	--	--	--	--	--	--	--	--
Wind Blown Dust	--	--	--	--	--	--	--	--	--	--
Animal Waste	5.5	5.5	5.5	5.5	5.5	--	--	--	--	--
Agricultural Pesticides	1.1	1.3	1.2	1.1	1.1	--	--	--	--	--
Non-Agricultural Pesticides	0.3	0.2	0.2	0.2	0.2	--	--	--	--	--
Consumer Products(Excluding Pesticides)	52.2	49.1	46.9	48.9	51.9	--	--	--	--	--
Other Sources	4.9	10.7	6.8	6.8	6.9	2.7	5.9	3.8	3.8	3.8
Subtotal	**63.9**	**66.7**	**60.6**	**62.5**	**65.6**	**2.7**	**5.9**	**3.8**	**3.8**	**3.8**
GRAND TOTAL EMISSIONS	**526**	**457**	**400**	**338**	**302**	**654**	**597**	**544**	**430**	**318**

1 Inventory and projections assume implementation of all control measures adopted as of December 31, 2003, including Smog Check II for the Bay Area.

2 The planning inventory represents average summer day emissions. ABAG Projections 2003 were used to project future emissions from on-road motor vehicles. ABAG Projections 2002 was the regional population projections used for the remainder of the planning inventory.

3 Entries are rounded to nearest whole number, totals may not equal to sums of column entries.

4 Photochemically reactive organic compounds excludes methane and other non-reactives and roughly 200 tpd of ROG emissions from natural sources.

5 Oxides of nitrogen (nitric oxide and/or nitrogen dioxide), NOx as NO2.

6 Banked Emissions show the total current deposits in the District's emissions banking program as allowed by BAAQMD Regulation 2, Rules 2 and 4. These emissions were reduced (beyond regulations) and banked, but may be withdrawn from the bank and emitted in future years.

7 Surplus emissions, voluntarily reduced, available for alternative compliance with BARCT requirements of selected rules, as prescribed by State law and BAAQMD Regulation 2, Rule 9.

Area Sources

Area sources are stationary sources that are individually very small, but that collectively make a large contribution to the inventory. Many area sources do not require permits from the BAAQMD, such as residential heating, and the wide range of consumer products such as paints, solvents, and cleaners. Some facilities considered to be area sources do require permits from the BAAQMD, such as gas stations and dry cleaners. Emissions estimates for area sources may be based on the BAAQMD data bank, calculated by CARB using statewide data, or calculated based on surrogate variables.

Mobile Sources

Mobile sources include on-road motor vehicles such as automobiles, trucks and buses, as well as off-road sources such as construction equipment, boats, trains and aircraft. Estimates of on-road motor vehicle emissions include consideration of the fleet mix (vehicle type, model year, and accumulated mileage), miles traveled, ambient temperatures, vehicle speeds, and vehicle emission factors, as developed from comprehensive CARB testing programs. The BAAQMD also receives vehicle registration data from the Department of Motor Vehicles. Some of these variables change from year to year, and the projections are based upon expected changes. Emissions from off-road mobile sources are calculated using various emission factors and methodologies provided by CARB and U.S. EPA.

3.4.1.3 Non-Criteria Pollutants

Although the primary mandate of the BAAQMD is attaining and maintaining the national and State Ambient Air Quality Standards for criteria pollutants within the BAAQMD jurisdiction, the BAAQMD also has a general responsibility to control, and where possible, reduce public exposure to airborne toxic compounds. The State and federal government have set health-based ambient air quality standards for criteria pollutants. The air toxics program was established as a separate and complementary program designed to evaluate and reduce adverse health effects resulting from exposure to toxic air contaminants (TACs).

The BAAQMD works to understand and to control both locally elevated concentrations (i.e., “hot spots”) and ambient background concentrations of TACs. The major elements of the Air District’s air toxics program are outlined below.

- Preconstruction review of new and modified sources for potential health impacts, and the requirement for new/modified sources with non-trivial TAC emissions to use the Best Available Control Technology.

- The Air Toxics Hot Spots Program, designed to identify industrial and commercial facilities that may result in locally elevated ambient concentrations of toxic air contaminants, to report significant emissions to the affected public, and to reduce unacceptable health risks.

- Control measures designed to reduce emissions from source categories of TACs, including rules originating from the State Toxic Air Contaminant Act and the federal Clean Air Act.

- The toxic air contaminant emissions inventory, a database that contains information concerning routine and predictable emissions of TACs from permitted stationary sources.

- Ambient monitoring of toxic air contaminant concentrations at a number of sites throughout the Bay Area.

Air Toxics Emission Inventory

The BAAQMD maintains a database that contains information concerning emissions of TACs from permitted stationary sources in the Bay Area. This inventory, and a similar inventory for mobile and area sources compiled by CARB, is used to plan strategies to reduce public exposure to TACs. The detailed concentrations of various TACs are reported in the BAAQMD, Toxic Air Contaminant Control Program, 2003 Annual Report (BAAQMD, 2005) and summarized in Table 3.4-5. The 2002 TAC data shows decreasing concentrations of many TACs in the Bay Area. The most dramatic emission reductions in recent years have been for certain chlorinated compounds that are used as solvents including 1,1,1-trichloroethane, methylene chloride, and perchloroethylene. Table 3.4-5 contains a summary of average ambient concentrations of TACs measured at monitoring stations in the Bay Area by the District in 2002.

Health Effects

The primary health risk of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because many scientists currently believe that there are not "safe" levels of exposure to carcinogens without some risk to causing cancer. The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods. CARB has estimated the average potential cancer risk from outdoor ambient levels of air toxics for 2000. Based on the evaluation by CARB Diesel exhaust PM10 contributes 71 percent to the total cancer risk (see Table 3.4-6).

TABLE 3.4-5
Concentration of Toxic Air Contaminants in the Bay Area (2002)

Monitoring Station (mean ppb*)	Chemical[(1)]											
	BENZ	CCl_4	$CHCl_3$	DCM	EDB	EDC	MTBE	PERC	TCA	TCE	TOL	VC
Oakland – Davie Stadium	0.44	0.11	0.01	0.29	0.01	0.05	0.21	0.03	0.03	0.03	0.94	0.15
San Leandro	0.28	0.11	0.08	0.28	0.01	0.05	0.32	0.02	0.03	0.03	0.89	0.15
Livermore – Rincon Ave	0.39	0.11	0.02	0.27	0.01	0.05	0.46	0.02	0.31	0.03	0.90	0.15
Oakland – Filbert Street	0.50	0.11	0.02	0.34	0.01	0.05	0.46	0.05	0.03	0.03	1.33	0.15
Pittsburg – W 10^{th} St.	0.38	0.11	0.02	0.49	0.01	0.05	0.80	0.02	0.03	0.03	1.27	0.15
Martinez	0.33	0.11	0.01	0.30	0.01	0.05	0.65	0.01	0.09	0.03	0.79	0.15
Crockett	0.20	0.11	0.02	0.74	0.01	0.05	0.38	0.01	0.05	0.03	0.36	0.15
Concord – Treat Blvd.	0.43	0.12	0.03	0.25	0.01	0.05	0.56	0.03	0.03	0.03	1.79	0.15
Richmond – 7^{th} St	0.35	0.11	0.02	0.30	0.01	0.05	0.53	0.02	0.03	0.03	1.21	0.15
Bethel Island	0.24	0.11	0.01	0.27	0.01	0.05	0.43	0.01	0.03	0.03	0.50	0.15
San Pablo – Rumrill Blvd	0.38	0.11	0.02	0.34	0.01	0.05	0.63	0.03	0.03	0.03	1.04	0.15
San Rafael	0.38	0.10	0.02	0.26	0.01	0.05	0.37	0.08	0.03	0.03	0.84	0.15
Fort Cronkite – Sausalito	0.14	0.11	0.01	0.25	0.01	0.05	0.24	0.01	0.06	0.03	0.27	0.15
Napa – Jefferson St	0.48	0.11	0.03	0.25	0.01	0.05	0.82	0.02	0.03	0.03	1.08	0.15
San Francisco – Arkansas St	0.40	0.11	0.02	0.49	0.01	0.05	0.37	0.03	0.10	0.03	1.04	0.15
Redwood City	0.53	0.11	0.04	0.29	0.01	0.05	0.68	0.04	0.03	0.09	1.72	0.15
Sunnyvale	0.40	0.10	0.03	0.31	0.01	0.05	0.39	0.03	0.03	0.03	0.80	0.15
San Jose – Jackson Street	0.59	0.11	0.02	0.37	0.01	0.05	0.73	0.03	0.03	0.03	1.54	0.15
Vallejo – Tuolumne St	0.52	0.11	0.02	0.62	0.01	0.05	0.84	0.02	0.03	0.03	1.18	0.15
Santa Rosa – 5^{th} St	0.41	0.11	0.02	0.30	0.01	0.05	0.45	0.01	0.66	0.03	0.97	0.15

(1) BENZ = benzene, CCl_4 = carbon tetrachloride, $CHCl_3$ = chloroform, DCM = methylene chloride, EDB = ethylene dibromide, EDC = ethylene dichloride, MTBE = methyl tertiary butyl ether, PERC = perchloroethylene, TCA = 1,1,1-trichloroethane, TCE = trichloroethylene, TOL = toluene, and VC = vinyl chloride.
Source: BAAQMD, 2005.
*Values below the detection limit are set to one-half the detection limit for statistical calculations

TABLE 3.4-6

Estimated Statewide Average Potential Cancer Risk From Outdoor Ambient Levels of Air Toxics For 2000[1]

Compound	Potential Cancer Risk[2,3] Excess Cancers/Million	Percent Contribution to Total Risk
Diesel Exhaust PM10	540	71.2
1,3-Butadiene	74	9.8
Benzene	57	7.5
Carbon Tetrachloride	30	4.0
Formaldehyde	19	2.5
Hexavalent Chromium	17	2.2
para-Dichlorobenzene	9	1.2
Acetaldehyde	5	0.7
Perchloroethylene	5	0.7
Methylene Chloride	2	0.1
TOTAL	758	100

(1) CARB, 2000
(2) Diesel exhaust PM10 potential cancer risk based on 2000 emission inventory estimates. All other potential cancer risks based on air toxics network data. 1997 monitoring data were used for para-dichlorobenzene. 1998 monitoring data was used for all other pollutants.
(3) Assumes measured concentrations are equivalent to annual average concentrations and duration of exposure is 70 years, inhalation pathway only.

3.4.1.4 Transport of Air Pollutants

Since 1989, CARB has evaluated the impacts of the transport of ozone and ozone precursor emissions from upwind areas to the ozone concentration in downwind areas. These analyses demonstrate that the air basin boundaries are not true boundaries of air masses. All urban areas are upwind contributors to their downwind neighbors.

The Bay Area is both a contributor and a receptor for ozone and ozone precursor transport. Ozone precursors emitted in the Bay Area are transported into northern California, including the San Joaquin Valley, the Sacramento Valley, the Mountain Counties, and the coastal areas from Sonoma County to San Luis Obispo County (see Figure 3.4-5). The Bay Area is a receptor area for ozone and ozone precursors transported from the broader Sacramento area (CARB, 2001) (see Figure 3.4-5).

The Bay Area is bounded to the west by the Pacific Ocean and the Bay. Mountains surround the Bay Area to the north, east and south. On many summer days a sea breeze pushes relatively clean air from the Pacific Ocean toward the east, where air flows predominantly through passes in the surrounding mountains. As it moves from west to east the sea breeze flow picks up pollutants from the central Bay Area and transports the mix of clean coastal air and pollutants to surrounding regions. On some summer days,

however, a high-pressure zone sets up over Central California and can block the sea breeze. On such days, air from the Central Valley can flow from east to west. These days can also produce high ozone in the Bay Area and the Central Valley.

FIGURE 3.4-5
Ozone Transport from the BAAQMD

At the Altamont Pass, electricity-generating windmills lining the hill crests attest to the strong, steady winds blowing eastward into the San Joaquin Valley. Areas in the path of these natural inland air currents, such as Vacaville in the Sacramento Valley, and Tracy in the San Joaquin Valley, may be influenced by pollutants transported from the Bay Area. Areas further downwind, such as the cities of Sacramento and Stockton, may also be impacted by transport from the Bay Area, but to a lesser degree (CARB, 2001). The degree to which emissions from the Bay Area contribute to exceedances of ozone standards in neighboring air districts is under investigation and has not yet been quantified.

On some days when the State standard is violated in the Sacramento area, pollutants from the Bay Area are carried in by the delta breeze. However, on hot summer days when the temperature in Sacramento climbs into the high 90's and above, stagnant wind conditions allow a buildup of local emissions, and the ozone concentration can violate the State or federal standards. Only when a strong evening delta breeze disperses these accumulated pollutants do the ozone concentrations decrease (CARB, 2001).

On some days, pollutants transported from the Bay Area may impact the northern San Joaquin Valley, possibly mixing with local emissions to contribute to State and federal violations at Stockton and Modesto. On other days, violations of the State standard may

be due entirely to local emissions. The impact of Bay Area transport diminishes with distances, so metropolitan areas such as Fresno and Bakersfield to the south are less affected. In those areas, ozone concentrations are dominated by local emissions (CARB, 2001).

To the south, winds funnel pollutants into the Santa Clara Valley. Surface winds can carry these pollutants southeast to Hollister in the North Central Coast Air Basin. Ozone violations in Hollister may largely be caused by this transport, with transport aloft from the northern San Joaquin Valley occasionally making a shared contribution. Winds can also carry pollutants over the hills south of Hollister, as far as northern San Luis Obispo County (CARB, 2001).

In Sonoma County, summer prevailing winds blow across the Sonoma Plain from the southern portion of Sonoma County, which lies within the Bay Area Air Basin, to the northern part, which lies within the North Coast Air Basin. The Bay Area portion of Sonoma County, comprising the urban areas of Santa Rosa and Petaluma, is a substantial source of ozone precursor emissions. High ozone concentrations at Healdsburg, in the North Coast, are entirely due to emissions transported from the Bay Area (CARB, 2001).

3.4.2 SIGNIFICANCE CRITERIA

To determine whether or not air quality impacts from the proposed project are significant, impacts will be evaluated and compared to the significance criteria in Table 3.4-7. If impacts equal or exceed any of the following criteria, they will be considered significant.

TABLE 3.4-7

Air Quality Significance Thresholds for Project Operations

Significance Thresholds for Localized Impacts	
Pollutant	**Significance Threshold**
PM10	80 lbs/day or 15 tons/yr
CO	Project plus background >20 ppm (1-hour average) Project plus background > 9 ppm (8-hour average)
Diesel Particulate Emissions and other Toxic Air Contaminants (TACs)	Maximum Exposed Individual (MEI) Cancer Risk $\geq$ 10 in 1 million Hazard Index $\geq$ 1.0 at the MEI
Significance Thresholds for Regional Impacts	
Pollutant	**Significance Threshold**
ROG	2005 Ozone Strategy results in a net increase in emissions
NOx	2005 Ozone Strategy results in a net increase in emissions
PM10	2005 Ozone Strategy results in a net increase in emissions

3.4.3 ENVIRONMENTAL IMPACTS

The purpose of the 2005 Ozone Strategy is to establish a comprehensive program to attain the State one-hour ozone standard through implementation of different categories of control measures. Implementation of the control measures contained in the 2005 Ozone Strategy is required to make progress toward meeting the State ozone standard.

This subchapter evaluates secondary air pollutant emissions that could occur as a consequence of efforts to reduce ozone (e.g., emissions from control equipment such as afterburners). Secondary air quality impacts are potential increases in air pollutants that occur indirectly from implementation of control measures in the 2005 Ozone Strategy. Table 3.4-8 lists the control measures with potential secondary air quality impacts.

3.4.3.1 Criteria Pollutants

As identified in Table 3.4-8, potential secondary air quality impacts evaluated in this section are associated with: (1) change in the use of VOCs; (2) emissions from new control equipment installed at stationary sources; (3) potential impacts of NOx controls and ozone transport; (4) construction activities; (5) increased electricity demand; (6) emissions from mobile sources; and (7) miscellaneous air quality issues.

Secondary Emissions from Change in Use of Lower VOC Coatings

PROJECT-SPECIFIC IMPACTS: Some of the proposed control measures are expected to alter the formulation of various coating products including SS 1 - Auto Refinishing, SS 2 - Graphic Arts Operations, SS 3 – High Emitting Spray Booths, SS 4 – Polyester Resin Operations, and SS 5 – Wood Products. To obtain further VOC emission reductions from paints and other coating products it is expected that coatings would be reformulated with water-based or exempt compound formulations. Concerns have been raised regarding a number of issues associated with the use of lower VOC content limits for coating products including: (1) low VOC coatings tend to have a high solids content resulting in a thicker application and use of more low VOC coatings than conventional coatings; (2) the potential for illegal thinning producing non-compliant coatings; (3) the potential need for more priming to promote adhesion; (4) the potential need for more topcoats to increase durability; (5) the potential need for more touch-ups and repair work since low VOC coatings dry slowly and are susceptible to damage; (6) the potential need for more frequent recoating due to inferior durability when compared to conventional coatings; (7) substituting low VOC coatings with inferior durability with better performing high VOC in other categories (e.g., the use of industrial maintenance coatings in residential settings); and (8) the potential for low VOC coatings to have higher reactivity rates (thus producing more ozone) than conventional coatings.

TABLE 3.4-8

Control Measures with Potential Secondary Air Quality Impacts

Control Measures	Control Measure Description	Control Methodology	Air Quality Impact
SS 1	Auto Refinishing	Reformulated low-VOC coatings/solvents	Potential change in use of VOC and toxic contaminants
SS 2	Graphic Arts Operations	Reformulated low-VOC coatings/solvents	Potential change in use of VOC and toxic contaminants
SS 3	High Emitting Spray Booths	Reformulated low-VOC coatings/solvents, add on control devices	Potential change in use of VOC and toxic contaminants, potential increase in combustion emissions
SS 4	Polyester Resin Operations	Reformulated low-VOC coatings/solvents	Potential change in use of VOC and toxic contaminants
SS 5	Wood Products Coating	Reformulated low-VOC coatings/solvents	Potential change in use of VOC and toxic contaminants
SS 6	Flares	Most likely through control of operations but could include incineration	Potential combustion emissions
SS 7	Gasoline Bulk Terminals and Plants	More stringent standards, emission controls (e.g., flares)	Potential combustion emissions
SS 8	Marine Loading Operations	Add-on control equipment	Potential increase in combustion emissions
SS 9	Organic Liquid Storage Tanks	Add domes to tanks, improved standards for tank cleaning, I&M programs	Potential increase in construction emissions
SS 10	Pressure Relief Devices	Add-on control equipment	Potential increase in combustion emissions
SS 12	Industrial, Institutional and Commercial Boilers	Low NOx burners	Increase in localized ozone levels, reduced boiler efficiency
SS 13	Large Water Heaters and Small Boilers	Low NOx burners, lower standards for new heaters/ boilers	Increase in localized ozone levels, reduced boiler efficiency
SS 14	Stationary Gas Turbines	Add-on control equipment, including SCR	Increase in localized ozone levels, reduced boiler efficiency, increased ammonia emissions
MS 3	Low-Emission Vehicle Incentives	Purchase low or zero-emission vehicles or engines, engine repowers, retrofits & replacements; add-on control equipment; clean fuels or additives; and use of alternative fuels	Electricity generation to operate equipment, potential decrease in engine efficiency could reduce fuel economy and increase emissions, production of cleaner fuels could increase emissions at refineries.

TABLE 3.4-8 (concluded)

Control Measures	Control Measure Description	Control Methodology	Air Quality Impact
TCM 1	Support Voluntary Employer-Based Trip Reduction Programs	Support and encourage voluntary efforts by Bay Area employers to promote the use of commute alternatives by their employees	Localized increase in emissions due to increased traffic in areas near transit stations
TCM 3	Improve Local and Areawide Bus Service	Add on control devices (particulate traps and NOx catalysts), alternative clean fuels and bus service improvements	Localized increase in emissions due to increased traffic near bus transit stations
TCM 4	Upgrade and Expand Local and Regional Rail Service	Construction of additional rail facilities, electrification of rail services	Construction emissions, electricity generation to operate equipment, localized increase in emissions due to increased traffic near rail stations
TCM 5	Improve Access to Rails and Ferries	Construction of new facilities, use of low emission vehicles	Construction emissions, electricity generation to operate equipment, localized increase in emissions due to increased traffic near transit stations
TCM 6	Improve Interregional Rail Service	Construction of new rail facilities	Construction emissions, localized increase in emissions due to increased traffic near rail stations
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Construction emissions, localized increase in emissions due to increased traffic near ferry terminals
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	Construction of new High Occ-upancy Vehicle (HOV) lanes	Construction emissions
TCM 9	Improve Bicycle Access and Facilities	Construction of additional bicycle lanes	Construction emissions are expected to be minor
TCM 13	Transit Use Incentives	Increase transit use and lower vehicle emissions with incentives including better transit information, universal fare cards, and better signage	Localized increase in emissions due to increased traffic near transit stations

These issues have been studied by CARB, the SCAQMD, and the U.S. EPA as part of rule making activities. In all studies, the low VOC coatings were determined to perform comparably to the conventional coatings. These issues are further discussed below.

More Thickness: Reformulated compliant water- and solvent-borne coatings are very viscous (i.e., are formulated using a high-solids content) and, therefore, may be difficult to handle during application, tending to produce a thick film when applied directly from the can. A thicker film might indicate that a smaller surface area is covered with a given amount of material, thereby increasing VOC emissions per unit of area covered.

Table 3.4-9 shows that the 1998 CARB Survey yielded results for average VOC content as the random sampling of low-VOC coatings to their conventional counterparts. The survey showed a consistent trend of a sales-weighted average lower-percent solids by volume in coatings with lower-VOC content.

Based upon the results of the CARB survey, it is concluded that compliant low-VOC coatings are not necessarily formulated with higher solids content than conventional coatings (CARB, 2000). Further, there is no evidence that there is an inverse correlation between solids content and coverage area. Studies completed by the SCAQMD show similar results (SCAQMD, 2003).

TABLE 3.4-9

1998 CARB Survey

	CARB SURVEY RESULTS	
Coating Types	**Average VOC Content (g/l)[1]**	**Average Solids by Volume (%)**
Floor Coatings (>250 g/l)	149	83
Floor Coatings (<250 g/l)	164	34
IM[2] Coatings (>250 g/l)	436	56
IM Coatings (<250 g/l)	124	36.6
Nonflats (>250 g/l)	331	58
Nonflats (<250 g/l)	164	36
Quick Dry Enamels (>250 g/l)	403	50
Quick Dry Enamels (<250 g/l)	n/a	n/a
PSU[3] (>250 g/l)	384	46
PSU (<250 g/l)	101	31
Quick Dry PSU (>250 g/l)	432	45
Quick Dry PSU (>250 g/l)	136	41
Water Proofing Sealer (>250 g/l)	339	50
Water Proofing Sealer (<250 g/l)	227	30
Rust Preventive Coatings (>250 g/l)	382	48
Rust Preventive Coatings (<250 g/l)	144	39
Stains(>250 g/l)	412	47
Stains(<250 g/l)	203	30

(1) g/l = grams per liter
(2) Industrial/Maintenance
(3) PSU = primers, sealers, and undercoatings

Illegal Thinning: It has been asserted that thinning occurs in the field in excess of what may be allowed by rule limits. It has also been asserted that, because reformulated compliant water- and solvent-borne coatings are more viscous (i.e., high-solids content), painters have to adjust the properties of the coatings to make them easier to handle and apply. In particular for solvent-borne coatings, this adjustment consists of thinning the coating as supplied by the manufacturer by adding solvent to reduce its viscosity. The added solvent increases VOC emissions back to or sometimes above the level of higher VOC formulations.

Many of the reformulated compliant coatings are water-borne formulations or will utilize exempt solvents, thereby eliminating any concerns of thinning the coating as supplied and increasing the VOC content as applied beyond the compliance limit. Since exempted solvents are not considered a reactive VOC, thinning with them would, therefore, not increase VOC emissions. Water based coatings are thinned with water and would also not result in increased VOC emissions.

In mid-1991, CARB conducted a field study of thinning in regions of California that have established VOC limits for architectural coatings. A total of 85 sites where painting was in progress were investigated. A total of 121 coatings were in use at these sites, of which 52 were specialty coatings. The overall result of this study was that only six percent of the coatings were thinned in excess of the required VOC limit indicating a 94 percent compliance rate (CARB, 2000). The SCAQMD has completed similar studies concluding that illegal thinning was not a major problem (SCAQMD, 2003).

In summary, field investigations of actual painting sites in California that have VOC limits for coatings indicate that thinning of specialty coatings exists but rarely beyond the actual compliance limits. Even in cases where thinning does occur, it is rarer still for paints to be thinned to levels that would exceed applicable VOC content limits. The conclusion is that widespread thinning does not occur often; when it does occur, it is unlikely to occur at a level that would lead to a substantial emissions increase when compared with emissions from higher VOC coatings. As a result, claims of thinning resulting in significant adverse air quality impacts are unfounded.

More Priming: Conventional coatings are currently used as part of a three, four, or five part coating system, consisting of one or more of the following components; primer, midcoat, and topcoat. Coating manufacturers and coating contractors have asserted that reformulated compliant low-VOC water- and solvent-borne topcoats do not adhere as well as higher-VOC solvent-borne topcoats to unprimed substrates. Therefore, the substrates must be primed with typical solvent-borne primers to enhance the adherence quality. Additionally, it is has been asserted that water-borne sealers do not penetrate and seal porous substrates like wood, as well as traditional solvent-borne sealers. This allegedly results in three or four coats of the sealer per application, compared to one coat for a solvent-borne sealer that would be necessary, resulting in an overall increase in VOC emissions for the coating system.

Regarding surface preparation, coating product data sheets were evaluated. Information from the coating product data sheets indicated that low-VOC coatings do not require

substantially different surface preparation than conventional coatings. According to the product data sheets, conventional and low-VOC coatings require similar measures for preparation of the surface (i.e. apply to clean, dry surfaces), and application of the coatings (i.e. brush, roller or spray). Both low-VOC coatings and conventional coatings for both architectural and industrial maintenance applications have demonstrated the ability to adhere to a variety of surfaces. As a part of the technology assessment, the product data sheets were analyzed for a variety of low-VOC primers, including stain-blocking primers, primers that adhere to alkyds, and primers that have equal coverage to conventional solvent-borne primers, sealers, and undercoaters (CARB, 2000).

As a result, based on the coating manufacturer's coating product data sheets, the material needed and time necessary to prepare a surface for coating is approximately equivalent for conventional and low-VOC coatings. More primers are not needed because low-VOC coatings possess comparable coverage to conventional coatings, similar adhesion qualities and are consistently resistant to stains, chemicals and corrosion. Low-VOC coatings tend not to require any special surface preparation different from what is required before applying conventional coatings to a substrate. As part of good painting practices for any coating, water-borne or solvent-borne, the surface typically needs to be clean and dry for effective adhesion. Consequently, claims of significant adverse air quality impacts resulting from more priming are unfounded.

More Topcoat: Another issue raised in the past relative to low VOC coatings is the assertion that reformulated compliant water- and low-VOC solvent-borne topcoats may not cover, build, or flow-and-level as well as the solvent-borne formulations. Therefore, more coats are necessary to achieve equivalent cover and coating build-up.

Technology breakthroughs with additives used in recent formulations of low-VOC coatings have minimized or completely eliminated flow and leveling problems. These flow and leveling agents mitigate flow problems on a variety of substrates, including plastic, glass, concrete and resinous wood. These additives even assist in overcoming flow and leveling problems when coating oily or contaminated substrates. According to the product data sheets for the sampled coatings, water-borne coatings have proven durability qualities. Comparable to conventional coatings, water-borne coatings for architectural applications are resistant to scrubbing, stains, blocking and UV exposure. Coating manufacturers, such as Dunn-Edwards, ICI, Pittsburgh Paints and Sherwin Williams, formulate low-VOC nonflat coatings (<150 g/l) with high build and excellent scrubability. Most of the coatings are mildew resistant and demonstrate excellent washability characteristics. The coverage of the coatings average around 400 square feet per gallon, which is equivalent to the coverage of the conventional nonflat coatings. Con-Lux, Griggs Paint and Spectra-Tone also formulate even lower VOC (<50 g/l) coatings that also demonstrate excellent durability, washability, scrubability and excellent hide. The coverage is again equivalent to the conventional coatings around 400 square feet per gallon (CARB, 2000).

Both low-VOC and conventional coatings have comparable coverage and superior performance. These low-VOC coatings possess scrub and stain resistant qualities,

blocking and resistance to ultraviolet (UV) exposure for the exterior coatings. Both low-VOC and conventional Industrial/Maintenance (IM) coatings tend to have chemical and abrasion resistant qualities, gloss and color retention, and comparable adhesion qualities. With comparable coverage and equivalent durability qualities, additional topcoats for low-VOC coatings should not be required.

More Touch Up and Repair Work: Another potential issue related to low VOC coatings is the assertion that reformulated compliant water- and low-VOC solvent-borne formulations dry slowly, and are susceptible to damage such as sagging, wrinkling, alligatoring, or becoming scraped and scratched. It is also claimed that the high-solids solvent-borne alkyd enamels tend to yellow in dark areas, and that water-borne coatings tend to blister or peel, and also result in severe blocking problems. As a result, additional coatings for repair and touch-up would be necessary.

Extra touch-up and repair and more frequent coating applications are related to durability characteristics of coatings. Product data sheets were evaluated and recent studies conducted to obtain durability information for low-VOC coatings and conventional coatings. Based on information in the coating product data sheets, comparable to conventional coatings, water-borne coatings for architectural applications are resistant to scrubbing, staining, blocking and UV exposure. They were noted for excellent scrubability and resistance to mildew. The average drying time between coats for the low-VOC coatings (<150 g/l) was less than the average drying time for the conventional coatings (250 g/l). The average drying time for the lower-VOC coatings (<50 g/l) did increase more than the conventional coatings. However, with the development of non-volatile, reactive diluents combined with hypersurfactants, performance of these nearly zero-VOC coatings has equaled, and for some characteristics, outperformed traditional, solvent containing coatings (CARB, 2000).

Therefore, based on the durability characteristics information contained in the coating product data sheets, low-VOC coatings and conventional coatings have comparable durability characteristics. As a result, it is not anticipated that more touch up and repair work will need to be conducted with usage of low-VOC coatings. Consequently, claims of significant adverse air quality impacts resulting from touch-up and repair for low-VOC coatings are unfounded.

More Frequent Recoating: An issue raised in past rulemaking is the assertion that the durability of the reformulated compliant water- and low-VOC solvent-borne coatings is inferior to the durability of the traditional solvent-borne coatings. Durability problems include cracking, peeling, excessive chalking, and color fading, which all typically result in more frequent recoating. As a result, it is possible more frequent recoating would be necessary resulting in greater total emissions than would be the case for conventional coatings.

The durability of a coating is dependent on many factors, including surface preparation, application technique, substrate coated, and exposure conditions. Again, as mentioned above, key durability characteristics, as discussed in coating product data sheets, (e.g., resistance to scrubbing, abrasion, corrosion, chemicals, impact, stain, and UV), are

similar between conventional and low-VOC coatings. Both coating types pass abrasion and impact resistance tests, and have similar durability qualities. According to the coating product data sheets, low-VOC coatings would not need more surface preparation than what needs to be done to prime the surface for conventional coatings (see also "More Priming" discussion above). The technique for applying the coatings did not significantly differ either. It is expected that if applied using manufacturers' recommendations, compliant low-VOC coatings should be as durable as conventional coatings and, therefore, no additional recoating could occur as a result of the usage of low-VOC coatings. Furthermore, overall durability is dependent on the resin used in the formulation as well as the quality of pigment, not just the VOC content of the coating.

Coatings manufacturers' own data sheets indicate that the low-VOC coatings for both architectural and industrial maintenance applications are durable and long lasting. Any durability problems experienced by the low-VOC coatings are not different than those seen with conventional coatings. Recent coating technology has improved the durability of new coatings. Because the durability qualities of the low-VOC coatings are comparable to the conventional coatings, more frequent recoatings would not be necessary.

Substitution: Some have claimed that since reformulated compliant water- and low-VOC solvent-borne coatings are inferior in durability and are more difficult to apply, consumers and contractors will substitute better performing high VOC coatings in other categories for use in categories with low compliance limits. An example of this substitution could be the use of a rust preventative coating, which has a higher VOC content limit requirement, in place of an industrial/maintenance coating or a nonflat coating.

There are several reasons why widespread substitution is not expected to occur. First and foremost, based on staff research of resin manufacturers' and coating formulators' product data sheets as well as recent studies conducted by ARB, have shown that there are, generally, a substantial number of low-VOC coatings in a wide variety of coating categories that are currently available. These coatings have performance characteristics comparable to conventional coatings. Second, coating rules can be developed to prohibit the application of certain coatings in specific settings. For example, IM coatings cannot be used in residential, commercial, or institutional settings. Also, rust preventive coatings cannot be used in industrial settings. Third, the type of performance (e.g., durability) desired in some settings would prohibit the use of certain coatings. For example, in the typical IM setting a coating with a life of 10 years or more is desired due to the harshness of the environment. Therefore, it is unlikely that an alkyd-based rust preventive coating with a typical life of five years would be used in place of an industrial/maintenance coating. Fourth, coatings rules typically require that when a coating can be used in more than one coating category, the lower limit of the two categories is applicable. It is highly unlikely that coating applicators will violate future coatings rules by substituting higher-VOC coatings for lower-VOC coatings.

As discussed above, CARB does not expect that low-VOC coatings used for specific coating applications will be substituted with higher-VOC coatings used for other specific types of coating applications (CARB, 2000). Currently, there are a substantial number of low-VOC coatings in a wide variety of coating categories that have performance characteristics comparable to conventional coatings. Moreover, the type of performance desired in some settings would prohibit the use of certain coatings in those settings.

In the rare event that substitution does occur, it is expected that future coatings would still achieve overall VOC emission reductions. Substitution would only result in less emission reductions than expected, it would not increase emissions as compared to the existing setting. Consequently, it is not expected that control measures requiring a lower overall VOC content of coatings will result in significant adverse air quality impacts from the substitution of low-VOC coatings with higher-VOC coatings.

More Reactivity: Different types of solvents have different degrees of "reactivity," which is the ability to accelerate the formation of ground-level ozone. Some coating manufacturers and coating contractors assert that the reformulated compliant low-VOC water- and solvent-borne coatings contain solvents that are more reactive than the solvents used in conventional coating formulations. Furthermore, water-borne coatings perform best under warm, dry weather conditions, and are typically recommended for use between May and October. Since ozone formation is also dependent on the meteorological conditions, it has been asserted that the use of waterborne coatings during this period increases the formation of ozone.

The use of reactivity as a regulatory tool has been debated at the local, state, and national level for over 20 years. For example, CARB incorporated a reactivity-based control strategy into its California Clean Fuel/Low Emissions Vehicle regulations, where reactivity adjustment factors are employed to place regulations of exhaust emissions from vehicles using alternative fuels on an equal ozone impact basis. CARB is evaluating a similar strategy for consumer products and industrial emissions, and contracted with Dr. William Carter, University of California at Riverside, Center for Environmental Research and Technology, College of Engineering, for a two-year study to assess the reactivities of VOC species found in the consumer products emissions inventory. Dr. Carter, one of the principal researchers of reactivities of various VOC species, plans to further study VOC species, more specifically glycol ethers, esters, isopropyl alcohol, methyl ethyl ketone (MEK), and an octanol, since these are typically found in either waterborne coatings, solvent-borne coatings, or both. These specific VOCs have been prioritized based on emissions inventory estimates, mechanistic uncertainties, and lack of information in the current reactivity data. Under the current models and ozone chamber studies, however, Dr. Carter has been unable to assess the reactivity of low volatility compounds, and has not succeeded in reducing the uncertainties in the reactivity of key VOC species used in industrial and maintenance coatings. He did identify the state of science with respect to VOC reactivity and described areas where additional work is needed in order to reduce the uncertainty associated with different approaches to assessing reactivity (CARB, 2000).

In the absence of actual reactivity numbers for the compounds contained in "traditional" solvent formulations and compliant, low-VOC coatings, emissions must be calculated in the standard manner of total VOC per unit of coating. Based upon the current state of knowledge regarding VOC reactivity, it is speculative to conclude that these control measures will generate significant adverse air quality impacts due to increased reactivity.

On June 16, 1995, the U.S. EPA determined that acetone, p-chlorobenzotriflouride (PCBTF), and VMS (as well as other solvents) have low photochemical reactivity and should be exempted from consideration as a VOC. Oxsol 100 (PCBTF), manufactured by Occidental Chemical Corporation, was also delisted as a VOC in 1995. This solvent can be used to extend or replace many organic solvents, including toluene, xylene, mineral spirits, acetone, methyl ethyl ketone, trichloroethylene, and perchloroethylene. Toxicity data of PCBTF was assessed by the Office of Environmental Health Hazard Assessment (OEHHA) and it was not considered to have a significant toxic risk. This product is less toxic than toluene, and is not considered a Hazardous Air Pollutant or an Ozone-Depleting Substance. The U.S. EPA is also in the process of delisting t-butyl acetate, which may also help coating formulators in utilizing exempt solvents in their formulations.

Synergistic Effects of the Eight Issues: It has been asserted in the past that not only should each of the eight issues (i.e., more thickness, illegal thinning, more priming, more topcoats, more touch-up and repair, more frequent recoating, more substitution, and more reactivity) be analyzed separately but that the synergetic effect of all issues be analyzed. CARB staff analysis determined that based on the National Technical Service (NTS) data (see below) and review of product data sheet, the low-VOC compliant coatings have comparable performance as conventional coatings. Therefore, since individually each issue does not result in a significant adverse air quality impact, the synergistic effect of all eight issues will not result in significant adverse air quality impacts (CARB, 2000). Even if it is assumed that some of the alleged activities do occur, e.g., illegal thinning, substitution, etc., the net overall effect of the proposed amendments is expected to be a reduction in VOC emissions.

NTS Study: A study by NTS was initiated to assess application and durability characteristics of zero-VOC, low-VOC, and high-VOC coatings in order to supplement information collected by the SCAQMD, as part of a technology assessment.

The results of the NTS study show that zero-VOC coatings available today, when compared to high-VOC coatings are equal, and in some cases, superior in performance characteristics, including coverage, mar resistance, adhesion, abrasion resistance, and corrosion protection. However, the NTS results also highlight application characteristics of some zero-VOC nonflat and PSU coatings that are somewhat limited when compared to solvent-based, high-VOC coatings. Those include lower rankings for leveling, sagging and brushing properties. However, for industrial/maintenance coatings, zero and low-VOC coatings performed better than high-VOC coatings. In addition to the laboratory results, the NTS study was expanded with additional testing, including accelerated actual exposure, real time actual exposure, and actual field application characteristics. In sum,

the results of the NTS study indicate that some, but not all of the zero-VOC coatings may have some degraded application characteristics. This means that when promulgating coatings rules or rule amendments, sufficient research and development time should be allowed to correct potential coating application problems.

Conclusion: Based on the preceding analysis of potential secondary air quality impacts from implementing future coatings rules, it is concluded that the overall air quality effects will be a VOC emission reduction. Therefore, based on the significance criteria, impacts associated with the use of lower VOC coatings will be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant secondary air quality impacts from coating reformulation have been identified so no mitigation measures are required.

Secondary Impacts from Control of Stationary Sources

PROJECT SPECIFIC IMPACTS: Emission reductions from the control of emissions at several stationary sources could result in secondary emissions. Options for further NOx emission reductions could include addition of control equipment [selective catalytic reduction (SCR)], process changes to reduce emissions or require that new equipment meet more stringent emission limits. Installation of new SCR equipment or increasing the control efficiency of existing equipment would be expected to increase the amount of ammonia used for NOx control. As a result ammonia slip emissions could increase, thus, contributing to PM10 concentrations. Ammonia can be released in liquid form, thus, directly generating PM10 emissions. Ammonia can also be released in gaseous form where it is a precursor to PM10 emissions. Injecting ammonia at the proper molar ratio, increasing the amount of catalyst used, or installing scrubbers can minimize potential increases in ammonia slip emissions.

Control Measures SS 14 – Stationary Gas Turbines could reduce NOx by using SCR, which may potentially result in increased ammonia emissions due to "ammonia slip" (release). Ammonia slip can worsen as the catalyst ages and becomes less effective. Ammonia slip from SCR equipment is continuously monitored and controlled. A limit on ammonia slip is normally included in permits to operate for stationary sources, which should minimize potential air quality impacts associated with ammonia slip from these sources.

A number of control measures would result in a decrease in VOC emissions from various facilities including: (1) SS 3 – High Emitting Spray Booths; and (2) SS 6 – Flares. The methods to control fugitive emissions could include leakless valves and vapor recovery devices. Some vapor recovery devices, e.g., afterburners, incinerators, or flares, might also be installed resulting in combustion emissions, including NOx and CO emissions. While some control measures may cause a small increase in CO and NOx emissions, the 2005 Ozone Strategy control measures will achieve an overall reduction in VOC and NOx. The emission control devices require air permits to operate. Emissions from vapor recovery devices are generally controlled by using efficient combustion practices, therefore, secondary impacts from these control measures are not expected.

Conclusion: Based on the discussion above and the impact evaluation criteria, secondary air quality impacts from stationary source control measures are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant secondary air quality impacts from control of stationary sources have been identified so no mitigation measures are required.

Potential Adverse Impacts and Ozone Transport

PROJECT-SPECIFIC IMPACTS: It has been well established that both NOx and VOC are involved in the formation of ground-level ozone, and thus reducing NOx emissions generally lowers ozone formation. However, studies have shown that lowering NOx alone can, under conditions of low VOC to NOx ratios, lead to localized increases in ozone. At sufficiently low VOC to NOx ratios, reducing NOx can increase ozone production efficiency, potentially resulting in higher ozone concentrations. This phenomenon has been investigated as a likely cause of the so-called "ozone weekend effect."

The "ozone weekend effect" refers to the observation that ozone measurements in some locations, primarily large metropolitan areas, are typically higher on weekends compared to weekdays. Smog-forming emissions mostly come from sources such as cars, trucks, factories, and fossil-fuel power plants that produce lower total emissions on weekends than on weekdays. One theory as to what causes the weekend effect indicates that many urban areas of the state are VOC-limited, and therefore reducing NOx emissions disproportionately in relation to VOC emissions will cause ozone concentrations to increase. The California Air Resources Board (CARB) has been studying the weekend effect because it has become a regulatory issue. It has been offered by some as evidence that reductions of NOx emissions alone would be counter-productive for reducing ambient ozone levels.

Understanding the weekend effect is not a simple task because ozone formation, transport, and destruction in the lower atmosphere are highly complex processes. The CARB is currently evaluating various possible explanations of the ozone weekend effect. The hypotheses address temporal, spatial, and compositional changes in emissions from weekdays to weekends and how these changes might interact with meteorological and photochemical processes to produce the observed weekday to weekend differences in ozone concentrations (CARB, 2003).

Although in the Bay Area NOx reductions alone have the potential to increase ozone, a strategy of concurrent reductions of the major precursors of ozone, VOC and NOx, has been used for about 15 years to reduce ozone levels in the Bay Area on all days of the week, including weekends. Historical trends of air monitoring data show substantial reductions in ozone concentrations and therefore the public's exposure to ozone on both weekend and weekdays. Combined reductions of VOC and NOx, thus are not counter-

productive for attaining ambient air quality standards. The 2005 Ozone Strategy includes control measures that will reduce both NOx and VOC. This strategy is expected to prevent an increase in ozone concentration that might occur from decreases in only NOx emissions.

While the degree of pollutant transport and its effect on ozone concentrations in affected areas have not yet been quantified, the effect of the 2005 Ozone Strategy on ozone precursor pollutants to downwind regions is clear. Decreasing VOC and NOx emissions within the Bay Area through implementation of the Ozone Strategy is expected to decrease ambient ozone concentrations in the Bay Area and to decrease the available ozone and ozone precursors available for transport into neighboring air basins. Therefore, implementation of the proposed Ozone Strategy is not expected to result in any adverse impacts associated with the transport of ozone or ozone precursors to neighboring air basins.

In 2003, the CARB amended State regulations on ozone transport mitigation. CARB retained the requirement for upwind transport Districts, such as the Bay Area, to apply best available retrofit control technology (BARCT). CARB also added two new requirements related to the adoption of all feasible measures and no net increase thresholds for new source review permitting programs. These measures should further reduce transport impacts, if any, on neighboring districts.

The District amended Rule 2-2 requiring new or modified permitted sources that emit or have the potential to emit 10 tons or greater per year of an ozone precursor to fully offset their emission increase. In addition, implementation of the 2005 Ozone Strategy will fulfill the District's obligation to adopt all feasible measures. The emissions reductions from these measures are also expected to reduce transport impacts.

Conclusion: Based on the above analysis, the potential air quality impacts from increased ozone concentrations due to decreased NOx emissions proposed as part of the 2005 Ozone Strategy is considered less than significant. In addition, the potential impacts to downwind areas from the reduction of NOx and VOC emissions resulting from the 2005 Ozone Strategy is considered less than significant.

PROJECT-SPECIFIC MITIGATION: Air quality impacts due to the "weekend effect" and ozone transport are not significant so no mitigation measures are required.

Secondary Air Quality Impacts from Construction Activities

The BAAQMD considers construction emission impacts to be less than significant if the construction mitigation measures listed in the District's CEQA Guidelines are used. The District guidelines only address particulate matter (dust), not exhaust emissions from diesel powered equipment.

While implementing the 2005 Ozone Strategy control measures is expected to reduce operational emissions, construction-related activities associated with installing or

replacing equipment, for example, are expected to generate emissions from construction worker vehicles, trucks, and construction equipment. Implementation of some of the control measures will require construction of new infrastructure including construction of controls at stationary sources (e.g., SCR systems and domes on tanks), construction of additional bus, rail and ferry facilities, construction of new High Occupancy Vehicle (HOV) lanes, and construction of additional bicycle lanes.

The inventory prepared for the 2005 Ozone Strategy includes estimates of the construction emission inventory for construction activities in 2003 and 2010 (see Table 3.4-10). It is assumed that construction activities to implement control measures in the 2005 Ozone Strategy, e.g., (1) additional infrastructure to support electric and alternative fuel vehicles; (2) additional infrastructure to support new HOV lanes; (3) construction of additional bus, rail and ferry facilities; and (4) additional infrastructure to support electrification of new sources contribute to construction activity emission inventories.

TABLE 3.4-10

Estimated Construction Emissions in the Bay Area
(Tons/Day)

Source Category	ROG	NOx
2003 Emission Inventory		
Construction and Mining Equipment	10.7	91.1
2010 Emission Inventory		
Construction and Mining Equipment	6.4	62.9
Emission Reductions (Emissions in 2003 – emissions in 2010)	4.3	28.2

Source: BAAQMD, 2004

Construction activities include the installation of control equipment on existing stationary sources, which would not involve extensive construction activities and would not be expected to result in significant emissions. Other construction activities could involve the installation of new transportation infrastructure. As shown in Table 3.4-10, the estimated VOC and NOx emissions associated with construction in the Air District are expected to be reduced between the 2003 and 2010 inventories, resulting in an air quality benefit. CARB control measures, in particular new emission standards for off-road mobile sources, are the main source of the reduction in combustion emissions from off-road equipment expected between the 2003 and 2010 inventories.

The estimated PM10 emissions associated with construction activities are expected to follow the same trend, resulting in decreased emissions between 2003 and 2010 because the CARB control measures are also aimed at reducing diesel particulate emissions.
Construction emissions associated with dredging for the new ferry facilities are estimated in Table 3.4-11. As discussed in the EIR prepared for the ferry facilities (WTA, 2003),

each individual ferry expansion should employ the current BAAQMD-recommended construction mitigation measures to reduce impacts.

TABLE 3.4-11

Criteria Pollutant Emissions from Dredging Associated with TCM 7 – Improve Ferry Service at Hercules/Rodeo

Source	VOC	NOx	CO	PM10	SO_2
Tug Engine (lb/day)	9.5	187.3	10.7	10.7	6.0
Dredging Engine (lb/day)	17.6	121.7	149.9	7.1	3.5
TOTAL (lbs/day)	**27.2**	**309.0**	**160.7**	**17.8**	**9.5**
Tug Engine (ton)	0.06	1.17	0.07	0.07	0.04
Dredging Engine (ton)	0.11	0.76	0.94	0.04	0.02
TOTAL (ton)	**0.17**	**1.93**	**1.00**	**0.11**	**0.06**

Source: WTA, 2003

The 2005 Ozone Strategy is not expected to result in an overall increase in emissions of regional pollutants, therefore, these impacts are not significant. Further, construction projects are expected to implement the BAAQMD construction mitigation measures for particulate matter, so that secondary air quality impacts from construction impacts are not expected to be significant.

Conclusion: Based on the above evaluation and significance criteria, the secondary air quality impacts from construction activities are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION: Each individual project should employ the current BAAQMD-recommended construction emissions to reduce impacts. Secondary air quality impacts from construction activity are not significant so no mitigation measures are required.

Secondary Impacts from Increased Electricity Demand

PROJECT-SPECIFIC IMPACTS: Electricity is often used as the power source to operate various components of add-on control equipment, such as ventilation systems, fan motors, vapor recovery systems, etc., and from the increase electrification of mobile sources. Increased demand for electrical energy may require generation of additional electricity, which in turn could result in increased indirect emissions of criteria pollutants in the Bay Area and in other portions of California.

Control measures that could result in an increase in electricity use include measures that would require add-on controls, including SS 3 – High Emitting Spray Booths. The stationary source measures that may result in increased demand for electrical energy due

to operation of add-on control equipment are included in Table 3.4-8. Some of the transportation control measures would include electrification of mobile sources including MS 3 – Low Emission Vehicle Incentives and TCM 4 – Upgrade and Expand Local and Regional Rail Service.

An increase in the use of electric vehicles would require the generation of additional electricity in the Air District and other areas of California. The potential increase and amount of electricity is unknown. Because the control measures are general in nature, it is difficult to determine what, if any, impacts could be expected. Several control measures target emission reductions from transportation measures that would encourage the development of vehicle control technology to meet or exceed ultra-low emission vehicle standards. Such technology would include electric and advance hybrid electric vehicles as a result of advanced battery technology and development of property support infrastructure. The increased demand for electrical energy may require generation of additional electricity, which in turn may result in increased indirect emissions of all criteria pollutants (due to the increase in natural gas combustion used to generate more electricity). The amount of electricity generated is described in the energy impacts Subchapter 3.17 of this EIR.

Electrification of motor vehicles and other commercial and industrial equipment will reduce petroleum fuel usage in the Bay Area. At that time, there may be an increase in emissions due to increased electric power generation due to increased demand. The number of electric vehicles is unknown at this time. While the control measures may cause an increase in NOx emissions associated with increased electricity generation, overall the 2005 Ozone Strategy should achieve a net reduction in NOx emissions.

An incremental increase in electricity demand would not create significant adverse air quality impacts. However, if electricity demand exceeds available power, additional sources of electricity would be required. Electricity generation within the Air District is subject to BAAQMD Regulation 9, Rule 9, which regulates NOx emissions (the primary pollutant of concern from combustion to generate electricity) from existing power generating equipment. Regulation 9, Rule 9 establishes NOx concentration limits from electric generating facilities. As a result, NOx emissions from existing electric generating facilities will not increase significantly, regardless of increased power generation for add-on control equipment or electrification activities.

New power generation equipment would be subject to Regulation 9, Rule 9. New power generating equipment would not result in air quality impacts because they would be subject to BACT requirements, and all emission increases would have to be offset (through emission reduction credits) before permits could be issued. Further, emissions from the combustion of gasoline or diesel fuels are generally the emissions that would be reduced when electrification is proposed and replaced with emissions from the combustion of natural gas (as would generally occur from electricity generating facilities). Emissions from diesel combustion (e.g., rail engines) are orders of magnitude higher than emissions from the combustion of natural gas. So overall emissions are

expected to decrease. No significant adverse impacts to air quality are expected from control measures requiring electricity use.

The emissions from electrical generation have been included in the emissions inventory prepared for the 2005 Ozone Strategy. Table 3.4-12 summarizes the emissions associated with electric generation in 2003 and 2010.

TABLE 3.4-12

Annual Average Emissions for Electric Generation in the Bay Area (tons/day)

Source Category	VOC	NOx
2003 Emission Inventory[(1)]		
Cogeneration	1.0	5.0
Power Plants	0.2	2.8
Total:	**1.2**	**7.8**
2010 Emission Inventory[(1)]		
Cogeneration	1.1	5.4
Power Plants	0.2	2.7
Total:	**1.3**	**8.1**
Emission Increases (Emissions in 2010 minus emissions in 2003)	0.1	0.3
Emission Increases Converted to Pounds per Day	200	600
Projected Increase Associated with the Ozone Strategy[(2)] (lbs/day)	20	60

(1) Source: BAAQMD, 2004

(2) Assumes that overall increase in electricity associated with the Ozone Strategy is about one percent of the increases in electricity generation that occurs between the years 2003 and 2010.

The inventory prepared for the 2005 Ozone Strategy includes estimates for cogeneration and power plants in 2003 and 2010. It is assumed that the emissions associated with electrical generation that are part of the control measures would partially contribute to the emission changes identified in the emission inventories. The inventory also accounts for growth in population. It has been estimated that implementation of all the control measures is expected to result in an overall increase in electricity in 2010 of less than one percent, relative to the projected peak electricity demand in 2010. The estimated VOC and NOx emissions due to increased electrical demand associated with implementation of the Ozone Strategy are expected to increase, but the overall VOC and NOx emissions are expected to be less than current emissions. Based on Table 3.4-12 and due to the existing regulations that would apply to the generation of electricity in the Bay Area, emissions from power generating equipment in the Air District are not expected to be significant.

The BAAQMD does not regulate electricity generating facilities outside of the Air District so the rules and regulations discussed above do not apply to electricity generating facilities outside of the Air District. About 82 percent of the electricity used in California is generated in-state and about 18 percent is imported (see Section 3.16.1). While these electricity generating facilities would not be subject to BAAQMD rules and regulations, they would be subject to the rules and regulations of the local air pollution control District and the U.S. EPA. These agencies also have established New Source Review regulations for new and modified facilities that generally require compliance with BACT or lowest achievable emission reduction technology. Most electricity generating plants use natural gas, which provides a relatively clean source of fuel (as compared to coal- or diesel-fueled plants). The emissions from these power plants would also be controlled by local, state, and federal rules and regulations, minimizing overall air emissions. These rules and regulations may differ from the BAAQMD rules and regulations because the ambient air quality and emission inventories in other air districts are different than those in the Bay Area. Compliance with the applicable air quality rules and regulations are expected to minimize air emissions in the other air districts to less than significant.

Electricity in California is also generated by alternative sources that include hydroelectric plants (about 23 percent), geothermal energy (about five percent), wind power (one percent), and solar energy (less than one percent) which are clean sources of energy. These sources of electricity generate little, if any, air emissions. Increased use of these and other clean technologies will continue to minimize emissions from the generation of electricity.

Conclusion: Based on the above evaluation and significance criteria, the secondary air quality impacts due to electricity generation are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant secondary air quality impacts from increased electricity demand have been identified so no mitigation measures are required.

Emissions from Mobile Sources

PROJECT-SPECIFIC IMPACTS: MS 3 – Low Emission Vehicle Incentives could require the use of clean fuels and use of alternative fuels, such as compressed natural gas or hydrogen, and could include other types of alternative fuels. Clean fuels are expected to be fuels other than petroleum fuels (e.g., natural gas) so that no modifications are required to refineries and no increase in emissions from refineries is expected. The use of alternative fuels, such as compressed natural gas, would be expected to displace petroleum-based fuels. The use of alternative fuels in mobile sources is expected to result in fewer air emissions than the use of petroleum-based fuels. Therefore, no significant impacts on air quality would be expected from the implementation of measure MS3.

Although overall the 2005 Ozone Strategy is anticipated to reduce emissions, compared to the existing baseline and No Project Alternative, some control measures could

encourage increased traffic and related emissions in localized areas (e.g., TCM 1 - Support Voluntary Employer-Based Trip Reduction Programs, TCM 3 - Improve Local and Areawide Bus Service, TCM 4 - Improve Regional Rail Service, TCM 6 - Improve Interregional Rail Service, TCM 7 - Improve Ferry Service, and TCM 15 - Local Land Use Planning and Development Strategies), and TCM 13 - Transit Use Incentives). These control measures could result in increased traffic near transit terminals, thus, generating increases in emissions, particularly CO emissions or CO "hot spots," in the local areas surrounding the transit terminals. While localized CO impacts are unlikely due to statewide use of oxygenated fuels and declining trends in background CO concentrations, the level of analysis provided in this Program DEIR prevented the District from concluding the impact would be less than significant. Therefore, localized increases in CO emissions are considered potentially significant.

The proposed Transportation Control Measures, such as TCM 15 include measures that would reduce traffic within mixed-use development including providing pedestrian pathways, providing transit benches and shelters, providing bicycle infrastructure (e.g., bike racks), providing bike routes, etc. Therefore, an overall decrease in vehicle miles traveled and air emissions would be anticipated regionally with implementation of the control measures contained in the 2005 Ozone Strategy.

Implementation of TCM 7 – Improve Ferry Service would result in a decrease in emissions of NOx and PM10 from passenger cars, buses and ferries. However, as shown in Table 3.4-13, a region-wide increase in emissions of SOx, VOC and CO would occur. Further, the potential increase in cold-start emissions during the evening commute could lead to a violation of the short-term carbon monoxide standard which is also considered a significant adverse impact (WTA, 2003). The change in emissions associated with TCM 7 for NOx and PM10 are expected to be beneficial, i.e., result in an emission decrease (NOx and PM10), or less than significant because they are regional pollutants. Although TCM 7 could result in an increase in certain pollutants, implementation of the 2005 Ozone Strategy is expected to result in an overall reduction in NOx and VOC emissions.

TCM 11 – Install Freeway Traffic Management Systems is aimed at reducing congestion on freeways. However, the increased use of ramp metering may result in increased traffic and congestion of local streets leading onto the freeway. Increased traffic could result in CO hot spots in areas near freeway on-ramps generating potentially significant impacts.

TABLE 3.4-13

Summary of Criteria Pollutant Emissions from Ferries (TCM 7)

Emissions (lbs/day)	Year 2025 without TCM 7	Year 2025 with TCM 7	Increase in Emissions from Future Baseline (lbs/day)
NOx	2,929	1,249	-1,680
SOx	101	550	449(1)
PM10	175	37	-137
CO	169	684	515(1)
VOC	155	338	183(1)

Source: WTA, 2003
(1) Increase in emissions were considered potentially significant in the WTA (2003) EIR.

Conclusion: The 2005 Ozone Strategy is expected to result in an overall reduction in emissions from mobile sources on a regional basis. However, some control measures could encourage increased traffic and related emissions in localized areas (e.g., TCM 1, TCM 3, TCM 4, TCM 6, TCM 7, TCM 13, and TCM 15). These control measures could result in increased traffic near transit terminals, thus, generating increases in emissions, particularly CO emissions or CO "hot spots," in the local areas surrounding the transit terminals. While localized CO impacts are unlikely due to statewide use of oxygenated fuels and declining trends in background CO concentrations, the level of analysis provided in this Program DEIR prevented the District from concluding the impact would be less than significant. Therefore, based on the above evaluation and significance criteria, the potential for localized increases in CO emissions is considered a significant impact.

PROJECT-SPECIFIC MITIGATION: The increase in cold start emissions and localized CO emissions can be reduced by encouraging non-drive access at the ferry terminals and encouraging implementation of other control measures such as TCM 5 - Improve Access to Rail and Ferries, and TCM 9 – Improve Bicycle Access and Facilities. However, the effectiveness of these mitigation measures cannot be quantified so the impact remains significant. Project level environmental analysis on the implementation of the various TCMs will be required to determine the potential for impacts at specific locations.

The WTA is planning to continue investigating the feasibility and applicability of using energy sources other than fossil fuels and different engine technologies. One promising technology is the use of fuel cells. Alternative energy sources and engine technologies are expected to become available and will be incorporated as they become feasible (WTA, 2003). Alternatives to diesel-fueled buses and rail engines must also be considered to minimize localized emissions at buses, ferry and rail terminals. However,

as future technology cannot be predicted, and the overall effects of the implementation of the TCMs cannot be reasonable assesses at this time, this impact remains significant.

Miscellaneous Air Quality Issues

The purpose of the 2005 Ozone Strategy is to assure the Bay Area continues progress toward attaining the State one-hour ozone standard through implementation of different control measures. By revising and updating emission inventories and control strategies and preparing the 2005 Ozone Strategy, the BAAQMD is complying with State law. The 2005 Ozone Strategy further identifies the rules and regulations that the BAAQMD and other agencies will be working to implement in the near future. Therefore, issues on the CEQA environmental checklist related to impacts on the existing air quality plan, rules and regulations or future compliance dates are not applicable to the 2005 Ozone Strategy. The 2005 Ozone Strategy establishes a new air quality plan and identifies control measures that will be implemented through adoption of rules and regulations to achieve compliance with the State ozone standard as expeditiously as practicable. No significant adverse impacts are anticipated on the existing 2000 air quality plan as the 2005 Ozone Strategy includes additional control measures that were not included in the 2000 Clean Air Plan that will lead to even further emission reductions. Therefore, no significant adverse impacts have been identified for the CEQA environmental checklist topics under air quality plan, rules and regulations, and future compliance dates.

3.4.3.2 Non-Criteria Pollutants

PROJECT SPECIFIC IMPACTS: Several control measures that are proposed in the 2005 Ozone Strategy may result in the substitution of solvents. When a product is reformulated to meet new VOC limits, however, a manufacturer could use a chemical, not used before, that may be a toxic air contaminant. This potential impact will need to be evaluated and mitigated as reformulation options are reviewed during the development of new VOC limits.

Two particular TACs used in some consumer products, methylene chloride and perchloroethylene, are specifically exempted from the VOC definition because of their very low ozone-forming capabilities. As a result, some manufacturers may choose to use methylene chloride or perchloroethylene in the reformulations to reduce the VOC content in meeting future limits. Product liability and regulations such as California's Proposition 65 are expected to minimize the use of toxic materials because manufacturer's would have to provide public notices if any Proposition 65 listed-material is used. In addition, the BAAQMD has established a Toxic Air Contaminant Program that would be expected to minimize TACs at stationary sources.

There is a potential that the exempt compounds may create air quality impacts if the exempt solvents contain toxic compounds that are not regulated by the State and federal TAC programs or by the BAAQMD's TAC rules. The potential impacts will need to be analyzed for each control measure during the rulemaking process. The BAAQMD does not exempt negligibly photochemically reactive compounds that are ozone depletors or

toxic air contaminants. Therefore, there is no incentive to use these toxic solvents or ozone depleting solvents.

Although overall the 2005 Ozone Strategy is anticipated to reduce emissions, compared to the existing baseline and No Project Alternative, some control measures could encourage higher traffic and related emissions in localized areas, including emissions of diesel exhaust. CARB estimates that diesel exhaust particulate matter contributes 71 percent to the total cancer risk (see Table 3.4-6) (CARB, 2000). TCMs that encourage the use of mass transit or increase service by transportation that uses diesel fuel could result in increased emissions of diesel exhaust, including TCM 1 - Support Voluntary Employer-Based Trip Reduction Programs, TCM 3 - Improve Local and Areawide Bus Service, TCM4 - Improve Regional Rail Service, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, TCM – 13 Transit Use Incentives and TCM 15 – Local Land Use Planning and Development Strategies). TCM 15 – Local and Land Use Planning and Development Strategies could concentrate traffic in specific areas. TCM 15 also includes measures that would reduce traffic within mixed-use development including providing pedestrian pathways, providing transit benches and shelters, providing bicycle infrastructure (e.g., bike racks), providing bike routes, etc. Further, MS 1 – Diesel Equipment Idling Ordinance could reduce emissions from diesel engines due to idling. On balance, an overall decrease in vehicle miles traveled and air emissions would be anticipated regionally; however, significant air quality impacts associated with the diesel exhaust could occur locally.

Conclusion: Based on the above evaluation and significance criteria, the 2005 Ozone Strategy is expected to result in an overall decrease in vehicle miles traveled and air emissions on a regional basis. However, significant localized air quality impacts associated with diesel exhaust could occur due to certain TCMs that would concentrate traffic in specific areas. Therefore, based on the above evaluation and significance criteria, impacts associated with non-criteria pollutants are considered significant.

PROJECT-SPECIFIC MITIGATION: Significant impacts have been identified for the potential increases of diesel exhaust emissions in localized areas near transit terminals. The increase in emissions can be reduced by encouraging non-drive access at the ferry terminals, such as proposed in TCM 5 – Improve Access to Rail and Ferries, and other measures in the 2005 Ozone Strategy. In addition, substantial statewide diesel emission reductions are expected due to CARB control measures aimed at diesel trucks. However, the effectiveness of these mitigation measures cannot be quantified at a local level so the impact remains significant.

3.4.3.3 Global Warming and Stratospheric Ozone Depletion

The Ozone Strategy as a whole will promote a net decrease in greenhouse gases. The transportation control measures are intended to reduce vehicle miles traveled and they will reduce carbon dioxide emissions from motor vehicles as compared to the No Project Alternative. Other strategies that promote fuel efficiency and pollution prevention will also reduce greenhouse gas emissions, such as SS15 – Promote Energy Efficiency.

Measures that stimulate the development and use of new technologies such as fuel cells will also be beneficial. In general, strategies that conserve energy and promote clean technologies also reduce greenhouse gas emissions.

Conclusion: Overall, the 2005 Ozone Strategy is expected to have a net effect of reducing emissions of compounds that contribute to global warming and stratospheric ozone depletion. Therefore, based on the above evaluation and significance criteria, impacts to global warming and stratospheric ozone depletion are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant secondary air quality impacts were identified to global warming and stratospheric ozone depletion so no mitigation measures are required.

3.4.4 MITIGATION MEASURES

Mitigation measures have been discussed under each subcategory. In summary, mitigation measures were required due to potential localized increases in CO and diesel particulate emissions, as they could exceed the BAAQMD significance thresholds. While localized CO impacts are unlikely due to statewide use of oxygenated fuels and declining trends in background CO concentrations, the level of analysis provided in this Program DEIR prevented the District from concluding the impact would be less than significant.

3.4.5 CUMULATIVE AIR QUALITY IMPACTS

3.4.5.1 Criteria Pollutants Cumulative Impacts

Some secondary emissions may occur as a result of implementing one or more control measures in the 2005 Ozone Strategy and some of these impacts are considered significant. The overall emission reductions in the 2005 Ozone Strategy are expected to far outweigh any potential secondary adverse air quality impacts that may occur. Each control measure will be subject to more detailed environmental analyses when specific rules or rule amendments are promulgated by the BAAQMD to evaluate the specific technology, identify secondary impacts, and identify feasible mitigation measures, as necessary. Rules implemented by the BAAQMD and other agencies are expected to have a cumulative beneficial impact on air quality by lowering criteria pollutant emissions.

The forecast for the Bay Area includes a significant increase in population with a related increase in traffic (vehicles miles traveled) over the next 25 years. The 2005 Ozone Strategy and other air plans and control measures have been developed, in part, to develop a strategy for attaining and maintaining compliance with ambient air quality standards in spite of this population growth. Emissions of NOx and ROG are expected to decline in the future, even as population and traffic increase due to various control measures. However, emissions of PM10 in the Air District are expected to increase (see Table 3.4-14).

The cumulative effects of the 2005 Ozone Strategy and other air quality rules, regulations, and plans are expected to be a reduction in vehicle miles traveled in the Bay Area compared to the No Project Alternative or baseline, thus providing beneficial impacts to the transportation system as well as air quality. Localized impacts, as discussed in the project-specific impacts above may occur. However, on a cumulative basis, the 2005 Ozone Strategy is expected to result in a reduction in criteria pollutants and therefore, no significant adverse cumulative impacts are anticipated as a result of the implementation of the 2005 Ozone Strategy.

TABLE 3.4-14
Bay Area Predicted Emissions (tons per day)

YEAR	POLLUTANT		
	ROG	NOx	PM10
2003	457	597	200
2005	400	544	204
2010	338	430	211
2020	302	318	232

The control measures proposed by the BAAQMD as part of the 2005 Ozone Strategy are estimated to achieve a total of 10.85 to 11.78 tons per day of ROG emission reductions, and between 9.89 to 10.90 tons per day of NOx emission reductions, providing a beneficial air quality impact (see Table 2-5). The rules implementing these emission reductions have proposed rule adoption schedules between 2004 and 2007.

TCMs that encourage the use of mass transit or increase service by transportation that uses diesel fuel could result in increased emissions and potentially significant localized emissions of CO. On balance, an overall decrease in vehicle miles traveled and air emissions would be anticipated regionally; however, significant air quality impacts associated with CO could occur locally. While localized CO impacts are unlikely due to statewide use of oxygenated fuels and declining trends in background CO concentrations, the level of analysis provided in this Program DEIR prevented the District from concluding the impact would be less than significant. Mitigation measures for these impacts were addressed in the impact specific discussions above.

The overall PM10 emission inventory is expected to increase (see Table 3.4-14). The increase in PM10 emissions is largely associated with increase in population and not the 2005 Ozone Strategy. Control measures to be implemented by CARB are expected to provide additional PM10, ROG and NOx emission reductions in the Air District, primarily associated with reduced emissions from mobile sources and consumer products.

Conclusion: The emission reductions gained by the control measures identified in the 2005 Ozone Strategy are expected to outweigh the potential secondary impacts on a regional basis. As noted in the above discussion on ambient air quality, implementation

of the control measures identified in the 2005 Ozone Strategy is expected to result in emission reductions to further the Bay Area towards compliance with the state ozone standard (even considering the increase in population growth). Considering the air quality benefits provided by the 2005 Ozone Strategy, no significant cumulative adverse impacts are expected.

CUMULATIVE IMPACT MITIGATION FOR CRITERIA POLLUTANTS: The mitigation measures for project specific impacts are provided after each impact discussion above. No additional significant adverse cumulative impacts for criteria pollutants were identified so no further mitigation measures are required.

3.4.5.2 Non-Criteria Pollutants Cumulative Impacts

Implementing the 2005 Ozone Strategy may contribute to new or additional non-criteria pollutant emissions. For example, increases in the use of methylene chloride and perchloroethylene could occur in consumer products because they are specifically exempted by CARB from the ROG definition due to their very low ozone-forming capabilities. There is a potential that the exempt compounds may create air quality impacts if the exempt solvents contain toxic compounds that are not regulated by the State and federal TAC programs. However, these compounds are not exempted from BAAQMD rules and regulations so there is no incentive to use these compounds in the Bay Area.

TCMs that encourage the use of mass transit or increase service by transportation providers that use diesel fuel could result in increased emissions and potentially significant localized TAC emissions of diesel exhaust. On balance, an overall decrease in vehicle miles traveled and air emissions would be anticipated regionally; however, significant air quality impacts associated with diesel exhaust could occur locally. Mitigation measures for these impacts were addressed in the project-specific impact discussions above.

CARB has identified particulate matter from diesel-fuel engines as a toxic air contaminant and is implementing a Risk Reduction Plan (RRP) to reduce particulate matter emissions from diesel-fueled engines and vehicles. The RRP includes: (1) new regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce diesel particulate emissions by about 90 percent; (2) new retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles where determined to be technically feasible and cost effective; and (3) new phase 2 diesel fuel regulations to reduce the sulfur content levels of diesel fuel to no more than 15 ppm to provide the quality of diesel fuel needed by the advanced diesel PM emission controls (CARB, 2000). The projected emission benefits associated with the full implementation of the plan (including proposed federal measures), are reductions in diesel particulate emissions and associated cancer risk of 85 percent by 2010 and 95 percent by 2020. The RRP will have a great impact on reducing the localized risks associated with activities that expose nearby individuals to diesel particulate emissions.

Conclusion: Overall, the 2005 Ozone Strategy will reduce non-criteria pollutants on a regional level. Further, implementation of CARB's Risk Reduction Plan will further reduce localized TAC emissions of diesel exhaust by about 90 percent. Considering the air quality benefits provided by the 2005 Ozone Strategy, no significant cumulative adverse impacts are expected.

CUMULATIVE IMPACT MITIGATION FOR NON-CRITERIA POLLUTANTS: No significant cumulative impacts for non-criteria pollutants were identified so no mitigation measures are required.

3.5 BIOLOGICAL RESOURCES

3.5.1 ENVIRONMENTAL SETTING

The Bay Area supports an extensive diversity of distinct vegetative communities. Broad habitat categories generally include coastal scrubs, oak woodlands, grasslands, estuaries, coastal salt marsh, riparian habitats, and eucalyptus groves, wetlands and rivers and streams. Wetlands, estuaries, rivers and streams, and urban disturbed habitats are not vegetative communities but provide wildlife habitats. The California Department of Fish and Game (CDFG) has identified several specific native vegetative communities as rare and/or sensitive. These natural communities are of special significance because the present rate of loss indicates that further habitat degradation may threaten the viability of plant and wildlife species within the community and hinder the long-term sustainability of the community or species. Natural communities within the Bay Area generally include coastal shrub and chaparral, grasslands, riparian, coastal marsh and estuaries, wetlands, woodlands, eucalyptus grove, and rivers and streams. These communities support a large diversity of wildlife.

The San Francisco Bay and Delta make up the Pacific Coast's largest estuary, encompassing roughly 1,600 miles of waterways and draining over 40 percent of California's fresh water. The Sacramento and San Joaquin Rivers flow from Northern California's inland valleys into the Delta's winding system of islands, sloughs, canals, and channels before emptying into San Francisco Bay and the Pacific Ocean (MTC, 2004). The marine environment supports a wide variety of species including fish, birds and mammals. The United States Fish and Wildlife Service recognizes several threatened and endangered species that occur in San Francisco Bay. These include the Steller sea lion (*Eumetopias jubatus*), the loggerhead sea turtle (*Caretta caretta*), the leatherback turtle (*Dermochelys coriacea*), the olive ridley sea turtle (*lepidochelys olivacea*), and several fish species including coho salmon, steelhead, tidewater goby, delta smelt, Pacific lamprey, and Sacramento splittail. The four later species are native residents; the other species, however, are expected to use open water habitat either seasonally or infrequently (MTC, 2004).

The facilities affected by the proposed stationary source control measures are expected to be located in the commercial and industrial areas within the Bay Area. These commercial/industrial areas have been graded to develop the various structures, and are typically surrounded by other commercial and industrial facilities. Native vegetation, other than landscape vegetation, has usually been removed from these facilities.

3.5.2 SIGNIFICANCE CRITERIA

The impacts on biological resources will be considered significant if any of the following criteria apply:

> The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
>
> The project interferes substantially with the movement of any resident or migratory wildlife species.
>
> The project adversely affects aquatic communities.

3.5.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates biological resources impacts that could occur as a consequence of efforts to improve air quality. Table 3.5-1 lists the control measures with potential impacts on biological resources.

TABLE 3.5-1

Control Measures with Potential Biological Resources Impacts

Control Measures	Control Measure Description	Control Methodology	Biological Resources Impact
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Impacts to sensitive biological resources due to construction of near ferry services and routes

TCM 7 – Improve Ferry Service would result in the construction of new or expanded facilities in the vicinity of the Pittsburg/Antioch, Martinez, Hercules/Rodeo or other terminals. Potential impacts to wetlands, marshlands and aquatic resources could result from dredging operations, construction of facilities or severe erosion from wake wash. These impacts were evaluated in the WTA DEIR (2003) and were considered to remain potentially significant following mitigation. In addition, the WTA DEIR also identified potentially significant impacts associated with the possibility of a ferry striking a whale (although rare) and from noise impacts on wildlife during construction activities.

No other direct or indirect impacts from implementing the control measures within the 2005 Ozone Strategy were identified which could adversely affect biological resources in the Air District. The control measures would primarily result in modifications at existing commercial or industrial facilities to reduce or eliminate existing emissions. Such existing facilities are generally located in appropriately zoned commercial or industrial areas, which typically do not support rare, threatened or endangered species or their habitat. Similarly, modifications at existing facilities would not be expected to interfere substantially with the movement of any native or migratory fish and wildlife species within wildlife corridors, or impede the use of native wildlife nursery sites.

TCM 15 – Local Land Use Planning and Development Strategies would attempt to influence land use patterns and reduce the time and distance traveled between home, jobs, schools, shops and services. TCM 15 would encourage compact, mixed use infill development near transit stations, transit corridors and town centers and discourage urban sprawl into non-urban areas, providing a potential benefit to undeveloped areas and the related biological resources in these areas.

Conclusion: Based on the above evaluation and significance criteria, the impacts on biological resources are expected to be significant to wetlands, marshlands and aquatic resources from dredging operations, construction of facilities or severe erosion from wake wash. In addition, the WTA (2003) DEIR also identified potentially significant impacts associated with the possibility of a ferry striking a whale (although rare) and from noise impacts on wildlife during construction activities.

3.5.4 MITIGATION MEASURES

Biological impacts associated with TCM 7 – Improve Ferry Service were considered potentially significant. The following mitigation measures have been imposed by the Water Transit Authority on this proposed control measure and the mitigation for significant impacts are summarized below (WTA, 2003):

B1 Wetland areas should be delineated on a site-specific basis. Specific wetland boundary determinations shall be used to avoid disturbance of these resources when specific terminal layout plans are defined. For example, parking lot facilities typically the largest part of a terminal footprint, could be located in areas away from the shore and associated wetlands.

B2 In cases where wetland impacts are unavoidable, suitable compensatory mitigation shall be designed within the same subarea and implemented in consultation with appropriate regulatory agencies.

B3 Disturbance of eelgrass beds and mudflats shall be avoided in the design of project features and routing of ferries. Site specific side scan sonar surveys would be required prior to implementation of new routes or construction of new terminals to verify that eelgrass is not present.

B4 As part of the environmental studies and documentation for specific projects, specific areas of eelgrass beds and mudflats that could be impacted shall be specifically determined. In cases where eelgrass is unavoidable, suitable compensatory mitigation shall be designed and implemented in consultation with appropriate regulatory agencies.

B5 Indirect impacts to eelgrass beds from sedimentation shall be avoided or reduced through the use of silt curtains to protect the beds from sedimentation or other methods that would otherwise protect the eelgrass from turbidity plumes generated from dredging.

B6 Ferries shall be equipped with a whale detection system such as forward-looking sonar.

B7 Terminal locations shall be reviewed for potential occurrence of listed species and habitat. Terminal locations and routes should be designed or located to avoid these species. In areas where construction of a terminal could impact a listed species, consultation shall be conducted with appropriate agencies and appropriate permits shall be required.

The biological impacts associated with TCM7 are expected to remain significant following mitigation.

3.5.5 CUMULATIVE BIOLOGICAL IMPACTS

The various control measures and air quality plans with the potential to impact biological impacts are expected to be limited to transportation related projects, the impacts of which were discussed above. Individual project specific impacts from control measure implementation are not expected to result in cumulatively considerable impacts to biological resources. Therefore, cumulative impacts to biological resources are expected to be less than significant. The 2005 Ozone Strategy is expected to improve air quality which would be beneficial to humans as well as plant and animal species in the Air District.

3.6 CULTURAL RESOURCES

3.6.1 ENVIRONMENTAL SETTING

Cultural resources are defined as buildings, sites, structures, or objects that 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 moderate climate combined

with the abundant natural resources found throughout the Bay Area have supported human habitation for several thousand years. Rising sea levels, the formation of the San Francisco Bay, and the resulting filling of inland valleys have covered these early sites, which were most likely located along the then existing bayshore and waterways. Existing evidence indicates the presence of many village sites from at least 5,000 years ago in the region (MTC, 2004).

Six different groups of native population, identified by their language, lived within the Bay Area, including Coastanoan, Eastern Miwok, Patwin, Coast Miwok, Pomo and Wappo. These native populations increased between 5,000 years ago and the arrival of the Spanish in the later 18th century. Native villages and campsites were inhabited on a temporary basis and are found in several ecological niches due to the seasonal nature of their subsistence base (MTC, 2004). Approximately 7,000 Native American and historic cultural resources have been recorded in the Bay Area and are listed with the Historical Resources Information System. About 1,373 cultural resources are listed on the National Register of Historic Places, of which approximately 240 are designated California Historic Landmarks. The California Inventory of Historic Resources includes a total of about 820 historic buildings, sites, or objects and 2,340 archaeological sites. The greatest concentration of listed historic resources occurs in San Francisco with 215 sites on the National Register. Alameda County has the second highest number of listed historic resources with 159 (MTC, 2004).

Dense concentrations of the Native American archaeological sites occur along the historic margins of San Francisco and San Pablo Bays. Archaeological sites have also been identified in the following environmental settings in all Bay Area counties: along historic bayshore margins, near sources of water (such as vernal pools and springs), along ridgetops, and on midslope terraces, and at the base of hills and on alluvial flats (MTC, 2004).

3.6.2 SIGNIFICANCE CRITERIA

Impacts to cultural resources will be considered significant if:

> The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
>
> Unique paleontological resources are present that could be disturbed by construction of the proposed project.
>
> The project would disturb human remains.

The CEQA Guidelines define a significant cultural resources 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 (CEQA Guidelines Section 15064.5(b)).

3.6.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates cultural resources impacts that could occur as a consequence of efforts to improve air quality. Table 3.6-1 lists the control measures with potential impacts on biological resources.

TABLE 3.6-1

Control Measures with Potential Cultural Resources Impacts

Control Measures	Control Measure Description	Control Methodology	Cultural Resources Impact
TCM 4	Upgrade and Expand Local and Regional Rail Service	Construction of additional rail facilities, electrification of rail services	Construction of new rail facilities could impact cultural resources
TCM 6	Improve Interregional Rail Service	Construction of new rail facilities	Construction of new rail lines could impact cultural resources
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Construction of new ferry facilities could impact cultural resources
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	Construction of new High Occ-upancy Vehicle (HOV) lanes	Construction of new freeway lanes could impact cultural resources

Implementing the proposed 2005 Ozone Strategy is primarily expected to result in controlling stationary source emissions at existing commercial or industrial facilities, providing incentives to control for mobile source emissions, or establishing transportation improvement projects. Affected facilities are typically located in appropriately zoned commercial or industrial areas or transportation corridors that have previously been disturbed.

In a small number of cases, implementing stationary source control measures in the proposed 2005 Ozone Strategy may require minor site preparation and grading at an affected facility. Under this circumstance, it is possible that archaeological or paleontological resources could be uncovered. Even if this circumstance were to occur, significant adverse cultural resource impacts are not anticipated because there are existing laws in place that are designed to protect and mitigate potential adverse impacts to cultural resources. As with any construction activity, should archaeological resources be found during construction that results from implementing the proposed BAAQMD control measures, the activity would cease until a thorough archaeological assessment is conducted.

Some of the transportation control measures may require more substantial construction activities and potentially disturb cultural resources. TCM 7 – Improve Ferry Service

would require dredging of new channels or pier retrofit or installation that could impact submerged, sub-bottom and previously unknown cultural resources in San Francisco Bay near the Hercules/Rodeo terminal location. TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 6 – Improve Interregional Rail Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways could result in construction of new terminals, railways, and freeway lanes and potentially impact previously unknown cultural resources.

Conclusion: Because the stationary sources potentially affected are existing facilities, and controlling stationary source emissions does not typically require extensive cut-and-fill activities, or excavation, it is unlikely that implementing stationary source control measures in the proposed 2005 Ozone Strategy will: (1) adversely affect historical or archaeological resources as defined in CEQA Guidelines §15064.5; (2) destroy unique paleontological resources or unique geologic features; or (3) disturb human remains interred outside formal cemeteries. However, implementation of TCMs 4, 6, 7 and 8 could adversely impact previously unknown historical, archaeological or paleontological resources and, therefore, could result in significant impacts.

3.6.4 MITIGATION MEASURES

The EIR for the Expansion of Ferry Transit Service in San Francisco Bay (TCM 7) included mitigation measures to reduce the potential impacts on cultural resources. Such mitigation includes detailed cultural surveys prior to construction activities, avoiding archaeological sites, preservation of the resources and so forth. The impacts were considered to remain significant following mitigation as construction could impact known or unknown cultural resources (WTA, 2003).

The following mitigation measures are required to minimize the potential significant impacts on cultural resources associated with TCM 7 construction activities:

CR1 Cultural surveys shall be required prior to construction activities associated with new transportation facilities in areas where cultural resources may be expected.

CR2 When possible, development near or on cultural resources will be avoided.

CR3 Where cultural resources cannot be avoided, a qualified paleontologist/ archaeologist monitor will conduct full-time monitoring of construction activities in areas that are likely to contain paleontologic resources. In areas identified with a moderate to low potential to contain fossils, monitoring time will be reduced until fossil remains are discovered, at which time monitoring will then be increased to full-time.

CR4 A qualified archaeologist shall monitor ground disturbing activities in native soils/sediments, as well as the initial stages of grading of the property. In the event that archaeological resources are discovered during construction, the monitor will have the authority to temporarily halt or divert construction in the

immediate vicinity of the discovery while it is evaluated for significance. Construction activities could continue in other areas. If the discovery proves to be significant, additional investigation, such as evaluation and data recovery excavation may be warranted.

CR5 A qualified paleontologist will be retained to supervise monitoring of construction excavations and to produce a mitigation plan in areas of cultural resource sensitivities. Paleontological monitoring will include inspection of exposed rock units and microscopic examination of matrix to determine if fossils are present. The paleontologist will have authority to temporarily divert grading away from fossil remains.

CR6 If microfossils are present, the monitor will collect matrix for processing. In order to expedite removal of fossiliferous matrix, the monitor may request heavy machinery assistance to move large quantities of matrix out of the path of construction to designated stockpile areas. Testing of stockpiles will consist of screen washing small samples (approximately 200 pounds) to determine if significant fossils are present. Productive tests will result in screen washing of additional matrix from the stockpiles to a maximum of 6,000 pounds per locality to ensure recovery of a scientifically significant sample.

CR7 Recovered fossils will be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis and reposited in a designated paleontological curation facility.

CR8 At each fossil locality, field data forms will record the locality, strategraphic sections will be measured, and appropriate scientific samples collected and submitted for analysis.

CR9 The qualified paleontologist will prepare a final mitigation report to be filed with the lead agency and the repository.

The above mitigation measures are expected to reduce the potential impacts on cultural resources associated with construction activities. Until final locations and designs are known for some of the transportation control measures, the impact on unknown cultural resources cannot be determined and this remains a potentially significant impact.

3.6.5 CUMULATIVE IMPACTS ON CULTURAL RESOURCES

The various control measures contained within the 2005 Ozone Strategy and other air quality plans with the potential to impact cultural resources are expected to be limited to transportation related projects, the impacts of which were discussed above. No additional cumulative impacts, other than the project specific impacts discussed above are expected. Improving air quality could provide benefits to historic buildings within the Bay Area by minimizing exposure to chemicals that could result in building deterioration.

3.7 GEOLOGY AND SOILS

3.7.1 ENVIRONMENTAL SETTING

The Bay Area is located in the Coast Range geomorphic province, with portions of Contra Costa and Solano Counties extending into the Great Valley geomorphic province. The Coast Range extends about 400 miles along the Pacific Coast, from Oregon into southern California. The province is characterized by a series of northwest trending ridges and valleys controlled by tectonic folding and faulting and generally characterize the geologic setting of the San Francisco Bay region, 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 interfingered 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, Calaveras, Rodgers Creek-Healdsburg, Concord-Green Valley, Greenville-Marsh Creek, Seal Cove-San Gregorio and West Napa faults (Figure 3.7-1). Other smaller faults in the region classified as potentially active include the Southampton and Franklin faults. The San Andreas and the Hayward faults are the two main active, strike-slip faults in the Bay Area and have experienced movements within the last 150 years. The San Andreas fault is a major structural feature in the region and forms a boundary between the North American and Pacific tectonic plates. Recent earthquakes over 5.0 magnitude are included in Table 3.7-1.

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.

Liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of severe vibration (e.g., earthquake). The relatively rapid loss of soil shear strength during strong earthquake shaking results in the temporary fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage homes, buildings, roads, pipelines, etc. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at depths less than 40 feet. In addition, liquefaction can occur in areas with unconsolidated or artificial fill sediments such as those located in reclaimed areas along the margin of the San Francisco Bay. Liquefaction potential is highest in areas underlain by Bay fills, Bay Mud, and unconsolidated alluvium.

TABLE 3.7-1

EARTHQUAKES IN THE BAY AREA OVER 5.0 MAGNITUDE SINCE 1960

YEAR	LOCATION (epicenter)	MAGNITUDE
1960	West of Cape Mendocino	6.2
1980	Livermore	5.8
1984	Morgan Hill	6.1
1984	Mendocino Fracture Zone	6.7
1989	Loma Prieta	7.1
1992	Cape Mendocino	7.2
1992	Cape Mendocino	6.5
1992	Cape Mendocino	6.6
1994	Mendocino Fracture Zone	6.9
2000	Mendocino Fracture Zone	5.9

Source: California Division of Mines and Geology, 2004

Tsunamis are tidal waves or period waves that are caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. Tsunamis affecting the Bay Area would most likely originate west of the Bay, within the Pacific Rim. During the period between 1854 and 1964, approximately 21 tsunamis were recorded at the Fort Point tide gauge in San Francisco. The largest wave height recorded was 7.4 feet resulting from the 1964 Alaska earthquake. It is estimated that a tsunami with a wave height or run up to 20 feet could pass through the Golden Gate every 200 years. A ten-foot wave is estimated to occur every 90 years. Areas that are highly susceptible to tsunami inundation tend to be located in low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled (MTC, 2004).

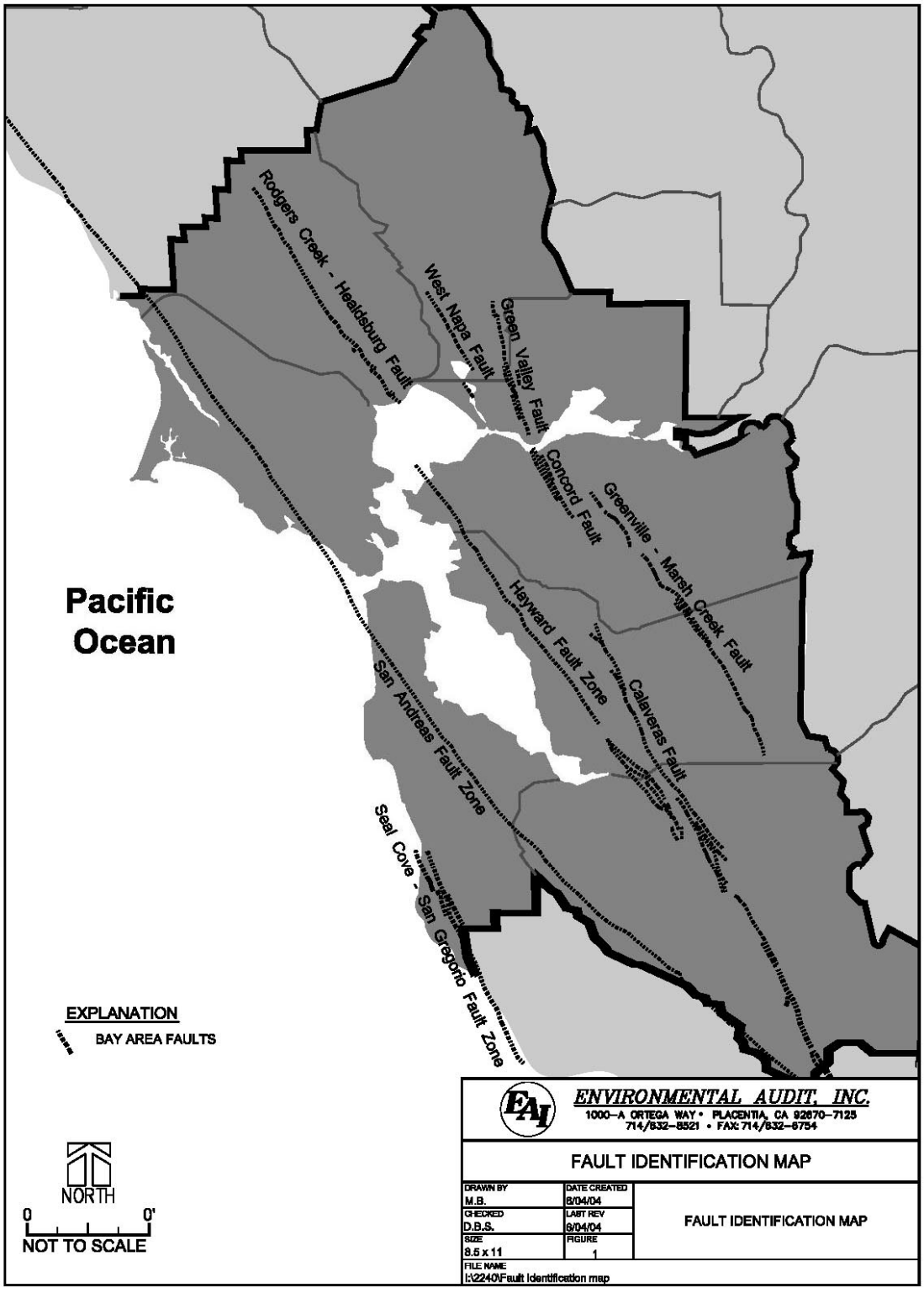

FIGURE 3.7-1
Fault Identification Map

3.7.2 SIGNIFICANCE CRITERIA

The impacts on the geological environment will be considered significant if any of the following criteria apply:

Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.

Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.

Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.

Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.

Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

3.7.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates impacts on geology and soil that could occur as a consequence of efforts to improve air quality. No control measures were identified that are expected to result in impacts to geological impacts. However, all control measures that require construction of new facilities could potentially have geological hazards and are addressed below.

The proposed 2005 Ozone Strategy will not directly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, landslides, mudslides or substantial soil erosion for the following reasons: When implemented as rules or regulations, BAAQMD control measures do not directly or indirectly result in construction of new structures. Some structural modifications, however, at existing affected facilities may occur as a result of installing control equipment or making process modifications. In any event, existing affected facilities or modifications to existing facilities would be required to comply with relevant Uniform Building Code requirements in effect at the time of initial construction or modification of a structure.

New structures must be designed to comply with the Uniform Building Code Zone 4 requirements since the Air District is located in a seismically active area. The local cities or counties are responsible for assuring that projects comply 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 represents the foundation conditions at the site.

Any potentially affected facilities that are located in areas where there has been historic occurrence of liquefaction, e.g., coastal zones, or existing conditions indicate a potential for liquefaction, including expansive or unconsolidated granular soils and a high water table, may have the potential for liquefaction induced impacts at the project sites. The Uniform Building Code requirements consider liquefaction potential and establish more stringent requirements for building foundations in areas potentially subject to liquefaction. Therefore, compliance with the Uniform Building Code requirements is expected to minimize the potential impacts associated with liquefaction. The issuance of building permits from the local cities or counties will assure compliance with the Uniform Building Code requirements. Therefore, no significant impacts from liquefaction are expected.

Because facilities affected by any BAAQMD control measures are typically located in industrial or commercial areas, which are not typically located near known geological hazards (e.g., landslide, mudflow, seiche, tsunami or volcanic hazards), no significant adverse geological impacts are expected.

Although the proposed 2005 Ozone Strategy control measures may require modifications at existing industrial or commercial facilities, such modifications are not expected to require substantial grading or construction activities. Construction would be expected for some of the transportation control measures for ferry service, rail service and to construct carpool or bus lanes. The proposed control measures do not have the potential to substantially increase the area subject to compaction or overcovering since the subject areas would be limited in size and, typically, have already been graded or displaced in some way. Therefore, significant adverse soil erosion impacts are not anticipated from implementing the 2005 Ozone Strategy.

The CEQA environmental checklist includes a discussion of septic tanks and alternative wastewater disposal systems within the discussion of Geology and Soils. Therefore, a discussion of septic tanks and alternative septic systems is included herein for completeness. Septic tanks or other similar alternative wastewater disposal systems are typically associated with small residential projects in remote areas. The proposed 2005 Ozone Strategy does not contain any control measures that generate construction of residential projects in remote areas. BAAQMD control measures typically affect existing industrial or commercial facilities, which already are hooked up to appropriate sewerage

facilities so no impacts on septic tanks or alternative wastewater disposal systems are expected.

Conclusion: Based on the above evaluation and significance criteria, the impacts on geological resources associated with implementation of the 2005 Ozone Strategy are expected to be less than significant.

3.7.4 MITIGATION MEASURES

No significant adverse impacts on geology and soils are expected so no mitigation measures are required.

3.7.5 CUMULATIVE GEOLOGY AND SOILS IMPACTS

The cumulative impacts are essentially the same as the direct impacts outlined above. The projected increase in population in the Bay Area will result in increased risk of exposure of people and property to the potentially damaging effects of strong seismic shaking, fault rupture, seismically induced ground failure and slope instability. The potential for structural failures, injuries and loss of life would be greatest on raised structures, on earthquake susceptible soils and within fault zones. These issues are related to population growth and not to air quality plans, rules or regulations. Therefore, no significant cumulative impacts on geology and soils are expected.

3.8 HAZARDS AND HAZARDOUS MATERIALS

3.8.1 ENVIRONMENTAL SETTING

The goal of the 2005 Ozone Strategy is to attain and maintain the State one-hour ozone standard, thus improving air quality and protecting public health. Some of the proposed control measures intended to improve overall air quality may, however, have direct or indirect hazards associated with their implementation. Hazard concerns are related to the potential for fires, explosions or the release of hazardous substances in the event of an accident or upset conditions.

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facility. 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 refineries. 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.

3.8.1.1 Hazardous Materials Incidents

The California Hazardous Materials Incident Reporting System (CHMIRS) is a post incident reporting system to collect data on incidents involving the accidental release of hazardous materials. Information on accidental releases of hazardous materials are reported to and maintained by OES. In 2001, there were a total of 1,398 incidents reported in the nine counties regulated by the BAAQMD (see Table 3.8-1). The statistical information is from a widely distributed cross section of sources in California. These data may not accurately represent the actual occurrences of incidents throughout the state because of differences in population, non-uniform distribution of commercial and industrial facilities, and differences in resources between participating agencies statewide.

TABLE 3.8-1

Hazardous Materials Incidents 2001 by County

COUNTY	REPORTED INCIDENTS
Alameda	307
Contra Costa	372
Marin	72
Napa	33
San Francisco	97
San Mateo	133
Santa Clara	128
Solano	143
Sonoma	113
Total No. of Incidents	1,398

Source: Governor's Office of Emergency Services, 2001

The location of the spills varies (see Table 3.8-2). In the nine counties that comprise the Air District the major portion of the spills occurred during transportation or at transportation facilities. Incidents at utilities, at unknown locations and at industrial facilities were the most common locations, respectively, for hazardous materials incidents. About 15.5 percent of the hazardous materials incidents that occurred during transportation activities occurred within the nine counties that comprise the Bay Area.

TABLE 3.8-2

Hazardous Materials Incidents 2001

Spillsite	BAAQMD	Statewide	Percent of State Total
Transportation	604	3,104	19.5
Industrial	211	1,045	20.2
Commercial	142	818	17.4
Military	6	98	17.9
Residential	119	892	13.3
Waterways	129	505	6.1
Utilities	53	206	25.5
Other	135	756	25.2
Unknown	0	1,594	0
Total	**1,398**	**9,018**	**15.5**

Source: Governor's Office of Emergency Services, 2001

3.8.2 SIGNIFICANCE CRITERIA

The impacts associated with hazards will be considered significant if any of the following occur:

> Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
>
> Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

3.8.3 ENVIRONMENTAL IMPACTS

Table 3.8-3 lists the control measures associated with the 2005 Ozone Strategy with potential hazard impacts. The potential hazard impacts include hazards associated with the reformulation of coatings, ammonia use in selective catalytic reduction (SCR) units, use of fuel additives and alternative fuels. SS 6 - Flares was adopted by the Board of Directors on July 20, 2005, as Regulation 12: Rule 12: Flares. An environmental impact report was prepared for this rule development which concluded that potential hazards associated with regulating flare operations would be less than significant (BAAQMD 2005).

Reformulated Coatings

The 2005 Ozone Strategy includes control measures that could require reformulation of coatings and solvent to regulate VOC emissions by establishing VOC content requirements for products such as coatings and solvents. These control measures include SS 1 – Auto Refinishing, SS 2 – Graphic Arts Operations, SS 3 – High Emitting Spray Booths, SS 4 – Polyester Resin Operations, and SS 5 – Wood Products Coating, and may result in reformulating these products with materials that have a low content or contain exempt VOC materials. It is expected that future VOC content limits required for coatings and consumer products can be achieved, in part, through the use of coatings and products reformulated with acetone exempt solvents and water based solvents. Acetone is an exempt compound from air quality rules and regulations because of its low reactivity. With regard to possible replacement solvents, CARB indicates that the trend in coatings technology is to replace solvents with less toxic/less hazardous coalescing solvents (Yolo-Solano AQMD, 2001). Additionally, CARB staff indicates that a majority of water-based formulations do not contain solvents that are hazardous air pollutants (Yolo-Solano AQMD, 2001).

TABLE 3.8-3

Control Measures with Potential Hazard Impacts

Control Measures	Control Measure Description	Control Methodology	Impact
SS 1	Auto Refinishing	Reformulated low-VOC coatings/solvents	Potential exposure to glycol ethers; flammability of acetone
SS 2	Graphic Arts Operations	Reformulated low-VOC coatings/solvents	Potential exposure to glycol ethers; flammability of acetone
SS 3	High Emitting Spray Booths	Reformulated low-VOC coatings/solvents, add on control devices	Potential exposure to glycol ethers; flammability of acetone
SS 4	Polyester Resin Operations	Reformulated low-VOC coatings/solvents	Potential exposure to glycol ethers; flammability of acetone
SS 5	Wood Products Coating	Reformulated low-VOC coatings/solvents	Potential exposure to glycol ethers; flammability of acetone
SS 14	Stationary Gas Turbines	Add-on control equipment	SCR to control NOx could result in hazard impacts associated with ammonia
MS 3	Low Emission Vehicle Incentives	Purchase low or zero-emission vehicles or engines, engine repowers, retrofits & replacements; add-on control equipment; clean fuels or additives; and use of alternative fuels	Potential fuel additives can be hazardous. The use of fuel additives is federally regulated and requires evaluation of health effects prior to approval. May promote the use of alternative fuels particularly compressed natural gas
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Increase in use of alternative fuels (hydrogen)

To the extent that hazardous materials are used to replace higher VOC-containing materials, it is conceivable that implementing these control measures could create hazard impacts. In addition, these materials could be accidentally released into the environment.

As shown in Table 3.8-4, the flammability classifications by the National Fire Protection Association (NFPA) are the same for acetone, t-butyl acetate, toluene, xylene, MEK, isopropanol, butyl acetate, and isobutyl alcohol. Recognizing that as a "worst-case," acetone has the lowest flash point, it still has the highest Lower Explosive Limit, which means that acetone vapors will not cause an explosion unless the vapor concentration exceeds 26,000 ppm. Under operating guidelines of working with flammable coatings under well-ventilated areas, as prescribed by the fire department codes, it would be difficult to achieve concentrated streams of such vapors (SCAQMD, 2003).

TABLE 3.8-4
Chemical Characteristics for Common Coating Solvents

Chemical Compounds	Flashpoint (^{o}F)	Lower Explosive Limit (% by Vol.)	Flammability Classification (NFPA)
Toluene	40	1.3	Serious
Xylene	90	1.1	Serious
MEK	21	2.0	Serious
Isopropanol	53	2.0	Serious
Butyl Acetate	72	1.7	Serious
Isobutyl Alcohol	82	1.2	Serious
Stoddard Solvent	140	0.8	Moderate
Petroleum Distillates (Naptha)	105	1.0	Severe
EGBE	141	1.1	Moderate
EGME	107	2.5	Moderate
EGEE	120	1.8	Moderate
Acetone	1.4	2.6	Serious
Di-Propyl Glycol	279	1	Slight
Propylene Glycol	210	2.6	Slight
Ethylene Glycol	232	3.2	Slight
Texanol	248	0.62	Slight
Oxsol 100	109	0.90	Slight
t-Butyl Acetate	59	1.5	Serious
Hexamethylene Diisocyanate	284	1	Slight
Methylene Bisphenyl Diisocyanate	385	1	Slight
Toluene Diisocyanate	270	1	Slight

Source: SCAQMD, 2003

As a "worst-case" assumption, it is assumed most affected coating categories would be reformulated with acetone to meet the interim and final VOC content limits. The labels and MSDSs accompanying acetone-based products caution the user regarding acetone's flammability and advise the user to "keep the container away from heat, sparks, flame and all other sources of ignition." All of the large coating manufacturers currently offer pure acetone for sale in quart or gallon containers with similar warnings.

The fire departments regulate spray application of flammable or combustible liquids. They require no open flame, spark-producing equipment or exposed surfaces exceeding the ignition temperature of the material being sprayed within the area. For open spraying, as would be the case for the field application of the acetone-based coatings, no spark-producing equipment or open flame shall be within 20 feet horizontally and 10 feet vertically of the spray area. Anyone not complying with the guidelines would be in violation of the current fire codes. The fire departments limit residential storage of flammable liquids to five gallons and recommends storage in a cool place. If the flammable coating container will be exposed to direct sunlight or heat, storage in cool

water is recommended. Finally, all metal containers involving the transfer of five gallons or more should be grounded and bonded (SCAQMD, 2003).

Conclusion: Based upon the above considerations, hazard impacts and impacts to fire departments are expected be less than significant. Similarly, any increase in future compliant coating materials would be expected to result in a concurrent reduction in the number of accidental releases of coating materials. As a result, the net number of accidental releases would be expected to remain constant. Furthermore, if manufacturers use solvents such as Texanol, propylene glycol, etc., in future compliant water-borne coatings, no significant adverse hazard impacts would be expected to occur, because in general, these solvents are less flammable solvents as rated by the NFPA (SCAQMD, 2003).

Ammonia Use in SCRs

Proposed control measure SS 14 – Stationary Gas Turbines would require or encourage the use of SCR to reduce NOx emissions. Ammonia or urea is used to react with the NOx, in the presence of a catalyst, to form nitrogen gas and water. In some SCR installations, anhydrous ammonia is used. Safety hazards related to the transport, storage and handling of ammonia exist. Ammonia has acute and chronic non-cancer health effects and also contributes to ambient PM10 emissions under some circumstances.

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

Some of the control measures would require the increased use and storage of ammonia. Stationary gas turbines that would likely use SCRs would be industrial and commercial facilities, located in industrial/commercial zones. However, the use and storage of anhydrous ammonia would be expected to result in significant hazard impacts as there is the potential for anhydrous ammonia to migrate off-site and expose individuals to concentrations of ammonia that could lead to adverse health impacts. Anhydrous ammonia would be expected to form a vapor cloud (since anhydrous ammonia is a gas at standard temperature and pressures) and migrate from the point of release. The number of people exposed and the distance that the cloud would travel would depend on the meteorological conditions present. Depending on the location of the spill, a number of individuals could be exposed to high concentrations of ammonia resulting in potentially significant impacts.

In the event of an aqueous ammonia release, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a release from on-site vessels or storage tanks, spills would

be released into a containment area, which would limit the surface area of the spill and the subsequent toxic emissions. The containment area would limit the potential pool size, minimizing the amount of spilled material that would evaporate, form a vapor cloud, and impact residences or other sensitive receptors in the area of the spill. Significant hazard impacts associated with a release of aqueous ammonia would not be expected.

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

Although trucking of ammonia and other hazardous materials is regulated for safety by the U.S. DOT, there is a possibility that a tanker truck could be involved in an accident spilling its contents. The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition, and driver training. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality.

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

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

In the unlikely event that the tanker truck would rupture and release the entire 150 barrels of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water

accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent toxic emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. Without this pooling effect on an impervious surface, the spilled ammonia would not evaporate into a toxic cloud and impact residences or other sensitive receptors in the area of the spill. An accidental aqueous ammonia spill occurring during transport is, therefore, not expected to have significant impacts.

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

Conclusion: Based on the above evaluation and significance criteria, the hazard impacts associated with the use and transport of aqueous ammonia are less than significant. The hazard impacts associated with the use and transport of anhydrous ammonia are potentially significant.

Use of Fuel Additives

Mobile Source Control Measure MS 3 - Low Emission Vehicles, would encourage the use of fuel additives to provide emission reductions. In the past, the introduction of fuel additives into gasoline has resulted in environmental impacts, e.g., lead and MTBE. Before proposing rules requiring fuel additives, federal regulations require that the additives be evaluated for their toxic effects. The additives need to be evaluated for their potential health impacts associated with exposure, secondary air impacts (including generation of toxic air contaminants), hazard impacts, impacts on water quality, and any other potential environmental impacts that could occur. These studies are required prior to approving the additives to be used in any fuel and require that the benefits of the additive (e.g., emission reductions) outweigh any of the negative impacts associated with the additive.

Conclusion: Because of these requirements, the potential impacts of fuel additives are less than significant because negative impacts would be identified and mitigated, as necessary, prior to their use.

Alternative Fuels

Control Measures MS 3 – Low Emission Vehicles, and TCM 7- Improve Ferry Service, would establish incentive programs and in-use strategies requiring or promoting the use of alternative clean fuel, particularly compressed natural gas. Compressed natural gas (CNG) is a flammable material and increased use of natural gas could result in increased hazards associated with the transport and use of natural gas, particularly in mobile sources.

Natural gas is mainly methane, which is a mixture of hydrocarbons that are in gaseous form at ambient temperature and pressure. Natural gas can be compressed to increase its density, and in compressed form it contains a high enough fuel value that it can be used as a fuel for motor vehicles. Typical on-board pressures for CNG range from 3,000 to 3,600 pounds per square inch gauge (psig).

Compared with diesel fuel and gasoline the following can be stated:

- Diesel fuel and gasoline are toxic to the skin and lungs and CNG is not;
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air =1, gasoline is 3.4 and diesel fuel is >4). CNG is lighter than air (specific gravity is 0.55) and disperses more readily in air;
- CNG has a higher auto ignition temperature (1,200 ^{o}F) than diesel fuel (500 ^{o}F) or gasoline (500 ^{o}F);
- CNG is more difficult to ignite since it has a "lower flammability limit" that is higher (5.3 percent) than gasoline (one percent) or diesel fuel (0.5 percent); and,
- Natural gas can be directly shipped via pipelines to the compressor station, rather than by on-road delivery trucks, and has less delivery accident risk than vehicle shipments.

The compressed natural gas cylinders in vehicles are built to the Standards for CNG Vehicular Fuel Systems, specified in NFPA 52. CNG fuel tanks are made of one-half to three-quarter inch aluminum or steel and have been shown to be safer than conventional gasoline tanks in accidents. If a sudden release of CNG were to occur, the gas disperses rather than pooling or forming a vapor cloud like gasoline. Due to the high ignition temperature of CNG, the risk of fire is lower than gasoline and comparable to diesel fuel (SCAQMD, 2003).

CNG bottles are typically stored above ground as opposed to below ground for gasoline or diesel fuel tanks. As such, there is a risk of vehicles colliding with the bottles causing a gas release. This can generally be mitigated by installation of curbing and bollards to protect the tanks from vehicle operations.

The main additional hazard associated with the use of CNG versus conventional fuels is the exposure to high pressures employed during storage, dispensing and operations. Due to these high pressures a large amount of gas could escape in a short amount of time and,

if present under flammable conditions, could explode in the presence of an ignition source. Another potentially significant hazard is a release of natural gas during vehicle maintenance.

There are various existing regulations and recommended safety procedures that, when employed, will reduce any slightly higher insignificant hazards associated with use of alternative clean fuels to the same or lower level as conventional fuels. For example, the regulations and safety procedures associated with danger of releasing gas potentially creating explosive hazards includes the procedure to install methane detection systems to provide early detection of leaks and alert the maintenance personnel (CFC 2903.2.5). In addition, ignition sources can be reduced/eliminated by ensuring that all electrical systems are explosion proof (smoking and open flames are prohibited under CFC 2901.7). Providing adequate ventilation can prevent the occurrence of explosive conditions (required under CFC2903.1). Procedures can be established to ensure that all vehicles requiring maintenance are defueled and depressurized before admission to the maintenance depot (SCAQMD, 2003).

Electric Powered Vehicles

Electricity used to power vehicles is commonly provided by batteries, but fuel cells are also an emerging competitor. Batteries are energy storage devices and fuel cells convert chemical energy to electricity. Commercially available electric vehicles are mostly battery-powered at the present time. The following discussion concentrates, therefore, on battery powered electric vehicles.

In 1996, the International Center for Technology Assessment (ICTA) conducted a comprehensive review of the safety concerns associated with the use of electric vehicles. ICTA evaluated what it considered to be the four most pressing safety considerations associated with the use of electric vehicles, which include hydrogen offgassing, electrolyte spillage, electric shock, and exposure to toxic fumes. First, the ICTA found that hydrogen offgassing risks are not present in the three types of batteries likely to be used in electric vehicles. In fact, in these three battery technologies hydrogen gas is not released as part of the chemical processes, which take place during normal operation. Additionally, the risk of hydrogen emissions during stressful conditions has been minimized by the use of seals and proper valve regulation. Finally, the National Electric Code's (NEC's) and the Society of Automotive Engineer's (SAE's) recommended safety practices and guidelines for the operation and maintenance of electric vehicles, minimizes the hydrogen gas risk during battery recharging (ICTA, 1996).

Second, the ICTA found that electric vehicle batteries do not present a serious risk of burns from electrolyte spillage. While electrolyte leakage presents a risk in today's internal combustion engine vehicles because of their use of flooded lead acid batteries, most electric vehicles use batteries that are sealed, maintenance-free, and use either starved or gelled electrolyte. Moreover, the SAE, in conjunction with existing federal safety standards, has established standards that regulate the amount of electrolyte allowed to escape during an electric vehicle accident. As a result of these battery technologies

and the SAE efforts, the amount of electrolyte that can escape from a breached battery casing resulting from an accident has been minimized (ICTA, 1996).

Third, the ICTA found that the risk of electric shock from electric vehicle use and charging poses minimal safety risk. The entire design of electric vehicles has been premised around minimizing electrical hazards. The high voltage circuits in current electric vehicle designs are self-contained and entirely isolated from the passenger compartment, other electric conductors on board the vehicle, and from the vehicle chassis itself (unlike the battery in a conventional internal combustion engine vehicle, which uses the frame as grounding). Electric vehicles further isolate sources of electricity by using automatic disconnection devices in the event of a malfunction to disconnect the main propulsion battery from all electrical components in the vehicle. Finally, the SAE and manufacturers have worked closely to ensure that the NEC provides for the safe use of both conductive and inductive electric vehicle charging systems (ICTA, 1996).

Fourth, ICTA found that the configuration of modern electric vehicles minimizes the risk of exposure to toxic and hazardous materials during normal operating conditions. By isolating batteries and battery packs from the rest of a vehicle operating system, the chance of fire that could cause batteries to release toxic fumes is minimized. Moreover, crash tests and direct combustion attempts have indicated that batteries themselves are virtually non-flammable. In addition, U.S. OSHA has set strict standards to ensure that battery manufacturers do not expose workers to harmful doses of toxic or carcinogenic materials during manufacture (ICTA, 1996).

Overall, ICTA's findings support the view that the widespread adoption of electric vehicles will result in safer vehicles than the gasoline- or diesel-fueled ICEs currently in use (ICTA, 1996). Given ICTA's findings on electric vehicle safety, significant hazards risks are not expected from using this technology.

Conclusion: Conventional fuels, such as gasoline and diesel fuel, have been used since the introduction of the internal combustion engine, and their associated hazards are well known. The alternative clean-fuels discussed in this section pose different hazards during storage, handling, transport, and use than conventional fuels. In general, the hazards posed by the conversion to alternative clean fuels appear no greater than those posed by conventional fuels, particularly when compared to gasoline. Compared to gasoline, hazards due to fuel leakage are lower due to the lower vapor densities, higher auto ignition temperatures, and the higher "Lower Flammability Limits" of the clean fuels.

There are various existing regulations and recommended safety procedures that, when employed, will reduce any slightly higher insignificant hazards associated with use of alternative clean fuels to the same or lower level as conventional fuels. Therefore, when affected operators comply with existing regulations and recommended safety procedures, hazards impacts associated with the use of alternative clean-fuels will be the same or less than those of conventional fuels. Accordingly, significant hazard impacts are not expected from the use of alternative fuels.

Use of alternative fuels will require additional knowledge and training of emergency responders and of owners/operators of fueling stations regarding maintaining and operating alternative fuel refueling stations. Therefore, when users of alternative fuels (including responders and owners/operators of fueling stations) comply with existing regulations and recommended safety procedures, hazards impacts associated with the use of alternative clean-fuels will be the same or less than those of conventional fuels. Accordingly, significant hazard impacts are not expected from the increased use of alternative fuels.

Other Hazard Impacts

The following discussion of "Other Hazard Impacts" discusses additional topics on the CEQA Environmental Checklist, and some of these topics are not applicable to the 2005 Ozone Strategy. These topics include hazardous materials, airport land use plans, adopted emergency response plans and wildland fire hazards.

Government Code §65962.5 typically refers to a list of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits. Most facilities affected by the proposed control measures are not expected to be on this list and would not typically be expected to generate large quantities of hazardous materials. For any facilities affected by the proposed control measures that are on the list, it is anticipated that they would continue to manage any and all hazardous materials in accordance with federal, state and local regulations.

The proposed project will not adversely affect any airport land use plan or result in any safety hazard for people residing or working in the Air District. U.S. Department of Transportation – Federal Aviation Administration Advisory Circular AC 70/7460-2K provides information regarding the types of projects that may affect navigable airspace. Projects that involve construction or alteration of structures greater than 200 feet above ground level within a specified distance from the nearest runway; objects within 20,000 feet of an airport or seaplane base with at least one runway more than 3,200 feet in length and the object would exceed a slope of 100:1 horizontally (100 feet horizontally for each one foot vertically from the nearest point of the runway; etc.), may adversely affect navigable airspace. Control measures in the proposed 2005 Ozone Strategy are not expected to require construction of tall structures near airports so potential impacts to airport land use plans or safety hazards to people residing or working in the vicinity of local airports are not anticipated. This potential impact is not considered to be significant.

The proposed project will not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. Any existing commercial or industrial facilities affected by proposed control measures will typically have their own emergency response plans for their facilities already in place. Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of not only the public, but the facility employees as well. Adopting the proposed 2005 Ozone Strategy is not expected to interfere with any

emergency response procedures or evacuation plans and, therefore, is not considered to be significant.

The proposed 2005 Ozone Strategy would typically affect existing urbanized, commercial or industrial facilities in appropriately zoned areas. Since urbanized, commercial and industrial areas are not typically located near wildland or forested areas, implementing control measures is not expected to increase the risk of wildland fires. This impact is considered less than significant.

Conclusion: Based on the above evaluation and significance criteria, other hazard impacts associated with implementation of the 2005 Ozone Strategy are expected to be less than significant.

3.8.4 MITIGATION MEASURES

PROJECT SPECIFIC MITIGATION: The impacts associated with the use of anhydrous ammonia are potentially significant. No feasible mitigation measures have been identified to reduce this impact to less than significant.

3.8.5 CUMULATIVE HAZARD IMPACTS

The 2005 Ozone Strategy contains several control measures that could generate hazard/human health impacts through increased usage of coating products reformulated with acetone or other hazardous formulations. It is expected that the increased use of certain hazardous exemption compounds (e.g., acetone) would generally be balanced by a decreased use of other hazardous and flammable materials (e.g., methyl ethyl ketone, toluene, and xylenes). Therefore, no significant cumulative impacts are identified.

The potential adverse hazard impacts associated with the 2005 Ozone Strategy include additional use of ammonia in SCRs. These project-specific impacts would be expected to be minimized by the impact specific mitigation measures identified above.

CUMULATIVE HAZARD IMPACT MITIGATION: No significant adverse cumulative hazard impacts were identified so no mitigation measures are required.

3.9 HYDROLOGY AND WATER QUALITY

3.9.1 ENVIRONMENTAL SETTING

Bays and Estuaries

The San Francisco Bay and the San Joaquin-Sacramento River Delta combine to form the West Coast's largest estuary, where fresh water from rivers and numerous smaller tributaries flows out through the Bay into the Pacific Ocean. The San Francisco Bay Estuary (Estuary) encompasses roughly 1,600 square miles, drains more than 40 percent of the state, provides drinking water to approximately two-thirds of California, and irrigates 4.5 million acres of farmland. The Estuary also enables residents of the Bay Area to pursue diverse activities including shipping, fishing, recreation, and commerce (SFEP, 2004). The Estuary is composed of three distinct hydrographic regimes: The South Bay extends from the Bay Bridge to the southern terminus of the Bay in San Jose, and the Central and North Bays connect the Delta and the Pacific Ocean.

The North Bay consists of several small bays, the two largest being San Pablo Bay and Suisun Bay. The bays are connected to each other and the ocean by deep, narrow channels ranging from 42 feet deep in San Pablo Bay to over 360 feet deep at the Golden Gate. San Pablo Bay is characterized by a deep channel surrounded by broad shoals. San Pablo Bay is connected to Suisun Bay by the narrow Carquinez Strait. Suisun Bay is a shallow basin consisting of braided channels and shallow shoals.

The Central Bay has a highly complex bathymetry. East of the Golden Gate, the depth is approximately 300 feet, where extensive intertidal mudflats are present at the eastern edge of the Central Bay. In addition, several islands are located within the Central Bay, including Treasure, Alcatraz, and Angel islands.

The South Bay is characterized by large areas of broad shallows incised by a main channel 30 to 65 feet deep. It has similar bathymetry to San Pablo and Suisun Bays. A relatively deep channel extends along the western side of the South Bay, surrounded by broad mudflats.

Beneficial uses of the Bay include agricultural supply, fish spawning, and wildlife habitat, commercial and sport fishing, estuarine habitat, fresh water replenishment, ground water recharge, industrial water supply, fish migration, municipal and domestic water supply, navigation, industrial process water supply, preservation of rare and endangered species, contact and non-contact water recreation, and shellfish harvesting, (RWQCB, 1995).

Water Quality

The region discharges an estimated 5,000 to 40,000 metric tons of at least 65 pollutants into the Estuary each year. These pollutants come from industry, commerce,

transportation, agriculture, household maintenance and other activities. The 200 sewage plants and industries that discharge wastewater directly into the Estuary via a specific pipe or drain are known as point sources of pollution. Pollutants also reach the Estuary from "nonpoint" sources that include urban and agricultural runoff, spills, atmospheric fallout, dredging, landfill seepage, natural erosion, and decay processes (SFEP, 2004).

The overall goals of water quality regulation according to the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) are to protect and maintain thriving aquatic ecosystems and the resources those systems provide to society, and to accomplish these goals in an economically and socially sound manner (RWQCB, 1995).

The San Francisco Estuary Institute had administered a Regional Monitoring Program for the Regional Water Quality Control Board (RWQCB) and major wastewater dischargers into the Bay since 1993. Most dischargers to the Bay are required to participate as a condition of their discharge permit. SFEI conducts monitoring three times a year along the central line of the Bay from the Delta to the South Bay. The Regional Monitoring Program measures concentrations of trace constituents in water, sediment, and transplanted bivalves at various locations in the Estuary.

The Regional Monitoring Program monitors conventional water quality (such as salinity, dissolved oxygen, and temperature) and chemistry (such as metals and pesticides), water toxicity (effects on laboratory organisms), sediment characteristics and chemistry, sediment toxicity (effects on laboratory organisms), and contaminant bioaccumulation in shellfish.

Based on water quality analyses, the level of contamination in the Estuary is high enough to impair the health of the ecosystem. The Estuary is described as moderately impaired. Indications of impairment include the toxicity of the water and sediment samples; the frequent presence of contaminant concentrations exceeding water, sediment and fish guidelines; and altered communities of sediment dwelling organisms. Overall, sites in the lower South Bay, the Petaluma River mouth, and San Pablo Bay are more contaminated than other sites. Contamination in the Central Bay is lower primarily due to mixing with relatively clean ocean water. Of all the contaminants measured by the Bay's RMP, results suggest that those of greatest concern are mercury, polychlorinated biphenyls (PCBs), and diazinon, and chlorpyrifos (two pesticides). Also of concern are copper, nickel, zinc, DDT, chlordane, dieldrin, dioxins, polyaromatic hydrocarbons (PAHs) and selenium (SFEI, 2004).

Drainage and Runoff

Stormwater pollution occurs when rain comes into contact with materials and picks up and washes contaminants into storm drains, creeks or the Bay. Common sources of pollution include equipment and vehicles that may leak oil, grease, hydraulic fluid or fuel, construction materials and products, waste materials, landscaping runoff containing fertilizers, pesticides or weed killers, and erosion of disturbed soil. Stormwater discharges associated with industrial and construction activities are regulated according

to California Code of Regulations Section 402(p) under the National Pollutant Discharge Elimination System (NPDES) permitting system.

Typical pollution control measures include Best Management Practices (BMPs) that are designed to reduce quantities of materials used that may produce pollutants, change the way various products are handled or stored, employ various structural devices to catch and restrict the release of pollutants from the site, and set out appropriate responses to spills and leaks. Examples of BMPs include: temporary silt fences; protection devices such as rock aprons at pipe outlets; stabilized pads or aggregate at points where construction site leads to or from a public street; temporary drain inlet protection devices such as filter fabric and sand bags; concrete washouts for cement mixers; preservation of existing vegetation; vehicle and equipment cleaning, etc. Site-specific BMPs are described in a stormwater pollution prevention plan (SWPPP).

SWPPPs are designed to identify and evaluate sources of pollutants associated with industrial and construction activities that may effect the quality of stormwater discharges and authorized non-stormwater discharges from a facility; and to identify and implement site-specific BMPs to reduce or prevent pollutants associated with industrial or construction activities in stormwater discharges or authorized non-stormwater discharges.

Floodplain Risk

Some areas of the Bay along the shoreline and drainages leading to the Bay are potential floodplains. Risk associated with building in a floodplain include threats to life and property. The level of risk is determined by the nature of the facility, its location and appropriate mitigation measures. Local city or county government agencies regulate floodplain construction, management, and mitigation through land use controls, based on determinations of flood elevations.

Groundwater

Groundwater is subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. Where groundwater occurs in a saturated geologic unit that contains sufficient permeable thickness to yield significant quantities of water to wells and springs, it is called an aquifer. A groundwater basin is a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers. There are three basins beneath the greater San Francisco Bay Area: The San Francisco, Santa Clara, and San Pablo Basins. The San Francisco Basin extends north from the Dumbarton Bridge to the shoreline south of Richmond and the San Pablo Basin extends north of the San Francisco Basin. The Santa Clara Basin is located south of the San Francisco Basin. The San Francisco and Santa Clara Basins have a similar stratigraphic and tectonic development, while the San Pablo Basin appears to have had a different history. Bedrock appears to be the primary boundary between the San Francisco and San Pablo Basin. The Hayward Fault appears to form a groundwater barrier along portions of the basins (Norfleet Consultants, 1998).

Salt water intrusion occurred in upper aquifers between Alameda and Niles Cone in the Santa Clara Basin between the mid 1920's and late 1940's. A combination of drought and overpumping caused groundwater levels to fall below sea level in about 1924. When this occurred, there was widespread salt water intrusion through the young bay mud into the upper aquifer and eventually into the deeper aquifers. Evaluation for the intrusion revealed that there were no natural direct pathways to the deeper aquifers. Intrusion occurred via abandoned wells and reverse hydrostatic head from high pumping rates (Norfleet Consultants, 1998).

The Department of Water Resources (DWR) has identified 31 individual ground water basins in the San Francisco Bay Region that were or could serve as sources of high quality drinking water. Maintaining the high quality of groundwater is the primary objective of the RWQCB, which defines the lowest concentration limit required for groundwater protection. The RWQCB also has water quality limits for bacterial, chemical constitutes, radioactivity, taste and odor. Maximum Contaminant Levels (MCLs) and Secondary Maximum Contaminant Levels (SMCLs), have also been implemented to protect the beneficial uses of municipal and domestic drinking water sources (RWQCB, 1995).

3.9.2 SIGNIFICANCE CRITERIA

Potential impacts on water resources will be considered significant if any of the following criteria apply:

The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.

The project will cause the degradation of surface water substantially affecting current or future uses.

The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.

The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.

The project results in alterations to the course or flow of floodwaters or places structures within a 100-year flood zone.

3.9.3 Environmental Impacts

Table 3.9-1 lists the control measures associated with the 2005 Ozone Strategy with potential hydrology/water quality impacts.

Water Quality Impacts

PROJECT-SPECIFIC IMPACTS: Several of the control measures in the Ozone Strategy would include controlling VOC emissions through the reformulation of coatings and solvents including SS 1 – Auto Refinishing, SS 2 – Graphic Arts Operations, SS 3 – High Emitting Spray Booths, and SS 4 – Polyester Resin Operations, and SS 5 – Wood Products Coating. Emission reductions are expected to be achieved through the use of near-zero and zero VOC formulations, or through the use of air pollution control equipment. These control measures would enhance existing BAAQMD rules by increasing the number of facilities controlled, removing or reducing the exemptions, and/or requiring control devices.

Under these control measures, petroleum-based solvents, coatings and products are expected to be reformulated to aqueous-based solvents, coatings and products to comply with specified VOC emission reduction requirements. Like petroleum-based materials, aqueous materials may lead to adverse impacts to water resources if contaminated solvents, coatings or products are not handled properly. However, the use of water to reformulate coatings, solvents and products would generally lead to products that would be less toxic than petroleum based materials and generate fewer impacts to water quality.

TABLE 3.9-1

Control Measures with Potential Hydrology and Water Impacts

Control Measures	Control Measure Description	Control Methodology	Impact
SS 1	Auto Refinishing	Reformulated low-VOC coatings/solvents	Potential increased use of water based formulations
SS 2	Graphic Arts Operations	Reformulated low-VOC coatings/solvents	Potential increased use of water based formulations
SS 3	High Emitting Spray Booths	Reformulated low-VOC coatings/solvents, add on control devices	Potential increase in use of water based formulations
SS 4	Polyester Resin Operations	Reformulated low-VOC coatings/solvents	Potential increased use of water based formulations
SS 5	Wood Products Coating	Reformulated low-VOC coatings/solvents	Potential increased use of water based formulations
SS 11	Wastewater Systems	Installation of vapor recovery devices, seals/traps on drains, installation of solid piping, installation of water seals	Increase in VOCs in wastewater could enter oil-water separator and system may not handle increased load
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Increase potential for fuel spills and water quality degradation in San Francisco Bay

The use of aqueous based solvents, coatings and products may lead to adverse impacts to water resources if contaminated solvents are not handled properly. If the aqueous cleaning operation does not substantially increase the amount of hazardous wastewater

generated, then disposing of the wastewater will generally be considered a relatively small incremental addition to the wastewater stream and no adverse impacts would be expected. If, however, the material becomes contaminated with hazardous materials during the manufacturing or cleaning process, then the solution must be disposed of properly after its useful life. Proper disposal may be accomplished by use of wastewater treatment equipment or by shipping to a waste treatment, recycling or disposal site that accepts hazardous materials.

In the event that untreated solvent baths are discharged to the sewer system, adverse impacts could occur at the treatment plants. Potential impacts could include pass-through of untreated material or toxicity to biological treatment systems. The magnitude of the impact would depend on the quantity of the discharge and the species discharged, but in most instances, the adverse impact would derive from the contaminants mixed with the solvent and not the solvent itself. While it is unlikely that a single user of aqueous solvents would pose adverse significant water quality impacts, District-wide application of aqueous solvents with general discharge of emulsifying agents and contaminants may exceed the concentration limits of the receiving wastewater treatment plants. Further, it is possible that existing operations that currently hire a "turn-key" service (i.e., a service which delivers clean solvent and removes spent material for off-site redistillation and reuse) may discontinue such service and discharge used aqueous cleaners as wastewater, thereby resulting in an incremental increase in wastewater discharged as compared to petroleum-based solvents.

In connection with potential water quality impacts associated with SCAQMD rules or rule amendments similar to the control measures proposed by the BAAQMD, the Los Angeles County Sanitation District (LACSD) performed a study in response to the 1996 amendments to SCAQMD Rules 1171 - Solvent Cleaning Operations (which involves similar requirements as control measure SS 1 – Auto Refinishing), and the 1997 amendments to SCAQMD Rule 1122 - Solvent Degreasers. The CEQA analysis for these rule amendments concluded that they would result in a widespread conversion to the use of aqueous materials for cleaning operations. Four categories of pollutants – metals, conventional pollutants, toxic volatile organics, and surfactants – were monitored in four sampling episodes from August 1998 to June 1999 and compared with baseline concentrations dating back to at least 1995 (SCAQMD, 2003).

Six metals – cadmium, chromium, copper, lead, nickel, and zinc – were also studied. These six metals' average concentrations in the wastewater stream showed no appreciable change from the baseline concentrations. Three conventional pollutants – total dissolved solids (TDS), chemical oxygen demand (COD), and total suspended solids (TSS) – were studied. Conventional pollutant concentrations also showed no appreciable change from the baseline concentrations. A number of toxic VOCs were studied including perchloroethylene and toluene. Perchloroethylene and toluene were monitored because they are commonly found in automotive repair cleaners and could contaminate the aqueous-based cleaners that are discharged to the sewer. The study found that perchloroethylene concentrations are increasing. The increase in the influent to the treatment plant is believed to be from consumer products used by home auto maintenance

as well as a potential contribution from aqueous-based cleaners used by automotive repair facilities. Surfactants are used in personal care and cleaning products, and are measured in wastewater as methylene blue active substances (MBAS). MBAS concentrations are increasing from the baseline concentrations (SCAQMD, 2003).

Although concentrations increased for perchloroethylene and MBAS, it is not believed that aqueous-based cleaners are the major source. Subsequent to the conversion to, and use of aqueous-based cleaners, the LACSD has not experienced water quality issues related to aqueous-based cleaners and has not seen increasing trends in any measured pollutants due to the use of aqueous-based cleaners (SCAQMD, 2003).

There is the potential for the increased use of methylene chloride and perchloroethylene in reformulation of consumer products, which are specifically exempt from the definition of VOCs by CARB in recognition of their very low ozone forming capabilities. However, the BAAQMD does not exempt these compounds. Some manufacturers could use methylene chloride or perchloroethylene in their formulations to reduce the VOC content to meet future limits. CARB and the BAAQMD have taken steps to mitigate and limit the use of these compounds in recent Board actions. These actions include the Air Toxic Control Measure for automotive maintenance and repair activities, aerosol adhesives limits in the consumer products regulation; and reactivity limits in the aerosol coating regulations. CARB also tracks the use of methylene chloride and perchloroethylene in regulated consumer products through yearly manufacturer reporting requirements. Further, CARB staff has proposed VOC limits in the past that were achievable without the increased use of TACs (CARB, 2002). Also, Proposition 65 labeling requirements discourage manufacturers from reformulating consumer products with listed materials (which include methylene chloride and perchloroethylene).

As with solvent based materials, the illegal disposal of spent cleaning materials could result in significant adverse water quality impacts. Potential adverse wastewater impacts associated with reformulated solvents are expected to be minimal since: (1) compliance with State and federal waste disposal regulations would preclude adverse impacts; (2) "turn-key" services are available for aqueous cleaners; (3) some solvent cleaning operators may currently be disposing of spent material illegally; and (4) the amount of wastewater which may be generated from reformulated solvents is well within the projected receiving capacity of the publicly owned treatment works (POTWs) or wastewater treatment plants in the Bay Area.

Impacts to water quality from reformulated coatings (i.e., water-based coatings) would be due to the increased use of water for clean-up and the resultant increased discharge into the sewer system. Analysis estimated that the use of reformulated coatings to comply would be expected to generate about 3,760,745 gallons per year of wastewater by 2010 or about 10,304 gallons per day (see Table 3.9-2).

TABLE 3.9-2
Estimated Increased Wastewater in the Bay Areas
Associated with Reformulated Coatings[(1)]

COUNTY	1999 Average Daily Wastewater Flow (gal)	2010 Coatings Disposal (gal)	2010 Coatings Disposal (gal/day)	Total Impacts (% Increase in Wastewater Flow)
Alameda	155,399,800	805,395	2,207	0.0014
Contra Costa	66,268,000	499,382	1,368	0.0021
Marin	18,981,200	125,870	345	0.0018
Napa	1,697,000	69,876	191	0.0113
San Francisco	86,700,000	380,902	1,044	0.0012
San Mateo	56,000,000	396,997	1,088	0.0019
Santa Clara	170,060,000	984,016	2,696	0.0016
Solano	34,938,100	233,241	639	0.0018
Sonoma	25,408,400	265,066	726	0.0029
Total	615,452,500	3,760,745	10,304	0.0029

(1) Source: CARB, 2000

POTWs in the region are expected to be able to accommodate the potential increase in wastewater associated with reformulated coating. (The POTWs have an overall capacity of about 615.5 million gallons per day.) Further, State and federal regulations are expected to promote the development and use of coatings formulated with non-hazardous solvents. Wastewater which may be generated from reformulated coatings is expected to contain less hazardous materials than the wastewater generated for solvent-based coating operations, thereby reducing toxic influent to the POTWs.

The potential effects of reformulating coatings to water-based formulation differ from that for solvent cleaning operations. The significance determination for reformulated solvents is due to the concern that current cradle-to-grave operations may largely be replaced by practices that generate wastewater. The wastewater generated from solvent cleaning operations could contain contaminants at levels exceeding regulatory limits. The POTWs and other responsible agencies may not have sufficient resources to adequately inspect and monitor the effluent from the large number of solvent cleaning operations in the region.

Unlike the reformulation of solvent cleaning materials, coating operations currently generate wastewater. As discussed above, the reformulation of coatings could have a beneficial effect by reducing the levels of contaminants currently found in the wastewater from these operations. The amount of increased wastewater generated from coating operations would be well within the capacity of the regions POTWs. Consequently, wastewater impacts from coating reformulation are not considered significant.

SS 11 – Wastewater Systems would reduce ROG emissions from refinery wastewater systems by requiring control, covers or water traps at various emission points such as

open drains, sumps, junction boxes and manholes. The affected wastewater systems are part of existing refinery operations which include oil-water separators, biological and/or chemical treatment, and settling and clarification processes that occur to meet water discharge standards. Because of the nature of these processes and the ability of system operators to affect upstream hydrocarbon loading, any incremental increase in hydrocarbons that could go into the treatment system process as a result of this control strategy would not be expected to cause an exceedance of the refineries water discharge permits. Therefore, water quality impacts resulting from wastewater controls are not expected to be significant.

TCM 7 – Improve Ferry Service could result in an increased potential for fuel spills and water quality degradation in San Francisco Bay, e.g., during refueling operations or from spills or leaks. Although there is the potential for a spill, it was determined to be less than significant following mitigation which included a strengthened Harbor Safety Plan; reviewed and modified contingency plans, drill exercises and emergency response service agreements; educational programs for operators; and improvement technological designs on new fleets to avoid fuel spills (WTA, 2003).

Conclusion: Based on the above evaluation and significance criteria, the impacts on water quality associated with implementation of the 2005 Ozone Strategy are expected to be less than significant, with the exception of the water quality impacts associated with TCM 7.

PROJECT-SPECIFIC MITIGATION: The following mitigation measures were required by the WTA for TCM 7 – Improve Ferry Service:

HWQ1 Adoption of BMPs during construction to prevent, minimize, and clean up spills and leaks from construction equipment would reduce the potential for impacts to water quality. Examples of BMPs include refueling and maintenance of equipment only in designated lined and/or bermed areas, isolating hazardous materials from stormwater exposure, and preparing and implementing spill contingency plans in specified areas. Any equipment with a fuel tank or other oil tank, such as heavy excavation machinery, must be considered as a potential source of released oil. Storage and parking of such equipment shall take into account oil spill prevention regulations to ensure that the area is free of drains or other avenues through which spills may escape containment.

HWQ2 New terminal facilities shall be designed such that stormwater runoff would be controlled and discharged in an appropriate manner. Construction and industrial stormwater NPDES permits would be required, and BMPs shall be adopted to reduce the chance of pollutants entering surface and ground water, thereby reducing the potential for impacts to water quality. Typical pollution control measure include BMPs designed to reduce the quantities of materials used that may produce pollutants, changing the way various products and materials are handled or stored, employing various structural devices to catch and restrict the release of pollutants, and establishing appropriate responses to spills and leaks.

Examples of BMPs include: temporary fencing; protection devices such as rock aprons at pipe outlets; stabilized pads of aggregate at points where construction traffic would be leaving an unimproved construction site to enter a public street; temporary drain inlet protection devices such as filter fabric and sand bags; concrete washouts for cement mixers; preservation of existing vegetation; and vehicle and equipment cleaning.

Impacts on water quality are considered to be less than significant following mitigation measures.

Stormwater Impacts

PROJECT-SPECIFIC IMPACTS: TCM 4 - Upgrade and Expand Local Regional Rail Service, TCM5 - Improve Access to Rails and Ferries, and TCM 7 - Improve Ferry Service would require the construction of new terminals and transportation facilities. Construction and operation of terminal facilities, including parking lots, access roads, railroads, and buildings would increase the amount of impervious surface at terminal sites, causing an increase in stormwater discharge. If the stormwater came in contact with pollutants or disturbed soil, discharge of runoff could impact the quality of the receiving water. Sources of pollution during project construction could include oil leaked from heavy equipment and vehicles, grease, hydraulic fluid, fuel, construction materials and products, waste materials, landscaping runoff containing fertilizers, pesticides or weed killers, and erosion of disturbed soil.

Stormwater discharges associated with construction activities are regulated according to CCR§402(p) under the NPDES. Under the NPDES construction permit, owners of the proposed terminal locations where construction would disturb more than one acre of land would have to submit a Notice of Intent (NOI), develop a SWPPP, conduct monitoring and inspections, retain monitoring records, report incidences of noncompliance, and submit annual compliance by July 1 of each year.

The majority of terminals are expected to be located in developed areas, many of which may already have water quality problems (WTA, 2003).

Conclusion: Based on the above evaluation and significance criteria, the impacts of the 2005 Ozone Strategy on storm water discharge are potentially significant.

PROJECT-SPECIFIC MITIGATION MEASURES: See "Water Quality Impacts" above for the mitigation measures imposed for water impacts. The mitigation measures HWQ-1 and HWQ-2 are expected to reduce the potential impacts associated with TCM 7 on water quality to less than significant. Impacts associated with TCMs 4 & 5 are expected to be mitigated to a less than significant level through compliance with existing stormwater discharge requirements.

Potential Impacts Associated with Flood Zones

PROJECT-SPECIFIC IMPACTS: Facilities potentially affected by the proposed stationary source control measures are expected to be industrial and commercial facilities. Land use planning guidelines would generally prohibit the siting of industrial and commercial facilities within 100-year flood zones. Therefore, no significant impacts related to flood zones associated with stationary source control measures are expected.

TCM 7 - Improve Ferry Service would require the construction of new ferry terminals. None of the potential ferry terminal sites lie within the 100-year floodplain as mapped by the Federal Emergency Management Agency (FEMA) so the potential for impacts from flooding is considered less than significant (WTA, 2003).

TCM 4 – Upgrade and Expand Local and Regional Rail Service, and TCM5 – Improve Access to Rails and Ferries would require the construction of new terminals and transportation facilities. It is also expected that new rail service and terminals can be sited outside flood zones.

Conclusion: None of the proposed control measures would require or result in placing housing in a 100-year flood zone, or expose people or structures to a significant risk or loss due to flooding so that the potential for impacts from flooding would be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant impacts due to flood zones are expected, therefore, mitigation measures are not required.

Potential Impacts Associated with Ground Water Depletion

PROJECT-SPECIFIC IMPACT: Increased water consumption may occur due to the reformulation of coatings to aqueous-based materials. Several of the control measures in the 2005 Ozone Strategy would propose to control VOC emissions through the reformulation of coatings and products including SS 1 – Auto Refinishing; SS 2 – Graphic Arts Operation; SS 3 – High Emitting Spray Booths; SS 4 – Polyester Resin Operations; and SS 5 – Wood Products Coating. No other control measures were identified that were expected to result in an increase in water use.

CARB estimated the amount of water use associated with its proposed architectural coatings suggested control measure (CARB, 2000). The primary objective of CARB's control measure was to set VOC limits and other requirements that are feasible (based on current technology) and that will achieve significant emission reductions in VOC emissions from architectural coatings. CARB estimated that the projected water demand in the Bay Area would be about 6.28 million gallons per year by 2010 or about 17,206 gallons per day (CARB, 2000). Using CARB's estimate for water demand is expected to be conservative because many of the sources that would use reformulated coatings/solvents have already reformulated some of the coatings/solvents, and the estimate assumes that the only method for compliance would be reformulation. This

potential water demand is within the capacity of water supplied from various sources in the Bay Area (estimated water demand of about 1,880 billion gallons per year in 2010) (CARB, 2000) and is not considered significant compared with current and projected future demand and supply. While there are projected drought-year shortages in some regions of California, these shortages would occur regardless of the proposed control measures.

Conclusion: Since the potential impacts on water demand are considered less than significant, the potential for ground water depletion is also considered less than significant. Therefore, no significant water demand impacts or impacts on ground water depletion are expected.

PROJECT-SPECIFIC MITIGATION: No significant impacts due to groundwater depletion are expected, therefore, mitigation measures are not required.

3.9.4 MITIGATION MEASURES

The mitigation measures for each impact area were included within each subchapter. The mitigation measures identified for hydrology and water quality impacts are expected to reduce identified impacts to less than significant following mitigation.

3.9.5 CUMULATIVE HYDROLOGY AND WATER QUALITY IMPACTS

Wastewater generated as a result of implementing the 2005 Ozone Strategy control measures related to reformulated coatings, and solvents could have an incremental impact on sewer systems, but this affect is not expected to cause significant adverse cumulative impacts. In addition, the impact specific mitigation measures are expected to further minimize the potential for significant impacts.

Implementation of the 2005 Ozone Strategy will have only minor incremental impacts on water quality compared to impacts due to population growth and is not considered significant. There may be significant cumulative impacts on hydrology and water quality due to increases in population associated with increased population (e.g., increased water demand, increased wastewater discharged, etc.). However, these cumulative impacts are not related to the 2005 Ozone Strategy. No other cumulative impacts have been identified.

CUMULATIVE HYDROLOGY AND WATER QUALITY IMPACT MITIGATION: No significant adverse cumulative hydrology and water quality impacts were identified so no mitigation measures are required.

3.10 LAND USE AND PLANNING

3.10.1 ENVIRONMENTAL SETTING

The San Francisco Bay Area has grown from the sparsely populated Native American and Spanish settlements of the past, to an urban area of nearly seven million people today. The pattern of land use in the Bay Area runs from one of the most densely populated urban centers in the United States (the City of San Francisco), to open hills and shorelines, and from growing suburban areas, to still-viable farming areas.

Since the mid 1940's, the San Francisco Bay Area has grown from a primarily agricultural region with one major city (San Francisco), to the fourth most populous metropolitan region in the United States with multiple centers of employment, residential development, and peripheral agricultural areas. The pattern of land uses in the Bay Area includes a mix of open space, agriculture, intensely developed urban centers, a variety of suburban employment and residential areas, and scattered older towns. This pattern reflects the landforms that physically define the region, the Bay, rivers, and valleys. Major urban areas are centered around the Bay, with the older centers close to the Golden Gate. Newer urban areas are found in Santa Clara County to the south, the valleys of eastern Contra Costa and Alameda Counties, and Sonoma and Solano Counties to the north.

The Pacific coast and the northern valleys are primarily in agricultural and open space use, while the agricultural areas adjoining the Central Valley have seen substantial suburban development in recent years, particularly in Solano County and western Contra Costa County.

Land uses vary greatly within the Bay Area and include commercial, industrial, residential, agricultural, and open space uses. The amount of land developed in each of the nine counties varies from a low of 4.5 percent in Napa County to a high of 51 percent in San Francisco. The Bay Area includes 101 cities. Residential uses continue to consume the greatest amount of urban land, approximately 72 percent. With respect to residential densities, after San Francisco, the Berkeley/Albany, Daly City/San Bruno, and Sunnyvale/Mountain View areas have the highest densities, while Healdsburg/Cloverdale, Santa Rosa/Sebastopol, and San Ramon/Danville have the lowest. Most of the Bay Area's population and economy is situated along the perimeter of San Francisco Bay (the Bay), in the older, larger cities such as San Francisco, Oakland, and San Jose. However, the majority of new residential and commercial land use development is occurring in the peripheral cities located in the valleys surrounding the Bay, such as Santa Rosa, Fairfield, and Livermore (MTC, 2004).

The percent of developed land is forecast to increase by 71,482 acres between 2000 and 2030, an increase of 9 percent. This regional development will result in just over 19 percent of all Bay Area land being developed by 2030 (MTC, 2004).

3.10.2 SIGNIFICANCE CRITERIA

Land use and planning impacts will be considered significant if the proposed project conflicts with the land use and zoning designations established by the local jurisdiction (e.g., City or County), creates divisions in any existing communities, or conflicts with any applicable habitat conservation or natural community conservation plan

3.10.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates land use impacts that could occur as a consequence of efforts to improve air quality. Table 3.10-1 lists the control measures with potential land use impacts.

TABLE 3.10-1

Control Measures with Potential Land Use Impacts

Control Measures	Control Measure Description	Control Methodology	Land Use Impact
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Impacts to shoreline access
TCM 15	Local Land Use Planning and Development Strategies	Influence land use patterns to reduce time and distance traveled	Increase development near transit centers

The proposed 2005 Ozone Strategy will impose control requirements on stationary sources at existing commercial or institutional facilities, and develop transportation and mobile source control measures. As a result, the proposed 2005 Ozone Strategy does not require construction of structures for new land uses in any areas of the Air District and, therefore, is not expected to create divisions in any existing communities or conflict with any applicable habitat conservation or natural community conservation plan.

Population growth, land development, housing, traffic and air quality are interconnected. MTC as the regional transportation planning agency considers these interconnections when developing and implementing plans to improve air quality, transportation systems, land use compatibility and housing opportunities in the region. Any facilities affected by the proposed 2005 Ozone Strategy would still be expected to comply with, and not interfere with, any applicable land use plans, zoning ordinances, habitat conservation or natural community conservation plans.

Land use and other planning considerations are determined by local governments. Nevertheless, some potential control measures encourage local governments to favorably consider mixed-use development, in-fill development, jobs/housing balance, and limits on suburban growth. TCM 15 – Local Land use Planning and Development Strategies seeks to reduce motor vehicle use and emissions by promoting land use patterns and

development projects that facilitate walking, bicycling and transit use. This control measure would focus development near transit stations; encourage development with a mix of uses that locates housing near jobs, shops and services, schools, and other community development; encourages infill development; provides pedestrian and bicycle access; and reduces parking requirements.

While development that conforms to these goals could alter the homogenous character of an existing residential or commercial neighborhood, it is more likely to be incorporated into a new project. In-fill development can remove small and isolated open spaces from a neighborhood, it is more likely to be used to redevelop blighted or underutilized sites. It is anticipated that the local government approving the new development would require the developments to comply with local land use requirements in a manner that would avoid significant adverse effects on existing or new neighborhoods. The potential impacts on local government land use planning would be addressed in general and specific plans where additional environmental review would be conducted. As specific projects are developed, land use impacts need to be evaluated on a case-by-case basis. Thus, no significant adverse land use impact is anticipated from the application of TCM 15 – Local Land Use Planning and Development Strategies, due to the land use approval process in place at cities and counties in the Bay Area.

Adverse impacts to shoreline access and recreational uses from expansion or development of ferry terminal facilities (TCM 7 – Improve Ferry Service) are not expected to be significant, as no direct impacts to parks or trails have been identified (WTA, 2003).

Conclusion: Based on the above evaluation and significance criteria, the impacts of the 2005 Ozone Strategy on land use and planning are expected to be less than significant.

3.10.4 MITIGATION MEASURES

No significant adverse land use and planning impacts have been identified so no mitigation measures are required.

3.10.5 CUMULATIVE LAND USE AND PLANNING IMPACTS

The forecast development of residential and employment land uses in the Bay Area over the next 25 years would result in significant expansion of urban areas and significant changes in land use and the character of neighborhoods in the Bay Area. The 2005 Ozone Strategy and other air plans and control measures have been developed, in part, to develop a strategy for attaining and maintaining compliance with ambient air quality standards in spite of this development. While general population growth may impact land use and planning, the 2005 Ozone Strategy responds to proposed growth by developing control strategies to attain and maintain ambient air quality in spite of substantial population growth.

While the BAAQMD does not exercise land use authority and cannot directly affect the pattern that future land use will take, it can continue to participate and promote efforts to coordinate regional smart growth efforts to use land more efficiently, optimize transportation and preserve open space. Therefore, no significant cumulative impacts on land use and planning related to the 2005 Ozone Strategy are expected.

CUMULATIVE LAND USE IMPACT MITIGATION: No significant adverse cumulative land use impacts were identified so no mitigation measures are required.

3.11 MINERAL RESOURCES

3.11.1 ENVIRONMENTAL 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 so that land uses and the affected environment vary greatly throughout the area. Mineral resources are not specifically defined in the CEQA Guidelines, but generally include petroleum reserves, natural gas reserves, metal ore deposits, specific type of rock deposits (granite or marble), and other similar types of resources. The facilities affected by the proposed control measures are expected to be located in the urban portions within the Bay Area.

3.11.2 SIGNIFICANCE CRITERIA

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

> The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
>
> The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

3.11.3 ENVIRONMENTAL IMPACTS

There are no provisions of the proposed control measures which would directly result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. The proposed 2005 Ozone Strategy is not expected to deplete non-renewable mineral resources, such as aggregate materials, metal ores, etc., at an accelerated rate or in a wasteful manner because BAAQMD control measures are typically not mineral resource intensive measures. While mineral resources will need to be evaluated as each control measure is

promulgated, significant adverse impacts to mineral resources are not expected due to the 2005 Ozone Strategy.

3.11.4 MITIGATION MEASURES

No significant adverse mineral resource impacts have been identified so no mitigation measures are required.

3.11.5 CUMULATIVE MINERAL RESOURCES IMPACTS

The proposed 2005 Ozone Strategy and other air quality plans, rules and regulations, are not expected to impact mineral resources. Further, these air quality plans, rules and regulations are not expected to deplete mineral resources on a cumulative basis. Therefore, no significant cumulative impacts on mineral resources are expected.

CUMULATIVE MINERAL RESOURCES MITIGATION: No significant adverse cumulative mineral resources impacts were identified so no mitigation measures are required.

3.12 NOISE

3.12.1 ENVIRONMENTAL SETTING

Noise is defined as unwanted sound. The range of sound pressure perceived as sound is extremely large. The decibel is the preferred unit for measuring sound since it accounts for these variations using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel or dBA). The A-weighted decibel is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold for pain. Principal Bay Area noise sources are airports, freeways, arterial roadways, port facilities, and railroads. Additional noise generators included industrial manufacturing plants and construction sites. Local collector streets are not considered to be a significant source of noise since traffic volume and speed are generally much lower than for freeways and arterial roadways.

Background noise levels associated with vehicle traffic vary throughout the day based on the average density of noise sources in a given area. Traffic noise at a particular location depends upon the traffic volume on the roadway, the average vehicle speed, distance between the receptor and the roadway, the presence of intervening barriers between source and receiver, and the ratio of trucks (particularly heavy trucks) and buses to automobiles.

A number of factors control how traffic noise levels affect nearby sensitive land uses. These include roadway elevation compared to grade; structures or terrain intervening

between the roadway and the sensitive receptors; and the distance between the roadway and receptors. Caltrans or other sponsors for freeway projects conduct detailed noise studies for the environmental documents when these projects are ready for implementation.

The Bay Area has a large number of freeways and arterial roadways. Typical arterial roadways have one or two lanes of traffic in each direction, with some containing as many as four lanes in each direction. Noise from these sources can be a significant environmental concern where buffers (e.g., sound walls, buildings, landscaping, etc.) are inadequate or where the distance from centerline to sensitive uses is relatively small.

The two basic types of railroad operations are freight trains, and passenger rail operations, the latter consisting of commuter and intercity passenger trains and steel-wheeled urban rail transit. Generally, freight operations occur at all hours of the day and night, while passenger rail operations are concentrated within the daytime and evening periods.

Trains can generate high, relatively brief, intermittent noise events. Train noise is an environmental concern for sensitive uses located along rail lines and in the vicinities of switching yards. Locomotive engines and the interaction of steel wheels and rails generate primary rail noise. The latter source creates three types of noise: (1) rolling noise due to continuous rolling contact; (2) impact noise when a wheel encounters a rail joint, turn out or crossover; and (3) squeal generated by friction of tight curves. For very high-speed rail vehicles, air turbulence can be a significant noise source (MTC, 2004).

Construction can be another significant, although typically short-term source of noise. Construction is most significant when it takes place near sensitive land uses (e.g., schools and hospitals), occurs at night, or in early morning hours. Local governments typically regulate noise associated with construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies, and imposition of conditions of approval for building or grading permits.

The principle noise sources in an industrial area are impact, friction, vibration, and air turbulence from air and gas streams. Process equipment, heaters, cooling towers, pumps and compressors, contribute to noise emitted from industrial facilities. Elevated noise sources are not attenuated as quickly as ground sources due to the lack of interference from fences, structures, buildings, etc.

3.12.2 SIGNIFICANCE CRITERIA

Impacts on noise will be considered significant if:

> Construction noise levels exceed the local noise ordinance or, if the noise threshold is currently exceeded, project construction noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary.

Construction noise levels exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.

The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

3.12.3 ENVIRONMENTAL IMPACTS

Control measures with potential noise impacts are summarized in Table 3.12-1.

TABLE 3.12-1

Control Measures with Potential Noise Impacts

Control Measures	Control Measure Description	Control Methodology	Noise Impact
TCM 4	Upgrade and Expand Local and Regional Rail Service	Construction of additional rail facilities, electrification of rail services	Construction noise and increase in noise from existing and new rail lines
TCM 5	Improve Access to Rails and Ferries	Construction of new facilities, use of low emission vehicles	Construction noise, and increase in noise due to increased traffic
TCM 6	Improve Interregional Rail Service	Construction of new rail facilities	Construction noise and increase in noise from existing and new rail lines
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Construction noise and increase in noise from expanded ferry operations near ferry terminals
TCM 8	Construct Carpool/Express Bus Lanes on Freeways	Construction of new HOV lanes	Construction emissions and increased noise from freeways

Construction Noise Impacts Related to Transportation Control Measures

PROJECT SPECIFIC IMPACTS: Some of the Transportation Control Measures including TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways have the potential to generate significant construction noise impacts. Such activity would generate localized, short-term noise impacts from excavation, pile driving, grading, hauling, concrete pumping, and a variety of other activities requiring the operation of heavy equipment. Construction noise mitigation is normally required by Caltrans, as well as local city and county ordinances. Construction mitigation measures generally limit construction activities to times when construction noise would have the least effect on adjacent land uses, and would require such measures as properly muffling equipment noise, and turning off equipment when not in use. The mitigation measures

would be expected to reduce potentially significant construction-related noise impacts to below the significance criteria so that no significant noise impacts would be expected.

Conclusion: Standard construction noise reduction devices and compliance with local city and county ordinances are expected to ensure construction-related noise impacts associated with the 2005 Ozone Strategy are less than significant.

PROJECT-SPECIFIC MITIGATION: No significant impacts due to noise from construction activities related to the 2005 Ozone Strategy are expected, therefore, mitigation measures are not required.

Operational Noise Impacts Related to Transportation Control Measures

PROJECT SPECIFIC IMPACTS: Direct noise impacts associated with TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways, would result in new transit lines (noise and ground borne vibrations), widening of freeways which brings noise closer to sensitive land uses, addition of new lanes that result in high traffic volumes and speeds, and concentrating vehicle traffic near terminals. A project-level noise analysis may identify potentially significant noise impacts depending on the project, the existing or future land use, and the location of sensitive receptors in relation to the project.

Conclusion: Operational noise impacts related to TCMs 4, 5, 6, 7, and 8 in the 2005 Ozone Strategy are potentially significant.

PROJECT-SPECIFIC MITIGATION: Mitigation Measure N1 below was required by the WTA for TCM 7 – Improve Ferry Service and should be included for TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways:

N1 Siting and planning of new terminals shall include planning to locate terminal areas away from noise-sensitive land uses. Compliance with existing zoning ordinances should be sufficient to mitigate any potential impacts of ferry terminal operations.

The following mitigation measures should be evaluated and implemented for all TCMs that are determined to have potentially significant impacts through project specific environmental analysis:

N2 Construction of sound walls adjacent to new or improved roads or transit lines. Noise level increases could, in most cases, be mitigated to levels at or below existing levels if sound walls were constructed along the rights-of-way. A determination of the specific heights, lengths, and feasibility of sound walls must

be part of the project-level environmental assessment. It is likely that Federal Highway Administration noise abatement criteria would be met if sound walls are included as mitigation measures. Where the TCMs would improve existing roadways, sound walls would also result in a reduction of overall sound levels, even considering potential increases from road widenings and additional traffic. As a result, the implementation of this mitigation measure can avoid project noise impacts and reduce existing noise levels along a number of heavily traveled corridors in the region.

N3 Adjustments to proposed roadways or transit alignments to reduce noise levels in noise sensitive areas. For example, depressed roadway or railway alignments can effectively reduce noise levels in nearby areas.

N4 Insulation of buildings to construction or noise barriers around sensitive receptor properties.

N5 Vibration isolation of track segments.

N6 Use of local land use policies by local agencies to guide the location of noise sensitive uses to sites away from roadways and rail corridors.

Implementation of specific TCMs will require project specific environmental analysis. Any potentially significant noise impacts identified would be offset with project specific mitigation measures of a particular transportation improvement. Therefore, noise impacts from implementation of the TCMs listed in Table 3.12-1 are expected to be less than significant following mitigation.

Noise Impacts Related to Stationary Source Control Measures

PROJECT SPECIFIC IMPACTS: The proposed project may require existing commercial or industrial owners/operators of affected facilities to install air pollution control equipment or modify their operations to reduce stationary source emissions. Potential modifications will occur at facilities typically located in appropriately zoned industrial or commercial areas. Ambient noise levels in commercial and industrial areas are typically driven primarily by freeway and/or highway traffic in the area and any heavy-duty equipment used for materials manufacturing or processing at nearby facilities. It is not expected that any modifications to install air pollution control equipment would substantially increase ambient operational noise levels in the area, either permanently or intermittently, or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels. It is not expected that affected facilities would exceed noise standards established in local general plans, noise elements, or noise ordinances currently in effect.

It is also not anticipated that the proposed control measures will cause an increase in groundborne vibration levels because air pollution control equipment is not typically

vibration intensive equipment. Consequently, the 2005 Ozone Strategy will not directly or indirectly cause substantial noise or excessive groundborne vibration impacts.

Affected facilities would still be expected to comply, and not interfere, with any applicable airport land use plans and disclose any excessive noise levels to affected residences and workers pursuant to existing rules, regulations and requirements, such as CEQA. It is assumed that operations in these areas are subject to, and in compliance with, existing community noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements. In addition to noise generated by current operations, noise sources in each area may include nearby freeways, truck traffic to adjacent businesses, and operational noise from adjacent businesses.

Conclusion: There are no components of the proposed 2005 Ozone Strategy that would substantially increase ambient noise levels from stationary sources, either intermittently or permanently. Therefore, noise impacts associated with stationary source control measures are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION: No significant impacts due to noise from stationary source control measures are expected, therefore, mitigation measures are not required.

Miscellaneous Noise Impacts

The CEQA environmental checklist includes a discussion of impacts on airports and airport land use plans so discussions of those impacts are included in this section for completeness. Some 2005 Ozone Strategy control measures could apply to facilities within an airport land use plan or within two miles of a public airport or private airstrip. Affected facilities would be expected to comply, and not interfere, with any applicable airport land use plans and disclose any excessive noise levels to affected residences and workers pursuant to existing rules, regulations and requirements, such as CEQA. It is assumed that operations in these areas are subject to and in compliance with existing community noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements. In addition to noise generated by current operations, noise sources in each area may include nearby freeways, truck traffic to adjacent businesses, and operational noise from adjacent businesses. There are no components of the proposed 2005 Ozone Strategy that would substantially increase ambient noise levels, either intermittently or permanently so that no significant impacts would be expected.

3.12.4 MITIGATION MEASURES

Mitigation measures have been discussed under each subcategory. In summary, mitigation measures were required due to potential increases in noise associated with transportation-related projects. Mitigation measures are expected to reduce potential adverse noise impacts to less than significant.

3.12.5 CUMULATIVE NOISE IMPACTS

Construction phases associated with the 2005 Ozone Strategy control measures and other air quality measures are expected to generate localized, short-term noise impacts. The use of muffling devices, restriction of work hours, etc. is expected to mitigate the increase in noise at most of the construction sites. Further, construction noise levels would be short-term and cease following the construction period so no significant cumulative noise impacts are expected.

Control measures in the 2005 Ozone Strategy for stationary sources will usually occur within commercial of industrial areas that generally have higher allowable noise levels than sensitive land use areas (e.g., residential and schools). Most of the control measures would occur within buildings so that cumulative noise impacts would not be expected.

The control measures in the 2005 Ozone Strategy and other related air quality plans and rules are responding to population growth. The growth in traffic throughout the Bay Area could produce unquantifiable cumulative noise impacts that would increase noise. The cumulative increase in noise related to traffic is a factor of population growth and not associated with air quality control measures. The 2005 Ozone Strategy is responding to the population growth in an attempt to attain and maintain ozone ambient air quality standards. The 2005 Ozone Strategy and other related air quality plans are not expected to generate additional traffic that would generate cumulative noise sources. In fact, the air quality control measures (especially the transportation control measures) are expected to reduce traffic associated with single occupancy vehicles and, thus, reduce the related traffic noise levels. Therefore, the cumulative impact of the proposed project and other related projects are not expected to result in significant adverse noise impacts.

3.13 POPULATION AND HOUSING

3.13.1 ENVIRONMENTAL SETTING

The Bay Area's population has increased by 90 percent over the previous 40 years, while jobs have increased 200 percent. Looking ahead to the next 25 years, ABAG projects that the Bay Area's population will grow another 18.5 percent (1.3 million more residents) and employment will increase by another 33 percent (1.2 million additional jobs).

During the past 40 years, the location of people and jobs have become much more dispersed as new urban centers have formed and cities have gained population on the edge of the region. This shift in growth patterns is illustrated in Table 3.13-1. Santa Clara County is now the most populous county in Bay Area, and is home to about 25 percent of the region's residents. The county's largest city, San Jose, is also the largest city in the Bay Area with a population of 895,000. Currently, there are 12 cities in the Bay Area with more than 100,000 residents (MTC, 2001).

TABLE 3.13-1
Population Growth in the Bay Area (1980 – 2025)

County	1980	2000	2025	Growth: 1980 - 2000	Growth: 2000 - 2025
Alameda	1,105,379	1,462,695	1,701,599	357,316	238,904
Contra Costa	656,380	941,900	1,213,899	285,520	271,999
Marin	222,568	250,402	278,401	27,834	27,999
Napa	99,199	127,600	165,601	28,401	38,001
San Francisco	678,984	799,009	804,804	120,035	5,795
San Mateo	587,329	737,095	823,901	149,766	89,806
Santa Clara	1,295,071	1,755,333	2,062,906	460,262	307,573
Solano	235,203	401,300	581,400	166,097	180,100
Sonoma	299,681	455,305	591,597	155,624	136,292
Region	**5,179,784**	**6,930,639**	**8,224,108**	**1,750,855**	**1,293,469**

Source: Metropolitan Transportation Commission, 2001.

3.13.2 SIGNIFICANCE CRITERIA

The impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

The demand for temporary or permanent housing exceeds the existing supply.

The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

3.13.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates impacts on population and housing that could occur as a consequence of efforts to improve air quality. As discussed below, no control measures were identified that are expected to result in impacts to population and housing.

The proposed 2005 Ozone Strategy stationary source control measures generally affect existing commercial or industrial facilities located in predominantly industrial or commercial urbanized areas throughout the Air District. It is expected that the existing labor pool within the Bay Area would accommodate the labor requirements for any modifications at affected facilities. In addition, it is not expected that affected facilities will be required to hire additional personnel to operate and maintain new control equipment on site because air pollution control equipment is typically not labor intensive equipment. In the event that new employees are hired, it is expected that the existing local labor pool in the Air District can accommodate any increase in demand for workers that might occur as a result of adopting the proposed 2005 Ozone Strategy. As such, adopting the proposed 2005 Ozone Strategy is not expected to result in changes in population densities or induce significant growth in population.

Some of the TCMs are largely in response to population growth in order to provide additional roadways, railways and expressways, and carpools to transport the anticipated increase in population in an effective manner. To the extent that improved transportation attracts population growth to the area, the control measures could have an impact on population growth. However, the control measures themselves are not expected to provide housing or jobs that would attract more population to the area.

Some of the TCMs could result in impacts related to the displacement or relocation of homes and businesses as well as community disruption. In some cases, buildings on residential, commercial, and industrial land may have to be removed in order to make way for new or expanded transportation facilities. In other cases, certain transportation projects could permanently alter the characteristics and quality of a neighborhood. These impacts are considered speculative at this point and will need to be considered as the TCMs are proposed and developed in their project specific CEQA documents.

Because of the region's available workforce, history of mobility and existing patterns whereby individuals do not typically live close to their workplaces, any demand for new employees can be accommodated from the local region so no substantial population displacement is expected. Therefore, construction of replacement housing elsewhere in the Air District is not anticipated.

Conclusion: Based upon the above considerations, significant adverse impacts to population and housing are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

3.13.4 MITIGATION MEASURES

No significant impacts to population and housing are expected so no mitigation measures are required.

3.13.5 CUMULATIVE POPULATION AND HOUSING IMPACTS

Some of the TCMs are largely in response to population growth in order to provide additional / expanded alternatives to travel other than the single occupant vehicle. To the extent that improved transportation, and ultimately air quality, attracts population growth to the area, the control measures could have an impact on population growth. However, the control measures themselves are not expected to provide housing or jobs that would attract more population to the area inconsistent with adopted plans. Therefore, the cumulative impacts on population and housing are considered less than significant.

CUMULATIVE POPULATION AND HOUSING MITIGATION MEASURES: No significant cumulative impacts on population and housing were identified so no mitigation measures are required.

3.14 PUBLIC SERVICES

3.14.1 ENVIRONMENTAL SETTING

Given the large area covered by the BAAQMD that includes all or parts of nine counties, 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 public and private school districts, and park and recreation departments within the BAAQMD. Public facilities within the BAAQMD are managed by different county, city, and special-use districts.

3.14.2 SIGNIFICANCE CRITERIA

Impacts on public services will be considered significant if:

> The project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or
>
> The need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

3.14.3 ENVIRONMENTAL IMPACTS

There is no potential for significant adverse public service impacts as a result of adopting the proposed 2005 Ozone Strategy. The proposed project would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times or other performance objectives. No additional need for fire or police services would be expected. Better transportation systems and increased use of public transportation could reduce the number of traffic accidents and decrease the need for police services on freeways/roadways.

Adopting the proposed 2005 Ozone Strategy control measures would not induce population growth or alter the distribution of existing population. Thus, implementing the 2005 Ozone Strategy control measures would not increase or otherwise alter the demand for schools and parks in the Air District. No significant adverse impacts to schools or parks are foreseen as a result of adopting the proposed 2005 Ozone Strategy.

Conclusion: Based upon the above evaluation and the significance criteria, adopting the proposed 2005 Ozone Strategy is not expected to create significant adverse public service impacts.

3.14.4 MITIGATION MEASURES

No significant impacts to public services are expected so no mitigation measures are required.

3.14.5 CUMULATIVE PUBLIC SERVICES IMPACTS

The control measures contained in the 2005 Ozone Strategy are largely in response to population growth in order to provide alternatives to single occupant vehicles to transport the existing population and anticipated population of the area in an effective manner and with less air emissions. Control measures in the 2005 Ozone Strategy and other air quality rules, regulations and plans, are not expected to require additional fire, police or other public services. Therefore, no significant adverse cumulative impacts on public services are expected.

CUMULATIVE PUBLIC SERVICES MITIGATION MEASURES: No significant cumulative impacts on public services were identified so no mitigation measures are required.

3.15 RECREATION

3.15.1 ENVIRONMENTAL SETTING

The BAAQMD includes 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. Numerous recreational opportunities are available throughout the Bay Area. The facilities affected by the proposed control measures are expected to be located in urban centers within the Bay Area. Public recreational land uses are located throughout the Bay Area, but generally not within the confines of the commercial and industrial areas.

3.15.2 SIGNIFICANCE CRITERIA

The impacts to recreation will be considered significant if:

> The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
>
> The project adversely affects existing recreational opportunities.

3.15.3 ENVIRONMENTAL IMPACTS

This subchapter evaluates impacts on recreation. As discussed below, no control measures were identified that are expected to result in impacts to recreation.

As discussed under "Land Use and Planning" above, there are no provisions in the proposed control measures which would affect land use plans, policies, ordinances, or regulations. Land use and other planning considerations are determined by local governments. No land use or planning requirements, including those related to

recreational facilities, will be altered by the proposed project. The proposed control measures do not have the potential to directly or indirectly induce population growth or redistribution. As a result, the proposed control measures would not increase the use of, or demand for existing neighborhood and/or regional parks, or other recreational facilities, or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Conclusion: Based upon the above considerations, significant adverse impacts to recreation are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

3.15.4 MITIGATION MEASURES

No significant adverse impacts to recreation are expected so no mitigation measures are required.

3.15.5 CUMULATIVE RECREATIONAL IMPACTS

No project specific impacts on recreational activities are expected. The potential increase for recreational activities associated with other air quality rules, regulations and plans are not expected since these measures usually do not result in land use changes and changes in recreational opportunities. Therefore, no significant cumulative impacts on recreational activities are expected.

CUMULATIVE RECREATIONAL MITIGATION MEASURES: No significant adverse cumulative impacts on recreation were identified so no mitigation measures are required.

3.16 TRANSPORTATION AND TRAFFIC

3.16.1 ENVIRONMENTAL SETTING

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, and other) 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. 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.

Projected population and employment growth in the Bay Area will lead to further travel demand. Total person trips are projected to increase by 35 percent by 2025. This growth rate is higher than population growth, projected at 29 percent, but lower than the growth of employment (38 percent) (MTC, 2004).

There will also be substantial growth in trips from neighboring counties to the Bay Area as they increasingly supply homes for Bay Area workers, who are unable to find affordable housing in the nine counties. There are three major gateways with significant interregional trips: (1) San Joaquin Valley (Altamont Pass); Interstate 80 (Sacramento); and Route 17 (Santa Cruz). Emerging gateways into the Bay Area include U.S.Highway 101 South (San Benito and Monterey counties). In addition, Route 152 (San Joaquin County to Santa Clara County is a major commercial truck route from the San Joaquin Valley into the Bay Area, and Route 4 access the Central Valley as well.

The facilities affected by the proposed control measures are expected to be located in the commercial and industrial areas within the Bay Area and are accessed via highways and local roadway systems. Transportation modes includes vehicles, transit, bicycle and pedestrian.

3.16.2 SIGNIFICANCE CRITERIA

The impacts on transportation/traffic will be considered significant if any of the following criteria apply:

> Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to E or F for more than one month.
>
> An intersection's volume to capacity ratio increases by 0.02 (two percent) or more when the LOS is already E or F.

A major roadway is closed to all through traffic, and no alternate route is available.

There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

The demand for parking facilities is substantially increased.

Water borne, rail car or air traffic is substantially altered.

Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.

3.16.3 ENVIRONMENTAL IMPACTS

Table 3.16-1 lists the control measures associated with the 2005 Ozone Strategy with potential transportation and traffic impacts.

Adopting the proposed 2005 Ozone Strategy is expected to reduce vehicle trips and vehicle miles traveled in the Air District. Included as part of the proposed 2005 Ozone Strategy are transportation control measures. These transportation control measures include strategies to enhance mobility by reducing congestion through transportation infrastructure improvements, mass transit improvements, increasing telecommunications products and services, enhanced bicycle and pedestrian facilities, etc. Specific strategies that serve to reduce vehicle trips and vehicle miles traveled, such as strategies resulting in greater reliance on mass transit, ridesharing, telecommuting, etc., are expected to result in reducing traffic congestion. Although population in the Bay Area is expected to increase, implementing the transportation control measures will ultimately result in a greater percentage of the population using alternative transportation modes. Therefore, existing traffic levels and the level of service designation for intersections District-wide, would not be expected to decline at current rates, but are expected to improve (relative to population growth). Therefore, implementing the 2005 Ozone Strategy could ultimately provide transportation improvements and congestion reduction benefits over existing conditions and the No Project Alternative.

TABLE 3.16-1

Control Measures with Potential Transportation/Traffic Impacts

Control Measures	Control Measure Description	Control Methodology	Impact
TCM 1	Support Voluntary Employer-Based Trip Reduction Programs	Support and encourage voluntary efforts by Bay Area employers to promote the use of commute alternatives by their employees	Localized increase in traffic in areas near transit stations
TCM 3	Improve Local and Areawide Bus Service	Add on control devices (particulate traps and NOx catalysts), alternative clean fuels and bus service improvements	Localized increase in traffic near bus transit stations
TCM 4	Improve Regional Rail Service	Construction of new rail facilities, rail electrification	Localized increase in traffic near rail stations
TCM 6	Improve Interregional Rail Service	Construction of new rail facilities	Localized increase in traffic near rail stations
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Increase in traffic near ferry terminals
TCM 9	Improve Bicycle Access and Facilities	Construction of additional bicycle lanes	Increase potential conflicts between vehicle and bicycle traffic
TCM 11	Install Freeway Traffic Management Systems	Include traffic management features into new freeway projects and extend ramp metering to major freeway corridors	Potential localized increase in traffic on streets leading to freeway on-ramps
TCM 15	Local Land Use Planning and Development Strategies	Includes various indirect source mitigation measures	Localized increase in traffic in areas of higher density development (e.g., near transit stations and corridors)
TCM 20	Promote Traffic Calming	Includes various measures to increase pedestrian traffic and decrease the use of mobile sources	Traffic reductions on some streets may lead to more traffic on other streets without any traffic claming measures

Although overall the 2005 Ozone Strategy is anticipated to reduce vehicle miles traveled compared to the existing baseline and No Project Alternative, some control measures could encourage higher densities in localized areas (e.g., TCM 1 - Support Voluntary Employer-Based Trip Reduction Programs, TCM 3 - Improve Local and Areawide Bus Service, TCM4 - Improve Regional Rail Service, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, TCM 11 - Install Freeway Traffic Management Systems, and TCM 15 – Local Land Use Planning and Development Strategies). The impacts of individual projects are potentially significant and would need to be evaluated on a project-by-project basis by the local jurisdiction. Traffic studies would be required to determine if the existing street/road systems in the area can handle the proposed development, or if other means, such as roadway expansion, or increased alternative

transportation options, etc., would be required. TCM 15 – Local and Land Use Planning and Development Strategies seeks to reduce motor vehicle use and emissions by promoting land use patterns and development projects that facilitate walking, bicycling and transit use for a higher percentage of personal trips, sometimes referred to as smart growth. TCM 15 also includes measures that would reduce traffic within mixed-use development including providing pedestrian pathways, providing transit benches and shelters, providing bicycle infrastructure (e.g., bike racks), providing bike routes, etc. On balance, an overall decrease in vehicle miles traveled and transportation impacts would be anticipated regionally; however, TCM 15 would concentrate traffic in specific areas and significant adverse traffic impacts could occur locally. New development would need to comply with the local land use policies and regulations with regard to density and their related impact on the transportation systems.

TCM 7 – Improve Ferry Service would expand ferry service in the Bay Area reducing the total vehicle miles traveled by automobiles. The impacts related to this control measure were evaluated in a previously prepared Final Program EIR, Expansion for Ferry Transit Service in the San Francisco Bay Area, State Clearinghouse No. 2001112048 (WTA, 2003). Per CEQA Guidelines §15150, the description of the impacts and mitigation measures for that project are incorporated by reference. Copies of the Final Program EIR for the Expansion for Ferry Transit Service can be downloaded at http://www.watertransit.org/eir_download.shtml.

TCM 7 - Improve Ferry Service is expected to result in a 0.07 percent reduction in automobile vehicle miles traveled in the Bay Area (WTA, 2003). Due to the increase in ferry riders of an estimated 13,736, expanded ferry service is expected to result in an increase in access to terminals by riders. Of the estimated 36,974 daily riders, it is projected that 65 percent would access the terminals by car, 15 percent by bus or rail, and 20 percent on foot. With a 65 percent total access to terminals by car and a 13,376 increase in total daily riders, an estimated 8,928 new riders could be accessing ferry terminals by automobiles. There could also be an increase in bus access to ferry terminals. The increase in riders accessing the ferry terminals in cars could alter traffic circulation patterns in localized areas near the ferry terminals. The traffic impacts are considered potentially significant, where access and circulation are not adequate to accommodate riders attracted to the terminal and system (WTA, 2003).

TCM 1 - Support Voluntary Employer-Based Trip Reduction Programs, TCM 3 - Improve Local and Areawide Bus Service, TCM 4 - Improve Regional Rail Service, and TCM 6 - Improve Interregional Rail Service, could result in increased congestion in the vicinity of transportation terminals. An increase in individuals using rail and bus transport will result in an increase in the number of individuals that travel to rail and bus terminals. The increase in riders accessing the rail and bus terminals in cars could alter traffic circulation patterns in localized areas near the terminals. The traffic impacts are considered potentially significant, where access and circulation are not adequate to accommodate riders attracted to the terminal system.

Additional automobiles accessing existing and new ferry, rail and bus terminals would require parking. This could result in potential localized parking problems and conflicts in the vicinity of the terminals. Parking demand could exceed parking availability at some locations. Other control measures in the 2005 Ozone Strategy are not anticipated to result in inadequate parking at any affected facilities. The reason for this conclusion is that, to the extent that transportation and related control measures reduce or limit the growth in daily vehicle trips or charge additional parking fees, there could be a slight reduction in current or future demand for parking on a regional basis compared to existing levels of parking demand. However, the potential increase in parking demand near rail, bus, and ferry terminals is considered significant.

TCM 4 – Upgrade and Expand Local and Regional Rail Service and TCM 5 – Improve Access to Rails and Ferries could also result in a decrease in vehicle miles traveled on a regional basis by encouraging the use of mass transit (e.g., rails and ferries).

TCM 9 - Improve Bicycle Access and Facilities could increase potential conflicts between vehicle and bicycle traffic by increasing the number of people bicycling near transit terminals. TCM 9 also supports local efforts to provide bicycle access and amenities and to better integrate bicycles into roadway improvement and Caltrans' efforts to consider non-motorized travel in all their plans, programs, and projects. As new facilities are developed, consideration will need to be given to the potential conflicts between vehicles and bicycles. The development of bicycle lanes and physical separation between bicycle and vehicle lanes would help minimize the potential for conflicts.

Conclusion: Based upon the above considerations, some control measures in the 2005 Ozone Strategy could encourage higher traffic densities in localized areas (e.g., TCM 1, TCM 3, TCM4, TCM 6, TCM 7, TCM 11, and TCM 15). The impacts of individual projects are potentially significant and would need to be evaluated on a project-by-project basis. The potential increase in parking demand near rail, bus, and ferry terminals is also considered significant.

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Miscellaneous Traffic/Transportation Issues

The CEQA environmental checklist includes a discussion of air traffic impacts, emergency access and the potential conflicts with adopted policies, plans and programs, so the following discussion is provided. Neither air traffic nor air traffic patterns are expected to be directly or indirectly affected by adopting the proposed 2005 Ozone Strategy. Controlling emissions at existing commercial or industrial facilities, and developing TCMs, do not require constructing any structures that could impede air traffic patterns in any way.

It is not expected that adopting the proposed 2005 Ozone Strategy will directly or indirectly increase roadway design hazards or incompatible risks. New roadway improvements would be constructed to the most recent State and federal rules and regulations so that traffic hazards are expected to be minimized. TCM 20 – Promote Traffic Calming Measures is expected to reduce traffic hazards, as traffic calming

measures include developing streets exclusively for pedestrians, reducing speeds through residential neighborhoods, limiting vehicle speeds on arterials and major routes, and enhancing pedestrian and bicycling access to areas.

Controlling emissions at existing commercial or industrial facilities are not expected to affect in any way emergency access routes at any affected commercial or industrial facilities. The reason for this conclusion is that the process of controlling emissions (from stationary sources in particular) is not expected to require construction of any structures that might obstruct emergency access routes at any affected facilities.

Adopting the proposed 2005 Ozone Strategy will not conflict with adopted policies, plans or programs supporting alternative transportation programs. In fact, the transportation and related control measures would specifically encourage and provide incentives for implementing alternative transportation programs and strategies.

3.16.4 MITIGATION MEASURES

The following mitigation measures are required to mitigate the potential increased car and bus traffic to and from new and existing transportation terminals and stations, including TCM 1 - Support Voluntary Employer-Based Trip Reduction Programs, TCM 3 - Improve Local and Areawide Bus Service, TCM 4 - Improve Regional Rail Service, TCM 6 - Improve Interregional Rail Service, TCM 7 - Improve Ferry Service, and TCM 15 - Local Land Use Planning and Development Strategies.

T1 Once transport terminal and station locations are narrowed down, site specific traffic analyses shall be conducted to compare predicted traffic with applicable local LOS standards. Traffic analyses must also be completed where modifications are proposed for existing terminals and stations. Traffic mitigation measures would depend on site-specific conditions, including design of vehicular access to terminals, major access routes, parking availability, and traffic patterns. For example, impacts that were predicted to occur at intersections could be mitigated by addition of turning lanes. For some cases, where access is problematic or presents serious community concerns, the viability of the terminal location would need to be further evaluated.

T2 The project proponents, in conjunction with local and regional transit agencies, shall study and develop terminal-specific plans to ensure that potential driving patrons can be adequately served by transit in locations with limited parking and currently insufficient transit access.

T3 Non-drive access could be encouraged through measures such as charging fees for parking, provision of preferential parking for carpools and vanpools, comprehensive shuttle access, land use scenarios that encourage non-drive access, and encouraging bicycle and pedestrian access.

In addition to the above mitigation measures, TCM 9 – Improve Bicycle Access and Facilities and TCM 19 – Improve Pedestrian Access and Facilities, should also help to minimize localized impacts on traffic. Impacts after mitigation must be determined on a case-by-case basis after mitigation measures are considered. Therefore, the impact on traffic and parking in the vicinity of new transit remains potentially significant.

3.16.5 CUMULATIVE TRANSPORTATION/TRAFFIC IMPACTS

The forecast for the Bay Area includes a significant increase in population with a related significant increase in traffic (vehicles miles traveled) in the Bay Area over the next 25 years. While general population growth may impact transportation and traffic, the 2005 Ozone Strategy, along with other air quality policies and programs, have been developed as strategies for attaining and maintaining compliance with ambient air quality standards in response to this population growth.

The cumulative affect of the 2005 Ozone Strategy and other air quality rules, regulations, and programs are expected to result in a reduction in vehicle miles traveled in the Bay Area as compared to the No Project Alternative or the baseline, thus providing beneficial impacts to the transportation system. Localized impacts, as discussed in the project-specific impacts above may occur. However, on a cumulative basis, the 2005 Ozone Strategy is expected to result in a reduction in vehicle miles traveled, therefore, no significant adverse cumulative impacts on transportation and traffic are expected.

3.17 UTILITIES AND SERVICE SYSTEMS

3.17.1 ENVIRONMENTAL 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. Given the large area covered by the BAAQMD, public utilities are provided by a wide variety of local agencies.

3.17.1.1 Electricity

The electricity market in California was restructured under Assembly Bill 1890 (AB 1890), which was signed into law in 1996. Restructuring involved decentralizing the generation, transmission, distribution and customer services, which had previously been integrated into individual, privately-owned utilities. The objective of restructure was to increase competition in the power generation business, while increasing customer choice through the Power Exchange (PX). Additionally, the goal was to release control by privately-owned utilities of their transmission lines to a central operator called the Independent System Operator (ISO). Publicly-owned utilities provide electric service to approximately one-quarter of the state's population. AB 1890 states the Legislature's intention that the State's publicly-owned utilities voluntarily give control of their transmission facilities to the ISO, just as is required of the privately-owned utilities.

However, changes instituted by AB 1890 do not apply to them to the same extent as the privately-owned utilities. In-State, power plants supply most of California's electricity demand, while hydroelectric power plants from the Pacific Northwest, and power plants in the southwestern U.S., provide for California's out-of-state needs. The contribution between in-state and out-of-state power plants depends upon, among other factors, the precipitation that occurred in the previous year and the corresponding amount of hydroelectric power that is available. The two largest power plants in the Bay Area are located in Contra Costa County. Both of these plants consume natural gas, and provide over 1400 Mega Watts (MW) of electricity. Additionally, a 600 MW facility is under construction in Santa Clara County, and is scheduled to open in the summer of 2005 (CEC, 2004). Local electricity distribution service is provided to customers within the Air District by privately-owned utilities such as Pacific Gas and Electric (PG&E). Many public-owned utilities, such as Alameda Power and Telecom, East Bay Municipal Utility District and the Santa Clara Electric Department also provide service. PG&E is the largest electricity utility in the Bay Area, with a service area that covers all, or nearly all, of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties. PG&E provides approximately 94 percent of the total electricity demand in the Air District (CEC, 2001).

There are local reliability concerns in the San Francisco Area. Unless generation is added, or transmission upgrades are performed, local reliability criteria for the San Francisco peninsula will be exceeded as soon as 2006 (CEC, 2003). In addition, Hunters Point Power Plant (HPPP), a forty-five year old unit, and Potrero Power Plant, a forty year old unit, are in the process of being shut down (CAISO, 2005).

The ISO Governing Board first approved the Action Plan for San Francisco ("Action Plan") on November 10, 2004. The Action Plan specifies the new projects necessary, including generation and transmission, to facilitate the release of existing generation located within the City of San Francisco from the applicable Reliability Must Run ("RMR") Agreements with the ISO. Based on the current projected completion dates for the various transmission and generations projects, the release of the Hunters Point Power Plant ('Hunters Point") and the Potrero Power Plant ("Potrero") units from the RMR Agreements, which will allow the plants to close, is as follows:

Unit	Release Date
Hunters Point Units 2 & 3	Completed
Hunters Point Units 1 & 4	March 2006
Potrero Unit 3	December 2007
Potrero Units 4, 5, & 6	December 2007

Source: CAISO, 2005

The proposed schedule to shutdown HPPP and Potrero Power Plant assumes the sequential completion of certain transmission and power generation projects. If a project is not completed on schedule, then the shutdown of the units may be delayed.

Table 3.17-1 shows the amount of electricity delivered to residential and nonresidential entities in the counties in the BAAQMD in 2000 (CAISO, 2005).

TABLE 3.17-1

Bay Area Utility Electricity Deliveries for 2000 by County

	Residential		Non-Residential		Total	
County	**Number of Accounts**	**kWh[1] (million)**	**Number of Accounts**	**kWh (million)**	**Number of Accounts**	**KWh (million)**
Alameda	507,929	3,066	53,839	7,539	561,768	10,605
Contra Costa	341,2761	2,761	29,705	4,054	371,426	6,815
Marin	99,628	734	13,489	834	113117	1568
Napa	45,477	366	7,671	618	53,148	984
San Francisco	312,258	1,481	31,862	4,267	344,120	5,748
San Mateo	253,893	1,661	26,191	3,474	280,084	5,135
Santa Clara	555,775	3,990	60,054	13,853	615,829	17,843
Solano	126,607	984	14,023	2,088	140,630	3,071
Sonoma	171,448	1,258	24,367	1,735	195,815	2,993

Source: CEC, 2002

[1] kilowatt-hour (kWh): The most commonly used unit of measure telling the amount of electricity consumed over time. It means one kilowatt (1000 watts) of electricity supplied for one hour.

3.17.1.2 Natural Gas

Four regions supply California with natural gas. Three of them—the Southwestern U.S., the Rocky Mountains, and Canada—supply 85 percent of all the natural gas consumed in California. The remainder is produced in California. In 2000, approximately 35 percent of all the natural gas consumed in California was used to generate electricity. Residential consumption represented approximately one-fourth of California's natural gas use with the balance consumed by the industrial, resource extraction, and commercial sectors. PG&E provides natural gas service throughout the Bay Area (CEC, 2002a). CEC staff expects that PG&E will need to expand its pipeline capacity to access Canadian supplies by 2013 to meet the projected natural gas demand (CEC, 2003a).

Table 3.17-2 provides the estimated use of natural gas in California by residential, commercial and industrial sectors in 2000. About 71 percent of the natural gas consumed in California is for industrial and electric generation purposes.

The estimated energy use associated with transportation in California and the Bay Area is included in Table 3.17-3

TABLE 3.17-2

California Natural Gas Consumption for 2000

Sector	Utility	Non-Utility	Total
Residential	1,381	--	1,381
Commercial	505	--	505
Industrial	1,327	1,044	2,371
Electric Generation	2,281	45	2,326
Total	**5,495**	**1,089**	**6,584**

Source: CEC, 2002a

TABLE 3.17-3

Transportation Energy Use in California and the Bay Area (2000)

Fuel Type	Units	State	Bay Area	Bay Area % of Statewide Demand
Gasoline/Diesel	Million gallons	14,378	3,159	22
Electricity	Million kW-hr	505	416	82
Natural Gas	Million therms	34	5	15

Source: WTA, 2003

3.17.1.3 Solid/Hazardous Waste

Solid Waste

Permit requirements, capacity, and surrounding land use are three of the dominant factors limiting the operations and life of landfills. Landfills are permitted by the local enforcement agencies with concurrence from the California Integrated Waste Management Board (CIWMB). Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill. Landfills are operated by both public and private entities (CIWMB, 2002a).

There are three primary classes of landfill sites permitted to receive varying severity of waste materials. Class I sites are facilities that can accept hazardous waste as well as municipal solid waste, construction debris, and yard waste. Class II sites may receive certain designated waste along with municipal solid waste, construction debris, and yard waste. Class III sites can only accept non-hazardous waste, e.g., solid waste construction debris, wood and yard waste, and certain non-hazardous industrial waste.

A total of 21 Class III active landfills are located within the Air District with a total capacity of 52,517 tons per day (see Table 3.17-4). More detailed information on each landfill is in Appendix C.

TABLE 3.17-4

Number of Class III Landfills Located within the Bay Area and Related Landfill Capacity

County	Number of Landfills	Capacity (tons/day)
Alameda[(1)]	3	16,014
Contra Costa	3	7,500
Marin	2	2,375
Napa	1	300
San Mateo	2	3,998
Santa Clara	7	13,100
Solano	2	6,730
Sonoma	1	2,500
TOTAL	21	52,517

(1) Sources: California Integrated Waste Management System. See Appendix C for further details.

In addition, there are a total of 16 green waste composting facilities in the Bay Area (see Appendix C for further details).

Hazardous Waste

There are two hazardous waste (Class I) facilities in California, the Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Safety-Kleen facility in Buttonwillow (Kern County). Kettleman Hills has an estimated nine million cubic yard capacity (four million currently, with an additional five million expected upon completion of a berm expansion). The facility expects to continue receiving wastes for approximately nine years under its current permit. The facility is in the process of permitting a new landfill that would extend the life of the operation another 15 years. (Personal Communication, Terry Yarbough, Chemical Waste Management Inc., June 2004). Buttonwillow receives approximately 960 tons of hazardous waste per day and has a remaining capacity of approximately nine million cubic yards. The expected life of the Buttonwillow Landfill is approximately 40 years (Personal Communication, Marianna Buoni, Safety-Kleen (Buttonwillow), Inc., June 2004).

Hazardous waste also can 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.

About 611,400 tons of hazardous waste was generated in the nine counties that comprise the Air District in 2003 (see Table 3.17-5). The most common types of hazardous waste generated in the Bay Area include waste oil, other inorganic solid waste, contaminated soils, organic solids, asbestos-containing waste, and unspecified oil-containing wastes. Not all wastes are disposed of in a hazardous waste facility. Many of the wastes generated, including waste oil, are recycled.

TABLE 3.17-5

Hazardous Waste Generation in the Bay Area
(tons per year)

WASTE NAME	Alameda	Contra Costa	Marin	San Francisco	San Mateo	Santa Clara	Napa	Solano[1]	Sonoma[1]
Waste Oil	67,850	2,396	130	813	2,739	17,899	62	9,154	298
Inorganic Solid Waste	12,940	10,047	699	4,369	1,548	7,726	1	1,672	3,265
Contaminated Soils	10,159	71,497	1,310	52,592	2,132	12,219	460	2,193	626
Organic Solids	1,582	6,947	61	457	976	5,930	116	410	264
Asbestos Waste	5,854	4,860	1,039	11,602	2,160	5,968	539	896	663
Oil-Containing Waste	2,030	2,197	34	1,077	933	2,048	39	2,753	129
Unspecified Aqueous Solution	424	191	34	27	118	1,640	15	725	7
Unspecified Solvent Mixture	1,491	331	9	48	285	1,167	12	178	60
Aqueous Solution with Organic Residues	5,683	199	36	60	1,217	4,936	15	5,360	100
Total Waste Generated in County	174,412	140,543	5,099	96,912	39,689	105,402	1,771	36,473	11,100

(1) Data presented is for entire county and not limited to the portion of the county within the Bay Area jurisdiction.
Source: DTSC, 2004.

3.17.2 SIGNIFICANCE CRITERIA

The impacts to utilities/service systems will be considered significant if any of the following criteria are met:

> The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
>
> An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
>
> The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.
>
> The project increases demand for water by more than 300,000 gallons per day.
>
> The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

3.17.3 ENVIRONMENTAL IMPACTS

The potential impacts on utilities and service systems have been divided into separate sections to discuss the potentially significant impacts on: (1) Energy (electricity, natural gas, petroleum fuels and alternatives fuels); and (2) Solid and hazardous wastes. The impacts for each of these resources are discussed in separate subsections below. Table 3.17-6 lists the 2005 Ozone Strategy control measures that may have potentially significant utilities/service systems impacts.

3.17.3.1 Energy Impacts

Impacts on Electricity

PROJECT-SPECIFIC IMPACTS: The potential increase in electricity use due to implementation of the 2005 Ozone Strategy is associated with the potential installation of add-on control equipment. Several control measures could result in the installation of add-on control equipment including SS 3 – High Emitting Spray Booths and SS 14 – Stationary Gas Turbines. Several other control measures could result in an increase in the use of electric engines including MS 3 – Low Emission Vehicle Incentives, TCM 4 – Improved Regional Rail Service, and TCM 5 – Improved Access to Rails and Ferries.

TABLE 3.17-6

Control Measures with Potential Utilities/Service Systems Impacts

Control Measures	Control Measure Description	Control Methodology	Impact
Energy			
SS 3	High Emitting Spray Booths	Reformulated low-VOC coatings/solvents, add on control devices	Increase in use of electricity or natural gas for add-on control equipment
SS 12	Industrial, Institutional and Commercial Boilers	Low NOx burners	Increased energy use due to boiler turndown, capacity or efficiency
SS 13	Large Water Heaters and Small Boilers	Low NOx burners	Increased energy use due to boiler turndown, capacity or efficiency
SS 14	Stationary Gas Turbines	Add-on control equipment	Increase in use of electricity
MS 3	Low Emission Vehicle Incentives	Purchase low or zero-emission vehicles or engines, engine repowers, retrofits & replacements; add-on control equipment; clean fuels or additives; and alternative fuels	Increase in use of electricity, natural gas, and alternative fuels. Potential savings in petroleum fuel use
TCM 3	Improve Local and Areawide Bus Service	Add on control devices (particulate traps and NOx catalysts), alternative clean fuels	Potential increase in alternative fuels
TCM 4	Improve Regional Rail Service	Construction of new rail facilities, rail electrification	Increase in use of electricity
TCM 5	Improve Access to Rails and Ferries	Construction of new facilities, use of low emission vehicles	Increase in use of electricity and natural gas.
TCM 7	Improve Ferry Service	Construction of new facilities, use of low emission ferries, and add-on controls	Increase in use of alternative fuels (hydrogen). Potential savings in petroleum fuel use
Solid/Hazardous Waste			
SS 3	High Emitting Spray Booths	Reformulated low-VOC coatings/solvents, add on control devices	Potential increase in use of and disposal of activated carbon
SS 8	Marine Loading Operations	Add-on control equipment	Potential increase in use and disposal of activated carbon
SS 10	Pressure Relief Devices	Add-on control equipment	Potential increase in use and disposal of activated carbon
MS 3	Low Emission Vehicle Incentives	Purchase low or zero-emission vehicles or engines, engine repowers, retrofits & replacements; add-on control equipment; clean fuels or additives; and use of alternative fuels	Potential increase in solid/hazardous wastes
MS 4	Vehicle Buy Back Program	Provide financial incentives to scrap vehicles	Potential increase in solid/ hazardous wastes

For stationary sources, the increase in electricity demand is expected to be negligible. Most of the control measures would require natural gas rather than electricity (e.g., incinerators). Alternative processing equipment is expected to be the primary method of control for some of the control measures. For example, the primary method of control for SS 3 – High Emitting Spray Booths is expected to be the increased use of low VOC content products. Further, the primary method of control for other control measures is expected to be replacement of old equipment with newer, more energy efficient equipment, e.g., SS 12 – Industrial, Institutional and Commercial Boilers and SS13 – Large Water Heaters and Small Boilers.

Electrification of mobile sources is expected to increase the electricity use in the Bay Area. Shifting some of the fuel source to electricity will require an additional electrical load. The estimated baseline electricity use in the Air District is about 54,762 million kWh in 2000 (see Table 3.17-1). The CEC estimates that the electricity supply will increase by about four percent within the state between 2004 and 2010 (CEC, 2004b). Assuming the same increase in electricity generation occurs within the Bay Area by 2010, an increase in electricity demand of about 4 percent is expected [(54,762 x 0.04)+54,762 = 56,952 kWh].

Relative to the projected peak electricity demand in 2010, implementation of all the control measures is expected to result in an increase of about one percent of current electrical use in 2010 (see Table 3.17-7).

TABLE 3.17-7

Peak Electricity Demands for the Air District in 2010 (million kWh)

	2010
Baseline	56,952*
Overall Impact	548
Percent of Baseline	>1%

*CEC, 2004b

The electric energy impacts from the implementation of the 2005 Ozone Strategy are expected to be less than significant. The electric energy impacts in Table 3.17-7 represent a conservative estimate of electric energy demand and peak demand impacts. This analysis conservatively includes increases in electricity demand due to the use of add-on controls from coating and solvent control measures. It is expected based on current practices that reformulated products will be used to meet future VOC emission reductions from these control measures. Add-on controls will be used only if they are cost effective. These electricity impacts, although unavoidable, are expected to be less than significant because power-generating utilities are expected to have the capacity to supply the estimated electrical increase.

The Ozone Strategy also includes SS 15 – Promote Energy Conservation, which would have a beneficial air quality impact. This measure would be implemented through a combination of efforts. The BAAQMD will develop a model energy efficiency ordinance and encourage voluntary adoption by local government agencies. In addition, the Air District will conduct a public education program promoting energy efficiency that links energy efficiency with combating air pollution and global warming. The Air District will also explore potential incentives that could be provided to promote project and programs that in addition to reducing air pollution are energy efficient and reduce global warming gases. Quantification of emission reductions from this measure is speculative at this time and would depend on the breadth of implementation and the available funding for implementation.

Conclusion: Based upon the above considerations, significant adverse impacts to electricity generation are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

PROJECT-SPECIFIC MITIGATION: No mitigation measures are required because no significant impacts on electricity demand were identified.

Impacts on Natural Gas

PROJECT-SPECIFIC IMPACTS: Control measures in the 2005 Ozone Strategy may result in an increase in demand for natural gas associated with use as alternative fuels and with add-on controls, e.g, SS 3 – High Emitting Spray Booths, MS 3 – Low Emission Vehicle Incentives, TCM 3 – Improved Local and Areawide Bus Service, and TCM 5 – Improve Access to Rails and Ferries.

Total natural gas (end use) consumption in California is approximately 6,584 million cubic feet per day. The residential, commercial, and industrial sectors account for approximately 21, eight, and 36 percent, respectively, of total statewide natural gas (end use) consumption. Approximately 35 percent of the natural gas used in the state is to generate electricity. The demand for natural gas in California is expected to increase by approximately eight percent from 2003 to 2010 (CEC, 2003).

The Bay Areas may show an increase in natural gas consumption used as an alternative fuel to petroleum fuels. The need for natural gas fueling stations would be required to fuel buses and potentially to fuel motor vehicles. The use of natural gas in buses would displace a portion of the use of diesel fuel in the future, the amount of which will be determined when the number of buses or vehicles that will use natural gas is known.

For stationary sources, a slight increase in natural gas demand is expected from the use of add-on air pollution controls. The amount of natural gas to run these control devices is unknown. All of the industrial facilities affected by these proposed rule amendments currently use fuel gas and/or natural gas. Alternative processing equipment is expected to be the primary method of control, i.e., it is expected based on current practices that

reformulated products will be used to meet some of the future VOC emission reductions from these control measures. Add-on controls will be used only if they are cost effective.

The increased demand in electricity will be generated from the use of natural gas, resulting in an increased demand for natural gas. The increased demand in natural gas associated with the additional electricity demands is expected to be negligible because the increase in electrical demand is negligible.

It is estimated that the control measures will result in a very small increase in natural gas use (i.e., about one percent), which is an extremely small increase relative to the amount of natural gas used in California. In 2010, almost 25,000 million therms of natural gas will be consumed in California. The increase in natural gas use associated with the 2005 Ozone Strategy is expected to be within the statewide projections for natural gas use. The natural gas impacts from the implementation of the Ozone Strategy are expected to be less than significant.

Conclusion: These energy impacts, although unavoidable, are expected to be less than significant because sufficient natural gas capacity and supplies are expected be available. The Ozone Strategy also includes SS 15 – Promote Energy Conservation that could help to increase energy efficiency and reduce air emissions from energy use.

Impacts on Petroleum Fuels

PROJECT-SPECIFIC IMPACTS: In general, implementation of the 2005 Ozone Strategy may result in a decrease in the demand for petroleum fuels (i.e., gasoline and diesel) due in part to the potential use of alternative fuels for buses, idling restrictions and all the mobile source and transportation control measures in the 2005 Ozone Strategy.

However, an increase in the use of add-on control equipment and devices, such as diesel particulate filters, SCRs, catalytic controls, etc., generally result in a slight decrease in engine fuel efficiency. While overall emissions are reduced with these technologies, there could be an increase in petroleum fuel usage.

Table 3.17-8 shows the Bay Area gasoline and diesel fuel consumption in 2000 and the projected consumption in 2005 and 2010. Long term forecast is for total vehicles, vehicle travel and fuel consumption to continue to increase but at declining rates. The fuel consumption for new cars is expected to remain at 27.5 miles per gallon, and the fleet economy will reach a peak value of 18.82 miles per gallon by year 2021 (Caltrans, 2003).

TABLE 3.17-8

Projected Fuel Consumption in the Bay Area*
(million gallons/year)

Fuel Type	2000	2005	2010
Gasoline	2,824	2,990	3,279
Diesel	386	346	381
Total	3,210	3,336	3,660

*Caltrans, 2003

The changes in the consumption of diesel fuels associated with the 2005 Ozone Strategy are expected to be included in the forecast in Table 3.17-8. The largest increase in diesel fuel demand would be expected to come from increased/expanded bus service and non-electrified rail service due to an increase in the number of riders. The Ozone Strategy may result in a minor increase in diesel fuel usage due to a decreased fuel efficiency associated with add-on control equipment. On the other hand, a decrease in diesel fuel use would be expected to occur associated with control measures that switched to alternative fuels (e.g., TCM 3 – Improve Local and Areawide Bus Service and TCM 5 – Improve Access to Rail and Ferries).

TCM 7 – Improve Ferry Service could result in a higher energy per passenger miles traveled value than other transit modes. This higher energy consumption ratio occurs as a result of the WTA meeting its design and purpose as an effective transportation alternative in terms of service and routes. The difference in energy consumption per passenger mile traveled between ferries and automobiles is greater for ferries but not significantly different (see Table 3.17-9). The difference between ferries and other modes is more substantial, and therefore this impact remains significant following mitigation (WTA, 2003).

TABLE 3.17-9

Comparison of Bay Area Passenger Data for Mass Transit Modes(1)

Transit Mode	Passengers/Run	Energy/PMT(2) (Btu/PMT)	Total PMT
Automobile	1.17	5,321	207,919,595
Buses	56	660	18,083,990
Light Rail	110	91	2,125,739
BART	1,056	68	33,151,135
Commuter Rail	971	102	8,263,795
Ferries	67	6,297	415,612

(1) WTA, 2003

(2) PMT = passenger miles traveled

Conclusion: Based upon the above considerations, TCM 7 – Improve Ferry Service could result in a higher energy per passenger miles traveled value than other transit modes so the impacts on petroleum fuels are potentially significant.

PROJECT-SPECIFIC MITIGATION: Significant impacts were identified for petroleum fuels associated with TCM 7 - Improve Ferry Service. The following mitigation measure has been imposed by the WTA:

UT1 The WTA is planning to continue investigating the feasibility and applicability of using energy sources other than fossil fuels and different engine technologies. One promising technology is the use of fuel cells. The WTA has investigated the use of alternative fuels for ferries in New Technologies and Alternative Fuels Working Document. Alternative energy sources and engine technologies will become available and will be incorporated as they become feasible and cost-effect.

The impact could be less than significant with implementation of the above mitigation measures. However, the effectiveness of the mitigation cannot be quantified at this time. Therefore, this impact remains potentially significant.

Impacts on Alternative Fuels

PROJECT-SPECIFIC IMPACTS: The 2005 Ozone Strategy may cause a shift from conventional petroleum fuel to alternative fuels. The increased use of alternative fuels in California's transportation energy market continues at a gradual pace, but could be limited by a variety of market and regulatory uncertainties. Continuing progress in reducing new gasoline vehicle emissions is having a negative effect on auto industry development and marketing of alternative fuel vehicles. The use of cleaner-burning alternative fuels such as CNG is not receiving as much emphasis in light-duty vehicle emission-reducing strategies as previously expected. The combination of gasoline reformulation and advances in automotive emission control technology appears to be making the exhaust emission levels required by California's low-emission vehicle standards achievable without relying on the use of alternative fuels. Therefore, the demand for alternative fuels would depend on their marketing strategies and the development of infrastructure to affect consumer choice.

There is growing interest and financial support for the use of hydrogen-powered fuel cells to power cars, trucks, homes and businesses. The federal government is supporting the development of hydrogen-powered fuel cells in order to reverse America's growing dependence on foreign oil. The federal government is providing funding for the development of technologies and infrastructure to produce, store, and distribute hydrogen for use in fuel cell vehicles and electricity generation. A total of about $1.7 billion over a five year period was provided to develop hydrogen-powered fuel cells, hydrogen infrastructure and advance automotive technologies.

Hydrogen fuel cells are proven technology but more work is needed to make them cost-effective for use in cars, trucks, homes or businesses. Hydrogen fuel cells create electricity to power cars with minimal pollution. While hydrogen fuel cell technology is promising, its use in the future is dependent on many things (cost-effectiveness of the technology, availability of hydrogen, etc.), so that the extent to which it may be used in the future is currently unknown.

Conclusion: Although the 2005 Ozone Strategy may result in an increase in alternative transportation fuels, this increase is not expected to be significant since alternative fuels (e.g., natural gas and hydrogen) are available or the feedstock that produces the fuels are generally available. Future demand could be met through increased production. The energy impacts associated with the future use of alternative fuels are expected to be less than the current strategy that uses predominately petroleum-based fuels so that no significant impacts on alternative fuels are expected.

PROJECT-SPECIFIC MITIGATION: No significant impacts on alternative fuels are expected so no mitigation measures are required.

3.17.3.2 Solid/Hazardous Waste Impacts

The analysis of solid/hazardous waste impacts assumes that safety and disposal procedures required by various agencies in the State of California will provide reasonable precautions against the improper disposal of hazardous wastes in a municipal waste landfill. Because of State and federal requirements, some facilities are attempting to reduce or minimize the generation of solid and hazardous waste by incorporating source reduction technologies to reduce the volume or toxicity of waste generated, including improving operating procedures, using less hazardous or non-hazardous substitute materials, and upgrading or replacing inefficient processes.

Potential Solid Waste Impacts due to Air Pollution Control Technologies

PROJECT-SPECIFIC IMPACT: Table 3.17-6 identifies those proposed control measures that may have potential project specific impacts on solid waste due to the addition of pollution control equipment that may need disposal and replacement. It is difficult to quantify the number of facilities that would employ these types of equipment, the rate of disposal necessary to maintain the equipment, type of waste generated by the equipment (i.e., hazardous or non-hazardous) and the timing by which these technologies would come into use.

Particulate matter collected on filters is expected to be small. Diesel particulate filters are estimated to collect about 10 to 150 grams of material per vehicle per year (CARB, 2002), and the particulate collected is considered hazardous waste. The amount of material collected from these types of control equipment is expected to be minor as described in the following paragraphs and could be handled within the capacity of existing disposal facilities.

The diesel PM10 filter system consists of a filter positioned in the exhaust stream designed to collect a significant fraction of the PM10 emissions while allowing the exhaust gases to pass through the system. Since the volume of PM10 generated by a diesel engine is sufficient to fill up and plug a reasonably sized filter over time, some means of disposing of this trapped PM10 must be provided. The most promising means of disposal is to burn or oxidize the PM10 in the filter, thus regenerating, or cleansing, the filter.

A complete filter system consists of the filter and the means to facilitate the regeneration, if not of the disposable type. The exhaust temperature of diesels is not always sufficient to initiate regeneration in the filter. A number of techniques are available to bring about regeneration of filters. It is not uncommon for some of these various techniques to be used in combination. Some of these methods include:

- Using a catalyst coated on the filter element. The application of a base or precious metal coating applied to the surface of the filter reduces the ignition temperature necessary for oxidation of the particulate;

- Using a NOx conversion catalyst upstream of the filter to facilitate oxidation of NO to NO_2 which adsorbs on the collected PM10, substantially reducing the temperature required to regenerate the filter;

- Using fuel-borne catalysts to reduce the temperature required for ignition of the accumulated material;

- Throttling the air intake to one or more of the cylinders, thereby increasing the exhaust temperature;

- Using fuel burners, electrical heaters, or combustion of atomized fuel by catalyst to heat the incoming exhaust gas to a temperature sufficient to ignite the PM10;

- Using periodically compressed air flowing in the opposite direction of the PM10 from the filter into a collection bag which is periodically discarded or burned; and

- Throttling the exhaust gas downstream of the filter. This method consists of a butterfly valve with a small orifice in it. The valve restricts the exhaust gas flow, adding back pressure to the engine, thereby causing the temperature of the exhaust gas to rise and initiating combustion.

Baghouses and HEPA filters collect particulate emissions from station sources. Prefilters and filters collect particulate emissions from mobile sources of particulate emissions. These types of filtration control equipment can effectively remove particulate matter, including heavy metals, asbestos, as well as other toxic and nontoxic compounds.

Polytetrafluoroethylene (PTFE) membranes or HEPA filters can increase a system's removal efficiency up to 99.9 percent. In general, as particulate size decreases, the

surface area to volume ratio increases, thus increasing the capacity of these filters to adsorb smaller particles (including hazardous materials). An increase in the use of membranes and filters may increase solid waste requiring disposal in landfills in amounts greater than what would be produced if the 2005 Ozone Strategy were not adopted. In some cases, the waste generated will be hazardous (e.g., the collection of toxic emissions). The increase in the amount of waste generated from the use of filters and the collection of additional particulate matter are expected to be small as the amount of material collected is small. Therefore, the potential impacts of the use of additional filtration equipment on solid/hazardous waste generation are less than significant.

Based on the above considerations no significant adverse solid/hazardous waste impacts are anticipated to occur from the use of particulate traps.

State law requires hazardous waste generators to attempt to recycle their wastes in lieu of disposal. OEHHA has implemented a hazardous waste exchange program to promote the use reuse and exchange of hazardous wastes. The program is designed to assist generators of hazardous wastes to recycle their wastes and encourage the reuse of the wastes. The DTSC also publishes a directory catalog of industrial waste recyclers annually so that industries will know where to buy, sell, or exchange their wastes.

Conclusion: Based upon the above considerations, significant adverse impacts to solid and hazardous waste are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

PROJECT-SPECIFIC MITIGATION: No significant solid/hazardous waste impacts were identified for solid waste impacts due to air pollution control technologies as part of the 2005 Ozone Strategy so no mitigation measures are required.

Carbon Adsorption

The proposed control measures may generate additional solid or hazardous waste in the form of carbon used to control organic emissions, should facilities choose to comply using activated carbon filters. The additional volume of carbon is not expected to be significant since carbon is usually collected and regenerated so that little additional solid waste would be expected.

PROJECT-SPECIFIC IMPACT: Several control measures could encourage the use of carbon adsorption as air pollution control equipment including SS 3 – High Emtting Spray Booths, SS 8 – Marine Loading Operations, and SS 10 – Pressure Relief Devices. The amount of solid waste, which may be generated by the carbon adsorption process would depend on the number of carbon adsorbers installed, the operating characteristics, and the frequency of carbon replacement. Most of the control measures have alternative methods of compliance, e.g., reformulation of materials, so that all facilities would not be expected to use carbon adsorption to comply.

If carbon adsorption systems are used, the amount of hazardous waste generated on an annual basis is expected to be minimal. Most activated carbon used in carbon adsorption control devices is reclaimed and reactivated, resulting in negligible impacts on solid waste disposal facilities. Activated carbon can have a lifetime of five to 10 years; however, the operating characteristics of the control device may result in a shorter lifetime.

Spent carbon is usually recycled and reused rather than disposed in landfills. Most facilities contract out with vendors that take the spent carbon and deliver regenerated carbon. Another alternative to the land disposal of regenerated carbon is to burn the spent carbon in a thermal incinerator. With thermal incineration, the organic materials contained in the carbon are oxidized to carbon dioxide, water, and in most cases, harmless combustion by-products. Incineration destroys the toxic constituents and significantly reduces the volume of carbon to be disposed of, thus reducing solid waste impacts. The disadvantage of incineration is that without additional add-on control devices, there may be an increase in criteria pollutant emissions. Further, it is not expected that carbon adsorption will be used in every case where it is listed as a control option. It is expected that facilities will continue to choose other more cost-effective options to comply with control measures.

Conclusion: Based upon the above considerations, significant adverse solid waste impacts resulting from the use of carbon adsorption are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

PROJECT-SPECIFIC MITIGATION: No significant impacts due to the use of carbon adsorption are expected so no mitigation measures are required. However, it is recommended that recycling and reusing activated carbon should be required to minimize the amount of spent carbon waste being transferred to landfills.

Early Retirement of Equipment

PROJECT-SPECIFIC IMPACT: Control Measure MS 3 – Low Emission Vehicle Incentives and MS 4 – Vehicle Buy Back Program may result in the early retirement (scrapping) of vehicles.

Approximately 80 percent of a retired vehicle can be recycled and reused in another capacity. Batteries, catalytic converters, tires, and other recoverable materials (e.g., metal components) are removed and the rest of the vehicle is shredded. The shredded material is then sent for recovery of metal content. Therefore, the amount of solid waste landfilled as a result of the proposed measures would be smaller than the size of the vehicle. Additionally, there are a limited number of vehicles that can be scrapped per year. These vehicles would be scrapped in the near future, regardless of the control measures as they are older vehicles. Further, these control measures are not expected to mandate that older vehicle, engines, or other equipment be scrapped. The control measures are expected to allow a number of different control methods to comply with the required emission reductions. Control measures that would require new equipment will generally require

that it occur at the end of the life of the old equipment and new equipment is put into service. Control Measures MS 3 – Low Emission Vehicle Incentives and MS 4 – Vehicle Buy Back Program are expected to result in earlier retirement of vehicles than would have occurred without these control measures. Therefore, the control measures would not necessarily result in an increase in the generation of waste, rather they would result in an earlier generation of the waste. Based on the above, the increase in solid waste is expected to be accounted for within the California Integrated Waste Management Board's permitted capacity of the landfills within the Bay Area of over 52,715 tons per day so that no significant impacts would be expected.

The California Integrated Waste Management Act of 1989 (AB 939) requires cities and counties in California to reduce the amount of solid waste disposed in landfills by 25 percent by 1995 and by 50 percent by 2000, through source reduction, recycling and composting activities. Many cities and counties have not met these waste reduction goals. The generation of additional waste could impact the abilities of cities and counties to further reduce wastes. However, as discussed above the increase in solid waste that is expected to be diverted to a landfill is small and many of the waste streams are recyclable.

Conclusion: Based upon the above considerations, significant adverse impacts on landfill capacity are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

PROJECT-SPECIFIC MITIGATION: No significant impacts on solid/hazardous waste associated with the early retirement of vehicles were identified so no mitigation measures are required.

Reject Low VOC Content Coatings

PROJECT-SPECIFIC IMPACT: PROJECT-SPECIFIC IMPACTS: Several of the control measures in the 2005 Ozone Strategy would include controlling VOC emissions through the reformulation of coatings including SS 1 – Auto Refinishing; SS 2 – Graphic Arts Operation; SS 3 – High Emitting Spray Booths; SS 4 – Polyester Resin Operations; and SS 5 – Wood Products Coating. Emission reductions are expected to be achieved through the use of near-zero and zero VOC formulations. There is the potential for compliant lower VOC coatings:

- to not have the same freeze-thaw capabilities as existing coatings;
- to have shorter shelf lives and "go bad" sooner than conventional coatings; and
- to result in a shorter pot life compared to conventional coatings.

The above conditions could result in an increased generation of materials that would require disposal. CARB evaluated the potential impact of these conditions to increase the generation of waste (CARB, 2000) and their evaluation is summarized below.

CARB evaluated the coating product data sheets and determined that all categories of low-VOC coatings except quick dry primers, sealers, and undercoaters have comparable or even longer shelf lives than conventional coatings. However, low VOC industrial maintenance and floor coatings had average pot lives that were shorter (one the order of about one-half) than those of conventional coatings. The NTS Study showed that there are compliant water-borne coatings that pass freeze-thaw stability tests. Furthermore, manufacturers have indicated that the addition of surfactants will help to overcome freeze-thaw problems.

CARB assumed that about five percent of all affected coatings that currently do not comply with the lower VOC limits would be landfilled due to freeze-thaw problems, one percent of all affected coatings would be landfilled due to a shorter shelf life, and 10 percent of all industrial maintenance and floor coatings would be landfilled as a result of a shorter pot life (CARB, 2000). According to California law, coatings that have solidified are not considered hazardous waste and may be disposed of in municipal landfills. Liquid coatings must be sent to a hazardous waste treatment facility. Therefore, the only coatings that would solidify and be considered non-hazardous waste would be industrial maintenance and floor coatings. The empty containers of failed (but still liquid) coatings due to freeze-thaw and shelf-life problems were included in the solid waste analysis. Table 3.17-10 shows the estimated non-hazardous material that may be landfilled in the counties that make up the BAAQMD's jurisdiction. Table 3.17-10 shows that landfilling of non-hazardous material will account for less than one percent of the permitted throughput capacity of any county and is considered less than significant.

TABLE 3.17-10

Projected Solid Waste Impacts Associated with Low VOC Coatings in the Bay Area

County	Permitted Throughput tons/day[(1)]	Freeze-Thaw Disposal tons/day (2010) [(2)]	Shelf-life Disposal tons/day (2010) [(2)]	Pot Life Disposal tons/day (2010)[(2)]	Total Disposal tons/day (2010)[(2)]	Total Impact (% of Permitted Throughput)
Alameda	16,014[(3)]	0.196	0.033	0.384	0.613	0.004
Contra Costa	7,500	0.082	0.014	0.162	0.258	0.003
Marin	2,375	0.021	0.004	0.041	0.065	0.003
Napa	300	0.012	0.002	0.023	0.036	0.012
San Francisco	0	0.063	0.011	0.123	0.197	N/A
San Mateo	3,998	0.065	0.011	0.129	0.205	0.005
Santa Clara	13,100	0.162	0.027	0.319	0.508	0.004
Solano	6,730	0.038	0.006	0.076	0.120	0.002
Sonoma	2,500	0.044	0.007	0.086	0.137	0.005
TOTAL	52,517	0.683	0.115	1.343	2.139	

(1) See Appendix C for additional information.
(2) Source: CARB, 2000.

(3) Includes wastes from the city and county of San Francisco as about 90 percent of waste generated in San Francisco is disposed of in the Altamont Landfill in Alameda County (County of San Francisco, 2004).

To estimate the amount of liquid hazardous waste that would be generated due to implementation of low VOC content coatings, it was assumed that five percent and one percent per year of all coatings would be disposed due to freeze-thaw and shelf-life problems, respectively. In order to provide a conservative estimate of waste generation, it was also assumed that all coatings, including existing solvent-borne formulations, would be reformulated as waterborne coatings. The amount of hazardous waste generated in the Bay Area was estimated by assuming that the amount of hazardous waste generated within the Air District was the same percentage of solid waste as compared to the state total. (About 21.1 percent of the projected amount of solid wastes generated from low VOC coatings in the state are estimated to be generated in the Bay Area.). As shown in Table 3.17-11, the increased amount of coatings that would be disposed of in hazardous waste landfills is not expected to be significant. Further, there are financial incentives to the manufacturer to reduce the amount of reject coatings generated and, therefore, the amount disposed, since it costs to manufacture the coating and then to dispose of the material if it is rejected. Therefore, as these coatings become more common and there is more experience with their manufacture and use, fewer coatings are expected to be disposed.

TABLE 3.17-11

Projected Hazardous Waste Impacts Associated with Low VOC Coatings in the Bay Area (1)

Facility	Remaining Capacity (cubic yards)	Estimated Remaining Years	Freeze-Thaw Disposal (cubic yards)	Shelf-Life Disposal (cubic yards)	Total Disposal (cubic yards)	Total Impact (% of Remaining Capacity)
Chem Waste Management, Kettleman Hills	9 million	15	16,214	3,261	19,475	0.216
Safety Kleen	9 million	40	259	36	295	0.003

(1) Source: CARB, 2000

Conclusion: Based upon the above considerations, significant adverse impacts on hazardous waste disposal facilities are not expected due to implementation of the control measures within the 2005 Ozone Strategy.

PROJECT-SPECIFIC MITIGATION: No significant impacts on hazardous waste disposal facilities due to additional reject low VOC content coatings are expected so no mitigation measures are required.

Water Demand Impacts

PROJECT-SPECIFIC IMPACT: Increased water consumption may occur due to the reformulation of coatings to aqueous-based materials. Several of the control measures in the 2005 Ozone Strategy would propose to control VOC emissions through the reformulation of coatings and products including SS 1 – Auto Refinishing; SS 2 – Graphic Arts Operation; SS 3 – High Emitting Spray Booths; SS 4 – Polyester Resin Operations; and SS 5 – Wood Products Coating. No other control measures were identified that were expected to result in an increase in water use.

CARB estimated the amount of water use associated with its proposed architectural coatings suggested control measure (CARB, 2000). The primary objective of the CARB's control measure was to set VOC limits and other requirements that are feasible (based on current technology) and that will achieve significant emission reductions in VOC emissions from architectural coatings. CARB estimated that the projected water demand from the implementation of the low-VOC coating rules in the Bay Area would be about 6.28 million gallons per year by 2010 or about 17,206 gallons per day (CARB, 2000). CARB's estimate for water demand is expected to be conservative because many of the sources that would use reformulated coatings/solvents have already reformulated some of the coatings/solvents, and the estimate assumes that the only method for compliance would be reformulation This potential water demand is within the capacity of water supplied from various sources in the Bay Area (estimated water demand of about 1,880 billion gallons per year in 2010) (CARB, 2000) and is not considered significant compared with current and projected future demand and supply. While there are projected drought-year shortages in some regions of California, these shortages would occur regardless of the proposed control measures.

Conclusion: Based upon the above considerations, no significant adverse impacts on water demand are expected due to implementation of the control measures within the 2005 Ozone Strategy.

PROJECT-SPECIFIC MITIGATION: No significant water demand impacts were identified as part of the proposed project so no mitigation measures are required.

3.17.4 MITIGATION MEASURES

The mitigation measures for resources were addressed in each subcategory. Energy impacts remain potentially significant following mitigation.

3.17.5 CUMULATIVE UTILITIES AND SERVICE SYSTEM IMPACTS

Cumulative Energy Impacts

The analysis of adverse cumulative impacts to energy resources is different than the comparable analysis for other impacts areas for several reasons. First, it is difficult to quantify past energy impacts relative to implementation of the past air quality plans

because it is difficult to determine an actual link between past business practices (and associated energy demand) and compliance with air quality rules and regulations. There is no methodology to estimate past energy demand relative to past air plans. A second difficulty inherent in evaluating cumulative energy resources impacts is that it is difficult to predict if an affected facility will alter its energy demand in the future or switch to a different resource as a result of complying with a control measure included in the Ozone Strategy because of other business considerations. For example, an affected facility owner might switch to an alternative clean fuel if equipment using that alternative clean fuel is much more efficient than the old equipment using conventional fuels. This decision could have been made for a variety of reasons such as cost savings, increased production capacity, etc., and may not be related to the 2005 Ozone Strategy. Currently, analyses do not make these distinctions.

The energy impacts associated with implementation of the 2005 Ozone Strategy are analyzed relative to future baseline energy projections. The future baselines are based upon existing baselines, which is essentially past energy resource utilization plus future energy resource utilization. The estimated future energy resource demand from the 2005 Ozone Strategy is present energy demand plus future anticipated demand. Therefore, the project-specific energy resource impacts evaluated in preceding sections are equivalent to a cumulative impact analysis. The overall impact of the 2005 Ozone Strategy is to more effectively use buses, ferries, and rail transportation as opposed to single occupancy vehicles. The use of buses and rail (including light rail, BART, and commuter rail) result in a lower energy consumption than automobiles or ferries (see Table 3.17-9). It is predicted that buses, light rail, BART, and commercial rail, will transport millions more passengers than ferries (see Table 3.17-9). Therefore, the overall cumulative impact of the 2005 Ozone Strategy on energy, is expected to be less than significant.

CUMULATIVE ENERGY IMPACT MITIGATION: No significant adverse cumulative energy impacts were identified so no mitigation measures are required.

Cumulative Solid/Hazardous Waste Impacts

The proposed 2005 Ozone Strategy is not expected to result in significant, cumulative adverse impacts on solid or hazardous waste. Significant impacts were not identified for an increase in waste from the 2005 Ozone Strategy. The control measures are expected to allow a number of different control methods to comply with required emission reductions. The most cost effective control measures would be expected to be implemented. Control measures that would require new equipment will generally require that it occur as the life of the old equipment is exhausted and new equipment is put into service. Further, recycling of vehicles for scrap metal is common and expected to continue. Therefore, the increase in solid waste is expected to be within the permit capacity so that no significant cumulative impacts would be expected.

CUMULATIVE SOLID/HAZARDOUS WASTE MITIGATION: No significant cumulative solid/hazardous waste impacts were identified so no mitigation measures are proposed.

CHAPTER 4

ALTERNATIVES

4.0 ALTERNATIVES

4.1 INTRODUCTION

According to the CEQA guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide means for evaluating the comparative merits of each alternative (CEQA, Guidelines, § 15126.6(a)). In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines §15126.6(a)). The discussion of alternatives must focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the proposed project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines §15126.6(a)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative (CEQA Guidelines, § 15126.6(f)(3)).

The alternatives typically included in CEQA documents are developed by breaking down the project into distinct components (i.e., implementation dates, funding levels, policy emphases, etc.) and varying the specifics of one or more of the components. Different compliance approaches that generally achieve the objectives of the project may also be considered as project alternatives.

The possible alternatives to the proposed 2005 Ozone Strategy are limited by the nature of the project. The CCAA requires the BAAQMD to reduce pollutants contributing to non-attainment to the maximum extent feasible. As such, the proposed 2005 Ozone Strategy, and any acceptable project alternatives, must comply with this criterion to attain the basic objectives of the project. Consequently, all viable project alternatives must include at a minimum all the control measures identified in the 2005 Ozone Strategy.

4.2 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reason underlying the lead agency's determination. Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; or (3) inability to avoid significant environmental impacts.

Under a typical alternatives analysis, the control measures with potentially significant adverse impacts, following mitigation, would be removed from the 2005 Ozone Strategy. The control measures that would be eliminated under this alternative include SS 14 Stationary Gas Turbines, TCM 1 – Voluntary Employer-Based Trip Reduction Programs,

TCM 3 – Improve Local and Areawide Bus Service, TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 6 – Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, TCM 8 – Contruct Carpool/Express Bus Lanes on Freeways, TCM 11 – Install Freeway Traffic Management Systems, TCM 13 - Transit Use Incentives, and TCM 15 Local Land use Planning and Development Strategies. However, this alternative is not legally feasible for several reasons. First, some of these control measures have already been approved as part of the 2000 CAP and would still be implemented even if they were removed from the 2005 Ozone Strategy.

Second, the BAAQMD is required under the CCAA to adopt all feasible measures. To satisfy the all feasible measures requirement, the Air District investigated a wide range of potential ideas from many sources. The steps the BAAQMD took to identify all feasible control measures are outlined in Chapter 2, Sections 2.3, 2.3.1, 2.3.3, 2.3.5, and 2.3.6. In total, Air District staff considered 390 control measure suggestions primarily from stationary and mobile sources. Of the 390 control measure suggestions considered by Air District staff the potential control measures were distilled down to the measures identified in the 2005 Ozone Strategy that were determined to be feasible per the requirements of California Health and Safety Code §40922(b). The factors taken into consideration when determining which control measures are feasible include cost effectiveness, technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforcement (CCR §40922 (a-b)). MTC took the lead in evaluating transportation control measures, and conducted a TCM Workshop in September 2003 to solicit TCM ideas from the public. MTC and Air District staff worked together in revising the TCMs and their TCM evaluation process was summarized in their evaluation report, "Evaluation of Transportation Control Measures for Federal and State Air Quality Plans" (October 2003).

Third, the Air District is required under the California Health and Safety Code to include all feasible control measures, including §70600(b)(1), which requires the adoption and implementation of BARCT on all existing stationary sources of ozone precursor emissions as expeditiously as practicable. In addition, the BAAQMD must include measures to attain the State ambient air quality standard for ozone by the earliest practicable date §70600(b)(2) in order to help other adjacent air basins where ozone generated in the Bay Area is transported. Some of CARB's transport mitigation requirements are included among CCAA planning requirements for all non-attainment areas. To summarize the transport mitigation requirements, the Air District must:

1. Adopt and implement all feasible measures.
2. Adopt and implement BARCT.
3. Adopt a no net increase permitting program for sources above 10 tons per year.
4. Include measures to attain the standard in specified downwind regions.

The requirements to adopt all feasible measures and implement BARCT on all existing stationary sources are necessary for the Bay Area to meet both the CCAA and transport mitigation requirements, and are addressed in the control strategy as well as through Air District rule development and permitting processes. With respect to the no net increase

requirement, the Air District adopted a 10 ton/year no net increase requirement for ozone precursors in District Regulation 2, Rule 2: New Source Review on December 21, 2004. Regarding measures sufficient to attain the State ozone standard in specified transport areas, this is accomplished by the requirement to adopt all feasible measures. As adoption of all feasible measures represents the most stringent control strategy that can be accomplished, this requirement is met with the approval of each triennial plan.

Therefore, per the CCAA, once feasible control measures have been identified, they are required to be included in the Ozone Strategy. Based on this requirement, alternatives that did not include all feasible measures were considered infeasible and were not considered.

4.3 ALTERNATIVES TO THE 2005 OZONE STRATEGY

The number of potential alternatives to the BAAQMD's 2005 Ozone Strategy is limited because of the aforementioned requirement in the CCAA that emissions must be reduced to the maximum extent feasible. Two alternatives to the proposed Ozone Strategy were identified in this EIR: 1) the No Project Alternative, which is required under CEQA regulations: and 2) the Transit Access and Low Emission Vehicle Emphasis Alternative. Both of these alternatives are evaluated in this section.

4.3.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

CEQA requires a No Project Alternative to be evaluated. A No Project Alternative consists of what would occur if the project were not approved. In this case, the No Project Alternative refers to the BAAQMD taking no further action to meet its one-hour State ozone standard requirements under the CCAA with the exception of continuing to adopt rules and regulations contained in the 2000 Clean Air Plan (CAP). Adopting the No Project Alternative does not imply that no further action will be taken to implement control measures that reduce emissions that contribute to ozone. In this case, the net effect of not adopting the 2005 Ozone Strategy would be a continuation of the existing 2000 CAP. The environmental impacts of the 2000 CAP were evaluated in a separate CEQA document (BAAQMD, 2000). The No Project Alternative analyzed herein will take into account the most current air quality setting and will include control measures as contained in the 2000 CAP, but no new control measures.

Under the No Project Alternative, the Air District will continue to implement the control measures identified in Table 4.3-1. This approach is consistent with CEQA Guidelines §15126.6(e)(3)(A), which states "When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the 'no project' alternative will be the continuation of the existing plan, policy, or operation into the future. Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan."

TABLE 4.3-1

2000 CAP Control Measures

Control Measure No.	Description of Control Measure
Stationary Sources	
A1	Improved Architectural Coatings Regulation 8, Rule 3
A5	Surface Preparation and Cleanup Standards for Metal Parts Coating, Regulation 8, Rule 14
A21	Improved Automobile Refinish Coatings (Reg. 8, Rule 45)
A22	Improved Wood Products Coatings Regulation 8, Rule 32
A23	VOC Limits for Concrete Coating Operation Reg 8 Rule 4
B2	Improved Storage of Organic Liquids Regulation 8, Rule 5
C4	Improved Process Vessel Depressurization Reg 8, Rule 10
D8	Improved Residential Water Heater Regulation 9, Rule 6
G3	Seasonal Limitations on Organic Liquid Storage Tank and Wastewater Separator Cleaning and Refinery Shutdowns
A3	Improved Aerospace Coatings, Regulation 8, Rule 29
A6	Improved Surface Coating of Plastic Parts and Products Regulation 8, Rule 31
C7	Control of Emissions from Petroleum Refinery Flares (Regulation 12, Rule 11)
C8	Draining of Liquid Products/Sumps and Pits
F7	Easing of Administrative Requirements for Use of Lower Emitting Technology
F8	Limitations on Solvents Based on Relative Reactivities
Transportation Control Measures	
TCM 1	Support Voluntary Employer-Based Trip Reduction Programs
TCM 3	Improve Areawide Transit Service
TCM 4	Improve Regional Rail Service
TCM 5	Improve Access to Rail and Ferries
TCM 6	Improve Intercity Rail Service
TCM 7	Improve Ferry Service
TCM 8	Construct Carpool/Express Bus Lanes on Freeways
TCM 9	Improve Bicycle Access and Facilities
TCM 10	Youth Transportation
TCM 11	Install Freeway/Arterial Metro Traffic Operations Systems
TCM 12	Improve Arterial Traffic Management
TCM 13	Transit Use Incentives
TCM 14	Improve Rideshare/Vanpool Services and Incentives
TCM 15	Local Clean Air Plans, Policies and Programs
TCM 16	Intermittent Control Measure/Public Education
TCM 17	Construct Demonstration Projects
TCM 18	Transportation Pricing Reform
TCM 19	Pedestrian Travel
TCM 20	Traffic Calming

Failure to implement additional control measures may also violate State of California requirements that areas designated non-attainment for State standards should demonstrate continued reductions in emissions. There would be no further improvements in air quality if no emissions controls beyond those currently required were implemented. The projected baseline air quality would represent a no further action scenario. Further, the BAAQMD may not attain the State ambient air quality standards as required by the CCAA if the 2005 Ozone Strategy is not implemented.

Under the No Project Alternative, additional emission reductions would accrue from vehicle fleet turnover and on-going implementation of State (CARB) and federal control measures. However, the emission reductions are not expected to be enough to show progress towards attainment of the State one-hour ozone standard.

4.3.2 ALTERNATIVE 2 –TRANSIT ACCESS AND LOW EMISSION VEHICLE EMPHASIS ALTERNATIVE

Significant impacts were identified for some transportation control measures related to access to transit stations, including TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 6 – Improve Interregional Rail Service, and TCM 7 – Improve Ferry Service. The impacts from accessing transit stations include air quality and transportation impacts. The localized air quality impacts would result from CO emissions from cold starts during congested rush hours and diesel exhaust from idling buses accessing the transit facilities. While localized CO impacts are unlikely due to statewide use of oxygenated fuels and declining trends in background CO concentrations, the level of analysis provided in this Program DEIR prevented the District from concluding the impact would be less than significant. Transportation impacts would occur from congestion during rush hours in the vicinity of the transit facilities. All of these impacts could be compounded in some locations by TCM 15 – Local Land Use Planning and Development Strategies, that would encourage higher densities around transit facilities resulting in increased generation and exposure to air pollutants and increased traffic congestion.

Under Alternative 2, a greater emphasis would be placed on implementing control measures in the 2005 Ozone Strategy that in part mitigate the air quality and transportation and traffic impacts identified with some of the TCMs, particularly those control measures that improve access to transit facilities and encourage increased use of low emission vehicles. TCM 3 – Improve Local and Areawide Bus Service, would reduce exposure to diesel exhaust by replacing diesel buses with clean fuel buses and retrofit of existing buses with emission control devices. TCM 5 – Improve Access to Rail and Ferries would improve access to rail and ferries by expanding feeder buses and shuttles and improving bicycle and pedestrian access. TCM 9 – Improve Bicycle Access and Facilities would increase bicycle access to transit. TCM 15 – Local Land Use Planning and Development Strategies includes parking strategies that would reduce this impact, such as reduced parking, shared parking and parking pricing. TCM 19 - Improve Pedestrian Access and Facilities, would increase pedestrian access to transit facilities.

Measure MS 1- Diesel Equipment Idling Ordinance, would reduce bus emissions by limiting bus idling times. MS 3 – Low Emission Vehicle Incentives would reduce diesel exhaust and other mobile source emissions by increasing the number of low emission buses, as well as other light and heavy-duty vehicles.

4.4 ALTERNATIVES ANALYSIS

4.4.1 MINOR IMPACTS

The environmental analyses completed in Chapter 3 concluded that the potential impacts of the control measures included as part of the 2005 Ozone Strategy on some of the environmental resources were very minor on agricultural resources, mineral resources, population/housing, public services, and recreation. The alternatives evaluated in this DEIR could involve implementation of either the same number (no project alternative) or fewer control measures. Therefore, the potential impact of Alternatives 1 and 2 on agricultural resources, mineral resources, population/housing, public services, and recreation are expected to be the same as the proposed project, or less than significant. The potential impacts of the alternatives on the remainder of the environmental resources are addressed in this section.

4.4.2 AESTHETICS

Under the proposed project, there is the potential for significant aesthetic impacts associated with several TCMs, including TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways. Construction of these TCMs could have significant impacts on views of the Bay, or the visual character of waterfront areas, or scenic highways.

4.4.2.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the implementation of the Water Transit Authority's adopted Implementation and Operations Plan would still remain. Therefore, the potential significant impacts on aesthetics under the No Project Alternative remain the same as the proposed project.

4.4.2.1 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Improved Transit Access Alternative, the TCMs that could generate potentially significant aesthetic impacts would still be implemented. It is expected that similar structures, terminals, roadways and railways would be required under this alternative.

However, it is possible that fewer or smaller parking structures could be required near terminals and ferry buildings in order to encourage forms of transportation other than cars, or that parking fees could be sufficiently high enough to discourage driving to, and parking at, these facilities. Nonetheless, the potential significant impacts on aesthetics identified under the Alternative 2 are expected to remain about the same as the proposed project.

4.4.3 AIR QUALITY

The potential increase in congestion near train stations, ferry buildings and bus stations could result in potentially significant air quality impacts associated with certain TCMs, including TCM 1 – Voluntary Employer-Based Trip Reduction Programs, TCM 3 – Improve Local and Areawide Bus Service, TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, TCM 11 – Install Freeway Traffic Management Systems, TCM 13 – Transit Use Incentives, and TCM 15 – Local and Land Use Planning and Development Strategies. In addition, cold-start emissions during the evening commute could lead to a violation of the short-term carbon monoxide standard which was also considered a potentially significant impact for the proposed project.

4.4.3.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 1 – Voluntary Employer-Based Trip Reduction Programs, TCM 3 – Improve Local and Areawide Bus Service, TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, TCM 11 – Install Freeway Traffic Management Systems, TCM 13 – Transit Use Incentives, and TCM 15 – Local and Land Use Planning and Development Strategies that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the implementation of the Water Transit Authority's adopted Implementation and Operations Plan would still remain. Therefore, the potential significant impacts on air quality under the No Project Alternative remain the same as the proposed project.

4.4.3.2 Alternative 2 – Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Transit Access and Low Emission Vehicle Emphasis Alternative, the TCMs that could generate potentially significant air quality impacts would still be implemented. However, more emphasis would be placed on other control measures, including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, MS 1 – Diesel Equipment Idling Ordinance and MS 3 – Low Emission Vehicle Incentives. It is expected that with more emphasis, early implementation, increased parking fees or other actions to help ensure the effectiveness of TCMs 3, 5, 9, 19, and MS-1 & 2, that the potential for significant air quality impacts would be reduced

when compared to the impacts anticipated from the proposed project. However, the extent to which this alternative would actually relieve the congestion expected around transit facilities and subsequently reduce CO emissions is unknown. Therefore, the potentially significant air quality impacts under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project.

4.4.4 BIOLOGICAL RESOURCES

The potential for significant biological impacts associated with the proposed project is largely associated with the implementation of TCM 7 – Improve Ferry Service. It was determined that the construction of new ferry buildings could have significant impacts on wetlands and marsh lands. The possibility of a ferry striking a whale was considered significant (although rare). Noise impacts on wildlife during construction activities were also considered significant.

4.4.4.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 7 – Improve Ferry Service that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the construction of new ferry facilities as approved by the Water Transit Authority in their adopted Implementation and Operations Plan would still remain. Therefore, the potential significant impacts on biological resources under the No Project Alternative remain the same as the proposed project.

4.4.4.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Transit Access and Low Emission Vehicle Emphasis Alternative, TCM 7 – Improve Ferry Service would still be implemented. Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis on these TCMs will not alter the potentially significant impacts on biological resources associated with TCM 7 – Improve Ferry Service. Therefore, the potential significant impacts on biological resources under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project.

4.4.5 CULTURAL RESOURCES

The potential for significant cultural resources impacts associated with the proposed project is associated with the implementation of TCM 7 – Improve Ferry Service. TCM 7 would require dredging of new channels, or for pier retrofit or installation, that could impact submerged, sub-bottom and previously unknown cultural resources in San Francisco Bay near the Hercules/Rodeo terminal location. These impacts were considered to be potentially significant following mitigation.

4.4.5.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 7 – Improve Ferry Service that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the construction of new ferry facilities as approved by the Water Transit Authority in their adopted Implementation and Operations Plan would still remain. Therefore, the potential impacts on cultural resources under the No Project Alternative remain the same as the proposed project.

4.4.5.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Transit Access and Low Emission Vehicle Alternative, TCM 7 – Improve Ferry Service would still be implemented. Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis on these TCMs will not alter the impacts on cultural resources associated with TCM 7 – Improve Ferry Service. Therefore, the potential impacts on cultural resources under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project.

4.4.6 GEOLOGY AND SOILS

The proposed project impacts on geology and soils were determined to be less than significant. Compliance with the Uniform Building Code requirements is expected to minimize the potential impacts associated with geological hazards. The issuance of building permits from the local cities or counties will assure compliance with the Uniform Building Code requirements. Therefore, no significant impacts from geological hazards are expected due to implementation of the 2005 Ozone Strategy.

4.4.6.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, some aspects of the control measures adopted in the 2000 CAP would still be implemented. Therefore, the impacts on geology and soils under the No Project Alternative are expected to remain the same as the proposed project and are less than significant.

4.4.6.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis

on these TCMs will not alter the potential impacts on geology and soils. Therefore, the potential impacts on geology and soils under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project and are less than significant.

4.4.7 HAZARDS/HAZARDOUS MATERIALS

The proposed project impacts on hazards and hazardous materials were determined to be potentially significant for SS 14 – Stationary Gas Turbines due to the potential use of SCR units that utilize anhydrous ammonia. The hazards associated with other control measures including the hazards related to reformulated coatings, fuel additives, alternative fuels, and electric powered vehicles were determined to be less than significant.

4.4.7.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, many of the same control measures included under the proposed project would still be implemented (see Table 4.3-1). However, SS 14 – Stationary Gas Turbines would not be included in Alternative 1 as it was not included in the 2000 CAP. Therefore, the impacts on hazards/hazardous materials under the No Project Alternative are expected to be less than significant.

4.4.7.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis on these TCMs will not alter the potential impact on hazards and hazardous materials. Therefore, the potential impacts on hazards and hazardous materials under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project and are potentially significant.

4.4.8 HYDROLOGY AND WATER QUALITY

The proposed project impacts on hydrology and water quality were determined to be less than significant following mitigation for: (1) the increased potential for fuel spills and water quality degradation in San Francisco Bay associated with TCM 7 – Improve Ferry Service. Although there is the potential for a spill, it was determined to be less than significant following mitigation which included a strengthened Harbor Safety Plan; reviewed and modified contingency plans, drill exercises and emergency response service agreements; educational programs for operators; and improvements in technological designs on new fleets to avoid fuel spills; and (2) potential storm water runoff associated with TCM 4 – Upgrade and Expand Local Regional Rail Service, TCM5 – Improve Access to Rails and Ferries, and TCM 7 - Improve Ferry Service.

4.4.8.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, some aspects of the control measures adopted in the 2000 CAP would still be implemented. Therefore, the impacts on hydrology and water quality under the No Project Alternative are expected to remain the same as the proposed project, and are less than significant, following mitigation.

4.4.8.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis on these TCMs will not alter the potential impacts of the proposed project on hydrology and water quality. Therefore, the potential impacts on hydrology and water quality under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project and are less than significant, following mitigation.

4.4.9 LAND USE AND PLANNING

The proposed project impacts on land use and planning were determined to be less than significant.

4.4.9.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, some aspects of the control measures adopted in the 2000 CAP would still be implemented. Therefore, the impacts on land use and planning under the No Project Alternative are expected to remain the same as the proposed project and are less than significant.

4.4.9.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis on to these TCMs is not expected to significantly alter the potential impacts on land use and planning. Under Alternative 2, there could be some changes to bus, rail and ferry terminals to make them more user friendly to pedestrian or bus activity. Changes to parking lots or structures could also occur to minimize the use of vehicles for transport to the terminals. The construction of terminal facilities require permitting by the local land use agency to determine and assure that the facilities comply with local zoning and land

use plans. Therefore, the Transit Access and Low Emission Vehicle Emphasis Alternative would have the same effect on Land Use and Planning services as the proposed project, which were less than significant.

4.4.10 NOISE

The addition of new transit lines, widening of freeways (which brings noise closer to sensitive land uses), addition of new lanes that result in high traffic volumes and speeds, and the concentration of vehicle traffic near terminals associated with TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways, would result in direct noise impacts (both noise and ground borne vibrations). Mitigation measures are expected to reduce the noise to acceptable noise levels.

4.4.10.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the construction of new ferry facilities as approved by the Water Transit Authority in their adopted Implementation and Operations Plan would still remain. Therefore, the potential impacts on noise under the No Project Alternative are essentially the same as the proposed project and are expected to be less than significant following mitigation.

4.4.10.2 Alternative 2 - Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Transit Access and Low Emission Vehicle Alternative, TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, TCM 7 – Improve Ferry Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways would still be implemented. Alternative 2 would provide increased emphasis on some TCMs including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. The increased emphasis on these TCMs is not expected to alter the impacts on noise as the transportation projects would still be constructed. Therefore, the potential impacts on noise under the Transit Access and Low Emission Vehicle Emphasis Alternative remain the same as the proposed project, and are expected to be less than significant following mitigation.

4.4.11 TRANSPORTATION AND TRAFFIC

The potential impacts of the proposed project on transportation and traffic were considered potentially significant due to increases in congestion near train stations, ferry buildings and bus stations. The potentially significant transportation and traffic impacts were associated with implementation of TCM 1 – Voluntary Employer-Based Trip Reduction Programs, TCM 3 – Improve Local and Areawide Bus Service, TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, TCM 9 – Improve Bicycle Access and Facilities, TCM 11 – Install Freeway Traffic Management Systems, TCM 13 – Transit Use Incentives, TCM 15 – Local and Land Use Planning and Development Strategies, and TCM 20 – Promote Traffic Calming. Impacts must be determined on a case-by-case basis after mitigation measures are considered. Therefore, the impacts on traffic and parking in the vicinity of terminals remain potentially significant, following mitigation.

4.4.11.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 1 – Voluntary Employer-Based Trip Reduction Programs, TCM 3 – Improve Local and Areawide Bus Service, TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, TCM 9 – Improve Bicycle Access and Facilities, TCM 11 – Install Freeway Traffic Management Systems, TCM 13 – Transit Use Incentives, TCM 15 – Local and Land Use Planning and Development Strategies, and TCM 20 – Promote Traffic Calming that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the implementation of the Water Transit Authority's adopted Implementation and Operations Plan would still remain. Therefore, the potential significant impacts on transportation and traffic under the No Project Alternative remain the same as the proposed project.

4.4.11.2 Alternative 2 – Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Transit Access and Low Emission Vehicle Alternative, the TCMs that could generate potentially significant transportation and traffic impacts would still be implemented. However, more emphasis would be placed on other control measures, including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS 1 – Diesel Equipment Idling Ordinance. It is expected that with more emphasis, early implementation, increased parking fees or other actions to help ensure the effectiveness of these TCMs, the potential for significant transportation and traffic impacts would be reduced from the proposed project. The extent to which this alternative would actually reduce traffic is unknown, so the transportation and traffic impacts are expected to remain the same as the proposed project, potentially significant.

4.4.12 UTILITIES AND SERVICE SYSTEMS

The potential impacts of the proposed project on utilities and service systems were considered potentially significant for energy impacts due the use of petroleum fuels associated with TCM 7 - Improve Ferry Service. The impact could be reduced with implementation of the mitigation measures, however, the effectiveness of the mitigation measures cannot be quantified at this time. Therefore, this impact remains potentially significant.

No significant adverse impacts were identified for increases in electricity, natural gas, solid/hazardous waste facilities, or water use associated with the 2005 Ozone Strategy.

4.4.12.1 Alternative 1 - No Project Alternative

Under the No Project Alternative, aspects of TCM 7 – Improve Ferry Service that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the implementation of the Water Transit Authority's adopted Implementation and Operations Plan would still remain. Therefore, the potential significant impacts on utilities and service systems under the No Project Alternative remain the same as the proposed project.

4.4.12.2 Alternative 2 – Transit Access and Low Emission Vehicle Emphasis Alternative

Under the Transit Access and Low Emission Vehicle Alternative, TCM 7 – Improve Ferry Service would be implemented so the potential for significant impacts on energy would remain. However, more emphasis would be placed on other control measures, including TCM 3 – Improve Local and Areawide Bus Service, TCM 5 – Improve Access to Rail and Ferries, TCM 9 – Improve Bicycle Access and Facilities, TCM 19 - Improve Pedestrian Access and Facilities, and MS-1 – Diesel Equipment Idling Ordinance. It is expected that with more emphasis, early implementation, increased parking fees or other actions to help ensure the effectiveness of TCMs 3, 5, 9, 19, and MS-1, there would be reduced traffic and potentially reduced use of petroleum resources. The extent to which this alternative would actually reduce the use of petroleum resources is unknown so the utilities and service system impacts are expected to remain significant.

4.5 COMPARISON

Pursuant to CEQA Guidelines §15126.6(d), an EIR should include sufficient information about each alternative to allow meaningful comparison with the proposed project. Section 15126.6(d) also recommends the use of a matrix to summarize the comparison. Table 4.5-1 provides this matrix comparison. The No Project Alternative would not ultimately achieve the long-term benefits of the 2005 Ozone Strategy, and is not a legally viable alternative as it would violate portions of the CCAA.

Under Alternative 2, Transit Access and Low Emission Vehicle Alternative, the potential significant air quality and transportation and traffic impacts associated with the proposed project could be reduced. However the level to which the air quality impacts and transportation and traffic impacts could be reduced is unknown at this time and these impacts are expected to remain the same as those identified for the proposed project. The proposed project is considered to be the environmentally superior alternative because implementation of the control measures in the 2005 Ozone Strategy will provide more ozone precursor emission reductions than the emission reductions that could be expected with the no project alternative. Therefore, the proposed project, which addresses the CCAA's legal mandate that the District adopt "all feasible measures," is the preferred alternative.

TABLE 4.5-1

Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	Alternative 1	Alternative 2
Aesthetics	PS	PS	PS
Agricultural Resources	NS	NS	NS
Air Quality	PS	PS	PS
Biological Resources	PS	PS	PS
Cultural Resources	PS	PS	PS
Geology and Soils	NS	NS	NS
Hazards and Hazardous Materials	PS	NS	PS
Hydrology and Water Quality	MNS	MNS	MNS
Land Use and Planning	NS	NS	NS
Mineral Resources	NS	NS	NS
Noise	MNS	MNS	MNS
Population and Housing	NS	NS	NS
Public Services	NS	NS	NS
Recreation	NS	NS	NS
Traffic and Transportation	PS	PS	PS
Utilities and Service Systems	PS	PS	PS

NS = Not Significant Impact
MNS = Mitigated to Not Significant Impact
PS = Potentially Significant Impact

CHAPTER 5

OTHER CEQA TOPICS

Relationship Between Short-Term and Long-Term Productivity
Significant Irreversible Environmental Changes
Growth-Inducing Impacts

5.0 OTHER CEQA TOPICS

5.1 RELATIONSHIP BETWEEN SHORT-TERM AND LONG-TERM PRODUCTIVITY

An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term goals or maximizing productivity of these resources. Implementing the 2005 Ozone Strategy is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the 2005 Ozone Strategy is to set forth a comprehensive control program that demonstrates that the Bay Area will make progress towards attaining the State one-hour ozone standard. By showing progress toward attainment of the State ambient air quality standards, the Strategy is expected to enhance short and long-term environmental productivity in the region.

Implementing the 2005 Ozone Strategy does not narrow the range of beneficial uses of the environment. Of the potential environmental impacts discussed in Chapter 3, those related to aesthetics, air quality, biological resources, cultural resources, transportation and traffic, and utilities and service systems are considered potentially significant following mitigation. Implementation of the recommended mitigation measures will ensure such impacts are mitigated to the greatest degree feasible.

Because no short-term environmental benefits are expected at the expense of achieving long-term environmental goals, there is no justification for delaying the proposed action. This project needs to be implemented as the BAAQMD is required by the CCAA to formally adopt a triennial update to the region's strategy for achieving the State ambient air quality standards. The BAAQMD is proceeding with the 2005 Ozone Strategy pursuant to this mandate.

5.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA requires an EIR to discuss significant irreversible environmental changes which would result from a proposed action should it be implemented. Irreversible changes include a large commitment of nonrenewable resources, committing future generations to specific uses of the environment (e.g., converting undeveloped land to urban uses), or enduring environmental damage due to an accident.

Implementation of the 2005 Ozone Strategy is not expected to result in significant irreversible adverse environmental changes. The Strategy would place only an incremental demand on nonrenewable and limited resources, such as energy and water supplies, relative to the accelerated rate of use of these resources due to population growth and increased consumer demand. The largely irretrievable conversion of

undeveloped/agricultural land to urban uses is a function of the growing population and local land use authority, not the 2005 Ozone Strategy.

Some of the control measures in the Strategy could result in potentially significant impacts to aesthetics, localized air quality, biological resources, cultural resources, transportation, and public utilities and service systems. The extent of these potential impacts could not be fully analyzed due to the lack of specificity of the control measures and the uncertainty of their implementation. Mitigation measures have been identified that could minimize these potentially significant impacts. However, additional project level analysis is required to determine if these potential impacts are significant and if there are feasible mitigation measures available to reduce the impacts to less than significant.

The 2005 Ozone Strategy is expected to result in long-term benefits associated with improved air quality even though the population of the Bay Area is expected to increase. The project would result in reduced emissions of ozone precursors, thereby improving air quality and related public health. Reduced ozone air pollution would also directly improve the vitality of crops and other plants, and the related health of livestock, domestic animals and wildlife. Ozone damage to structures and materials would also be diminished.

5.3 GROWTH-INDUCING IMPACTS

A growth-inducing impact is defined as the "ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth-inducing impacts can generally be characterized in three ways. In the first instance, a project is located in an isolated area and brings with it sufficient urban infrastructure to result in development pressure being placed on the intervening and surrounding land. This type of induced growth leads to conversion of adjacent acreage to higher intensity uses because the adjacent land becomes more conducive to development and, therefore, more valuable because of the availability of the extended infrastructure.

A second type of growth-inducing impact is produced when a large project, relative to the surrounding community or area, affects the surrounding community by facilitating and indirectly promoting further community growth. The additional growth is not necessarily adjacent to the site or even of the same land use type as the project itself. A project of sufficient magnitude can induce growth in a community that could alter a community's size and character significantly.

A third and more subtle type of growth-inducing impact occurs when a new type of development is allowed in an area, which then subsequently establishes a precedent for additional development of a similar character (e.g., a new university is developed which leads to additional educational facilities, research facilities and companies, housing, commercial centers, etc.)

None of the above scenarios characterize the project in question. The control measures contained in the 2005 Ozone Strategy accommodate the projected growth for the region – they are not the cause of residential, commercial, industrial, and infrastructure development. The Strategy may indirectly increase the efficiency of the region's urban form through encouraging more air quality efficient development patterns as the Strategy does seek to influence land use, e.g., TCM 15 – Local and Land Use Planning and Development Strategies. The 2005 Ozone Strategy does not change jurisdictional authority or responsibility concerning land use or property issues (Section 40716 of the California Health and Safety Code) and, therefore, is not considered to be growth-inducing.

It should be noted that there are secondary, positive growth-inducing impacts that could result from the implementation of the 2005 Ozone Strategy. As air quality improves, the Bay Area could become a more attractive, healthful place to live, which could encourage additional migration to the region. However, it is not possible to predict whether this would occur, nor the extent to which this would occur. As further analysis would be speculative, this topic is not further discussed.

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CHAPTER 6

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Organizations and Persons Consulted

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6.2 ORGANIZATIONS AND PERSONS CONSULTED

The CEQA statues and Guidelines require that organizations and persons consulted be provided in the EIR. A number of organizations, state and local agencies, and private industry have been consulted. The following organizations and persons have provided input into this document.

Organizations

California Air Resources Board
Metropolitan Transportation Commission
Water Transit Authority

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CHAPTER 7

ACRONYMS

7.0 ACRONYMS

ABBREVIATION	DESCRIPTION
AAQS	Ambient Air Quality Standard
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AB1807	California Toxic Air Contaminants Program (Tanner Bill)
AB2728	Revised Tanner Bill
AB2588	Air Toxic "Hot Spots" Information and Assessment Act
AB2595	California Clean Air Act
ACE2588	Assessment of Chemical Exposure for AB2588
ADT	Average Daily Traffic
AEL	Acute Exposure Limit
AER	Annual Emission Reporting
AFV	Alternative Fuel Vehicles
AHM	Acutely Hazardous Material
API	American Petroleum Institute
AQIP	Air Quality Investment Plan
ARB	Air Resources Board
ASC	Area Source Credits
ASTM	American Society for Testing and Materials
ATCM	Airborne Toxic Control Measure
ATIR	Air Toxics Inventory Report
ATT	Advanced Transportation Technology
AVR	Average Vehicle Ridership
AWT	Advanced Water Treatment
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BACM	Best Available Control Measures
BAR	Bureau of Automotive Repair
BARCT	Best Available Retrofit Control Technology
BCM	Best Available Control Measures for Fugitive Dust Sources
BMP	Best Management Practices
BPTCP	Bay Protection and Toxic Clean Up Plan
BTU	British Thermal Units
BTU/hr	British Thermal Units per hour
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
Caltrans	California Department of Transportation
CalOSHA	California Occupational Safety and Health Administration
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCOS	Central California Ozone Study

CCR	California Code of Regulations
CDFC	California Department of Fish and Game
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CFCs	Chloroflorocarbons
CFR	Code of Federal Regulations
CH4	Methane
CHMIRS	California Hazardous Materials Incident Reporting System
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
CMA	Congestion Management Agencies
CNEL	community noise equivalent level
CNG	Compressed Natural Gas
CNS	Central nervous system
CO	carbon monoxide
CO_2	carbon dioxide
COD	Chemical Oxygen Demand
CPUC	California Public Utilities Commission
CUP	Conditional Use Permit
CVP	Central Valley Project
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CWMI	Chemical Waste Management Inc.
C4	Butane
dBA	decibel
DHS	Department of Health Services
DLM	Dry Low NOx
DMV	Department of Motor Vehicles
DOC	Diesel Oxidation Catalyst
DOT	Department of Transportation
DPR	Department of Pesticide Regulation
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
DTIM	Direct Travel Impact Model
DWR	California Department of Water Resources
ERC	Emission Reduction Credit
EB	Electron Beam
EGR	Exhaust Gas Recirculation
EHS	Extremely Hazardous Substance
EIP	Economic Incentive Program
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPCRA	USEPA's Emergency Planning and Community Right-to-Know

ERPG	Emergency Response Planning Guideline
ESP	Electrostatic Precipitators
^{o}F	Degrees Fahrenheit
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FGR	flue gas recirculation
FHWA	Federal Highway Administration
FIP	Federal Implementation Plan
FR	Federal Register
G	acceleration of gravity
g/l	grams per liter
GLM	Ground Level Monitors
GWRS	Groundwater Replenishment System
H_2	Hydrogen
H_2SO_4	Sulfuric Acid
HAP	Hazardous Air Pollutants
HAZOP	hazards and operation process
HCFs	Hydrochlorofluorcarbons
HDV	Heavy Duty Vehicles
HEPA	High-Efficiency Particulate Air
HEV	Hybrid Electric Vehicles
HHV	Higher Heating Value
HMBP	Hazardous Materials Business Plan
HNO_3	Nitric Acid
HOV	High Occupancy Vehicle
HRA	Health Risk Assessment
HSWA	Hazardous and Solid Waste Act
HMTA	Hazardous Materials Transportation Act
HWCL	Hazardous Waste Control Law
I&M	Inspection and Maintenance
ICAO	International Civil Aviation Organization
ICE	Internal Combustion Engine
ICTA	International Center for Technology Assessment
ISCST3	Industrial Source Complex Model Short Term Version 3
ISO	Independent System Operator
ISTEA	International Surface Transportation Efficiency Act
ITS	Intelligent Transportation Systems
kWh	Kilowatt Hour
^{o}K	degrees Kelvin
LACSD	Los Angeles County Sanitation District
LAER	lowest achievable emission reduction
lbs	pounds
lbs/hr	pounds per hour
LEL	lower explosive limit
LEM	Location Efficient Mortgage

LEV	Low Emission Vehicle
LOS	Level of Service
LPG	liquefied petroleum gas
Lpk	Peak sound level
MACT	Maximum Achievable Control Technologies
MCL	Maximum Contamination Level
MATES	Multiple Air Toxic Exposure Study
MBAS	Methylene Blue Active Substances
MECA	Manufacturer's of Emission Controls Association
MEI	maximum exposed individual
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
MEK	Methyl Ethyl Ketone
MICR	Maximum Increased Cancer Risk
MMBD	Million Barrels Per Day
Mmcfd	Million Cubic Feet per Day
MOU	Memo of Understanding
MSDS	Material Safety Data Sheet
MSERC	Mobile Source Emission Credit
MSIP	Mobile Source Emission Reduction Incentive Program
MSW	Municipal Solid Waste
MTBE	methyl tertiary butyl ether
MTC	Metropolitan Transportation Commission
MTM	Mid-Term Control Measures
mw	megawatts
m/s	meters per second
N_2	nitrogen
NAAQS	National Ambient Air Quality Standards
NAFTA	North American Free Trade Agreement
NAMS	National Air Monitoring Stations
nanograms/m^3	nanograms per cubic meter
NEC	National Electric Code
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NFPA	National Fire Protection Agency
NH_3	Ammonia
NIOSH	National Institute of Occupational Safety and Health
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOP	Notice of Preparation
NOP/IS	Notice of Preparation/Initial Study
NOI	Notice of Intent
NOV	Notice of Violation
NOx	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System

NS	No significant impacts
NSPS	New Source Performance Standards
NSR	New Source Review
NTS	National Technical System
O_3	Ozone
OAP	Ozone Attainment Plan
OBD	On-Board Diagnostic Program
OEHHA	Office of Environmental Health Hazards Assessment
OEM	Original Equipment Manufacturer
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbons
PCBF	Perchlorobenzotrifluoride
PCBs	Polychlorinated Biphenyls
PCBTF	p-chlorobenzotriflouride
PCE	passenger car equivalents
PEM	Proton Exchange Membrane
PG&E	Pacific Gas and Electric Company
pH	potential hydrogen ion concentration
PM10	particulate matter less than 10 microns equivalent aerodynamic diameter
PM2.5	particulate matter less than 2.5 microns equivalent aerodynamic diameter
POTW	Publicly Owned Treatment Works
Ppb	parts per billion
ppbv	parts per billion by volume
pphm	parts per hundred million
ppm	parts per million
ppmv	parts per million by volume
PRD	Pressure Relief Devices
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
psia	pounds per square inch absolute
psig	pounds per square inch (gauge)
PSM	Process Safety Management Program
PTFE	Polytetrafluoroethylene
PX	Power Exchange
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation and Recovery Act
REL	Reference exposure level
RFP	Reasonable Further Progress
RFG	reformulated fuels gasoline
RMP	Risk Management Program
RMPP	Risk Management and Prevention Program
ROC	Reactive Organic Compound

ROG	Reactive Organic Gases
RPS	Renewable Portfolio Standard
RRMP	Redesignation Request and Maintenance Plan
RTIP	Regional Transportation Implementation Plan
RTP	Regional Transportation Plan
RVP	Reid Vapor Pressure
RWQCB	Regional Water Quality Control Board
SAE	Society of Automotive Engineers
SARA	Superfund Amendments and Revitalization
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison Company
SCR	Selective Catalytic Reduction
SCS	Soil Conservation Service
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SMCL	Secondary Maximum Contaminant Level
SNCR	Selective Non-Catalytic Reduction
SO_2	sulfur dioxide
SO_3	Sulfur Trioxide
SOFC	Solid Oxide Fuel Cell
SOx	sulfur oxide
SPCC	Spill Prevention, Control and Countermeasure
SPM	Special Purpose Monitor
SSCOT	State Standing Committee on Terrorism
SULEV	Super Ultra Low Emission Vehicle
SWP	State Water Project
SWMPS	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TAF	thousand acre feet
TAO	Technology Advancement Office
TCM	Transportation Control Measure
TCE	Trichloroethylene
Tcf	trillion cubic feet
TDM	transportation demand management
TDS	total dissolved solids
TEA	Transportation Equity Act
TFCA	Transportation Fund for Clean Air
TIMP	Transportation Improvement and Mitigation Program
TMA	Transportation Management Association
TMDL	Total Maximum Daily Loads
TOG	Total Organic Gases
TPA	Transportation Planning Agency

TPD	Tons per Day
TPH	total petroleum hydrocarbons
TPY	Tons per Year
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
ULEV	Ultra Low Emission Vehicle
ULF	Ultra Low Flush
U.S.	United States
USBR	United States Bureau of Reclamation
USDOT	United States Department of Transportation
U.S. EPA	United States Environmental Protection Agency
USC	United States Code
USCG	United States Coast Guard
ug/l	micrograms per liter
ug/m^3	micrograms per cubic meter
UV	Ultra Violet
UWA	Unified Watershed Assessment
V/C	volume to capacity ratio
VIP	Vehicle Inspection Program
VMT	Vehicle Miles Traveled
VOC	volatile organic compounds
volatiles	purgeable organics
WDR	Waste Discharge Requirements
WRD	Water Replenishment District
WST	Waste Related Measures
WTA	Water Transit Authority
ZEV	Zero Emissions Vehicles

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Volume II

(Appendices)

Prepared for:

Bay Area Air Quality Management District
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APPENDIX A

NOTICE OF PREPARATION

APPENDIX A

CEQA

NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE BAY AREA 2004 OZONE STRATEGY

To: Interested Agencies, Organizations and Individuals

Subject: Notice is hereby given that the Bay Area Air Quality Management District (BAAQMD) will be the lead agency and will prepare an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA), in connection with the project described in this notice. The Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) will be responsible agencies for this project under CEQA. This Notice of Preparation is being prepared pursuant to California Public Resources Code § 21080.4 and CEQA Guidelines Section 15082.

Project Title: Bay Area 2004 Ozone Strategy

Project Location: The Ozone Strategy will apply within the jurisdiction of the BAAQMD, which includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, and the southern portions of Solano and Sonoma counties. A map of the BAAQMD is attached to this Notice of Preparation.

Project Descriptions: The proposed Ozone Strategy will address two separate and different sets of air quality planning requirements under State and Federal law. The proposed Ozone Strategy will include stationary source control measures, transportation control measures (TCMs), mobile source control measures and other measures to reduce emissions of the pollutants that form ground-level ozone. Measures may be implemented by the BAAQMD, MTC, ABAG and other parties.

The proposed Ozone Strategy will set forth strategies to make progress toward attainment of the California one-hour ozone standard.

The proposed Ozone Strategy will also provide for maintenance of the national one-hour ozone standard and will include (1) control measures that serve as contingency measures to go into effect if a violation of the national one-hour ozone standard occurs during the maintenance period, and (2) control measures that replace Transportation Control Measure (TCM) 2, a TCM included in the 1982 Bay Area Air Quality Plan, and provide more expeditious emission reductions than those expected from TCM 2.

The BAAQMD is charged under the California Clean Air Act with the responsibility for adopting the elements of the Ozone Strategy addressing state air quality planning requirements. The BAAQMD, along with MTC and ABAG, will collectively adopt the elements of the Ozone Strategy addressing the national one-hour ozone standard and control measures to replace TCM 2. Upon adoption, all elements of the Ozone Strategy will be transmitted to the California Air Resources Board for approval under the requirements of the applicable state and federal clean air acts. Only the elements

addressing the national one-hour ozone standard and the control measures to replace TCM 2 will be transmitted to the U. S. Environmental Projection Agency for inclusion in the state's federal air quality plan called the California State Implementation Plan. A more detailed Project Description begins on the page 3.

Probable Environmental Effects: The project is intended to and expected to benefit public health and the environment by reducing emissions of the air pollutants that form ozone. However, implementation of the control measures described in the project could result in secondary environmental effects if, for example, any means used to reduce these emissions causes impacts to water, air quality, energy, hazards and hazardous materials, noise, public services and transportation.

Response: This notice provides information on the above project and provides you an opportunity to submit comments on potential environmental effects that should be considered in the EIR. If the proposed project has no bearing on you or your agency, no action on your part is necessary. Due to the time limits mandated by State law, your response must be sent at the earliest possible date but ***not later than 30 days*** after receipt of this notice. If you or your agency wishes to submit comments, they may be sent to BAAQMD Senior Planner, Joseph Steinberger, via the contact information below. Individuals or agencies concerned with the environmental effects of the proposed Ozone Strategy may also provide comments in person at a scoping meeting to be held at the following place and time.

Scoping Meeting
MetroCenter
Auditorium
101 8th Street
Oakland, CA
Tuesday, April 20, 2004
9:00 – 11:00 am

Written Comments
JOSEPH STEINBERGER, SENIOR PLANNER
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Phone: (415) 749-5018 Fax: (415) 749-4741
Email: jsteinberger@baaqmd.gov
DATE: MAY 1, 2004

Jack P. Broadbent
Executive Officer/Air Pollution Control Officer

PROJECT DESCRIPTION

Ozone in the lower atmosphere is an air pollutant that is harmful to humans because it causes respiratory problems. Ozone also reduces crop yields and accelerates deterioration of paints, finishes, rubber products, plastics, and fabrics. In 1979, the United States Environmental Protection Agency (EPA) established a health-based ambient air standard for ozone. This national one-hour ozone standard is set at 0.12 parts per million (ppm) averaged over one hour. California has a separate standard for ozone set at 0.09 ppm, also averaged over one hour. The San Francisco Bay Area air basin is designated as a non-attainment area for the California one-hour ozone standard and is seeking redesignation to attainment for the national one-hour ozone standard.

The Bay Area Air Quality Management District (BAAQMD), in conjunction with the Metropolitan Transportation Commission and the Association of Bay Area Governments, is preparing the Bay Area 2004 Ozone Strategy. The proposed Ozone Strategy outlines a strategy for making progress toward attainment of the California one-hour ozone standard in the Bay Area. The proposed Ozone Strategy is also intended to separately demonstrate continued attainment of the national one-hour ozone standard in the Bay Area. This Notice of Preparation of an Environmental Impact Report addresses the proposed Ozone Strategy.

The San Francisco Bay Area air basin, in which the proposed Ozone Strategy would apply, encompasses all of seven counties—Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa, and portions of two others—southwestern Solano and southern Sonoma. The BAAQMD is governed by a 21-member Board of Directors, made up of 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 from non-vehicular sources within its jurisdiction.

Because ozone is formed through chemical reactions between reactive organic gases (ROG) and nitrogen oxides (NOx) in the presence of sunlight, efforts to reduce ozone seek to limit emissions of ROG and NOx into the atmosphere. In general, ROG comes from evaporation or incomplete combustion of fuels, from the use of solvents in cleaning operations and in paints and other coatings, and in various industrial and commercial operations. NOx is produced through combustion of fuels by mobile sources – cars, trucks, construction equipment, locomotives, aircraft, marine vessels – and stationary sources such as power plants and other industrial facilities.

Exceedances of the California and national ozone standards in the Bay Area have decreased significantly with the regulation and reduction of ozone precursor emissions (i.e. ROG and NOx). This improvement is due to State and national regulations requiring cleaner motor vehicles and fuels, BAAQMD regulations requiring reduced emissions from industrial and commercial sources, as well as programs to reduce the use of motor vehicles.

Proposed control measures in the Ozone Strategy will augment the extensive federal, state, regional and local regulations and programs that are already in place. They may include, but are not limited to, more stringent controls on stationary sources such as

refineries, transportation control measures to reduce vehicle use and emissions, and incentives to reduce emissions from mobile sources.

Attainment of California One-Hour Ozone Standard

The Ozone Strategy will include an assessment of the region's progress toward attaining the California ozone standard and reducing exposure to ozone. The State has not set a deadline to attain the California one-hour ozone standard. The Ozone Strategy will identify "all feasible measures," as required by the California Clean Air Act, for control of ozone precursors that will assist the Bay Area in attaining the California ozone standard and address pollutant transport to downwind regions. The Ozone Strategy will be prepared in accordance with applicable provisions of the California Clean Air Act. It will update the Bay Area 2000 CAP adopted by the BAAQMD Board of Directors on December 20, 2000.

Measures included in the Ozone Strategy are expected to produce environmental benefits by reducing emissions of ozone precursors. The environmental review of the Ozone Strategy will evaluate whether any measures will have secondary adverse environmental impacts, which could occur, for example, through the use of an emission reduction technology that itself may cause some adverse impact. The BAAQMD has prepared a preliminary list of measures that may be included in the Ozone Strategy. The list is likely to undergo further revision as the Ozone Strategy is finalized. Based on the Bay Area's atmospheric photochemistry, control measures that reduce ROG are the most helpful in the expeditious attainment of national and state ozone standards. The preliminary measures would reduce ROG emissions from the emission sources listed below:

- Autobody refinishing
- Refinery wastewater systems
- Refinery flares
- Gasoline bulk terminals and plants
- Graphic arts operations
- High emitting spray booth operations at industrial surface coating facilities
- Loading of marine vessels with petroleum cargos
- Polyester resin operations
- Organic liquid storage tanks
- Refinery pressure relief devices
- Coating of wood products

The environmental review of the proposed Ozone Strategy will also examine the environmental effects of some stationary source measures that reduce NOx emissions. In general, atmospheric models and ambient measurement show that, due to the nature of Bay Area atmospheric photochemistry, reducing Bay Area NOx emissions may increase localized Bay Area ozone levels. However, under some circumstances, reducing Bay Area NOx emissions may reduce ozone levels downwind of the Bay Area. NOx reductions will also help reduce levels of fine particulate pollution in the Bay Area. The

BAAQMD has identified preliminary measures that would reduce NOx emissions from the following sources:

- Boilers, steam generators, and heaters
- Stationary gas turbines

The environmental analysis will also examine the environmental effects from enhancements to the 19 existing transportation control measures (TCMs) in the 2000 CAP listed below. The enhancements include measures to improve rail, bus and ferry service, ridesharing facilities and programs, bicycle and pedestrian facilities, parking programs, smart growth programs, and Spare the Air program enhancements.

- TCM 1: Support Voluntary Employer-Based Trip Reduction Programs
- TCM 3: Improve Local and Areawide Bus Service
- TCM 4: Improve Local and Regional Rail Service
- TCM 5: Improve Access to Rail and Ferries
- TCM 6: Improve Interregional Rail Service
- TCM 7: Improve Ferry Service
- TCM 8: Construct Carpool / Express Bus Lanes on Freeways
- TCM 9: Improve Bicycle Access and Facilities
- TCM 10: Youth Transportation
- TCM 11: Install Freeway / Arterial Metro Traffic Operations System
- TCM 12: Arterial Management Measures
- TCM 13: Transit Use Incentives
- TCM 14: Improve Rideshare / Vanpool Services and Incentives
- TCM 15: Local Land Use Planning and Development Strategies
- TCM 16: Intermittent Control Measure / Public Education
- TCM 17: Construct Demonstration Projects
- TCM 18: Transportation Pricing Reform
- TCM 19: Pedestrian Access and Facilities
- TCM 20: Traffic Calming

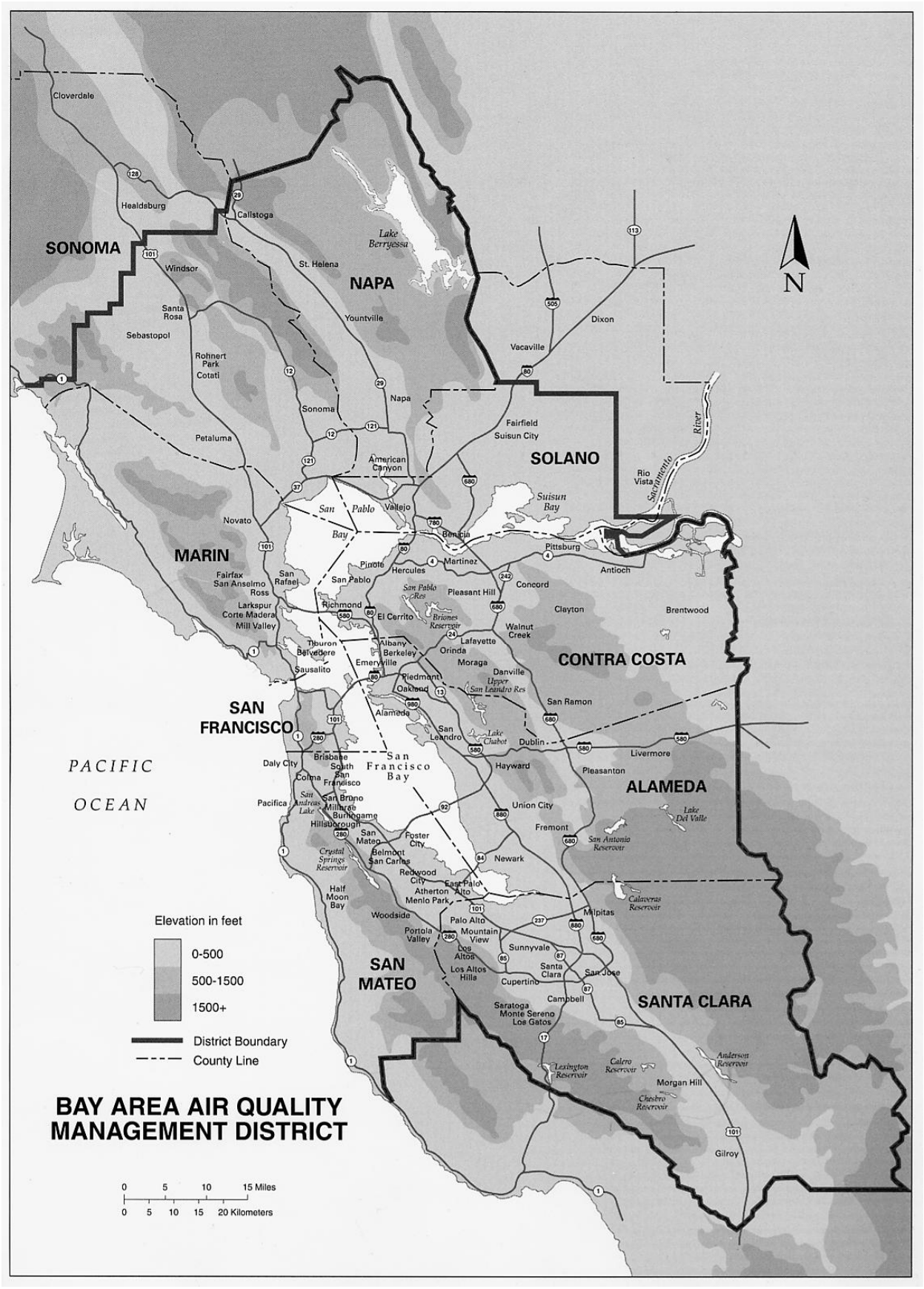
The environmental analysis of the proposed Ozone Strategy will also evaluate mobile source measures that encourage vehicle maintenance and the use of low-emission vehicles, engines, fuels and lubricants (e.g. synthetic motor oil) and reduced idling by trucks and other diesel equipment. It will also examine additional measures that are being considered for inclusion in the proposed Ozone Strategy but do not fit into the previous source categories. These measures include clean air labeling, energy conservation, and public education programs.

Maintenance of National One-Hour Ozone Standard

The Ozone Strategy will also contain a demonstration that the national one-hour ozone standard has been attained, provide for maintenance of the standard, and include

contingency measures to be implemented if a violation of the standard occurs in the future. This portion of the Ozone Strategy will be prepared in accordance with applicable provisions of the federal Clean Air Act.

This portion of the Ozone Strategy will also propose a transportation control measure (TCM) replacement. Federal air quality planning regulations allow for the replacement of existing control measures with other control measures provided the measures achieve emission reductions equal to or greater than the measures being replaced. The environmental review of the Ozone Strategy will examine the proposed measures that would replace TCM 2 (titled "Support post-1983 improvements identified in transit operator's 5-year plans…") in the 1982 Bay Area Air Quality Plan. The proposed replacement of TCM 2 would be accomplished through substitution of measures which meet the emission reduction requirements of TCM 2.


SONOMA
NAPA
SOLANO
MARIN
CONTRA COSTA
SAN FRANCISCO
ALAMEDA
SAN MATEO
SANTA CLARA
PACIFIC OCEAN
San Francisco Bay
Suisun Bay
Lake Berryessa
Cloverdale
Healdsburg
Calistoga
St. Helena
Windsor
Santa Rosa
Sebastopol
Rohnert Park
Cotati
Yountville
Napa
Sonoma
Petaluma
American Canyon
Vacaville
Dixon
Fairfield
Suisun City
Rio Vista
Sacramento River
Novato
San Pablo Bay
Vallejo
Benicia
Martinez
Pittsburg
Antioch
Pinole
Hercules
San Pablo
Pleasant Hill
Concord
Clayton
Brentwood
Walnut Creek
Lafayette
Orinda
Moraga
Danville
Fairfax
San Anselmo
Ross
San Rafael
Larkspur
Corte Madera
Mill Valley
Richmond
El Cerrito
Briones Reservoir
San Pablo Res
Upper San Leandro Res
Tiburon
Belvedere
Albany
Berkeley
Emeryville
Sausalito
Piedmont
Oakland
Alameda
San Leandro
Lake Chabot
Dublin
San Ramon
Livermore
Pleasanton
Hayward
Union City
Fremont
Newark
San Antonio Reservoir
Lake Del Valle
Calaveras Reservoir
Milpitas
Daly City
Brisbane
South San Francisco
Colma
San Bruno
Millbrae
Burlingame
Hillsborough
San Mateo
Foster City
Belmont
San Carlos
Redwood City
East Palo Alto
Atherton
Menlo Park
Palo Alto
Mountain View
Los Altos
Los Altos Hills
Sunnyvale
Santa Clara
San Jose
Cupertino
Campbell
Saratoga
Monte Sereno
Los Gatos
Woodside
Portola Valley
Half Moon Bay
Pacifica
San Andreas Lake
Crystal Springs Reservoir
Lexington Reservoir
Calero Reservoir
Anderson Reservoir
Chesbro Reservoir
Morgan Hill
Gilroy
N
Elevation in feet
0-500
500-1500
1500+
District Boundary
County Line
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
0 5 10 15 Miles
0 5 10 15 20 Kilometers

APPENDIX B

COMMENTS RECEIVED ON THE NOP

COMMENT LETTER 1

Contra Costa County Community Development Department
April 26, 2004

Community
Development
Department

County Administration Building
651 Pine Street
4th Floor, North Wing
Martinez, California 94553-0095

Phone: (925) 335-1278

Contra
Costa
County

Dennis M. Barry, AICP
Community Development Director

April 26, 2004

Joseph Steinberger, Senior Planner
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Steinberger:

This letter is intended to provide our response to the Notice of Preparation for the Bay Area 2004 Ozone Strategy (Ozone Strategy). It includes our comments and input regarding the information that should be included in the scope of the environmental analysis for this project. Staff would also like to express their continued interest to study efforts that have the potential to alleviate both traffic congestion and improve air quality and the public health of Bay Area residents.

It is our understanding that the environmental analysis will study the effectiveness of the Ozone strategy to evaluate both the enhancements to existing TCM and the evaluation of new TCM's, as part of the attainment to the California ozone standard. Additionally the Ozone Strategy will review new TCM's that would replace, and still meet the requirements of, TCM 2 as part of the effort to meet the National 1 hour standard. The County is particularly concerned about the secondary impacts from the proposed revisions to the TCMs. For instance, TCM 3 through 8 provide additional transportation capacity (more rail, bus and HOV facilities) which will support the continued conversion of land to higher intensity uses and impact our natural resources. The Draft EIR should examine the mitigation measures or alternatives to the TCMs proposed the Ozone Strategy that can reduce these secondary effects.

- The Draft EIR should examine the ability of Developer-based trip reduction ordinances to mitigate the secondary environmental effects of land use and development by enhancing the ability of TCM 15 (Local and Land Use Planning and Development Strategies) to further improve air quality. Currently the proposed TCM has the ability to affect land use and planning strategies by addressing the need for local governments to respond to air quality impacts in their jurisdiction by incorporating air quality elements within their General Plans. However, within the proposed TCM there currently is no discussion of encouraging localities to draft Developer-based trip reduction ordinances as part of their planning and development strategies and General Plan policies. Trip Reduction Ordinances have the ability to mitigate several air quality impacts by providing the jurisdictions ability to impose requirements on a developer or property owner to integrate practical facilities (that facilitate walking, bicycling and transit use) and services to the development of their site.

  The implementation of such requirements outlined in the ordinance is a feasible method with which local governments can implement air quality improvements within their General Plan policies. The addition of trip reduction ordinances within the measures addressing land use and development strategies further illustrates the connection between land use, transportation and air quality. The ability of such measures to significantly improve air quality provides the Air District with reasonable authority to implement such measures and/or support other agencies in implementing and monitoring them as part of the Ozone Strategy should those agencies be deemed responsible for such measures.

- The Draft EIR should evaluate the ability of TCM 8 (Construct Carpool / Express Bus Lanes of Freeways) to further mitigate the environmental effects of this measure to improve air quality. The proposed TCM should evaluate the ability of existing and proposed High Occupancy Vehicle (HOV) facilities to have standard occupancy requirements, specifically on Bay Area Bridges and the roadways. Currently TCM 8 discusses the air quality impacts of new HOV lane construction on regional freeways and expressways. However, the measure does not identify the potential air impacts that could be feasibly mitigated by coordinating the operation of existing HOV bypass lanes at the toll plazas of Bay Area bridges with the occupancy and time restrictions of the existing or funded HOV lanes feeding into these toll plazas. The existing HOV occupancy requirements on Bay Area bridges vary with their adjacent HOV lanes at several locations. This variation in occupancy requirement and time restrictions between the road and connecting bridge facilities could potentially adversely impact the ability to reduce mobile source emissions by making it difficult to encourage car/vanpooling in the Bay Area. Therefore the Air District should give serious consideration to revising the occupancy requirements and time restrictions governing the HOV bypass lanes at the toll plazas of Bay Area bridges to match the requirements of the HOV lanes feeding into these toll plazas. This would serve the dual purpose of creating a seamless connection of regional HOV facilities and mitigate the production of nitrogen oxides (NOx), one of the main ozone precursor emissions.

The Air District should carefully study the all feasible mitigation measures and alternatives to the TCM's proposed in the Ozone Strategy. The Air District should take actions within its power to implement such mitigation measures and alternatives and encourage other responsible agencies to take actions that could and should be done in support of the Ozone Strategy and in support of the public's health. This response is provided to support preparation of a complete and adequate EIR for the Ozone Strategy.

Sincerely,

Hillary P. Heard, Transportation Planning Division

c: S. Goetz, CDD

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COMMENT LETTER 2

Law Office of Mark Chytilo
August 30, 2004

LAW OFFICE OF MARC CHYTILO

ENVIRONMENTAL LAW

April 30, 2004
Revised

Mr. Joseph Steinberger, Senior Planner
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

By Mail and Email: Jsteinberger@baaqmd.gov

RE: Comments to CEQA NOP and Preliminary Comments on Scope of BAAQMD 2004 Clean Air Plan

Dear Mr. Steinberger and the BAAQMD:

This office represents Transportation Solutions Defense and Education Fund, an organization that advocates for smart growth and sound planning in the areas of air quality, transportation and land use. This letter is also submitted on behalf of Communities for a Better Environment, a statewide environmental health and justice organization, and Our Children's Earth Foundation. **Please accept this revised letter of this date and discard the previously submitted version.**

Commenters have reviewed the NOP and related issues surrounding the development of the 2004 Clean Air Plan ("CAP") and state implementation plan for maintenance of the one hour ozone standard ("SIP"). In the interest of ensuring that various legal and technical issues are timely addressed in this effort, we are taking this opportunity to address a range of issues that we believe should be addressed and included in the 2004 CAP. Please feel free to contact this office or any of the principals directly should you have any questions.

Generally, commenters believe that a number of requirements of the California Clean Air Act and the federal Clean Air Act have not been addressed in prior CAPs and SIPs, and by this letter, we seek to identify those issues which we request the District and its co-lead agencies devote attention to develop and resolve these issues.

I. CLEAN AIR ACT AND CALIFORNIA CLEAN AIR ACT ISSUES

1. Attainment demonstration

The District has historically declined to prepare an attainment demonstration for its CAPs. It is apparent, from a careful reading of the California Clean Air Act, that there is an implicit

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obligation to prepare an attainment demonstration, and in the absence thereof, the CAP cannot be found legally adequate.

The California Clean Air Act directs that all Bay Area CAPs and SIPs must meet the standards of Health and Safety Code §§ 40717 and 40233, which are accomplished through, *inter alia*, preparation of: 1) an estimate of the emissions reductions from transportation sources **necessary to attain state and federal ambient air quality standards**, Health and Safety Code §§ 40233(a)(1); 40717(b)(1)(emphasis added); and 2) development and adoption of a Transportation Sources Plan on a schedule adopted by each District and including a formal process for review, comment, revision, and potential District oversight of the Transportation Sources Plan implementation. Health and Safety Code §§ 40233(a)(3) and 40717(b)(2-3).

Commenters and the District have previously disputed the meaning of § 40233. Although the case was resolved, we note that a California State court has upheld this interpretation of identical authority applying to the Bay Area Air Quality Management District in *CBE & TRANSDEF v. Bay Area Air Quality Management District & Metropolitan Transportation Commission*, San Francisco County Superior Court, Statement of Decision filed July 24, 2003, page 4 ("The Court finds there has been a violation of Health and Safety Code § 40233 [analogous to § 40717]. . . . [There] is a shortfall of [emissions reductions necessary to meet the attainment emissions inventory] of 26 tons of VOC emissions per day. [Respondents] are ordered within 60 days from notice of entry of order to develop a plan for public review that reduces VOC by an additional 26 tons per day.").

Thus this authority establishes that Districts must undertake an attainment demonstration process sufficient to estimate emissions reductions from transportation sources necessary for attainment, which implicitly mandates an attainment demonstration of some type modeling all sources.

2. TCM Plan

Commenters believe that the specific elements and requirements of Health and Safety Code § 40233 apply to the adoption of this CAP and maintenance plan and we thus implore the District and its co-lead agencies to fully and faithfully observe all such requirements.

3. Reasonably Available Transportation Control Measures

The California Clean Air Act directs Districts to "**focus particular attention on reducing emissions from transportation and areawide emissions sources.**" Health and Safety Code § 40910, emphasis added. While we applaud recent strides by the District and its co-lead agency MTC to promote Smart Growth principles and enhance public transit opportunities, commenters believe that more can be done to more forcefully leverage the public transportation funding process to provide more definite incentives for Smart Growth and use of public transit and to dis-incentivize single occupancy vehicle use and sprawl.

We believe that a potentially useful objective may be modeled after a portion of the federal Clean Air Act applying to severe and above areas. 42 U.S.C. § 7511a(d)(1) directs that areas develop SIP revisions containing separate TCMs sufficient to independently offset any growth in emissions from increases in VMT and numbers of vehicle trips.

In addition, there are numerous pollution control measures that are required by other air districts that were not put in the 2001 Ozone Attainment Plan. These measures are obviously "reasonable available." CBE made extensive comments related to this during the public comment periods for the 2001 Ozone Attainment Plan. (This letter incorporates CBE's July 16, 2001 comments on the BAAQMD/MTC/ABAG Proposed Final Ozone Attainment Plan (June 2001 version)).

4. Air Pollution Transport

The District has an obligation under state and federal law to quantify and resolve transport issues such that all areas in the State attain the state standard "by the earliest practicable date," Health and Safety Code § 40913(a), and the federal standards "as expeditiously as practicable" 42 U.S.C. § 7502(a)(2)(A), "within the entire geographic area comprising such State." 42 U.S.C. § 7407(a). Merely complying with ARB's transport mitigation regulations does not meet these standards.

Not only has the Legislature expressly mandated that CAPs "focus particular attention on reducing emissions from transportation and areawide emissions sources," Health and Safety Code § 40910, but TCMs are particularly important for transport mitigation due to their disproportionate NO_x emissions reductions. The District argues that it is VOC limited, so its control strategies generally do not focus on NO_x emissions reductions. However, NO_x emissions reductions to address transport may affect ozone attainment, so the complex issue must be expressly and qualitatively addressed, not avoided, in the 2004 CAP and SIP. In fact, EPA rescinded the District's NOx waiver in 1997, stating, "It is clear, upon final redesignation of the Bay Area to nonattainment based on subsequent violations of the Ozone NAAQs, that the basis for granting the original NOx waiver no longer exists." 62 Fed.Reg. 66578 (Dec. 19, 1997) Thus, all reasonable available NOx controls should be included.

5. Long Term TCM Benefits

We note that many agencies discount TCMs in their attainment strategies on the basis of perceived limited immediate emissions reductions. It is our opinion that TCMs can be substantially more effective at gaining emissions reductions than current methodologies credit, and further that the long term air quality benefits of transit and Smart Growth TCMs offer substantial cumulative air pollution control benefits, such as through slowed rates of VMT growth. Regardless of the actual immediate benefits, the California Clean Air Act mandates RATCMs "sufficient to substantially reduce the rate of increase of passenger vehicle trips and

miles traveled per trip" for moderate areas and above, and thus must be a component of most CAPs anyway. Health and Safety Code § 40918(a)(3).

6. Justification of HOV Network as TCM

We note that the District has previously denoted high occupancy vehicle lane networks as a potential TCM. We question, however, whether HOV networks are appropriate as TCMs, since numerous studies show them to be air quality neutral at best and they typically increase highway capacity and induce further VMT while discouraging more systematic solutions, such as regional- and commute-focused public transit.

7. Contingency measures

The CAP and SIP must contain, respectively, contingency measures sufficient to implement in the event of a finding by ARB pursuant to Health and Safety Code § 41503.3 or in the event of a one-hour ozone violation, 42 U.S.C. § 7502(c)(9).

The past practice of simply including ARB state tailpipe standards or other impending controls as contingency measures is not appropriate. By statute, federal contingency measures are to be automatically applied if the area fails to meet a milestone, implicitly to allow the area to "catch up" from unanticipated violations. Reciting the eventual adoption of tighter tailpipe and other statewide standards cannot serve this purpose, and thus the CAP and SIP must identify and adopt a new generation of genuine contingency measures for the Bay Area.

8. TCM Substitution

The NOP is not clear how the District and MTC intend to accomplish the so-called "TCM substitution." Since this is identified in this SIP revision process, presumably the TCM substitution will be addressed as a potential SIP revision. If the agencies are intending to proceed with a TCM substitution under other authority or a different process, this should be clearly stated in the relevant documentation, including the NOP.

9. VMT Growth Rate Reduction

The Act requires all areas moderate and above to include all reasonably available transportation control measures ("RATCMs") in state CAPs to "substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip." Health and Safety Code § 40918(a)(3). Most California Air Pollution Control Districts and CAPs, including the Bay Area, fail to achieve the VMT growth rate performance standard. The 2004 CAP must specifically address the RATCM standard and achieve the applicable VMT growth standards imposed by statute. Any action on the CAP and SIP should acknowledge and observe the District's CEQA Guidelines which address regional VMT growth expressly.

10. Redesignation Issues – Zero Threshold for Permitting

The District should consider requesting redesignation to the "extreme" classification under the California Clean Air Act (CCR 70306(b)), or otherwise adopting the "no net increase" permitting program with a zero threshold. Health and Safety Code § 40918.5. The CAP is required to reduce the threshold currently, thus an alternative that must be examined is reducing the no net increase permitting threshold to zero.

11. Timing Issues

The Clean Air Plan was supposed to be adopted in 2003, but has been delayed, presumably for the Central California Ozone Study data necessary to model attainment and quantify transport contributions and thereby select the most effective control strategies. Nevertheless, the Bay Area has been denied the benefit of this revised CAP's control strategies and emissions reductions from the delay that has occurred. Commenters request that the CAP examine potential means to rectify the lost progress from this year's delay.

II. CEQA Issues

The NOP contends, and the District's position in litigation has been, simply, that only the potential impacts of control measures must be considered in the EIR. Commenters contend that this simplistic analysis fails to comport with CEQA's legal standards of adequacy, and more importantly, fails to apprise decisionmakers and the public of the true consequences and alternatives to the proposed project. We encourage the District to broaden the scope of the EIR to ensure that cumulative effects and the public health effects of the chosen control strategy are disclosed, along with alternatives that might avoid some of the impacts to public health if attainment is achieved more quickly, and/or with a greater margin of safety. (*See, e.g., Communities for Better v. California Resources Agency*, 103 Cal.App.4th (2002) 98, 116-123).

There can be other environmental consequences from the CAP's adoption and implementation, for example, sprawl resulting from excessive future Motor Vehicle Emissions Budgets with attendant conversion of lands and increased traffic congestion, "Smart Growth" from certain transportation control measures with attendant increases in transit system productivity, reduced development pressure and thus preservation of rural and open space lands, and the effects of non-criteria pollutants upon particular communities, such as toxics from cumulatively increased diesel emissions traffic and entrainment/re-entrainment of road-based hazardous particulate matter

1. Scope of Impact Issues

Commenters believe that the CEQA document must address the full range of impacts associated with the District's exercise of discretion in this matter. The analysis must consider not only what control strategies are in the preferred project, but also what control strategies are not (which should be the list of control strategies included in an alternative project) and which, if included, could accelerate attainment and provide more expeditious attainment and protected public health. Since one purpose of the CAP is to achieve and maintain the California ambient air quality standard for ozone, the project is essentially focused on remediating a currently unhealthful environmental condition. "Exposure of sensitive receptors [there are millions of Bay Area asthma suffers, and millions of children and elderly individuals, each of whom is considered a sensitive receptor for ozone exposure] to substantial pollutant concentrations" is a significant impact. CEQA Guidelines, App. G, III. Every day that the area exceeds an ambient air quality standard, the ozone concentration is "substantial." This represents a significant impact as it exceeds the level that the Air Resources Board established as causing adverse health effects and the Legislature has determined should be attained "by the earliest practicable date."

Given the narrow margin of attainment (see below), the EIR must identify the potential environmental consequences of exceedences during the 2004 ozone season. These consequences include highway sanctions and conformity lapse, either of which could affect the region's receipt of federal transportation funds. These funds, and the projects they support, may have been identified and relied upon as mitigation measures for other projects (such as large development projects). The direct and indirect effects of having the CAP/SIP "aim too low" and cause continuing human exposure and other consequences must be examined.

2. Baseline Issues

Ordinarily, the CEQA baseline is the present or reasonably foreseeable conditions that would occur without the project. Commenters believe that the normal baseline for purposes of preparation of a CAP and/or SIP is timely (and for nonattainment areas that have missed attainment dates including the Bay Area, timely refers to the statutory date for attainment) compliance with the ambient air quality standards, and by assuming this baseline, the environmental review document must articulate and address the effects of the delayed compliance with the standard, and the significant impacts to human health and economic productivity from unhealthful ambient air quality in the interim.

The baseline issue should also provide an empirical evaluation of the economic and emissions activity during the period of attainment. Commenters have provided independent evidence to EPA and the District that the Bay Area experienced a dramatic economic recession during the period of attainment that does not reflect the region's ordinary economic, and thus emissions activity. The previous determination of attainment and redesignation to maintenance was predicated on a prior period of economic downturn, and the past experience creates an obligation on the District to examine the basis for the baseline assumptions of one hour federal ozone standard attainment in the environmental review document.

3. Alternatives Analysis

The EIR's alternatives analysis must identify and compare a range of CAPs with various attainment dates and different levels of margin of safety in demonstrating attaining and/or maintaining the respective standard. This is particularly important for the maintenance plan/SIP, as the margin of attainment is extremely small, both in ozone concentration and number of exceedence days. This narrow margin increases the probability that the region will exceed the federal one hour ozone standard during the 2004 ozone season, preventing redesignation. The EIR should examine more aggressive control strategies as an alternative that would provide a greater margin of safety to protect public health and increase the likelihood that the region will maintain its federal maintenance status.

4. TCM Substitution

The NOP is incomplete due to the failure to describe the process and authority by which the District and MTC intend to accomplish the so-called "TCM substitution." Further, the NOP fails to identify the proposed substitute TCMs, and thus public comment is incomplete. Depending on the substitute TCM proposed, there is the possibility of collateral impacts, such as increased VMT, disproportionate emissions effects on particular communities, higher particulate matter emissions, induced traffic, etc. Transit ridership increases have a particular set of community benefits, including Environmental Justice consequences, that must be considered and expressly addressed through the substitution process, including evaluation in the environmental review document. The NOP is not complete and thus should consider the TCM substitution process to involve a potentially significant impact.

5. Secondary Impacts

The District's overall control strategy may itself cause potentially significant impacts, such as by pursuing a VOC only control strategy and not controlling NO_x emissions that are more prone to be transported as an ozone precursor and contribute to downwind nonattainment. The proposed control strategies will affect toxic emissions ratios, diesel emissions and particulate matter attainment strategies. The environmental review document must examine the effect of the CAP/SIP on these other pollutants, and identify alternatives that can avoid any significant impacts, and mitigate those that cannot be avoided. Environmental Justice issues must be specifically addressed, as many control strategies affect the spatial and temporal distribution of air pollutants to the detriment of individual neighborhoods and communities.

Commenters acknowledge and appreciate the District's ongoing efforts to control air pollution and improve air quality, but believe that important requirements of the Federal and California Clean Air Acts were not properly addressed. Importantly, the CEQA environmental review process may either serve as a useful adjunct to assist the air quality planning process through

expansive alternatives analysis and mitigation measures, or it may continue as a perfunctory process with little benefit to decisionmakers or the public. Much more remains to be done in the efforts to provide for healthful air quality for all Bay Area residents and visitors, and we encourage the District to use the CEQA process as a means to improve the quality of the CAP and SIP and answer lingering questions in the community over the District's commitment to aggressive air pollution control.

Thank you for your consideration of our views in this important issue.

Sincerely,

LAW OFFICE OF MARC CHYTILO

By: Marc Chytilo

CC: Mr. Jack Broadbent, BAAQMD
Ms. Kathleen Walsh, BAAQMD
Ms. Debbie Jordan, EPA
Mr. Will Rostov, CBE
Ms. Tiffany Schauer, OCE
Mr. David Schonbrunn, TRANSDEF

COMMENT LETTER 3

Communities for a Better Environment

BAY AREA 2004 OZONE STRATEGY ENVIRONMENTAL IMPACT REPORT SCOPING MEETING

COMMENT FORM

If you or your agency wishes to submit comments, they may be sent to BAAQMD Senior Planner, Joseph Steinberger, via the contact information below. Comments must be received by May 7, 2004.

COMMENTS:

(1) Include analysis of transport's effects in downwind areas (Central Valley) in the EIR.

(2) Include analysis of factors that contributed to the mistaken conclusion that the ozone standard was met (in the 1990s), such as economic conditions, weather variability, etc., & whether these factors cause uncertainty in present projections of compliance, in the EIR.

CONTACT INFORMATION:

Name: Greg Karras, Communities for a Better Environment

Address: 1611 Telegraph Ave., Suite 450 City: Oakland Zip: 94612

Phone: (510) 302 0430 Fax: (510) 302-0437

Email: GKARRAS@CBECAL.ORG Affiliation: CBE

Please leave this in the comment box or send to:
Joe Steinberger, BAAQMD, 939 Ellis Street, San Francisco, CA 94109
Email: jsteinberger@baaqmd.gov Fax: 415-749-4741

BAY AREA AIR QUALITY MANAGEMENT DISTRICT · METROPOLITAN TRANSPORTATION COMMISSION · ABAG

COMMENT LETTER 4

California Department of Transportation
May 4, 2004

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5505
FAX (510) 286-5513
TTY (800) 735-2929

Flex your power!
Be energy efficient!

May 4, 2004

ALAGEN201

Mr. Joseph Steinberger
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Steinberger:

BAY AREA 2004 OZONE STRATEGY – NOTICE OF PREPARATION

Thank you for including the California Department of Transportation in the early stages of the environmental review process for the Bay Area 2004 Ozone Strategy project. Please send two copies of the Draft Environmental Impact Report to the following address as soon as it is available:

Patricia Maurice, Associate Transportation Planner
Office of Transit and Community Planning, Mail Station 10D
California DOT, District 4
111 Grand Avenue
Oakland, CA 94612-3717

Please feel free to call or email Patricia Maurice of my staff at (510) 622-1644 or patricia_maurice@dot.ca.gov for more information, or with any questions regarding this letter.

Sincerely,

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

COMMENT LETTER 5

MTC; Robert Huang
May 6, 2004

Joseph Steinberger

From: Robert Huang [rhuang@mtc.ca.gov]
Sent: Thursday, May 06, 2004 4:56 PM
To: Joseph Steinberger
Cc: Harold Brazil
Subject: Comment on TCM 13

Joe,

Here are my comments:

Bullet 3 of **Description** for TCM 13 (p E-20):

Under this bullet should be a description of both pre-tax and employer-subsidized transit voucher options. In fact, since 1998, an increasing number of employees are taking advantage of the pre-tax incentive as they become aware of this tax break and as employers pull back from providing full transit subsidies. Commuter Check is one of several vendors that cater to this market. If you want to mention Ecopass, you should also mention the joint program between AC Transit and UC Berkeley that allows all UC students to ride AC bus free since the paid for it from their registration fees.

Under **Cost** on page E-21:

There was no description of RTC in Description. The cost of $400,000 is no longer valid; MTC is no longer directly involved with Commuter Check and RTC. Muni manages and operates the RTC; Commuter Check manges its own operation.

If you have any questions, call me at 510/464-7825.

Robert Huang

COMMENT LETTER 6

Monterey Bay Unified Air Pollution Control District
May 3, 2004

MONTEREY BAY
Unified Air Pollution Control District
serving Monterey, San Benito, and Santa Cruz counties

AIR POLLUTION CONTROL OFFICER
Douglas Quetin

24580 Silver Cloud Court • Monterey, California 93940 • 831/647-9411 • FAX 831/647-8501

May 3, 2004

Jack Broadbent
Executive Officer
Bay Area AQMD
939 Ellis St.
San Francisco, CA 94109

SUBJECT: NOP FOR DEIR FOR BAY AREA 2004 OZONE STRATEGY

Dear Mr. Broadbent:

Staff has reviewed the referenced document and has the following recommendation for the air quality impact analysis as it relates to the North Central Coast Air Basin:

- The impact of the strategy on downwind ozone levels in the North Central Coast Air Basin should be assessed.

Please do not hesitate to call if you have any questions.

Sincerely,

Janet Brennan

Janet Brennan
Supervising Planner
Planning and Air Monitoring Division

COMMENT LETTER 7

AC Transit
May 6, 2004

1600 Franklin Street, Oakland, CA 94612 - Ph. 510/891-4716 - Fax. 510/891-7157

Joseph Steinberger
Senior Planner
Bay Area Air Quality Management District
939 Ellis St.
San Francisco, Ca. 94109

May 6, 2004

Subject: Notice of Preparation of Draft Environmental Impact Report for the Bay Area 2004 Ozone Strategy

Dear Mr. Steinberger:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the Environmental Impact Report (EIR) on the Bay Area 2004 Ozone Strategy. The Ozone Strategy will set forth how the region plans to meet state and federal requirements concerning ozone. The Strategy will describe the actions needed from Bay Area regional agencies--the Air Quality district, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). The Strategy will regulate both stationary and mobile transportation sources.

The Notice of Preparation for the Ozone Strategy states that the EIR will evaluate enhancements to 19 of the 20 Transportation Control Measures (TCMs) set forth in the 2000 Clean Air Plan. This effort will be critical to the success of any air quality improvement plan. As the Air Quality district has often stated, motor vehicles are the largest source of air pollution in the Bay Area.

We note that Transportation Control Measure 2 has been deleted. This measure called upon MTC as a responsible agency under the California Environmental Quality Act to "Support post-1983 improvements identified in transit operators' 5 year plans." Our response to this change is discussed later in the letter.

AC Transit believes that the Bay Area must have an effective, adequately funded program to shift travel from single occupant vehicles to transit and other travel modes that minimize air pollution. This requires a strong and stable transit network to realize **TCM 3--Improve Local and Regional Bus Service.** It will require leveling the transportation "playing field" that currently favors automobile drivers through measures such as **TCM 13--Transit Use Incentives** and **TCM 18--Transportation Pricing Reform.** This effort will require restructuring Bay Area land use so that it is transit-friendly rather than transit-hostile, as recognized in **TCM 15--Local Land Use Planning and Development Strategies.** It will require continued development of a transit system that serves all user groups, as indicated by **TCM 10--Youth Transportation.** Development of the transit-related TCMs, such as those we have listed above, must be done in close consultation with AC Transit and other transit operators. In this way, the Air District can formulate a program that is grounded in the realities of Bay Area transit .

Before the current recession, transit ridership was growing in the Bay Area, for the first time in decades. However this growth did not reach the full potential for transit ridership here. In our view, there are elements of Bay Area transportation and air quality policy that must change in order to realize more ridership growth. Key items that the TCMs should address include the following:

- Although the balance has shifted somewhat, regional transportation investment has historically focused heavily on long distance trips. However, the bulk of trips in the region are under five miles, with consequent pollution.

- Major investments have been made in long distance services without requiring smart growth and compact development.

- TCM 5 calls for improved access to rail and ferry service, yet many transit passengers must pay an additional fare to transfer, while most auto drivers receive free parking at transit stations. This clearly creates a disincentive to use transit.

- The on-street environment for bus passengers is often poor. Yet there is no general funding source for passenger amenities, and often such improvements must be funded by advertising. In addition, some communities resist the addition of passenger amenities. Poor conditions discourage passengers from riding.

- Perhaps the most critical issue is identifying a stable source of funds for transit--especially operating funds--so that transit agencies are not forced to contract or expand services with the economy. These issues should be addressed in formulating the TCMs.

A realistic, comprehensive program for making transit improvements and increasing transit ridership would capture the spirit and thrust of the deleted TCM2. On the other hand, if the remaining TCMs are not adequately conceptualized, funded, and implemented, then the absence of TCM 2 will be sorely felt. AC Transit is concerned more with the effectiveness of the Transportation Control Measures in shifting travelers' modes and increasing transit ridership than with the particular language that is used.

Thank you for your interest on our comments. If you have any questions about them please contact Nathan Landau, Long Range Planning Division, 510/891-4792.

Yours Truly,

Nancy Skowbo
Acting Deputy General Manager for Service Development

cc. Rick Fernandez
Nathan Landau
Ken Scheidig
Tina Spencer
AC Board of Directors

COMMENT LETTER 8

Santa Clara Valley Transportation Authority
May 18, 2004

SANTA CLARA
Valley Transportation Authority

May 18, 2004

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

Attention: Joseph Steinberger

Subject: Bay Area 2004 Ozone Strategy

Dear Mr. Steinberger:

Santa Clara Valley Transportation Authority (VTA) staff have reviewed the NOP for the Bay Areas 2004 Ozone Strategy. We have the following comments.

VTA supports Transportation Control Measures that encourage, promote, and increase the use of alternative travel modes of transportation.

We appreciate the opportunity to review this project. If you have any questions, please call me at (408) 321-5784.

Sincerely,

Roy Molseed
Senior Environmental Planner

RMdh

SANTA CLARA
Valley Transportation Authority

May 18, 2004

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

Attention: Joseph Steinberger

Subject: Bay Area 2004 Ozone Strategy

Dear Mr. Steinberger:

Santa Clara Valley Transportation Authority (VTA) staff have reviewed the NOP for the Bay Areas 2004 Ozone Strategy. We have the following comments.

VTA supports Transportation Control Measures that encourage, promote, and increase the use of alternative travel modes of transportation.

We appreciate the opportunity to review this project. If you have any questions, please call me at (408) 321-5784.

Sincerely,

Roy Molseed
Senior Environmental Planner

RM:kh

N:\BAAQMD let 5 18 04.doc
3331 North First Street - San Jose, CA 95134-1906 - Administration 408.321.5555 - Customer Service 408.321.2300

COMMENT LETTER 9

Sacramento Metropolitan Air Quality Management District
May 6, 2004

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Norm Covell
AIR POLLUTION CONTROL OFFICER

May 6, 2004

Joseph Steinberger, Senior Planner
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Sir:

Thank you for sending a copy of your Notice of Preparation of the Draft Environmental Impact Report (DEIR) for the Bay Area 2004 Ozone Strategy, and for your agency's ongoing participation in meetings to resolve ozone transport issues. We look forward to continuing this dialogue. We hope that it will lead to agreement on the ozone transport control measures that should be included in your Ozone Strategy. Below we provide our specific recommendations for your DEIR.

A) Summary

The DEIR summary must list the, "Areas of controversy known to the lead agency." (CEQA Guidelines, sec. 15123.)

The BAAQMD and the SMAQMD have made great strides over the last year in resolving differences over the ozone transport issue. (See Attachments 2 - 5.) The planning process for the Ozone Strategy provides us with yet another forum for continuing this progress. We appreciate that the NOP both acknowledges the transport issue, and identifies some measures to reduce ozone transport. Every measure you adopt will be another important step forward. However, if at the time the DEIR is published, there remain differences of opinion between the BAAQMD and SMAQMD regarding the nature or extent of ozone transport, or the list of "all feasible measures" that should be included in the Ozone Strategy to reduce transport, these differences should be noted in the DEIR summary.

B) Project Description

The project description section of an EIR includes, "A statement of objectives sought by the proposed project." (CEQA Guidelines, sec. 15124.) Please include as objectives of the Ozone Strategy, "The approval of all feasible control measures to mitigate ozone transport, and the approval of a schedule for their prompt adoption."

The project description in the DEIR should include a list of your proposed air pollution control measures. The project description should indicate which control measures will be

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implemented to make progress toward meeting the California 1-hour standard, which measures will provide for maintenance of the national 1-hour ozone standard, and which measures will serve as contingency measures. We have reviewed the preliminary draft control measures posted on your website, and provide specific comments below.

1) Preliminary TCMs

Your proposed control measures include enhancements of your TCM program. In general, it is an impressive list of TCMs that reflects a strong collaboration among BAAQMD, MTC, ABAG and transit providers throughout your region. Nevertheless, the list of TCMs does raise a couple of concerns on our part.

At this early stage of measure development, it is understandable that you have not calculated the emission reduction potential of the measures. As your analysis of the measures continues, we hope that it reveals significant emission reductions.

TCM 15 deals with local land use planning and development strategies. Your background discussion of TCM 15 states that, "TCM 15 responds to the indirect source requirements of the CCAA." (Draft Bay Area 2004 Ozone Strategy, March 16, 2004, p. E-22.) The California Air Resources Board issued a guidance document for the development of indirect source control programs in 1990. That document recommends that air districts adopt criteria to ensure that indirect source mitigation measures must:

- "be actually implemented:
- result in a new or enhanced program;
- have continued effectiveness;
- be legally binding; and
- be reasonably quantifiable." (CARB, California Clean Air Act Guidance for the Development of Indirect Source Control Programs, p. 4.)

TCM 15 includes a few grant programs that have a high likelihood of achieving emission reduction. Unfortunately, TCM 15 places a great deal of emphasis on actions that MTC, ABAG, BAAQMD, and local governments "could take," "could develop", "should prepare," "should assure," or "encourage". In other provisions, TCM 15 merely commits ABAG, MTC, and BAAQMD to "consider," "monitor," "examine," and to "explore." (Draft Bay Area 2004 Ozone Strategy, March 16, 2004; Page E-22 – E-24.) This language does not ensure that the measures will be actually implemented. Furthermore, many of the policies lack quantified objectives at which the implementing agencies can aim to achieve, and agree to be held accountable.

Other air districts are taking a more direct approach to reducing emissions from indirect sources. For example, our Land Use Mitigation program tracks CEQA projects from planning through implementation to secure quantified emission reductions. We are working on a Construction Mitigation Indirect Source Rule to reduce construction equipment emissions even more effectively. We will also be developing a Land Use Mitigation Indirect Source Rule. In its 2002 and 2005 ROP, the San Joaquin Valley

Unified Air Pollution Control District committed to adopting an Indirect Source Rule to reduce the impact of emissions from new development. (SJVUAPCD, Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone, December 31, 2002, Table 4-3, p. 4-7; See Attachment 6.) We hope that your final version of TCM 15 will take a more direct approach to indirect source control.

2) Preliminary Stationary Source Measures

We realize that you did not have the time to fully consider and incorporate our February 18, 2004 proposed control measures into your March 16, 2004 report, Preliminary Draft Control Measures Descriptions. Thus, we are encouraged by the fact that, in some form, 8 of our proposed stationary source control measures are present on your list. This is a good start, and reflects that we are both thinking along the same lines. We hope that the rest of our proposed measures will ultimately become part of your Ozone Strategy.

With regard to those measures you have analyzed in your report, we have a few suggestions. Please consider a measure to control petroleum refinery flare emissions that sets prescriptive standards, such as measure B-1 from our February 18 materials. With regard to your control measure for gas turbines, please consider a provision to control emissions from gas turbines 2.9 – 10 MW in size. Finally, with regard to organic liquid storage tanks, please give further consideration to requiring that fixed roof tanks storing organic liquids with vapor pressures greater than 0.1 psia be vented to control devices with efficiencies of 95% or greater.

C) Environmental Setting

The environmental setting section must describe the physical environmental conditions in the vicinity of the project, to the degree necessary for an understanding of the significant effects of the proposed project and its alternatives. (CEQA Guidelines, sec. 15125, subd. (a).) In this section of the Ozone Strategy DEIR, please describe the current non-attainment status of the Sacramento air basin, the current contribution of ozone transport from the Bay Area, and the climate and topography that influence this transport. (BAAQMD CEQA GUIDELINES, p. 27.)

Should any inconsistencies arise between the proposed Ozone Strategy and the State Implementation Plan, they should also be disclosed in this section. (CEQA Guidelines, sec. 15125, subd. (c).)

D) Discussion of Significant Environmental Effects

A lead agency faces a number of thresholds of significance when assessing impacts to air quality. One threshold question is whether the project will conflict with or obstruct the implementation of an air quality plan. Another threshold question is whether a project will contribute substantially to an existing or projected air quality violation. In considering these questions, the lead agency must also evaluate effects that are indirect,

long-term, or cumulative. Impacts during all phases of the project must be considered. (CEQA Guidelines, secs. 15126.2, subd. (a); 15130; 15126.)

It remains our hope that your Ozone Strategy will include the approval of all feasible measures to reduce ozone transport, and a prompt schedule for their adoption. However, if the Ozone Strategy does not include the approval of all feasible measures, and a prompt schedule for their adoption, it will obstruct the successful implementation of plans to attain State and Federal air quality standards in the Sacramento region, it will contribute to projected air quality violations in the Sacramento region, and it may extend the number of years that these adverse conditions persist. These would constitute significant impacts warranting analysis in the DEIR.

E) Mitigation Measures

ARB's report on Ozone Transport Mitigation lists 28 source categories for which feasible control measures have been identified. The report goes on to list the 11 specific source categories that district and ARB staffs have been discussing through the Northern California Air Quality Coordinating Group. (Attachment 7, pp. 6 & 9.) Your proposed control measures address only 6 of these 11 source categories. We hope that you will also consider control measures to lower VOC limits for adhesives, degreasing, and solvent cleaning; and to regulate stationary internal combustion engines (including diesel) between 50 and 250 horse-power.

The materials we provided to the BAAQMD in February included 38 measures to mitigate the impacts of ozone transport. (See Attachment 2 & enclosed CD.) It appears that your staff has included, in some form, at least 11 of these control measures (8 stationary measures & 3 TCMs) in its analysis of preliminary draft control measures for your Ozone Strategy. (Bay Area 2004 Ozone Attainment Strategy, Preliminary Draft Control Measure Descriptions, March 16, 2004, pp. 1-2.) This is a very promising start, and we greatly appreciate your cooperation in this matter. We hope that the rest of our proposed measures will ultimately become part of your Ozone Strategy. The BAAQMD should discuss each of these measures in the DEIR, and should identify the basis for selecting particular measures. (CEQA Guidelines, sec. 15126.4, subd. (a)(1)(B).)

Should you deem any of the 38 measures to be infeasible, such a finding must ultimately be supported by substantial evidence in the record. (CEQA Guidelines, sec. 15091.) Should you come to your infeasibility conclusion early in the CEQA process, please consult with us as soon as possible. This is consistent with the CEQA direction emphasizing early consultation. (CEQA Guidelines, sec. 15006, subd. (k).)

F) Alternatives

CEQA requires that the DEIR consider a reasonable range of alternatives that would attain most of the project objectives, but would lessen the significant impacts of the project. The range of alternatives must be sufficient to foster informed decisionmaking and public participation. Alternatives may be more costly than the project, and they may

impede, to some degree, the attainment of project objectives. (CEQA Guidelines, sec. 15126.6.) Please consider an Ozone Strategy or alternative that includes as many of our 38 proposed control measures as are feasible. When you evaluate the impacts, please provide a quantitative comparative analysis of the project description and its alternatives.

Thank you again for the opportunity to provide scoping comments. We look forward to continuing the dialogue regarding ozone transport mitigation. If you have any questions, please feel free to contact me by phone at (916) 874-4834, or by e-mail at gtholen@airquality.org.

Sincerely,

Tom DeBusine, for

Greg Tholen
Environmental Coordinator

cc.
Norm Covell, APCO, SMAQMD
Brigette Tollstrup, Division Manager, SMAQMD

LIST OF ATTACHMENTS

1) 5/22/03 SMAQMD letter to ARB regarding Ozone Transport Mitigation Regulations

2) 2/18/04 Summary Chart of BAAQMD Measures provided by SMAQMD

3) 2/18/04 Schubert, et al., Summary of Control Strategies for San Francisco Bay Area Federal Nonattainment Area.

4) 3/3/04 Letter from BAAQMD to SMAQMD

5) 3/5/04 Letter from SMAQMD to BAAQMD

6) 12/31/02 Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone, p. 4-7.

7) 4/8/04 ARB, Ozone Transport Mitigation in California

ENCLOSURE

CD with zipped files of BAAQMD Measures provided by SMAQMD

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

COPY

ATTACHMENT 1

Norm Covell
AIR POLLUTION CONTROL OFFICER

May 22, 2003

Clerk of the Board
California Air Resources Board
P.O. Box 2815 Sacramento, CA 95812

RE: Ozone Transport Mitigation Regulations

Dear Chairman Lloyd and Members of the Board;

The Sacramento region urgently needs every available emission reduction to meet the national ambient air quality standard for ozone by 2005 and to make expeditious progress towards attaining the state ambient air quality standards for ozone. This includes reductions from our upwind neighbors.

Our District both generates and receives transported emissions. We expected these regulations to provide reductions needed to meet Sacramento's clean air goals, and to help neighbors downwind of Sacramento.

We support ARB requiring mitigation of reactive organics and nitrogen oxides as ozone precursor pollutants. We also appreciate ARB's steps to improve the 'all feasible measures' process. However, the proposed regulation provide almost no new emission reductions and does little to forward attainment of either the state of federal ambient air quality standards in the Sacramento or other areas.

Mitigation of transport impacts

The Staff Report for this regulation estimates an emission benefit from the New Source Review requirements in the San Francisco Bay Area of 0.09 tons per day (tpd) reactive organics and 0.05 tpd of nitrogen oxides. This is approximately 0.01% of the ozone precursor emissions inventory (over 1150 tons per day) in the San Francisco Bay Area.

The Staff Report states, "*amendments for all feasible measures are expected to result in new emission reductions.*" The report identifies no new feasible measures to be adopted, however, and therefore provides no basis for this statement. As the report acknowledges, areas are already subject to the "all feasible measures" requirement. The regulation does not impose new requirements, so no additional reductions can be expected.

We have and continue to support the cooperative, interdistrict approach to evaluating feasible measures. Districts have shared information regarding our assessments and

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are meeting to discuss a process for reaching consensus on feasible reduction strategies. I am hopeful that these discussions will result in substantive emission reduction commitments. Nevertheless, we believe the statute requires ARB to take a proactive approach to requiring mitigation of upwind emissions. ARB is required to establish mitigation requirements because the state is responsible for balancing the competing interests of upwind and downwind districts.

We have provided our assessment of opportunities for additional reductions mitigating transport impacts from the Bay Area to the BAAQMD and your staff[1]. These requested rule changes were not included in this proposed regulation and the Staff Report does not discuss the feasibility of those requests. Yet the development of the triennial report and mitigation regulations is precisely the point at which the legislature has instructed ARB to intervene and identify feasible measures for adoption by upwind districts.

Federal ozone planning efforts

ARB acknowledges that emissions in upwind areas impact the ability of downwind areas to meet federal standards and states that California addresses the establishment of upwind mitigation measures through this triennial transport process. ARB also asserts that by doing so, the emission reductions achieved through the state transport analysis will be reflected in the emissions baseline to be used in future federal plans in the downwind areas.

Unfortunately, the ARB has not identified new mitigation measures, and so there is no basis for asserting that the state process has substantively addressed transport under either state or federal law. As a result, when downwind areas prepare their federal plans, they will have to impose additional measures in their regions to offset the emissions from sources in the upwind districts -- sources that in some cases, are already subject to less stringent controls than their downwind counterparts.

State responsibility for mitigating transport

We reiterate our request made at the workshop that the following measures be required by this transport mitigation regulation.

1) ARB should work with the Governor's office to secure an Executive Order requiring a) all state agencies include preferences for using vendors who have low emission vehicles and equipment when contracting for goods and services and b) construction work performed using state equipment or under state contracts meet a fleet average emission rate that is 20% below the inventory fleet average for NOx and 45% below the inventory fleet average for PM. At a minimum, ARB has the authority to implement these policies within the ARB contracting process.

[1] Norm Covell correspondence to Catherine Witherspoon, Workshop on Ozone Transport Regulations, March 13, 2003

2) ARB should develop land use guidelines for both state agencies and local governments. We provided lists of land use mitigation measures that could be included in that guidance. The report states that ARB supports and participates in state level efforts to improve local land use, yet defers commitments in this area to new federal planning "implemented into the next decade." We request action now to support attainment of the federal standard in Sacramento by 2005.

3) We reiterate our request that ARB include requirements for the BAAQMD control measures. These include the following requirements, which are already in place in the Sacramento area.
   a) Reduce the exemptions levels for boilers, steam generators, process heaters, space heaters, internal combustion engines and gas turbines. Require such equipment to meet both local permit requirements and emissions standards at least as stringent as those required in the Sacramento area.
   b) Establish cleanup solvent requirements for architectural coatings users; including low VOC materials and work practice standards.
   c) Reduce the VOC limit for contact adhesives.

Transport assessment

The Staff Report states that ARB will reassess some transport couples next year. California Health and Safety Code Section 39610 required this assessment every three years, beginning in 1989. An assessment of the San Francisco Bay Area to Broader Sacramento Area transport couple was last done in 1996. In April 2001, ARB performed an assessment (due in 1999), but did not evaluate the San Francisco Bay to Broader Sacramento Area transport couple as required. A new triennial assessment by ARB was due in 2002. Both ARB and District staff are working on Central California Ozone Study results and, currently, that data is not available. In the meantime, I request that the following information, which already exists, be used for transport assessments.

   a) SARMAP Modeling results performed by ARB staff for assessments of the BAAQMD Refinery Rule.
   b) Meteorological data from profilers installed following the 1996 assessment at Bruceville Road in Elk Grove, Travis AFB, and most recently in San Francisco Bay delta region
   c) Walnut Grove Tower ozone and meteorological data

Thank you for the opportunity to provide input to this regulatory process. If you have any questions regarding these comments, you may contact me at (916) 874-4803 or Brigette Tollstrup (916) 874-4832.

Sincerely,

Norm Covell
Air Pollution Control Officer

c. Brigette Tollstrup
Robert Fletcher, ARB
Bob Effa, ARB
Gayle Sweigart, ARB
Bill Norton, BAAQMD
Tom Christofk, PCAPCD
Larry Greene, YSAQMD
Marcella McTaggert, EDAPCD
Steve Speckert, FRAQMD

Attachments
Correspondence to Catherine Witherspoon, March 13, 2003

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

COPY

Norm Covell
AIR POLLUTION CONTROL OFFICER

March 13, 2003

Catherine Witherspoon
Executive Officer
California Air Resources Board
P.O. Box 2815 Sacramento, CA 95812

RE: Workshop on Ozone Transport Regulations

Dear Ms. Witherspoon;

This letter provides comments on proposed amendments to transport regulations in response to your February 25, 2003 workshop notice. The Sacramento region urgently needs every available emission reduction to meet the national ambient air quality standard for ozone by 2005 and to make expeditious progress towards attaining the state ambient air quality standards for ozone. This includes reductions from our upwind neighbors.

Our District both generates and receives transported emissions. We are concerned about these regulations not only as providing us with critical assistance in meeting Sacramento's clean air goals, but guiding the actions we must take to help neighbors downwind of Sacramento.

I support ARB defining precursors to be mitigated to include both reactive organics and nitrogen oxides. I also appreciate ARB's steps towards improving the all feasible measures' process. I have concerns that have not been addressed. These concerns are detailed below. I also request that the proposed regulations be expanded in the following areas:

State responsibility for mitigating transport
The draft regulations have not addressed our request that the state take responsibility for mitigating transported emissions.

1) ARB must look beyond stationary source controls and local district actions and mitigate transported emissions from mobile sources. Mobile source emissions dominate our ozone air quality problems, and ARB must identify new opportunities under their regulatory authority to mitigate transported emissions.

2) ARB should work with the Governor's office to secure an Executive Order requiring all state agencies include preference for using vendors who have low emission vehicles and equipment when contracting for goods and services.

777 12th Street, 3rd Floor Sacramento, CA 95814-1908
916/874-4800 916/874-4899 fax
www.airquality.org

3) ARB should work with the Governor's office to secure an Executive Order requiring construction work performed using state equipment or under state contracts meet a fleet average emission rate that is 20% below the inventory fleet average for NOx and 45% below the inventory fleet average for PM.

4) ARB should be a leader by developing land use guidelines for both state agencies and local governments. Attached are lists of land use mitigation measures that could be included in that guidance.

Improve the 'All Feasible Measures' process

The existing 'all feasible measures' process is flawed for several reasons.

1) Federal deadlines not addressed - ARB must require that upwind areas fully mitigate emissions for 'significantly' impacted areas like Sacramento to attain both state and federal ambient air quality standards. Attaining the federal standards are an important first step to attaining the state standards. It is clear that ARB must assess mitigation requirements in the context of the federal standards to ensure the sufficiency of the Bay Area's mitigation measures -- as well as those of other upwind districts -- in meeting federal attainment deadlines. ARB has asserted that federal SIP's are not the appropriate venue for assessing intrastate transport, and that addressing intrastate transport is ultimately the state's responsibility, not the federal EPA's. Although we disagree with that position, if ARB is correct, than the transport study and mitigation regulations are the only clear vehicle left for ARB to fulfill its responsibility to both assess and mitigate transport pollutant impacts. Moreover, without a genuine and thorough assessment of mitigation measures, the analysis of impacts is meaningless.

2) No additional mitigation - The requirement to impose "all feasible measures" provides no additional mitigation requirements beyond those already required by state law. California Health & Safety Code Section 40914(b) states;
   "A district may use...and the state board concurs in, either of the following:
   ...the inclusion of every feasible measure in the plan..."
   ARB staff reported that upwind districts have selected the 'all feasible' measures option and complied with the 'all feasible' measures requirement (Status Report on Transport Mitigation, July 2001.)

3) Disagreement regarding 'feasible' - You may recall that we provided comments during plan development activities in the BAAQMD requesting that additional measures be included, yet our requests for added measures were not included in the final plan. In short, we disagree that the upwind area plan met the 'all-feasible' or the related federal requirement for reasonably available control measures. We request that ARB set standards districts must meet to satisfy this requirement. For example, ARB could establish a process to identify where emissions standards and exemption levels in upwind areas must be at least equivalent to the significantly or overwhelmingly impacted downwind neighbors. If the district justifies that the less

stringent standards are not cost-effective or technologically feasible then they could seek relief.

4) Consistent planning requirements doesn't equate to consistent rules - Planning commitments are preliminary assessments of control strategies. Plans can reflect similar control strategies, yet differences in rulemaking exist. Recently, at the request of BAAQMD, our staff provided an assessment (attached) of the differences between the BAAQMD rules and the SMAQMD rules. I request that ARB evaluate this information and require rule amendments to ensure all feasible measures are in place. Additionally, I request that ARB incorporate evaluation of rule consistency from a transport perspective when exercising its oversight responsibilities during district rulemaking process.

5) Annual district reporting requirements are infeasible - Proposed addition of annual district reporting requirements (Section 70600(c)(1)) including public process for reporting on plan commitments are time consuming and do not address the fundamental issues noted above. I support ARB review of district's progress and encourage the ARB to engage a public process in that review.

The workshop notice does not discuss when ARB will reassess the transport couples. California Health and Safety Code Section 39610 required this assessment every three years, beginning in 1989. An assessment of the San Francisco Bay Area to Broader Sacramento Area transport couple was last done in 1996. In April 2001, ARB performed an assessment (that was due in 1999) but did not evaluate the San Francisco Bay to Broader Sacramento Area transport couple as required. A triennial assessment by ARB was due in 2002. Both ARB and District staff are working on Central California Ozone Study results and, currently, that data is not available. In the meantime, I request that the following information, which already exists, be used for transport assessments.

a) SARMAP Modeling results performed by ARB staff for assessments of the BAAQMD Refinery Rule.
b) Meteorological data from profilers installed following the 1996 assessment at Bruceville Road in Elk Grove, Travis AFB, and most recently in San Francisco Bay delta region
c) Walnut Grove Tower ozone and meteorological data

The above data, along with new data analysis techniques, is essential to evaluate the impact from pollutants transported on aloft winds and from transport of ozone precursors. Finally, I suggest formation of a statewide Transport working group to share ideas about transport assessment methods and to peer review the final assessments. That working group should include local air districts and members of the scientific community.

Thank you for the opportunity to provide input to this regulatory process. If you have any questions regarding these comments, you may contact me at (916) 874-4803 or Brigette Tollstrup (916) 874-4832.

Sincerely,

Norm Covell
Air Pollution Control Officer

c. Brigette Tollstrup
Robert Fletcher, ARB
Bob Effa, ARB
Gayle Sweigart, ARB

Attachments
Correspondence to William Norton, September 10, 2002
Land use mitigation measures

Blind Copies provided to the following people at the workshop (3/13/03):

Peter Hess, BAAQMD
Larry Greene, YSAQMD
Tom Christofk, PCAPCD

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Norm Covell
AIR POLLUTION CONTROL OFFICER

September 10, 2002

Bill Norton
Interim Executive Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Norton:

This is in response to your recent request for information on the Sacramento Metropolitan Air Quality Management District's suggestions for requiring lower emitting activities in the Bay Area. Attached is a list of suggested changes to the Bay Area's Rules and Regulations. This list incorporates exemption levels and emission limitations that are already in effect in the Sacramento area and for many of the suggestions are already in effect in most of the nonattainment areas in the state.

If you have any questions about the suggested rule improvements, you can contact my staff, Aleta Kennard, at (916) 874-4833. I look forward to working with you to improve the air quality in both the Sacramento and Bay Area.

Sincerely,

Norm Covell
Air Pollution Control Officer

Attachment

L/PCG/baaqmdreq

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www.airquality.org

SUGGESTED CHANGES TO BAAQMD RULES

Suggested changes to Permit Exemptions:

Lower the permitting threshold for boilers fired on natural gas from 10 mmBTU/hr to 1 mmBTU/hr

Lower the permitting threshold for bakery ovens from 10,000 lbs product per day and 10 mmBTU/hr to 1 mmBTU/hr

Lower the permitting threshold for space heating from 20 mmBTU/hr to 1 mmBTU/hr

Lower the permitting threshold for petroleum drycleaning from 700 gal/year to 1 gal/day

Suggested changes to New Source Review regulations:

Lower offset trigger levels for NOx and VOC from 50 TPY to 15 TPY and require the offsets to be obtained at a minimum offset ratio of 1.3:1 if the offsets are not at the same site

Suggested changes to Rule 8-6 Terminals/Bulk Plants

Require the loading racks at terminals to meet an emission limit of 0.08 lbs/1000 gallons

Suggested changes to Rule 8-16 Solvent Cleaning

Were there currently is not a VOC emission limit requirement, establish an emission limit at least as stringent as:

Material Type	VOC limit, g/l
General Wipe Cleaning	50
Medical Devices/Pharm	800
Automotive Coating Remover	200
Adhesive Sealant Remover	350
General cleaning of Graphic Arts	72
Water Based Architectural Coatings	50
Solvent Based Architectural Coatings	300 or enclosed gun cleaner

Lower the VOC emission limits for the following products:

Material Type	From g/l	To g/l
Electrical/Electronic Component	250 lbs/day	500
Flexographic Printing	800	100

Remove the one unit solvent cleaning exemption and require 50 g/l material for all cold solvent degreasing.

Suggested changes to Rule 8-19 Metal Parts Coating

Lower the VOC emission limits for the following products:

Material Type	From G/l	To G/l
High Performance Architectural	750	420
Pretreatment Wash Primer	780	420
Silicone Release	700	420
Extreme Performance	550	420

Suggested changes to Rule 8-20 Graphic Arts

Lower the rule exemption level from 175 lbs/month of actual VOC emissions to 60 lbs/month actual VOC emissions. Apply this same exemption level to screen printers.

Change the fountain solution VOC limit from 8% to 80 g/l of VOC.

Suggested changes to Rule 8-24 SOCMI

Require reactors, distillation columns, crystallizers and centrifuges to meet 85% control system efficiency and 90% control efficiency

Suggested changes to Rule 8-29 Aerospace Coatings

Lower the VOC emission limits for the following products:

Material Type	From g/l	To g/l
Adhesive Bonding	750	600
Electric Discharge	800	612
Radiation Effect	800	600
Fuel Tank	720	650
High Temperature	720	420
Stripper	400	300

Suggested changes to Rule 8-51 Adhesives

Lower the VOC emission limits for the following products:

Material Type	From g/l	To g/l
Other Plastic Welding	500	450
Contact Bond Specialty	400	250

Suggested changes to Rule 9-7 Boilers

Lower exemption level from 10 mmBTU/hr when fired on natural gas to 5 mmBTU/hr

Suggested changes to Rule 9-8 IC Engines

Lower exemption level from 250 Hp to 50 Hp

Establish emission limitations for diesel fired IC engines

Suggested changes to Rule 9-9 Gas Turbines

Remove the exemption for less than 4 MW and lower the hourly exemption from 877 hours to 200 hours

Suggested strategies for the Port of Oakland

The Port Oakland has implemented a number of pilot and demonstration programs to reduce emissions from ground support equipment operating at the Port and from trucks carrying cargo to and from the Port. We suggest that the Port move well past pilot and demonstration programs and implement sweeping operational policies.

- The Port should be encouraged through any and all means to reduce idling to an absolute minimum on all heavy equipment and trucks.
- All means should be employed to reduce operating emission of both NOx and PM from ground support equipment at the Port. Strategies to reduce emissions include repowering older equipment with newer engines, encouraging turn-over to modernize the fleet, purchasing low-emission or zero-emission equipment whenever new equipment is purchased and retrofitting existing equipment to operate at lower emission levels using emulsified fuel or exhaust retrofit technology. (Note: the first diesel retrofit technology that will reduce both NOx and PM is in the CARB Verification process now and should be available by the end of the year.)
- All means should be employed to reduce operating emissions of both NOx and PM from the trucks that carry cargo to and from the Port. Strategies to reduce emissions included repowering older vehicles with newer engines, encouraging turn-over to modernize the fleet, purchasing low-emission or zero-emission vehicles whenever new vehicles are purchased and retrofitting existing vehicles to operate at lower emission levels using emulsified fuel or exhaust retrofit technology.
- All ships in port should be encouraged to use shore power from the grid rather than on-board generators while docked.

Suggested strategies for the Marine Vessels

US EPA is currently working with international agencies to develop more stringent regulations for marine vessels. However, several associations representing local and state air pollution officers in California and the United States have petitioned EPA to make the proposed regulations much tougher. These associations include the California Air Pollution Control Officers Association (CAPCOA), the State and Territorial Air Pollution Prevention Association (STAPPA) and the Association of Local Air Pollution Control Officers (ALAPCO). The BAAQMD should go on record in support of these tougher standards which include:

- Establish and implement Tier 2 NOx standards that achieve emission reductions comparable to those being required of other mobile source categories.
- Require that all emission standards apply to both domestic and foreign flagged vessels.
- Establish maximum fuel sulfur content levels of no more than 15,000ppm, preferably much lower in the 500 to 5,000ppm range.

- Include measures to address hydrocarbon, carbon monoxide and particulate matter emissions.
- Evaluate retrofit strategies for potential reductions in emissions from existing vessels.

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Bicycle/Pedestrian/Transit			
1	Non-residential projects provide bicycle lockers and/or racks	C	0.5	
2	Provide an additional 20 percent of required Class I and Class II bicycle parking facilities	C	0.5	
3	Non-residential projects provide personal showers and lockers	C	0.5	
4	Bicycle storage (Class I) at apartment complexes or condos without garages	R	0.5	
5	Entire project is located within 1/2 mile of an existing Class I or Class II bike lane and provides a comparable bikeway connection to that existing facility	R, C, M	1.0	All facilities must be in place before 20% of the occupancy permits are granted or before 2005, whichever occurs first.
6	The project provides for pedestrian facilities and improvements such as overpasses and wider sidewalks	R, C, M	1.0	All facilities must be in place before 20% of the occupancy permits are granted or before 2005, whichever occurs first.
7	Bus service provides headways of 15 minutes or less for stops within 1/4 mile; project provides essential bus stop improvements (i.e., shelters, route information, benches, and lighting).	C	1.0	Maximum combined credit for measure #7 and #64 is 2.0
8	Provide a display case or kiosk displaying transportation information in a prominent area accessible to employees or residents	R, C, M	0.5	
9	High density residential, mixed, or retail/commercial uses within 1/4 mile of existing transit, linking with activity centers and other planned infrastructure	R, C, M	2.0 for light rail, 1.0 for bus only	Planned infrastructure must be in General Plan or Community Plan. Office uses considered under "Commercial Building Design" category. Maximum credit is 2.0 (light rail and bus points cannot be combined).
10	High density residential, mixed, or retail/commercial uses within 1/4 mile of planned transit, linking with activity centers and other planned infrastructure	R, C, M	1.0 for light rail, 0.5 for bus only	Planned transit must be in MTP or RT Masterplan; planned infrastructure must be in General Plan or Community Plan. Office uses considered under "Commercial Building Design" category. Maximum credit is 1.0 (light rail and bus points cannot be combined). Cannot get points for both this measure and measure #9.

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Parking			
11	Employee and/or customer paid parking system (no validations)	C	3.0	Must be coordinated with TMA.
12	Provide minimum amount of parking required	C, M	0.5	
13	Provide parking reduction: Office 25%, Medical office 8%, Commercial 5%, Industrial 10%,, Additional 10-20% if located along transit station (special review of parking is required)	C, M	2.5	
14	Provide-grass paving or reflective surface for unshaded parking lot areas, driveways, or fire lanes that reduce standard paving by 10% or more	R, C, M	0.5	
15	Increase parking lot shading by-20% over code	R, C, M	1.0	
16	Provide electric vehicle charging facilities	R, C, M	1.0	Details of facilities' provision must be coordinated with City or County of Sacramento and SMAQMD.
17	Provide preferential parking for carpool/vanpools	C	0.5	
18	Covered carpool/vanpool spaces near the entrance to the building(s)	C	0.5	
19	Loading and unloading facilities for transit and carpool/vanpool users	C	0.5	
20	Project is located within one mile of a park and ride lot operated by a transportation agency	R	0.5	
21	Provide a parking lot design that-includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances	C	0.5	

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res. C=Comm M=Mixed	Point Value	Comments
	Commercial Building Design			
22	Office FAR is 0.75 or greater within 1/4 mile of a planned transit stop	C, M	**1.5 for light rail, 0.8 for bus only**	Planned transit must be in MTP or RT Masterplan. Cannot get points for both this measure and the below measure.
23	Office FAR is 0.75 or greater within 1/4 mile of an existing transit stop	C, M	**2.5 for light rail, 1.5 for bus only**	
24	Setback distance is minimized between development and existing transit, bicycle, or pedestrian corridor	C, M	**1.0**	
25	Setback distance is minimized between development and planned transit, bicycle, or pedestrian corridor	C, M	**0.5**	Planned transit, bicycle or pedestrian corridor must be in MTP, RT Masterplan, General Plan, or Community Plan. Cannot get points for both this measure and the above measure.
	Residential Development			
26	Average residential density 7 d.u. per acre or greater	R	**1.5, 3.0, 4.5**	1.5 points for 7-14 du/acre, 3.0 points for 15-29 du/acre, 4.5 points for 30+ du/acre
27	Multiple and direct street routing (grid style)	R, C, M	**2.5**	Full credit for internal connectivity factor (CF) >= 0.70, and average 1/4 mile or less between external connections. [CF= # of intersections / (# of cul-de-sacs + intersections)]
28	Granny Flats - Have ancillary "granny units" (requires Special Development Permit but no Accessory Structure Use Permit)	R	**1.0**	

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Mixed Use			
29	Development of projects predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site. A "single site" may include contiguous properites.	M	3.0	Cannot get points for both this measure and any "Convenience Services" measures. Also mutually exclusive with #30.
30	Mixed use - Have at least 3 of the following on site and/or within 1/4 mile: Residential Development, Retail Development, Personal Services, Open Space, Office	R, C, M	1.0	Cannot get points for both this measure and any "Convenience Services" measures. Also mutually exclusive with #29.
31	Neighborhood serving as focal point with parks, school and civic uses within 1/4 mile	R, M	0.5	
32	Separate, safe, and convenient bicycle and pedestrian paths connecting residential, commercial, and office uses	R, C, M	2.0	
33	The project provides a development pattern that eliminates physical barriers such as walls, berms, landscaping, and slopes between residential and non-residential uses that impede-bicycle or pedestrian circulation	C, M	1.0	
	Convenience Services			
34	Day care facilities are provided on site	R, C, M	1.0	
35	Restaurant or cafeteria on site or within 1/4 mile of site	R, C, M	0.2	
36	Bank or ATM on site or within 1/4 mile of site	R, C, M	0.2	
37	Dry cleaners on site or within 1/4 mile of site	R, C, M	0.2	
38	Post office on site or within 1/4 mile of site	R, C, M	0.2	
39	Entertainment (movie/video) on site or within 1/4 mile of site	R, C, M	0.2	
40	Recreation facility/fitness center on site or within 1/4 mile of site	R, C, M	0.2	

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Building Component Measures			
41	Install lowest emitting commercially available fireplace	R	1.0	
42	Install lowest emitting commercially available furnace	R, C, M	0.5	
43	Install ozone destruction catalyst on air conditioning systems, in consultation with SMAQMD	R, C, M	2.5	
44	Install Energy Star labeled roof materials	C	0.5	
45	Provide fiber optic wiring and connections	R, C, M	0.5	
46	Provide T1 wiring and connections	R, C, M	0.5	
47	Install roof photovoltaic energy systems	R	0.5	2.5 if offered as a standard feature on all homes
48	Comply with SMUD Advantage (Tier II) energy standards	R	0.5	
49	Comply with SMUD Advantage Plus (Tier III) or EPA/DOE Energy Star Home energy standards	R	1.0	Cannot get points for both this measure and the above measure.
50	Orient 75 or more percent of homes and/or buildings to face either north or south (within 30 degrees of N/S), and include shading masterplan	R	0.5	Moved from Commercial Building Design and Residential Development sections.

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	TDM and Misc. Measures			
51	Include permanent TMA membership and funding requirement. Funding to be provided by Community Facilities District or County Service Area or other non-revocable funding mechanism.	R, C, M	2.5	
52	Carpool Matching Assistance	C	0.2	Must be coordinated with TMA.
53	Provide financial incentives to carpoolers for vehicle tune-up or maintenance	R, C, M	0.2	Must be coordinated with TMA.
54	Provide Flextime for non-SOV commuters	C	0.2	Must be coordinated with TMA.
55	Provide Guaranteed Ride Home	C	0.2	Must be coordinated with TMA.
56	Implement compressed work week schedules	C	0.2	Must be coordinated with TMA.
57	Provide on-site Transportation Coordinator	R, C, M	0.2	Must be coordinated with TMA.
58	Contract only with commercial landscapers who operate with equipment that complies with the most recent California Air Resources Board certification standards, or standards adopted no more than three years prior to date of use.	C	2.0	
59	Make physical development consistent with requirements for neighborhood electric vehicles	R	1.5	
60	Install videoconferencing system	C, M	0.5	
61	Promote-teleworking and implement an employee-telework policy	C, M	1.0	
62	Provide free-access telework terminals in multi-family projects	R	1.0	At least one terminal per 100 apartments
63	Implement Clean Air Business Practices such as using low-emission delivery vehicles, contract with alternative-fuel waste hauling companies, etc., in consultation with-SMAQMD	C	tbd	
64	Provide electric shuttle to transit stops	R, C, M	2.0	Maximum combined credit for measure #7 and #64 is 2.0
65	Provide-a complimentary cordless electric lawnmower to each residential buyer	R	2.0	
66	Provide an opportunity to receive either a complimentary bicycle or electric bicycle retrofit kit to each residential buyer	R	0.5	
67	Transit pass subsidy and/or commute alternative allowance	C	1.5	Point value based on 100% subsidy.

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Innovative Strategies			
99	Other proposed strategies, in consultation with City or County of Sacramento and SMAQMD	R, C, M	tbd	

STAFF'S PROPOSED CHANGES TO PROPOSED REGULATION ORDER

OZONE TRANSPORT MITIGATION REGULATIONS

MAY 22, 2003

The ARB staff is proposing the following changes to the proposed amendments to the transport mitigation regulations that were included in the Staff Report (ISOR). The ~~strikeout~~ indicates deletions, and the underline indicates additions.

70600. Emission Control Requirements

(a) Definitions

Section (a)(1) is amended to read:

(1) "~~A~~all ~~F~~feasible ~~M~~measures" means air pollution control measures, including but not limited to emissions standards and limitations, applicable to all air pollution sources categories under a district's authority that are based on ~~achieve~~ the maximum ~~possible~~ degree of reductions ~~of~~ achievable for emissions of ozone precursors, taking into account technological, social, environmental, energy and economic~~, and energy~~ factors, including cost-effectiveness.

The substitution of sources for source categories is intended to clarify the intent of ARB staff. In the Staff Report, the ARB staff stated its intent that the terminology "all air pollution sources under a district's authority" be interpreted as placing emphasis on a district's evaluation of source categories, not every source within a particular category.

Also, minor changes have been made to the definition to clarify that cost-effectiveness is part of the economic factors that upwind districts would consider when implementing the "all feasible measures" requirement.. Cost-effectiveness of potential measures is considered by air districts, as part of their ongoing implementation of the California Clean Air Act, and is required by section 40926 of the California Health and Safety Code.

Section (a)(2) is amended to reflect non-substantive edits and reads:

(2) "~~O~~ozone precursors" means oxides of nitrogen and reactive organic gases.

(b) Specific Requirements

Section (b) is amended to read:

(b) Specific Requirements

Districts within the areas of origin of transported air pollutants, as identified in section 70500(c), shall include sufficient emission control measures in their attainment plans for ozone adopted pursuant to part 3, ~~C~~chapter 10 (commencing with section 40910) of division 26 of the Health and Safety Code, ~~Part 3, Division 26, beginning with section 40910~~, to mitigate the impact of pollution sources within their jurisdictions on ozone concentrations in downwind areas commensurate with the level of contribution. An upwind district shall comply with the transport mitigation planning and implementation requirements set forth in this section regardless of their attainment status, unless the upwind district complies with the requirements of section 70601. At a minimum, the attainment/transport mitigation plans for districts within the air basins or areas specified below shall conform to the following requirements:

The term "commensurate with level of contribution" was added for consistency with State law. Section 39610 of the Health and Safety Code directs the ARB to establish mitigation requirements commensurate with the degree of contribution from the upwind district.

Language was added to clarify the intent of the original proposal that upwind districts are subject to the mitigation requirements regardless of their attainment status. State law specifically requires upwind districts to plan for attainment in both their own district and that of the downwind districts, and to also at a minimum, include in their attainment plan all of the mitigation measures required by ARB. The new language "attainment/mitigation plans" clarifies that upwind districts, regardless of attainment status, are responsible for compliance with transport mitigation requirements in their triennial update to attainment plans. That is attainment plans must include a transport mitigation element.

No changes were made to (b)(1), (b)(2), (b)(3), (b)(4), and (b)(5).

(c) Implementation

The following implementation process has been deleted, as this process is no longer used in the modified regulation:

~~(1) By November 1 of each year, each district subject to the requirements set forth in section 70600(b), shall, in consultation with the downwind districts, review the list of control measures identified in its most recently approved attainment plan and make an initial finding as to whether the list of control measures meets the requirements of section 70600(b). Once the district has made the initial finding, the district shall:~~

~~(A) issue a public notice describing the basis of the initial finding and provide for public comment on the initial finding for a period of at least 30 days;~~

~~(B) review the public comments and make a final finding;~~

~~(C) by December 31 of each year, submit, concurrent with the submittal of a progress report to the state board required under Health and Safety Code section 40924(a), a final finding as to whether the list of control measures continues to include the measures required by section 70600(b) and, if not, a listing of measures that will be added;~~

~~(2) Within 60 days of submittal, the state board shall review the final finding and public comments and notify the district if additional measures must be added to the list of control measures.~~

~~(3) Within 180 days of receiving notification by the state board, the district shall, as appropriate, update the rulemaking calendar required pursuant to Health and Safety Code section 40923.~~

The following implementation process has been added to reflect new language in the modified regulation:

(1) Prior to revising its attainment/transport mitigation plan pursuant to section 40925 of the Health and Safety Code, each district subject to the requirements set forth in section 70600(b) shall, in consultation with the downwind districts, review the list of control measures in its most recently approved attainment plan and make a finding as to whether the list of control measures meets the requirements of section 70600(b). The district shall include the finding in its proposed triennial plan revision.

(2) If the ARB determines that a district's plan does not satisfy the requirements of section 40912 of the Health and Safety Code and this regulation, the Board and the district shall follow the procedures specified in section 41503.2 of the Health and Safety Code for addressing plan deficiencies.

This language replaces requirements for annual review of all feasible measures, and adds new language that aligns implementation with the triennial plan review process. This change was made in response to comments that an annual review would require excessive district resources and that formalizing review from a transport perspective every three years would achieve comparable results.

Note: Authority cited: Sections 39600, 39601 and 39610(b), Health and Safety Code. References: Sections 39610, 40912, 40913, 40921, 40924, 40925, and 41503, Health and Safety Code.

70601. Procedure for Limiting the Application of All Feasible Measures and Best Available Retrofit Control Technology.

No changes to (a), (b), and (d)

Section (c) is amended to read:

(c) the district is implementing an alternative emissions reduction strategy pursuant to section 40914 of the Health and Safety Code and demonstrates, based on the best available scientific evidence, including but not limited to air quality modeling analyses, that the strategy will be at least as effective and as expeditious as the transport mitigation requirements specified in section 70600; or

Previous language implied that the use of the best available scientific evidence including air quality modeling analyses was allowed. This language clarifies this intent.

Note: Authority cited: Sections 39600, 39601, 39610(b), Health and Safety Code. References cited: Sections 39610, 40912, 40913, 40921, 40924, 40925, and 41503, Health and Safety Code.

All Measures: State-Fed & Bay Area - List for F

Control Measure	Strategy Title	Description	VOC Potential Emission Reductions tpd	NOx Potential Emission Reductions tpd	Imple-mentation Date	Implementing Agency
B-1	Petroleum Refineries	Require controls on wastewater treatment equivalent to the South Coast AQMD on process drains, manhole covers, sewer lines, and recovered oil storage vessels.			2007	BAAQMD
B-1	Petroleum Refineries	Require controls on flare emissions equivalent to the San Joaquin and Santa Barbara air districts	n/a		2007	BAAQMD
B-1	Petroleum Refineries	Require controls on fugitive emissions that incorporate the more stringent requirements currently being implemented in the South Coast and Santa Barbara air districts.			2007	BAAQMD
B-1	Petroleum Refineries	Require controls on storage tanks including "No visible gap" criteria for external floating roof, external floating roof tanks with domed roofs, and fixed roof tanks must be vented to 95% efficient control device and all fittings vapor tight.			2007	BAAQMD
B-1	Petroleum Refineries	Reduce the Nox emission limit for boilers and process heaters used at refineries and lower the applicability limit for gaseous fuels to 5 mmbtu/hr.		1.27	2007	BAAQMD
D1	Semiconductor Manufacturing	Require the use of advanced low VOC solvents and photoresist solutions and/or the use of an emission control device that will capture and abate 95% of the uncontrolled emissions.			2007	BAAQMD
D12	Graphic Arts	Lower VOC limits for adhesives, fountain solutions and cleaning operations.			2005	BAAQMD
D14	Other Gas Turbines	Require a lower Nox emission limit for gas turbines which is comparable to SCAQMD and SJUAPCD.		0.69	2010	BAAQMD
D16	Boilers, Steam Generators, Process/Space Heaters	Require boilers 5-20 mmbtu/hr to meet 15 ppm of NOx and boilers greater than 20 mmbtu/hr to meet 9 ppm of NOx.		0.66	2007	BAAQMD
D19	Electric Utilities	Require lower Nox limit for boilers, turbines, and engines used at electric utilities.		2.27	2010	BAAQMD
D27	Fuel Handling	Option 1 - Implement an incentive program to accelerate replacement of gasoline cans.			2005	BAAQMD
D27	Fuel Handling	Option 2 - Require participants in the lawnmower exchange program to surrender old gas cans.			2005	BAAQMD
D27	Fuel Handling	Option 3 - Provide free replacement gas cans to commercial businesses.			2005	BAAQMD
D3	Adhesives and Sealants	Lower VOC limits for solvent based adhesives and sealants.			2007	BAAQMD
D7	Degreasing/Solvent Cleaning	Reduce VOC limit for cleaning materials to 25 g/l to match South Coast limit.			2007	BAAQMD
D8	Thinning, Surface Prep and Cleanup	Amend surface prep and cleanup rules in Placer and Yolo-Solano to capture all unregulated cleaning operations. Adopt solvent cleaning rules in Feather River and El Dorado similar to Sacramento Rule 466.			2005	BAAQMD
D9	Unspecified	Lower VOC limits for coatings not otherwise captured by a specific coating rule.	n/a		2005	BAAQMD
LU-2A	Indirect Source Rule for New Land Use/Transportation Development	Implement an Indirect Source Rule to mitigate the construction impacts of new projects where emissions exceed established District Thresholds of Significance.		4.65	2005	BAAQMD
LU-2B	Indirect Source Rule for New Land Use/Transportation Development	Implement an Indirect Source Rule to mitigate the operational impacts of new projects where emissions exceed established District Thresholds of Significance.		8.45	2005	BAAQMD
OFMS-14/ OFMS7	Agricultural Engines	Incentive to replace diesel agricultural engines with electric at normal rebuild times.		0.02	2005	BAAQMD
OFMS-14/ SN-48	Agricultural Engines	Incentive to implement a mandatory program for early replacement of diesel ag engines.		0.32	2005	BAAQMD

All Measures: State-Fed & Bay Area - List for February 18, 2004

OFMS37	Replace standard gasoline powered mowers with electric ones	Implement an incentive program to replace gasoline-powered mowers with electric mowers.		0.001	2005	BAAQMD
OFMS73	Establish clean air labeling, energy conservation and public education programs	Public education/outreach measure consisting of clean air vehicle labeling and energy conservation.		0.1632	2005	BAAQMD
OFMS-77	Ground Support Equipment	Reduce GSE and ground access vehicles with fleet turnover and replacement with ZEVs, repower, retrofit, and replacement with equipment that meet lower emission standards.		0.311	2005	BAAQMD
ONMS-375/ ONMS-86	Fleet Rule	Require light-duty, medium-duty, and heavy-duty public fleets and those private entities contracted by a public agency to meet a combination of fleet average emissions reduction and purchasing requirements that would lead to lower emissions.		4.6	2007	BAAQMD
ONMS-52 (a. & b)	Heavy-duty Diesel Vehicle Retrofits	Sacramento Emergency Clean Air Transportation (SECAT) and Carl Moyer programs in that it provides incentives aimed at reducing oxides of nitrogen (NOx) emissions.		1.798	2007	BAAQMD
ONMS-52/ ONMS-374; ONMS-52/ ONMS-65; ONMS-52/ ONMS-255; ONMS-52/ MISC-31	Heavy-Duty Diesel Engine Repowers; Commercial vehicle fleet modernization; Dual Fuel Retrofit Technology; Emulsified Diesel/GTL	Sacramento Emergency Clean Air Transportation (SECAT) and Carl Moyer programs in that it provides incentives aimed at reducing oxides of nitrogen (NOx) emissions.		2.311	2005	BAAQMD
ONMS-61/ONMS-62	Clean Private Fleet Requirements	Require light-duty, medium-duty, and heavy-duty private fleets to meet a combination of fleet average emissions reduction and purchasing requirements leading to lower NOx and other pollutant emissions.		6.3	2007	BAAQMD
ONMS-69	Free Gas Caps	Provide free gas caps to light duty passenger and truck owners during smog check.			2005	BAAQMD
SN-111A	Large Water Heaters and Small Boilers	Establish low NOx limits for all new boilers and water heaters between 75,000 and 1,000,000 Btu/hr.		0.171	2007	BAAQMD
SN-58/SN-57	Oil and Gas Fugitive Emissions	Reduce the leak threshold, increase the inspection frequency, and reduce the repair time for leaking fugitive components.			2005	BAAQMD
SN-59	Asphaltic Concrete Production	Establish NOx limits for combustion units consistent with low NOx burners and FGR. Require capture and control of fugitive ROG emissions.		0.017	2007	BAAQMD
TCM-159	Expand "Spare The Air" Program	Limit activity on Spare the Air days or days when an ozone exceedance has been forecast.		2.68	2005	BAAQMD
TCM-159/ OFMS13	Voluntary Program to reduce pleasure craft use	Limit activity on Spare the Air days or days when an ozone exceedance has been forecast.		0.111	2005	BAAQMD
LU-4	BAY AREA Community Design Program	Address a wide range of concerns regarding current development patterns that are dominated by "urban sprawl". Level 2. Local Land Use Change plus Regional Accessibility		0.12	2007	BAAQMD/ County, City, Municipal bodies/ Transit agencies/ Regional Transportation Planning Agency / MPO
OFMS-52	Construction equipment idling	Limit idling on construction equipment.		0.42	2005	BAAQMD/ City/ County/ CARB
ONMS 64	Catalytic converter replacement program	Voluntary (incentivized) replacement of catalysts and oxygen sensors on older passenger cars and light trucks.		2.338	2007	BAAQMD/Dept of Consumer Affairs
TCM-174	Work-Related Trip Reduction Program	Enhance the existing Regional Ridesharing Program that is currently part of the RTP Track 1 program.		0.333	2005	BAAQMD/TMAs

All Measures: State-Fed & Bay Area - List for February 18, 2004

CONS 1	Set new product limits for 2006	Limit VOC content of products and/or stipulate less reactive VOCs for graffiti removers, multipurpose solvents, electronic cleaners, adhesive removers, toilet/urinal care products, nail polish hairstyling aids, other cleaning products, special purpose adhesives, and footwear care products.			2007	CARB
FVR 1	Increase recovery of fuel vapors from aboveground storage tanks	Adopt enhanced vapor recovery requirements for aboveground storage tanks.			2007	CARB
FVR 2	Recover fuel vapors from gasoline dispensing at marinas	Adopt Phase II Vapor Recovery requirements for marinas.			2007	CARB
FVR 3	Reduce fuel permeation through gasoline dispenser hoses	Require gasoline dispenser hoses to meet the gasoline permeation rate requirements of SAE Standard J1527.			2007	CARB
LT/MED-DUTY 1	Replace or upgrade emission control systems on existing passenger vehicles-Pilot Program	Require mandatory replacement of catalysts, oxygen sensors and evaporative emission canisters on older passenger cars and light trucks.		23.375	2007	CARB
LT/MED-DUTY 2	Improve Smog Check to reduce emission from existing passenger & cargo vehicles	Increase the repair cost ceiling and annual, or at least biennial, adjustments from now on.		1.86	2005	CARB
MARINE 1	Pursue approaches to clean-up the existing harbor craft fleet-cleaner fuels and engines	Reduce emissions of NOx and HC from existing vessels through options including retrofit controls, repowering, and the use of cleaner fuels.		0.8476	2007	CARB
MARINE 2	Pursue approaches to reduce land-based port emissions-alternative fuels, cleaner engines, retrofit controls, electrification, education programs, operational controls	Reduce emissions of ROG, NOx and PM10 from land based port related combustion sources through using cleaner engines, alternative fuels, retrofit controls, electrification, education programs and operational controls.		0.034	2005	CARB
OFF-RD CI 1/OFF-RD CI 2	Clean up the existing heavy-duty off-road equipment fleet (compression ignition engines)-Retrofit Controls	Require emission reduction retrofit and aftertreatment devices to be installed on off-road heavy-duty (> 50 Hp) Diesel (HDD) equipment through an incentive program or in-use emission control rule. Require HDD off-road vehicles and equipment to be registered and inspected to detect improper maintenance/tampering.		3.081	2007	CARB
OFF-RD LSI 1/ OFMS56	Set lower emission standards for new off-road gas engines (Spark ignited engines 25 hp and greater)	Align California standards with the more stringent Tier 2 emission standards promulgated by EPA for these engines.		0.063	2007	CARB
OFF-RD LSI 2	Pursue approaches to clean up the existing off-road gas equipment fleet (spark-ignition engines 25 hp and greater)-Retrofit Controls	Require retrofit controls/more stringent emission standards from large spark-ignition (LSI) engines over 25 horsepower used in off-road equipment.		0.627	2007	CARB
OFMS 75	Tighter emission standards for pleasure craft / State/Federal	Set new standards for marine craft similar in stringency to EPA's standards for HC+NOx but roll in more quickly.			2005	CARB
ONMS 345	Halt Rolling Exemption in Smog Check Program	Halt the 30-year rolling exemption and include pre-1974 vehicles in the Smog Check Program		0.433	2005	CARB

All Measures: State-Fed & Bay Area - List for February 18, 2004

ON-RD HVY DUTY 1	Augment truck and Bus Inspections with Community-based Inspections	Augment existing Heavy-Duty Inspection Program at weigh stations with inspections of heavy-duty vehicles for evidence of improper maintenance/tampering using a "snap idle" test in "mixed-use communities" (residential/commercial/industrial areas).			2005	CARB
ON-RD HVY DUTY 2	Capture and control vapors from gasoline cargo tankers	Require the vapor connections on fuel cargo tankers to be fitted with closure devices such as poppeted adapters/manually operated valves, and product/vapor recovery hoses to have poppeted caps/adapters.			2007	CARB
ON-RD HVY DUTY 3/ ONMS-45/ ONMS-42	Heavy-duty Diesel Vehicle Idling Restriction; Reflash & CARB Commitments	Restrict idling; implement idling reduction devices (GVWR > 14,000 lbs); Heavy-duty Engine Recalibration (reflash); ARB SIP Committed reductions		9.738	2005	CARB
SMALL OFF-RD 1	Set lower emissions standards for new handheld lawn and garden equipment (SI engines under 25 hp)	Establish new exhaust emission standards and evaporative emission standards for 2-stroke handheld engines.		0.06	2010	CARB
TCM-159/ OFMS13	Ban 2 -Strokes Pleasure craft	Limit activity on Spare the Air days or days when an ozone exceedance has been forecast.		1.252	2005	CARB
ONMS-60	Increase to 100% Testing Only	Additional option is to include inspection of evaporative emissions as well and require repairs for emission above a certain threshold.			2005	Department of Consumer Affairs, Bureau of Automotive Repair with cooperation of the Department of Motor Vehicles.
			Total	47.3142	73.3948	

State-Fed Measures (Bay Area) - List for February 18, 2004

Control Measure	Strategy Title	Description	VOC Potential Emission Reductions (tons/day)	NOx Potential Emission Reductions (tons/day)	Implementation Date	Implementing Agency
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OFF-RD LSI 1/ OFMS56	Set lower emission standards for new off-road gas engines (Spark ignited engines 25 hp and greater)	Align California standards with the more stringent Tier 2 emission standards promulgated by EPA for these engines.		0.063	2007	CARB
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ONMS-60	Increase to 100% Testing Only	Additional option is to include inspection of evaporative emissions as well and require repairs for emission above a certain threshold.			2005	Department of Consumer Affairs, Bureau of Automotive Repair with cooperation of the Department of Motor Vehicles.
		Total	29.7934	41.3706		

BAAQMD Measures - List for February 18, 2004

Control Measure	Strategy Title	Description	VOC Potential Emission Reductions (tons/day)	NOx Potential Emission Reductions (tons/day)	Imple-mentation Date	Implementing Agency
B-1	Petroleum Refineries	Require controls on wastewater treatment equivalent to the South Coast AQMD on process drains, manhole covers, sewer lines, and recovered oil storage vessels.			2007	BAAQMD
B-1	Petroleum Refineries	Require controls on flare emissions equivalent to the San Joaquin and Santa Barbara air districts	n/a		2007	BAAQMD
B-1	Petroleum Refineries	Require controls on fugitive emissions that incorporate the more stringent requirements currently being implemented in the South Coast and Santa Barbara air districts.			2007	BAAQMD
B-1	Petroleum Refineries	Require controls on storage tanks including "No visible gap" criteria for external floating roof, external floating roof tanks with domed roofs, and fixed roof tanks must be vented to 95% efficient control device and all fittings vapor tight.			2007	BAAQMD
B-1	Petroleum Refineries	Reduce the Nox emission limit for boilers and process heaters used at refineries and lower the applicability limit for gaseous fuels to 5 mmbtu/hr.		1.27	2007	BAAQMD
D1	Semiconductor Manufacturing	Require the use of advanced low VOC solvents and photoresist solutions and/or the use of an emission control device that will capture and abate 95% of the uncontrolled emissions.			2007	BAAQMD
D12	Graphic Arts	Lower VOC limits for adhesives, fountain solutions and cleaning operations.			2005	BAAQMD
D14	Other Gas Turbines	Require a lower Nox emission limit for gas turbines which is comparable to SCAQMD and SJUAPCD.		0.69	2010	BAAQMD
D16	Boilers, Steam Generators, Process/Space Heaters	Require boilers 5-20 mmbtu/hr to meet 15 ppm of NOx and boilers greater than 20 mmbtu/hr to meet 9 ppm of NOx.		0.68	2007	BAAQMD
D19	Electric Utilities	Require lower Nox limit for boilers, turbines, and engines used at electric utilities.		2.27	2010	BAAQMD
D27	Fuel Handling	Option 1 - Implement an incentive program to accelerate replacement of gasoline cans.			2005	BAAQMD
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LU-2B	Indirect Source Rule for New Land Use/Transportation Development	Implement an Indirect Source Rule to mitigate the **operational** impacts of new projects where emissions exceed established District Thresholds of Significance.		0.45	2005	BAAQMD
OFMS-14/ OFMS7	Agricultural Engines	Incentive to replace diesel agricultural engines with electric at normal rebuild times.		0.02	2005	BAAQMD
OFMS-14/ SN-48	Agricultural Engines	Incentive to implement a mandatory program for early replacement of diesel ag engines.		0.32	2005	BAAQMD
OFMS37	Replace standard gasoline powered mowers with electric ones	Implement an incentive program to replace gasoline-powered mowers with electric mowers.		0.001	2005	BAAQMD

BAAQMD Measures - List for February 18, 2004

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Summary of Control Strategies for San Francisco Bay Area Federal Nonattainment Area

Presented to BAAQMD & SMAQMD Meeting, February 18, 2004

Raymond K. Schubert
Michael D. Jackson
TIAX LLC

TIAX LLC
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Cupertino, California 95014

Reference: D0200

1. Bay Area Methodology
2. Overview of Analysis
3. Effectiveness of Control Measures
4. Summary

Agenda

1. Bay Area Methodology
2. Overview of Analysis
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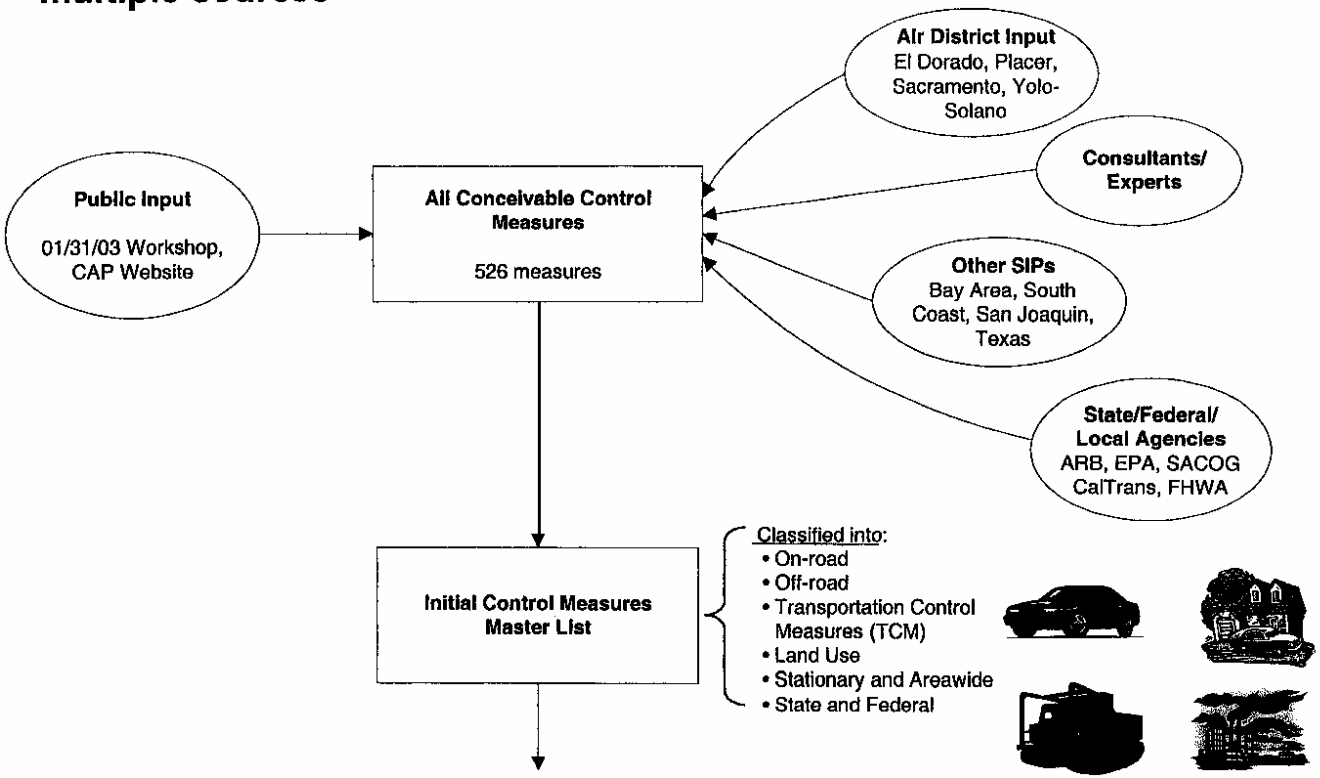
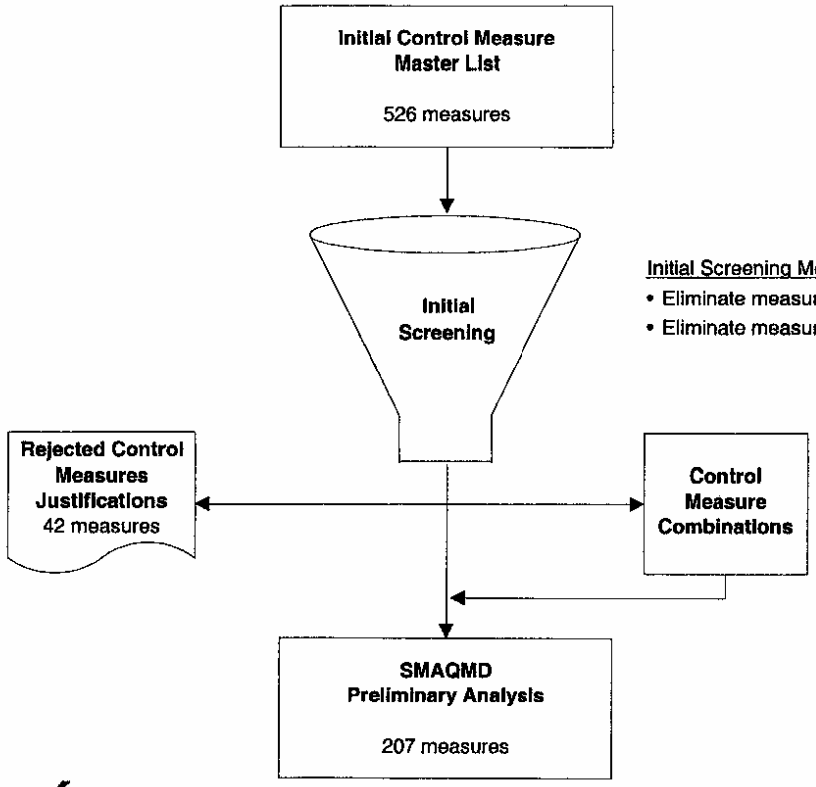
The initial control measure master list is a compilation of measures from multiple sources



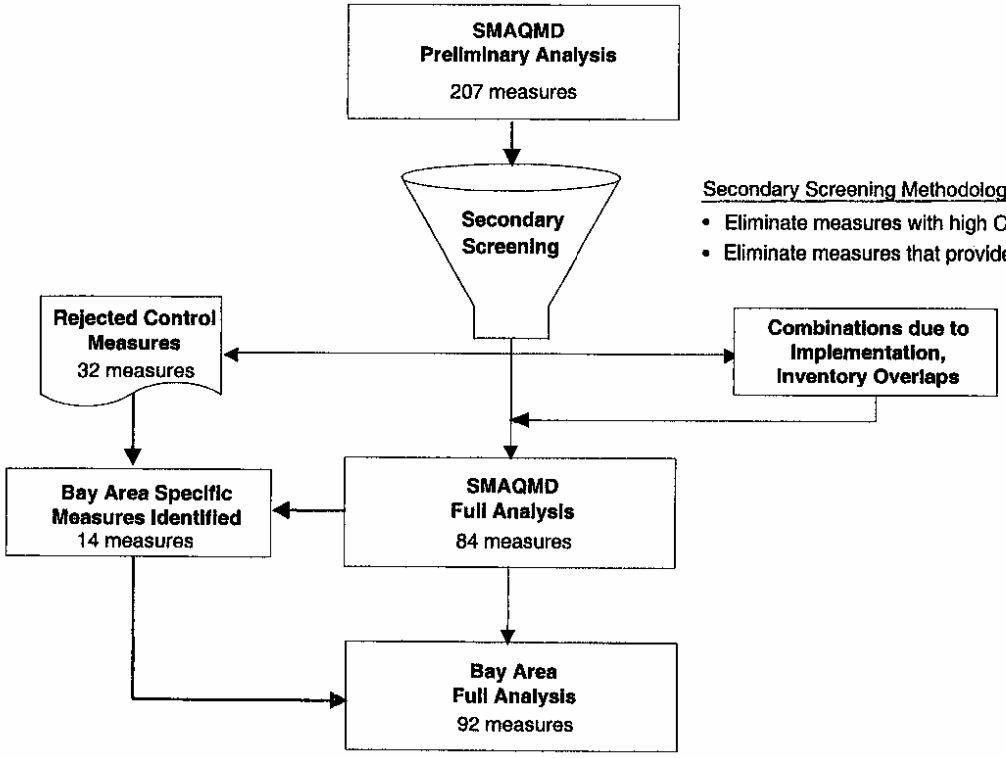
The initial control measure list was reduced by performing a screening and combining similar and complementary measures



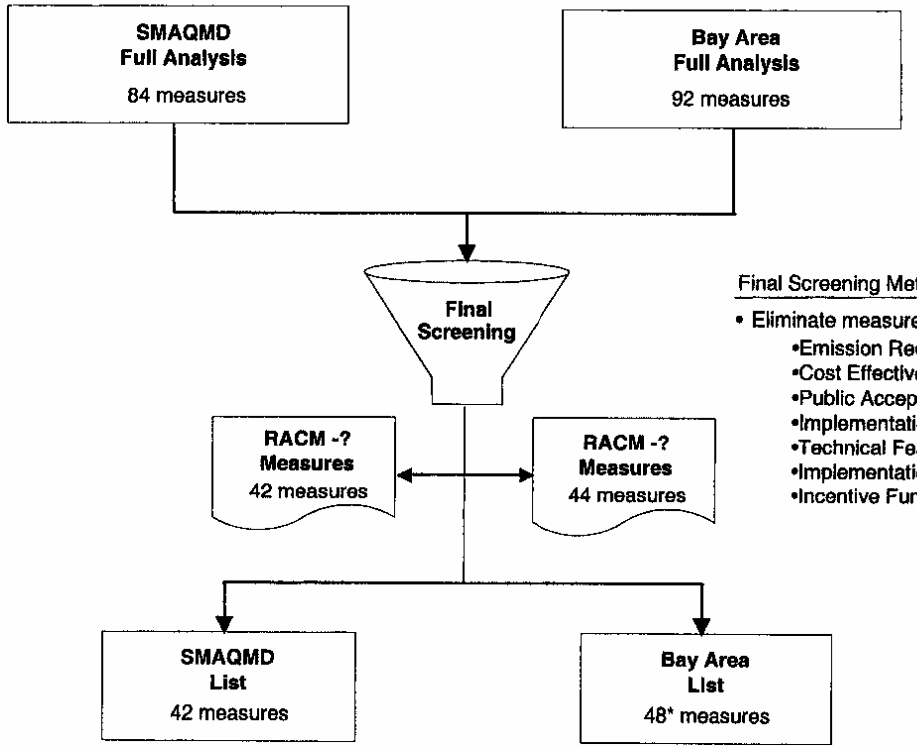
Initial Screening Methodology :

- Eliminate measures that are not technically feasible
- Eliminate measures that do not provide emission benefits

The Sacramento preliminary analyses were evaluated to identify measures for full analysis, for both Sacramento and the Bay Area.



Finally, the full analysis measures were screened based on a Feasibility Analysis to identify potentially viable measures.



Final Screening Methodology :

- Eliminate measures based on Feasibility Analysis
  - •Emission Reductions
  - •Cost Effectiveness
  - •Public Acceptability
  - •Implementation/Enforcement
  - •Technical Feasibility
  - •Implementation in 2008 Timeframe
  - •Incentive Funding Availability

BA hasn't made that determination

* - Some incentive measures are not funded

Sacramento control measure master list used to identify measures for Bay Area analysis

- 207 Sacramento preliminary control measure analysis were performed
  - these measures were available to the BAAQMD on the web
- Secondary screening identified measures for full analysis
  - 84 measures in Sacramento
  - 92 measures in the Bay Area
- The analysis effort was divided into three levels of analyses:
  - Bay area specific -- different analysis because of implementation/inventory
  - "translation" of control measure from SFNA inventory to Bay Area inventory
  - State/Federal measures were completed to identify emission reductions based on proposed ARB measures

Sacramento control measure master list used to identify measures for Bay Area analysis

- TIAX, Sierra Research, and Jones & Stokes teamed on this effort and divided the work:

Analysis Type	Onroad / TCM / Land Use	Offroad	Stationary / Area Wide	Total Measures
Translation	21	11	28	60
Bay Area Specifc	4	2	8	14
State/Fed.	5	10	3	18
Total	30	23	39	92

Sierra Research

- Some measures were identified as having state jurisdiction during the analysis and are classified as such, e.g. Tighter emission standards for pleasure craft (OFMS75).
- Final control measure list was developed based on RACM feasibility in the 2008 timeframe.

Agenda

1. Bay Area Methodology
2. Overview of Analysis
3. Effectiveness of Control Measures
4. Summary

All analysis have the same elements

- Described control measure
- Identified inventory EIC categories
  - Used Planning Inventory
  - Selected 2005 or 2007, based on implementation date, and 2010
  - Used full Emission Inventory Codes
- Estimated emission reductions for control measure
  - Tons per day and percent effectiveness by each individual emission inventory code
  - Calculated cumulative effects for 2010
- Determined implementation timeframe and estimated cost effectiveness
  - 2005 or 2007 and 2010
- Evaluated control measures on U.S. EPA Criteria
  - Real, quantifiable, permanent, enforceable, surplus

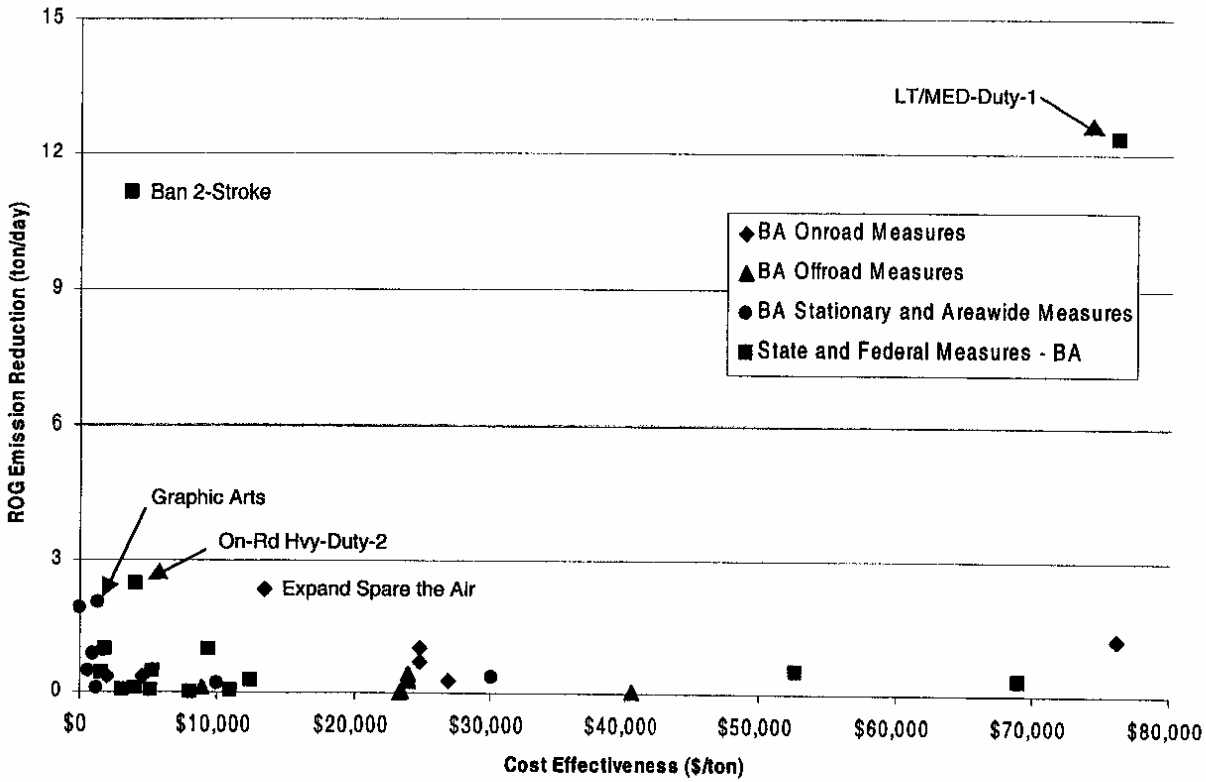
All analysis have the same elements (continued)

- Identified implementation agency and needed resources and authority
- Discussed overall feasibility
  - Emission reduction cost effectiveness, public acceptability, implementation/ enforcement, technical feasibility
- Cited resources and references
- Evaluators made preliminary RACM conclusions
- Jones & Stokes performed preliminary environmental impact in CEQA format
- Calculations are provided in back-up spreadsheets (Excel)

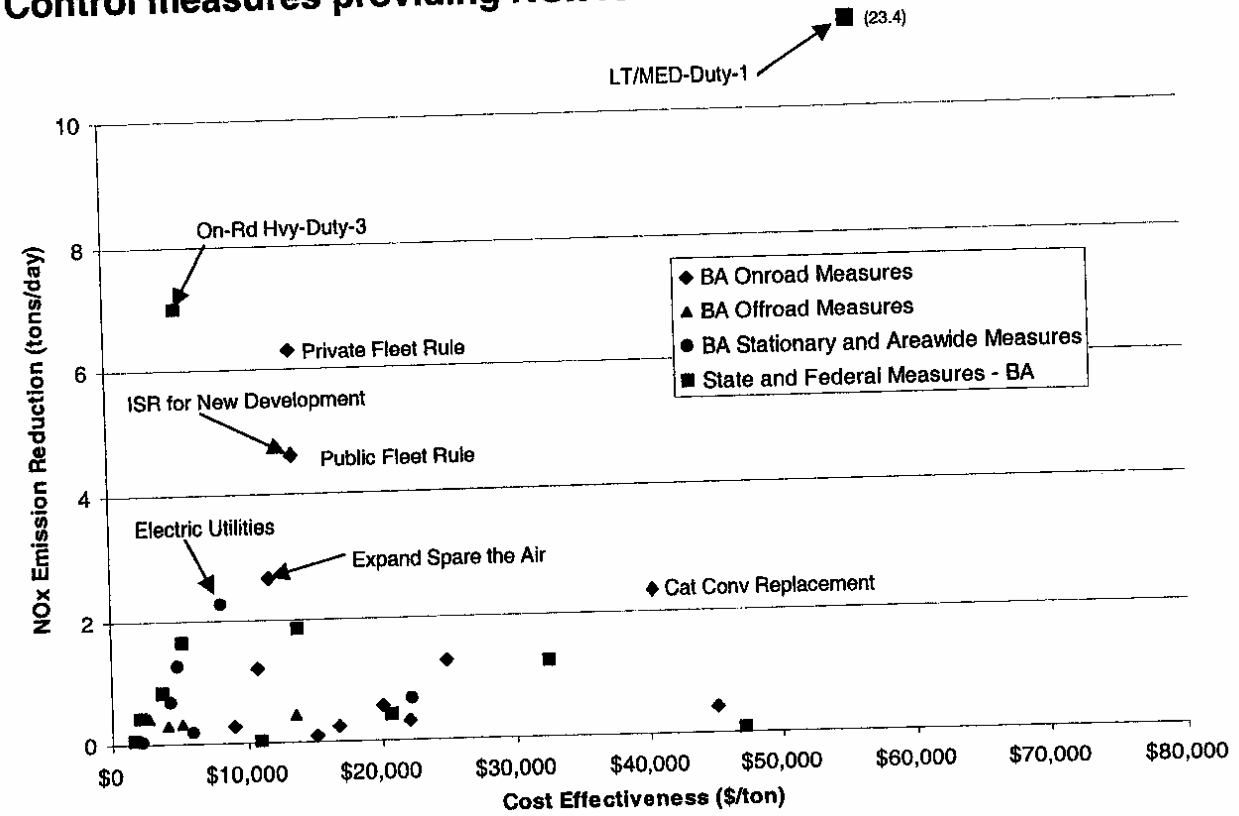
Agenda

1. Bay Area Methodology
2. Overview of Analysis
3. Effectiveness of Control Measures
4. Summary

Control measures providing ROG reductions



Control measures providing NOx reductions



INCENTIVE FUNDING

Funding Programs (Revenue Sources)

DMV	$20,000,000

Programs to Fund (Based on Funding Revisions and Cost Effectiveness)

Enhanced Spare the Air		$ 490,567 - $527,088
Fleet Modernization	(2005)	$ 12,493,415
EGRT Retrofit	(2007)	$ 12,145,740
Heavy-Duty Repowers		$ 6,952,371 - $ 7,281,303

New Programs to Fund (Based Cost Effectiveness)

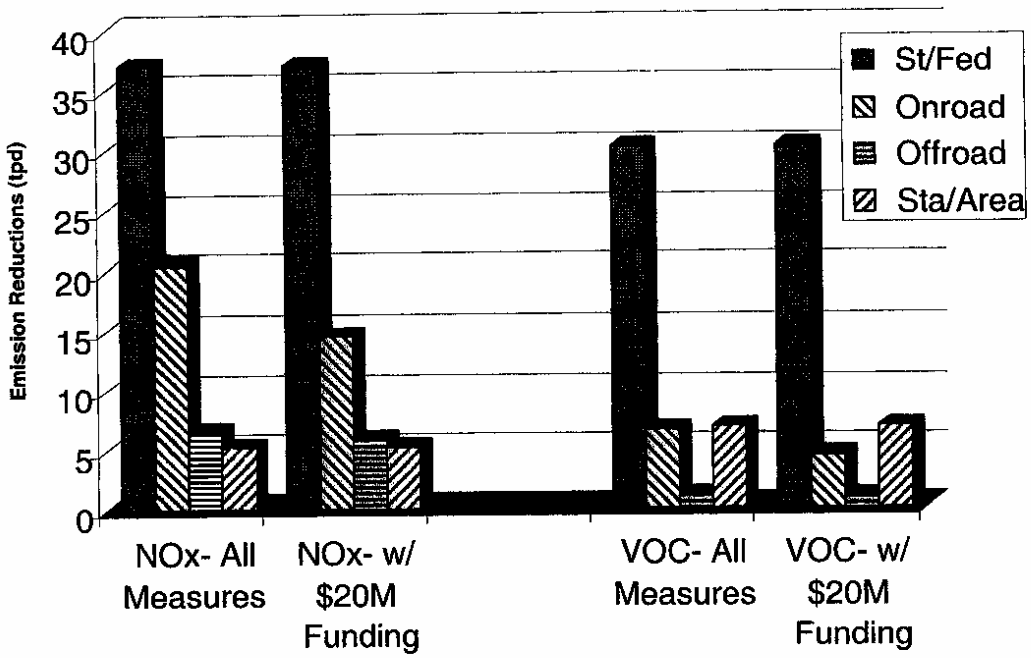
Ag pump electrification incentives		$ 101,196 – $ 112,124
Voluntary Pleasure Craft Ban (STA)		$ 46,849 – $ 49,137
Lawn Mower Buyback		$ 320,487 – $ 325,162
Fleet Modernization	(2007)	$ 2,941,632
Cleaire Longview	(2007)	$ 10,963,397
Dual Fuel Retrofit		$ 51,034,773 – $ 57,852,710
Emulsified Fuel		$ 6,926,173 – $ 7,487,120
Cat. Converter Replacement	(2007)	$ 172,000,000
Community Design	(2007)	$ 21,700,000

	Funding = $20,000,000		Additional Funding		
	NOx (tpd)	VOC (tpd)	Funding Level	NOx (tpd)	VOC (tpd)
2005	3.21	2.38	$78,988,314	5.40	2.86
2007	4.27	2.16	$313,864,377	14.57	4.26

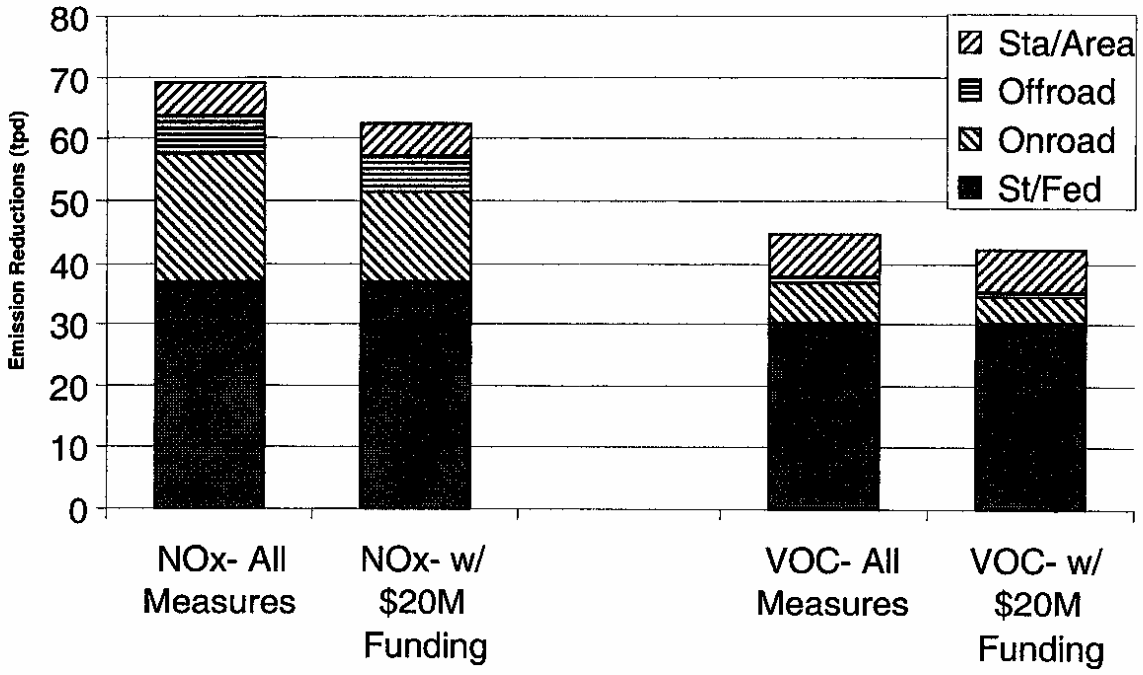
Measure No.	Description	2005 Reduction NOx	2005 Reduction ROG	2005 Costs Cost	2005 Costs CE-NOx	2005 Costs CE-ROG	2007 Reduction NOx	2007 Reduction ROG	2007 Costs Cost	2007 Costs CE-NOx	2007 Costs CE-ROG	Notes
ONMS-52/ ONMS-374	Heavy-duty Repowers	0.249	0.015	$ 6,952,371	$ 16,896		0.757	0.044	$ 7,281,303	$ 17,059		Adjusted to 1.35% /year installation rate
ONMS-52/ ONMS-52a	Cleaire Longview System						0.579	0.063	$ 10,963,397	$ 19,953		
ONMS-52/ ONMS-52b	Johnson Matthey EGRT						1.249	0.115	$ 12,746,740	$ 10,786		Adjusted to 3.85% /year installation rate
ONMS-52/ ONMS-[illegible]	Fleet Modernization for HDV	0.279	0.020	$12,493,[illegible]	$ [illegible]		1.135	0.076	$ 22,941,632	$ 9,636		Adjusted to 2.00% /year installation rate
ONMS-52/ ONMS-255	Dual Fuel Retrofit	1.307	0.069	$51,034,773	$ 25,182		4.211	0.212	$ 57,852,710	$ 24,437		
ONMS-52/ MISC-31	Emulsified Fuel	0.421	0	$ 6,926,173	$ 45,119		1.236	0	$ 7,487,120	$ 50,887		
OFMS37	Lawn Mower Buyback	0.001	0.005	$ 325,162		$ 23,404	0.003	0.022	320,487		$ 24,673	
TCM-159	Enhance Spare the Air	[illegible]	[illegible]	$ [illegible]	$ [illegible]		2.290	2.000	$ [illegible]	[illegible]		Cost is for increased incentive over current program
TCM-159/ OFMS13	Vol. Pleasure Craft Ban	0.111	0.365	$ 46,849	$ 15,027		0.113	0.308	49,137	15,444		Loss revenue from increased fees (28.1 days/year)
OFMS73	Clean Air Labeling	0.01	0.004	$ 25,000	$ 42,466		0.006	0.003	$ 25,000	$ 73,217		
LU-4	Community Design						0.12	0.11	$ 21,700,000	$119,786		
OFMS14/ OFMS7	Ag Engines -- Normal Life	0.020	0	$ 101,196	$ 6,157		0.11	0.01	$ 112,124	$ 6,822		
OFMS14/ SN-48	Ag Engines -- Early Retire.	0.320	0.04	$ 592,806	$ 5,101		0.45	0.06	$ 458,639	$ 9,526		
ONMS-64	Cat. Converter Replacement						2.338	1.235	$ 172,000,000	$ 40,285		
ONMS-69	Free Gas Caps		0.33	$ 246,077		$ 2,040		0.35	$ 246,077		$1,946	

	2005 NOx	2005 ROG	2005 Cost	2007 NOx	2007 ROG	2007 Cost
Low	3.21	2.38	$19,936,354	4.27	2.16	$ 10,654,192
High	5.40	2.86	$78,988,314	14.57	4.26	$ 313,864,377

Comparison of Emission Reduction by Authority



Total Emission Reductions



Comparison of Bay Area and Sacramento Nonattainment Regions

	Bay Area Nonattainment Region	Sacramento Nonattainment Region
Population	6.6M (2000)	1.8M (2001)
Exceedance Days (2003)		
•Federal 1-hr std	1	6
•State 1-hr std	19	51
Inventory		
•NOx (tpd)	605 (2003)	157 (2005)
•ROG (tpd)	497 (2003)	121 (2005)

Agenda

1. Bay Area Methodology
2. Overview of Analysis
3. Effectiveness of Control Measures
4. Summary

- See similar trends between Bay Area and Sacramento. Higher reductions possible in Bay Area due to larger inventory
- State and Federal measures have the most leverage
- Off-road and stationary / area source control measures are significant but small relative to State and Federal Measures
- Proposed Fleet Rules have large impact
- Incentive funding is needed to get additional reductions from local on-road and off-road measures

- Changes in measure implementation and scope have occurred since the preliminary Sacramento analysis -- particularly with the Bay Area specific measures.
- A comparing the current measures to the BAAQMD measure list presented on January 20, 2004, gives the following observations:
  - several measures were classified as "Already Implemented", but may not have the same level of control measures analyzed
  - level of emission reductions that BAAQMD characterizes as negligible seems high in some cases
  - jurisdiction of on-road and off-road sources may need to be discussed to understand the reasons for rejecting these measures; e.g. fleet rules appear to be measures available to districts with a state nonattainment area classification of serious

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ATTACHMENT 4

March 3, 2004

Karen Wilson
Manager, Strategic Planning Division
Sacramento Metropolitan Air Quality Management District
777 12th Street, 3rd Floor
Sacramento, CA 95814

Dear Karen:

At our meeting on February 18, 2004, Sacramento Metropolitan Air Quality Management District (SMAQMD) staff and your consultant (Tiax) provided tables, presentations, and disks of information regarding potential ozone control measures for the Bay Area Air District to consider as we prepare our draft Ozone Strategy. We thank you for your suggestions and will give them a thorough review.

At the meeting, we agreed to give you a timeframe for our review of the information you provided. We expect to complete our review by May 2004, in time to incorporate the results of our review into our draft Ozone Strategy. I will contact you when we have completed our review to schedule a staff to staff meeting to discuss our analysis.

Our next Ozone Working Group (OWG) meeting is March 23, 2004, at the offices of the Metropolitan Transportation Commission beginning at 9:30 a.m. We hope SMAQMD staff will be able to attend. The OWG provides an excellent opportunity for all stakeholders, including SMAQMD, to participate in our planning process. I would like to let you know that the materials we present at the March OWG meeting regarding control measure evaluations and control measure descriptions will not be updated based on your most recent input, given the timeframe I indicated above. Of course, the materials will reflect our evaluation of earlier input, by SMAQMD and others.

Please feel free to give me a call at 415-749-4646 if you have any questions.

Sincerely,

Jean Roggenkamp
Director of Planning and Research

cc: B. Tollstrup, SMAQMD

939 ELLIS STREET • SAN FRANCISCO CALIFORNIA 94109 • 415.771.6000 • *www.baaqmd.gov*

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Norm Cov
AIR POLLUTION CONTROL OFFIC

March 5, 2004

Jack Broadbent
Air Pollution Control Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109-7714

Dear Mr. Broadbent,

I would like to thank you and your staff for your participation in a productive exchange of information regarding air quality planning issues at our meeting on February 18, 2004. At that meeting, we provided you with information on Bay Area measures we have analyzed for their emission reduction potential. Your staff indicated that they had seen most of the measures as we were developing the analysis, but requested further time to review and comment before we submit the information to the Air Resources Board.

It is my understanding that the information your staff requested has been sent to Jean Roggenkamp. As we discussed at the meeting, it is appropriate that our analysis be forwarded to ARB for consideration as it identifies all feasible measures for implementation in accordance with its Transport Mitigation Regulation.

We will transmit the analysis to ARB in early April. Accordingly, we request that you provide us with any comments you may have by Friday, March 26 so that we may incorporate them into our transmittal.

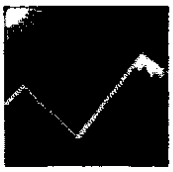
Thank you again for the attention you and your staff have given this matter.

Sincerely,

Norm Covell
Air Pollution Control Officer

cc: Larry Greene, APCO, Yolo-Solano AQMD
Tom Christofk, APCO, Placer County APCD
Marcella McTaggart, APCO, El Dorado County AQMD
Steve Speckert, APCO, Feather River AQMD

777 12th Street, 3rd Floor Sacramento, CA 95814-1908
916/874-4800 916/874-4899 fax



San Joaquin Valley
Air Pollution Control District

Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone

December 31, 2002

Table 4-3 (continued)

Category	Current Rule #	Pollutant	2005 Baseline Emissions (tons/day)	Reference[1]	Comments
Cutback Asphalt Application	4641	VOC	1.6	APS	District will investigate feasible controls for further reductions.
Dryers & Dehydrators		NOx	Unknown	Houston	Emission Inventory development needed.
Fluid Catalytic Cracking Units		NOx	Unknown	Houston	Emission Inventory development needed.
Furnaces		NOx	Unknown	Houston	Emission Inventory development needed.
Glass Melting Furnaces	4354	NOx	11.9	APS; Houston	District will investigate feasible controls for further reductions.
Indirect Source Mitigation Fee		**VOC/NOx**	**Unknown**	**Staff; public comment**	**Fees would be collected from new land development and used to fund air quality incentive programs. Longer lead-time is needed to assess public support and feasibility.**
Water Heaters & Boilers, 75,000 Btu/hr – 2 MMBtu/hr	**4305**	**NOx**	**Unknown**	**APS**	**Emission Inventory development needed.**
Livestock Waste		**VOC**	**82.9**	**SCAQMD; Public**	**Emission Inventory refinement needed. Longer lead-time needed for emission control technology assessment.**

State of California
AIR RESOURCES BOARD

STATUS REPORT

OZONE TRANSPORT MITIGATION IN CALIFORNIA

Release Date: **April 8, 2004**
Meeting Date: **April 22-23, 2004**

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: http://www.arb.ca.gov.

California Environmental Protection Agency
AIR RESOURCES BOARD

State of California
California Environmental Protection Agency
AIR RESOURCES BOARD

Staff Report

OZONE TRANSPORT MITIGATION IN CALIFORNIA

Air Resources Board Meeting
Begins April 22, 2004 at 9:00 a.m.
and may continue April 23, 2004 at 8:30 a.m.
Air Resources Board
Central Valley Auditorium
1001 I Street
Sacramento, California 95814

Meeting notice available at
http://www.arb.ca.gov/aqd/transport/mitigation/mitigation.htm.

This report and related materials are available for downloading from the Air Resources Board's Internet site at http://www.arb.ca.gov/aqd/transport/mitigation/mitigation.htm. In addition, written copies may be obtained from the Board's Public Information Office, 1001 I Street, 1st Floor, Environmental Services Center, Sacramento, California 95814, (916) 322-2990.

If you are a person with a disability and desire to obtain this document in an alternative format, please contact the Americans with Disabilities Act Coordinator at (916) 323-4916, or TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

QUESTIONS

If you have questions concerning this report, please contact:

Ms. Kim Heroy-Rogalski, P.E.
Staff Air Pollution Specialist
Phone: (916) 327-2200
Email: kheroyro@arb.ca.gov

INTRODUCTION

Unhealthy ozone levels in an area often result from a combination of emissions generated by local sources and pollution blown in or transported from other regions of the State. Consequently, mitigating the transport of ozone and ozone-forming pollutants within California is an important part of the State's efforts to achieve health-based ambient air quality standards.

Over the last decade, California has continued to strengthen both the science of pollution transport and the regulatory framework to reduce transport. In the last year, the Air Resources Board (ARB or Board) and the local air pollution control and air quality management districts (districts) have focused on improving coordination between regions and identifying feasible emission controls to further cut ozone levels.

This status report on ozone transport mitigation does the following:

- Reviews how transport of ozone pollution is addressed in California law,
- Identifies the transport relationships among California regions,
- Summarizes changes made in 2003 to the transport mitigation regulation,
- Provides an update on the status of transport mitigation,
- Describes the regional coordination activities underway, and
- Discusses the direction staff expects to take in the next few years to further understand, characterize, and mitigate ozone pollution transport.

Transport in California State Law

An "upwind" area is a generator of transported emissions, while a "downwind" area is a receptor of transported emissions. The California Clean Air Act (the Act) directs the ARB to periodically assess transport in terms of the contribution of ozone and ozone precursors in upwind regions to ozone concentrations in downwind regions. In addition, the Act directs ARB to establish mitigation requirements for upwind districts commensurate with their contributions to downwind air quality problems. The laws on transport are found in section 39610 of the California Health and Safety Code (H&SC). The regulations relating to transport are in title 17 of the California Code of Regulations (CCR) sections 70500, 70600, and 70601.

The Act requires districts to develop plans to attain the State ambient ozone standard and update the plans every three years (H&SC sections 40911 and 40925). The Act also requires that the combination of plans for upwind and downwind districts provide for attainment and maintenance of the ozone standard in both regions (H&SC section 40912). While there are no deadlines for attainment, the Act requires steady progress by either reducing emissions of each ozone precursor (i.e., reactive organic gases and oxides of nitrogen) by five percent per year or by adopting all feasible measures (H&SC section 40914). Districts subject to this requirement are pursuing the all feasible

measures path. Finally, each upwind district's plan must satisfy the mitigation requirements established by ARB pursuant to H&SC section 39610.

Transport Assessments

Over the last decade, ARB has done a series of technical assessments of transport relationships between air basins in California. The assessments identify transport couples consisting of an upwind and a downwind area. ARB also characterizes the contribution of transported pollutants as overwhelming, significant, or inconsequential. The influence of transport on a downwind area can vary widely day by day, depending mostly on the weather. As a result, a transport couple can have multiple characterizations. ARB approved the initial assessment in 1990, and updated the assessment in 1993, 1996, and 2001. Table 1 lists the identified transport couples within California.

TABLE 1
CALIFORNIA TRANSPORT COUPLES

Air Basin Impacted by Transport (Downwind Area)	Origin of Transport (Upwind Area)
Broader Sacramento Area	San Francisco Bay Area San Joaquin Valley
Great Basin Valleys	San Joaquin Valley
Mojave Desert	South Coast San Joaquin Valley Mexico
Mountain Counties	Broader Sacramento Area San Joaquin Valley San Francisco Bay Area
North Central Coast	San Francisco Bay Area San Joaquin Valley
North Coast	San Francisco Bay Area
Salton Sea	South Coast Mexico
San Diego	South Coast Mexico
San Francisco Bay Area	Broader Sacramento Area
San Joaquin Valley	San Francisco Bay Area Broader Sacramento Area
South Central Coast	South Coast California Coastal Waters San Joaquin Valley San Francisco Bay Area
South Coast	South Central Coast
Upper Sacramento Valley	Broader Sacramento Area

From title 17 California Code of Regulations, section 70500(c) Transport Identification Table

The body of knowledge developed through the assessments has yielded a practical understanding of the fundamental transport relationships among California regions. We know that urbanized areas largely cause their own air pollution. We know under what weather conditions these urban areas can receive pollution from their upwind neighbors and under what conditions they can transport pollution to their downwind neighbors. And finally, we know that depending on the weather patterns, the magnitude of the impact on the same downwind area can change substantially depending on the day.

ARB staff's analytical transport work continues. In addition to the established practice of examining weather patterns, air flow, and pollution levels to identify transport couples, staff is developing additional modeling tools as part of the Central California Ozone Study and the Southern California Ozone Study to apply to future transport analyses. This work is the next step in the evolution of transport assessment—integrated evaluation of control strategies and pollution transport across air basins within the same modeling domain. The work is beginning to enhance our understanding of the fundamental transport relationships already identified. Based on the ongoing transport analyses, ARB staff is not proposing any new transport couples at this time.

TRANSPORT MITIGATION REQUIREMENTS AND IMPLEMENTATION STATUS

ARB first adopted transport mitigation regulations in 1990. The 1990 regulations established mitigation requirements for upwind areas found to have either overwhelming or significant impacts on downwind areas. The primary mitigation requirement was to accelerate application of best available retrofit control technology (BARCT) to major stationary sources in upwind districts.

The Board amended its transport regulations in 1993 and further strengthened the regulations in May 2003. The 2003 amendments requires upwind districts to: (1) adopt all feasible measures for ozone precursors until the downwind region attains the State ozone standard, unless the measure is not needed in the downwind region, and (2) adjust no net increase thresholds for requiring offsets to be at least as stringent as those of the downwind district. No net increase thresholds are part of a district's stationary source permitting program; new or modified stationary sources with emissions or the potential to emit above the threshold must offset their emissions increase with additional emission reductions from elsewhere at the source or from other sources. The end result is no net increase in emissions within the district.

ARB staff is monitoring district compliance with the new requirements for all feasible measures and adjusted no net increase thresholds through review of district triennial California Clean Air Act plans (required by H&SC section 40925) and rulemaking activities.

The two new transport mitigation requirements are described in further detail below, along with a summary of recent district actions to comply.

All Feasible Measures

Districts that violate the State ozone standard are already required to adopt and implement all feasible measures unless they can demonstrate a five percent annual reduction in emissions. The 2003 amendments establish a continuing obligation for upwind districts to pursue these measures, regardless of their attainment status, until their downwind neighbors attain the State ozone standard. The amendments also require each upwind district to review its list of control measures in consultation with its downwind neighbor district and make a finding as to whether the list of control measures meets the all feasible measures requirement.

Districts can opt out of the all feasible measures requirement under certain conditions. For example, a district need not require all feasible measures if it demonstrates that emissions from a source do not contribute to ozone violations in any downwind area, or if the most recent transport assessment demonstrates that the district's transport impact is inconsequential. Such demonstrations must be included in the district's air quality plan and approved by ARB.

ARB has defined all feasible measures in title 17, CCR, section 70600(a)(1) as:

> *...air pollution control measures, including but not limited to emissions standards and limitations, applicable to all air pollution source categories under a district's authority that are based on the maximum degree of reduction achievable for emissions of ozone precursors, taking into account technological, social, environmental, energy and economic factors, including cost-effectiveness.*

The all feasible measures benchmark evolves over time as new technology is developed to reduce emissions and districts adopt more effective rules in response. While each district is responsible for doing its own analysis of all feasible measures, it is useful to compile references to the most stringent district rule within the State for common source categories with significant emissions. These reference documents can aid each district's assessment of its own rules and comparison to the California benchmark. ARB and district staffs have typically worked together to evaluate rules and develop these references. In 1999, ARB staff released a comprehensive list of all feasible measures entitled Identification of Performance Standards for Existing Stationary Sources: A Resource Document.

In the past year, the districts, under the auspices of the California Air Pollution Control Officers Association (CAPCOA), and ARB have made noteworthy progress in updating this document and other resources to identify what the all feasible measures are for the current round of California Clean Air Act plans. Together, we have also conducted a direct rule comparison among the transport-coupled air basins for the San Francisco Bay Area, the Broader Sacramento Area, and San Joaquin Valley.

CAPCOA Potential All Feasible Measures List for Stationary Sources CAPCOA has responded vigorously to the all feasible measures and consultation requirements for

upwind areas. The Rules Subcommittee of CAPCOA's Engineering Managers Committee developed a list of potential all feasible measures meant to supplement the 1999 ARB document. The Rules Subcommittee solicited stationary source rules from each district that they believed would qualify as an all feasible measure. With participation from ARB staff, the Rules Subcommittee then evaluated the stringency of the rules submitted and culled them into a list of potential all feasible measures. Table 2 describes the source categories included in the CAPCOA potential all feasible measures list. At its December 2003 meeting, the CAPCOA Board approved the Potential All Feasible Measures List for Stationary Sources for distribution to districts and ARB.

The Rules Subcommittee also prepared a list of measures that districts had submitted but which did not meet the all feasible measures criteria and an explanation of why they did not qualify. This list will also help support the all feasible measures analyses. Finally, the Rules Subcommittee prepared a summary of the various factors that a district should evaluate when determining whether a certain rule is a feasible measure for that particular district. The factors included cost-effectiveness, socioeconomic impacts, public acceptability, the number and age of affected sources in the district, and the existing level of control.

We appreciate the level of district commitment and resources invested in developing CAPCOA's Potential All Feasible Measures List. The document is an important tool for district staffs to use in preparation of California Clean Air Act plans. We look forward to working with CAPCOA to revisit and update the list periodically to reflect control technology advances as new rules are implemented around the State.

Some districts have already submitted their 2003 California Clean Air Act ozone plans to ARB. Other districts are still working on their plans. As ARB staff reviews the plans, staff will look at the district rulemaking commitments with respect to the all feasible measures requirement to determine if the districts have identified all opportunities for emission reductions. Staff expects to provide feedback to districts when there appear to be opportunities for additional rulemaking commitments.

TABLE 2
SOURCE CATEGORIES IN
2003 CAPCOA POTENTIAL ALL FEASIBLE MEASURES LIST

Adhesives and sealants
Aerospace assembly and component manufacturing
Architectural coatings
Boilers, steam generators, and process heaters
Commercial charbroiling
Degreasing operations
Equipment leaks (valves and flanges)
Food product manufacturing and processing
Gasoline transfer and dispensing
Glass coatings
Graphic arts
High volume spray booths
Hydrogen plant vents
Large water heaters and small boilers
Lime kilns
Metal parts and products coatings
Organic liquids
Polyester resin operations
Polystyrene, polyethylene, and propylene foam products
Residential water heaters
Soil decontamination
Solid waste disposal
Solvent cleaning operations
Solvent use
Storage tanks
Vehicle refinishing
Wood coatings
Wood flat stock coatings

No Net Increase Thresholds

The 2003 amendments to the transport mitigation regulation also require upwind districts to update their no net increase thresholds by December 31, 2004, to be as stringent as the threshold for their downwind district(s). The purpose is to ensure that upwind and downwind couples are taking comparable actions in their permitting programs. As shown in Table 3, the Bay Area Air Quality Management District and the five districts located in the Broader Sacramento Area must amend their new source

review (NSR) rules to lower their no net increase emission thresholds to the level used by the San Joaquin Valley Unified Air Pollution Control District. All have indicated their intention to make the needed changes by the end of this year.

TABLE 3
DISTRICTS THAT NEED TO LOWER
THEIR NEW SOURCE REVIEW NO NET INCREASE THRESHOLDS

District	No net increase threshold [tons per year]	
	Current	Required
Bay Area Air Quality Management District	15	10
El Dorado County Air Quality Management District	15	10
Feather River Air Quality Management District*	25	10
Placer County Air Pollution Control District	15	10
Sacramento Metropolitan Air Quality Management District	15	10
Yolo-Solano Air Quality Management District	15	10

* The Feather River District may choose to limit the 10 tons per year threshold to just the portion of Southern Sutter County within the Broader Sacramento Area.

REGIONAL COORDINATION

There has also been tremendous progress over the last year in improving coordination between districts affected by transport as they seek to meet both federal and State ambient air quality standards. CAPCOA successfully crafted a procedural framework that districts may use to address planning and rulemaking issues related to transport. Specific to Northern California, Air Resources Board Members are leading an air agency group focused on exploring and resolving long-standing transport issues.

CAPCOA Transport Protocol

In December 2002, with ARB's transport mitigation regulation update underway, the CAPCOA Board set a goal to achieve consensus on a protocol for districts to use in dealing with transport issues. Over the course of 2003, participating districts developed the CAPCOA Pollution Transport Protocol (see Appendix A). The focus of this protocol is two-fold. First, the protocol outlines a process for districts to coordinate with each other and ARB staff on transport-related technical work for plans to meet federal and State air quality standards. Second, it acknowledges that disputes over pollutant transport can occur, and sets up a process to resolve disputes between districts at the local level. The protocol is designed to provide more detail on how districts can manage transport issues, consistent with the requirements of ARB's transport mitigation

regulation. Individual districts may choose to use the protocol as developed or adapt it for their specific situations.

Although the protocol is voluntary and not legally binding, ARB staff believes that it sets up a useful and workable framework for addressing transport. We are optimistic that the protocol will facilitate districts working together to resolve pollution transport issues.

The contents of the CAPCOA protocol are summarized below:

- **Upwind districts should adopt all feasible measures for stationary sources.** If any district in California has a rule limiting emissions of ozone precursors for a source category, the protocol states that all upwind districts should adopt a rule for that source category designed to achieve at least the same percentage control of emissions within the same time frame. Exceptions include if (a) the rule would cost more than $15,000 per ton to implement, (b) the rule would provide de minimis benefits, (c) there is implementation uncertainty for the previously adopted rule, or (d) the district board determines that the rule is infeasible based on technological, social, environmental, economic, or energy factors.

- **Upwind districts should consider transportation control measures (TCMs) adopted by other air districts.** TCMs are strategies designed to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion. The protocol calls on districts to make a good faith effort to implement TCMs designed to achieve the same percentage control of the same activity as TCMs adopted by other California districts. CAPCOA has undertaken a complementary new effort to develop a reference document for districts on transportation-related strategies (such as TCMs and clean fleet incentives) being implemented around California. Such local strategies can complement the State's actions to reduce transportation emissions.

- **Upwind and downwind districts should engage in a cooperative process to allocate emission control responsibilities.** The protocol encourages district executive, modeling, and planning staffs to meet periodically. Upwind and downwind district staff and ARB staff should participate in modeling coordination working groups. Upwind districts should show that their air quality plans contain sufficient measures to eliminate transport that by itself can cause an exceedance of the federal ambient air quality standards in a downwind district.

- **Disputes among districts related to pollution transport should be resolved at the lowest level possible.** CAPCOA supports a hierarchy of meetings, first among district management and then among district board members, using a mediator if necessary.

Northern California Air Quality Coordinating Group

Over the past year, Air Resources Board Members have been leading meetings with elected officials and district executive staff from the Bay Area, Sacramento, Yolo-Solano, and San Joaquin Valley air districts to discuss transport-related issues. These meetings represent a constructive model for the kind of cooperation that is essential to evaluate the facts relative to transport concerns and to build consensus on how to resolve them.

In response to these discussions, the staffs of the Sacramento, San Joaquin, Bay Area, and Yolo-Solano air districts have been working cooperatively with the ARB staff to evaluate and compare rules for a number of source categories. For each category examined, staff prepared a detailed comparison of each rule element – emission limits, applicability, exemptions, inspection requirements, etc. In addition to comparing the rules among the participating districts, the technical group identified the most effective rule in California for each source category. District and ARB staff reached consensus on analyses for the following source categories:

- Adhesives
- Boilers
- Can and coil coating
- Degreasing
- Graphic arts
- Internal combustion engines
- Solvent cleaning
- Storage of organic liquids
- Turbines
- Valves and flanges
- Vehicle refinishing

Where differences among rules were identified, the Northern California district staff reached consensus on which districts had the potential to achieve additional emission reductions through a rule revision. District staffs made commitments to undertake rule development and/or further evaluations to see if rule revisions were justified. The districts are folding the results of the rule comparison effort into their upcoming California Clean Air Act plans.

THE FUTURE OF TRANSPORT ASSESSMENT AND MITIGATION

Over a decade of technical work has provided a good understanding of the fundamentals of pollutant transport statewide, including the basic transport relationships among air basins. With much more extensive air quality and meteorological data becoming available from field studies, ARB staff has begun to take the next step in transport analyses. Future transport analyses will take advantage of two regional field studies that together cover nearly all of the State—the 1997 Southern California Ozone Study (SCOS) and the 2000 Central California Air Quality Study, which is comprised of

the California Regional Particulate-Matter Air Quality Study and the Central California Ozone Study (CCOS).

The vast size of the domains studied under both CCOS and SCOS will significantly improve our ability to investigate transport phenomena. These studies will allow for better three-dimensional characterization of transport. In addition, the regional air quality models developed as part of the studies will provide tools to examine transport from a broader regional, rather than transport couple, perspective.

The regional models are already being used to develop clean air plans to meet the federal one-hour ozone standard. These tools are helping us assess the benefits of existing and new control strategies in both upwind and downwind regions throughout the modeled domains. ARB and districts are developing ozone episodes for modeling that involve meteorological conditions conducive to transport. This modeling should help us fine tune our understanding of how changes in upwind and downwind emissions affect ozone levels downwind for use in future State Implementation Plans and California Clean Air Act plans. The next steps are to project the level of control needed to attain the federal eight-hour ozone standard and ultimately the State ozone standard.

As this status report has described, the last year has seen considerable progress in mitigating the transport of ozone pollution throughout California. The districts and ARB together have focused renewed attention on defining all feasible measures, comparing rules among districts, and handling transport disputes among districts. The key to the future is maintaining this momentum.

ARB staff expects that the rule comparison work of the Northern California Air Quality Coordinating Group will translate into rulemaking commitments in the Northern California districts' plans. We are optimistic that other districts will embrace the all feasible measures process described in the new CAPCOA Pollution Transport Protocol to find additional emission reduction ideas from an innovative or more effective rule in another district. Both upwind and downwind districts will reap air quality benefits from such efforts.

As districts are working to find and implement every feasible measure, ARB continues to identify and develop new strategies to achieve cost-effective emission reductions from sources under our jurisdiction. In addition to the Board's existing programs, ARB has an ambitious rulemaking calendar set forward as part of the 2003 State and Federal Strategy of the California State Implementation Plan. As these measures take effect, emissions all across the State will be reduced, and thus transport of pollution among all regions will be further decreased.

Appendix A
CAPCOA Transport Protocol

CAPCOA

POLLUTION TRANSPORT PROTOCOL

(Approved by the CAPCOA Board on 1/22/04 and 2/26/04 for use as an instrument to develop Memoranda of Understanding among Air Districts)

SECTION 1. ALL FEASIBLE MEASURES

(a) **Supplemental AFMs Provisions for Ozone.** Every district that is subject to a requirement in the California Air Resources Board ozone transport mitigation regulations (title 17, Cal. Code Regs. §70600, 70601) to adopt "All Feasible Measures" (AFMs) shall comply with the following Supplemental AFMs Provisions:

(1) **Consideration and Adoption of Rules From Other Districts.** The district shall adopt a rule based upon each rule limiting emissions of ozone precursors that has been adopted by another California air district, except as provided in paragraph (3) below (Exceptions Due to Infeasibility). In complying with this requirement, the district need not adopt the specific language of a rule adopted in another district, but shall adopt a rule that is designed to achieve, at a minimum, substantially the same percentage control of emissions from substantially the same source category, within the amount time from rule adoption allowed by such other district, and with comparable enforceability.

(2) **Time of Rule Adoption**. Rules required by paragraph (1) above shall be adopted no later than two years after initial adoption of a rule by another air district, or two years after approval of this protocol, whichever is later. A district may delay adoption of a rule beyond such times to the extent necessary to avoid delaying adoption of another rule or rules that will achieve greater emission reductions within the same time.

(3) **Exceptions Due to Infeasibility.** A district is not required to adopt a rule pursuant to this section if any of the following exceptions apply—

(A) **Not Cost-Effective**. The governing board of the district subject to the AFMs requirement finds that implementation of the rule would not be cost-effective in that district. Cost-effectiveness of the rule in the

district subject to the AFMs requirement shall be calculated based on the circumstances and types of sources in that district. A rule shall be considered cost-effective if it is no more expensive to implement than the most expensive cost-effectiveness determined for such a rule by another district, except that a district may determine a rule to be not cost-effective if it will cost more than $15,000 per ton to implement. This cost level will adjust based on the CPI change from 2003.

(B) **De Minimis Benefits**. The governing board of the district subject to the AFMs requirement finds that implementation of the rule would not produce emission reductions in that district exceeding a level that the board determines to be de minimis. A district may not use this exception to reject adoption of a rule unless the district adopts an alternative rule or other enforceable strategy. The alternative rule shall be adopted within 18 months and shall achieve surplus emission reductions that are equivalent to, and in the same time as, mass emission reductions that the rejected rule would have achieved.

(C) **Implementation Uncertainty.** The previously-adopted rule—

(i) was determined by the district that adopted it to be technology-forcing, and has not yet been implemented, or

(ii) is subject to a condition precedent to implementation such as a feasibility assessment, and such condition has not yet been satisfied, or

(iii) was not submitted for inclusion in the SIP because the air district desired to avoid the need to obtain EPA approval to modify the rule, or

(iv) has not been implemented by 25% or more of the sources affected by such rule, because such sources are under variance.

(D) **Infeasibility Due To Other Factors**. The governing board of the district subject to the AFMs requirement finds that the rule is infeasible in that district based on technological, social, environmental, economic or energy factors specified by the board. This exception is subject to the following limitations:

(i) A rule that would be cost-effective as defined in subparagraph (A) above may not be determined to be infeasible under this subparagraph based on inadequate cost-effectiveness.

(ii) A district may not use this exception to reject adoption of a rule that was adopted by a transport-coupled district with an "overwhelming" designation, unless the district adopts an alternative rule or other enforceable strategy. The alternative rule

shall be adopted within 18 months and shall achieve surplus emission reductions that are equivalent to, and in the same time as, mass emission reductions that the rejected rule would have achieved. This requirement to adopt an alternative rule does not apply to a district that is downwind of, and has a lower attainment classification (e.g. "serious," "severe") than, the transport-coupled district.

(4) Transportation Control Measures.

(A) **Compliance With Applicable Laws.** The district shall include TCMs in its state and federal ozone air quality plans that are sufficient to comply with applicable requirements of state and federal law.

(B) **Consideration and Implementation of TCMs From Other Districts.** The district shall make a good faith effort to achieve implementation within its jurisdiction of TCMs that are based on each TCM that is included in a plan adopted by another California air district, except as provided in subparagraph (C) below (Exceptions Due to Infeasibility). In complying with this subparagraph, the district need not attempt to achieve implementation of the specific language of a TCM from another district, but shall attempt to achieve implementation of a TCM that is designed to achieve, at a minimum, substantially the same percentage control of emissions from the same activity, within the amount time from plan adoption allowed by such other district plan, and with comparable enforceability.

(C) **Exceptions Due to Infeasibility.** A district shall not be required to make a good faith effort to achieve implementation of a TCM if any of the Exceptions Due to Infeasibility described in paragraph (3) above apply. For purposes of this provision, any reference to "rule" in paragraph (3) shall also mean "TCM," and the $15,000 per ton maximum cost-effectiveness value specified in subparagraph (3)(A) shall not apply.

(D) **Definition**. As used in this paragraph, the terms "transportation control measures" and "TCMs" means strategies other than air district rules that are designed to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions.

(5) Rule Implementation. The triennial plan update pursuant to Health & Safety Code Section 40925 shall include: (1) a comparison of how each adopted rule compares to the to the commitments in the plan in terms of emission reductions and implementation timing; (2) for rules with compliance deadlines that have passed, a description of how compliance has

been achieved (i.e., periodic inspections, complaints, industry outreach); and (3) a description of any violations and penalties associated with the rule.

(b) AFMs for Particulate Matter. Every District that has been determined by CARB to be the source of emissions that have the potential to cause an "overwhelming" impact on attainment of air quality standards for particulates in a downwind district shall adopt AFMs to reduce such emissions. For such an upwind district, the requirements of subsection (a) shall apply to rules to reduce the types of particulate and/or particulate precursor emissions that contribute to exceedances of air quality standards in the downwind district.

(c) Burden of Proof. A district seeking to invoke any exception specified in this section to a requirement to adopt a rule shall substantiate that the exception is applicable.

(d) Dispute Resolution. The Dispute Resolution Procedure set forth in section 3 below shall be invoked in the event of a disagreement between districts regarding compliance with this section.

SECTION 2. EMISSION REDUCTIONS BASED ON MODELING

(a) Transport—NAAQS. Each air district that has been identified by CARB as part of on upwind portion of a transport couple shall include in every air quality plan revision an analysis, based upon the best available modeling or other data, showing that the plan contains sufficient measures to eliminate transport that, by itself, can cause an exceedance of the federal ambient air quality standards for ozone or particulate matter in a downwind district. This analysis shall show that such exceedances will not occur on and after the date that the downwind district must attain the federal ambient air quality standards. The analysis shall be conducted with input from downwind districts, as described in section 4 below (Coordination of Planning and Modeling).

(b) Significant Transport. Each district that is part of a transport-couple designated by CARB as "significant" or "overwhelming" shall engage in a cooperative process to allocate emission control responsibilities between the upwind and downwind districts to achieve the federal and state ambient air quality standards for ozone and particulate matter. As part of this process, downwind and upwind districts shall attempt to quantify—

(1) the amount of additional reductions in transported emissions that will be needed in the downwind district after the downwind district applies all feasible controls to sources within its jurisdiction,

(2) the amount of additional reductions that the upwind district can feasibly contribute to satisfy such need, and

(3) the amount of any remaining shortfall, and the emission reductions needed from sources within the regulatory jurisdiction of the state and federal governments to eliminate that shortfall.

At a minimum, such process shall include periodic meetings and exchange of information between APCOs and modeling and planning staffs according to schedules consistent with federal plan submission deadlines.

(c) **Downwind Plan Allocation for Transport Reductions.** Upwind districts shall assist downwind districts to include, in their attainment plans for state and federal ozone and particulate matter standards, allocations for pollutant reductions that will occur through implementation of the adopted upwind district plan. As part of such assistance, upwind districts shall attempt to quantify the pollutant reductions that will be achieved in the downwind district by implementation of the adopted upwind district plans. Upwind districts shall, if requested, assist downwind districts in obtaining CARB and EPA approval for such plan allocations.

(d) **Dispute Resolution.** If, after a good faith effort, it appears to any party that the process described in subsection (b) above will not achieve consensus in time to comply with deadlines for submission of plans, or if there is any other disagreement between districts regarding implementation of this section, the dispute resolution procedure specified in section 3 below shall be invoked.

SECTION 3. DISPUTE RESOLUTION

It is intended that disputes among districts related to issues within air pollution transport should be solved at the lowest levels. Of course, this depends on the nature of the difference and where it may occur in the process. Generally, CAPCOA supports a hierarchy of meetings, first between APCOs, then between APCOs with representatives of their boards. The procedure could provide that meetings will take place with a mediator.

This protocol is intended to serve as an essential structure for MOUs between districts to address air pollution transport issues. In this sense, those districts should be encouraged to expand procedures as needed so as to address issues related to the specific districts signing the MOU.

SECTION 4. COORDINATION OF PLANNING AND MODELING

(a) **General.** Because planning and modeling efforts are currently underway or nearing completion in both the SCOS and CCOS domains for the purpose of current 1-hr ozone plans, and CRPAQS for the purpose of current PM10 and future $PM_{2.5}$ plans, structures for coordination are currently in place. The

proposed approaches for a more integrated and participatory process are set forth below in two parts: (1) a long-term approach for subsequent modeling and coordination needs in support of 8-hr ozone and particulate matter planning efforts; and (2) a short-term approach under the existing structures.

(b) Long-Term Approach

(1) Transport-Coupled Modeling Coordination Working Groups. There shall be established appropriate Modeling Coordination Working Groups (MCWGs) which shall be comprised of one member representing each district which is part of a "significant" or "overwhelming" transport couple as determined by CARB; and one representative from CARB. There shall be one MCWG for the central/northern California transport couples as delineated by the CCOS domain; and one MCWG for the southern California transport couples, as delineated by the SCOS domain. Each MCWG shall elect a chairperson who must be from a district. The purpose of the MCWG is to make recommendations for:

(A) coordinating the timing and scheduling of planning/modeling efforts needed to support federal and/or state planning requirements for ozone and particulate matter,

(B) optimizing coordinated efforts for all districts affected by such modeling,

(C) establishing protocols prior to undertaking modeling efforts which would include, but not be limited to, the:

(i) establishment of modeling domain,

(ii) selection of appropriate models and submodels,

(iii) determination of validation criteria,

(iv) identification of needed inputs and timelines for inputs,

(v) criteria for selection of episodes days to be modeled; selection of appropriate year, if annual conditions are to be modeled,

(vi) determination of future year scenarios to be modeled, e.g., "what if" conditions,

(vii) process for making model/model input adjustments.

(D) determining, to the degree possible, the criteria for quantitative assessments for emissions reductions necessary to attain federal and state ozone and particulate matter standards in all transport-coupled upwind and downwind districts.

(E) new studies designed to quantify transport.

(2) Combined Coordination Meeting

At least once per year, there shall be a combined meeting of MCWGs. The purpose of this meeting is to promote reasonable consistency among the districts in modeling efforts through exchanges of technical information.

(3) Responsibilities. Each participating agency agrees to:

(A) regularly participate in scheduled meetings and/or conference calls,

(B) provide key dates and timelines with respect to its federal or state plan development,

(C) work constructively toward an acceptable model protocol by providing input to and/or commenting on model protocol development,

(D) provide model inputs with respect to local parameters, such as base and future year emissions inventories, within the time frames established in the protocol,

(4) Differences in District Capabilities. It is recognized that smaller districts have less technical capabilities with respect to modeling than the larger districts. If any eligible district so requests, and if adequate funding is available, each applicable MCWG may select an independent modeling expert to provide advice to the MCWG and/or local districts regarding protocol development and evaluation of results. If the applicable MCWG cannot agree on a specific expert, the MCWG shall recommend two or more candidates to the CAPCOA Board, which shall make a final decision. If the costs for such expert participation cannot be agreed upon among the agencies participating in the applicable MCWG, this situation shall be referred to the CAPCOA Board.

(5) Meetings. Each MCWG shall meet as frequently as necessary to meet its objectives, but not less frequently than once every six months. Meeting locations shall be determined by each MCWG. Pursuant to Section 4(b)(2), the annual combined meeting shall reasonably attempt to accommodate both northern and southern venues.

(6) Reporting. Each MCWG shall provide a summary report of activities to the CAPCOA President once every six months, or more frequently if deemed appropriate by the CAPCOA Board.

(c) Short-Term Approach; Involvement in Existing Process. Because of the extent of modeling processes underway for the current round of SIP development, districts shall recognize that the CAPCOA Board may request that its Technical Consultant participate in ongoing model working group meetings

and conference calls to maintain currency in modeling efforts, including timelines, model validation processes, input data, episodic scenarios, model adjustments, model output, and other factors as appropriate.

APPENDIX C

LANDFILL INFORMATION

TABLE C-1
Alameda County Landfill Status

Alameda County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
Tri-Cities Recyling & Disposal Facility	01-AA-0008	281,491	8/1/05*	Estimated	2,346	19,271,000	1,081,500	6/1/2001
Altamont Landfill	01-AA-0009	1,346,360	1/1/2005	Estimated	11,150	58,900,000	15,843,000	6/19/2001
Vasco Road Sanitary Landfill	01-AA-0010	407,721	1/1/2015	Estimated	2,518	31,942,205	12,279,865	6/11/2001
TOTALS		2,035,572			16,014	110,113,205	29,204,365	

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

*Source: County of Alameda, Environmental Health Dept., August 2004.

TABLE C-2
Contra Costa County Landfill Status

Contra Costa County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
W. Contra Costa Landfill	07-AA-0001	306,092	1/1/05*	Estimated	2,500	17,875,000	1,300,000	12/14/2001
Acme Landfill	07-AA-0002	25,389	10/31/06*	Estimated	1,500	268,700	175,000	12/12/2001
Keller Canyon Landfill Class II	07-AA-0032	715,730	12/31/2030	Estimated	3,500	75,018,280	68,279,670	6/6/2001
TOTALS		1,047,211			7,500	93,161,980	69,754,670	

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

*Source: County of Contra Costa, Environmental Health Dept., August 2004.

TABLE C-3
Marin County Landfill Status

Marin County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
Redwood Sanitary Landfill	21-AA-0001	370,640	1/1/2039	Estimated	2,300	19,100,000	12,900,000	6/11/2001
W. Marin Sanitary Landfill	21-AA-0002	NA	1/1/2036	Estimated	75	0	0	NA
TOTALS		370,640			2,375	19,100,000	12,900,000	

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

TABLE C-4
Napa County Landfill Status

Napa County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
Clover Flat Landfill	28-AA-0002	46,238	1/1/2021	Estimated	300	5,100,000	3,081,946	7/21/2000

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

TABLE C-5
San Mateo County Landfill Status

San Mateo County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
Ox Mountain Sanitary Landfill	41-AA-0002	807,890	1/1/2018	Estimated	3,598	37,900,000	44,646,148	1/1/2000
Hillside Class III Disposal Site	41-AA-0008	49,167	12/31/2010	Estimated	400	2,310,000	355,937	12/31/2001
TOTALS		857,057			3,998	40,210,000	45,002,085	

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

TABLE C-6
Santa Clara County Landfill Status

Santa Clara County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity	Remaining Capacity (cubic yards)	Remaining Capacity Date
Norcal West Systems Pacheco Pass	43-AA-0004	100,858	1/1/2104	Estimated	1,000	6,200,000	568,589	6/13/2001
City of Palo Alto Refuse Disposal	43-AM-0001	27,244	12/30/2011	Estimated	200	7,758,854	7,758,854	7/23/1999
Zanker Material Processing Faciltiy	43-AN-0001	18,210	12/31/2018	Estimated	350	540,100	540,100	9/9/1998
Newby Island Sanitary Landfill	43-AN-0003	646,188	12/31/2020	Estimated	4,000	50,800,000	14,978,546	12/31/2001
Zanker Road Class III Landfill	43-AN-0007	14,608	12/12/2003	Estimated	1,300	1,300,000	477,000	8/26/1998
Kirby Canyon Recy. & Disp.	43-AN-0008	281,463	12/31/2022	Estimated	2,600	36,400,000	57,271,507	6/11/2001
Guadalupe Sanitary Landfill	43-AN-0015	180,238	1/1/2010	Estimated	3,650	12,222,222	9,379,843	6/11/2001
TOTALS		1,268,809			13,100	115,221,176	90,974,439	

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

TABLE C-7
Solano County Landfill Status

Solano County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
Hay Road Landfill, Inc.	48-AA-0002	69,229	1/1/2070	Estimated	2,400	28,240,000	23,198,067	6/13/2001
Potrero Hills Landfill	48-AA-0075	649,461	1/1/2035	Estimated	4,330	21,500,000	13,800,000	12/14/2001
TOTALS		718,690			6,730	49,740,000	36,998,067	

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

TABLE C-8
Sonoma County Landfill Status

Sonoma County Class III Landfills	SWIS No.	2002 Year End Total (tons)	Closure Date	Closure Type	Permitted Throughput (tons/day)	Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Remaining Capacity Date
Central Disposal Site	49-AA-0001	490,830	1/1/2014	Estimated	2,500	19,779,250	11,243,928	2/27/2003

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

TABLE C-9
BAY AREA
Green Waste Composting Facilities Status

FACILITIES	SWIS No.	Throughput	Throughput Units	Permitted Capacity	Capacity Units	Facility Acreage
ALAMEDA-None						
CONTRA COSTA						
W. Contra Costa Sanitary Landfill	07-AA-0044	81	tons/day	11,600	cubic yards	17
MARIN						
Redwood Sanitary Landfill (Unit 2)	21-AA-0001	NA		NA		NA
NAPA						
Napa Garbage Service (Unit 1)	28-AA-0023	200	tons/day	52,000	tons/year	5
Upper Valley Disposal Service	28-AA-0026	17,500	tons/day	34,000	tons/year	20
Napa County Total		17,700	tons/day	86,000	tons/year	
SAN FRANCISCO-None						
SAN MATEO						
Tillo Products Co.	41-AA-0176	5,000	cubic yards/month	30,000	cubic yards	4
SANTA CLARA						
Palo Alto Lanfill Composting	43-AA-0014	17,000	cubic yards/year	17,000	cubic yards	7
Z-Best Composting	43-AA-0015	1,500	tons/day	500,000	cubic yards	77
South Valley Organic Composting	43-AA-0017	750	tons/day	450	tons/week	18.3
Zanker Road Landfill Unit 3	43-AN-0007	200	tons/day	0		6
Newby Island Compost Facility	43-AN-0017	470	tons/day	980	tons/day	18
Santa Clara County Total						
SOLANO						
Jepson Prairie Organics	48-AA-0083	300	tons/day	35,000	cubic yards	15
Potrero Hill Composting	48-AA-0084	850	cubic yards/day	60,000	cubic yards	18
Travis AFB Composting	48-AA-0085	24	cubic yards/day	10,000	cubic yards	3
Goodyear Road Composting	48-AA-0088	30,000	cubic yards	40,000	cubic yards	17
Solano County Total				145,000	cubic yards	
SONOMA						
Central Composting Site	49-AA-0260	300	tons/day	300	tons/day	35
Grab N' Grow	49-AA-0369	300	cubic yards/day	5,000	cubic yards	4
Sonoma County Total						
Total Bay Area						

Source: California Integrated Waste Management Board, Solid Waste Information System (SWIS), July 2004. http://www.ciwmb.ca.gov/SWIS

APPENDIX D

COMMENTS ON THE DRAFT EIR AND RESPONSES TO THE COMMENTS

APPENDIX D

FINAL ENVIRONMENTAL IMPACT REPORT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT 2005 OZONE STRATEGY

RESPONSE TO COMMENTS

INTRODUCTION

This Appendix, together with the Draft Environmental Impact Report constitutes the Final Environmental Impact Report for the Bay Area Air Quality Management District's (District) 2005 Ozone Strategy.

The Draft Environmental Impact Report was circulated for a 45-day public review and comment period which started on October 7, 2005 and ended November 21, 2005. The Draft Environmental Impact Report is available at the District's offices, 939 Ellis Street, San Francisco, CA 94109, or by phone at (415) 749-5093. The Draft Environmental Impact Report can also be downloaded by accessing the District web pages at www.baaqmd.gov.

The Draft Environmental Impact Report included a detailed project description, the environmental setting for each environmental resource, and an analysis of each environmental resource on the California Environmental Quality Act (CEQA) checklist. Based on the Draft Environmental Impact Report, potentially significant adverse environmental impacts (after mitigation) were identified for a number of TCMs including aesthetics, air quality, biological resources, cultural resources, hazards, transportation and traffic, and utilities and service system. TCM impacts on hydrology and water quality, and noise were determined to be less than significant following mitigation. Most of the potentially significant impacts are associated with the construction and operation of new transit stations and facilities for rail, bus and ferries. Feasible mitigation measures were imposed where potentially significant adverse impacts were identified.

The District received five comment letters on the Draft Environmental Impact Report during the public comment period, along with an email and comments from a public meeting. Responses to all comments are presented in this Appendix. The comments are bracketed and numbered. The related responses are identified with the corresponding number and are included in the following pages. In order to adequately address the comments raised in the comment letters, new information is provided to merely clarify, amplify or make insignificant modifications to the Draft EIR. Pursuant to CEQA Guidelines §15073.5(c)(2), recirculation is not necessary since the information is provided in response to written comments on the project's effects and does not identify any new, avoidable significant effects.

COMMENT #1
Email from David Schonbrunn
October 31, 2005

Comment 1-1

Did the DEIR address the measures proposed for deletion? They are part of the No Project Alt, but not the Project.

Response 1-1

The Draft EIR addressed the potential adverse significant impacts of implementing the measures proposed for inclusion in the 2005 Ozone Strategy (also referred to as the "Project"). The Draft EIR did not address the three control measures proposed for deletion because they are not included in the proposed Project. The impact of these measures is included in the No Project Alternative because taking no action would result in the retention of these measures. We note, however, that one of the measures proposed for deletion is considered technologically infeasible at this time (D8) and the impact of deleting the other two of the three control measures (A23 & G3) is considered negligible for the following reasons:

A23 - Concrete Coating Operations. Emissions from concrete coating operations are currently less than 0.05 tons per day; therefore, potential emission reductions from this control measure are de minimis.

G3 - Seasonal Limitations on Organic Liquid Storage Tank and Wastewater Separator Cleaning and Refinery Shutdowns. This measure would require that discretionary activities such as organic liquid storage tank cleaning, wastewater separator cleaning and refinery unit shutdowns be controlled or conducted outside the summer ozone season. The 2001 Ozone Attainment Plan Reasonably Available Control Measure review also evaluated this control measures. This review found that refineries maximize production during the summer and schedule these activities at other times, so few emission reductions are likely during summer months. Also, amendments to Regulation 8, Rule 10 - Process Vessel Depressurization adopted in January 2004 achieve part of the emission reduction that would be produced by this measure. Amendments to Regulation 8, Rule 8 - Wastewater Separators adopted in September 2004 achieve an addition portion of the emission reduction. Finally, more stringent organic liquid storage tank cleaning requirements, which are currently being studied as part of 2001 Ozone Attainment Plan further study measure FS-10, would achieve yet another portion of the emission reductions. Therefore, the emission reductions under G3 have been achieved or will be achieved through other rules; moreover, these rules will achieve emission reductions on a continual basis, not just seasonally. Any remaining emission reductions that could be achieved through seasonal prohibitions are de minimis.

D8 - Improved Residential Water Heater Rule. Residential water heaters are subject to the requirements of District Regulation 9, Rule 6 - Nitrogen Oxide Emissions from Natural Gas Fired Water Heaters. The control measure recommended lower NOx limits found in the comparable SCAQMD rule. In 1999, amendments to SCAQMD Rule 1121 established a 20 nanogram NOx/joule of heat output standard effective in 2002 and a 10 nanogram NOx/joule of heat out put standard effective in 2005. The standards were considered to be technology forcing standards. Manufacturers are not currently able to meet the 20 nanogram NOx/joule of heat output at this time. The SCAQMD has amended the effective date for Rule 1121 until 2006 thru 2008. Therefore, this control measure is infeasible at this time.

COMMUNITIES FOR A
BETTER
ENVIRONMENT

November 21, 2005

VIA EMAIL
Suzanne Bourguignon, Principal Environmental Planner
Bay Area Air Quality Management District
939 Ellis Street, San Francisco, CA 94109
Email: sbourguignon@baaqmd.gov

Re: Communities for a Better Environment Comments on Draft EIR for Bay Area 2005 Ozone Strategy Plan

Communities for a Better Environment (CBE) submits the following comments on the Draft Environmental Impact Report for the Bay Area Air Quality Management District's (District) 2005 Bay Area Ozone Plan ("Ozone Plan DEIR"). We incorporate by reference the comments that CBE has previously submitted related to the 2005 Ozone Plan and Transportation Solutions Defense and Education Fund's DEIR comments. 2-1

The Ozone Plan DEIR generally provides clear summaries of the Draft 2005 Bay Area Ozone Plan's major elements. One shortcoming in the project description, which has implications that will be further addressed related the failure to consider a reasonable range of project alternatives, is that the DEIR fails to provide details regarding "further study measures." Another serious deficiency, which is common to the Draft Ozone Plan itself, is that the DEIR's analytical approach largely treats ozone impacts in isolation from broader air quality regulations and thereby fails to adequately address the full range of air quality impacts.

Our comments focus on the following central deficiencies in the Ozone Plan DEIR: 2-2

- inconsistent and inadequate definitions of baseline conditions;
- piecemealing with a narrow focus on ozone without adequate consideration of interrelationships with broader air quality impacts;
- incomplete analysis of cumulative impacts;
- failure to apply precautionary principle protective of public health to compensate for analytical deficiencies from piecemealing and inadequate cumulative analysis;
- failure to provide and analyze a reasonable range of project alternatives.

Inconsistent Baseline Conditions Not Defined by Substantial Evidence

CEQA Guidelines Section 15125(a) establishes that "the baseline physical conditions … as they exist at the time the notice of preparation is published …determine whether an 2-3

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impact is significant." The lead agency generally has discretion in determining what constitutes environmental baseline conditions, so long as it is consistently supported by substantial evidence. Fat v. County of Sacramento (2002) 97 Cal.App.4th 1270, 1278. Unless baseline conditions are consistently and substantially defined, it is impossible to evaluate environmental impacts because there is nothing against which to compare projected conditions which result from a plan or project. Save Our Peninsula Committee v. Monterey County Board of Supervisors (2001) 87 Cal.App.4th 99, 119.

The Ozone Plan DEIR does not consistently define what constitutes baseline conditions. The text indicates that the baseline is 2000 based on the 2000 Clean Air Plan (CAP), but data is presented which variously compares conditions to 2000, 2002 or 2003, or, in the case of toxic air emissions in Table 3.4-5, 2002 data is provided without any comparisons to past conditions and with no identification of projected future conditions. In general, the DEIR assumes that future emissions of ozone precursors – reactive organic gases and nitrogen oxides – will be considerably lower than the past inventory. This conclusion seems to be based on declines seen starting in 2001. As CBE has explained in earlier comments the District uses changes rooted in the serious economic downturn seen in the Bay Area and favorable meteorological conditions to justify less aggressive and effective regulations. The DEIR needs to reassess its estimates of future emissions on more realistic projections which are not dependent upon distortions inherent in data based on unrepresentative conditions.

2-3 concluded

Both the stationary source controls and Transportation Control Measures (TCMs) presented in the Ozone Plan DEIR largely reiterate control measures which have either been previously implemented or are already subject to rulemaking processes. In some cases, particularly with respect to a number of TCMs, it is difficult to understand which measures have already been implemented or what substantive changes to existing controls are being proposed and analyzed. This confusion further compromises the Ozone Plan DEIR's already inconsistent definition of baseline conditions. Despite the ongoing character of most of the control measures, very little objective evaluation of the past effectiveness and prospects for future effectiveness is provided to support claimed projections of future reductions in emissions. The quality of the limited assessments of control measures provided is severely compromised by the failure to thoroughly address air quality impacts beyond consideration of effects on ozone precursors.
The Ozone Plan DEIR does not provide substantial evidence which consistently documents what constitutes baseline conditions. Its projections about what the Ozone Plan will accomplish thus are not credible because neither the starting point, i.e., baseline conditions, nor the past efficacy of its control measures have been adequately demonstrated. Therefore the Ozone Plan DEIR is deficient due to its failure to establish consistent baseline conditions against which future impacts can be evaluated.

2-4

Limited Efficacy of Proposed Transportation Control Measures and Failure to Incorporate More Effective Measures

Transportation Control Measures (TCMs) focus on indirect sources of air pollution, primarily motor vehicles, instead of stationary sources. Indirect sources are major generators of ozone precursors but also generate other pollutants that have disproportionately adverse effects on environmental justice communities which also suffer similarly disproportionate effects from stationary sources. The Ozone Plan DEIR primarily relies upon TCM approaches from its 1991 Clean Air Plan (CAP) and subsequent CAPs to presume a past and future effectiveness which is largely undemonstrated.

The TCMs carried forward in the Ozone Plan continue the present heavy focus on grant funding of employers and other voluntary transportation demand management (TDM) programs. The only specific information provided regarding the past effectiveness of these programs shows a 70% decline in the effectiveness of emission reductions from the Carl Moyer Program since FY 2000-01 (Ozone Strategy, Table 8, p. 37). In practice, there have been ongoing problems with many of BAAQMD's grant programs associated with funds being allocated but not fully utilized or lack of private commitments to establish and maintain effective programs. The DEIR discloses neither these ongoing problems with programs the Ozone Plan proposes to carry forward nor specific enhancements to address these problems, including incorporation of additional, more effective TCMs into the Ozone Plan. 2-5

The TCMs discussed in the Ozone Plan DEIR continue to emphasize various expensive capital projects, particularly for rail projects, without addressing the effects on competing transit services or providing thorough documentation of relative effectiveness with respect to overall air quality amelioration. Within TCMs # 4, 5 and 6, for example, no analysis is provided which distinguishes the relative effectiveness of different rail services.

The Ozone Plan DEIR does not even acknowledge recent operational funding shortfalls and the long-term, adverse picture regarding operations funding for transit, particularly for bus transit operators, and the associated adverse effects on air quality. The lack of attention to maintenance and upgrading of bus services in the TCM controls is striking because the Bay Area 2005 Ozone Strategy document itself documents that TCM #3 dwarfs the magnitude of NO_x reductions achieved by other TCMs, achieves the highest level of effective ROG reductions of any of the TCMs, and also has a "good" cost effectiveness rating. The logical implication from the limited evidence presented is that the DEIR and the Ozone Plan itself need to objectively assess the actual effectiveness of the various TCMs, particularly in relation to TCM #3. In the absence of a critical evaluation of relative effectiveness, the generalized implication that some other TCMs should be carried forward is likely misplaced and a reorientation in funding priorities would be more likely to improve air quality than the amorphous approach presented in the DEIR. 2-6

Inconsistent Baseline Plus Uncertain Efficacy of Control Measures Equal Deficient DEIR

The DEIR's failure to clearly define or analyze either what constitutes baseline conditions or the actual effectiveness of its advocated control measures vitiates an underlying purpose of CEQA which is to objectively disclose and analyze environmental impacts. Without an accurate baseline, it is impossible to realistically evaluate the likelihood of improved conditions in the future. Without thorough and objective evaluations of the past and likely future effectiveness of control measures, the feasibility of the outcomes claimed in the DEIR is speculative. The DEIR fails to define consistent or accurate baseline conditions, relies on control measures with largely undocumented effectiveness, and presumes future ameliorations which are fraught with uncertainties. A lead agency cannot rely upon either inadequately defined baseline conditions or mitigation measures of uncertain efficacy or feasibility. Kings County Farm Bureau v. City of Hanford (1990) 221 Cal. App. 3d 692, 718, 729. Thus, the DEIR fails to articulate and adequately address the effects of delayed compliance with the state ozone standard and the significant impacts to human health and economic productivity from unhealthful ambient air quality that would likely occur in the interim between an ill-defined baseline and a murky future. 2-7

Ozone Piecemealed From Other Air Quality Impacts

The DEIR and the underlying Ozone Plan segment evaluation of the state program for ozone compliance without addressing interrelationships identified by the California Air Resources Board between toxic air emissions, localized effects from diesel emissions, and particulate attainment strategies. Broad public health effects due to interactions between pollutants are not addressed nor are comprehensive risk assessments provided. The following examples highlight how the DEIR's focus on ozone demonstrates an incongruous and ineffective approach to air quality regulation: 2-8

- Figure 3.4-3 shows that VOC Emissions from combustion stationary sources and miscellaneous other sources rose over the 2000-2003 period;
- Table 3.4-4 shows a lack of progress and even increases in ROG and NO_x emissions in the future at many refinery and chemical facilities;
- Table 3.4-14 shows steady future increases in PM_{10} emissions; and
- 2002 data is presented for toxic air emissions in Table 3.4-5 with no identification of projected future conditions.

But the District is required to analyze the environmental impacts of this Plan in addition to the air impacts. See ARB BACT Workbook, Section B)

Moreover, the lack of attention to Particulate Matter (PM) emissions is especially egregious because PM aggravates respiratory illnesses, can cause asthma attacks, and may cause early death in people with heart and lung disease. PM is particularly dangerous for people living in environmental justice communities because they are hit 2-9

with numerous sources. The DEIR should fully analyze all aspects of PM impacts as well as the ozone impacts when adopting control measures. For example, the DEIR should consider together the emissions from cooling towers, NO_x reductions from boilers, stationary internal combustion engines, alternative diesel fuels, all of which generate PM as well as ozone – PM precursors in the case of NO_x reductions from boilers. CEQA requires that the full range of environmental impacts be analyzed. Failure to analyze such sources for potential measures to reduce smog and PM may lead to a biased control analysis as well as a deficient CEQA analysis. Modeling also should consider possible PM reductions because this would most comprehensively address the impacts of ozone and is the most cost-effective approach since the Air District is charged with regulating both PM and ozone.

2-9 concluded

CEQA mandates that all environmental impacts associated with a project be analyzed and can "not become submerged by chopping a large project into many little ones---each with a minimal potential impact on the environment." Bozung v. Local Agency Form. Comm'n of Ventura County (1975) 13 Cal. 3d 263, 283-284. The Ozone Plan DEIR segments its analysis and fails to comprehensively address PM, diesel, toxic air, and broader air quality emissions which are closely related but different in effects from the impacts of ozone precursors. The DEIR does not analyze the Ozone Plan and its effects in their entirety and has thereby violated CEQA by illegally piecemealing the project by masking the full, interrelated effects of the program of controls in the Ozone Plan. See, Citizens Association for Sensible Development of Bishop Area v. County of Inyo (1985) 172 Cal. App. 3d 151.

2-10

Cumulative Impacts

The Ozone Plan DEIR dutifully presents section headers for cumulative air quality impacts for both criteria and non-criteria pollutants. The discussion of criteria pollutants indicates that ROG and NOx emissions are expected to decline but that PM10 emissions would increase by 16 percent by 2020. The DEIR concludes that these "secondary impacts" would be outweighed by other reductions in emissions related to ozone. The DEIR fails to substantively analyze potential ROG and diesel impacts in connection with non-criteria pollutants. The DEIR briefly discusses the California Air Resources Board Risk Reduction Plan (RRP) and appears to treat the RRP as an all-purpose panacea to any and all impacts from non-criteria pollutants.

The Ozone Plan DEIR's cursory approach to cumulative air quality impacts mirrors its piecemealing approach to overall air quality impacts. CEQA requires that the lead agency must assess the environmental impacts of all reasonably foreseeable aspects of a project. Laurel Heights Improvement Assoc. v. Regents of the Univ. of Calif. (1988) 47 Cal. 3d 376, 396-397. The Ozone Plan DEIR impermissibly addresses ozone impacts without linkages to broader health effects related to PM, diesel, toxic air, and broader air quality impacts. The BAAQMD is legally mandated to comprehensively address all aspects of adverse air quality effects in an integrated fashion. Instead, the Ozone Plan DEIR puts control measures for ozone precursors in one box and other threats to public

2-11

health in another box. CEQA requires that environmental documents not limit assessments to consideration of individually limited effects but must also evaluate effects which may be cumulatively considerable in the context of the combined cumulative impacts of a project or plan. CEQA Guidelines, Section 15030; San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus (1994) 27 Cal. App. 4th 713. The Ozone Plan DEIR's myopic focus on regional ozone impacts does not satisfy CEQA because neither a comprehensive set of controls are included nor is a thorough analysis that ensures that adverse localized air quality effects and overall cumulative air quality impacts performed.

2-11 concluded

The DEIR Fails to Mitigate Potentially Significant Environmental Impacts

The piecemealing and failure to address cumulative impacts in the DEIR is further illustrated in the by the lopsided analysis in determining whether a control measure is appropriate. The DEIR must be revised to apply a precautionary approach in evaluating controls, one that recognizes that low income communities and communities of color face higher exposures to air pollution because of proximity to stationary & mobile sources, increased sensitivity to those sources due to constant high exposure, and because many pollutants concentrate locally. The Ozone Plan DEIR states that it considered 390 control measures based on the following factors: (1) Technological feasibility of proposed controls; (2) Emission inventory of the source category and total likely emission reductions from proposed controls; (3) Cost-effectiveness in dollars per ton of emissions reduced; (4) Enforceability, including whether emission reductions are real, quantifiable, permanent, enforceable, and surplus; (5) Rate (and timing) of emissions reductions; (6) Public acceptability, including interests and concerns of community members; (7) Pollutant reduced (volatile organic compounds, nitrogen oxides or both); (8) Any potential adverse environmental impacts; and (9) Socioeconomic impacts.

2-12

The factors outlined in the Ozone Plan DEIR weigh cost and the economic cost to industry and focus solely on the regional picture. These factors as applied do not consider the costs in terms of adverse health effects from localized and disproportionate concentrations of pollutants in environmental justice communities. The Ozone Plan's disproportionate consideration of economic costs to industry in these factors has no real countervailing consideration of the benefits of any proposed measure to the most adversely affected communities who suffer severe health impacts from current operations and perpetuation of existing control strategies. Any balanced measure of economic costs must also consider the economic costs to these communities and related government services associated with high levels of cancer, asthma, and impaired productivity.

These deficiencies make it imperative that a precautionary approach most protective of the public health of environmental justice communities be included in the Ozone Plan and its DEIR to ensure that this dynamic and these facts are taken into account when evaluating a control measure and its effects. The Ozone Plan DEIR claims that the factors BAAQMD considered include "concerns of community members" but that is only relevant to the extent that the community members are fully informed and actually

2-13

involved in the planning process. The Ozone Plan DEIR presents an incomplete and biased analysis that does not address the negative effects or potential benefits associated with additional control measures. These have been precluded from analysis in the DEIR by disproportionately weighing economic costs to industry without application of a precautionary principle cognizant of the full range of air quality impacts and the disproportionate concentration of the most adverse impacts in environmental justice communities.

The California Clean Air Act requires each area to attain compliance with air quality standards by the earliest practical date. Cal. Health & Safety Code Section 43018(a) Since 1991, BAAQMD has developed a series of plans which promise to achieve attainment, but the region continues to routinely violate the California ambient air quality standard for ozone. The Ozone Plan DEIR continues this pattern by providing no projected future attainment date or even a realistic estimate of the emissions reductions necessary to achieve attainment. BAAQMD's past and proposed control measures aspire and promise but have not demonstrated "earliest practical" delivery of results. The time is long past for the affected communities which CBE represents to have economic costs to industry used to dismiss serious consideration of a precautionary approach protective of the health of vulnerable communities.

2-13 concluded

Deficient Project Alternatives

The definition of project alternatives in the Ozone Plan DEIR is deficient because it fails to go beyond a vaguely defined alternative that is dismissed without being appropriately defined or analyzed.

CEQA requires that an EIR describe "a range of reasonable alternatives … which could feasibly attain the basic objectives of the project and evaluate the comparative merits of the alternatives." CEQA Guidelines, Section 15126.6; Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal. 3d 553. Feasible alternatives capable of either eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if such alternatives would be more costly or to some degree would impede the project's objectives, must be included in an EIR. CEQA Guidelines, Section 15126.6 (b) California Public Resources Code Section 21002 further declares that "public agencies should not approve projects as proposed if there are feasible alternatives or mitigation measures available which would substantially lessen the significant environmental effects of such projects." See also, CEQA Guidelines, Sections 15002 (a)(3) and 15021(a)(2); Sierra Club v. Gilroy City Council (1990) 222 Cal. App. 3d 692, 711, 730-731; Citizens for Quality Growth v. City of Mount Shasta (1988) 198 Cal. App. 433, 440-441. An inadequate discussion of alternatives constitutes an abuse of discretion. Laurel Heights Improvement Assn. v. Regents of Univ. of Calif. (1988) 47 Cal. 3d 376, 404-406.

2-14

The Ozone Plan DEIR neither presents a reasonable range of alternatives. The DEIR does not even acknowledge the specific Further Study Measures identified in the Bay

Area 2005 Ozone Strategy document. These measures include the following which could substantially reduce adverse emissions at refineries and chemical facilities:

- emissions from cooling towers
- refinery wastewater treatment systems
- vacuum trucks
- valves and flanges
- wastewater from coke cutting operations
- NO_x reductions from refinery boilers
- stationary internal combustion engines
- encourage alternative diesel fuels

If the precautionary health principle protective of the public health of environmental justice communities had been applied, these measures would have been included as control measures included in the Ozone Plan and not deferred for consideration at some uncertain future time. Absent inclusion in the project, these measures for stationary sources must be included in the definition of at least one project alternative in order to satisfy CEQA's requirement for consideration of a reasonable range of alternatives. In addition, the Ozone Plan DEIR needs to be modified to incorporate into one alternative analysis of a more comprehensively defined program of TCM measures.

2-14
concluded

Conclusion

CBE requests the District to address the deficiencies discussed in this letter.

Very truly yours,

Adrienne Bloch
CBE Staff Attorney

COMMENT # 2

Adrienne Bloch
Communities for a Better Environment
November 21, 2005

Response 2-1

The District staff has received and considered the comments submitted by Communities for a Better Environment (CBE) and Transportation Solutions Defense and Education Fund on the Draft EIR for the 2005 Ozone Strategy. Responses to those comments are set forth in this Appendix.

Response 2-2

This comment provides a general overview of the comment letter provided by CBE. More detailed comments are provided in the subsequent comments. The detailed responses to these issues are provided in Responses 2-3 through 2-14.

Response 2-3

The commenter fundamentally misunderstands the purpose of the environmental review required under CEQA. Many of the issues raised in comments submitted on the Draft EIR, including this one, ask whether the 2005 Ozone Strategy goes far enough to improve air quality. These are important issues; but they are pertinent to the review of the plan itself, not the EIR. Under CEQA our task is to consider whether implementation of the proposed project – in this case, the control measures included in the 2005 Ozone Strategy – will result in one or more significant adverse environmental impacts when compared to the baseline, and whether and how such impacts can be mitigated or avoided. This inquiry is very different from the question whether the project could improve upon the baseline or whether such improvements have been properly identified. In this appendix to the EIR, we focus our responses on the issues relevant to the environmental review under CEQA. Issues regarding the completeness of the plan and whether it could do more to improve air quality or whether those improvements have been properly quantified are addressed in the 2005 Ozone Strategy and appendix.

As the commenter notes, the CEQA Guidelines specify that an EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, from both a local and regional perspective. The baseline used in the Draft EIR meets these specifications.

To characterize the baseline, the District has consistently used the most recent air quality and emissions inventory data available. The Draft EIR uses ambient air quality data for 2004 with 2002 data for toxic air contaminants.[1] Baseline emission inventories for NOx

[1] The 2002 data for toxic air contaminants was the most recent data available at the time the Draft EIR was released.

and VOCs are provided in the Ozone Strategy for the years 2000, 2003, and 2005, which is reported in the EIR (see Table 3.4-4). In most cases, the 2003 inventory has been used for comparison with air quality project impacts to determine potentially significant adverse air quality impacts (see EIR section 3.4.3). No additional data have been provided by the commenter that would change this conclusion.

Note that the air quality environmental setting provides historical air quality information and data to provide an overall perspective of the air quality issues in the District. For example, a 10 year air quality summary is provided in Table 3.4-3, and a 20 year summary of ozone is provided in Figure 3.4-1. The trend data are provided so that the reader has a concept of the larger, historical air quality conditions in the Bay Area.

The commenter contends that deficiencies in characterizing the baseline results in less aggressive and effective regulations. As explained above, this is not a CEQA issue, and it is not true. The 2005 Ozone Strategy includes all feasible measures and an expeditious adoption schedule. Nothing in the characterization of the baseline for purposes of completing the CEQA analysis of the potential impacts of implementing the plan has affected that process.

Response 2-4

As explained in the response to Comment 2-3, this comment raises issues related to the adequacy of the Ozone Strategy itself and not the EIR. The baseline has been properly established and substantiated, and has provided an adequate basis for determining whether implementation of the 2005 Ozone Strategy will result in any significant adverse environmental impacts.

While not necessary to address a CEQA concern, note that District staff evaluated the potential effectiveness of all control measures based on a variety of factors, including:

- Technological feasibility of the proposed controls;
- Emission inventory of the source category and total likely emission reductions from the proposed control;
- Cost-effectiveness in dollars per ton of emissions reduced;
- Public acceptability, including interests and concerns of community members;
- Whether the emission reductions are real, quantifiable, permanent, enforceable, and surplus;
- Whether reduction is of volatile organic compounds or nitrogen oxides or both;
- Rate of emission reduction;
- Any potential adverse environmental impacts; and
- Socioeconomic impacts.

More importantly, in the context of the Draft EIR, and despite the commenter's suggestion to the contrary, the District did consider the potential impacts of the plan's effects on pollutants other than ozone precursors.

A summary of the description and evaluation of these control measures is included in Appendix C&D of the 2005 Ozone Strategy. Table 6 of the 2005 Ozone Strategy shows the rules and control measures that have been adopted since 1991. Pages 38 through 42 of the 2005 Ozone Strategy describes the TCMs that have been implemented during 2001-2003. The air quality impacts of the plan are detailed in Chapter 3.4 of the EIR.

See Response 2-3 with respect to baseline.

Response 2-5

Again this comment concerns primarily the 2005 Ozone Strategy and not the Draft EIR. A summary of the evaluation of the TCMs is included as Appendix D of the 2005 Ozone Strategy. Under CEQA an EIR must include an evaluation of the potential adverse impacts of a proposed project (in this case the control measures in the 2005 Ozone Strategy), mitigate potentially significant impacts, and evaluate alternatives to avoid potentially significant adverse impacts. There is no requirement in the CEQA statutes and guidelines that require that an EIR evaluate the effectiveness of the control measures, although that was a component of the 2005 Ozone Strategy.

Note that the 2005 Ozone Strategy indicates that most projects in Phase 1 of the TCMs are either currently programmed or funding is otherwise expected to be available for full implementation. Some Phase 2 projects have substantial funding identified, while others are dependent on future funding sources (see page 59 of the 2005 Ozone Strategy).

Again we note that the Draft EIR did consider the impacts of all control measures, including TCMs, and addressed the potential adverse impacts of any air pollutant effected by the plan.

Response 2-6

This comment concerns the 2005 Ozone Strategy and not the Draft EIR. A summary of the description and evaluation of the TCMs is included as Appendix D of the 2005 Ozone Strategy and is not part of the EIR.

The regulatory agenda for adopting the stationary source control measures and TCMs is identified in Table 10 and Table 13, respectively, of the 2005 Ozone Strategy. Phase 1 of TCM #3 is being implemented between 2004 and 2006. Phase 2 will occur after 2006.

Response 2-7

This comment concerns the 2005 Ozone Strategy and not the Draft EIR. See Response 2-3 with respect to baseline. See Responses 2-4 and 2-5 regarding the analysis of the effectiveness of the control measures.

The commenter's suggestion that delayed compliance has resulted in significant impacts on air quality and public health is not based in fact. As shown in the EIR (see Table 3.4-

3), the air quality in the Bay Area was in compliance with most ambient air quality standards in 2004, except for the 1-hour state ozone standard (exceeded on 7 days) and the 24-hour federal PM2.5 standard (exceeded on 1 day).

Response 2-8

The commenter claims that the Draft EIR and 2005 Ozone Strategy do not address the interrelationships between toxic air emissions, localized effects from diesel emissions and particulate matter attainment strategies. We disagree. The EIR evaluated the air quality impacts of the control measures included in the 2005 Ozone Strategy on all pollutants. For example, the EIR evaluated the secondary emissions due to change in the use of lower VOC coatings, which includes analysis of the potential increase in toxic air contaminants. The EIR evaluated the secondary air quality impacts from additional control of stationary sources, which includes an analysis of PM10 emissions, ammonia emissions and CO emissions, as well as NOx and VOC emissions. The EIR evaluated the secondary air quality impacts from construction activities for all criteria pollutants. The EIR evaluated the secondary air quality impacts of VOC and NOx emissions associated with increased electrical demand. The EIR evaluated the emissions from mobile sources, including CO, NOx, VOC and PM10 emissions. Further, the EIR evaluated the impacts of the 2005 Ozone Strategy on toxic air contaminants, including diesel emissions.

The commenter misunderstands the purpose of the various tables and figures referenced in this comment. Figures 3.4-3 and 3.4-4 were intended to show that VOC and NOx emissions from mobile sources are the major source of VOC and NOx emissions in the Bay Area and account for over 50 percent of the total VOC emissions and about 80 percent of the NOx emissions in 2003. An overall reduction in emissions from mobile sources has lead to a decrease in total emissions as illustrated in Figure 3.4-2. Any effective ozone control strategy will need to focus on reductions in emissions in mobile sources in order to attain the ambient air quality standards.

As noted in this comment, the overall PM10 emission inventory is expected to increase between 2005 and 2020. The evaluation in the EIR of the secondary PM10 emissions associated with the implementation of the proposed control measures in the 2005 Ozone Strategy indicated that the increases were expected to be minor. In fact, the overall increase in PM10 emissions projected between 2005 and 2020 is largely associated with an increase in population and other activities, not implementation of the 2005 Ozone Strategy. Additional control measures to be implemented by CARB are expected to provide additional PM10, VOC, and NOx emission reductions in the Air District, primarily associated with reduced emissions from mobile sources and consumer products.

The EIR indicates that the 2005 Ozone Strategy is expected to result in an overall decrease in vehicle miles traveled and air emissions on a regional basis. However, significant localized air quality impacts associated with diesel exhaust could occur due to certain TCMs that would concentrate traffic in specific areas. Impacts associated with toxic air contaminants as a result of implementing these TCMs were considered to be

potentially significant. Sufficient data to estimate the projected future concentrations are not available and will depend on many different factors, e.g, location of transportation centers, projected capacities, etc. Therefore, the specific concentrations of toxic air contaminants are considered to be speculative, and are not amenable to further analysis at this time. These impacts will be fully considered when the individual projects that may result in these emissions increases are proposed. Nonetheless, for purposes of this project, the potential toxic air contaminant impacts were considered to be significant and to require mitigation.

Response 2-9

The District agrees that PM10 is a pollutant of significant concern.[2] Thus, while the 2005 Ozone Strategy is intended to reduce ozone precursor emissions and does not specifically address PM, many of the proposed control measures are expected have the additional benefit of helping to reduced overall PM and diesel PM emissions. CEQA does not require the District to consider the impacts of ozone and PM10 emissions from sources currently operating within the District, unless the 2005 Ozone Strategy can be expected to result in an increase in emissions of ozone precursors or PM10 or its precursors from those sources. See Response 2-8 regarding PM10 impacts of the proposed 2005 Ozone Strategy.

Several stationary source control measures will reduce PM emissions. The flare control measure (SS-6 Flares, adopted as Regulation 12, Rule 12 on July 20, 2005) will result in decreased PM emissions from a reduction in incineration. The control measures aimed at combustion processes (boilers, large water heaters and stationary gas turbines) primarily reduce NOx emissions. NOx emissions from stationary (and vehicular) source fuel combustion are precursors to nitrates, which comprise a significant portion of ambient PM. Therefore, these NOx measures will also lead to a reduction in PM.

All of the mobile source measures will help reduce PM emissions, with the diesel equipment idling ordinance measure (MS-1) and the low-emission vehicle incentives measure (MS-3) helping to reduce diesel PM in particular. All of the transportation control measures, by reducing vehicle trips and vehicle miles traveled will have the

[2] For example, the District recently approved a schedule for adoption of particulate matter (PM) control measures under Senate Bill 656 (stats. 2003, c. 738). This legislation, sponsored by Senator Byron Sher, requires ARB, in consultation with local air districts, to develop and adopt a list of the most readily available, feasible, and cost-effective control measures that could be employed by ARB and the air districts to reduce PM10 and PM2.5. The goal of SB 656 is to ensure progress toward attainment of State and federal PM10 and PM2.5 standards. The list of control measures is to be based on rules, regulations, and programs existing in California as of January 1, 2004 to reduce emissions from new, modified, or existing stationary, area, and mobile sources. CARB approved the list of control measures in November 2004. The bill also requires air districts to review the CARB list and develop implementation schedules for feasible control measures appropriate for the respective air basins based on the nature and severity of local PM conditions. The implementation schedules are to be developed by prioritizing adoption and implementation based on the effect each control measure will have on public health, air quality, emission reductions, as well as each control measure's feasibility, cost-effectiveness, and appropriateness for the respective region. The District has evaluated the CARB list of control measures, analyzed Bay Area PM sources, and approved an implementation schedule in November 2005.

additional benefit of reducing PM emissions from fossil fuel combustion and re-entrained road dust.

Response 2-10

The District has not improperly segmented a large project to avoid consideration of environmental impacts. To the contrary, we have looked at the impacts of individual control measures because that is the only way to accurately assess the overall impact of implementing the 2005 Ozone Strategy. In no sense has the District piecemealed the analysis of potential impacts to avoid consideration of mitigation measures and other alternatives. In fact, while the plan as a whole is expected to have an overall beneficial effect on air quality, the District has faithfully met its obligation to mitigate the environmental impacts identified in the EIR where feasible.

See Responses 2-8 and 2-9 with respect to potential PM control measures. As discussed in Response 2-8, the EIR evaluated the potential secondary air quality impacts of the proposed 2005 Ozone Strategy on all pollutants. The cumulative impact of the overall air pollution control strategy in the Bay Area are included in Section 3.4.5. No piecemealing of the proposed project has occurred. The EIR recognizes that there are potentially significant impacts associated with the 2005 Ozone Plan itself. The cumulative impacts of the various air pollution control measures and strategy is expected to be an overall reduction in emissions, over what would be expected without the control measures and strategies in place.

Response 2-11

The comment that the Draft EIR fails to analyze potential ROG and diesel impacts in connection with toxic air contaminants is incorrect. The potential VOC emission impacts related to toxic air contaminants for the 2005 Ozone Strategy is found in subsection 3.4.3.2 Non-Criteria Pollutants. The cumulative impact discussion associated with toxic air contaminants is located in subsection 3.4.5.2.

CARB's risk reduction plan is included as a cumulative project impact discussion and is not referred to as an "all purpose panacea" to impacts from toxic air contaminants. However, the RRP is expected to result in a reduction in diesel particulate emissions and associated cancer risk of 85 percent by 2010 and 95 percent by 2020. Therefore, the RRP will have a beneficial effect on reducing the localized impacts of toxic air contaminants. Additional clarification has been provided in subsection 3.4.5.2 to indicate that the reduction in particulate emissions and the related decrease in cancer risk is expected to provide beneficial health impacts.

The Draft EIR analyzed the impacts of all air pollutants on air quality, including air quality standards that have been established to protect public health. The EIR considers the ozone control measures that are part of the 2005 Ozone Strategy as the proposed project. The impact of other air pollution control strategies (e.g. CARB regulations) is part of the cumulative analysis in subsection 3.4.5 of the EIR, and not part of the

proposed project. As required under CEQA Guidelines §15130 (b), the discussion of cumulative impacts reflects the severity of the impacts and their likelihood of occurrence. The guidelines indicate that the discussion need not provide the same level of detail as is provided for the effects attributable to the project alone. Therefore, the analysis of the ozone control measures impacts in the EIR correctly places greater emphasis on the impacts of the proposed project over the cumulative impact.

The mere existence of significant cumulative impacts caused by other projects alone does not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable. (CEQA Guidelines §15064(h)(4).) As noted above, the cumulative impacts of the various air pollution control strategies have been evaluated in the EIR. Further, the commenter claims that available control strategies have been excluded from the analysis but does not provide examples.

See also Responses 2-8, 2-9, and 2-10.

Response 2-12

The commenter argues that the Draft EIR must be revised to apply a precautionary approach in evaluating controls. In fact, the document does exactly this by complying with the requirement under CEQA to identify all significant adverse environmental impacts that may result from implementation of the 2005 Ozone Strategy.

The commenter suggests that additional controls are necessary to further reduce levels of ozone, particularly in communities that are disproportionately impacted by pollutants. Although not relevant to the environmental analysis required under CEQA, we note that ozone is a regional pollutant and that reductions in ozone precursor emissions within the air basin will affect all communities within the District (and downwind areas as well), including the most heavily impacted areas such as Livermore at the eastern edge of the District. In this regard it is also useful to recall that the 2005 Ozone Strategy includes all feasible measures and an expeditious adoption schedule. This is specifically authorized by state law. Moreover, any control measure included in the plan must be able to meet certain requirements including feasibility and cost-effectiveness; this is required by state law. See Response 2-4 for a discussion of how control measures were developed

The proposed project's potential impacts, considering all air pollutants and all receptors, are addressed in the analysis of potential adverse impacts in Chapter 3. The overall impact of the 2005 Ozone Strategy and other air pollution control strategies is expected to be an overall reduction in air emissions to all communities in the Bay Area, providing the related air quality and public health benefits.

The remainder of this comment concerns the 2005 Ozone Strategy and not the Draft EIR.

Response 2-13

The District conducted an extensive public participation effort for the 2005 Ozone Strategy that involved multiple opportunities for public comment. The public involvement process in included in Appendix A of the 2005 Ozone Strategy.

The Bay Area violated the state ozone standard on 7 days in 2004, the most recent year with monitoring data available, which is down from 1996 when state ozone standard was exceed on 34 days (see EIR Table 3.4-3). As noted in Response 2-4, the DISTRICT staff evaluated the potential effectiveness of each control measures based on a variety of factors, only one of which was cost.

The California Clean Air Act requires regions that do not meet the State one-hour ozone standard to prepare plans for attaining the standard, and to update these plans every three years. The measures constitute a roadmap for how the Bay Area proposes to comply with the State one-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary source measures, mobile sources measures and transportation control measures. These plans must include estimates of current and future emissions of the pollutants that form ozone, and a control strategy, including "all feasible measures", to reduce these emissions. The plans must also propose measures to reduce transport of air pollutants to downwind regions.

The CCAA contemplates the use of models to assess improvements in air quality as part of the ongoing effort to attain and maintain the state ambient air quality standards as part of the triennial plan updates. However, as the District is currently pursuing an "all feasible measures" planning effort – as are all other districts that have planning obligations under the CCAA – modeling to demonstrate the effect of emissions reductions and the estimated attainment date are not necessary or required as part of the 2005 Ozone Strategy. See also Response 2-12.

Response 2-14

The limitation in developing alternatives to the proposed project are addressed in the EIR (see subsection 4.2 - Alternatives Rejected as Infeasible). The only alternative under the CCAA available to the District as a legal and practical matter is to adopt all feasible measures on an expeditious schedule. To satisfy the all feasible measures requirement, the District investigated a wide range of potential ideas from many sources. The steps the District took to identify all feasible control measures are outlined in Chapter 2, Sections 2.3, 2.3.1, 2.3.3, 2.3.5, and 2.3.6. In total, District staff considered 390 control measure suggestions primarily from stationary and mobile sources. Of the 390 control measure suggestions considered by District staff the potential control measures were distilled down to the measures identified in the 2005 Ozone Strategy that were determined to be feasible per the requirements of California Health and Safety Code §40922(b). The factors taken into consideration when determining which control measures are feasible include cost effectiveness, technological feasibility, total emission reduction potential, the rate of reduction, public acceptability, and enforcement (CCR §40922 (a-b)).

The CCAA requires that the District's 2005 Ozone Strategy include implementation of all feasible control measures and installation of BARCT on all existing stationary sources of ozone precursor emissions as expeditiously as practicable (title 17, California Code of Regulations (13 CCR), §70600(b)(1)). In addition, the District must include measures to attain the State ambient air quality standard for ozone by the earliest practicable date (13 CCR §70600(b)(2)) in order to help other adjacent air basins where ozone generated in the Bay Area is transported. Some of CARB's transport mitigation requirements are included among CCAA planning requirements for all non-attainment areas. To summarize the transport mitigation requirements, the District must:

1. Adopt and implement all feasible measures.
2. Adopt and implement BARCT.
3. Adopt a no net increase permitting program for sources above 10 tons per year.
4. Include measures to attain the standard in specified downwind regions.

The requirements to adopt all feasible measures and implement BARCT on all existing stationary sources are necessary for the Bay Area to meet both the CCAA and transport mitigation requirements, and are addressed in the control strategy as well as through District rule development and permitting processes. With respect to the no net increase requirement, the District adopted a 10 ton/year no net increase requirement for ozone precursors in District Regulation 2, Rule 2: New Source Review on December 21, 2004. Regarding measures sufficient to attain the State ozone standard in specified transport areas, this is accomplished by the requirement to adopt all feasible measures. As adoption of all feasible measures represents the most stringent control strategy that can be accomplished, this requirement is met with the approval of each triennial plan**.**

Therefore, per the CCAA, once feasible control measures have been identified, they are required to be included in the Ozone Strategy. Based on this requirement, alternatives that did not include all feasible measures were considered infeasible and were not considered.

The Further Study Measures are discussed in subsection 2.3.8 of the Draft EIR. Further study measures are measures for which insufficient information was available during the development of the control strategy to allow for a comprehensive review. For example, emissions data for some source categories or the emissions reduction potential of some control measures may be uncertain. In these cases, further study may be warranted if the other aspects of a suggested control, such as public acceptability and adverse environmental impacts appear positive. The 2005 Ozone Strategy includes a number of measures for evaluation – Further Study Measures; if and when those measures are found to be appropriate to be considered for adoption the District will take the necessary steps to adopt the measure or include it in a future planning document. These measures have not reached a stage when they would be appropriate as alternatives under CEQA. Moreover, the District staff is unaware of any potential adverse environmental impact identified in the EIR that could be avoided by either by substituting or adding one or more FSM. In this regard we note that the potential environmental impacts associated

with Further Study Measures are speculative and not evaluated in this EIR because they are not included as commitments in the 2005 Ozone Strategy. Additional CEQA review will be required if any of the Further Study Measures are proposed to be implemented.

LAW OFFICE OF MARC CHYTILO

ENVIRONMENTAL LAW

November 21, 2005

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

By US Mail

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Principal Environmental Planner
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939 Ellis Street,
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By Email: sbourguignon@baaqmd.gov
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RE: CEQA Comments, 2005 Ozone Strategy

Dear Mr. Broadbent and Ms. Bourguignon:

This office represents Transportation Solutions Defense and Education Fund ("TRANSDEF") in this matter. Please accept our comments on the draft environmental impact report (DEIR) for the 2005 Ozone Strategy.

We note continuing difficulties securing documents. This office requested a copy of the 2005 Ozone Strategy and its EIR by telephone upon receiving notice of their availability. The 2005 Ozone Strategy was provided, but not the environmental review document. This omission was discovered too late to make a further request. We appreciate the web-positing, but did request a hard copy that was not sent. 3-1

We previously requested an extension of the comment period for the plan to coincide with the environmental review document, but were denied. We would like to believe in the District's commitment to public process and receipt of comment, but after years of frustrations, we still find impediments to participation. We note that many of our comments reiterate concerns articulated about previous Clean Air Plan environmental review documents.

Comment 1 – Latent impacts from less aggressive strategy

Given that the purpose of CEQA's environmental review document is to inform "decisionmakers, and the public generally, of potentially significant adverse environmental effects of a project," (DEIR p. 1-3), the EIR must disclose the fact that more aggressive air pollution control strategies would reduce adverse human health effects from the exposure to ozone. The latent adverse effects upon public health of the District's failure to more promptly achieve the California Ambient Air Quality Standard for ozone should be identified as a 3-2

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significant impact. Additionally, the health effects of this project, in terms of premature deaths, asthma attacks, and other air pollution related symptoms, should be disclosed.

3-2 concluded

Comment 2 – Inadequate Baseline - visibility

The DEIR fails to adequately characterize the effect of air pollution-related haze on Bay Area views and aesthetics, as well as the effects of transported haze to downwind communities in Sacramento and the San Joaquin Valley. This baseline is essential to evaluate the project's impacts – does one set of selected control strategies improve visibility better than another? And are there visibility consequences from the project as proposed and considered? These questions are ignored as the baseline is not established.

3-3

Comment 3 – Alternatives analysis

The environmental review document fails to include a reasonable range of alternatives, since no alternative achieves improvements in local and/or regional visibility, none accelerates air quality improvement faster than the proposed project, and none achieves air quality to the point of predicting attainment. The EIR is required to provide the District decisionmakers and the public with sufficient information to select and advocate, respectively, the most appropriate project. The selection of a narrow range of alternatives, none of which really achieves the California Clean Air Act's purpose of attainment, condemns the environmental review document's adequacy.

3-4

Comment 4 - Shifting project description

The District described one project for the NOP, then another in the DEIR. Given the extensive comments to the NOP (that filled an entire volume of the 2005 Ozone Strategy) the District should have alerted the public and interested agencies of the decision to abdicate its responsibilities under the federal 1-hour ozone standard, *to wit*, to adopt and submit a maintenance plan. Various elements of the project described in the NOP have been dropped without explanation.

3-5

Comment 5 – Inadequate project description

Central to an adequate environmental review document is a complete statement of the project objectives. Guidelines § 15124(b). In this case, the objective is to comply with the California Clean Air Act's requirements. Page 1-6. As noted in the DEIR, the California Clean Air Act requires plans "for attaining the standard," (p. 2-3), including periodic plan revisions. The plans "must contain estimates of current and future emissions of pollutants that form ozone" and thus represent a revised plan for purposes of Health and Safety Code § 40233's transportation sources plan requirements. The project fails to achieve the stated objectives, as it fails to estimate emissions reductions needed for attainment, after professing the ability to do so. Further, the

3-6

project omits the California Clean Air Act's mandated periodic revision to the " emissions reductions from transportation sources necessary to attain the state and federal ambient air quality standards." Future estimated emissions inventories are not included, including the mobile source emissions inventory, and there is no prediction of the emissions reductions necessary for attainment. As such, the Project description is inadequate for including all statutorily mandated elements, such as the estimate of emissions reductions necessary for attainment and the concomitant § 40233 transportation sources plan.

Similarly, the absence of mandated contingency measures in the 2005 Ozone Strategy render its project description inadequate – the project objectives are to comply with the mandated air quality planning requirements, yet the 2005 Ozone Strategy fails to do so.

In light of these glaring omissions, the DEIR should be re-circulated with a complete project description, including compliance with all California Clean Air Act requirements, not only those the District chooses.

3-6 concluded

Comment 6 – Precursor tradeoffs

The DEIR does not adequately describe the conflict between VOC-based control strategies, which have been in the past projected to achieve improved Bay Area air quality more quickly that dual-precursor strategies, and the proposed dual-precursor strategy that is slower at improving Bay Area air quality, but which also reduces air pollution transport. Alternatives should examine the relative merits and detriments of differing approaches. This fundamental issue must be disclosed and the relative merits and detriments of the approach evaluated for informed decisionmaking and meaningful public participation.

3-7

Comment 7 – Environmental Justice

The DEIR is incorrect in stating flatly that environmental justice issues may not be considered in the environmental review document. Environmental justice issues are relevant, and must include examination of any reasonably foreseeable effects of Plan adoption and control strategy implementation upon specific communities. For example, certain control strategies will increase emissions at particular locations – e.g. diesel emissions near freeways from increased diesel bus use, carbon monoxide and toxics hotspots, or refinery emissions control strategies increasing secondary emissions. These emissions increases, as well as the continuation of emissions that might otherwise be controlled, should be mapped against maps of know sensitive receptors. (See BAAQMD CEQA Guidelines, pages 10-11.)

3-8

Additionally, Bay Area demographic data should be integrated with data reflecting which geographical areas will experience substantial reductions, moderate reductions, and any that will experience increases in emissions. TRANSDEF believes that the 2005 Ozone Strategy has the

potential to benefit more affluent suburban communities affected by ambient air quality to the detriment of urban communities that have more exposure to air pollution hotspots.

3-8 concluded

Comment 8 – Particulate matter increases

Contrary to the 2005 Ozone Strategy's proclamation, increased particulate matter emissions and ambient air quality concentrations of particulate matter are affected by the project's balancing of stationary source versus mobile source measures. TCMs reasonably available would reduce VMT and vehicle-based particulate matter emissions, which are a significant fraction of the emissions inventory. The 2005 Ozone Strategy should examine alternatives that more aggressively employ TCMs to both improve regional air quality, reduce transport and reduce the rate of particulate matter emissions inventory growth.

Additionally, the 2005 Ozone Strategy EIR must examine the effect of its plan and control strategies upon the Bay Area's compliance with the California Clean Air Act's particulate matter requirements. Although District has generally taken the position that those elements of the California Clean Air Act with no firm and enforceable deadlines may be ignored at their discretion, a CEQA document that fails to evaluate the relationship is inadequate, and where significant impacts to particulate matter result, as here, alternatives and mitigation measures that ameliorate those impacts be considered. The District could, for example, adopt a particulate matter attainment plan and control strategy that is integrated with its ozone strategy.

3-9

Comment 9 – Biological resources

With the District's first plan-based admission of the effects of significant Bay Area air pollution transport to the San Joaquin Valley and beyond, the 2005 Ozone Strategy must examine the effect of Bay Area emissions on Sierra alpine and sub-alpine biological resources. For example, visibility, tree-death and other dramatic biological losses are currently being caused by air pollution in the Sierra mountains. While local San Joaquin Valley emissions are also likely to be a significant part of this impact, equally undoubtedly Bay Area transported air pollutants also contribute. This significant impact must be identified and considered in the DEIR, and alternatives and mitigation measures considered.

3-10

Comment 10 - Land use issues

The impotence of transportation control measures in the 2005 Ozone Strategy is demonstrated in the DEIR's § 3.10.3. The baseline is uncontrolled growth and increased emissions commensurate with population increases. Clearly, land use strategies hold the only long-term means to achieving and maintaining health based ambient air quality standards in the Bay Area into the future. Per capita emissions could and should be reduced through the 2005 Ozone Strategy transportation control measures.

3-11

It is generally disappointing that the District is unwilling to use the 2005 Ozone Strategy to more aggressively integrate air quality planning and attainment objectives with land use patterns and transportation planning --the very areas that have historically prevented the District from achieving attainment. As noted by various NOP comments, the Bay Area has promoted public transit expansion in some places that have exacerbated sprawl and expansion of the urban area, while refocusing enhanced transit to existing urban areas offers a substantially more cost-effective and air pollution control-effective transit system. Until the Bay Area's sprawling land use patterns are curbed, air pollution will always remain a major problem for the Bay Area.

3-11 concluded

Comment 11 – All feasible measures and alternatives analysis

TRANSDEF understands that the District's response to the thrust of TRANSDEF's objections has been and will be that all feasible measures are required and utilized, so nothing more can be done. We respectfully disagree and suggest much more can and should be done.

The Air Resources Board definition of all feasible measures allows various economic, cost-effectiveness and other restraints to be used to narrow the scope of control strategies considered. TRANSDEF contends that these constraints should be lifted (or at least publicly articulated) for purposes of consideration of alternatives and in the case of transportation control measures in the 2005 Ozone Strategy.

Specifically, 17 Cal. Code of Regs. § 70600(a)(1) provides:

> "all feasible measures" means air pollution control measures, including but not limited to emissions standards and limitations, applicable to all air pollution source categories under a district's authority that are based on the maximum degree of reductions achievable for emissions of ozone precursors, taking into account technological, social, environmental, energy and economic factors, including cost-effectiveness.

3-12

This definition inherently allows the District to exercise subjective judgment in considering control strategies. In light of the relatively smaller emissions reductions associated with TCM implementation, the District appears to have discounted and discarded potentially available transportation control measures and strategies that have long-term substantial benefits to the Bay Area's air quality improvement efforts. In order to avoid such questions and publicly explain the District's decisionmaking rationale, TRANSDEF requests that the District employ more transparent and objective criteria to delineate its air pollution control choices, and expand its horizons when considering potentially applicable transportation control measures.

Expanding the definition of feasible measures, especially in the transportation control measure context, substantially expands the universe of CEQA alternatives that could and should be

considered. The artificial limiting of alternatives based on skewed, subjective feasibility criteria that have not been disclosed to the public taints the adequacy of the CEQA environmental review document.

3-12 concluded

Comment 12 – Population assumptions are not articulated

Under the District's CEQA Guidelines, future local plans must be consistent with the applicable Clean Air Plan, which has now been named the Ozone Strategy. BAAQMD CEQA Guidelines page 21-22, 12/1999. The 2005 Ozone Strategy serves as a cap on growth, since local plans must conform to the population estimates used in the 2005 Ozone Strategy. It is not apparent that these population numbers are specified in the 2005 Ozone Strategy, creating the potential for substantial increased population growth without encountering the air quality limitations that would impose consideration of alternatives and mitigation measures under CEQA. The 2005 Ozone Strategy appears growth-inducing without an express articulation of the population figures that are air quality-related limits for local plans.

3-13

Similarly, regional demographic trends demonstrate that any increase in VMT in any jurisdiction in the Bay Area constitutes a significant impact to air quality. These cumulative impacts may be mitigated by the adoption of BAAQMD CEQA thresholds that acknowledge a finding of significant impact for any project increasing VMT, as any such increase delays attainment and causes and/or contributes to nonattainment. This finding allows the imposition of CEQA's environmental review document requirement, and creates opportunity for the identification of project alternatives and an environmentally superior alternative.

Comment 13 – Project inconsistency with local CEQA thresholds

The District CEQA thresholds also require comparison of the rates of VMT growth to population growth rate. Id., at 22. ABAG observes population growth at or less than 1% per year in most Bay Area communities, yet the per capita VMT growth rate is approximately 1.4%. Using BAAQMD CEQA thresholds, this is a significant impact that should be recognized in the EIR.

The 2005 Ozone Strategy must examine alternative levels of VMT and include expanded transportation control measures to reduce future VMT to improve future ambient air quality and avoid the significant impact from excessive VMT growth. Enhanced project mitigation and more aggressive and effective strategies for development projects to avoid, reduce and offset their air pollution emissions and VMT increases is a viable and feasible 2005 Ozone Strategy air pollution control strategy that should be included as part of a Plan alternative and/or control strategy.

3-14

Thank you for your consideration of our comments in this matter.

Sincerely,

/S/
Marc Chytilo

CC: Sacramento Air Quality Management District
San Joaquin Valley Air Pollution Control District
Communities for a Better Environment

COMMENT # 3

Marc Chytilo
Law Offices of Marc Chytilo
November 21, 2005

Response 3-1

The District staff appreciates your comments and will continue to improve on efforts to make the public participation process available to all interested parties.

Response 3-2

As discussed in Response 2-14, the District is required to adopt and implement all feasible control measures and implement best available retrofit control technology or BARCT on all existing stationary sources of ozone precursor emissions as expeditiously as practicable (13 CCR §70600(b)(1)). In addition, the District must include measures to attain the State ambient air quality standard for ozone by the earliest practicable date §70600(b)(2) in order to help other adjacent air basins where ozone generated in the Bay Area is transported. The District considered 390 control measures and distilled the list down to those included in the 2005 Ozone Strategy. The District is not aware of any additional or "more aggressive" control measures to consider and the commentater has not suggested any.

The commenter suggests that "the EIR must disclose the fact that more aggressive air pollution control strategies would reduce adverse human health effects from the exposure to ozone" and that "latent adverse effects upon public health of the District's failure to more promptly achieve the California Ambient Air Quality Standard for ozone should be identified as a significant impact." These comments reveal a fundamental misunderstanding of the CEQA review. Certainly the question whether the District has gone far enough in developing a strategy to meet the state ozone standard is a central concern of the project in relation to the CCAA planning requirements. The purpose of the CEQA review, however, is to understand the environmental impacts that may occur as a result of implementing the control measures in the 2005 Ozone Strategy. In fact, as noted in the EIR, the overall effect of the proposed project (implementation of the 2005 Ozone Strategy) is expected to be a decrease in VOC and NOx emissions and a related decrease in ozone, providing an overall air quality and public health benefit. See Response 2-3 for additional discussion of this issue.

Response 3-3

In large part, this comment concerns the 2005 Ozone Strategy and not the Draft EIR. The commenter suggests that inadequacies in the baseline for pollution-related haze prevented meaningful consideration of alternatives. We disagree.

Pollution related "haze" is a combination of a number of pollutants, including PM10. However, as noted in Response 2-9, NOx control measures will also lead to a reduction in PM10. All of the mobile source measures will help reduce PM emissions, with the diesel equipment idling ordinance measure (MS-1) and the low-emission vehicle incentives measure (MS-3) helping to reduce diesel PM specifically. All of the transportation control measures, by reducing vehicle trips and vehicle miles traveled will have the additional benefit of reducing PM emissions from fossil fuel combustion and re-entrained road dust. A reduction in emissions in the Bay Area will reduce the emissions available for transport of pollutants into downwind areas, providing air quality and public health benefits in those areas as well.

The environmental baseline associated with transport of pollutants outside of the Bay Area is addressed in section 3.4.1.4 of the Draft EIR. The potential impacts from the transport of pollutants associated with implementation of the control measures in the 2005 Ozone Strategy is addressed in section 3.4.3.1 under Potential Adverse Impacts and Ozone Transport. As explained by the analysis in the EIR, decreasing NOx and VOC emissions within the Bay Area through implementation of the 2005 Ozone Strategy is expected to decrease ambient ozone concentrations in the Bay Area and to decrease the available ozone and ozone precursors available for transport into neighboring air basins.

Moreover, because the District is unable to identify measures to reduce emissions of ozone precursors by five percent or more per year as otherwise required by Health and Safety Code § 40914(a), the District uses the "all feasible measures" alternative authorized in § 40914(b). For this reason, the District has included all feasible measures in the 2005 Ozone Strategy; consequently there are not alternative sets of measures to consider and choose between as the commenter suggests.

Response 3-4

While the EIR may differ somewhat from the traditional EIR, the commenter has spelled out the various reasons why this is so. See Response 2-14 regarding the alternative analysis. Since the District is currently pursuing an "all feasible measures" planning effort, a strategy specifically authorized by the CCAA, determining the attainment date is not necessary or required as part of the 2005 Ozone Strategy under the California Clean Air Act. The remainder of this comment concerns the adequacy of the 2005 Ozone Strategy and not the Draft EIR.

Response 3-5

The 2005 Ozone Strategy describes how the San Francisco Bay Area will make progress toward the State one-hour ozone standard as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. At the beginning of this ozone planning process, the 2005 Ozone Strategy was to include requirements related to the national one-hour ozone standard; however with the revocation of the national one-hour standard in June 2005, the District has decided to move forward with this Strategy as a state triennial update as required by the CCAA.

The project description did not change the control measures included in the 2005 Ozone Strategy nor did it substantially change the environmental analysis. All environmental resources on the CEQA checklist were evaluated in the impact analysis in the EIR. Finally, there is no requirement to re-circulate the NOP when changes are made to a proposed project. The EIR evaluated the project as currently proposed and the public was given 45-days public notice as required under CEQA.

Response 3-6

The project objectives are outlined in section 1.1.6 of the EIR and are as follows:

- Comply with the 1988 California Clean Air Act requirements including:
  1. Apply best available retrofit control technology (BARCT);
  2. Implement all feasible measures through an expeditious implementation schedule;
  3. Reduce population exposure to ozone and its precursors according to a prescribed schedule;
  4. Provide for the attainment of the State ozone ambient air quality standard at the earliest practicable date.
- Comply with transport mitigation requirements in Health and Safety Code §40912.

Contrary to the comment, the District staff believes that the 2005 Ozone Strategy achieves the above objectives.

The commenter's enumerated concerns about the project description are actually claims that the 2005 Ozone Strategy is inadequate, cloaked in CEQA terminology. See Response 2-3 regarding the distinction between these two sets of issues. And see Responses 2-13 and 3-4 regarding the attainment demonstration requirements. Future estimated emission inventories were included in the 2005 Ozone Strategy and EIR. Emission inventories for VOC and NOx were estimated in the 2005 Ozone Strategy and included in Table 3.4-4 of the EIR for 2000, 2003, 2005, 2010 and 2020 and include both mobile and stationary sources.

The requirement to include contingency measures is inconsistent with the use of the "all feasible measures" alternative authorized under Health and Safety Code § 40914(b) and used by the District in preparing the 2005 Ozone Strategy. Contingency measures are required under § 40915 for implementation upon a finding by the state board that the District is failing to achieve interim goals or maintain adequate progress toward attainment. Neither of those situations is applicable to implementation of an "all feasible measures" plan.

Response 3-7

The EIR discusses the potential adverse impacts and ozone transport in section 3.4.3.1 – Criteria Pollutants. Although in the Bay Area NOx reductions alone have the potential to increase ozone, a strategy of concurrent reductions of the major precursors of ozone, VOC and NOx, has been successfully used for some time to reduce ozone levels in the

Bay Area on all days of the week, including weekends. Historical trends of air monitoring data show substantial reductions in ozone concentrations and therefore the public's exposure to ozone. Combined reductions of VOC and NOx has been used for about 15 years to reduce ozone levels in the Bay Area, thus are not believed to be counter-productive for attaining ambient air quality standards. The 2005 Ozone Strategy includes control measures that will reduce both NOx and VOC. This strategy is expected to prevent an increase in ozone concentration that might occur from decreases in only NOx emissions.

Response 3-8

Currently there are no requirements to analyze environmental justice as a separate issue in the CEQA process. The commenter disingenuously suggests that the DISTRICT CEQA Guidelines require mapping emissions increases against maps of known sensitive receptors. The language relied upon relates to land use conflicts, specifically in the context of a development project. The adoption of a plan to reduce ozone is a very different type of project and warrants different treatment. As required by CEQA, however, the District has considered the impacts of potential localized increases in air pollutants as a result of implementing control measures in the 2005 Ozone Strategy. In proposing the plan, the District is carrying out its obligation to address air quality issues wherever they exist. Contrary to the commenter assertion, the District is not aware of any data that would support the commentator's opinion that the 2005 Ozone Strategy has the potential to benefit more suburban communities to the detriment of urban communities. Rather, the 2005 Ozone Strategy is expected to provide overall emission reductions, and air quality and public health benefits to anyone who lives or works in or visits the Bay Area.

Response 3-9

The 2005 Ozone Strategy does consider impacts on the District's obligations to attain the State Ambient Air Quality Standards for particulate matter. See Responses 2-8 and 2-9 regarding PM10 impacts. Also, see the Alternatives Analysis in Chapter 4 of the EIR. As noted in Response 2-8, PM10 emissions associated with the proposed control measures in the 2005 Ozone Strategy are minor; however, PM10 emissions are expected to increase in the Bay Area due to population growth and related activities. Alternative 2 evaluated in the EIR includes a greater emphasis on implementing control measures that mitigate in part air quality and transportation and traffic impacts identified with some of the TCMs, particularly those control measures that improve access to transit facilities and encourage increased use of low emission vehicles. But this alternative was not expected to avoid or lessen the potentially significant adverse impacts of the proposed project and was rejected. The 2005 Ozone Strategy includes all feasible control measures; no additional feasible TCMs have been suggested by the commentater.

Response 3-10

This is primarily a comment addressing the adequacy of the 2005 Ozone Strategy and not the Draft EIR. See Response 3-3 regarding transport of air pollutants. The impacts of ozone transport were evaluated in 3.4.3.1 of the EIR. With regard to the impacts of implementing the 2005 Ozone Strategy, we note that the overall impact of the control measures is expected to be a reduction in NOx and VOC emissions and a related reduction in ozone available for transport to downwind communities. So no significant impacts on Sierra alpine and sub-alpine biological resources are expected due to the 2005 Ozone Strategy.

Response 3-11

This comment concerns the 2005 Ozone Strategy and not the Draft EIR. As noted in the Draft EIR, the District, MTC, and ABAG will highlight and publicize noteworthy examples of local clean air plans, policies and programs, as well as noteworthy development projects. The regional agencies are aware that land use strategies are important to achieving and maintaining ambient air quality standards. Fundamentally, land use planning and control is the province of the counties and cities. Nevertheless, the District will continue to provide input into the land use decision making process to ensure that air quality issues are addressed in that decision making process. Also please note that that the TCMs in the 2005 Ozone Strategy are expected to reduce emissions of all criteria pollutants.

Response 3-12

See Response 2-14 regarding the alternatives analysis and Response 2-4 regarding the determination of the appropriate control measures. As noted by the commenter, the District has included all feasible control measures in the 2005 Ozone Strategy. Contrary to the commenter's apparent belief, the Air Resources Board's definition of "all feasible measures" is intended to be broadly inclusive of measures that are capable of achieving needed emission reductions. The commenter's call to expand the universe of transportation control measures considered does not provide a single example of a transportation control measure that should have been included in the 2005 Ozone Strategy or evaluated in the EIR. Therefore, District staff still believes that there are no additional feasible control measures that should be considered at this time.

Response 3-13

The comment that the 2005 Ozone Strategy serves as a cap on growth, since local plans must conform to the population estimates used in the 2005 Ozone Strategy, is incorrect. The 2005 Ozone Strategy uses the emission inventory for stationary sources developed by the District. However, the 2005 Ozone Strategy emission inventory for on-road motor vehicles is based on forecasts developed by ABAG and MTC, and ARB emission factors. ABAG is responsible for developing the population growth estimates and MTC is responsible for motor vehicle activity projections. The District is required to use those

estimates as part of the emissions inventory in the 2005 Ozone Strategy. The 2005 Ozone Strategy does not change the motor vehicle emission budgets currently in force in the Bay Area for federal transportation conformity purposes, and does not "allow" for increased population growth. As noted in Table 1 of the Ozone Strategy, ABAG Projection 2003 were used to project future emissions from on-road motor vehicles. AGAB Projections 2002 were used to forecast the remainder of the planning inventory. As noted on page 15 of the Ozone Strategy, MTC's travel activity adjustments and ABAG projections used in preparing the ozone strategy on-road mobile source emissions inventory are the same as were used in the Air Quality Conformity Analysis for MTC's Transportation 2030.

In any event, the population estimates in the 2005 Ozone Strategy would not act as a cap under the District CEQA Guidelines. Rather, they are used as a threshold of significance to determine whether a local plan will have a significant adverse environmental cumulative impact that must be analyzed in a CEQA document.

Response 3-14

The commenter's assertion that projected regional VMT growth would be considered a significant impact under the District CEQA Guidelines is incorrect. The District Guidelines clearly state that the population and VMT thresholds are intended to be used in analyzing *local* plans; they were not intended as thresholds for regional plans.

The cumulative effect of the 2005 Ozone Strategy and other air quality programs are expected to result in a reduction in vehicle miles traveled in the Bay Area as compared to the No Project Alternative, thus providing beneficial impacts to the transportation system. Localized impacts, as discussed in the project-specific impacts in the EIR may occur. However, on a cumulative basis, the 2005 Ozone Strategy is expected to result in a reduction in vehicle miles traveled when compared to the No Project Alternative, or baseline conditions. Therefore, no significant adverse cumulative impacts on transportation and traffic are expected. The population growth and related VMT referred to in this comment is unrelated to implementation of the 2005 Ozone Strategy. That is, the strategy includes control measures to respond to this growth, but is not responsible for this growth. Moreover, while the commenter indicates that enhanced project mitigation and more aggressive and effective strategies for development projects to avoid, reduce and offset air pollution emissions and VMT increases should be considered, no suggestions on feasible strategies have been provided. The District staff believes that all feasible control measures have been identified and included in the 2005 Ozone Strategy.

TRANSPORTATION SOLUTIONS DEFENSE AND EDUCATION FUND

16 Monte Cimas Avenue, Mill Valley, CA 94941 415-380-8600 Fax: 415-383-0776

November 21, 2005
By E-mail & U.S. Mail

Jack Broadbent, APCO
BAAQMD
939 Ellis Street
San Francisco, CA 94109

Re: Comments on 2005 Ozone Strategy DEIR

Dear Mr. Broadbent:

The Transportation Solutions Defense and Education Fund, TRANSDEF, is an environmental non-profit advocating the regional planning of transportation, land use and air quality in the Bay Area. We appreciate this opportunity to comment on the Draft Environmental Impact Report ("DEIR") for the Bay Area 2005 Ozone Strategy ("Plan").

General Comments

The three measures from the previous Clean Air Plan that are proposed for deletion (pages 35-36 of the Plan) represent part of the Baseline of the No Project Alternative. Therefore, the impacts of their deletion must be studied in the DEIR. We could find no mention of these measures in the DEIR. 4-1

The two year delay in the adoption of this Plan has meant that the residents of the District have suffered excessive pollution without the new and more effective control measures they were legally entitled to. The DEIR should identify the impacts of the delayed adoption, including public health impacts. 4-2

The DEIR is stuck in the rut of looking for the negative impacts of control measures, making it largely oblivious to the environmental benefits generated by a regional plan. Where future conditions are predicted to be much worse than current conditions, as in the Bay Area, a truly responsible agency would use its powers to make the future better. For example, the RTP predicts a dramatic increase in traffic congestion. The DEIR for the Ozone Strategy, unfortunately, is myopic. Its focus on air quality causes it to ignore the great deterioration in quality of life caused by the environmental impacts of growth and regional development, including increased noise and congestion and loss of open space and habitat lands. 4-3

We believe the Ozone Strategy should be attempting to do whatever it can to make future conditions as close as possible to current conditions. That was the whole point of the Regional Agencies Smart Growth Strategies process. The air quality benefits of a 4-4

vigorous implementation of Smart Growth have been ignored. Unfortunately, with its goal of making only marginal improvements to the conditions predicted for the future (the Baseline), the District sets a very low bar for itself as to what can be accomplished, and what should be accomplished. The District stands in marked contrast to the Port of Los Angeles, which recently announced a truly vigorous emissions reductions program. 4-4 concluded

Page-Referenced Comments

p. 1.4: The Plan and DEIR did not adequately respond to the NOP comments of the Contra Costa County Community Development Department suggesting developer-based trip reduction ordinances (DEIR Volume II, p. B-2). While TCM 15 contains useful concepts for improving land use decisions, it does not propose a comprehensive developer-based trip reduction ordinance, even after the County asserted that the District had "reasonable authority to implement such measures" and stated that "The Draft EIR should examine the mitigation measures or alternatives to the TCMs proposed [by] the Ozone Strategy that can reduce these secondary impacts" of the "continued conversion of land to higher intensity uses and [its] impact [on] our natural resources."

Neither does TCM 15 propose anything based on the SMAQMD Land Use Mitigation program, or its Land Use Mitigation Indirect Source Rule (DEIR Volume II, pp. B-48-54 & B-66). When other agencies suggest that the District adopt rules that are either already in effect, or soon will be, the District is obligated to either adopt similar rules or provide a detailed explanation, supported by substantial evidence in the record, as to why such a rule is not feasible. The 'BAAQMD Evaluation' of the 'Topic Raised by Public' is vague and incorrect. An honest evaluation would be that the District is afraid to be aggressive in its involvement with land use practices. The purpose of environmental review is to bring out areas of controversy for informed decisonmaking. By not stating the controversy openly, the DEIR prevents policymakers from addressing and resolving it. 4-5

p. 1.4: "Transit" is misspelled. 4-6

p. 1.4: Because MTC is not responsible for the overall planning of air quality, it is entirely appropriate that the air quality Plan contain TCM 8 language directing MTC to accomplish specific air quality goals when compiling its HOV Lane Master Plan. Otherwise, the HOV Lane Master Plan will be driven by considerations other than air quality. 4-7

p. 1-5: The first column heading of Table 1-1 does not need a hyphen. 4-8

p. 1-5: The reasons that the region attained the federal 1-hour ozone standard are directly relevant to the concerns raised by TRANSDEF that the clean data of recent years are but a repeat of the past pattern. 4-9

p. 1-5: We disagree that the DEIR is not required to address environmental justice. Under both State and federal law, the District is prohibited from discriminating against 4-10

people because of race or ethnicity. The DEIR needs to conduct an environmental justice analysis of the impacts of its control measures, to determine whether they either disproportionately impact communities that are already overly impacted, or whether they provide beneficial effects that help communities reduce the impacts from which they are already suffering. Without an EJ analysis, such impacts would not be discovered. 4-10 concluded

pp. 1-11 & 5-1: A significant irreversible environmental change that is ignored because it is part of the Baseline is global warming. This is possibly the most frightening environmental change of all. Current science points to global warming as irreversible, once fossil fuel emissions achieve some critical level. It is a failure of environmental planning to ignore such a crucial environmental change, given the predicted loss of habitat and species coupled with famine, floods, storms, drought and massive property damage. While it is understandable that such catastrophic consequences would provoke societal denial, it is not acceptable that a responsible environmental document be allowed to remain in denial. The failure to seriously address this issue as if it were the looming catastrophe we all know it is is deeply irresponsible. At a minimum, the EIR needs to identify the likely consequences of global warming as part of the environmental setting, and demonstrate the beneficial impacts that will derive from the Ozone Strategy. 4-11

p. 2-18 - 2-19: Shouldn't the Altamont Commuter Express be deleted from TCM 4, as it is an interregional program listed in TCM 6? Its benefits appear to be double-counted. 4-12

p. 2-28 – 2-29: It is very odd that in no point in the DEIR other than a quick reference buried in the text on page 3-52 are the grand total emissions reductions displayed. Is this because the Ozone Strategy has such puny results that totals would be embarrassing? 4-13

p. 3-4: As part of the environmental setting, define regional haze levels. Provide data on the constituent components of regional haze, including the contribution of ground-level ozone and its precursors. Provide a narrative describing the District's responsibility to protect scenic resources by controlling regional haze, and what it is doing in furtherance of those responsibilities. 4-14

p. 3-7: The Plan is expected to have the beneficial impact of reducing the conversion of open space and agricultural lands by promoting Smart Growth, thereby preserving scenic resources. 4-15

p. 3-10: The analysis of the cumulative impacts on agriculture is grossly inadequate, including especially the impacts of TCM 15. The benefits of the Plan, including the preservation of agricultural lands, must be evaluated. 4-16

p. 3-15: Select or create a single annual measurement that best captures the severity of weather patterns in generating ozone (would degree-days be the best one, or is there a need to integrate wind pattern data?). Provide the following companion charts to Figure 3.4-1: 1). Plot ozone-generating weather severity by year. 2). With weather severity still on the Y axis, plot the number of exceedence days on the X axis. Provide 4-17

Year labels for the data points, even if this involves drawing lines to connect the label to the data point. These charts will allow a rough comparison of emissions levels for years with similar weather, which will be useful in evaluating the claim that the District is making progress in reducing emissions. 4-17 concluded

p. 3-31: Other secondary impacts of TCM 8 are increases in highway capacity and a corresponding induced vehicle trip demand, leading to higher VMT. Demonstrate through a careful analysis of induced demand that the net impact of TCM 8 will actually be a reduction in criteria pollutants. 4-18

p. 3-48: Is it correct that the Plan will result in a reduction in mobile source emissions from current levels, even after projected growth, or is this reduction only as compared to the No Project Alternative? Imprecision in language here and elsewhere could cause serious misunderstandings about the efficacy of the Plan. 4-19

p. 3-50: Is it correct that the Plan will promote a net decrease in greenhouse gases over current levels, after projected growth, or is this decrease only as compared to the No Project Alternative? 4-20

p. 3-52: The DEIR references the CCAA requirement of Sect. 40918 "to substantially reduce the rate of increase of vehicle trips and vehicle miles traveled" on pages 1-8 and 2-15, yet fails to analyze whether the Plan complies with this requirement. The best the DEIR can do is to make the vague claim that "The cumulative effects of the 2005 Ozone Strategy and other air quality rules, regulations and plans are **expected to be** a reduction in vehicle miles traveled in the Bay Area compared to the No Project Alternative or baseline." (p. 3-52, emphasis added.) Where is the quantitative analysis of the reduction of regional VMT as compared to the baseline? Without an analytic method and quantitative results, the DEIR cannot validly claim any conclusions pertaining to VMT. Clearly, it fails miserably to meet the statutory requirements of the CCAA. 4-21

p. 3-52: How can the DEIR claim that a reduction in VMT is beneficial to the transportation system, when MTC has never acknowledged this? MTC does not treat increases in VMT as significant impacts (despite this being obvious). 4-22

p. 3-52: We hereby adopt TRANSDEF's comments on the Plan itself by reference. In particular, by presenting a history of the fallacious Clean Air Plan mobile source emissions predictions, we cast grave doubt on the prediction of future mobile source emissions reductions, which are crucial to the reductions in criteria pollutant levels predicted by the Plan and DEIR. 4-23

p. 3-53: Is it correct that the Plan will promote an overall decrease in VMT over current levels, after projected growth, or is this decrease only as compared to the No Project Alternative? Where are the numbers? 4-24

p. 3-57: The Plan is expected to have the beneficial impact of reducing the conversion of open space and agricultural lands by promoting Smart Growth, thereby preserving wildlife habitat. 4-25

p. 3-94: The significance criteria for impacts on land use and planning evidences a pathetically backwards approach to planning. The Plan is by definition a regional plan. A regional plan can do so much more than just conflict with local plans——it can create beneficial impacts. A regional plan can **improve** local plans by providing an over-arching vision and implementation scheme, giving local plans a structure by which to accommodate future growth with reduced environmental impacts. Impacts should be considered significant and beneficial if the cumulative regional negative impacts of the Plan are less than the Baseline. Look at the analysis of the TRANSDEF Smart Growth Alternative in the EIR for the 2005 RTP, where lower impacts made our alternative the environmentally superior alternative. That was a significant beneficial impact to land use and planning. 4-26

p. 3-96: The analysis of the cumulative impacts on land use and planning is grossly inadequate, including especially the impacts of TCM 15. The benefits of the Plan must be evaluated. 4-27

p. 3-109: A recitation of the projected increase in VMT is suspiciously absent. 4-28

p. 3-109: In its NOP comment letter (DEIR Volume II, p. B-23), AC Transit made a series of important points that should have been part of the environmental setting leading to the development of corresponding control measures: the need to bring the region's investment in short distance transit trips up to their emissions-reducing potential; the need to place Smart Growth requirements for major transit investments into a TCM; the need to make transfers for transit passengers cheaper, as an incentive to use transit, to counter the free parking offered at transit stations; the need for regular funding of passenger amenities; and the need to find a stable source of funds for transit, so that service does not have to be reduced when sales tax revenues decline. MTC needs to analyze the susceptibility of the various transit operators to economic fluctuations, and devise a plan to make funding more stable. 4-29

p. 3-109: The District's own CEQA Guidelines provide another measure of significance: where the rate of growth of VMT exceeds the rate of growth of population. It would be illogical, unseemly and unsupportable to assert that impacts on the regional level can be ignored when the District insists the same impacts be considered at a local level. 4-30

p. 3-112: The discussion of TCM 7 discloses a projected increase in auto travel to access ferry terminals, thereby causing local congestion, not to mention additional VMT, cold starts and related emissions. These impacts should be mitigated by requiring that access to new ferry services be via non-auto modes. 4-31

p. 3-115: We repeat the comments we made about page 3-52 in respect to cumulative transportation/traffic impacts. In addition, "cumulative affect" should be "cumulative effect." 4-32

p. 4-1: In TRANSDEF's comments on the Plan, we harshly criticized the non-transparent process by which the feasibility of candidate control measures was evaluated. At the very least, the DEIR is required by CEQA Guidelines Sect. 15126.6(c) to provide a narrative about alternatives that were considered but rejected, **including the rejected candidate control measures**. There is no justification given for not having done this, nor would any be supportable. The TCMs in particular need to be demonstrated to have gone through a comparative rule review as rigorous as the CAPCOA review of stationary source measures. 4-33

As SMAQMD's NOP comment letter (DEIR Volume II, p. B-31-32) stated, "The range of alternatives must be sufficient to foster informed decisionmaking and public participation. Alternatives may be more costly than the project, and they may impede, to some degree, the attainment of project objectives. (CEQA Guidelines, sec. 15126.6.)" The Alternatives Analysis in the DEIR does not meet these requirements. In particular, it does not give decision-makers any serious policy options to weigh. The Plan is delivered to them as a *fait accompli*., with the EIR process being merely a procedural bother. TRANSDEF urges the District to use environmental review for the purpose for which it was intended: to provide a transparent public process in which to make informed decisions for the betterment of the public and the environment.

For the requirement to 'adopt all feasible measures' so as 'to attain by the earliest practicable date' to have any meaning whatsoever, the determination of feasibility must be made in a public transparent process. TRANSDEF proposes that the way to cure the failed process is to list in the Alternatives Analysis section under each justification for infeasibility the measures that meet that criterion, sorted by the degree of infeasibility. The Alternatives Analysis then needs to consider alternatives constructed of the more feasible of the so-called infeasible measures (recognizing that valid CEQA alternatives can have higher costs). Different alternatives will lead to different predicted attainment dates and margins of safety, with corresponding costs and social acceptabilities and respective environmental and public health benefits. Policymakers need to compare these alternatives to the District's chosen path to see the public health and environmental consequences of its timidity. 4-34

pp. 5-1 – 5-2: It is grossly misleading to grandly state "Implementation of the 2005 Ozone Strategy is not expected to result in significant irreversible adverse environmental changes." This is true only in comparison to doing nothing. During the implementation period, however, great irreversible changes will take place. The only difference is that the changes will not be the result of direct impacts of the Plan. They will be the result of other agencies' decisions taken because the Plan failed to act. In the absence of a state legal structure that calls for regional planning to reduce these irreversible environmental changes, the Ozone Strategy and Regional Transportation Plan act as *de facto* regional plans. These plans are where we express a regional 4-35

vision and figure out how to implement it. Just because the goal of the Ozone Strategy is air quality, the potential to influence the regional quality of life should not be shortchanged.

We vehemently disagree with the statement that "The largely irretrievable conversion of undeveloped/ agricultural land to urban uses is a function of the growing population and local land use authority, not the 2005 Ozone Strategy." The absence of a state growth management structure has meant that the region has been like a ship traveling without a captain. A regional plan provides direction by looking at the consequences of all the smaller decisions, and then providing steering for the greater good. By its decision to join the Joint Policy Committee, the District has formally committed to work with the other regional agencies to do its part on behalf of the region, using its regulatory authority. This Ozone Strategy DEIR, with its flawed analysis of Significant Irreversible Environmental Changes, demonstrates only the thinking that was prevalent **prior** to the Regional Agencies Smart Growth Strategies process. The time has come for the District to take its regional mission seriously. The best way to do that is with an exhaustive Alternatives Analysis to see what more can be accomplished.

4-35 concluded

TRANSDEF appreciates this opportunity to comment on the DEIR of this important regional document. We believe that much more needs to be done before the District can afford to be complacent. Please contact us to further discuss these comments.

Sincerely,

/s/ David Schonbrunn

David Schonbrunn,
President

CC: Sacramento Air Quality Management District
San Joaquin Valley Air Pollution Control District
Communities for a Better Environment

COMMENT # 4

David Schonbrunn
Transportation Solutions Defense and Education Fund
November 21, 2005

Response 4-1

See Response 1-1 regarding the three deleted control measures.

Response 4-2

The delay in completing the triennial review of the 2000 Clean Air Plan has not resulted in significant impacts on air quality and public health. As shown in the EIR (see Table 3.4-3), the air quality in the Bay Area was in compliance with most ambient air quality standards in 2004, except for the 1-hour state ozone standard (exceed on 7 days) and the 24-hour PM2.5 standard (exceed on 1 day). Further, the air quality was generally better in 2004 than 2003, as standards were exceed on fewer days in 2004.

Moreover, the delay in completing the triennial update did not delay rule development and TCM implementation. To the contrary, the District and MTC have continued to move forward with rules and program implementation, keeping ARB informed throughout this time period.

Response 4-3

This comment evidences a fundamental misunderstanding of the purposes of CEQA. The purpose of an EIR is to identify, analyze and reduce or avoid the negative impacts of a project. While the EIR does, in fact, point out environmental benefits where appropriate, CEQA specifically requires that the potential for significant **adverse** impacts be evaluated and has no requirements to evaluate environmental benefits. Also, please note that the overall population growth in the Bay Area is not part of the proposed project. Rather, the proposed project includes the air pollution control measures included in the 2005 Ozone Strategy. And while implementation of the project –the 2005 Ozone Strategy – has the potential to generate various significant adverse environmental impacts, which are the primary subject of the EIR, the plan is expected to result in overall emission reductions in the Bay Area.

Response 4-4

This comment evidences a fundamental misunderstanding of the purposes of CEQA. The purpose of an EIR is to identify, analyze and reduce or avoid the negative impacts of a project. The 2005 Ozone Strategy is expected to result in overall emission reductions in the Bay Area, thus improving the overall air quality. The strategy relies on the adoption of all feasible measures on an expeditious schedule. It is not intended to maintain current conditions as suggested in this comment; rather the goal is to attain the State one-hour

ozone standard. District staff believe that the 2005 Ozone Strategy includes all feasible control measures and an expeditious adoption schedule as required by state law. Smart growth policies are included in some TCMs, particularly such as those found in TCM 15.

Response 4-5

Most of this comment does not relate to the evaluation of the proposed project in the EIR, but rather questions the adequacy of the 2005 Ozone Strategy itself. The Topics Raised by the Public contained in the Draft EIR are those issues that were raised during the NOP public review period.

Response 4-6

Comment is noted and the correction will be made in the Final EIR.

Response 4-7

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

Congestion management and air quality are both important considerations of the HOV Lane Master Plan. Specific air quality goals are included in the control measure.

Response 4-8

No hyphen is included in the first column heading of Table 1-1.

Response 4-9

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

The District staff disagrees with this comment because the most recent air quality data continues to show compliance with the federal 1-hour ozone standard, which was revoked in June of 2005.

Response 4-10

See Response 2-12 regarding environmental justice. The District did consider the potential adverse environmental impacts of the proposed control measures wherever the impact may occur, including the possibility of impacts resulting from cumulative impacts.

Response 4-11

The impacts of the project on global warming are evaluated in Section 3.4.3.3 of the EIR. The 2005 Ozone Strategy as a whole will promote a net decrease in greenhouse gases. The transportation control measures are intended to reduce vehicle miles traveled and they will reduce carbon dioxide emissions from motor vehicles as compared to the No Project Alternative. Other strategies that promote fuel efficiency and pollution prevention will also reduce greenhouse gas emissions, such as SS15 – Promote Energy Efficiency. Measures that stimulate the development and use of new technologies such as fuel cells will also be beneficial. In general, strategies that conserve energy and promote clean technologies also reduce greenhouse gas emissions.

Response 4-12

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

There are several cases (as with the mention of the ACE service expansion in TCM 4 and 6) in which some projects are listed in multiple TCMs. This does not constitute double-counting but rather illustrates the inter-relationship between TCMs and the need to implement particular projects for several reasons.

Response 4-13

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

Table 2-5 in the EIR provides the emission reductions for each control measure.

Response 4-14

See Response 3-3 regarding haze.

Response 4-15

Comment noted. The impacts of the 2005 Ozone Strategy on agricultural resources are included in Section 3.3 of the EIR. See Response 4-3 regarding environmental benefits.

Response 4-16

See Response 4-3 regarding environmental benefits.

Response 4-17

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

The California Clean Air Act and CEQA do not require that the suggested analysis be included as part of the 2005 Ozone Strategy or EIR. However, air quality trends in the Bay Area are provided in Section 3.4.1 of the EIR (environmental setting for air quality). A 10-year air quality summary is included in Table 3.4.3. A 19-year summary of exceedences of the 1-hour state ozone standard is provided in Figure 3.4-1. Emission inventories for various years are provided in Figures 3.4-2, 3.4-3, and 3.4-5, and Table 3.4-4. The data provided in the EIR show the general air quality trends.

Response 4-18

As described in the 2005 Ozone Strategy, the emission reductions associated with TCM 8 are currently unknown; therefore, the EIR did not take credit for any emission reductions. Note that in general, HOV and bus express lanes are expected to increase average vehicle ridership, which reduces the number of vehicles on the roads and the related emissions.

Response 4-19

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

The 2005 Ozone Plan is expected to result in overall emission reductions in NOx and VOC from existing conditions. Under the No Project Alternative, aspects of TCM 1 – Voluntary Employer-Based Trip Reduction Programs, TCM 3 – Improve Local and Areawide Bus Service, TCM 4 – Improve Regional Rail Service, TCM 6 – Improve Intercity Rail Service, TCM 7 – Improve Ferry Service, TCM 11 – Install Freeway Traffic Management Systems, TCM 13 – Transit Use Incentives, and TCM 15 – Local and Land Use Planning and Development Strategies that were approved as part of the 2000 CAP would still be implemented, and the impacts resulting from the implementation of the Water Transit Authority's adopted Implementation and Operations Plan would still remain.

Response 4-20

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

See Response 4-11.

Response 4-21

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

The requirement in the CCAA is to reduce the rate of growth in VMT, not the absolute number. Examining VMT growth in the Transportation 2030 Plan prepared by MTC, in

different time increments, such as 2005, 2015, 2025, the rate of increase in VMT between these dates does decrease. Enhanced TCMs, as proposed in the 2005 Ozone Strategy, can further reduce VMT growth and emissions from what the Transportation 2030 Plan estimates, particularly due to the various pricing strategies recommended in the TCMs.

The emissions reported in Table 3.4-14 (page 3-52 of the Draft EIR) are the overall emissions in the Bay Area and include both stationary and mobile sources, as well as increases associated with population growth. However, ozone precursor emissions are predicted to decrease substantially between 2003 and 2010 even after taking into consideration population and VMT increases over this time period. The 2005 Ozone Strategy is a comprehensive document describing the Bay Area's strategy for compliance with State one-hour ozone standard planning requirements, including all reasonably available TCMs to reduce VMT growth as required by Health and Safety Code § 40918(a)(3); it is, however, an air quality document, not a transportation plan. While the District and commenter may disagree as to the magnitude of VMT reduction to be realized, there is no basis for a suggestion that the strategy will increase VMT.

Response 4-22

The methodology for calculating mobile source emissions takes into consideration, amongst numerous other variables, an estimate of daily vehicle miles traveled. Therefore, the District believes that reducing VMT could also reduce the number of vehicles using the transportation system on a daily basis and therefore provide beneficial impacts to the transportation system by reducing congestion.

MTC has indicated that VMT inevitably grows with population and job growth in the Bay Area. Within this context, MTC considers the changes in VMT when evaluating the overall impacts of various transportation investments on the transportation system and draws their findings based on such analysis.

Response 4-23

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3. The responses to comments on 2005 Ozone Strategy have been prepared in a separate document and are included as Attachment B in the Staff report for the 2005 Ozone Strategy.

Response 4-24

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

Please see response 4-21.

Response 4-25

Comment is noted. Please see Response 4-3 regarding beneficial impacts.

Response 4-26

The significance criteria used in the land use portion of the EIR are based on standard CEQA guidance found in the environmental checklist and is, therefore, consistent with the CEQA guidelines. It is not clear, moreover, what the commenter is suggesting with regard to the environmental review of the 2005 Ozone Strategy as the commenter has not presented any other alternative to the 2005 Ozone Strategy for staff to consider.

Response 4-27

See Response 4-3 regarding beneficial impacts.

Response 4-28

See Response 4-21.

Response 4-29

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

All feasible control measures have been included in the 2005 Ozone Strategy. See Response 2-4 regarding the development of feasible control measures.

Response 4-30

See Response 4-21. We note, additionally, that implementation of the control measures in the 2005 Ozone Strategy is expected to reduce not increase VMT when compared to baseline conditions.

Response 4-31

See the air quality mitigation section of the EIR (page 3-48) for mitigation measures for localized air quality impacts. Significant impacts have been identified for the potential increases of diesel exhaust emissions in localized areas near transit terminals. The increase in emissions can be reduced by encouraging non-drive access at the ferry terminals, such as proposed in TCM 5 – Improve Access to Rail and Ferries, and other measures in the 2005 Ozone Strategy, and this was included in the EIR.

Response 4-32

The typographical error noted by the commenter will be corrected. See Response 4-21.

Response 4-33

CEQA requires a discussion of alternatives considered to avoid or reduce that potential adverse environmental impact of the proposed project. The evaluation of alternatives under CEQA is set out in Chapter 4 of the EIR. See Response 1-1 regarding the rejected control measures, which are not part of the proposed project. There is no CEQA requirement to evaluate the impacts of control measures that are not included in the plan. See Response 2-4 regarding the development of feasible control measures.

Response 4-34

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

The 2005 Ozone Strategy includes all feasible measures and an expeditious adoption schedule. See Response 2-14 regarding the alternatives analysis and Response 2-4 regarding the development of feasible control measures.

Response 4-35

This comment raises issues related to the adequacy of the 2005 Ozone Strategy itself and not the EIR. See Response 2-3.

The purpose of the 2005 Ozone Strategy is to ensure progress towards attainment of the 1-hour state ozone standard and not to limit population growth. The 2005 Ozone Strategy does not induce growth but responds to the estimated population growth in the region, while showing progress towards attaining and maintain the 1-hour state ozone standard. The District will continue to work closely with those local and regional agencies that are charged with responsibility for managing growth and transportation planning, and will continue to do so in order to meet its charge of protecting public health and the environment from the effects of air pollution.

October 25, 2005

Ms. Suzanne Bourguignon
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

SUBJECT: Bay Area 2005 Ozone Strategy
Draft Environmental Impact Report

Dear Ms. Bourguignon:

City of Sunnyvale staff thank you for the opportunity to review the Draft Program Environmental Impact Report for the 2005 Ozone Strategy. City staff has the following comments on the Draft:

1. Page 3-100, Noise Impacts, Project-Specific Mitigation – It should be noted that local agencies often have no control over agencies operating rail service, and these agencies in turn do not have legal responsibility for mitigating noise levels or attenuating high noise levels from increased operations. This may mean the noise impacts from increased rail operations should be considered significant and unmitigated. The City of Sunnyvale certainly encourages the Bay Area Air Quality Management District to advocate for noise attenuation to accompany any increases in rail service that provide positive air quality benefits. 5-1

2. Page 3-106, Public Services – The analysis of impacts seems poorly developed. Given that the Ozone Strategy encompasses regulatory actions that can be imposed on public agencies, there is a strong likelihood that agencies would need to adopt new programs, policies, and procedures to comply with the strategy. These programs and policies will require changes to services. For example, the City of Sunnyvale recently participated in the construction of a new rail station. Construction of the station resulted in new, significant, unfunded responsibilities for maintenance of the station that resulted in reduction of services in other areas. Implementation of many of the TCM's will have impacts on public services. 5-2

3. Page 3-111, Transportation and Traffic Impacts, Table 3.16-1 – For TCM 20, Traffic Calming, diversion of traffic to other streets is identified as an impact. Diversion of traffic in and of itself does not constitute a significant impact unless that diversion violates a level of service threshold or an adopted policy regarding traffic diversion, or, as the document's significance criterion states, causes "...an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system." . It is common practice for transportation engineers to consider the effects of traffic calming on traffic patterns prior to implementation, and typically traffic calming is not recommended when significant diversion is a possibility. It is incorrect to assume that traffic calming would automatically or even frequently cause diversion at the level of a significant impact. Traffic diversion should not be listed as a potentially significant impact in this document. 5-3

4. Page 3-113, Transportation and Traffic Impacts, TCM 9 – The nomenclature used in this explanation should be corrected to recognize that bicycles are legally defined as vehicles. I believe the author is referencing *motor* vehicles. It is unclear on what scientific basis the conclusion that potential conflicts between bicyclists and motor vehicles could increase. I do not believe that there is solid documentation that provision of improved facilities for bicyclists increases conflicts. There is considerable documentation that provision of bicycle facilities increases the awareness of motor vehicle drivers to bicyclists in the traffic mix, and there is also documentation that provision of comprehensive bikeway networks increases the mode share for bicycling. Bikeways also increase the predictability of bicyclists in traffic. Increasing the mode share may create the perception of increased conflicts, but it does not necessarily increase the rate of conflicts. Also, physical separation of bicycle and vehicle lanes runs contrary to specific guidance of the California Department of Transportation Highway Design Manual, which states "raised barriers...shall not be used to delineate bike lanes." I do not believe that there is a potentially significant impact for increased conflicts between bicycles and motor vehicles from TCM 9. 5-4

Once again, thank you very much for the opportunity to provide input on this document. I can be reached at (408) 730-7330 with any questions or comments.

Sincerely,

Jack Witthaus
Transportation and Traffic Manager

COMMENT #5

Jack Witthas
City of Sunnyvale
October 25, 2005

Response 5-1

Comments concerning noise impacts are noted. The development of new rail, ferry and freeway lanes are in the early planning phases so it is feasible to site the rail lines, ferry terminals and roadways in a manner that could minimize noise impacts and reduce land use and noise conflicts on sensitive land uses. Further, the use of physical barriers represent feasible mitigation to noise impacts and should be used where applicable (i.e., where there are the potential for significant noise impacts). The mitigation monitoring program will be used to monitor compliance with the mitigation measures.

Response 5-2

Per the CEQA guidelines, impacts on public services are considered significant if they would result in 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 fire protection, police protection, schools, parks, or other public services. No such impacts were identified. The physical construction of rail facilities and other transportation improvements were considered in the EIR. However, no other physical impacts that could generate significant environmental impacts were identified, e.g., require new fire stations, police stations, schools, etc.

Response 5-3

Note that the conclusion of the impact analysis was that some control measures in the 2005 Ozone Strategy could encourage higher traffic densities in localized areas (e.g., TCM 1, TCM3, TCM 4, TCM6, TCM 7, TCM 11, and TCM 15). No significant traffic impacts were identified for TCM 20.

Response 5-4

The description of TCM 9 will be modified to refer to motor vehicles, and not just vehicles. The document is written in layman's terms and is not using a legal definition of vehicles as including bicycles, but the plain English definition where motor vehicles are generally referred to as cars, and bicycles mean bicycles (not motor vehicles).

In general, the higher the concentration of bicycles in an area where there are motor vehicles, the higher the potential for accidents (or conflicts). Improved bicycle facilities and dedicated bike lanes would minimize such potential increases. Note that no significant adverse traffic impacts were identified for TCM 9.

Draft EIR Comments from Ozone Strategy Public Meeting

Ozone Working Group Meeting, October 25, 2005:

David Schonbrunn (TRANSDEF) – This EIR is an improvement over past EIRs. However, this is a faith-based environmental protection document in that there are a number of references to the need to reduce VMT and promises that this plan will accomplish that but there are no numbers to back it up. This is completely unheard of and totally unacceptable.

1. There needs to be documentation of the effectiveness of the measures that you include here to reduce VMT, so that we can evaluate them. 6-1

2. Alternatives analysis is not adequate. A discussion of the options that were screened out is missing. It would be useful if the EIR listed all of these screened out alternatives and sorted them for the reasons why they were removed from consideration. If some were eliminate as infeasible or if it was a judgment call, the list should note that. Part of the discussion should identify the feasibility criteria and marginal costs-benefits of rejected alternatives. Need to include the cost-effectiveness for included measures in an alternative and what the marginal cost burden would be to implement those measures and then look at the results for emission reductions and health benefits. Identify what basis was used for determining the EIR alternatives. District should group measures according to their reason for rejection (e.g. cost, legislative barriers) as well as corresponding benefits. This would make the alternatives analysis more meaningful and would give policymakers a choice because you don't do that now. 6-2

3. EIR asserts there are greater land use trends responsible for the loss or conversion of agricultural lands for urban development. However, the Ozone Strategy functions as a de facto regional plan. Therefore it is misleading for the EIR to operate under the assumption that land use changes will occur irregardless of the Ozone Strategy. There is no separation or conflict between reducing ozone and improving the future of the Bay Area. 6-3

Ozone Strategy Community Meeting, October 26, 2005:

No public comments on the DEIR.

COMMENT #6

Draft EIR Comments from Ozone Strategy Public Meeting
October 25, 2005

Response 6-1

See Response 4-22.

Response 6-2

See Response 2-14. The alternatives rejected as infeasible are discussed in section 4.2 of the EIR.

Response 6-3

Land use changes can be influenced by the Ozone Strategy and the impacts are discussed in Chapter 3. The 2005 Ozone Strategy and other air quality programs generally provide a reduction in emissions from stationary and mobile sources providing a regional air quality benefit. The impacts of the 2005 Ozone Strategy on agricultural resources are considered to be less than significant as no control measures are expected to impact agricultural lands or require the conversion of agricultural lands to non-agricultural resources.

November 22, 2005 Received by E-mail

Suzanne Bourguignon, Principal Environmental Planner
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Ms. Bourguignon:

This letter is intended to provide our response to the request for comments on the Draft Bay Area 2004 Ozone Strategy (Draft Ozone Strategy). Staff apologizes for the late date with which we are submitting our comments, but sincerely hope these comments will be considered as part of the review process.

Staff originally provided comments on the Notice of Preparation for the Draft Ozone Strategy on April 26th of this year. Based on our review it does not appear that the mitigation measures, and alternatives, to the TCM's which staff suggested were fully studied or included in the plan. Please let us know if this interpretation is accurate.

Should our interpretation be determined to be correct staff would like to suggest that our original comments and suggestions be reevaluated for inclusion in the final version of the Ozone Strategy (see attachment). For your convenience staff has summarized the mitigation measures or alternatives to the TCMs below:

- The Air District should examine the ability of Developer-based trip reduction ordinances to mitigate the secondary environmental effects of land use and development. If analysis shows such ordinances can be effective, they should be included in the Draft Ozone Strategy.

7-1

- The Air District should evaluate the potential to increase the ability of TCM 8 (Construct Carpool / Express Bus Lanes of Freeways) to mitigate additional environmental effects by changing the existing and proposed High Occupancy Vehicle (HOV) facilities to have a standard occupancy requirement, on both the Bay Area Bridges and the roadways. Currently the standards vary, which may discourage some motorists from using these facilities to their full potential.

7-2

Staff maintains that the Air District should carefully study all feasible mitigation measures, and alternatives to, the TCM's proposed in the Draft Ozone Strategy. This response is provided to support preparation of the complete Ozone Strategy which includes all actions necessary to support public health by the reduction of traffic congestion and subsequent improvement to air quality in the Bay Area.

Sincerely,

Hillary P. Heard, Transportation Planning Division

Attachment

c: S. Goetz, CDD

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(925) 335-1278

April 26, 2004

Joseph Steinberger, Senior Planner
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Steinberger:

This letter is intended to provide our response to the Notice of Preparation for the Bay Area 2004 Ozone Strategy (Ozone Strategy). It includes our comments and input regarding the information that should be included in the scope of the environmental analysis for this project. Staff would also like to express their continued interest to study efforts that have the potential to alleviate both traffic congestion and improve air quality and the public health of Bay Area residents.

It is our understanding that the environmental analysis will study the effectiveness of the Ozone strategy to evaluate both the enhancements to existing TCM and the evaluation of new TCM's, as part of the attainment to the California ozone standard. Additionally the Ozone Strategy will review new TCM's that would replace, and still meet the requirements of, TCM 2 as part of the effort to meet the National 1 hour standard. The County is particularly concerned about the secondary impacts from the proposed revisions to the TCMs. For instance, TCM 3 through 8 provide additional transportation capacity (more rail, bus and HOV facilities) which will support the continued conversion of land to higher intensity uses and impact our natural resources. The Draft EIR should examine the mitigation measures or alternatives to the TCMs proposed the Ozone Strategy that can reduce these secondary effects.

- The Draft EIR should examine the ability of Developer-based trip reduction ordinances to mitigate the secondary environmental effects of land use and development by enhancing the ability of TCM 15 (Local and Land Use Planning and Development Strategies) to further improve air quality. Currently the proposed TCM has the ability to affect land use and planning strategies by addressing the need for local governments to respond to air quality impacts in their jurisdiction by incorporating air quality elements within their General Plans. However, within the proposed TCM there currently is no discussion of encouraging localities to draft Developer-based trip reduction ordinances as part of their planning and development strategies and General Plan policies. Trip Reduction Ordinances have the ability to mitigate several air quality impacts by providing the jurisdictions ability to impose requirements on a developer or property owner to integrate practical facilities (that facilitate walking, bicycling and transit use) and services to the development of their site.
- The implementation of such requirements outlined in the ordinance is a feasible method with which local governments can implement air quality

improvements within their General Plan policies. The addition of trip reduction ordinances within the measures addressing land use and development strategies further illustrates the connection between land use, transportation and air quality. The ability of such measures to significantly improve air quality provides the Air District with reasonable authority to implement such measures and/or support other agencies in implementing and monitoring them as part of the Ozone Strategy should those agencies be deemed responsible for such measures.

- The Draft EIR should evaluate the ability of TCM 8 (Construct Carpool / Express Bus Lanes of Freeways) to further mitigate the environmental effects of this measure to improve air quality. The proposed TCM should evaluate the ability of existing and proposed High Occupancy Vehicle (HOV) facilities to have standard occupancy requirements, specifically on Bay Area Bridges and the roadways. Currently TCM 8 discusses the air quality impacts of new HOV lane construction on regional freeways and expressways. However, the measure does not identify the potential air impacts that could be feasibly mitigated by coordinating the operation of existing HOV bypass lanes at the toll plazas of Bay Area bridges with the occupancy and time restrictions of the existing or funded HOV lanes feeding into these toll plazas. The existing HOV occupancy requirements on Bay Area bridges vary with their adjacent HOV lanes at several locations. This variation in occupancy requirement and time restrictions between the road and connecting bridge facilities could potentially adversely impact the ability to reduce mobile source emissions by making it difficult to encourage car/vanpooling in the Bay Area. Therefore the Air District should give serious consideration to revising the occupancy requirements and time restrictions governing the HOV bypass lanes at the toll plazas of Bay Area bridges to match the requirements of the HOV lanes feeding into these toll plazas. This would serve the dual purpose of creating a seamless connection of regional HOV facilities and mitigate the production of nitrogen oxides (NOx), one of the main ozone precursor emissions.

The Air District should carefully study the all feasible mitigation measures and alternatives to the TCM's proposed in the Ozone Strategy. The Air District should take actions within its power to implement such mitigation measures and alternatives and encourage other responsible agencies to take actions that could and should be done in support of the Ozone Strategy and in support of the public's health. This response is provided to support preparation of a complete and adequate EIR for the Ozone Strategy.

Sincerely,

Hillary P. Heard, Transportation Planning Division

c: S. Goetz, CDD

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COMMENT # 7

Hillary P. Heard
Contra Costa County
November 22, 2005

Response 7-1

TCM 15 includes the following text which responds to the commenter's suggestion: "Cities and counties are encouraged to require developer-based trip reduction programs." This text was added during the preparation of the 2005 Ozone Strategy in response to this commenter's April 2004 letter.

Response 7-2

TCM 8 includes a statement that the Bay Area should consider moving toward a consistent region-wide set of operation hours for HOV lanes, which would correspond to the current maximum spread of 5am to 10am and 3pm to 7pm. An encouragement of consistency of vehicle occupancy requirements would generally be air quality beneficial if consistent occupancy requirements were made higher than existing requirements (such as 2+ to 3+). TCM 8 includes a statement that "an increase in vehicle occupancy from 2+ to 3+ would normally be considered after other feasible corridor management strategies (Express Bus, expanded CHP enforcement, ramp metering, etc.) have been deployed."

Bay Area 2005 Ozone Strategy

2005 Ozone Strategy
Final Environmental Impact Report

Statement of Findings, Statement of Overriding Considerations, And Mitigation Monitoring Plan

December 21, 2005

Prepared for:

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Contact: Suzanne Bourguignon
(415) 749-5093

Prepared By:

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INTRODUCTION

The California Environmental Quality Act (CEQA), Public Resources Code § 21000 et seq., requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the Bay Area Air Quality Management District (District) has prepared a Program Environmental Impact Report (EIR) to address the potential environmental impacts associated with the proposed 2005 Ozone Strategy. The District is the lead agency for the proposed project and, therefore, has prepared an EIR pursuant to CEQA. The purpose of the EIR is to describe the proposed project and to identify, analyze, and evaluate any potentially significant adverse environmental impacts that may result from adopting and implementing the proposed 2005 Ozone Strategy. The Draft EIR was circulated to the public for a 45-day review and comment period from October 7, 2005 to November 21, 2005. The District received five comment letters, and one email during the 45-day public review and comment period and additional comments were made during the public meetings and workshops. The bulk of the comments did not raise CEQA issues, i.e., issues regarding the potential adverse environmental impacts of implementing the 2005 Ozone Strategy and the control measures contained therein (Project), measures to mitigate those impacts, or alternatives to the Project. Responses to all CEQA-related comments were prepared and comments and responses are included in the Final EIR.

BACKGROUND

The Bay Area Air Quality Management District (District) was established in 1955 by the California Legislature to control air pollution in the counties around San Francisco Bay, to attain air quality standards as specified in State and federal law. There have been significant improvements in air quality in the Bay Area over the last several decades. Ozone conditions in the Bay Area have improved significantly over the years. Ozone levels – as measured by peak concentrations and the number of days over State or national standards – have declined substantially as a result of aggressive programs by the Air District, Metropolitan Transportation Commission (MTC) and other regional, State and federal partners. In fact, in April 2004 the U.S. Environmental Protection Agency (U.S. EPA) determined that the region had attained the national one-hour ozone standard. U.S. EPA recently transitioned from the national one-hour standard to a more health protective 8-hour standard. The 8-hour standard took effect in June 2004, and the federal one-hour standard was revoked on June 15, 2005.

However, there is still a need for continued improvement of air quality in the Bay Area. The Air District is required to meet State standards by the earliest date achievable through the implementation of all feasible measures. Therefore, in order to attain the more stringent State ozone standard, the region must continue its long-term progress in reducing ozone levels. The Air District will continue to adopt regulations, implement programs and work cooperatively with other agencies, organizations and the public on a wide variety of

strategies to improve air quality in the region. The 2005 Ozone Strategy provides a detailed description of how the Bay Area plans to achieve these goals.

The California Clean Air Act (CCAA), adopted in 1988, requires the District to develop and periodically update, a plan to achieve and maintain State ambient air quality standards for ozone, carbon monoxide (CO), sulfur dioxide (SO_2), and NO_2 by the earliest practicable date (Health & Safety Code §40910). The Bay Area has attained the CO, SO_2 and NO_2 standards. Because the region violates the State one-hour ozone standard, the Bay Area is considered a nonattainment area for the State standard. The CCAA requires regions that do not meet the State ozone standard to prepare plans for attaining the standard and to update these plans every three years. These plans must include estimates of current and future emissions of the pollutants that form ozone (ozone precursors) and a control strategy that includes "all feasible measures" to reduce these emissions. The plans must also include measures to reduce transport of ozone and ozone precursors to downwind regions.

The 2005 Ozone Strategy is the latest triennial update to the Bay Area strategy to achieve the State ozone standard, including new control measures. The control measures are proposed to satisfy State ozone planning requirements.

SUMMARY OF THE PROPOSED PROJECT

The control strategy for the 2005 Ozone Strategy is to implement all feasible measures on an expeditious schedule in order to reduce emissions of ozone precursors. This is consistent with CCAA requirements in the Health and Safety Code and pollutant transport mitigation requirements in the California Code of Regulations. The control strategy includes stationary source measures, mobile source measures and transportation control measures.

There are 15 stationary source measures proposed for the 2005 Ozone Strategy. Most stationary source measures in the 2005 Ozone Strategy will be implemented through rule making. The District goes through a detailed process to develop and adopt rules and regulations to impose standards on, and limit emissions from, stationary sources of emissions in the Bay Area.

The term "mobile source", as used in the CCAA and by the Air District, refers collectively to vehicular sources and other non-stationary sources. Four mobile source control measures are included in the 2005 Ozone Strategy.

The CCAA specifically requires air districts to "adopt, implement and enforce transportation control measures." Transportation Control Measures (TCMs) are defined as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions." (Sec. 40717). TCMs must be sufficient to substantially reduce the rate of increase in vehicle trips and vehicle miles traveled (Sec. 40918). Nineteen TCMs are included in the 2005 Ozone Strategy.

POTENTIAL SIGNIFICANT ADVERSE IMPACTS THAT CANNOT BE MITIGATED BELOW A SIGNIFICANT LEVEL

The EIR evaluated all 17 environmental resources identified on the CEQA checklist and identified potentially adverse environmental impacts from implementing the 2005 Ozone Strategy on aesthetics, air quality, biological resources, cultural resources, transportation and traffic, and utilities and service systems. Impacts to these environmental topics were comprehensively analyzed in the EIR. Based on the analysis in the EIR, the following impacts have been identified as potentially significant adverse impacts that cannot be reduced below significance.

1. Potentially significant adverse aesthetic impacts were identified related to TCMs 4, 6, 7, and 8, which involve the construction of new rail lines, bus lanes and ferry facilities. Mitigation measures are not expected to eliminate aesthetic impacts to less than significant.

2. The 2005 Ozone Strategy is expected to result in an overall reduction in emissions from mobile sources on a regional basis. However, some transportation control measures could encourage increased traffic and related emissions in localized areas. These control measures could result in increased traffic near transit terminals, thus, generating increases in emissions, particularly CO emissions or CO "hot spots," in the local areas surrounding the transit terminals. Therefore, the potential for localized increases in CO emissions is considered a significant impact.

3. Significant localized air quality impacts associated with diesel exhaust could occur because certain TCMs in the 2005 Ozone Strategy would concentrate traffic in specific areas. Therefore, based on the significance criteria, impacts associated with non-criteria pollutants are considered significant.

4. The impacts on biological resources are expected to be significant to wetlands, marshlands and aquatic resources from dredging operations, construction of facilities or severe erosion from wake wash associated with TCM 7 – Improve Ferry Service. In addition, potentially significant biological impacts associated with the possibility of a ferry striking a whale (although rare) and from noise impacts on wildlife are also possible during construction activities for ferry facilities.

5. Implementation of TCMs 4,6,7 and 8 would result in construction that could adversely impact previously unknown historical, archaeological or paleontological resources and, therefore, could result in significant impacts.

6. The hazard impacts associated with the use of anhydrous ammonia in SCR Units that could be used to comply with certain control measures are potentially significant.

7. Some control measures in the 2005 Ozone Strategy could encourage higher traffic densities in localized areas (e.g., TCM 1, TCM 3, TCM 4, TCM 6, TCM 7, TCM 11, and TCM 15). The impacts of individual projects are potentially significant and would need to be evaluated on a project-by-project basis. The potential increase in parking demand near rail, bus, and ferry terminals is also considered significant.

8. TCM 7 – Improve Ferry Service could result in a higher energy per passenger miles traveled value than other transit modes so the impacts on petroleum fuels (i.e., utilities and service systems) are potentially significant.

POTENTIAL SIGNIFICANT ADVERSE IMPACTS THAT CAN BE REDUCED BELOW A SIGNIFICANT LEVEL

The following impacts have been identified as potentially significant adverse impacts that can be reduced below a significant level.

1. Operational noise impacts related to TCMs 4, 5, 6, 7, and 8 in the 2005 Ozone Strategy are potentially significant. The impacts could be mitigated with project-specific mitigation measures including the construction of sound walls, adjustments to roadways or transit alignments, insulation of buildings, vibration isolation of track segments, and local land use policies to guide the location of roadways and rail corridors.

2. Water quality impacts associated with TCMs 4, 5, and 7 are potentially significant but are expected to be mitigated to less than significant using storm water controls, National Pollutant Discharge Elimination System standards, and constructing new facilities outside of 100-year flood zones.

STATEMENT OF FINDINGS

Public Resources Code §21081 and CEQA Guidelines §15091(a) state, "No public agency shall approve or carry out a project for which an EIR has been completed which identifies one or more significant adverse environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding." Additionally, the findings must be supported by substantial evidence in the record (CEQA Guidelines §15091(b)). As identified in the Final EIR and summarized above, the proposed project has the potential to create significant adverse aesthetic, air quality, biological resources, cultural resources, hazard, traffic and utilities and service systems impacts. The District Board of Directors, therefore, makes the following findings regarding the proposed project. The findings are supported by substantial evidence in the record as explained in each finding. This Statement of Findings will be included in the record of project approval and will also be noted in the Notice of Determination. The Findings made by the District Board of Directors are based on the following significant adverse impacts identified in the EIR.

Findings for Potentially Significant Adverse Impacts That Cannot Be Mitigated Below a Significant Level

1. Transportation improvements could result in potentially significant adverse aesthetic impacts.

Finding and Explanation: The aesthetic analysis concludes that the implementation of some transportation improvements as part of the 2005 Ozone Plan may result in visual changes that will block or damage view of scenic resources or adversely affect visual continuity.

The Board of Directors finds that while feasible mitigation measures have been identified to eliminate or minimize the potentially significant adverse impact to aesthetics, implementation of those measures would not reduce the aesthetic impacts to less than significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse aesthetic impacts identified for the proposed project.

2. Potential for localized increases in carbon monoxide emissions near transit terminals is potentially significant.

Finding and Explanation: The air quality analysis concludes that the 2005 Ozone Strategy is expected to result in an overall reduction in emissions from mobile sources on a regional basis. However, some transportation control measures could encourage increased traffic and related emissions in localized areas. These control measures could result in increased traffic near transit terminals, thus, generating increases in emissions, particularly CO emissions or CO “hot spots,” in the local areas surrounding the transit terminals. Therefore, the potential for localized increases in CO emissions is considered a significant impact.

The Board of Directors finds that while feasible mitigation measures have been identified to eliminate or minimize the potentially significant adverse impact to air quality, implementation of those measures cannot be quantified at a local level at this time so the impact remains significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse air quality impacts identified for the proposed project.

3. Potential for localized increases in diesel exhaust and the related toxics air contaminant near transit terminals is potentially significant.

Finding and Explanation: The air quality analysis concludes that the 2005 Ozone Strategy is expected to result in an overall reduction in emissions from mobile sources on a regional basis. However, some transportation control measures could encourage increased traffic and related emissions in localized areas. These control measures could result in increased traffic near transit terminals, thus, generating increases in emissions, particularly toxic air contaminants associated with diesel emissions, in the local areas surrounding the transit terminals. Therefore, the potential for localized increases in toxic air contaminants is considered a potentially significant adverse impact.

The Board of Directors finds that while feasible mitigation measures have been identified to minimize the potentially significant adverse impact to air quality, implementation of those measures cannot be quantified at a local level at this time so the impact remains significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse air quality impacts identified for the proposed project.

4. Potential impacts on biological resources are expected to be significant to wetlands, marshlands and aquatic resources from dredging operations, construction activities, erosion from wake wash and the possibility of a ferry striking a whale.

Finding and Explanation: The analysis in the 2005 Ozone Strategy EIR concludes that the 2005 Ozone Strategy is expected to result in significant biological impacts to wetlands, marshlands and aquatic resources from dredging operations, construction of facilities or severe erosion from wake wash. In addition, the Water Transit Authority identified potentially significant impacts associated with the possibility of a ferry striking a whale (although rare) and from noise impacts on wildlife during construction.

The Board of Directors finds that while feasible mitigation measures have been identified to minimize the potentially significant adverse impact to biological resources, implementation of those measures are not expected to reduce the impacts to less than significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse biological impacts identified for the proposed project.

5. Implementation of some transportation control measures could impact cultural resources resulting in significant adverse impacts.

Construction activities associated with TCMs 4,6,7 and 8 could adversely impact previously unknown historical, archaeological or paleontological resources and, therefore, could result in significant impacts.

The Board of Directors finds that while feasible mitigation measures have been identified to minimize the potentially significant adverse impact to cultural resources, implementation of those measures are not expected to reduce the impacts to less than significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

technological factors" (Public Resources Code §21061.1). Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse impacts on cultural resources identified for the proposed project.

6. Hazard impacts associated with the use of anhydrous ammonia in SCR Units are potentially significant.

Proposed control measure SS 14 – Stationary Gas Turbines would require or encourage the use of SCR to reduce NOx Emissions. Ammonia is used to react with NOx, in the presence of a catalyst, to form nitrogen and water. The storage and transportation hazards associated with the use of anhydrous ammonia are potentially significant.

The Board of Directors finds that feasible mitigation measures have not been identified to reduce the potentially significant adverse impact to hazards to less than significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse impacts on hazards identified for the proposed project.

7. Control measures could result in higher traffic densities in localized areas generating significant traffic and parking impacts.

Finding and Explanation: Some control measures in the 2005 Ozone Strategy could encourage higher traffic densities in localized areas (e.g., TCM 1, TCM 3, TCM 4, TCM 6, TCM 7, TCM 11, and TCM 15). The impacts of individual projects are potentially significant and would need to be evaluated on a project-by-project basis. The potential increase in parking demand near rail, bus, and ferry terminals is also considered significant.

The Board of Directors finds that while feasible mitigation measures have been identified to reduce traffic and parking impacts, they remain significant. Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse impacts on traffic and parking identified for the proposed project.

8. TCM 7 could result in potentially significant impacts on utilities and service systems.

Finding and Explanation: TCM 7 – Improve Ferry Service could result in a higher energy per passenger miles traveled value than other transit modes so the impacts on petroleum fuels (under utilities and service systems) are potentially significant.

The Board of Directors finds that while feasible mitigation measures have been identified to reduce utilities and service system impacts, they remain significant. Therefore, this impact cannot be reduced below a significant level.

The Board of Directors finds further that the Final EIR considered alternatives pursuant to CEQA Guidelines §15126.6, but no project alternatives would reduce to insignificant levels the significant adverse impacts on utilities and service systems identified for the proposed project.

Findings for Potentially Significant Adverse Impacts that Can Be Mitigated Below a Significant Level

1. Operational noise impacts related to TCMs 4, 5, 6, 7, and 8 in the 2005 Ozone Strategy are potentially significant.

Finding and Explanation: Operational noise impacts related to TCMs 4, 5, 6, 7, and 8 in the 2005 Ozone Strategy are potentially significant as they could add new transit lines, widen freeways and add new traffic lanes. The noise impacts could be mitigated with project-specific mitigation measures including the construction of sound walls, adjustments to roadways or transit alignments, insulation of buildings, vibration isolation of track segments, and local land use policies to guide the location of roadways and rail corridors.

The Board of Directors finds that feasible mitigation measures have been identified to minimize noise impacts to less than significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Measures to mitigate noise impacts are identified in the Final EIR and in the "Mitigation Monitoring Plan" section below.

2. Water quality impacts associated with TCMs 4, 5, and 7 are potentially significant.

Water quality impacts associated with TCMs 4, 5, and 7 are potentially significant but are expected to be mitigated to less than significant using storm water controls, NPDES standards, and constructing new facilities outside of 100-year flood zones.

The Board of Directors finds that feasible mitigation measures have been identified to minimize water quality impacts to less than significant. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code §21061.1). Measures to mitigate water quality impacts are identified in the Final EIR and in the "Mitigation Monitoring Plan" section below.

Statement of Findings Conclusion

Changes or alterations have been incorporated into the Final EIR for the 2005 Ozone Strategy to mitigate or minimize the potentially significant adverse environmental effects associated with certain project impacts, i.e., aesthetics, air quality, biological resources, cultural resources, hazard, traffic and utilities and service systems impacts. No additional feasible mitigation measures or project alternatives, other than those already included in the Final EIR, have been identified that can further mitigate the potentially significant adverse project impacts on aesthetic, air quality, biological resources, cultural resources, hazard, traffic and utilities and service systems impacts and meet the proposed project objectives.

All feasible mitigation measures identified in the Final EIR have been adopted as set forth in the mitigation monitoring program. The analysis indicated that the alternatives would not reduce to insignificant levels the significant aesthetic, air quality, biological resources, cultural resources, hazard, traffic and utilities and service systems impacts identified for the proposed project.

The purpose of the 2005 Ozone Strategy is to establish a comprehensive regulatory program to attain and maintain state 1-hour ambient air quality standard for ozone through implementation of different categories of control measures. The District finds that the proposed project achieves the best balance between minimizing potential adverse environmental impacts and achieving the project objectives of complying with state and ambient air quality standards. The District further finds that all of the findings presented in this "Statement of Findings" are supported by substantial evidence in the record.

The record of approval for this project may be found in the District's Headquarters in San Francisco, California.

STATEMENT OF OVERRIDING CONSIDERATIONS

If significant adverse impacts of a proposed project remain after incorporating mitigation measures or no measures or alternatives to mitigate the adverse impacts are identified, the lead agency must make a determination that the benefits of the project outweigh the unavoidable adverse environmental effects if it is to approve the project. CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project (CEQA Guidelines §15093 [a]). If the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable" (CEQA Guidelines §15093 [a]). Accordingly, a Statement of Overriding Considerations regarding potentially significant adverse aesthetics, air quality, biological resources, cultural resources, hazard, water quality, transportation and traffic, and utilities and service system impacts resulting from implementing the 2005 Ozone Strategy has been prepared. This Statement of Overriding Considerations is included as part of the record of the project approval for the proposed project. Pursuant to CEQA Guidelines

§15093(c), the Statement of Overriding Considerations will also be noted in the Notice of Determination for the proposed project.

Despite the inability to incorporate changes into the project that will mitigate potentially significant adverse significant adverse aesthetic, air quality, biological resources, cultural resources, hazard, water quality, traffic and utilities and service systems impacts to a level of insignificance, the District Board of Directors finds that the following benefits and considerations outweigh the significant unavoidable adverse environmental impacts:

1. The long-term effect of the 2005 Ozone Strategy control measures is the reduction of ozone throughout the Bay Area Air Quality Management District ("District"), to protect public health and the environment and to make progress toward attaining state and federal ozone air quality standards. Implementation of the 2005 Ozone Strategy control measures will continue to reduce emissions from stationary and mobile sources. In the long term, the 2005 Ozone Strategy is expected to produce a net reduction in district-wide air pollution caused by emissions from stationary and mobile sources.

2. The emission reductions achieved by implementation of the 2005 Ozone Strategy control measures would help offset potential emission increases associated with population growth. Additionally, other factors are expected to further reduce emissions from mobile sources over time. These factors include an increased percentage of cleaner vehicles in the vehicle universe and implementation of CARB controls on mobile sources.

3. The proposed 2005 Ozone Strategy is necessary because the District does not currently comply with the state 1-hour ambient air quality standards for ozone. The focus of the Plan is to comply with the CCAA requirements that requires that the District: (1) Apply best available retrofit control technology (BARCT); (2) Implement all feasible measures through an expeditious implementation schedule; (3) Provide for the attainment of the State ozone ambient air quality standard at the earliest practicable date; and (4) comply with transport mitigation requirements in Health and Safety Code §40912. Improvements in air quality will be necessary to bring the Basin into attainment with the state 1-hour ozone standard. Failure to implement the control measures in the 2005 Ozone Strategy, means the District would not comply with the requirements of the California Clean Air Act.

4. Ozone is a highly reactive gas that can damage the tissues of the lungs and respiratory tract. High concentrations of ozone irritate the nose, throat and respiratory system and construct the airways in the lungs. Ozone also can aggravate other respiratory conditions such as asthma, bronchitis and emphysema. A reduction in ozone precusor emissions and a related reduction in ozone concentrations is expected to provide beneficial impacts to public health by reducing public exposure to ozone concentrations.

5. The analysis of potential adverse environmental impacts incorporates a "worst-case" approach. This means that whenever the analysis requires that assumptions be made,

those assumptions that result in the greatest adverse environmental impacts are typically chosen. This method likely overestimates the actual impacts from the proposed project.

6. Many of the potential adverse environmental impacts are associated with implementation of TCMs, many of which have been approved as part of the 2000 Clean Air Plan, which is already in place, and, therefore, are expected to be implemented even without approval of the 2005 Ozone Strategy.

The District Board of Directors finds that the above-described considerations outweigh the unavoidable significant effects to the environment as a result of the proposed project.

MITIGATION MONITORING PLAN

Introduction

CEQA requires an agency to prepare a plan for reporting and monitoring compliance with and implementation of measures to mitigate significant adverse environmental impacts. Mitigation monitoring requirements are included in CEQA Guidelines §15097 and Public Resources Code §21081.6, which specifically state:

When making findings as required by subdivision (a) of Public Resources Code §21081 or when adopting a negative declaration pursuant to Paragraph (2) of subdivision (c) of Public Resources Code §21080, the public agency shall adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment (Public Resources Code §21081.6). The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of an agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead or responsible agency, prepare and submit a proposed reporting or monitoring program.

The provisions of CEQA Guidelines §15097 and Public Resources Code §21081.6 are triggered when the lead agency certifies a CEQA document in which mitigation measures, changes, or alterations have been required or incorporated into the project to avoid or lessen the significance of adverse impacts identified in the CEQA document. Public Resources Code §21081.6 leaves the task of designing a reporting or monitoring plan to individual public agencies.

To fulfill the requirements of CEQA Guidelines §15097 and Public Resources Code §21081.6, the District must develop a plan to monitor project compliance with those mitigation measures adopted as conditions of approval for the 2005 Ozone Strategy EIR. The following subsections identify the specific mitigation measures identified in the EIR and the public agency or agencies responsible for monitoring implementation of each mitigation measure.

A. Environmental Impacts That Cannot Be Mitigated to Less than Significant

The environmental resources that were identified in the Final EIR as having significant or potentially significant adverse impacts are identified below. The Final EIR concluded that no significant adverse impacts on agriculture resources, geology/soils, land use/planning, mineral resources, population/housing, public services, and recreation. The Final EIR concluded that significant adverse impacts to aesthetics, air quality, biological resources, cultural resources, hazard/hazardous materials, hydrology/water quality, transportation and traffic, and utilities and service system would be expected due to implementation of the 2005 Ozone Strategy.

Aesthetic Impacts

New Transportation Facilities Could Block or Damage Scenic Views

The aesthetic analysis concludes that the implementation of some transportation improvements in TCMs 4, 6, 7, and 8, which involved the construction of new rail lines, bus lanes, and ferry facilities may result in visual changes that will block or damage views of scenic resources or adversely affect visual continuity. Mitigation measures are not expected to eliminate aesthetic impacts to less than significant.

Mitigation Measures for Aesthetic Impacts

The mitigation measures for aesthetic impacts developed by the Water Transit Authority (WTA, 2003) for construction of ferry terminals include the following:

A1 Where feasible, the following shall be included in ferry terminal design:

- Locate terminal facilities so as not to obstruct or detract from views of the Bay from nearby public thoroughfares;
- Design terminals and layout to integrate with the surrounding landscape and historical structures to preserve, and take advantage of, existing views of the Bay and shoreline;
- Design terminal facilities to provide new or enhanced point access areas or view areas such as piers, platforms, and walkways;
- Design and site terminals so as to maintain and enhance the visual quality of the shoreline and visual public access to the Bay; and
- Vessels should be standardized to support system-wide operations and to work interchangeably at all terminals. Vessel berthing should be configured so as to allow maximum feasible visual access to the Bay.

A2 The WTA established Intermodal and Architectural Design Guidelines shall be considered in the planning and design of new and enhanced ferry terminals.

Mitigation measures for other transportation projects should include the following:

A3 Design projects to minimize contrasts in scale and massing between the project, and surrounding natural forms and development. Site or design projects to minimize their intrusion into important view sheds.

A4 Use natural landscaping to minimize contrasts between the project and surrounding areas. Wherever possible, develop interchanges and transit lines at or below grade of the surrounding land to limit view blockage. Contour the edges of major cut and fill slopes to provide a more natural looking finished profile.

A5 Design landscaping along highway and transportation corridors to add significant natural elements and visual interest to soften the hard edged, linear travel experience that would otherwise occur.

A6 Complete design studies for projects in designated or eligible Scenic Highway corridors. Consider the complete highway system and develop mitigation measures to minimize impacts on the quality of the views or visual experience that originally qualified the highway for scenic designation.

It is not expected that these mitigation measures would eliminate all visual impacts and the implementation of some transportation improvements may result in visual changes that will block or damage views of scenic resources or adversely affect visual continuity in some areas following mitigation.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for aesthetic impacts will be implemented by various lead and local agencies and project applicants within the district.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. Monitoring will be accomplished as follows:

MMA1 This mitigation measure has been imposed by the WTA and is already part of a separate mitigation monitoring program.

MMA2 This mitigation measure has been imposed by the WTA and is already part of a separate mitigation monitoring program.

MMA3 Artist renderings or other similar visual graphics must be provided for transportation projects in scenic areas so that decisionmaker can review projects for scale and massing between the project, and surrounding natural forms and development. Alternative locations for transportation projects should be evaluated so that the project's aesthetic impacts into important view sheds are minimized.

MMA4 Artist renderings or other similar visual graphics should be provided for transportation projects in scenic areas so that decisionmaker can review the potential for projects to conflict with surrounding areas. Landscaping plans to be implemented following construction activities should be provided prior to project approval for evaluation of aesthetic impacts and project-specific mitigation requirements.

MMA5 Landscaping plans to be implemented following construction activities should be provided prior to project approval for evaluation of aesthetic impacts from transportation projects and project-specific mitigation requirements.

MMA6 See MMA3 above.

Air Quality Impacts

Localized CO Emission Increases are Potentially Significant

The 2005 Ozone Strategy is expected to result in an overall reduction in emissions from mobile sources on a regional basis. However, some transportation control measures could encourage increased traffic and related emissions in localized areas. These control measures could result in increased traffic near transit terminals, thus, generating increases in emissions, particularly CO emissions or CO "hot spots," in the local areas surrounding the transit terminals. Therefore, the potential for localized increases in CO emissions is considered a significant impact.

Mitigation Measures for Localized CO Emissions

The increase in cold start emissions and localized CO emissions can be reduced by encouraging non-drive access at the ferry terminals and encouraging implementation of other control measures such as TCM 5 - Improve Access to Rail and Ferries, and TCM 9 – Improve Bicycle Access and Facilities. However, the effectiveness of these mitigation measures cannot be quantified so the impact remains significant. Project level environmental analysis on the implementation of the various TCMs will be required to determine the potential for impacts at specific locations.

The WTA is planning to continue investigating the feasibility and applicability of using energy sources other than fossil fuels and different engine technologies. One promising technology is the use of fuel cells. Alternative energy sources and engine technologies are expected to become available and will be incorporated as they become feasible (WTA, 2003). Alternatives to diesel-fueled buses and rail engines must also be considered to minimize localized emissions at buses, ferry and rail terminals. However, as future technology cannot be predicted, and the overall effects of the implementation of the TCMs cannot be reasonable assesses at this time, this impact remains significant.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for air quality impacts will be implemented by various lead and local agencies and project applicants within the district. To the extent that construction results from complying with District rules that have been promulgated from 2005 Ozone Strategy control measures, the District can impose permit conditions on permit applicants at the time permit applications are processed and approved.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. Monitoring will be accomplished by requiring that CO hot spots analyses are provided for transportation projects to determine if the project will generate significant concentrations of CO and to mitigate the specific project impacts to less than significant by minimizing CO emissions. Specific mitigation measures are not included because they will vary depending on the specific project.

Localized Increases Associated with Diesel Exhaust are Potentially Significant

The 2005 Ozone Strategy is expected to result in an overall decrease in vehicle miles traveled and air emissions on a regional basis. However, significant localized air quality impacts associated with diesel exhaust could occur due to certain TCMs that would concentrate traffic in specific areas. Therefore, impacts associated with non-criteria pollutants are considered significant.

Mitigation Measures for Localized Increases in Diesel Exhaust Emissions

Significant impacts have been identified for the potential increases of diesel exhaust emissions in localized areas near transit terminals. The increase in emissions can be reduced by encouraging non-drive access at the ferry terminals, such as proposed in TCM 5 – Improve Access to Rail and Ferries, and other measures in the 2005 Ozone Strategy. In addition, substantial statewide diesel emission reductions are expected due to CARB control measures aimed at diesel trucks. However, the effectiveness of these mitigation measures cannot be quantified at a local level so the impact remains significant.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for air quality impacts will be implemented by various lead and local agencies and project applicants within the district. To the extent that construction results from complying with District rules that have been promulgated from 2005 Ozone Strategy control measures, the District can impose permit conditions on permit applicants at the time permit applications are processed and approved.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. Monitoring will be accomplished by requiring that health risk assessments for diesel emissions are provided for transportation projects on a case-by-case basis to determine if the project will generate significant concentrations of diesel exhaust and to mitigate the specific project impacts by minimizing diesel emissions (e.g., limit diesel engine idling to less than 5 minutes). Specific mitigation measures are not included because they will vary depending on the specific project.

Biological Resources Impacts

Biological Impacts are Potentially Significant

The analysis in the 2005 Ozone Strategy EIR concludes that the 2005 Ozone Strategy is expected to result in significant biological impacts to wetlands, marshlands and aquatic resources from dredging operations, construction of facilities or severe erosion from wake wash. In addition, the Water Transit Authority identified potentially significant impacts associated with the possibility of a ferry striking a whale (although rare) and from noise impacts on wildlife during construction.

Mitigation Measures for Biological Impacts

Biological impacts associated with TCM 7 – Improve Ferry Service were considered potentially significant. The following mitigation measures have been imposed by the Water Transit Authority on this proposed control measure and the mitigation for significant impacts are summarized below (WTA, 2003):

B1 Wetland areas should be delineated on a site-specific basis. Specific wetland boundary determinations shall be used to avoid disturbance of these resources when specific terminal layout plans are defined. For example, parking lot facilities typically the largest part of a terminal footprint, could be located in areas away from the shore and associated wetlands.

B2 In cases where wetland impacts are unavoidable, suitable compensatory mitigation shall be designed within the same subarea and implemented in consultation with appropriate regulatory agencies.

B3 Disturbance of eelgrass beds and mudflats shall be avoided in the design of project features and routing of ferries. Site specific side scan sonar surveys would be required prior to implementation of new routes or construction of new terminals to verify that eelgrass is not present.

B4 As part of the environmental studies and documentation for specific projects, specific areas of eelgrass beds and mudflats that could be impacted shall be specifically determined. In cases where eelgrass is unavoidable, suitable compensatory mitigation shall be designed and implemented in consultation with appropriate regulatory agencies.

B5 Indirect impacts to eelgrass beds from sedimentation shall be avoided or reduced through the use of silt curtains to protect the beds from sedimentation or other methods that would otherwise protect the eelgrass from turbidity plumes generated from dredging.

B6 Ferries shall be equipped with a whale detection system such as forward-looking sonar.

B7 Terminal locations shall be reviewed for potential occurrence of listed species and habitat. Terminal locations and routes should be designed or located to avoid these species. In areas where construction of a terminal could impact a listed species, consultation shall be conducted with appropriate agencies and appropriate permits shall be required.

The biological impacts associated with TCM7 are expected to remain significant following mitigation.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for biological impacts will be implemented by various lead and local agencies and project applicants within the district.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. The mitigation measures under biological impacts have been imposed by the WTA and are already part of a separate mitigation monitoring program so that additional mitigation monitoring is not required.

Cultural Resources Impacts

Impacts on Cultural Resources are Potentially Significant During Construction Activities

Construction activities associated with TCMs 4, 6, 7 and 8 could adversely impact previously unknown historical, archaeological or paleontological resources and, therefore, could result in significant impacts.

Mitigation Measures for Cultural Resources

The EIR for the Expansion of Ferry Transit Service in San Francisco Bay (TCM 7) included mitigation measures to reduce the potential impacts on cultural resources. Such mitigation includes detailed cultural surveys prior to construction activities, avoiding archaeological sites, preservation of the resources and so forth. The impacts were considered to remain significant following mitigation as construction could impact known or unknown cultural

resources (WTA, 2003). The following mitigation measures are required to minimize the potential significant impacts on cultural resources associated with TCM 7 construction activities:

CR1 Cultural surveys shall be required prior to construction activities associated with new transportation facilities in areas where cultural resources may be expected.

CR2 When possible, development near or on cultural resources will be avoided.

CR3 Where cultural resources cannot be avoided, a qualified paleontologist/ archaeologist monitor will conduct full-time monitoring of construction activities in areas that are likely to contain paleontological resources. In areas identified with a moderate to low potential to contain fossils, monitoring time will be reduced unless fossil remains are discovered, at which time monitoring will then be increased to full-time.

CR4 A qualified archaeologist shall monitor ground-disturbing activities in native soils/sediments, as well as the initial stages of grading of the property. In the event that archaeological resources are discovered during construction, the monitor will have the authority to temporarily halt or divert construction in the immediate vicinity of the discovery while it is evaluated for significance. Construction activities could continue in other areas. If the discovery proves to be significant, additional investigation, such as evaluation and data recovery excavation may be warranted.

CR5 A qualified paleontologist will be retained to supervise monitoring of construction excavations and to produce a mitigation plan in areas of cultural resource sensitivities. Paleontological monitoring will include inspection of exposed rock units and microscopic examination of matrix to determine if fossils are present. The paleontologist will have authority to temporarily divert grading away from fossil remains.

CR6 If microfossils are present, the monitor will collect matrix for processing. In order to expedite removal of fossiliferous matrix, the monitor may request heavy machinery assistance to move large quantities of matrix out of the path of construction to designated stockpile areas. Testing of stockpiles will consist of screen washing small samples (approximately 200 pounds) to determine if significant fossils are present. Productive tests will result in screen washing of additional matrix from the stockpiles to a maximum of 6,000 pounds per locality to ensure recovery of a scientifically significant sample.

CR7 Recovered fossils will be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis and reposited in a designated paleontological curation facility.

CR8 At each fossil locality, field data forms will record the locality, strategraphic sections will be measured, and appropriate scientific samples collected and submitted for analysis.

CR9 The qualified paleontologist will prepare a final mitigation report to be filed with the lead agency and the repository.

The above mitigation measures are expected to reduce the potential impacts on cultural resources associated with construction activities. Until final locations and designs are known for some of the transportation control measures, the impact on unknown cultural resources cannot be determined and this remains a potentially significant impact.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for cultural impacts will be implemented by various lead and local agencies and project applicants within the district.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. The mitigation measures under cultural impacts have been imposed by the WTA and are already part of a separate mitigation monitoring program so that additional mitigation monitoring is not required.

Hazard and Hazardous Materials Impacts

Hazard Impacts Associated with the Use of Aqueous Ammonia are Potentially Significant

Proposed control measure SS 14 – Stationary Gas Turbines would require or encourage the use of Selective Catalytic Reduction (SCR) units to reduce emissions of oxides of nitrogen (NOx). Ammonia is used in SCR units to react with NOx, in the presence of a catalyst, to form nitrogen and water. The storage and transportation hazards associated with the use of anhydrous ammonia are potentially significant.

Hazard Impacts Mitigation Measures

The impacts associated with the use of anhydrous ammonia are potentially significant. No feasible mitigation measures have been identified to reduce this impact to less than significant.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for hazard impacts will be implemented by various lead and local agencies and project applicants within the district. To the extent that construction results from complying with District rules that have been promulgated from 2005 Ozone Strategy control measures, the District can

impose permit conditions on permit applicants at the time permit applications are processed and approved.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. No specific mitigation measures were identified for hazard impacts. The District will look for mitigation measures for anhydrous ammonia impacts on a project-by-project basis.

Transportation/Traffic Impacts

Control measures could result in higher traffic densities in localized areas generating significant traffic and parking impacts.

Some control measures in the 2005 Ozone Strategy could encourage higher traffic densities in localized areas (e.g., TCM 1, TCM 3, TCM 4, TCM 6, TCM 7, TCM 11, and TCM 15). The impacts of individual projects are potentially significant and would need to be evaluated on a project-by-project basis. The potential increase in parking demand near rail, bus, and ferry terminals is also considered significant.

Traffic Impact Mitigation Measures

The following mitigation measures are required to mitigate the potential increased car and bus traffic to and from new and existing transportation terminals and stations, including TCM 1 - Support Voluntary Employer-Based Trip Reduction Programs, TCM 3 - Improve Local and Areawide Bus Service, TCM 4 - Improve Regional Rail Service, TCM 6 - Improve Interregional Rail Service, TCM 7 - Improve Ferry Service, and TCM 15 - Local Land Use Planning and Development Strategies.

T1 Once transport terminal and station locations are narrowed down, site specific traffic analyses shall be conducted to compare predicted traffic with applicable local level of service (LOS) standards. Traffic analyses must also be completed where modifications are proposed for existing terminals and stations. Traffic mitigation measures would depend on site-specific conditions, including design of vehicular access to terminals, major access routes, parking availability, and traffic patterns. For example, impacts that were predicted to occur at intersections could be mitigated by addition of turning lanes. For some cases, where access is problematic or presents serious community concerns, the viability of the terminal location would need to be further evaluated.

T2 The project proponents, in conjunction with local and regional transit agencies, shall study and develop terminal-specific plans to ensure that potential driving patrons can be adequately served by transit in locations with limited parking and currently insufficient transit access.

T3 Non-drive access could be encouraged through measures such as charging fees for parking, provision of preferential parking for carpools and vanpools, comprehensive

shuttle access, land use scenarios that encourage non-drive access, and improving bicycle and pedestrian access.

In addition to the above mitigation measures, TCM 9 – Improve Bicycle Access and Facilities and TCM 19 – Improve Pedestrian Access and Facilities, should also help to minimize localized impacts on traffic. Impacts after mitigation must be determined on a case-by-case basis after mitigation measures are considered. Therefore, the impact on traffic and parking in the vicinity of new transit remains potentially significant.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for transportation and traffic impacts will be implemented by various lead and local agencies and project applicants within the district. To the extent that construction results from complying with District rules that have been promulgated from 2005 Ozone Strategy control measures, the District can impose permit conditions on permit applicants at the time permit applications are processed and approved.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. Monitoring will be accomplished as follows:

MT1 Site-specific traffic analysis shall be conducted and reviewed by the local jurisdiction for compliance with applicable local Level of Service (LOS) standards. Traffic analysis will include existing traffic counts and projection of future traffic levels to estimate the project LOS impacts. Traffic mitigation measures would depend on site-specific conditions, including design of vehicular access to terminals, major access routes, parking availability, and traffic patterns, and will be developed on a case-by-case basis in conjunction with the local jurisdiction.

MT2 Site-specific plans will be conducted to determine the project generated traffic impacts (see MT1) and availability of parking, to ensure driving patrons have adequate service. Mitigation measures will be developed on a case-by-case basis in conjunction with the local jurisdiction.

MT3 Site-specific plans will be conducted to determine the project generated traffic impacts (see MT1) and determine the options available for non-drive access through measures such as charging fees for parking, provision of preferential parking for carpools and vanpools, comprehensive shuttle access, land use scenarios that encourage non-drive access, and improving bicycle and pedestrian access. Mitigation measures will be developed on a case-by-case basis in conjunction with the local jurisdiction.

Utilities and Service System Impacts

The Use of Ferries Could Result in Significant Use of Petroleum Fuels

TCM 7 – Improve Ferry Service could result in a higher energy per passenger miles traveled value than other transit modes so the impacts on petroleum fuels (under utilities and service systems) are potentially significant.

Utilities and Service System Mitigation Measures

The following mitigation measure has been imposed by the WTA for TCM 7 - Improve Ferry Service:

UT1 The WTA is planning to continue investigating the feasibility and applicability of using energy sources other than fossil fuels and different engine technologies. One promising technology is the use of fuel cells. The WTA has investigated the use of alternative fuels for ferries in New Technologies and Alternative Fuels Working Document. Alternative energy sources and engine technologies will become available and will be incorporated as they become feasible and cost-effect.

The impact could be less than significant with implementation of the above mitigation measures. However, the effectiveness of the mitigation cannot be quantified at this time. Therefore, this impact remains potentially significant.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for utilities and service systems impacts will be implemented by various lead and local agencies and project applicants within the district.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. The mitigation measure utilities and service system impacts has been imposed by the WTA and is already part of a separate mitigation monitoring program so that additional mitigation monitoring is not required.

B. Environmental Impacts That Can Be Mitigated to Less Than Significant

The environmental resources that were identified in the Final EIR as having potentially significant adverse impacts that can be mitigated to less than significant are identified below.

Noise Impacts

Operational Noise Impacts Related to TCMs 4, 5, 6, 7, and 8 in the 2005 Ozone Strategy are Potentially Significant.

Operational noise impacts related to TCMs 4, 5, 6, 7, and 8 in the 2005 Ozone Strategy are potentially significant as they could add new transit lines, widen freeways and add new traffic lanes. The noise impacts could be mitigated with project-specific mitigation measures including the construction of sound walls, adjustments to roadways or transit alignments, insulation of buildings, vibration isolation of track segments, and local land use policies to guide the location of roadways and rail corridors.

Mitigation Measures for Noise Impacts

Potentially significant noise impacts were identified so the following mitigation measure is proposed and is expected to reduce the emissions to less than significant. Mitigation Measure N1 below was required by the WTA for TCM 7 – Improve Ferry Service and should be included for TCM 4 – Upgrade and Expand Local and Regional Rail Service, TCM 5 – Improve Access to Rails and Ferries, TCM 6 - Improve Interregional Rail Service, and TCM 8 – Construct Carpool/Express Bus Lanes on Freeways:

N1 Siting and planning of new terminals shall include planning to locate terminal areas away from noise-sensitive land uses. Compliance with existing zoning ordinances should be sufficient to mitigate any potential impacts of ferry terminal operations.

The following mitigation measures should be evaluated and implemented for all TCMs that are determined to have potentially significant impacts through project specific environmental analysis:

N2 Construction of sound walls adjacent to new or improved roads or transit lines. Noise level increases could, in most cases, be mitigated to levels at or below existing levels if sound walls were constructed along the rights-of-way. A determination of the specific heights, lengths, and feasibility of sound walls must be part of the project-level environmental assessment. It is likely that Federal Highway Administration noise abatement criteria would be met if sound walls are included as mitigation measures. Where the TCMs would improve existing roadways, sound walls would also result in a reduction of overall sound levels, even considering potential increases from road widenings and additional traffic. As a result, the implementation of this mitigation measure can avoid project noise impacts and reduce existing noise levels along a number of heavily traveled corridors in the region.

N3 Adjustments to proposed roadways or transit alignments to reduce noise levels in noise sensitive areas. For example, depressed roadway or railway alignments can effectively reduce noise levels in nearby areas.

N4 Insulation of buildings to construction or noise barriers around sensitive receptor properties.

N5 Vibration isolation of track segments.

N6 Use of local land use policies by local agencies to guide the location of noise sensitive uses to sites away from roadways and rail corridors.

Implementation of specific TCMs will require project specific environmental analysis. Any potentially significant noise impacts identified would be offset with project specific mitigation measures of a particular transportation improvement. Therefore, noise impacts from implementation of the TCMs are expected to be less than significant following mitigation.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for noise will be implemented by various lead and local agencies and project applicants within the district.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. Monitoring will be accomplished as follows:

MN1 Mitigation measure N1 has been imposed by the WTA and is already part of a separate mitigation monitoring program so no additional monitoring is required.

MN2 Noise analyses for new or improved roads and transit lines must be conducted on a project-by-project basis. The results of the noise analysis shall determine the need and specifications for the construction of sound walls adjacent to new or improved roads or transit lines, using Federal Highway Administration noise abatement criteria.

MN3 Noise analyses for new or improved roads and transit lines must be conducted on a project-by-project basis. The results of the noise analysis shall determine the need for adjustments (e.g., depressed lanes or rail lines) to proposed roadways or transit alignments to reduce noise levels in noise sensitive areas.

MN4 Noise analyses for new or improved roads and transit lines must be conducted on a project-by-project basis. The results of the noise analysis shall determine the need for building insulation or noise barriers around sensitive receptor properties.

MN5 Noise analyses for new or improved roads and transit lines must be conducted on a project-by-project basis. The results of the noise analysis shall determine the need for vibration isolation of track segments.

MN6 Noise analyses for new or improved roads and transit lines must be conducted on a project-by-project basis. The results of the noise analysis shall be reviewed with local jurisdictions to determine potential impacts to noise sensitive uses. Alternative alignments must be evaluated to mitigate impacts to noise sensitive uses.

Hydrology/Water Quality Impacts

Water Quality Impacts Associated with TCMs 4, 5, and 7 are Potentially Significant

Water quality impacts associated with TCMs 4, 5, and 7 are potentially significant but are expected to be mitigated to less than significant using storm water controls, NPDES, and constructing new facilities outside of 100-year flood zones.

Mitigation Measures for Water Quality Impacts

The following mitigation measures were required by the WTA for TCM 7 – Improve Ferry Service:

HWQ1 Adoption of BMPs during construction to prevent, minimize, and clean up spills and leaks from construction equipment would reduce the potential for impacts to water quality. Examples of BMPs include refueling and maintenance of equipment only in designated lined and/or bermed areas, isolating hazardous materials from storm water exposure, and preparing and implementing spill contingency plans in specified areas. Any equipment with a fuel tank or other oil tank, such as heavy excavation machinery, must be considered as a potential source of released oil. Storage and parking of such equipment shall take into account oil spill prevention regulations to ensure that the area is free of drains or other avenues through which spills may escape containment.

HWQ2 New terminal facilities shall be designed such that storm water runoff would be controlled and discharged in an appropriate manner. Construction and industrial storm water NPDES permits would be required, and BMPs shall be adopted to reduce the chance of pollutants entering surface and ground water, thereby reducing the potential for impacts to water quality. Typical pollution control measures include BMPs designed to reduce the quantities of materials used that may produce pollutants, changing the way various products and materials are handled or stored, employing various structural devices to catch and restrict the release of pollutants, and establishing appropriate responses to spills and leaks. Examples of BMPs include: temporary fencing; protection devices such as rock aprons at pipe outlets; stabilized pads of aggregate at points where construction traffic would be leaving an unimproved construction site to enter a public street; temporary drain inlet protection devices such as filter fabric and sand bags; concrete washouts for cement mixers; preservation of existing vegetation; and vehicle and equipment cleaning.

Impacts on water quality are considered to be less than significant following mitigation.

Mitigation Monitoring and Reporting

Implementing Party: Because the EIR for the 2005 Ozone Strategy is a program EIR for an ongoing regulatory program, the District finds that the mitigation measures for noise will be implemented by various lead and local agencies and project applicants within the district.

Monitoring Agency: Because the EIR for the 2005 Ozone Strategy is a program EIR and general in nature, the monitoring agency is expected to vary and include lead and local agencies within the Basin. The mitigation measure for water quality impacts has been imposed by the WTA and is already part of a separate mitigation monitoring program so that additional mitigation monitoring is not required.