



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

## BOARD OF DIRECTORS' REGULAR MEETING

November 16, 2005

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

### Questions About an Agenda Item

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

### Meeting Procedures

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

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



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

WEDNESDAY  
NOVEMBER 16, 2005

BOARD ROOM  
7TH FLOOR

9:45 A.M.

## CALL TO ORDER

Opening Comments  
Roll Call  
Pledge of Allegiance  
Commendations/Proclamations

Marland Townsend, Chairperson  
Clerk of the Boards

## PUBLIC COMMENT PERIOD

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

## CONSENT CALENDAR (ITEMS 1 – 4 )

Staff/Phone (415) 749-

1. Minutes of November 2, 2005 Meeting  
M. Romaidis/4965  
[mromaidis@baaqmd.gov](mailto:mromaidis@baaqmd.gov)
2. Communications  
J. Broadbent/5052  
[jbroadbent@baaqmd.gov](mailto:jbroadbent@baaqmd.gov)  
*Information only*
3. Monthly Activity Report for October, 2005  
J. Broadbent/5052  
[jbroadbent@baaqmd.gov](mailto:jbroadbent@baaqmd.gov)
4. Consider Approval of Resolution Adjusting the District's Maximum Medical Contribution Declared to California Public Employees Retirement System (CalPERS)  
J. Broadbent/5052  
[jbroadbent@baaqmd.gov](mailto:jbroadbent@baaqmd.gov)

*The Board of Directors will consider approval of a resolution adjusting the District's maximum medical contribution declared to CalPERS for management, confidential, represented, and miscellaneous employees and retirees*

## PUBLIC HEARINGS

5. Public Hearing to Consider Adoption of Proposed Particulate Matter Implementation Schedule  
J. Roggenkamp/4646  
[jroggenkamp@baaqmd.gov](mailto:jroggenkamp@baaqmd.gov)  
*Pursuant to SB 656 (Sher, 2003), the District has evaluated existing rules and programs to reduce particulate matter emissions in the Bay Area, and has identified additional control measures that could be implemented to further reduce particulate matter emissions in the region. Staff request Board approval of the proposed particulate matter implementation schedule.*

## **PUBLIC HEARINGS (CON'T)**

6. Public Hearing to Consider Report on Further Study Measure 9: Refinery Wastewater Treatment Systems

**J. Broadbent/5052**

[jbroadbent@baaqmd.gov](mailto:jbroadbent@baaqmd.gov)

*Staff has examined the emissions from refinery wastewater treatment systems, potential control technologies, and costs of control, and recommends no regulatory amendments to District Regulation 8, Rule 8 at this time.*

## **CLOSED SESSION**

7. Conference with Legal Counsel

### **A. Existing Litigation:**

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

**Arbitration Between Paul Mauriello, Grievant, and Bay Area AOMD**, American Arbitration Association No. 74-300-600-04 LYMC

### **B. Significant Exposure to Litigation**

*Pursuant to Government Code Section 54956.9(b), a need exists to meet in closed session to discuss one potential litigation matter against the District.*

## **OPEN SESSION**

8. Report of the Executive Officer/APCO
9. Chairperson's Report
10. 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)

11. Time and Place of Next Meeting – 9:45 a.m. Wednesday, December 7, 2005 - 939 Ellis Street, San Francisco, CA 94109
12. Adjournment

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

**(415) 749-4965**

**FAX: (415) 928-8560**

**BAAQMD homepage:**

**[www.baaqmd.gov](http://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.

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: November 7, 2005

Re: Board of Directors' Draft Meeting Minutes

RECOMMENDED ACTION:

Approve attached draft minutes of the Board of Directors meeting of November 2, 2005.

DISCUSSION

Attached for your review and approval are the draft minutes of the November 2, 2005 Board of Directors' meeting.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

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

Draft Minutes: Board of Directors' Regular Meeting – November 2, 2005

**Call To Order**

Opening Comments: Chairperson Marland Townsend called the meeting to order at 9:50 a.m.

Roll Call: Present: Marland Townsend, Chair, Harold Brown, Roberta Cooper, Chris Daly, Mark DeSaulnier, Dan Dunnigan, Scott Haggerty, Jerry Hill, Liz Kniss, Patrick Kwok, Jake McGoldrick (10:09 a.m.), Nate Miley, Julia Miller, Mark Ross, Michael Shimansky, John Silva, Tim Smith, Pam Torliatt (9:58 a.m.), Gayle B. Uilkema, Brad Wagenknecht, Shelia Young.

Absent: Erin Garner.

Chairperson Townsend acknowledged Executive Officer/APCO, Jack Broadbent's two years at the Air District.

Pledge of Allegiance: Director Smith led the Board in the Pledge of Allegiance.

Commendations/Proclamation: There were none.

**Public Comment Period:** There were no speakers.

**Consent Calendar (Items 1 – 7)**

1. Minutes of October 19, 2005 Meeting
2. Communications. Correspondence addressed to the Board of Directors
3. Report of the Advisory Council. There was no report. This item was removed from the Consent Calendar.
4. Set Public Hearing for November 16, 2005 to Consider Report on Further Study Measure 9: Refinery Wastewater Treatment Systems

*Staff has examined the emissions from refinery wastewater treatment systems, potential cost of control, and recommends no regulatory amendments to District Regulation 8, Rule 8 at this time.*

5. Set Public Hearing for December 7, 2005 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 be kept for two years and made available to District staff.*

6. Set Public Hearing for December 7, 2005 to Consider Approval of Proposed Amendments to Regulation 8, Rule 44: Marine Vessel Loading Terminals; Rule 46: Marine Vessel to Marine Vessel Loading; District Manual of Procedures, Volume IV: Source Test Policy and Procedures, ST-34; Bulk and Marine Loading Terminals – Vapor Recovery Units; and approval of a California Environmental Quality Act (CEQA) Negative Declaration

*The proposed amendments to Regulation 8, Rule 44 would reduce the allowable organic vapor leak standard for equipment and connections associated with loading activities, expand the applicability of the rule to include organic chemicals, require control of organic vapors during cleaning, purging and gas freeing of cargo tanks on vessels, require collection and submission of data on low-volatility cargos not regulated by the rule, and consolidate the requirements of Rule 46 into Rule 44. The proposed amendments would delete Rule 46. The amendments to ST-34 include corrections to temperature and pressure standardization errors in some equations and incorporates a requirement to determine gas constituent average concentrations on a flow-weighted basis in some circumstances.*

7. Set Public Hearing for December 7, 2005 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 emission and recommends no amendments to District regulations at this time.*

**Board Action:** Director Wagenknecht moved approval of the Consent Calendar; seconded by Director Young.

**Speaker:** The following individual came forward to speak on agenda item 5:

Greg Karras  
CBE  
Oakland, CA 94612

Director Pamela Torliatt arrived at 9:58 a.m.

Director Miller offered an amendment to the motion to remove agenda item 3 from the consent calendar since there was no report. The motion was so amended and carried unanimously without objection.

**Committee Reports and Recommendations**

8. Report of the Public Outreach Committee Meeting of October 24, 2005



Director Silva presented the report and stated that the Public Outreach Committee met on Monday, October 24, 2005. Staff presented a summary of the 2005 Spare the Air/Free Morning Commute Campaign. Staff noted that there was only one Spare the Air advisory issued this smog season, which was on July 26<sup>th</sup>.

Staff presented plans for the upcoming wintertime outreach campaign. The season begins November 14, 2005 and ends February 17, 2006. Media and other outreach strategies were discussed. The Committee provided direction to staff on several items.

Plans for the Spring 2006 lawn mower exchange program were presented to the Committee. A battery operated mower will be available this year.

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

**Board Action:** Director Silva moved that the Board of Directors approve the report of the Public Outreach Committee; seconded by Director Miller.

Director Shimansky requested that consideration be given to free transit all day on Spare the Air days next summer. The motion then passed unanimously without objection.

9. Report of the Mobile Source Committee Meeting of October 24, 2005

*Action(s): The Committee recommended Board of Director approval of fiscal year 2005/2006 Transportation Fund for Clean Air Regional Fund grant awards listed on Attachment 1, totaling \$12.4 million.*

Director Haggerty presented the report and stated that the Committee met on Monday, October 24, 2005. Staff provided the Committee with an overview of the methodology to be used during the upcoming Carl Moyer Program funding cycle to comply with the requirements of AB1390 (Lowenthal).

Staff presented the report on the Transportation Fund for Clean Air (TFCA) Regional Fund grant awards for fiscal year 2005/2006. The Committee approved the staff recommendation that the Board of Directors consider and approve the funding for projects as listed on Attachment 1 of the staff report. The grant awards for fiscal year 2005/2006 TFCA Regional Fund total \$12.4 million. The Committee requested additional information to be included in Attachment 2, of agenda item #4, for projects not being recommended for funding. The staff has revised and included Attachment 2, of agenda item #4, in your Board packets. The Committee provided direction to staff on several items.

The next meeting of the Committee is scheduled for 9:30 a.m., Wednesday, December 8, 2005.

**Board Action:** Director Haggerty moved that the Board of Directors approve the recommendations and report of the Mobile Source Committee; seconded by Director Miller.

10. Report of the Budget and Finance Committee Meeting of October 26, 2005

*Action(s): The Committee recommended Board of Director approval to amend the FY 2005/2006 Budget by transferring \$80,075 from the Reserve for Capital Equipment to the Technical Services Budget, and authorize the Executive Officer/APCO to issue a purchase order in the amount of \$80,075 to Thermo Environmental Instruments for five Methane/Non-Methane Organic Carbon Analyzers.*

Director Miller presented the report and stated that the Committee met on Wednesday, October 26, 2005 and received the First Quarter Financial Report for Fiscal Year 2005/2006.

Staff presented a report on and the Committee recommends Board of Director approval of an Amendment to the fiscal year 2005/2006 Budget with the transfer of \$80,075 from the Reserve for Capital Equipment to the Technical Services budget and Authorize approval of a Purchase Order in excess of \$70,000 for five analyzers for the Air Monitoring Section.

Staff also presented a report on the status of Phase One implementation of video-conferencing equipment and installation in the 4<sup>th</sup> floor conference room. The Committee requested the item be referred to the Executive Committee for further discussion when the plans for the project are received.

The next meeting of the Committee is scheduled for 9:45 a.m., Monday, November 21, 2005.

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

11. Report of the Legislative Committee Meeting of October 31, 2005

*Action(s): The Committee recommended approval of the Air District's proposed 2006 legislative agenda.*

Director Wagenknecht presented the report and stated that the Committee met on Monday, October 31, 2005. Staff presented a summary of the recently concluded legislative year in Sacramento and highlighted the outcome of measures on which the District adopted positions.

Staff also presented potential legislative measures for consideration for incorporation into the District's 2006 legislative agenda. The following measures were discussed: 1) efforts to improve goods movement; 2) a smoke check component to Smog Check; 3) remote sensing; 4) increasing the ceiling for air pollution penalties; and 5) wood smoke ordinances. The Committee also provided a number of ideas for consideration.

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

**Board Action:** Director Wagenknecht moved that the Board of Directors approve the report of the Legislative Committee and adopt the legislative agenda for 2006; seconded by Deputy Director Dunnigan; carried unanimously without objection.

Director Jake McGoldrick arrived at 10:09 a.m.

Chairperson Townsend encouraged Board members to attend the meetings of the Committees to which they are assigned.

### **Presentation**

12. Presentation on Upcoming Particulate Matter Season and Air District Programs

*Staff gave a presentation on efforts to be undertaken throughout the upcoming particulate matter season and on Air District programs to address this winter time air quality public health concern.*

Mr. Broadbent stated that the Bay Area experiences elevated PM during the winter and this presentation will provide the Board with information on the District's programs to mitigate PM during the winter months.

Jean Roggenkamp, Deputy APCO, made the presentation and reviewed the following:

- What is Particulate Matter (PM)?
- Why is PM a health problem?
- What is the nature of PM in the Bay Area?
- What are current District PM reduction activities?
- New PM control measures being proposed.
- The focus on wood burning this winter.
- The next steps regarding wood burning.

Eric Stevenson, Air Monitoring Manager, demonstrated an instrument/monitor that the District will use to measure particulate matter in neighborhoods.

Mr. Broadbent stated that there is a concern that there will be more wood burning this winter due to escalating natural gas prices. District staff is responding to this concern in a comprehensive way and staff will report back to several Committees on the ideas presented today.

### **Closed Session** (The Board adjourned to Closed Session at 10:37 a.m.)

13. Closed Session to Consider Employment Agreements with the Executive Officer/APCO and the District Counsel

*Pursuant to Government Code Sections 54957 and 54957.6, the Board considered approval of employment agreements and/or amendments to employment agreements with the Executive Officer/APCO and the District Counsel.*

### **Open Session** (The Board reconvened to Open Session at 11:10 a.m.)

Brian Bunger, District Counsel, reported that the Board met in Closed Session on agenda item 13 to consider the performance evaluations of the District Counsel and Executive Officer and final action will take place under agenda item 14.

14. Consideration of Employment Agreements with the Executive Officer/APCO and the District Counsel.

*Pursuant to Government Code Sections 54957 and 54957.6, the Board considered approval of employment agreements and/or amendments to employment agreements with the Executive Officer/APCO and the District Counsel*

**Board Action:** Director Cooper moved Board of Director approval of the employment agreements with the Executive Officer/APCO and the District Counsel; seconded by Director Kwok; carried unanimously without objection.

### **Other Business**

15. Report of the Executive Officer/APCO – Mr. Broadbent reported on the following:
  1. The 50<sup>th</sup> Anniversary event at Scotts Restaurant in Jack London Square on November 10<sup>th</sup> starting at 5:30 p.m.
  2. Introduced Vanessa Johnson, Executive Secretary to Jean Roggenkamp, Deputy APCO.
16. Chairperson's Report: Chairperson Townsend announced the following:
  1. The formation of the Nominating Committee consisting of the following Board members: Director Brown, Chairperson, Director Cooper, Director Garner, Director Haggerty and himself.
  2. The Ad Hoc Committee on Climate Change will hold its first meeting on Wednesday, December 14<sup>th</sup>.
  3. The increase in the mileage rate as of September 2005 through the end of the year.
17. Board Members' Comments – Director Uilkema noted that she has provided each Board member with a copy of the Voluntary Clean Air Plan for North-Central Contra Costa County.

18. Time and Place of Next Meeting –9:45 a.m., Wednesday, November 16, 2005 - 939 Ellis Street, San Francisco, CA 94109.
19. Adjournment – The meeting adjourned at 11:14 a.m.

Mary Romaidis  
Clerk of the Boards

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: November 7, 2005

Re: Board Communications Received from November 2, 2005 through November 15, 2005

RECOMMENDED ACTION:

Receive and file.

DISCUSSION

A list of Communications received by the Air District from November 2, 2005 through November 15, 2005, if any, will be at each Board member's place at the November 16, 2005 Regular Board meeting.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AGENDA: 3

Memorandum

To: Chairperson Townsend and Members  
of the Board of Directors

From: Jack P. Broadbent  
Executive Officer/APCO

Date: November 16, 2005

Re: Report of Division Activities for the Month of October 2005

**COMPLIANCE & ENFORCEMENT DIVISION – K. WEE, DIRECTOR**

**Enforcement Program**

On October 12<sup>th</sup> staff attended the Alameda County Environmental Crimes Task Force meeting. The Alameda County Health Department asked for District staff's assistance with a gasoline dispensing facility (GDF) that has compliance issues with their dispensing equipment and underground storage tanks. Staff responded to Pacific Steel Castings revised Odor Control Plan dated October 12, 2005, in which they propose to install carbon adsorption equipment at Plant #3. On October 17<sup>th</sup>, staff attended the District Hearing Board meeting regarding Tesoro, Martinez's Abatement Order. Tesoro presented a revised Coker modification plan with which staff is in agreement. Staff attended the Northern District Environmental Crimes Task Force Meeting on October 19<sup>th</sup>, and updated the group on the Tesoro, Martinez's District Abatement Order.

**Compliance Assurance Program**

On October 18<sup>th</sup> staff hosted a meeting at District Offices with members from EPA Office of Enforcement and Compliance Assurance (OECA), EPA Region IX and CAPCOA Enforcement Managers. The purpose of the meeting was to discuss the new reporting requirements that will include new data entry, and processing for local Districts to submit to the EPA data base. These changes will impact enforcement programs state and nation-wide. Staff provided comments to Contra Costa County Hazardous Materials Office's Area Response Plan, an emergency response matrix and planning guide. Staff completed the review of Tesoro, Martinez's pressure relief device (PRD) inspection protocol for PRDs in the refinery's blowdown systems.

Staff attended a vapor recovery rulemaking workshop in Sacramento on October 18<sup>th</sup>. CARB presented proposed changes to equipment certification procedures and vapor recovery definitions. Staff attended the CAPCOA Vapor Recovery Committee meeting in Sacramento on October 19<sup>th</sup>-20<sup>th</sup>. Issues discussed included In-Station Diagnostics (ISD) enforcement; ISD 18-month evaluation; equipment availability; testing, training, and certification for testers, installers, and maintenance contractors.

## **Compliance Assistance Program**

Staff hosted a meeting at District offices with gas station industry representatives on October 25<sup>th</sup> to discuss upcoming Enhanced Vapor Recovery (EVR) deadlines, ongoing compliance issues; proposed new enforcement guidelines; and to hear industry concerns. Staff met with NUMMI representatives from their Environmental Excellence Program to plan a jointly developed compliance handbook. On October 12<sup>th</sup>, staff conducted a presentation on new District regulations, reporting requirements and permitting of small generators at the 3<sup>rd</sup> Annual Regulatory Conference of the Pacific Industrial Business Association (PIBA). Green Business Compliance Certifications were completed for two businesses in Santa Clara County and one in Alameda County. Over the Phone Interpretation (OPI) use for the month of October included Cantonese.

## **Training**

The first two-week classroom portion of New Inspector Training ended, to be followed by a one-week HAZWOPER certificate course, another classroom week and ending with two weeks of field training. The following CARB classes were held at the District and available to all District staff: Aerospace Industry; Fugitive Dust; Stationary Engines; Baghouses. On October 12<sup>th</sup>, staff attended a training class on the oil refining industry at the Shell Refinery.

## **Operations**

Staff met with the External Flare Workgroup (refineries, WSPA, CBE) to discuss reporting requirements under Reg. 12-12, including a proposed format for the Flare Minimization Plans and flaring event investigations involving greater than 500,000 SFCM/day. Staff sent out approximately 50 follow-up letters to facilities who requested breakdown relief this year, but did not submit the required emissions calculations associated with the events. Staff reviewed and approved the Smoke Management Plan for the Marin-Cello prescribed burn located at Point Reyes National Seashore. Staff has completed Administrative Operating Procedures (AOP) for the use of the Aerocet 531 hand-held particulate sampling meters to assist in a Wood Smoke Monitoring Study.

**(See Attachment for Activities by County)**

**ENGINEERING DIVISION – B. BATEMAN, DIRECTOR**

## **Toxics Program**

The Toxic Evaluation Section completed a total of 32 health risk screens during October. The majority of these risk screens were for permit applications for diesel engine emergency generators and gas stations. Staff continued the transition to the new Air Toxics New Source Review Rule and associated health risk screening procedures. Work also began on the transition to AERMOD, a new air dispersion model recently adopted by EPA as a replacement to the current ISCST model. Staff continued work related to the preparation of a Health Risk Assessment being prepared by Pacific Steel Casting Company in Berkeley under the requirements of the Air Toxics Hot Spots Program. Staff met with faculty of John Muir Elementary School in Berkeley about potential health impacts from nearby sources of toxic air contaminants, and is following up on several action items identified at that meeting.



**Title V Program**

Work continued in developing responses to the comments received on Revision 2 and 3 of the refinery Title V permits. Draft responses and permit revisions were prepared, and a meeting with EPA has been scheduled to discuss outstanding issues.

**Permit Evaluation Program**

The District received a total of 142 new permit applications in October. Staff attended the CAPCOA Engineering Managers Meeting in Sacramento, and made a presentation on District permitting processes at a Regional Water Quality Control Board training session.

**Engineering Special Projects Program**

Work began on air dispersion modeling of refinery flares in support of the District's rule development efforts. A guidance document was drafted on the appropriate content of incomplete letters for permit applications.

**Community Air Risk Evaluation (CARE) Program**

The CARE Interim Program Manager attended AWMA conferences on "Environmental Data Analysis" and "Diesel Particulate Matter Emissions" in Chicago. District staff, and the District's contractor Sonoma Technologies, Inc., presented an update on the CARE program to a joint meeting of the District Advisory Council's Air Quality Planning and Technical Committees. The third meeting of the CARE Task Force was held on October 20, 2005. Topics covered included an overall status update, a report on the preliminary emission maps provided by the District's consultants, a discussion on activities related to QA/QC of the emissions inventory maps, and a summary of neighborhood-level cumulative impact analyses activities being carried out at the State-level by CARB.

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| <b>FINANCE, ADMINISTRATION AND<br/>INFORMATION SERVICES DIVISION – J. MCKAY, DIRECTOR</b> |
|---|

- The District's current payroll system must be replaced because ADP has announced that it will stop supporting our payroll system as of June 30, 2006. Replacing this system will be a significant effort. A weekly project team meets with HR to advance this work. The Project Management issues associated with this work may have repercussions on other Projects (including the Production System) that require senior management oversight.
- The district has contracted with Caporicci and Larson to perform our 2004-2005 audit. They will be in on November 28<sup>th</sup> for interim testing work.

**Projects in process:**

|                                    | <u>Started</u> | <u>% Complete</u> | <u>Completion</u> |
|------------------------------------|----------------|-------------------|-------------------|
| Phase III Fire Alarm System        | Aug. 05, 2005  | 85                | Nov. 30, 2005     |
| Phase IV HVAC Upgrade              | Aug. 05, 2005  | 60                | Dec. 30, 2005     |
| ADA upgrades for 7th, 4th floor    | Aug. 05, 2005  | 100               | Oct. 30, 2005     |
| Replace fire doors                 | Oct. 15, 2005  | 85                | Nov. 15, 2005     |
| 7th and 4th floor lighting         | Oct. 01, 2005  | 40                | Dec. 30, 2005     |
| All electrical closets up to code: | Oct. 15, 2005  | 85                | Dec. 01, 2005     |
| Garage pedestrian early warning:   | Aug. 29, 2005  | 100               | Sept. 15, 2005    |
| Emergency generator lights         | Oct. 15, 2005  | 20                | Dec. 30, 2005     |

**Toolsets for Permits/Enforcement/Legal**

The District initiated Business Process Redesign with its contractor, CH2M Hill. This process will lead to the detailed Pilot description to be delivered to the two successful toolset vendors.

Demonstration Requirements were forwarded to several vendors. Four Vendors (Hyland, OpenText, Interwoven and Stellant) provided four-hour demonstrations attended by Engineering, Legal, Enforcement and Planning. The Demonstrations were very well received. Hyland and OpenText were selected to move ahead with Pilot Implementations

The District is on target to have a new Oracle database design ready for the Pilot implementations scheduled to begin in the first calendar quarter of next year. A design document has been created. Although underlying structured database design can be performed apart from the design of systems for Content Management (forms and documents), the two elements will be pursued concurrently and each process will inform the other.

**LEGAL DIVISION – B. BUNGER, DISTRICT COUNSEL**

The District Counsel’s Office received 35 Violations reflected in Notices of Violation (“NOVs”) for processing.

Mutual Settlement Program staff initiated settlement discussions regarding civil penalties for 76 Violations reflected in NOVs. In addition, Mutual Settlement Program staff sent 1 Final 30 Day Letter regarding civil penalties for 1 Violation reflected in an NOV. Finally, settlement negotiations by Mutual Settlement Program staff resulted in collection of \$47,650 in civil penalties for 62 Violations reflected in NOVs.

Counsel in the District Counsel’s Office initiated settlement discussions regarding civil penalties for 21 Violations reflected in NOVs. Settlement negotiations by counsel in the District Counsel’s Office resulted in collection of \$122,000 in civil penalties for 28 Violations.

**(See Attachment for Penalties by County)**

**PLANNING DIVISION – H. HILKEN, DIRECTOR****Air Quality Planning Program**

Staff held two public meetings on the Draft Bay Area 2005 Ozone Strategy and Draft Environmental Impact Report (EIR): an Ozone Working Group meeting in Oakland and a community meeting in Richmond. Staff also held a public workshop for the SB 656 Particulate Matter Implementation Schedule. The District co-sponsored a workshop regarding potential land use conflicts arising from locating residential areas near sources of air toxics, issues highlighted in ARB's *Air Quality and Land Use Handbook*. Staff sent 2 letters regarding air quality impacts of development projects and plans in the Bay Area: Gilroy – Downtown Gilroy Specific Plan; Oakley – East Cypress Corridor Specific Plan.

**Grant Programs**

Staff held a retreat during which several topics were discussed focusing on the continuous improvement of the overall effectiveness of the Grant Programs Section. The Mobile Source Committee approved a recommendation that the Board of Directors approve the staff recommendations for the Transportation Fund for Clean Air Regional Fund grant awards for fiscal year 2005/2006. A total of 298 eligible light-duty vehicles were purchased and scrapped by the three Vehicle Buy Back Program contractors.

**Rule Development Program**

Staff hosted three public workshops in October: Reg. 8-44, Marine Loading, in Benicia; and Further Study Measures 8 and 9, Atmospheric Blowdown Systems and Refinery Wastewater Systems in Martinez. Staff hosted two technical working group meetings regarding Reg. 8-28: Pressure Relief Devices and Refinery Wastewater Systems. Staff also met separately with representatives from CBE, Adams & Broadwell, WSPA, and refinery operators regarding Reg. 8-44: Marine Loading, and Reg. 12-12: Flares at Petroleum Refineries. Staff also participated in Ozone and Particulate Matter Planning workshops and met with various stakeholders, industry representatives and associations regarding control and further study measure proposals.

**Research and Modeling**

Staff hosted a Modeling Advisory Committee meeting and presented the District's recent meteorological and photochemical modeling activities. Staff has been applying a Geographical Information System to graphically display emissions inventory and census data, and presented a demonstration of this system to the District Advisory Council and the CARE Task Force. Staff participated in the CCOS Technical and Policy Committee conference calls to discuss the progress of CCOS projects. Staff also participated in the Northern California Ozone SIP and Transport Workgroup conference calls to follow ARB's modeling activities.

**PUBLIC INFORMATION & OUTREACH**

**Media Relations:** On October 6<sup>th</sup> the Great Race for Clean Air event was held in Pleasanton to promote the Air District and commute alternatives "Four Modes in Four Weeks" contest. Media coverage included: NBC 11, Cable Channel 30, KGO Channel 7 news, KTVU, Contra Costa Times, Tri Valley Herald, and Benicia/Fairfield Times Herald.

Staff developed a media outreach plan and new marketing collateral for the wintertime Spare the Air Tonight program. The winter survey questionnaire and sampling plan has been finalized. This year the sampling base and the frequency of sampling will greatly expand. A media plan featuring the use of a hand-held PM monitoring device was also developed, and will also be implemented this winter.

A Spanish translation of Carl Moyer Program fact sheet was completed. Workshops and a publicity plan for outreach to prospective grant applicants have been developed.

**Summer STA:** Concluded the 2005 STA/FMC program. Tasks included preparing a written summary, meeting with all partners for a program debriefing and working with partners to remove all program signage, banners, billboards and vehicle wraps.

**AirAlert:** As of October 2005 total users in database are: 29,626 (compared to 30,150 last month, and 22,480 in October 2004.). Total Bay Area zip codes in database: 16713 (56% of users). Prepared documents and extended AirAlert contract (STI) to continue uninterrupted service through March 31 at no additional cost to Air District.

**Wood smoke Ordinance:** Currently, 39 cities and 7 counties have a wood smoke ordinance. Wood smoke ordinances for the City of Richmond and Solano County are on agendas for November 15 and 22 respectively.

**Events:** Staff was present at several events held in San Francisco including the Cancer Society Walk for Hope, the ALA Asthma Walk, and RadioDisney's Boo in the Zoo.

**Public Meetings:** Staff coordinated two public meetings. On October 26<sup>th</sup>, a presentation of the 2005 Ozone Strategy was held in the Richmond Auditorium. Approximately 35 individuals attended. Industry representatives predominated. On October 27<sup>th</sup>, a Public Workshop on Wastewater Treatment at Oil Refineries was held in the Martinez City Hall.

## TECHNICAL DIVISION – G. KENDALL, DIRECTOR

### Air Quality

Air quality in the Bay Area remained in the Good category from October 1<sup>st</sup> through October 12<sup>th</sup> due to a deep marine layer and the occasional passage of weak weather systems. PM<sub>2.5</sub> concentrations increased to the Moderate category on October 13<sup>th</sup> when a strong ridge of high pressure moved across the Bay Area and winds died down. Air quality was in the Good category from October 14<sup>th</sup> through October 21<sup>st</sup> due to cool air aloft and good vertical mixing. PM<sub>2.5</sub> levels increased to the Moderate category on October 22<sup>nd</sup> when another ridge of high pressure passed through the Bay Area. Air quality returned to the Good category from October 23<sup>rd</sup> through October 31<sup>st</sup> as a series of weather systems brought light rain to the Bay Area every few days.

### Air Monitoring

Thirty-two of the thirty-three air monitoring stations were operational during the month of October 2005. The Crockett station, located at water district facilities, is shut down during seismic upgrades. The Vallejo air monitoring station was shut down from October 14<sup>th</sup> through November 2<sup>nd</sup>, while the building was re-roofed, and came back on line on November 3<sup>rd</sup>.

### **Meteorology and Forecasting**

July 2005, air quality data were quality assured and entered into the EPA Air Quality System (AQS) database. Staff continued to make daily air quality and burn forecasts. The Marsh Burn season was completed with no complaints from the public on authorized burns. Staff completed meteorological guidelines for forecasting high particulate matter concentrations for the upcoming Residential Wood Smoke Data Collection Project.

### **Quality Assurance**

The Quality Assurance (QA) group completed testing of and developed procedures for a new gas analyzer audit system. Regular, mandated performance audits are now being performed using the new system. Staff conducted performance audits of 13 monitors at 3 District air-monitoring stations. The QA group also completed performance audits of the SO<sub>2</sub> and H<sub>2</sub>S monitors at Ground Level Monitoring Networks at the Tesoro and Chevron refineries.

### **Laboratory**

In addition to the ongoing, routine analyses, three quartz filters and three impinger solutions samples from the baghouse outlet at American Brass and Iron Foundry in San Leandro were analyzed for lead content. The methylene chloride content of a furniture stripper sample from Dold's Workshop in Dublin was determined.

### **Source Test**

Ongoing Source Test activities included Continuous Emissions Monitoring (CEM) Field Accuracy Tests, source tests, gasoline cargo tank testing, and evaluations of tests conducted by outside contractors. The ConocoPhillips Refinery's open path monitor monthly report for the month of September was reviewed. The Source Test Section provided ongoing participation in the District's Further Studies Measures for refineries.

**These facilities have received one or more Notices of Violations  
Report period: October 1, 2005 – October 31, 2005**

**Alameda County**

| <b>Status<br/>Date</b> | <b>Site #</b> | <b>Site Name</b>                            | <b>City</b> | <b>Regulation<br/>Title</b>  |
|------------------------|---------------|---|-------------|--|
| 10/26/05               | R1184         | A 2 Z Auto Body Center                      | Hayward     | Authority to Construct; Permit to Operate                                      |
| 10/13/05               | C9080         | Cal Gas                                     | San Lorenzo | Gasoline Dispensing Facilities   |
| 10/13/05               | C8521         | Chevron #3751                               | Newark      | Gasoline Dispensing Facilities   |
| 10/24/05               | B7284         | Fremont Auto Body                           | Fremont     | Authority to Construct; Permit to Operate                                      |
| 10/13/05               | C9280         | Lido Auto Care Inc                          | Newark      | Gasoline Dispensing Facilities   |
| 10/13/05               | C0189         | Nella Oil<br>Pacific Steel Casting Co-Plant | Fremont     | Gasoline Dispensing Facilities   |
| 10/11/05               | A0703         | #2  | Berkeley    | Public Nuisance  |
| 10/17/05               | C8384         | Valero                                      | San Lorenzo | Permit to Operate<br>Gasoline Bulk Terminals and Gasoline Delivery<br>Vehicles |
| 10/05/05               | K9374         | Beneto Tank Lines                           | Martinez    |  |

**Contra Costa County**

| <b>Status<br/>Date</b> | <b>Site #</b> | <b>Site Name</b>  | <b>City</b>  | <b>Regulation<br/>Title</b>  |
|------------------------|---------------|---|--------------|--|
| 10/11/05               | A0057         | BP West Coast Products, LLC   | Richmond     | Storage of Organic Liquids<br>Standards of Performance for New Stationary Sources;<br>Continuous Emission Monitoring and Recordkeeping<br>Procedures |
| 10/11/05               | A0010         | Chevron Products Company  | Richmond     |  |
| 10/11/05               | A0010         | Chevron Products Company  | Richmond     | Major Facility Review (Title V)  |
| 10/14/05               | Q8779         | Michael James Const., Inc.  | Walnut Creek | Permit to Operate<br>Gasoline Bulk Terminals and Gasoline Delivery<br>Vehicles   |
| 10/06/05               | R0790         | Sentinel Transportation   | Richmond     |  |
| 10/06/05               | A0011         | Shell Martinez Refinery<br>Tesoro Refining and Marketing<br>Company | Martinez     | Major Facility Review (Title V)  |
| 10/25/05               | B2758         | Tesoro Refining and Marketing<br>Company                            | Martinez     | Storage of Organic Liquids   |
| 10/11/05               | B2758         | Tesoro Refining and Marketing<br>Company                            | Martinez     | Hydrogen Sulfide   |

**Marin County**

| <b>Status<br/>Date</b> | <b>Site #</b> | <b>Site Name</b> | <b>City</b> | <b>Regulation<br/>Title</b> |
|------------------------|---------------|------------------|-------------|-----------------------------|
| NONE                   |               |                  |             |                             |

**Napa County**

| <b>Status<br/>Date</b> | <b>Site #</b> | <b>Site Name</b> | <b>City</b>                              | <b>Regulation<br/>Title</b>  |
|------------------------|---------------|------------------|--|--|
| 10/06/05               | A9183         |                  | Napa-Vallejo<br>Waste Mgmt.<br>Authority | Parametric Monitoring and Recordkeeping<br>Procedures; Major Facility Review (Title V) |

*San Francisco County*

| Received Date | Site # | Site Name          | City          | Regulation Title               |
|---------------|--------|--------------------|---------------|--------------------------------|
| 10/13/05      | B2703  | Michael's Cleaners | San Francisco | Perc Dry Cleaning              |
| 10/13/05      | C8010  | Unocal #0458       | San Francisco | Gasoline Dispensing Facilities |

*San Mateo County*

| Received Date | Site # | Site Name  | City          | Regulation Title                 |
|---------------|--------|--|---------------|----------------------------------|
| 10/19/05      | B0970  | Brianz Auto Body<br>Fifth Avenue Enterprises dba | Burlingame    | Motor Vehicle Coating Operations |
| 10/13/05      | C9772  | Silver Gas                                       | Redwood City  | Gasoline Dispensing Facilities   |
| 10/04/05      | C5169  | National Car Rental                              | San Francisco | Gasoline Dispensing Facilities   |
| 10/13/05      | C5900  | Nella Oil Company                                | Daly City     | Gasoline Dispensing Facilities   |
| 10/19/05      | B6454  | Quest Collision Center, Inc                      | Redwood City  | Motor Vehicle Coating Operations |
| 10/19/05      | A9459  | Tommy's Cleaners                                 | Millbrae      | Perc Dry Cleaning                |

*Santa Clara County*

| Received Date | Site # | Site Name   | City          | Regulation Title  |
|---------------|--------|---|---------------|---|
| 10/13/05      | C5610  | ARCO Facility #02153 - Wasu D<br>Pillay                                       | Santa Clara   | Gasoline Dispensing Facilities  |
| 10/13/05      | C7649  | ARCO Facility #06147-<br>KASSA'S GAS & MART<br>City of San Jose-South Service | Campbell      | Gasoline Dispensing Facilities  |
| 10/04/05      | C8007  | Yard  | San Jose      | Gasoline Dispensing Facilities<br>Parametric Monitoring and Recordkeeping<br>Procedures; Major Facility Review (Title V);<br>Solid Waste Disposal Sites |
| 10/04/05      | B1670  | Gas Recovery Systems, Inc   | San Jose      | Gasoline Dispensing Facilities  |
| 10/13/05      | C9602  | Navy Exchange/PO Box 84   | Moffett Field | Gasoline Dispensing Facilities  |
| 10/12/05      | C9779  | Palisade Gas and Wash   | San Jose      | Gasoline Dispensing Facilities  |
| 10/13/05      | C8900  | Pete's Stop   | San Jose      | Gasoline Dispensing Facilities  |
| 10/19/05      | R1077  | Roman Custom Granite  | San Jose      | Particulate Matter and Visible Emissions  |
| 10/13/05      | C9314  | Tosco Northwest Company   | Campbell      | Gasoline Dispensing Facilities  |

*Solano County*

| Received Date | Site # | Site Name                               | City    | Regulation Title                         |
|---------------|--------|---|---------|--|
| 10/06/05      | B2626  | Valero Refining Company -<br>California | Benicia | Particulate Matter and Visible Emissions |

*Sonoma County*

| Received Date | Site # | Site Name            | City       | Regulation Title                          |
|---------------|--------|----------------------|------------|---|
| 10/25/05      | R1224  | Santiago Padilla     | Petaluma   | Open Burning                              |
| 10/11/05      | F5599  | Sebastiani Vineyards | Sonoma     | Open Burning                              |
| 10/25/05      | B7296  | Sonoma County Fair   | Santa Rosa | Authority to Construct; Permit to Operate |
| 10/25/05      | B7296  | Sonoma County Fair   | Santa Rosa | Permit to Operate                         |

**Outside Bay Area**

| Received Date | Site # | Site Name         | City           | Regulation Title                                       |
|---------------|--------|-------------------|----------------|--|
| 10/07/05      | R0860  | Sabek             | King City West | Gasoline Bulk Terminals and Gasoline Delivery Vehicles |
| 10/07/05      | N1032  | Beneto Tank Lines | Sacramento     | Gasoline Bulk Terminals and Gasoline Delivery Vehicles |

**October 2005 Closed NOVs with Penalties by County**

**Alameda**

| Site Name                           | Site Occurrence | City        | Penalty  | # of Violations Closed |
|-------------------------------------|-----------------|-------------|----------|------------------------|
| ARCO Facility #05369 - CHEUK M FUNG | C9509           | Fremont     | \$500    | 1                      |
| Bay Area Diablo Petroleum Company   | A0921           | Hayward     | \$1,250  | 3                      |
| CertainTeed Corporation             | B2749           | Fremont     | \$800    | 1                      |
| Cleveland Steel Container           | A0249           | Oakland     | \$1,250  | 1                      |
| Corvette City                       | A7553           | Newark      | \$1,500  | 3                      |
| Davis Street SMART                  | A2773           | San Leandro | \$750    | 1                      |
| Eastmont Mall Properties            | P5854           | Oakland     | \$25,000 | 3                      |
| Heat & Control Inc                  | B1035           | Hayward     | \$500    | 1                      |
| Republic Services Vasco Road, LLC   | A5095           | Livermore   | \$8,500  | 6                      |
| Waste Management of Alameda County  | A2066           | Livermore   | \$16,000 | 6                      |

**Total Violations Closed: 26**



**Contra Costa**

| Site Name                          | Site Occurrence | City         | Penalty  | # of Violations Closed |
|------------------------------------|-----------------|--------------|----------|------------------------|
| Antioch Building Materials Company | A0092           | Pittsburg    | \$1,000  | 1                      |
| Bay Area Diablo                    | Q5015           | Martinez     | \$750    | 1                      |
| Bay Area/Diablo Petroleum Co       | C8024           | Richmond     | \$250    | 2                      |
| Glen Macauley                      | Q6055           | Brentwood    | \$1,000  | 1                      |
| Golden Gate Petroleum              | C9726           | El Sobrante  | \$375    | 1                      |
| Jim's California Auto Body, Inc    | A6247           | Concord      | \$750    | 1                      |
| Michael James Const., Inc.         | Q8779           | Walnut Creek | \$1,000  | 2                      |
| Pacific Tank Lines - Riverside     | N9323           | Richmond     | \$500    | 1                      |
| Shell Martinez Refinery            | A0011           | Martinez     | \$37,000 | 5                      |
| Trinity Valero Enterprises         | C0237           | Antioch      | \$150    | 1                      |

Total Violations Closed: 16

**Napa**

| Site Name               | Site Occurrence | City | Penalty | # of Violations Closed |
|-------------------------|-----------------|------|---------|------------------------|
| Galo MacLean Nursery    | 1FF43           | Napa | \$3,750 | 1                      |
| Jefferson Car Wash, Inc | 1FG58           | Napa | \$500   | 2                      |
| Vino Farms Inc          | 1FF45           | Napa | \$3,000 | 1                      |

Total Violations Closed: 4

**San Francisco**

| Site Name                                 | Site Occurrence | City          | Penalty | # of Violations Closed |
|---|-----------------|---------------|---------|------------------------|
| BAE Systems San Francisco Ship Repair Inc | A3288           | San Francisco | \$1,500 | 1                      |
| <b>Total Violations Closed:</b>           |                 |               |         | <b>1</b>               |

**San Mateo**

| Site Name                       | Site Occurrence | City                | Penalty | # of Violations Closed |
|---------------------------------|-----------------|---------------------|---------|------------------------|
| Gas at Jefferson                | C8799           | Redwood City        | \$500   | 1                      |
| Gas Recovery Systems, Inc       | B1668           | Menlo Park          | \$500   | 1                      |
| Menlo/Atherton Shell            | C2929           | Menlo Park          | \$500   | 1                      |
| Sabek Oil Company               | F5046           | South San Francisco | \$1,750 | 2                      |
| Shell Service Station           | C9543           | South San Francisco | \$375   | 1                      |
| Skyline Chevron                 | C2977           | Millbrae            | \$800   | 1                      |
| South Bay Marble Inc            | A6107           | San Carlos          | \$1,000 | 1                      |
| <b>Total Violations Closed:</b> |                 |                     |         | <b>8</b>               |

**Santa Clara**

| Site Name                                       | Site Occurrence | City     | Penalty | # of Violations Closed |
|---|-----------------|----------|---------|------------------------|
| Beacon 1-722                                    | C8386           | Gilroy   | \$300   | 1                      |
| BP Service Station/TOSCO                        | C9319           | Milpitas | \$500   | 1                      |
| Coastwide Environmental Technologies, Inc.      | F0630           | San Jose | \$750   | 2                      |
| Department of General Services                  | A7167           | Milpitas | \$350   | 1                      |
| Gas Recovery Systems, Inc., Guadalupe Mines Rd. | B1669           | San Jose | \$5,000 | 2                      |

**Santa Clara Continued**

| Site Name                                      | Site Occurrence | City          | Penalty  | # of Violations Closed |
|--|-----------------|---------------|----------|------------------------|
| Gas Recovery Systems, Inc., Dixon Landing Road | B1670           | San Jose      | \$33,000 | 8                      |
| Hansra Gas & Mart                              | C5214           | San Jose      | \$750    | 1                      |
| McLachlan Wood Finishing Co                    | A9941           | Mountain View | \$950    | 1                      |
| QualTech Circuits, Inc                         | B2445           | Santa Clara   | \$3,000  | 3                      |
| Randazzo Enterprises, Inc                      | M2174           | Palo Alto     | \$4,000  | 2                      |
| Roc's Cleaners                                 | A4268           | Campbell      | \$150    | 1                      |
| Unocal #7186 --Satnam Petroleum                | C8960           | San Jose      | \$400    | 1                      |
| Valero Refining Company                        | D0387           | San Jose      | \$250    | 1                      |

Total Violations Closed: 25

**Solano**

| Site Name            | Site Occurrence | City    | Penalty | # of Violations Closed |
|----------------------|-----------------|---------|---------|------------------------|
| Foodmaker/Quickstuff | C0077           | Benicia | \$1,200 | 4                      |

Total Violations Closed: 4

**Sonoma**

| Site Name              | Site Occurrence | City       | Penalty | # of Violations Closed |
|------------------------|-----------------|------------|---------|------------------------|
| Classic Mill & Cabinet | A7515           | Santa Rosa | \$4,500 | 2                      |
| George Iverson         | Q7010           | Sebastopol | \$500   | 1                      |
| JP Finishing           | B5967           | Cotati     | \$300   | 1                      |
| Mark Joseph Santino    | P0003           | Windsor    | \$150   | 1                      |
| Peter Boeck            | Q4424           | Santa Rosa | \$600   | 1                      |

Total Violations Closed: 6

**ACRONYMS AND TERMINOLOGY**

|           |  |
|-----------|--|
| ABAG      | Association of Bay Area Governments  |
| AC        | Authority to Construct issued to build a facility (permit)   |
| AMBIENT   | The surrounding local air  |
| AQI       | Air Quality Index  |
| ARB       | [California] Air Resources Board   |
| ATCM      | Airborne Toxic Control Measure   |
| BAAQMD    | Bay Area Air Quality Management District   |
| BACT      | Best Available Control Technology  |
| BANKING   | Applications to deposit or withdraw emission reduction credits   |
| BAR       | [California] Bureau of Automotive Repair   |
| BARCT     | Best Available Retrofit Control Technology   |
| BIODIESEL | A fuel or additive for diesel engines that is made from soybean oil or recycled vegetable oils and tallow. B100=100% biodiesel; B20=20% biodiesel blended with 80% conventional diesel |
| BTU       | British Thermal Units (measure of heat output)   |
| CAA       | [Federal] Clean Air Act  |
| CAL EPA   | California Air Resources Board   |
| CCAA      | California Clean Air Act [of 1988]   |
| CCCTA     | Contra Costa County Transportation Authority   |
| CEQA      | California Environmental Quality Act   |
| CFCs      | Chlorofluorocarbons  |
| CMA       | Congestion Management Agency   |
| CMAQ      | Congestion Management Air Quality [Improvement Program]  |
| CMP       | Congestion Management Program  |
| CNG       | Compressed Natural Gas   |
| CO        | Carbon monoxide  |
| EBTR      | Employer-based trip reduction  |
| EJ        | Environmental Justice  |
| EIR       | Environmental Impact Report  |
| EPA       | [United States] Environmental Protection Agency  |
| EV        | Electric Vehicle   |
| HC        | Hydrocarbons   |
| HOV       | High-occupancy vehicle lanes (carpool lanes)   |
| hp        | Horsepower   |
| I&M       | [Motor Vehicle] Inspection & Maintenance ("Smog Check" program)  |
| ILEV      | Inherently Low Emission Vehicle  |
| JPB       | [Peninsula Corridor] Joint Powers Board  |
| LAVTA     | Livermore-Amador Valley Transit Authority ("Wheels")   |
| LEV       | Low Emission Vehicle   |
| LNG       | Liquefied Natural Gas  |
| MPG       | Miles per gallon   |
| MTC       | Metropolitan Transportation Commission   |

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|                      |  |
|----------------------|--|
| NAAQS                | National Ambient Air Quality Standards (federal standards)                     |
| NO <sub>x</sub>      | Nitrogen oxides, or oxides of nitrogen   |
| NPOC                 | Non-Precursor Organic Compounds  |
| NSR                  | New Source Review  |
| O <sub>3</sub>       | Ozone  |
| PM <sub>2.5</sub>    | Particulate matter less than 2.5 microns                                       |
| PM <sub>10</sub>     | Particulate matter (dust) less than 10 microns                                 |
| PM <sub>&gt;10</sub> | Particulate matter (dust) over 10 microns                                      |
| POC                  | Precursor Organic Compounds  |
| pphm                 | Parts per hundred million  |
| ppm                  | Parts per million  |
| PUC                  | Public Utilities Commission  |
| RFG                  | Reformulated gasoline  |
| ROG                  | Reactive organic gases (photochemically reactive organic compounds)            |
| RIDES                | RIDES for Bay Area Commuters   |
| RTP                  | Regional Transportation Plan   |
| RVP                  | Reid vapor pressure (measure of gasoline volatility)                           |
| SCAQMD               | South Coast [Los Angeles area] Air Quality Management District                 |
| SIP                  | State Implementation Plan (prepared for <i>national</i> air quality standards) |
| SO <sub>2</sub>      | Sulfur Dioxide   |
| TAC                  | Toxic Air Contaminant  |
| TCM                  | Transportation Control Measure   |
| TFCA                 | Transportation Fund for Clean Air [BAAQMD]                                     |
| TIP                  | Transportation Improvement Program   |
| TMA                  | Transportation Management Association  |
| TOS                  | Traffic Operations System  |
| tpd                  | tons per day   |
| Ug/m <sup>3</sup>    | micrograms per cubic meter   |
| ULEV                 | Ultra low emission vehicle   |
| ULSD                 | Ultra low sulfur diesel  |
| USC                  | United States Code   |
| UV                   | Ultraviolet  |
| VMT                  | Vehicle miles traveled (usually per <i>day</i> , in a defined area)            |
| VTA                  | Santa Clara Valley Transportation Authority                                    |
| ZEV                  | Zero Emission Vehicle  |

**BAY AREA AIR QUALITY MANGEMENT DISTRICT**  
Memorandum

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

From: Jack P. Broadbent  
Executive Officer/APCO

Date: November 7, 2005

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

**RECOMMENDATION**

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

**BACKGROUND**

CalPERS requires the District to declare a maximum contribution amount that can be used by employees and retirees to purchase medical insurance. Effective January 1, 2006, the premiums for all basic health plans will be increasing by an average of 9%. Therefore, staff is recommending that the maximum contribution amount declared to CalPERS be increased. This action does not increase the fringe benefit allowance provided to employees or retirees. This only allows for a greater portion of the current fringe benefit allowance to be used to purchase medical insurance.

Pursuant to MOU, Article XI, Section 11.07, the fringe benefit allowance for non-management (represented) employees equals the total of the lowest health plan premium rate for an employee and two or more dependants offered by CalPERS, and the dental plan and vision plan premium rates for an employee plus dependents. The Board adopted the same formula for confidential employees and the same formula plus an additional \$50.00 for management employees. The MOU provides for District contribution of at least the lowest health plan premium rate for an employee and two or more dependents offered by CalPERS. Increasing the maximum employer contribution declared to CalPERS for purchase of medical insurance will facilitate correct billing to the District for medical insurance premiums.

The maximum contribution amounts vary for different employment categories of active employees and retirees (Management, Non-Management, Confidential and Miscellaneous).

The District's maximum medical premium contributions will be adjusted as follows:

| <u>Category</u>                    | <u>Current Contribution</u> | <u>Contribution Effective 1/1/06</u> |
|------------------------------------|-----------------------------|--------------------------------------|
| Management                         | \$972.19                    | \$1,062.39                           |
| Non Management                     | \$922.19                    | \$1,012.39                           |
| Confidential                       | \$922.19                    | \$1,012.39                           |
| Miscellaneous (i.e., limited term) | \$48.40                     | \$ 64.60                             |

BUDGET CONSIDERATION/FINANCIAL IMPACT

This action does not change the fringe benefit allowance amount for employees and retirees. Therefore, there is no additional fiscal impact beyond that contemplated in the current budget approved for FY 2005-2006.

Respectfully Submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Michael Rich

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

**Resolution No. 2005-\_\_\_**

**A Resolution to Fix the District's Contribution Under the  
Public Employees' Medical and Hospital Care Act**

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

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

NOW, THEREFORE, BE IT RESOLVED, that effective January 1, 2006 the employer's contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of family members, in a health benefits plan up to a maximum of:

| <u>Code</u> | <u>Bargaining (Representation) Unit</u> | <u>Contribution<br/>Per Month</u> |
|-------------|---|-----------------------------------|
| 004         | Management                              | \$1,062.39                        |
| 010         | Non Management                          | \$1,012.39                        |
| 011         | Confidential                            | \$1,012.39                        |
| 005         | Miscellaneous Unrepresented             | \$ 64.60                          |

Plus administrative fees and Contingency Fund assessments.

The foregoing resolution was duly and regularly introduced, passed and adopted at a regular meeting of the Board of Directors of the Bay Area Air Quality Management District on the Motion of Director \_\_\_\_\_, seconded by Director \_\_\_\_\_, on the \_\_\_\_\_ day of \_\_\_\_\_ 2005 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



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: November 9, 2005

Re: Public Hearing to Consider Adoption of Proposed Particulate Matter  
Implementation Schedule

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RECOMMENDED ACTION:

Staff recommends that the Board of Directors adopt the proposed Particulate Matter (PM) Implementation Schedule in Table 3 of the attached staff report.

BACKGROUND

In 2003, the State legislature passed SB 656 (stats. 2003, ch.738) to enhance existing state-wide efforts to mitigate particulate matter (PM) pollution from stationary and mobile sources. The legislation directed the California Air Resources Board (ARB) to compile a list of existing ARB and air district rules, regulations, and programs that address direct and indirect PM emissions. ARB compiled a list of 103 measures being implemented by air districts in California as of January 1, 2004. SB 656 directed each air district to review this list and create an implementation schedule for those measures on the list that would be appropriate for their air basin based on the nature and severity of the local PM problem. The District was required to review each measure based on its emissions reduction potential, potential to improve public health, and whether the control measure technology is readily available, feasible, and cost-effective for their region to implement. Based on this review, District staff developed an implementation schedule to develop new Bay Area rules and to enhance existing programs that address PM pollution.

The District released the Proposed Particulate Matter Implementation Schedule for public review and comment on September 12, 2005, and held a public workshop to discuss the staff report and the Implementation Schedule on October 11, 2005. A public comment period was open until October 18, 2005. The District received verbal comments at the public workshop as well as written comments. District staff have revised the staff report and responded to all public comments. The attached final staff report includes responses to comments.

## DISCUSSION

The PM Implementation Schedule calls for rule development on two District rules and the enhancement of two existing District programs. The two rules address controlling emissions from commercial broiling operations and new emission standards for stationary internal combustion engines (ICEs). The commercial broiling operations rule will involve requiring control devices that significantly reduce PM and VOC emissions from large-scale broiling operations, such as those used in certain fast food restaurants. The ICE engine rule will address stationary and portable engines greater than 50 horsepower and will complement ARB rules currently being implemented. These two rules will undergo the standard District rule making process which will include extensive opportunities for stakeholder and public input. They are both scheduled for adoption in 2006 with the implementation dates to be determined.

The District currently operates two programs that address wood burning. One is the Spare the Air Tonight voluntary wood burning curtailment and public awareness program and the other is the District's Model Wood Burning Ordinance program. Under the SB 656 PM Implementation Schedule these programs will be enhanced beginning in November 2005. The Spare the Air Tonight program enhancements will include lowering the Air Quality Index (AQI) threshold for when Spare the Air Tonight alerts will be issued. The lower AQI represents a more health-protective threshold and more alerts are anticipated than in previous years. The program will also include expanded public outreach and media efforts to inform the public about the health impacts of wood burning and a public survey will gather more information about wood burning activities and patterns in the Bay Area. The Wood Burning Model Ordinance program enhancements will include additional staff resources and outreach efforts aimed at expanding Bay Area cities and counties adoption of a variety of wood burning measures proposed in the model ordinance.

## ISSUES

The District received public comments regarding the Proposed Particulate Matter Implementation Schedule and has addressed these comments in Appendix B: Response to Comments. Also, based on the comments received, the staff report has been expanded to include more detailed information about the process used to evaluate the 103 ARB measures, definitions explaining the evaluation categories, and a more detailed comparison of the measures in the ARB list with existing District rules, regulations and programs (Appendix A). In addition to these changes, several measures were reevaluated and reclassified into different categories. However, the Implementation Schedule itself was not changed from that which was proposed in the Proposed Implementation Schedule issued on September 12, 2005.

The majority of public comments received concerned the issue of wood burning. The main concern was that the District is not proposing to add new rules and regulations to limit PM emissions from wood burning in the region. During the SB 656 measures evaluation process staff has determined that the District does not have enough information to determine whether the regulatory wood burning measures on the ARB list meet the appropriate standards of technical feasibility, total emission reduction potential, rate of emissions reduction, public acceptability, enforcement and cost-effectiveness in the Bay Area per Health and Safety Code Section 40922 and the ARB's SB 656 guidance to include in the PM Implementation Schedule at this time. Therefore the District has decided to perform a more detailed evaluation of wood burning activities and their impacts in the region beginning in November 2005. The

program was presented during the November 2, 2005, Board of Directors meeting and will include local air monitoring activities, public surveying, and other information gathering activities. Based on the results of these efforts, the District will evaluate what (if any) additional measures would be appropriate for the region.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

The costs associated with rule development and enforcement can be partially offset through existing District permitting fees. The costs associated with existing program enhancements can be covered through existing program budgets.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Ina Shlez  
Approved by: Henry Hilken

Attachment:

Final Staff Report on the Particulate Matter Implementation Schedule

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

November 9, 2005

Staff Report

Particulate Matter Implementation Schedule

Prepared by:  
Planning and Research Division

Reviewed by:  
Jean Roggenkamp  
Deputy Air Pollution Control Officer

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## **I. BACKGROUND**

### **A. What is Particulate Matter (PM)?**

Particulate matter (referred to as PM) consists of very small liquid and solid particles suspended in the air, and includes particles smaller than 10 microns in size (PM<sub>10</sub>) as well as finer particles smaller than 2.5 microns in size (PM<sub>2.5</sub>). Particles with a size between 2.5 and 10 microns are sometimes referred to as "coarse particles".

Ambient PM is made up of particles that are emitted directly, such as soot and fugitive dust, as well as secondary particles that are formed in the atmosphere from reactions involving precursor pollutants such as oxides of nitrogen, sulfur oxides, volatile organic compounds, (NO<sub>x</sub>, SO<sub>x</sub>, and VOC), and ammonia. Secondary PM and combustion soot tend to be fine particles (PM<sub>2.5</sub>) while fugitive dust is mostly coarse particles.

Some particles are directly emitted into the air. They come from a variety of sources such as cars, trucks, buses, industrial facilities, cooking, power plants, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood.

Other particles may be formed indirectly when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants, and in other industrial processes. Many combustion sources, such as motor vehicles and power plants, emit PM directly and also emit pollutants that form secondary PM.

### **B. What Kinds Of Problems Does PM Cause?**

#### **1. Human Health**

Exposure to particulate pollution is linked to increased frequency and severity of asthma attacks and even premature death in people with pre-existing cardiac or respiratory disease. Those most sensitive to particulate pollution include infants and children, the elderly, and persons with heart and lung disease.

When we inhale, we breathe in air along with any particles that are in the air. The air and the particles travel into our respiratory system (the lungs and airway). Along the way the particles can stick to the sides of the airway or travel deeper into the lungs. The farther particles go, the worse the effect. Smaller particles can pass through the smaller airways.

Many scientific studies have linked breathing PM to a series of significant health problems, including:

- aggravated asthma
- increases in respiratory symptoms like coughing and difficult or painful breathing
- chronic bronchitis
- decreased lung function
- premature death

#### **2. Visibility impairment**

PM is the major cause of reduced visibility (haze) in the United States, including both urban and rural areas. PM reduction programs are underway in cities as well as places like the Grand

Canyon and the Great Smokey Mountains National Parks where millions of tourists come every year to take in the views.

### 3. Atmospheric deposition

The smaller particles are lighter and stay in the air longer and travel farther. PM<sub>10</sub> particles can stay in the air for minutes or hours while PM<sub>2.5</sub> particles can stay in the air for days or weeks before settling as deposition on surfaces. PM<sub>10</sub> particles can travel as little as a hundred yards or as much as 30 miles. PM<sub>2.5</sub> particles can go even farther; many hundreds of miles before settling out. The effects of this settling include:

- making lakes and streams acidic
- changing the nutrient balance in coastal waters and large river basins
- depleting the nutrients in soil
- damaging sensitive forests and farm crops

### 4. Aesthetic damage

Certain types of PM, such as soot, can stain and damage stone and other materials, including culturally important objects such as historic buildings, monuments, and statues. Cleaning up these landmarks is expensive and time consuming.

### 5. Public Nuisance

PM can become a public nuisance when it is concentrated at the local level. The nuisance effects can include soiling of personal property, increased respiratory ailments, reduced visibility, odor, or other problems. These effects can have the most impact on sensitive populations, such as children, the elderly and those with existing respiratory illness or compromised immune systems.

## II. WHAT ARE PM CONDITIONS IN THE BAY AREA?

The U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB) have adopted ambient air quality standards for PM<sub>10</sub> and PM<sub>2.5</sub> (Table 1). California's standards are the most health-protective standards in the nation and are designed to provide additional protection for the most sensitive groups of people. According to ARB, attainment of California's standards is expected to result in the prevention of premature deaths, incidences of asthma among children, and over millions of lost work days per year.

**TABLE 1: STATE AND NATIONAL PM STANDARDS AND BAY AREA ATTAINMENT STATUS**

|                             | California Standard (µg/m <sup>3</sup> ) | Bay Area Status | National Standard (µg/m <sup>3</sup> ) | Bay Area Status |
|-----------------------------|--|-----------------|--|-----------------|
| PM <sub>10</sub> - Annual   | 20                                       | Nonattainment   | 50                                     | Attainment      |
| PM <sub>10</sub> - 24-hour  | 50                                       | Nonattainment   | 150                                    | Unclassified    |
| PM <sub>2.5</sub> - Annual  | 12                                       | Nonattainment   | 15                                     | Attainment      |
| PM <sub>2.5</sub> - 24-hour | --                                       | --              | 65                                     | Attainment      |

State and National particulate matter ambient air quality standards. The levels of the standards are expressed in micrograms per cubic meter (µg/m<sup>3</sup>). Status of Bay Area based on data available as of 11/23/2004.

Today, virtually all of California is considered to be in "nonattainment" for the State PM<sub>10</sub> standard, with most urban areas, the Central Valley, and several other areas in nonattainment for the State PM<sub>2.5</sub> standard. The Bay Area is currently in attainment of the Federal PM<sub>10</sub> and PM<sub>2.5</sub> standards.

### **III. WHAT IS BEING DONE TO REDUCE PM POLLUTION IN THE BAY AREA?**

The Bay Area Air Quality Management District (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 NO<sub>x</sub> from power plants, industrial facilities, and other combustion sources, and VOCs from petroleum refineries, coatings and solvents, product manufacturing, fuel storage, transfer and dispensing activities, and many other industrial and commercial facilities.

The Air District also administers programs that deal specifically with emissions from wood-burning appliances such as fireplaces, wood stoves and heaters. These programs include the Spare the Air Tonight campaign that advises Bay Area residents not to burn wood on evenings that are forecast to have conditions favorable for increased PM levels. The Air District has also developed a model wood burning ordinance for cities and counties, and administers incentive programs to replace older and dirtier wood-burning equipment with EPA-certified devices.

To reduce PM emissions from mobile sources, the Air District implements a variety of incentive programs to encourage fleet operators and the public to voluntarily replace or retrofit older higher polluting vehicles/equipment with newer lower polluting vehicles/equipment. The types of projects funded include purchasing low-emission vehicles, re-powering old polluting heavy duty diesel engines, and installing after market emissions control devices that reduce particulates and NO<sub>x</sub> emissions. These incentives are available for a wide variety of on-road and off-road equipment. In addition, one program focuses specifically on school buses while another deals specifically with refuse trucks. The Air District also operates a vehicle buy-back program to provide financial incentives to remove the oldest most polluting light-duty vehicles from Bay Area roadways.

### **IV. SB 656 PM IMPLEMENTATION SCHEDULE**

#### **A. What is the SB 656 PM Schedule?**

In 2003 the California Legislature enacted Senate Bill 656 (SB 656) to reduce public exposure to PM<sub>10</sub> and PM<sub>2.5</sub>. SB 656 requires ARB, in consultation with local air districts, to develop and adopt, by January 1, 2005, a list of the most readily available, feasible, and cost-effective control measures that could be used by ARB and the air districts to reduce PM<sub>10</sub> and PM<sub>2.5</sub>. The goal of SB 656 is to make progress in the near-term toward attainment of State and national PM<sub>10</sub> and PM<sub>2.5</sub> standards.

The potential PM control measures on ARB's list are based on rules, regulations, and programs



existing in California as of January 1, 2004 to reduce emissions from new, modified, and existing stationary, area, and mobile sources.

For more information about SB 656 and to view related documents, please go to [www.arb.ca.gov/pm/pmmeasures/pmmeasures.htm](http://www.arb.ca.gov/pm/pmmeasures/pmmeasures.htm).

### **B. The SB 656 Process**

As required by SB 656, ARB compiled a list of existing PM rules, regulations, and programs in California as of January 1, 2004. This list included 103 different measures that are being implemented by any air district to address both direct and indirect PM emissions. Local districts must review the ARB list and identify the measures most appropriate for their respective regions. Air Districts must adopt an implementation schedule that prioritizes the appropriate measures based on cost effectiveness and their effects on public health, air quality, and emissions reductions. The SB 656 legislation and ARB guidance directs each air district to base their evaluation of potential PM reduction measures on the nature and severity of the PM problem in their area.

SB 656 requires that local air districts not include measures on the implementation schedule if they are substantially similar to measures already adopted by the air district or if they are scheduled to be adopted within two years of adoption of the PM implementation schedule, or if the air district has determined that there are readily available, feasible, and cost-effective alternative control measures that will achieve equivalent or greater reductions.

### **C. Sources of PM in the Bay Area**

Air District staff has analyzed both direct and indirect sources of PM throughout the Bay Area. Based on 2000-2003 ambient air monitoring data, the Air District and ARB estimated that the PM<sub>2.5</sub> fraction of total PM accounted for approximately 60% of PM<sub>10</sub> during the winter and approximately 45% during the rest of the year. On days when the PM standards are exceeded, PM<sub>2.5</sub> can account for as much as 90% of PM<sub>10</sub>. On an annual basis, the ARB estimated that PM<sub>2.5</sub> comprised approximately 50% of the PM<sub>10</sub> levels. Therefore, PM<sub>2.5</sub> is seen a significant component of the region's total PM problem.

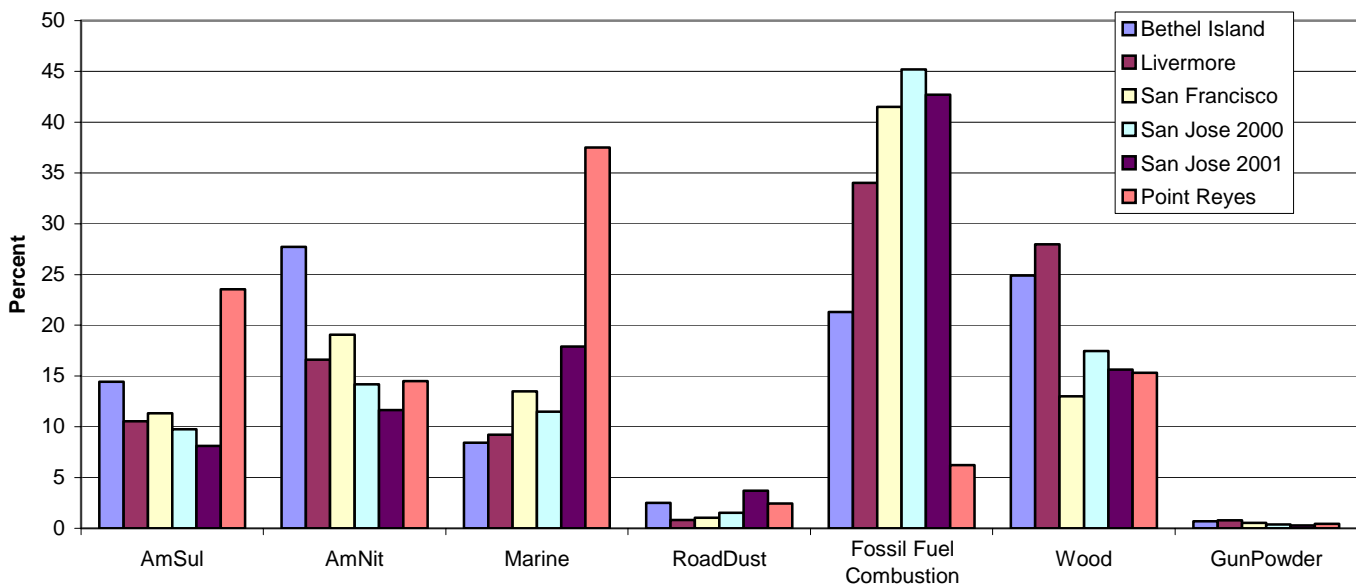
Air District staff and ARB staff have been working on ways to determine the sources of PM in the region. One method was to evaluate the Air District's source inventory for specific stationary and area sources. Another method was to analyze the nature of the PM collected as part of the region's participation in the state's PM<sub>2.5</sub> speciation network of ambient air monitors.

The emissions inventory data collected by the Air District reflects PM<sub>10</sub>. Based on the inventory data, combustion activities such as residential wood burning, construction/demolition activities, road dust, and emissions from on and off-road engines have been identified as significant sources of PM<sub>10</sub> emissions. While the inventory is helpful in determining potential PM<sub>10</sub> sources in the region, it does not provide the full picture of the makeup of the region's PM. The nature of particulates is that larger, coarser particles tend to settle out of the air closer to their emission source while smaller particles, such as the size of PM<sub>2.5</sub>, tend to remain suspended in the air longer and travel further. In addition, direct and indirect sources of PM needed to be distinguished. Therefore, further evaluation of the sources of PM was needed.

The data collected from ambient air monitoring in the region reflects both PM<sub>10</sub> and PM<sub>2.5</sub>. Recent scientific studies have found specific chemical components of PM to be associated with likely emission source categories. To help determine the sources of PM collected from ambient air monitors Air District staff applied an approach called the chemical mass balance (CMB) analysis using a computer model to apportion ambient PM collected on filters to a set of source categories, such as fossil fuel combustion, wood smoke, and geological dust. The CMB model found the mix of sources that best matches the ambient PM samples collected at monitoring sites, chemical species by chemical species. The results were then compared to the Air District's emissions inventory to further refine the source categories.

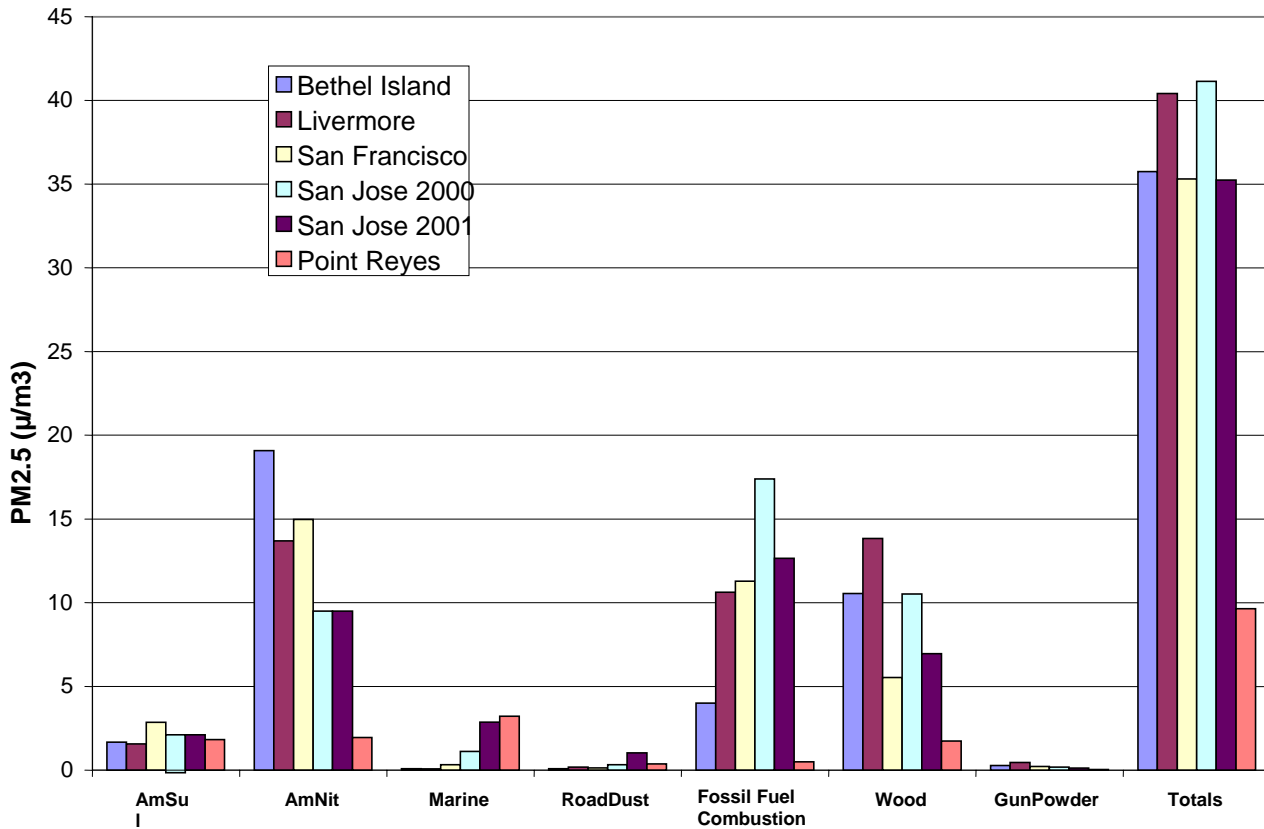
The combined analysis showed that for annual average PM<sub>2.5</sub> the largest source categories are on and off road motor vehicle exhaust and carbon from cooking and wood-burning activities. These categories include both directly emitted PM and secondary PM, such as ammonium nitrate formed by atmospheric reactions of ammonia with nitrogen oxides from motor vehicles and other combustion sources. Geological dust was found to be a minor component of ambient PM. During the winter, residential wood smoke and cooking are major contributors to ambient PM. Combustion PM<sub>2.5</sub>, which includes vehicle exhaust, is the second major component of PM<sub>2.5</sub> and a significant component of PM<sub>10</sub>. Ammonium nitrate is also a principal component of ambient PM. Winter conditions – cool temperatures, low-wind speeds, low inversion layers, and high humidity – favor the formation of ammonium nitrate and the buildup of PM in the region. Road dust and other dust producing activities also contribute to ambient PM<sub>10</sub>, but not PM<sub>2.5</sub>, and have a more local impact. The Figures 1 and 2 below summarize the results of the CMB analysis to determine source categories for both annual PM<sub>2.5</sub> and peak PM<sub>2.5</sub>.

**FIGURE 1**  
**Annual Percentage PM<sub>2.5</sub> Contributions from Various Source Categories**



The values shown are the mass from individual source categories as a percentage of the total estimated mass. Thus, the percentages sum to 100% for each site. Fossil Fuel Combustion category includes on-road and off-road vehicles, aircraft, refineries, and power generation sources.

**FIGURE 2**  
**Source Contributions to Peak Bay Area Ambient PM<sub>2.5</sub>**



Values are averages from 10 days with highest PM at each site. Totals are sums of individual source contributions. The Fossil Fuel Combustion category includes on-road and off-road vehicles, aircraft, refineries, and power generation sources.

## V. SB 656 MEASURES EVALUATION PROCESS

To address the requirement of SB 656, the ARB compiled a list of existing PM rules, regulations, and programs in California as of January 1, 2004. This list included 103 different measures that are being used by various air districts to address both direct and indirect PM emissions. Each air district in the state has characteristics and emissions sources specific to the region. For this reason, not every item on the ARB's list of 103 measures would be applicable to every region. The SB 656 legislation directed each air district to base their further reduction measures on the nature and severity of the PM problem in their area. For example, the San Joaquin Valley has a significant PM problem and is considered to be in non-attainment of the federal PM<sub>10</sub> and PM<sub>2.5</sub> standards. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has had to create PM Plans to address how they will achieve attainment, and the severity of their region's problem necessitated very aggressive regulations. The Bay Area, however, is in attainment of the federal PM standards and the PM problem here is not as extreme. Therefore, some measures that may be necessary to address the PM problem in San Joaquin Valley may not be as necessary or cost effective in the Bay Area.

In addition, the most important sources of PM vary from region to region. For example, District and ARB analysis indicate that geologic dust (e.g. from agricultural activities, unpaved roads, etc.) is not a major source of PM in the Bay Area. Therefore, control measures for those sources are less important for the Bay Area than in other regions. The SB 656 legislation and ARB guidance states that the Air District should not include measures if they are substantially similar to those scheduled to be adopted within two years of the Implementation Schedule or if the Air District has determined that there is a readily available, feasible, and cost-effective alternative control measure that will achieve equivalent or greater reductions. Therefore, measures that reduce PM precursors that are included in the Air District's Bay Area 2005 Ozone Strategy are not included in the Implementation Schedule.

Following ARB's SB 656 guidance, Air District staff compared each of the 103 measures on ARB's list with existing Air District rules, regulations and programs to determine if equivalent measures are already being implemented or are being addressed in other ways. The evaluation results categories are described below. The results of the District's evaluation are represented in Table 2. In addition, Appendix A describes each measure and, where appropriate, lists any applicable District rule, regulation or program that corresponds to the measure listed by the ARB. For a full description of each ARB measure, please visit [www.arb.ca.gov/pm/pmmeasures/board\\_approved\\_list.pdf](http://www.arb.ca.gov/pm/pmmeasures/board_approved_list.pdf).

## **EVALUATION RESULTS CATEGORIES**

### **Equivalent measures that are already being implemented by the District**

District staff compared each of the 103 control measures on the ARB list with existing District rules, regulations and programs to determine if equivalent control measures are already being implemented or if the emission sources are being addressed in other ways. The measures listed in this category were found to have equivalent District rules, regulations or programs that accomplished the same or similar emission reductions.

### **No Bay Area sources**

Each measure on the ARB list applies to a specific emissions source category. In some cases, those types of sources do not exist in the Bay Area and so the District does not need to employ rules, regulations or programs to address that particular source category.

### **Insignificant potential emissions reductions**

This category includes several kinds of measures:

- The difference in the specific requirements of the ARB listed measures, such as specific emission standards or operational requirements was found to have limited potential additional emissions reduction benefits compared to the existing District rule, regulation or program.
- The number of facilities in the Bay Area that would be impacted by the measure was so small that the new rule, regulation or program would not provide significant emissions reductions.
- The source category affected by the measure would not provide significant regional emissions reductions and provide relatively little local reductions to warrant implementation.

### **Proposed in the Ozone Strategy Control Measures**

The Health and Safety Code and ARB's SB 656 guidance indicate that air districts may not include on their PM Implementation Schedule any measures that are scheduled for adoption within two years of the adoption of the PM Implementation Schedule. The measures in this category are already proposed for adoption in the next two years in the District's Draft 2005 Ozone Strategy. Therefore, they are not being included as part of this PM Implementation Schedule. For a full list of the 2005 Ozone Strategy Control Measures and the timing of rule adoption, please see the Draft 2005 Ozone Strategy, Table 10: Regulatory Agenda 2005-2007 (pg. 49 of the Draft Bay Area 2005 Ozone Strategy).

### **Identified as further study measures in the Ozone Strategy**

This category of measures includes measures that are also being addressed in the District's Draft 2005 Ozone Strategy as further study measures. In most cases, these are sources that the District already addresses in some way through existing rules, regulations, or programs, but needs to conduct further analysis to determine whether it is feasible and beneficial to amend existing rules or adopt new rules or programs. The District does not currently have enough information to determine whether these ARB listed measures meet the appropriate standards for improving air quality, public health, cost effectiveness, and technical feasibility for implementation at this time. The District will continue to evaluate these further study measures to determine whether they are viable PM and/or ozone control measures for adoption at some point in the future.

### **Identified for enhancement/amendment**

Measures identified for enhancement and amendment include existing District rules, regulations and/or programs that the District believes could be significantly improved to further reduce emissions and increase protection of public health. These measures have been added to the Proposed PM Implementation Schedule for adoption beginning in 2005.

### **Identified for new rulemaking**

These measures address significant PM emission sources in the region and are expected to produce emission reduction benefits that have been proven to be cost-effective and technologically feasible. These measures have been added to the Proposed PM Implementation Schedule for adoption beginning in 2006 and will undergo a full rule-making process.

### **Identified for further study and evaluation**

The District has determined that insufficient information currently exists to determine that the measures in this category meet the appropriate standards of technical feasibility, total emission reduction potential, rate of emissions reduction, public acceptability, enforcement and cost-effectiveness per Health and Safety Code Section 40922 and ARB's SB 656 guidance to include in the PM Implementation Schedule at this time. The District will be gathering additional information and will further evaluate these measures to determine if they would be appropriate to adopt in the future.

**Table 2: Measures Evaluation Results**

| <b>Measure Evaluations Results</b>  | <b>ARB Control Measure Number</b>   |
|---|---|
| Equivalent measures that are already being used by the Air District   | 1, 3, 13-18, 20-32, 36, 39-41, 49, 51, 52, 54, 57-60, 63, 65, 68, 71, 73-78, 81, 85-98, 100-103<br><br>(62 total) |
| No Bay Area Sources   | 19, 35, 48, 61, 66<br><br>(5 total)   |
| Insignificant potential emissions reductions  | 33, 34, 37, 38, 42-44, 50, 69, 72<br><br>(10 total)   |
| Already being proposed in Ozone Strategy Control Measures   | 45, 46, 64, 70, 79, 80, 82, 84<br><br>(8 total)   |
| Identified as further study measure in Draft Bay Area 2005 Ozone Strategy   | 55, 56, 62, 67, 83, 99<br><br>(6 total)   |
| Identified for further study and evaluation.  | 2, 4-12<br><br>(10 total)   |
| Identified for enhancement/amendment – wood burning. Added to Implementation Schedule.  | 1 and 3<br><br>(2 total)  |
| Identified for new rulemaking – combustion emissions from stationary and portable IC engines and charbroiling operations. Added to Implementation Schedule. | 47 and 53<br><br>(2 total)  |

**VI. PROPOSED PM IMPLEMENTATION SCHEDULE**

The next step in the process was to evaluate the potential air quality and health benefits, cost effectiveness, and feasibility of the measures that are not currently being used by the Air District and propose additional measures for the Air District to adopt. The proposed new or amended measures are listed in Table 3.

**Table 3: PROPOSED PM IMPLEMENTATION SCHEDULE**

| Measure  | ARB Control Measure Number | Adopt/ Amend | Full Implementation |
|--|----------------------------|--------------|---------------------|
| Further limit NOx and VOC emissions from stationary and portable internal combustion engines.  | 47                         | 2006         | TBD                 |
| Limit PM and VOC emissions from commercial broiling operations that use chain-driven broilers.   | 53                         | 2006         | TBD                 |
| Amend existing public awareness program to provide additional outreach and educational resources. Enhance existing wood-burning ordinance program.                       | 1                          | 2005         | 2005                |
| Amend existing program aimed at voluntary curtailment of wood burning during periods of predicted high PM by adjusting the threshold for "Spare the Air Tonight" alerts. | 3                          | 2005         | 2005                |

**Internal Combustion Engines (ICE) – Measure 47**

Through an extensive rule development process, the District will consider new standards that will address NOX, PM and VOC emissions from stationary and portable internal combustion engines. The new standards will address a variety of engine sizes and types and will complement the ARB standards currently under development.

**Broiling Operations – Measure 53**

The District will develop a new rule that will require the installation of emissions control devices on new and existing chain driven commercial broiling operations preparing food for human consumption. The most likely devices, catalytic oxidizer control devices, are used to limit PM and VOC emissions and have been proven to be very cost-effective and to create significant emissions reductions in other regions. The District will conduct an extensive rule development process prior to the adoption of the new rule.

**Wood Burning Program Enhancements – Measures 1 and 3**

The District currently operates two programs that address wood burning. One is the District’s Model Wood Burning Ordinance program and the other is the Spare the Air Tonight voluntary wood burning curtailment and public awareness program. These programs will be enhanced beginning in November 2005.

The District plans to expand its public awareness program by increasing outreach activities and dissemination of educational materials to inform the public about the potential health hazards associated with wood smoke, to encourage better wood burning practices and use of more environmentally friendly heating devices in lieu of wood burning. The District will also increase efforts to have more cities and counties adopt its Model Wood Burning Ordinance. The District will also significantly expand outreach to print and electronic media regarding health effects and costs of wood burning and regarding the Spare the Air Tonight program.

The Spare the Air Tonight program enhancements will include lowering the Air Quality Index (AQI) threshold for issuing Spare the Air Tonight alerts from 150 AQI to 130 AQI. The lower AQI represents a more health-protective threshold and more alerts are anticipated than in previous years. Increased media outreach, newspaper advertisements and internet-based communication at the District website will be used to notify the public when high particulate matter levels are anticipated and Spare the Air Tonight advisories are issued.

## **VII. ADDITIONAL PM REDUCTION EFFORTS**

The process prescribed by SB 656 focuses on the measures list compiled by the ARB. However, in addition to the measures included on the Implementation Schedule through that process, the Air District plans to address PM emissions through other programs.

### **A. Community Air Risk Evaluation (CARE) Program**

The Air District has initiated a Community Air Risk Evaluation (CARE) program to evaluate health risk associated with toxic air pollutants in the Bay Area. When completed, the study will be a tool the Air District can use to reduce toxic air pollution in areas with the highest health risk. The program will look at all toxic air pollutants with an emphasis on diesel particulate matter, which is considered to be the major source of airborne health risk in California.

The program includes enhanced air monitoring that will better determine the relative contribution of air pollution sources, including vehicles, industrial emissions and/or wood burning to ambient particulate levels. As a result of the study, a "gridded" emission inventory (2 km x 2 km grid) for air toxics will be developed for the Bay Area. Based on the technical analyses, the Air District can focus on reducing toxic pollutants in areas with the highest health risk by using incentives, grant program funding and regulatory controls. A CARE Task Force of diverse stakeholders is assisting the Air District in its efforts.

### **B. Vehicle Incentive Programs**

The Air District currently operates a variety of vehicle incentive programs aimed at reducing mobile sources of emissions. These programs address light-duty fleet and heavy-duty vehicles as well as school buses and off-road engines.

The Carl Moyer program, for example, provides funds on an incentive basis for the incremental cost of cleaner than required engines and equipment. Eligible projects include 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 program achieves near-term reductions in emissions of oxides of nitrogen (NOx) and reduces PM. The types of projects and the available funding under this program have recently been expanded. In addition, the District operates other incentive programs such as the Low-Emission School Bus and the Solid Waste Collection Vehicle programs which address emissions from specific categories of heavy duty diesel vehicles as well as the Transportation Fund for Clean Air grant program and the Vehicle Buy-Back program.



The incentive programs are all contingent on funding available to the Air District. In some cases the funding comes from the Air Resources Board and in other cases the funding comes from local vehicle registration fees. The Air District looks for opportunities to garner additional funds that can be used for emission reduction projects in the Bay Area. Air District staff will continue to pursue additional resources for the region which can then be disbursed to applicable PM reduction programs.

### **C. Wood Burning**

In addition to the enhanced wood burning activities listed in the SB 656 Implementation Schedule in Table 3, the District will also be implementing a number of additional activities to reduce emissions, gain a better understanding of the nature and severity of wood smoke in the Bay Area and to help inform potential emission reduction strategies.

The table below provides a summary of the additional methods that the District will use to address residential wood burning in the Bay Area:

| Program                     | Approach  | Target Audience<br>Scale of Program |
|-----------------------------|---|-------------------------------------|
| Wood smoke air monitoring   | Identify areas particularly affected by wood burning and estimate local PM concentrations   | Neighborhood level                  |
| Fireplace Change-outs       | Provides funding incentives for voluntary wood burning appliance changes  | Public at-large<br>/County          |
| Enforcement Response        | Education, curtailment request and solution guidance  | Wood burning household/individual   |
| Wintertime Public Survey    | Solicits information about wood burning activities, public attitudes, and effectiveness of District Spare the Air Tonight program | Public at-large/Regional            |
| Study additional activities | Monitor programs in other regions such as enhanced incentive programs and regulatory wood burning programs                        | Public at-large/individual          |

#### **Wood Smoke Air Monitoring**

In order to improve the emission inventory for wood smoke and to better identify areas that may be particularly affected by wood smoke, the District will be conducting a focused air monitoring study in specific neighborhoods. This data, supplemented by survey data discussed below, will help identify factors that are conducive to high PM concentrations in residential neighborhoods, where such neighborhoods are located, and what PM levels may be experienced.

#### **Fireplace Change-Outs**

The District provides financial incentives in specific locations within the Bay Area for residents to remove non-EPA certified wood burning devices and install EPA certified devices and to replace wood burning fireplaces with natural gas fireplaces.

### **Enforcement Response**

When air pollution complaints about wood smoke are received about a residential source the District attempts to obtain a mailing address for the responsible party and then an information packet of materials is mailed. Included in the packet are the District's "Wood Burning Handbook", educational materials that describe the adverse health effects attributed to wood smoke, and a request that the wood burning be reduced or eliminated. The educational materials also include specific tips on how to burn cleanly.

### **Wintertime Survey**

Wintertime surveys have been conducted the day after a Spare the Air Tonight advisory was issued. The purpose of the study is to better understand the public's attitudes and behavior with respect to burning wood, their awareness of the Spare the Air Tonight Program, as well as the impact that the Program has had on awareness, opinions and behavior relevant to burning wood and air quality. The 2005 Wintertime Survey will be expanded to gather information about wood burning activities, including the quantities of wood being burned, the types of appliances being used, and the frequency of burning.

### **Monitor Additional Activities**

The District will also continue to examine programs in other regions, such as enhanced incentive programs and regulatory limits to wood burning, for potential applicability in the Bay Area.

### **D. Ozone Strategy Further Study Measures**

The Air District, in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments, has prepared the Draft Bay Area 2005 Ozone Strategy. The Ozone Strategy addresses California air quality planning requirements. A critical component of the Ozone Strategy is the set of control measures to further reduce ozone precursor emissions in order to reduce ozone levels in the Bay Area and to reduce transport of pollution to neighboring regions. The control strategy includes stationary source measures, mobile source measures and transportation control measures. In addition, the Air District has also identified a number of further study measures. Some of the further study measures identified in the Ozone Strategy are also on the ARB's list of 103 control measures for indirect PM emissions. The further study measures in the Ozone Strategy need to be researched in greater depth to determine their potential impact on air quality and public health, cost effectiveness, and feasibility. The Air District will continue to evaluate the further study measures to determine whether they are viable PM control measures as well as ozone control measures. For more information and to view a copy of the Draft Bay Area 2005 Ozone Strategy please visit [www.baaqmd.gov/pln/plans/ozone/2005\\_strategy/index.htm](http://www.baaqmd.gov/pln/plans/ozone/2005_strategy/index.htm).



## Appendix A: BAAQMD Review of SB 656 List of Air District Measures

| Measure # | Strategy   | District Rule   | BAAQMD Rule/Measure   | Evaluation Result <sup>1</sup>                 |
|-----------|--|---|---|--|
| 1.        | <u>Wood Burning Public Awareness Program</u><br>Informs the public about the indoor wood combustion control program. The goal is to inform the public about potential health hazards of wood smoke and to encourage better wood burning practices or use of heating devices.   | <u>SJVAPCD</u><br>Rule 4901   | BAAQMD<br>Spare the Air Tonight<br>program  | Equivalent Measure                             |
| 2.        | <u>Mandatory Curtailment During Periods with Predicted High PM Levels</u><br>a) Exempts households that use wood as primary sole source of heat and households in areas where natural gas service is not available.<br><br>b) Exempts U.S. EPA certified wood-burning appliances. A secondary source of heat is required in all dwellings. | a) <u>SJVAPCD</u> Rule<br>4901<br><br>b) <u>GBUAPCD</u><br><u>Town of Mammoth</u><br><u>Lakes</u><br>Rule 431 | BAAQMD Model Wood<br>Burning Ordinance<br>contains this provision <sup>2</sup><br><br>Currently adopted by 7<br>cities    | Identified for further<br>study and evaluation |
| 3.        | Voluntary curtailment during periods with predicted high PM levels.  | <u>SCAQMD,</u><br><u>YSAQMD</u><br><u>SLOAPCD</u><br>Programs   | BAAQMD<br>Spare the Air Tonight<br>program  | Equivalent Measure                             |
| 4.        | Require All U.S. EPA-certified or equivalent Wood-Burning Heaters.   | <u>SJVAPCD</u> Rule<br>4901   | None  | Identified for further<br>study and evaluation |
| 5.        | Require All U.S. EPA-certified or equivalent Wood-Burning Heaters and Wood-Burning Fireplaces.   | <u>NSoCAPCD</u><br>Reg. 4-1-400<br><u>SLOAPCD</u><br>Rule 504   | BAAQMD Model Wood<br>Burning Ordinance<br>contains this provision<br><br>Currently adopted by 39<br>cities and 7 counties | Identified for further<br>study and evaluation |

<sup>1</sup> For a full description of each evaluation category, please see the Particulate Matter Implementation Schedule Staff Report.

<sup>2</sup> The District's Model Wood Burning Ordinance contains a variety of provisions that correspond to measures 2, 5, 7-10, and 12 which can be adopted by cities and counties in the region. Each city and county has chosen to adopt specific elements of the Model Wood Burning Ordinance. The number of cities and counties that have adopted each element of the model ordinance is represented for each measure.

|     |  |   |  |   |
|-----|--|---|--|---|
| 6.  | Prohibits the Installation of Non-EPA Certified Wood-Burning Appliances & Wood-Burning Fireplaces (except pellet stoves).  | <u>GBUAPCD Town of Mammoth Lakes</u><br>Rule 431  | Federal New Source Performance Standards   | Identified for further study and evaluation |
| 7.  | Limits Number of wood-burning fireplaces and wood-burning heaters in new residential developments.   | <u>SJVAPCD</u><br>Rule 4901   | BAAQMD Model Wood Burning Ordinance contains this provision<br><br>Currently adopted by 38 cities and 7 counties | Identified for further study and evaluation |
| 8.  | Limits the number of wood-burning appliances that may be installed in new nonresidential properties.   | <u>GBUAPCD Town of Mammoth Lakes</u><br>Rule 431  | BAAQMD Model Wood Burning Ordinance contains this provision<br><br>Currently adopted by 2 cities                 | Identified for further study and evaluation |
| 9.  | Limits the number of additional wood-burning appliances that may be installed in existing residential and nonresidential properties.   | <u>GBUAPCD Town of Mammoth Lakes</u><br>Rule 431  | BAAQMD Model Wood Burning Ordinance contains this provision<br><br>Currently adopted by 24 cities and 3 counties | Identified for further study and evaluation |
| 10. | a) Replacement of Non-EPA Certified Appliances Upon Sale of Property - Non-complying devices must be removed or rendered inoperable.<br><br>b) Requires replacing, removing or rendering inoperable any non-U.S. EPA certified wood-burning appliance upon sale of a dwelling (excluding pellet stoves, but including fireplaces). | a) <u>SJVAPCD</u><br>Rule 4901<br><br>b) <u>GBUAPCD Town of Mammoth Lakes</u><br>Rule 431 | BAAQMD Model Wood Burning Ordinance contains this provision<br>a) Adopted by Sebastopol, CA                      | Identified for further study and evaluation |
| 11. | Sets moisture standard for "seasoned wood" offered for sale.   | <u>SJVAPCD</u><br>Rule 4901   | None   | Identified for further study and evaluation |

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| 12. | Prohibits the burning of materials not intended for use in wood-burning fireplaces and wood-burning heaters.  | <u>SJVAPCD</u><br>Rule 4901  | BAAQMD Model Wood Burning Ordinance contains this provision Currently adopted by 39 cities and 7 counties | Identified for further study and evaluation |
| 13. | Prohibition of All Residential Open Burning.  | <u>SJVAPCD</u><br>Rules 4103 & 4106                                | BAAQMD Regulation 5   | Equivalent Measure                          |
| 14. | Prohibition of Residential Open Burning where waste service is available.   | <u>MBUAPCD</u><br>Rule 438   | BAAQMD Regulation 5   | Equivalent Measure                          |
| 15. | Prohibition of Residential Open Burning in specified highly populated areas.  | <u>SMAQMD</u><br>Rule 407  | BAAQMD Regulation 5   | Equivalent Measure                          |
| 16. | Prohibition of Residential Open Burning within small lots and setbacks.   | <u>LCAQMD</u><br>Rule 433  | BAAQMD Regulation 5   | Equivalent Measure                          |
| 17. | Mandatory Curtailment of Non-Agricultural Open Burning during periods of predicted high PM or Ozone levels.   | <u>MBUAPCD</u><br>Rule 438   | BAAQMD Regulation 5   | Equivalent Measure                          |
| 18. | Limits during Burn Days in Smoke Sensitive Areas.   | <u>MBUAPCD</u><br>Rule 438   | BAAQMD Regulation 5   | Equivalent Measure                          |
| 19. | Emission Limits for Mechanized Burners.   | <u>SCAQMD</u><br>Rule 2.6  | None  | No Bay Area Sources                         |
| 20. | Establishes minimum drying times for any green waste to be burned and pile size limits.   | <u>BAAQMD</u><br>Regulation 5 (to be consistent)                   | BAAQMD Regulation 5   | Equivalent Measure                          |
| 21. | Restricts ignition hours and requires smoldering fires to be extinguished.  | <u>LCAQMD</u><br>Rules 431-433.5                                   | BAAQMD Regulation 5   | Equivalent Measure                          |
| 22. | a) Sets requirements for burn piles prior and during burning.<br><br>b) Sets requirements for burns on land to be cleared for residential or commercial development. APCO can restrict or prohibit the burning of poison oak. | a) <u>MaCAPCD</u><br>Rule 300<br><br>b) <u>MBUAPCD</u><br>Rule 438 | BAAQMD Regulation 5   | Equivalent Measure                          |

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| 23. | Requires permits for all types of outdoor burning.   | <u>NCUAQMD</u><br>Regulation 2                                     | BAAQMD<br>Regulation 5 | Equivalent Measure |
| 24. | <u>Fugitive Dust – Construction Earthmoving</u><br>a) Requires water or chemical stabilizers/dust suppressants be applied, in conjunction with optional wind barriers, to limit visible dust emissions to 20% opacity. Specifies that a Dust Control Plan must be submitted.<br><br>b) Sets standards for visible dust emissions, requires BACM for all sources of visible dust, lists BACM, requires dust control plan, and other requirements.               | a) <u>SJVAPCD</u><br>Rule 8021<br><br>b) <u>SCAQMD</u><br>Rule 403 | BAAQMD<br>Regulation 6 | Equivalent Measure |
| 25. | <u>Fugitive Dust – Construction/Demolition</u><br>a) Requires application of dust suppressants to limit VDE.<br><br>b) Prohibits VDE beyond property line. Requires application of BACM. Specifies that upwind-downwind PM10 levels, Sets bulk material and track-out requirements.  | a) <u>SJVAPCD</u><br>Rule 8021<br><br>b) <u>SCAQMD</u><br>Rule 403 | BAAQMD<br>Regulation 6 | Equivalent Measure |
| 26. | <u>Fugitive Dust – Construction/Grading Operations</u><br>a) Requires pre-watering to limit VDE. Requires phasing of work to reduce disturbed soil.<br><br>b) Requires water application to increase moisture content to proposed cut, and grading each phase separately to coincide with the construction phase. Specifies that chemical stabilizers are to be applied to graded areas where construction will not begin for more than 60 days after grading. | a) <u>SJVAPCD</u><br>Rule 8021<br><br>b) <u>SCAQMD</u><br>Rule 403 | BAAQMD<br>Regulation 6 | Equivalent Measure |
| 27. | <u>Fugitive Dust – Inactive Disturbed Land</u><br>a) Requires restricting vehicle access. Specifies that water/dust suppressants must be applied.<br><br>b) Prohibits VDE beyond property line and an upwind/downwind Requires BACM at all times and high wind measures.   | a) <u>SJVAPCD</u><br>Rule 8021<br><br>b) <u>SCAQMD</u><br>Rule 403 | BAAQMD<br>Regulation 6 | Equivalent Measure |

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| 28. | <p><u>Bulk Materials: Handling/Storage</u></p> <p>a) Establishes wind barrier and watering or stabilization requirements. Specifies bulk materials must be stored in accordance with the definition for stabilized surface. Requires outdoor materials be covered with tarps or plastic.</p> <p>b) Prohibits VDE beyond property line and an upwind/downwind PM10 differential. Requires use of BACM.</p>   | <p>a) <u>SJVAPCD</u><br/>Rule 8031</p> <p>b) <u>SCAQMD</u><br/>Rule 403</p>  | BAAQMD<br>Regulation 6 | Equivalent Measure                           |
| 29. | Addresses storage, handling, and transport of petroleum coke, coal, and sulfur.   | <u>SCAQMD</u><br>Rule 1158   | BAAQMD<br>Regulation 6 | Equivalent Measure                           |
| 30. | <p><u>Carryout and Track-out</u></p> <p>a) Requires track-out removal at the end of the workday, specifies a track-out control device must be installed at all access points to public roads. Requires maintaining sufficient length of paved interior roads to allow dirt/mud to drop off before leaving site and mud/dirt removal from interior paved roads with sufficient frequency to prevent track-out.</p> <p>b) Requires removing any track-out within one hour; or selecting a Table 3 track-out prevention option and removing track-out at the end of the workday.</p> | <p>a) <u>SJVAPCD</u><br/>Rule 8041</p> <p>b) <u>SCAQMD</u><br/>Rule 403</p>  | BAAQMD<br>Regulation 6 | Equivalent Measure                           |
| 31. | Carryout and Track-out Clean-Up Methods.  | <u>SJVAPCD</u><br>Rule 8041  | BAAQMD<br>Regulation 6 | Equivalent Measure                           |
| 32. | <p><u>Disturbed Open Areas</u></p> <p>a) Applies to non-agricultural areas of 3 acres or larger which have been unused for 7 days or more.</p> <p>b) Applies to non-agricultural areas of one-half acre or larger for residential use, and all non-residential areas.</p>   | <p>a) <u>SJVAPCD</u><br/>Rule 8051</p> <p>b) <u>SCAQMD</u><br/>Rule 403</p>  | BAAQMD<br>Regulation 6 | Equivalent Measure                           |
| 33. | <p><u>Paved Road Dust: New/Modified Public and Private Roads</u></p> <p>a) Requires paved shoulders for all roads with average daily vehicle trips (ADVT) of 500 or more.</p> <p>b) Establishes curbing or paved shoulder requirements in the event of a contingency notification.</p>  | <p>a) <u>SJVAPCD</u><br/>Rule 8061</p> <p>b) <u>SCAQMD</u><br/>Rule 1186</p> | BAAQMD<br>Regulation 6 | Insignificant Potential Emissions Reductions |



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| 34. | Requires use of certified PM10 efficient street sweepers by governmental agencies or their street sweeping contractors where the contract date, purchase date, or lease date is after January 1, 2000.   | <u>SCAQMD</u><br>Rule 1186  | None                       | Insignificant Potential Emissions Reductions |
| 35. | Requires vacuum-street sweeping on roads to remove sand and cinders that were placed on the road during winter storms as an anti-skid material.  | <u>GBUAPCD Town of Mammoth Lakes</u><br>Rule 431                    | None                       | No Bay Area Sources                          |
| 36. | Requirements for Unpaved Parking Lots/Staging Areas.   | <u>SJVAPCD</u><br>Rule 8061   | BAAQMD<br>Regulation 6-301 | Equivalent Measure                           |
| 37. | <u>Unpaved Roads: Control Requirements</u><br>a) Sets requirements for days with 75 or more vehicle trips. Sets requirements for days with 100 or more vehicle trips. Sets as option to above, obtaining a Fugitive PM10 Management Plan.<br><br>b) Sets applicability standard. Specifies all roads with ADT greater than the average ADT of all unpaved roads within its jurisdiction must be treated. Requires annual treatment of unpaved public roads beginning in 1998 and continuing for each of 8 years. | a) <u>SJVAPCD</u><br>Rule 8061<br><br>b) <u>SCAQMD</u><br>Rule 1186 | None                       | Insignificant Potential Emissions Reductions |
| 38. | <u>Weed Abatement Activities</u><br>a) Sets pre-activity requirements. Requires applying water to limit visible dust emissions. Sets stabilization requirements during periods of inactivity.<br><br>b) Specifies weed abatement activities are subject to standards of Rule 403 with exemptions. Specifies that after discing, the requirement for taking action on disturbed surface areas applies.  | a) <u>SJVAPCD</u><br>Rule 8021<br><br>b) <u>SCAQMD</u><br>Rule 403  | None                       | Insignificant Potential Emissions Reductions |
| 39. | Defines windblown dust as any visible emissions from any disturbed surface area which is generated by wind action alone. Specifies wind gusts as maximum instantaneous wind speed.   | <u>SCAQMD</u><br>Rule 403   | BAAQMD<br>Regulation 6     | Equivalent Measure                           |
| 40. | Sets windblown dust construction/earth moving activity abatement requirements.   | <u>SCAQMD</u><br>Rule 403   | BAAQMD<br>Regulation 6     | Equivalent Measure                           |
| 41. | Sets windblown dust abatement requirements for disturbed areas.  | <u>SCAQMD</u><br>Rule 403   | BAAQMD<br>Regulation 6     | Equivalent Measure                           |

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| 42. | <u>Windblown Dust: Bulk Materials/Storage Piles</u><br>a) Requires application of if subject to large operation requirements or if seeking an exemption from property line or upwind/downwind standard.<br><br>b) Additional bulk material control requirements for Coachella Valley sources.  | a) <u>SCAQMD</u><br>Rule 403<br><br>b) <u>SCAQMD</u><br>Rule 403   | BAAQMD<br>Regulation 6   | Insignificant Potential Emissions Reductions  |
| 43. | Wind Blown Dust abatement requirements for open areas.   | <u>GBUAPCD for Owens Lake Board Order #981116-01</u>   | BAAQMD<br>Regulation 6   | Insignificant Potential Emissions Reductions  |
| 44. | <u>Agricultural Operations</u><br>a) Limits fugitive dust from off-field agricultural sources such as unpaved roads. Requires producers to draft and implement a Fugitive Dust Management Plan.<br><br>b) Exemption from the Rule 403 general requirements for producers that voluntarily implement district approved conservation practices and complete and maintain the self-monitoring plan.<br><br>c) Cease tilling/mulching activities when wind speeds are greater than 25 mph (Coachella Valley).<br><br>d) Limits fugitive dust from paved , unpaved roads and livestock operations.<br><br>e) Reduces fugitive dust from livestock feed yards by requiring by limiting manure moisture and outlines manure management practices. | a) <u>SJVAPCD</u> Rule 8081<br><br>b) <u>SCAQMD</u> Rule 403<br><br>c) <u>SCAQMD</u> Rule 403.1<br><br>d) <u>SCAQMD</u> Rule 1186<br><br>e) <u>ICAPCD</u> Rule 420 | BAAQMD<br>Regulation 6   | Insignificant Potential Emissions Reductions  |
| 45. | <u>Boilers, Steam Generators, and Process Heaters (each rule has specific size and output thresholds)</u><br>a) Limits NOx emissions from gaseous fuel or liquid fuel fired boilers, steam generators, or process heaters.<br><br>b) Limits NOx emissions from any petroleum refinery boiler or process heater. Alternative Emission Control Plans allowed which result in equivalent emissions. All units subject to this rule are now under the SCAQMD's RECLAIM Program.  | a) <u>SJVAPCD</u> Rule 4306<br><br>b) <u>SCAQMD</u> Rule 1109<br><br>c) <u>SMAQMD</u>  | BAAQMD<br>Regulation 9-7<br>Regulation 9-10<br>Regulation 9-11 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measures in 2005 Ozone Strategy |

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|     | <p>c) Limits NOx emissions from gaseous fuel or liquid fuel fired boilers, steam generators, or process heaters with a total rated heat input greater than 5 million Btu/hr to between 30-40 ppmv depending on fuel type.</p> <p>d) Limits NOx emissions from gaseous, liquid, or solid fossil fuel fired boilers, steam generators, or process heaters.</p> <p>e) Limits NOx emissions from any boilers, steam generators, or process heaters.</p> <p>f) Limits NOx emissions from new and existing natural gas-fired large (commercial) water heaters, small (industrial) boilers, and process heaters. Exempts residential and low use units.</p> <p>g) Limits NOx emissions from new natural gas-fired large (commercial) water heaters, small (industrial) boilers, and process heaters. Exempts residential and low use units.</p> | <p>Rule 411<br/>and<br/>SCAQMD<br/>Rule 1146</p> <p>d) <u>SCAQMD</u><br/>Rule 1146.1</p> <p>e) <u>VCAPCD</u><br/>Rule 74.15.1</p> <p>f) <u>SCAQMD</u><br/>Rule 1146.2</p> <p>g) <u>SBAPCD</u><br/>Rule 360<br/>and<br/><u>VCAPCD</u><br/>Rule 74.11.1</p> |                          |   |
| 46. | <p><u>Turbines (NOx) - each rule has specific requirements depending on turbine operating capacity, yearly run time, and fuel type</u></p> <p>a) Limits NOx emissions from the operation of stationary gas turbines to between 9-65 ppmv. Exemptions include emergency standby and laboratory units.</p> <p>b) Limits NOx emissions to the atmosphere from the operation of stationary gas turbines to between 3-65 ppmv. Exemptions include emergency standby and laboratory units.</p> <p>c) Limits NOx emissions from the operation of gas turbines to 9-25 ppm for turbines in size range of 2.9 to 10 MW.</p>   | <p>a) <u>SMAQMD</u><br/>Rule 413</p> <p>b) <u>SJVAPCD</u><br/>Rule 4703</p> <p>c) <u>SCAQMD</u><br/>Rule 1134</p>   | BAAQMD<br>Regulation 9-9 | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measures in 2005 Ozone Strategy |
| 47. | <p><u>IC Engines (NOx, VOC)</u></p> <p>a) Limits NOx emissions from gaseous- and liquid-fueled stationary and portable engines over 50 bhp depending on use category of engine.</p>  | <p>a) <u>SCAQMD</u><br/>Rule 1110.2</p>   | BAAQMD<br>Regulation 9-8 | Identified for New Rulemaking   |

|     |   |   |  |  |
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|     | <p>b) Limits NOx emissions from spark ignited internal combustion engines over 50 bhp 250 and CO emissions depending on engine type and size.</p> <p>c) Limits NOx emissions from spark ignited internal combustion engines over 50 bhp depending on engine type and size and NMHC depending on engine size.</p>  | <p>b) <u>SJVAPCD</u><br/>Rule 4702</p> <p>c) <u>SMAQMD</u><br/>Rule 412</p>   |  |  |
| 48. | Limits NOx emissions from lime kilns depending on fuel type.  | <u>SJVAPCD</u><br>Rule 4313   | None   | No Bay Area Sources                          |
| 49. | <p><u>Cement Kilns (NOx, PM10, PM2.5)</u></p> <p>a) Limits NOx emissions from cement kilns during periods of operation other than start-up or shut-down. Additional limits are specified for start-up and shut-down periods.</p> <p>b) Limits NOx emissions from cement kilns.</p> <p>c) Limits PM emissions to 30 pounds per hour for kiln feed rates of 75 tons per hour or greater. Limits PM emissions.</p> | <p>a) <u>MDAQMD</u><br/>Rule 1161</p> <p>b) <u>KCAPCD</u><br/>Rule 425-3</p> <p>c) <u>SCAQMD</u><br/>Rule 1112.1</p>                | 1 Source in Bay Area currently complying with SIP-approved permit conditions | Equivalent Measure                           |
| 50. | Does not allow operation of petroleum coke calcining equipment unless the uncontrolled emissions of oxides of sulfur from such basic equipment, expressed as sulfur dioxide (SO2), are reduced by at least 80 percent.  | <u>SCAQMD</u><br>Rule 1119  | BAAQMD<br>Regulation 9-1-310.2<br>Additional permit requirements             | Insignificant Potential Emissions Reductions |
| 51. | <p><u>Furnaces (NOx)</u></p> <p>a) Sets NOx emission limits of 4.0 pounds per ton of glass pulled for glass melting furnaces.</p> <p>Sets NOx emission limits of 5.5 pounds per ton of glass pulled for glass melting furnaces.</p> <p>b) Sets a NOx emission limit for gas fired residential units with rating less than 175,000 Btu/hr.</p>   | <p>a) <u>SCAQMD</u> Rule 1117</p> <p>BAAQMD<br/>Rule 9-12</p> <p>b) <u>SCAQMD</u><br/>Rule 1111<br/><u>SDAPCD</u><br/>Rule 69.6</p> | BAAQMD<br>Rule 9-12  | Equivalent Measure                           |
| 52. | <p><u>Residential Water Heaters (NOx)</u></p> <p>a) Limits NOx emissions from water heaters with heat input rates</p>   | a) <u>SCAQMD</u>  | BAAQMD<br>Regulation 9-6   | Equivalent Measure                           |

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|     | <p>equal to or less than 75,000 Btu per hour to 20 ng/joule of heat output and sets future limit to 10 ng/joule of heat output.</p> <p>b) Limits NOx emissions from water heaters with heat input rates equal to or less than 75,000 Btu per hour to 40 ng/joule of heat output.</p>   | <p>Rule 1121</p> <p>b) <u>SJVAPCD</u><br/>Rule 4902</p>   |                          | (SCAQMD standards have been found to be technically infeasible – replaced by mitigation fees) |
| 53. | Requires new and existing chain driven charbroilers to be equipped with a catalytic oxidizer control device.   | <u>SJVAPCD</u><br>Rule 4692<br>and<br><u>SCAQMD</u><br>Rule 1138  | None                     | Identified for New Rulemaking   |
| 54. | General Administrative Requirements for composting and chipping and grinding facilities.   | <u>SCAQMD</u><br>Rule 1133  | BAAQMD<br>Regulation 2-1 | Equivalent Measure  |
| 55. | Prevents inadvertent decomposition associated with stockpiling of green and/or food wastes by establishing holding or processing time requirements for chipping and grinding activities.   | <u>SCAQMD</u><br>Rule 1133.1  | None                     | Identified as further study measure in 2005 Ozone Strategy                                    |
| 56. | Requires co-composting operations (biosolids and/or manure combined with bulking agents) to reduce VOC and ammonia emissions by 80%. Requires recordkeeping and source testing.  | <u>SCAQMD</u><br>Rule 1133.2  | None                     | Identified as further study measure in 2005 Ozone Strategy                                    |
| 57  | Limits emissions of VOC from gasoline dispensing facilities through equipment and operational requirements.  | <u>BAAQMD</u><br>Rule 8-7   | BAAQMD<br>Regulation 8-7 | Equivalent Measure  |
| 58. | <p><u>Organic Liquid Storage</u></p> <p>a) Limits VOC emissions from storage tanks with a capacity of 264 gallons and greater through operational and equipment requirements.</p> <p>b) Limits VOC emissions from any above-ground stationary tank with a capacity of 19,815 gallons or greater used for storage of organic liquids, and any above-ground tank with a capacity between 251 gallons and 19,815 gallons used for storage of gasoline by setting tank roof, other performance, and self-inspection requirements. Sets conditions for cleaning and degassing of aboveground and underground stationary tanks, reservoirs, or other containers storing or last used to store VOC.</p> | <p>a) <u>BAAQMD</u><br/>Rule 8-5</p> <p>b) <u>SCAQMD</u><br/>Rule 463<br/>in combination<br/>with<br/><u>SCAQMD</u><br/>Rule 1149</p> | BAAQMD<br>Regulation 8-5 | Equivalent Measure  |

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| 59. | <u>Equipment Leaks (Valves and Flanges)</u><br>a) Limits VOC and methane emissions from leaking equipment at petroleum refineries, chemical plants, bulk plants, and bulk terminals depending on equipment type.<br><br>b) Limits VOC emissions from leaking equipment at petroleum facilities and chemical plants by setting forth leak standards and requirements for component identification, operator inspection, maintenance, and atmospheric pressure relief devices. | a) <u>BAAQMD</u><br>Rule 8-18<br><br>b) <u>SCAQMD</u><br>Rule 1173 | BAAQMD<br>Regulation 8-18                  | Equivalent Measure  |
| 60. | Sets forth operational and "housekeeping" requirements for coatings and ink manufacturing.   | <u>SCAQMD</u><br>Rule 1141.1                                       | BAAQMD<br>Regulation 8-35                  | Equivalent Measure  |
| 61. | Limits VOC emissions from fiberboard manufacturing by requiring use of capture and control systems with specified efficiencies   | <u>PCAPCD</u><br>Rule 229  | None                                       | No Bay Area Sources   |
| 62. | Limits VOC emissions from solvents used in food product manufacturing and processing operations by limiting the VOC content of products depending on product, or by the use of a control device.   | <u>SCAQMD</u><br>Rule 1131   | BAAQMD<br>Regulation 8-2<br>Regulation 8-4 | Identified as further study measure in 2005 Ozone Strategy  |
| 63. | Sets forth equipment and operational requirements for pharmaceuticals and cosmetic manufacturing.  | <u>SCAQMD</u><br>Rule 1103   | BAAQMD<br>Regulation 8-24                  | Equivalent Measure  |
| 64. | Limits VOC emissions from all polyester resin operations that fabricate, rework, repair, or touch-up products through operational controls and by limiting the monomer content of products depending on product type.  | <u>SCAQMD</u><br>Rule 1162   | BAAQMD<br>Regulation 8-50                  | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measures in 2005 Ozone Strategy |
| 65. | <u>Polymeric Cellular Products (Foam)</u><br>a) Sets forth emission limits for polymeric cellular products manufacturing operations.<br><br>b) Limits VOC emissions from the manufacture of foam products composed of polystyrene, polyethylene or polypropylene. A control device with at least 98% efficiency may be used.   | a) <u>SCAQMD</u> Rule<br>1175<br><br>b) <u>BAAQMD</u><br>Rule 8-52 | BAAQMD<br>Regulation 8-52                  | Equivalent Measure  |

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| 66. | Requires the total emissions of VOC from the surfactant manufacturing equipment, before being vented to the atmosphere, be reduced; and all ports used for inspection, taking samples, or adding ingredients must be closed when not in use.   | <u>SCAQMD</u><br>Rule 1141.2  | None   | No Bay Area Sources  |
| 67. | <u>Adhesives and Sealants</u><br>a) Reduces VOC emissions from the application of adhesives, adhesive primers, sealants, sealant primers, or any other primers through operational controls and by limiting the VOC content of products. Emission control equipment can be used in lieu of meeting VOC limits.<br><br>b) Reduces VOC emissions from the application of adhesives, adhesive primers, sealants, sealant primers, or any other primers through operational controls and by limiting the VOC content of products. Emission control equipment can be used in lieu of meeting VOC limits. This rule has more stringent standards for a few categories than the rule above. | a) <u>VCAPCD</u><br>Rule 74.20<br><br>b) <u>SCAQMD</u><br>Rule 1168             | BAAQMD<br>Regulation 8-51  | Identified as further study measure in Ozone Strategy  |
| 68. | Several districts have adopted regulations consistent with ARB's Suggested Control Measure (SCM) which limits the content of VOC in architectural coatings   | SJVAPCD,<br>SDAPCD,<br>SMAQMD,<br>SBAPCD,<br>TeCAPCD,<br>MDAQMD, and<br>AVAQMD. | BAAQMD<br>Regulation 8-3   | Equivalent Measure   |
| 69. | Limits VOC emissions from the coating of glass products by limiting the VOC content of coating products or installing control equipment.   | <u>SJVAPCD</u><br>Rule 4610   | BAAQMD<br>Regulation 8-4<br>1 Source in Bay Area currently complying with SIP-Approved permit conditions | Insignificant Potential Emissions Reductions   |
| 70. | Limits VOC emissions from graphic arts operations by limiting the VOC content of products or by installing a control device.   | <u>SCAQMD</u><br>Rule 1130  | BAAQMD<br>Regulation 8-20  | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measure in |

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|     |   |                             |   | 2005 Ozone Strategy                          |
| 71. | Applies to all coating operations on magnet wire, where the wire is continuously drawn through a coating applicator. Prohibits use or application of any magnet wire coating which contains more than 200 grams VOC per liter (1.67 lb/gal) of coating, less water and exempt compounds. The rule also provides for use of approved emission control systems.   | <u>SCAQMD</u><br>Rule 1126  | BAAQMD<br>Regulation 8-26   | Equivalent Measure                           |
| 72. | Applies to coating operations of marine and fresh water vessels, oil drilling platforms, navigational aids and component parts; and structures intended for exposure to a marine environment. Limits VOC emissions. Allows use of specified air pollution control equipment which captures VOC emissions associated with coating, cleaning, and surface preparation, in lieu of use of low-VOC coatings and non-VOC materials used in cleaning and surface preparation. | <u>SDAPCD</u><br>Rule 67.18 | BAAQMD<br>Regulation 8-43   | Insignificant Potential Emissions Reductions |
| 73. | Limits VOC emissions from metal container, metal closure and metal coil coating operations through operational controls and by limiting the VOC content of products.  | <u>SCAQMD</u><br>Rule 1125  | BAAQMD<br>Regulation 8-11   | Equivalent Measure                           |
| 74. | Limits VOC emissions from the coating of metal parts and products not regulated by other specific regulations by limiting coating VOC content.  | <u>SCAQMD</u><br>Rule 1107  | BAAQMD<br>Regulation 8-19   | Equivalent Measure                           |
| 75. | Sets forth VOC emission limits and VOC content of motor vehicle coatings. This rule applies to all assembly line coating operations conducted during the manufacturing of new motor vehicles.   | <u>SCAQMD</u><br>Rule 1115  | BAAQMD<br>Regulation 8-13   | Equivalent Measure                           |
| 76. | Applies to coatings or wash primers for paper, fabric, or film substrates. Includes drying and curing processes such as heated, forced-air dried, and non-heated processes. The rule specifies VOC content of applicable coatings and sets forth application method and cleaning requirements.  | <u>SCAQMD</u><br>Rule 1128  | BAAQMD<br>Regulation 8-12   | Equivalent Measure                           |
| 77  | Specifies VOC content of coatings used on plastic, rubber, and glass and sets forth transfer efficiency requirements. The rule allows for use of an approved emission control system in lieu of VOC content limits.   | <u>SCAQMD</u><br>Rule 1145  | BAAQMD<br>Regulation 8-31 (plastics coatings)<br>No Bay Area sources for coatings of rubber. 1 glass coating facility | Equivalent Measure                           |



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|     |   |   | controlled by permit requirements |  |
| 78. | Specifies VOC content of screen printing materials and applies to persons performing screen printing operations or who sell, distribute, or require the use of screen printing materials.   | <u>SCAQMD</u><br>Rule 1130.1                                      | BAAQMD<br>Regulation 8-20         | Equivalent Measure   |
| 79. | Further reduces VOC emissions from spray coating or laminating operations in high VOC-emitting facilities.  | <u>SCAQMD</u><br>Rule 1132  | None                              | Proposed as Control Measure in 2005 Ozone Strategy   |
| 80. | Limits VOC emissions from coatings applied on Group I vehicles and equipment and Group II vehicles through operating requirements and by limiting VOC content.  | <u>SCAQMD</u><br>Rule 1151  | BAAQMD<br>Regulation 8-45         | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measure in 2005 Ozone Strategy |
| 81. | Limits VOC content of coatings, inks, and adhesives applied to wood flat stock for the purpose of manufacturing a finished wood panel intended for attachment to the inside walls of buildings, including, but not limited to, homes and office buildings, mobile homes, trailers, prefabricated buildings and similar structures, boats and ships, or a finished exterior wood siding. | <u>SCAQMD</u><br>Rule 1104  | BAAQMD<br>Regulation 8-23         | Equivalent Measure   |
| 82. | Specifies VOC content of wood products coatings. Requires wood strippers to have a maximum VOC content. The rule allows for use of an approved emission control system in lieu of VOC content limits and also includes an averaging provision.  | <u>SCAQMD</u><br>Rule 1136  | BAAQMD<br>Regulation 8-32         | Additional controls not included in existing BAAQMD regulations are being proposed as Control Measure in 2005 Ozone Strategy |
| 83  | <u>Cleaning operations – Limits on VOC emissions</u><br>a) Reducing VOC content of cleaning products to between 25 g/l-900 g/l depending on process.<br><br>b) Reducing VOC content of cleaning products to between 50 g/l-900 g/l depending on process   | a) <u>SCAQMD</u><br>Rule 1171<br><br>b) <u>SMAQMD</u> Rule<br>466 | BAAQMD<br>Regulation 8            | Identified as further study measure in 2005 Ozone Strategy   |

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| 84. | <u>Degreasing Operations – Limits on VOC emissions</u><br>a) Applies to cold cleaners and vapor degreasers by limiting product VOC content to 25 g/l. Air-tight and airless cleaning systems can be used in lieu of meeting the VOC limit.<br><br>b) Applies to cold cleaners by limiting product VOC content to 25 g/l for (900g/l for exempted categories.)<br><br>c) Applies to batch-loaded vapor degreasers by setting equipment and operating requirements.<br><br>d) Applies to cold cleaners limit to 50 g/l. Limits VOC emissions from vapor degreasers by setting equipment requirements. Air-tight and airless cleaning systems can be used in lieu of meeting the VOC limit.  | a) <u>SCAQMD</u> Rule 1122<br><br>b) <u>VCAPCD</u> Rule 74.6<br><br>c) <u>VCAPCD</u> Rule 74.6.1<br><br>d) <u>SMAQMD</u> Rule 454 | BAAQMD Regulation 8-16 | Additional controls not included in existing BAAQMD regulations are being proposed as a further study measure in 2005 Ozone Strategy |
| 85. | Limits VOC emissions from VOC containing materials or equipment not subject to VOC limits in any other, specific district regulation to no more than 833 lbs/month. A control device may be used in lieu of the monthly throughput limit.   | <u>SCAQMD</u> Rule 442  | BAAQMD Regulation 8-4  | Equivalent Measure   |
| 86. | <u>Soil Decontamination (VOC)</u><br>a) Limits the emissions of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills, and requires description of an acceptable procedure for controlling emissions from underground storage tanks during removal or replacement through the use of operational requirements and by limiting the amount of soil to be processed daily.<br><br>b) Limits VOC emissions from excavating, grading, handling and treating VOC contaminated soil as a result of leakage from storage or transfer operations, accidental spillage, or other deposition by requiring that soil with VOC concentrations above 1000 ppm be containerized, sealed, and shipped away for disposal. | a) <u>BAAQMD</u> Rule 8-40<br><br>b) <u>SCAQMD</u> Rule 1166  | BAAQMD Regulation 8-40 | Equivalent Measure   |
| 87. | <u>Solid Waste Landfills (VOC)</u><br>a) Limits VOC emissions from municipal solid waste landfills through installation of gas collection and control systems.<br><br>b) Limits VOC emissions from the waste decomposition process at solid waste disposal sites through requirements for gas collection and  | a) <u>SCAQMD</u> Rule 1150.1<br><br>b) <u>BAAQMD</u> Rule 8-34  | BAAQMD Regulation 8-34 | Equivalent Measure   |

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|     | control systems.  |  |  |                    |
| 88. | Requires any woodworking facility that uses a pneumatic conveyance system connected to woodworking equipment to vent sawdust emissions to a PM10 emissions control device, such that there are no visible emissions; to cover sawdust storage bins at all times; and to take measures to prevent visible emissions from waste disposal activities from crossing any property line.  | <u>SCAQMD</u><br>Rule 1137   | BAAQMD<br>Regulation 6   | Equivalent Measure |
| 89. | Applies Visible Emission Limits (PM10, PM2.5) by prohibiting discharges into the atmosphere from any single source of emission of any air contaminant for specified periods of time. Provides the option of exempting permitted outdoor residential burns.  | <u>MaCAPCD</u><br>Rule 202<br><u>SMAQMD</u><br><u>BAAQMD</u><br><u>SCAQMD</u><br><u>SDAPCD</u> | BAAQMD<br>Regulation 6   | Equivalent Measure |
| 90. | Prohibits discharges into the atmosphere from the burning of fuel of combustion contaminants.   | <u>MDAQMD</u><br>Rule 409  | BAAQMD<br>Regulation 6   | Equivalent Measure |
| 91. | <u>Grain Loading (PM10)</u><br>Prohibits release or discharge into the atmosphere from any source or single processing unit, exclusive of sources emitting combustion contaminants only.  | <u>MaCAPCD</u><br>Rule 207   | BAAQMD<br>Regulation 6   | Equivalent Measure |
| 92. | <u>DMV Funds (AB 2766 Funds): Motor Vehicle Registration Fee Program (Many districts implement this program)</u><br>State law authorizes air districts to assess motor vehicle registration fees of between \$2-\$4 (MV Fees) to reduce air pollution from motor vehicles and for related planning, monitoring, enforcement, and technical studies necessary for the implementation of the California Clean Air Act.                                | SCAQMD<br>BAAQMD<br>SJVAPCD<br>Programs  | BAAQMD<br>Transportation Fund for<br>Clean Air   | Equivalent Measure |
| 93. | <u>Heavy-Duty Engine Incentive Program</u><br>a) Helps fleets pay for new lower emission heavy-duty engines, lower emission retrofits, and engine replacements. Applies to public and private fleets. The program is funded by the air district and by the Carl Moyer Incentive Program sponsored by ARB.<br><br>b) Provides incentive funds for the differential cost associated with the reduced emission technology as compared with the cost of | a) <u>SMAQMD</u><br>Program<br><br>b) <u>SJVAPCD</u><br>Program                                | BAAQMD<br>Transportation Fund for<br>Clean Air<br>Carl Moyer Program<br>Low Emissions School<br>Bus Program<br>Solid Waste Collection<br>Vehicle Program | Equivalent Measure |

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|     | conventional technology. Eligible funding categories include heavy-duty on-road vehicles, off-road vehicles, locomotives, marine vessels, electric forklifts, electric airport ground support equipment and stationary agricultural irrigation pump engines. The SJVAPCD received \$25 million in State transportation funds from special legislation for the Valley Emergency Clean Air Program (VECAP). The air district added the VECAP funds to the Heavy Duty Engine Incentive Program.  |   |   |                    |
| 94. | <u>Lower Emission School Bus Program</u><br>Provides financial incentives to school districts to replace older school buses using both air district and ARB grant funding.  | <u>BAAQMD</u><br><u>VCAPCD</u><br><u>SCAQMD</u><br>Programs | BAAQMD<br>Lower Emission School Bus Program                                     | Equivalent Measure |
| 95. | <u>Moyer Program</u><br>Provides funds on an incentive-basis for the incremental cost of cleaner than required engines and equipment. Eligible projects include 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 program achieves near-term NOx and PM reductions.  | <u>Most Districts</u>                                       | BAAQMD<br>Carl Moyer Program  | Equivalent Measure |
| 96. | <u>Sacramento Emergency Clean Air Transportation (SECAT) Program</u><br>Encourages cleanup of the existing HDD truck fleet by providing funds to pay for the cost of retrofitting existing engines with newer, cleaner engines or paying a significant amount of the cost of a newer vehicle. The goal is to reduce NOx emissions from HDD trucks by 3 tons per day by 2005 by upgrading 3,000 to 6,000 trucks. Uses State transportation funds under special legislation plus funds from the federal Congestion Mitigation and Air Quality Improvement (CMAQ) Program. | <u>SMAQMD</u><br>Program                                    | BAAQMD<br>Carl Moyer Program  | Equivalent Measure |
| 97. | Provides incentives for certain new on-road original equipment manufacturer (OEM) alternative fuel vehicles with a Gross Vehicle Weight Rating (GVWR) up to 14,000 pounds, including passenger cars, pick-up trucks, small buses, and vans. With the exception of hybrid electric vehicles, no vehicles with the ability to operate on gasoline or diesel fuel are funded.  | <u>SJVAPCD</u><br>Program                                   | BAAQMD<br>Vehicle Incentive Program<br>and<br>Transportation Fund for Clean Air | Equivalent Measure |

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| 98.  | Encourages trading of gasoline-powered lawn mowers, by providing funds to offset the purchase cost of electric mowers   | <u>BAAQMD</u><br><u>SJVAPCD</u><br><u>SMAQMD</u><br><u>SCAQMD</u><br>Programs | BAAQMD<br>Lawn Mower<br>Replacement Program   | Equivalent Measure   |
| 99.  | <u>On-Road Motor Vehicle Mitigation Options</u><br>Requires employers who employ 250 or more employees to implement a program to reduce mobile source emissions generated from employee commutes and meet an annual emission reduction target (ERT) for their worksite.   | <u>SCAQMD</u><br>Rule 2202  | BAAQMD<br>Transportation Fund for<br>Clean Air funds<br>Regional Rideshare<br>Program, county-level<br>and school and<br>university ridesharing<br>programs.<br>Spare the Air and<br>BayCAP Programs<br>include employer<br>outreach. | Additional measures<br>not included in existing<br>BAAQMD programs<br>are proposed as<br>Further Study<br>Measures in 2005<br>Ozone Strategy |
| 100. | <u>Transportation Outreach Program</u><br>Requires employers with 100 or more employees to register with the air district annually and collect survey data on their employee's commute distances and ridesharing participation every two years. This rule allows the air district to devote resources and efforts in assisting employers with their voluntary trip reduction efforts. | <u>VCAPCD</u><br>Rule 211   | BAAQMD<br>Transportation Fund for<br>Clean Air funds<br>Regional Rideshare<br>Program, county-level<br>and school and<br>university ridesharing<br>programs.<br>Spare the Air and<br>BayCAP Programs<br>employer outreach             | Equivalent Measure   |
| 101. | <u>Spare the Air Program</u><br>Spare the Air is a voluntary, summertime effort aimed at reducing air pollution (specifically, ground-level ozone) through public outreach programs to encourage the general public and employers to take actions to reduce transportation related emissions.   | SMAQMD,<br>SJVAPCD,<br>BAAQMD<br>Programs                                     | BAAQMD<br>Spare the Air Program   | Equivalent Measure   |
| 102. | <u>Public Awareness Programs</u><br>Some air districts have implemented public awareness programs that: 1) support voluntary employer based trip reduction programs, 2) encourage alternative modes of transportation, 3) encourage cities  | <u>BAAQMD</u><br><u>SCAQMD</u><br><u>SMAQMD</u><br><u>SJVAPCD</u>             | BAAQMD<br>Spare the Air Program,<br>CEQA Commenting,<br>Smart Growth Program,   | Equivalent Measure   |

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|      | and counties to incorporate air quality beneficial policies into local planning and development activities, 4) promote demonstrations of low emission vehicles and refueling infrastructure, and/or 5) continue public education by informing residents about air quality status, air pollutant health effects, sources of pollution, and actions individuals and communities can take to help improve air quality.   | Programs                       | and 2005 Ozone Strategy Transportation Control Measures |                    |
| 103. | <u>Leveraging Other Sources for Transportation Funding</u><br>Some air districts apply for and receive money for transportation-related projects from federal, state, and local funding sources, the most notable being the federal Congestion Mitigation and Air Quality Improvement (CMAQ) program. The projects funded are usually small scale and include incentives, facilities, support services, and public awareness for carpools, vanpools, telecommuting, public transit, biking and walking. | <u>BAAQMD</u><br><u>SCAQMD</u> | BAAQMD Spare the Air Program and Grant Programs         | Equivalent Measure |

**More in-depth information** about *District rules and regulations* can be obtained at <http://www.arb.ca.gov/drdb/drdb.htm>

## Appendix B: Comments on Proposed SB 656 PM Implementation Schedule

### WRITTEN COMMENTS RECEIVED

| <u>#</u> | <u>ISSUE</u>           | <u>COMMENT</u>  | <u>STAFF RESPONSE</u>   |
|----------|------------------------|---|---|
| 1        | Compliance with SB 656 | <p><b>Ken Mandelbaum</b> (email: October 18, 2005):</p> <p>1). The law requires that “Each plan prepared pursuant to this chapter shall include an assessment of the cost effectiveness of available and proposed control measures and shall contain a list which ranks the control measures from the least cost-effective to the most cost-effective.” In the public meeting, the District stated that this list was never prepared.</p>   | <p>1). The Health and Safety Code and ARB SB 656 guidance direct air districts to prioritize the list of new measures scheduled <u>to be adopted</u> based on cost effectiveness, not to prioritize every measure on the list of 103 measures based on cost-effectiveness. Health and Safety Code Section 39614 (d)(2) (A) states that districts shall “Prioritize adoption and implementation of <u>proposed control measures</u> based on the effect individual control measures will have on public health, air quality, and emission reductions, and on the cost-effectiveness of each control measure (emphasis added).” The District has developed the proposed PM Implementation Schedule based on these criteria.</p> |
|          | Compliance with SB 656 | <p>2). The law states that: “An implementation schedule adopted by a district pursuant to this subdivision may not include a control measure that meets any of the following criteria: (A) Is substantially similar to a control measure already adopted by the district.” In the District’s proposed implementation schedule, the District has proposed to adopt ARB Control Measure Number 1, a public awareness program on wood burning. However, the BAAQMD has already had a wood burning public</p> | <p>2). This section of SB 656 directs air districts to not adopt a measure on the State’s list if the district already has a similar measure or program currently being implemented or scheduled for implementation within 2 years. The District does currently have a public awareness program for wood burning. The District intends, however, to substantially increase our public outreach and education efforts regarding wood burning. These activities will include: increased outreach to broadcast and print media;</p>  |

awareness program in place. When asked at the public workshop what additional budgetary resources or staff were being added to this effort in order to make it a “new or amended measure” the District answered that there would be none. A wood smoke public awareness program is indeed a critically important element in a PM reduction program, but for the District to make this a “new or amended measure”, and to avoid this proposed measure from being “substantially similar to a control measure already adopted by the district”, it seems the program must necessarily be expanded in scope and objective.

Compliance with SB 656

3). The District has identified for further study and evaluation ARB Control Measures #2 and #4-12. The law does not seem to provide a provision for further study. Rather it calls for the district to “adopt an implementation schedule for the most cost-effective local measures from the list for that district after prioritizing the measures based on the factors identified in subparagraph (A) of paragraph (2).” Furthermore, the district is expected to “Prioritize adoption and implementation of proposed control measures based on the effect individual control measures will have on public health, air quality, and emission reductions, and on the cost-effectiveness of each control measure.” According to the ARB, in the winter in the San Francisco Bay Area Air Basin “...wood smoke from residential wood combustion and cooking becomes the main component of fine particulate matter, followed by fossil fuel sources.” If this is the case, it would follow that if the district did prioritize the ARB Control Measures according to

feature stories and op-ed pieces on health effects and costs of wood burning; increased outreach to cities and counties on the model wood smoke ordinance; lowering the Spare the Air Tonight threshold; and other activities.

While the District’s overall FY 2005/2006 budget has already been adopted, substantially more resources will be devoted to outreach on wood smoke this year (approximately two additional FTEs and approximately \$40,000 in direct costs).

3). Identifying measures for further study is not specifically proposed in SB 656 or ARB guidance, nor is it precluded. As seen in the District’s ozone planning process, measures identified for further study often do result in regulatory or programmatic implementation. The District considers it to be more health protective to continue to evaluate (and in many cases implement) certain measures whose feasibility requires further analysis, rather than reject them during initial evaluation.

The District has determined, through our preliminary evaluation of the measures listed for “further study”, that insufficient information currently exists to determine that these measures meet the appropriate standards of technical feasibility, total emission reduction potential, rate of emissions reduction, public acceptability, enforcement and cost-effectiveness per Health and Safety Code Section 40922, to include in a PM Implementation



section 40922 of the California Health and Safety Code, several of the ARB Control Measures that pertain to wood-burning fireplaces and wood-burning heaters would be placed on the implementation schedule. Control Measures 2, 4, 11 and 12 in particular are measures that would appear to meet the standard of protecting “public health, air quality, and emission reductions, and on the cost-effectiveness of each control measure.”

Schedule at this time. Therefore, in lieu of eliminating these measures from consideration due to the preliminary evaluation, the District has decided to perform a more detailed evaluation of the “further study” measures to determine if they could meet the criteria for adoption at some point in the future. The District has begun a comprehensive evaluation of residential wood-burning in the Bay Area in order to determine if these or other regulatory control measures would be appropriate for the District.

In order to improve the emission inventory for wood smoke and to better identify areas that may be particularly affected by wood smoke, the District will be implementing a focused air monitoring study in specific neighborhoods this winter. The District will also conduct an extensive survey of wood burning activity. These studies will help identify factors that are conducive to high particulate matter concentrations in residential neighborhoods from wood-stoves and fireplaces. They will also help determine how such things as meteorology and localized topography, the moisture content of wood, the number and types of wood-burning appliances being used in a residence, the purpose of the burning, the type of material being burned, the frequency of the burning, and the number of residences burning in a particular neighborhood at one time all combine to affect particulate matter concentration.

District staff will also be tracking the development and implementation of similar rules, regulations and

programs in the San Joaquin Valley Air Pollution Control District, Puget Sound Clean Air Agency in Washington State and other regulatory agencies.

- 2 Diesel Engine Pollution** **John Clifton** (email October 10, 2005): Suggests District support use of “multi-fuel engines” for rail and generators as a way to control emissions from diesel engines.

The District supports a variety of technologies to reduce emissions of PM from diesel engines. Through the District’s various funding programs, such as the Carl Moyer program, the Low-Emission School Bus program, the TFCA, and the solid waste collection program, the District provides funding to fleets to install new engines and/or add on equipment to reduce PM and PM precursors. In addition, the District’s PM Implementation Schedule calls for rule making to further reduce PM from stationary internal combustion engines (ICE) in 2006. The District will consider all opportunities, including multi-fuel engines, that will provide PM emissions benefits from stationary and mobile diesel engines in its rule development effort on stationary ICEs and the mobile source grant programs.

However, only the California Air Resources Board (CARB), not individual air districts, has the authority to regulate and mandate the use of specific engines and fuels. In addition, multi-fuel engines are not a measure that was listed in the CARB list of 103 air district measures being used in California under SB 656.

- 3 Wood smoke and Wood burning** **Jenny Bard/American Lung Association** (email October 13, 2005): Urged the District to address

Please see response to Comment 1.2 & 1.3 above.

wood burning by specifically: Prohibiting the use of wood-burning appliances, fireplaces and/or heaters during periods when atmospheric conditions and the level of wood-burning activity are predicted to result in high PM concentrations; setting moisture standard for "seasoned wood" offered for sale; prohibiting the burning of materials not intended for use in wood-burning fireplaces and wood-burning heaters (e.g. garbage, treated wood and plastic products).

- |   |   |  |  |
|---|---|--|--|
| 4 | Wood smoke and wood burning at the neighborhood level | <p><b>Romas Simonaitis</b> (email letter October 14, 2005): Concerned about the local (neighborhood) level of wood smoke pollution in his neighborhood in Rincon Valley, Santa Rosa (Sonoma County). Complains that neighbors use EPA-certified wood burning appliances to heat their homes but the accumulation of smoke and odors makes walking outside during the winter months impossible. Believes that the District's existing voluntary Spare the Air Tonight program is ineffective. Suggests that the problem be looked at on a "case by case" basis and not just regionally and that "appropriate measures" be taken to address the issue.</p> | <p>Please see response to Comment 1.2 &amp; 1.3 above.</p> <p>Part of the District's efforts to determine the local impact of wood burning will include discussions with community members who report localized, neighborhood-level PM build-up as a result of wood burning. The District encourages community members to contact the agency to report such incidents. In addition, localized monitoring of air quality in neighborhoods particularly affected by wood smoke will be conducted beginning in November 2005 as part of the wood burning air monitoring activities.</p> |
| 5 | Sewer Gas/Particle Emissions                          | <p><b>Jack G. Ohringer</b> (letter September 20, 2005): Suggests District consider a "normally closed vent system" that addresses sewer gas/particle emissions for building plumbing vents.</p>  | <p>The District will consider new technologies to reduce PM that are feasible and will provide cost-effective emissions reductions. However, this type of emissions source was not identified in ARB's SB 656 list of measures being used in any air district in California.</p>   |
| 6 | Wood smoke and wood                                   | <p><b>Fred Mundy</b> (email October 18, 2005): Concerned</p>   | <p>Please see responses to Comments 1.2, 1.3 and 4</p>   |

burning

about wood smoke pollution in his neighborhood in San Geronimo Valley, Marin County. Suggests the District address wood burning and specifically limit moisture content in wood that can be burned.

above.

7

Clarity of District evaluations of SB 656 measures

**Linda Weiner/Clean Air Taskforce** (email October 18, 2005):

1). The staff report does not delineate those measures that the Air District may have already adopted and those measures that the Air District chose not to pursue. Moreover, the report provides no explanation as to why measures have been rejected.

1). Table 2 of the SB 656 Staff Report summarizes and categorizes the results of the District's evaluation of the 103 measures listed by ARB in the SB 656 program. The final staff report and appendices provide additional information on the District's evaluation. In particular, please see Attachment A, "BAAQMD Review of SB 656 List of Air District Measures" for the evaluation results.

Incentives for modernization of HDD fleets

2). No Air District rules are identified by name or number, thus making it difficult to determine how stringent these measures are compared to similar measures at other air districts throughout the state. For example, one of the measures, number 96, refers to the Sacramento Emergency Clean Air Transportation Program, which is not currently being implemented by the Sacramento Metropolitan Air Quality Management District and therefore should not have been listed. Urges the Bay Area Air Quality Management District to adopt a similar program featuring fleet modernization for older trucks.

2). The SECAT program included special legislation that provided the SMAQMD with additional funding for incentives for engine retrofits and fleet modernization for heavy duty diesel vehicles (HDDV). This legislation and funding applied only to the Sacramento region. The BAAQMD currently operates a number incentive programs for HDDVs including the Carl Moyer program, the Low Emission School Bus program, and the solid waste collection vehicles program. With recent changes in the guidelines for the disbursement of funding under the Carl Moyer program, the District anticipates that we will be offering more funding opportunities for fleet modernization efforts for diesel engine retrofits and HDDVs in the region.

Employer Trip Reduction measures

3). The Air District states that it lacks authority to regulate two measures covering On-Road Motor

3). The District may not mandate employer based trip reduction programs. Voluntary measures,

Vehicle Mitigation Options and Transportation Outreach Programs, the latter currently conducted by The Ventura County APCD. It is not clear how the Ventura County APCD has special authority beyond this Air District.

however, have proven to be an effective means of achieving reductions from these transportation sources. Through the Bay CAP program the District partners with employers and business groups to promote trip reduction and other emission reduction programs. The District's Spare the Air program includes over 2,250 employers with over a million employees. The District administers and/or funds numerous employer trip reduction programs. TFCA funds support MTC's Regional Rideshare programs, county level rideshare programs, and rideshare and transit programs at schools and universities. These measures will produce real reduction and are thought to be more effective than a simple registration program as the Ventura County measure.

Glass-coatings operations

4). Six measures are listed as having insignificant potential emissions reductions; however there is no explanation as to how they are insignificant. One measure, 69 Controlling Glass Coatings, appears to be significant, as the Owens-Brockway Glass Container facility is one of the major PM emitters in the Bay Area. Perhaps similar controls are already in place under measure 77 VOC Coatings Content; however, it is difficult to determine this from the staff report.

4). The insignificant potential emission reduction category includes measures with very few or no Bay Area sources, or measures for which the difference in specific requirements in the measure listed by ARB verses existing District measures would not result in cost effective emission reductions. The Owens-Brockway Glass Container facility is a Bay Area glass manufacturing facility, but this facility does not operate glass coating equipment. It is therefore not subject to the standards that are part of measure 69 which only deals with glass coatings operations.

In regards to measure 77, there is one facility in the Bay Area (not Owens-Brockway Glass) that would be subject to this measure. This facility is currently under permit with VOC emission limits equivalent to

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|--|--|--|
| Implementation Dates for Ozone Strategy Control Measures                   | 5). Seven measures are listed as proposed Ozone Strategy Control Measures, but it would be more helpful if implementation dates were provided.   | the standards in measure 77. Additional information on the District's evaluation is provided in Appendix A of the Staff Report.  |
| Further Study Measures   | 6). Ten measures are listed as being identified for further study and evaluation. However, there appears to be no concrete commitment to pursue these measures or provide a potential implementation timeframe. Commenter suggests that there be no further delay. | 5). The measures that are being proposed as control measures in the 2005 Ozone Strategy will each undergo a separate rule making process. Table 10: Regulatory Agenda, 2005-2007 in the Draft 2005 Ozone Strategy addresses the proposed schedule for each measure's adoption (pg. 49 of the Draft Bay Area 2005 Ozone Strategy). More complete control measure descriptions are available in Appendix C of the 2005 Ozone Strategy.<br><br>6). Please see response to Comment 1.2 & 1.3 above.                                  |
| Measures with no evaluations: Coke Calcining and Residential Water Heaters | 7). Two measures are missing from the document, number 50 on petroleum coking and number 52 on residential water heaters. These appear to be worthwhile measures for the Air District to pursue.   | 6). Please see response to Comment 1.2 & 1.3 above.<br><br>7). The District has amended the Proposed PM Implementation Schedule Staff Report to include evaluations of these measures. Measure 50, regarding Coke Calcining operations, has been determined not to provide any additional emissions reduction benefits beyond existing District permit requirements. Measure 52, regarding residential water heaters, has been determined to have an equivalent District rule. Please see Appendix A for additional information. |

Further input on PM reduction opportunities

8) Suggest meeting to share ideas to control PM, such as exploring measures to reduce PM from ports, railyards, distribution centers, airports and other significant industrial PM sources impacting residential communities. Measures could include, though not be limited to, truck replacement programs, shoreside power, truck-stop electrification, and more stringent CEQA requirements for construction. Since many of these measures are already in effect throughout the state, they may be found to be cost-effective.

8). These measures are not included in the ARB list of control measures. However, the District is open and willing to consider all opportunities to reduce PM in the region outside of the SB 656 process. District staff would be happy to meet with the Clean Air Task Force and other stakeholders to discuss potential PM reduction strategies.

Wood smoke and wood burning

9) At a minimum, suggest the implementation and adoption of the following CARB measures: a mandatory curtailment on wood burning during periods of PM concentrations that exceed the US EPA air quality index for healthy air; prohibition of the burning of garbage and other materials not intended for use in wood-burning heaters and fireplaces; and control of the moisture content of wood offered for sale.

9). Please see responses to Comments 1.2, 1.3 and 4 above.

8

Wood burning and wood smoke/opacity/controlled burn/ outdoor fireplaces

**Miriam Spross** (email: October 10, 2005): Urged the District to restrict wood burning and wood smoke, specifically: Ban residential and commercial wood-burning appliances that pollute; establish an opacity rule and strict emission controls for wood-burning; forbid "controlled burns" near residential areas; forbid the sale of wood-burning "outdoor fireplaces" and chimneys.

Please see response to Comment 1.2 & 1.3 above. Open burning is generally prohibited in the Bay Area Air Quality Management District with the exception of certain types of fires allowed by Regulation 5: Open Burning. Controlled burning, such as that which is used by local, state, and federal fire officials to reduce the risk of catastrophic fires during times of high-fire danger, is permitted under current District regulations. Section 5-408 of the District's Regulation 5 describes the

requirements of controlled burning in the region.  
This information can be found on the internet at:  
<http://www.baaqmd.gov/dst/regulations/rg0500.pdf>

9 Wood smoke

**American Lung Association of the East Bay**

(email, October 18, 2005):

Urged the District to adopt wood smoke regulations, specifically: mandatory curtailment of wood burning during periods of high PM concentrations that exceed US EPA air quality index for healthy air; prohibition of burning of garbage and other materials not intended for use in wood burning heaters and fireplaces; and control of the moisture content of wood offered for sale.

Please see response to Comment 1.2 & 1.3 above.

10 Internal Combustion Engines (ICE) Rule

**Dennis Bolt/Western States Petroleum Association**

(email, October 18, 2005):

WSPA is concerned that the District's proposed PM control of stationary internal combustion engines will overlap with regulations recently adopted by CARB and thereby impose conflicting requirements on regulated parties. The concern is that after expending time, money and effort to comply with ARB's stationary IC engine rule the District will adopt controls that require those same engines to be retrofitted again or replaced within the 2006-2007 timeframe. Suggests avoiding the overlapping timeframe. Encourages the District to clarify its intent in regulating stationary ICEs and avoid requiring retrofit or replacement of engines brought into compliance with the ARB rule.

During the rule development process for amendments to District rules concerning IC engines, District staff will specifically seek to avoid any regulatory conflict with ARB's Air Toxics Control Measure (ATCM). Staff will work with stakeholders to identify any potential conflicts.



**VERBAL COMMENTS RECEIVED DURING THE OCTOBER 11, 2005 PUBLIC WORKSHOP ON SB 656**

- 11** Retrofitting existing CARB-Certified Internal Combustion Engines (ICE)
- Gary Winslow/Headway Technologies:**  
Mr. Winslow's company recently purchased two emergency, diesel-fired systems that were CARB-certified. He asked if the District anticipates any rules related to PM for sustained sources that would require the generators to be retrofitted if they meet today's standards.
- The District will be conducting a formal rule development process for regulatory amendments regarding internal combustion engines. The District will be looking at engines of varying sizes and specifications and will be seeking opportunities to reduce emissions from existing devices as well as new devices. Staff will review ARB's standards and consider that some engines meet current ARB standards. Also, please see response to Comment 10.
- 12** Internal Combustion Engines (ICE) Rule
- Tery Lizarraga (Chevron):**  
1). Chevron is studying a number of engines to see if they should be replaced as part of the ARB rule – some do need to be replaced now. Concerned about going through the decision-making process now and finding out a year later that it was flawed because Chevron would need additional controls based on new District rules. Suggests that the District should merge the ARB ATCM and its rule making processes together so companies can know if engines need to be replaced in their entirety or to meet with the specs. Would like to not have to go through process of replacing engines for CARB ATCM process and then have new standards applied from the District's new rules.
- 1). The District will be sensitive to this potential conflict with ARB standards in the rule making process and will not want to conflict with ARB standards. Staff will be evaluating what is most appropriate for the Bay Area region and will be reviewing rules that have been implemented elsewhere in the state. The District encourages stakeholders to also review those rules. Staff will be evaluating those measures that have proved most cost-effective. The District encourages all stakeholders to participate in the public process during rulemaking and to meet with staff to discuss specific concerns. Because the rulemaking process has not yet begun, it is not possible to say how specific engines will be affected.

|           |  |  |  |
|-----------|--|--|--|
|           |  | 2). Could the State ATCM effort be delayed so that these efforts can come together?  | 2). The District does not have authority to delay the State ATCM process. As noted above, however, staff will consider the State ATCM requirements in any new District rule development. |
| <b>13</b> | Internal Combustion Engines (ICE) Rule | <b>Mike DeLeon (Tesoro):</b><br>Suggested that it would be useful to discuss the District's new rule making intentions with ARB to note how the conflicting schedules can be reconciled.   | Please see response to Comment 10. The District will consult with ARB during the rule development process.   |
| <b>14</b> | Internal Combustion Engines (ICE) Rule | <b>Dennis Bolt (Western States Petroleum Assoc.):</b><br>Commented that the time frame for adoption of a new ICE rule is very aggressive. Stated that the District has "an emissions inventory that is in flux because you have people who are coming into compliance with State standards. You can't do cost-effectiveness without a proper inventory." Suggests a phased-in adoption time out for retrofits. Believes that implementation of a new rule next year will result in the high probability of unfair or inaccurate rules. | Please see response to Comment 10. Refinement of the emission inventory is an important element of the rule development process.   |
| <b>15</b> | Wood burning                           | <b>Ken Mandelbaum (American Lung Association):</b><br>Mr. Mendelbaum's comments mainly concerned wood burning.<br><br>1). Wood burning is a stationary source with no economic benefit and controlling wood burning would provide the greatest health benefits with the least economic costs.<br><br>2). What is the threshold for Spare the Air nights?   | 1). Please see response to Comments 1.2 & 1.3 above.<br><br>2). The current threshold for Spare the Air Tonight  |

alerts is 150 Air Quality Index (AQI). As indicated in the PM Implementation Schedule Staff Report, the District will be lowering the threshold for announcing Spare the Air Tonight alerts to 130 AQI beginning in November 2005. This new threshold will be more protective of the health of sensitive populations in the Bay Area.

3). Is the District studying Washington State's wood burning law? They just went through a process to see what they should set as a standard, and it may be a good model for the District.

3). The District will continue to study regulations and policies in Washington State as well as other parts of the country.

4). What portion of the District's public education budget is dedicated to wood smoke education ?

4). The District's full operating budget is available by request, however the budget does not necessarily specify how money is allocated for specific issues such as wood burning. Various District Divisions are involved in wood burning related activities. These include the Public Information and Outreach Division, which operates the Spare the Air Tonight program and works with the media and communities to educate the public about the impacts of wood burning; the Technical Services Division, which operates the District's air monitoring equipment and analyzes PM data as well as forecasts conditions that result in the calling of Spare the Air Tonight alerts; the Enforcement Division, which responds to complaints and issues citations; and the Planning and Research Division, which develops rules, regulations, and programs related to PM. Each of these divisions' employs staff and, in some cases contractors, to carry out their duties.

5). Referring to Section 40922 of the Health and Safety Code, the District was supposed to prioritize the ARB measures from the most cost-effective to the least cost-effective. Will that list be made available?

6). Some measures on the ARB list are scheduled for further study. In SB 656 there is no provision to schedule measures for further study. Thought a list was to be drafted of the most cost-effective measures to the least cost-effective measures in order to compile an implementation schedule.

5). Please see response to Comment 1.1

6). Please see response to Comment 1.2 & 1.3 above.

**16** PM Monitoring Data

**Steve Ziman (Chevron):** Tried to find PM monitoring data on the District website. Didn't see the design standards for the monitors or what the breakouts are. This information would be useful in order to relate what Chevron is doing in terms of cost-effectiveness and how this affects attainment. Still unsure of what the modeling data looks like. Suggests expanding the website to improve better understanding.

The Air District currently operates 5 continuous PM<sub>2.5</sub> monitors. The continuous PM<sub>2.5</sub> monitors provide one-hour average concentrations of PM<sub>2.5</sub>. In order to access those hourly measurements, please visit the District's web site at <http://gate1.baaqmd.gov/aqmet/aq.aspx>; then select BAM PM<sub>2.5</sub>; and the average will be shown on the right hand side of the table. Twenty-four (midnight to midnight) one-hour measurements are required to calculate the 24-hour average. Filter based PM<sub>2.5</sub> and PM<sub>10</sub> data are not available until several days after the sampling because the filters must be transported to the District laboratory, equilibrated to a standard temperature and humidity, and then weighed. Data from filter based measurements are available on the District's annual air quality summaries, also posted online.

**17** Wood Burning  
And  
NO<sub>x</sub> and Nitrates as PM

**Sam Altschuler (PG&E):**  
1). It will be a tough year due to natural gas prices and people will be burning more wood this winter.

1). The District's enhanced public education and outreach regarding wood burning will address

precursors

Fireplaces are not only polluting but inefficient. Need to get the information out there to the public. Wood burning is a four month season and not sure what the monitoring data reflects. Annual emissions data would not reflect the true nature of wood burning.

health effects and costs of heating with wood compared to other fuels.

2). If the District goes after NOx as a PM nitrate, the District should also have to look at the speciation of NOx rather than just the total. Have to make sure not to raise the NOx levels due to implementing a control measure for PM. There are diesel PM control strategies such as electrification and particulate traps for mobile and stationary sources. District should look at the relationship between PM nitrate and ozone.

2 ). During the rule making process, the District will look at the overall air quality benefits associated with controlling NOx emissions to reduce secondary PM and other air pollutants.

18 Internal Combustion Engines (ICE) Rule

**Travis Clark (UCSF):**  
When the District addresses ICE emergency diesel generators, he encourages the District to consider that the State is applying minimum times for testing. Would like the District to address how to reconcile this with the maximum running times that may be suggested.

Please see response to Comment 10.

19 Charbroiling

**Gary Winslow/Headway Technologies:**  
What is a commercial charbroiling operation? Can you give examples?

During the rule development process, the District will focus on chain-driven charbroilers used in large-scale commercial food preparation, such as those used in certain fast-food restaurants. This is because it is easier to install catalytic devices on chain-driven charbroilers due to their size and smaller air-flows.

**20** Internal Combustion  
Engines (ICE) Rule

**Cory LaVign (Livermore Valley Transit  
Authority):**

1) With regards to the generator standards, LVTA has had daunting experiences with diesel and add-on particulate traps. Suggests that the District support a developed technology and, in particular, one that it isn't going to be onerous for emergency generators and should include exemptions.

2). What is the CARE program?

1). Please see response to Comment 10.

2). The CARE program is a separate District project to study the cumulative health risks of air pollution in the Bay Area through the development of a gridded inventory of the entire region. Results of the CARE program will highlight areas that have the highest concentration of toxic air pollutants, so that the District can better target future mitigation strategies.

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: November 9, 2005

Re: Public Hearing to Consider Report on 2001 Ozone Attainment Plan Further  
Study Measure 9: Refinery Wastewater Treatment Systems

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RECOMMENDED ACTION:

Receive and file this report and approve staff recommendation that no rule amendments are necessary at this time.

BACKGROUND

The District committed in its Revised San Francisco Bay Area 2001 Ozone Attainment Plan to examine whether controls on uncontrolled components of a petroleum refinery's wastewater system would reduce VOC emissions significantly at each of the Bay Area five refineries. The District, jointly with the California Air Resources Board (CARB), undertook a two-phased study to investigate the wastewater collection and treatment systems components (Further Study Measure 9: Refinery Wastewater Treatment Systems). The District completed the first phase of the study in 2004 and proposed amendments to Regulation 8, Rule 8: Wastewater Collection and Separation Systems that the Board adopted in September, 2004. The amendments reduce VOC emissions by 2.1 tons per day (tpd). The District has now completed the second phase of Further Study Measure 9, an investigation of whether there are potential VOC emissions reductions to be gained from the refineries' secondary wastewater treatment components. The secondary wastewater treatment components treat wastewater either using chemical and/or biological methods to separate the organics from the water prior to discharge into San Francisco Bay Area waters.

Since the beginning of this study, the District and CARB have invited representatives from the five Bay Area petroleum refineries, the Western States Petroleum Association (WSPA), the Regional Water Quality Control Board, Communities for a Better Environment (CBE), and outside environmental consultants to participate in technical working group meetings. Staff convened four working group meetings in 2005 to discuss the Phase Two Work Plan, proposed emissions models, sampling plan and methodology, and the control technologies and associated costs. In addition, the District held a Public Workshop on October 27, 2005 to solicit comments from the public on the District's recommendation not to amend the existing regulation.

## DISCUSSION

To estimate the emissions, the District and CARB conducted a field investigation to collect direct vapor measurements and wastewater samples from processes located at two refineries. The field-collected data were used in addition to refinery-specific process information to develop individual refinery-specific emission models. The District ran the model for each refinery and calculated potential emissions from each secondary treatment unit at each refinery.

The estimated emissions are as follows:

- A total of 0.24 tons per day (tpd) of VOC emissions was estimated from all units studied at the refineries;
- For Shell, Chevron, Tesoro, and Valero refineries, all of the emissions were produced from the biological treatment unit;
- Uncontrolled process units (i.e., equalization ponds and clarifiers) that followed the biological treatment unit had negligible emissions; and
- ConocoPhillips had VOC emissions of 0.11 tpd from an open channel and Dissolved Air Floatation (DAF) unit vents.

The District evaluated three reliable and proven control technologies (i.e., steam stripper, liquid phase carbon adsorption unit, and doming tanks) known to reduce VOC emissions from refinery wastewater streams. For either a steam stripper or a liquid phase carbon adsorption unit, it would cost from \$1.35 million to \$1.42 million per ton to remove 0.14 tons of VOC per day. Only two refineries could dome (enclose) their treatment tanks. The doming would cost \$25,000 per ton removed, not including costs of abating the emissions, but reduce VOC emissions by only 0.025 tpd. District staff has concluded that additional amendments to Regulation 8, Rule 8 are not viable measure to address ozone at this time.

## ISSUES

The Workshop staff report was available for public review on September 27, 2004 and a public workshop was held in Martinez on October 27, 2005. The core issues raised during a technical workgroup meeting and public workshop concerned additional expenses and effectiveness of installing the control technologies, recommendation for monitoring effluent flowing into the biological treatment units, consideration of additional factors for determining feasibility of implementing controls at ConocoPhillips, and consideration of pollution prevention strategies as a cost-effective control for reducing VOC emissions. Staff considered these comments and made changes to the Draft Staff Report, as appropriate. A summary of the outstanding issues and responses is presented below:

Required Monitoring: Communities for a Better Environment (CBE) proposed that the District amend Regulation 8, Rule 8 to require monitoring of the wastewater entering the wastewater treatment systems to determine whether the new controls required on upstream collection components by the September 2004 amendments will increase hydrocarbon concentrations in the downstream treatment systems. District and CARB staff have estimated that hydrocarbon concentrations at the separators would increase from less than <0.5% to 16%, depending on the refinery. This incremental increase is within the natural variation seen during normal operations. Consequently, a requirement for additional monitoring of the effluent into the biological treatment units is not warranted. However, the District may use its



existing authority to sample, source test, or periodically monitor hydrocarbon concentrations at any of refineries' wastewater systems.

Feasibility of Implementing Controls at ConocoPhillips: CBE commented that the feasibility of implementing controls has not been evaluated adequately for ConocoPhillips. Although their emissions of 0.11 tpd are over 45% of all emissions from wastewater treatment systems, and staff has evaluated control technologies, staff does not believe that a regulatory amendment is necessary for one facility. ConocoPhillips is cooperating with the District to discuss possible controls.

Pollution Prevention Strategies: CBE commented that District staff did not evaluate the feasibility and cost-effectiveness of reducing VOC emissions through operational changes by implementing pollution prevention controls. Potential pollution prevention strategies designed to reduce the VOC concentrations entering the collection systems were discussed in the phase one staff report. The option of implementing pollution prevention strategies to control wastewater collection system components is included in Regulation 8, Rule 8. As noted by CBE, some of the refineries have implemented such programs in order to comply with the September 15, 2004 amendments. Any reductions of VOCs entering the wastewater stream at the collection system will reduce VOCs at the treatment systems. No additional pollution prevention strategies are available that would solely be applicable to the treatment systems without impacting, at the outset, the collection and separation systems. Consequently, no additional pollution prevention programs were discussed in the phase two staff report.

#### BUDGET CONSIDERATION/FINANCIAL IMPACTS

None

Respectfully submitted,

Jack P. Broadbent  
Executive Officer / Air Pollution Control Officer

Prepared by: Virginia Lau  
Approved by: Henry Hilken

Attachment:

Staff Report for Further Study Measure 9: Refinery Wastewater Treatment Systems

**Bay Area Air Quality Management District**

**939 Ellis Street  
San Francisco, CA 94109**

**Staff Report**

**Further Study Measure 9  
Refinery Wastewater Treatment Systems**

**November 2005**

**Prepared by:**

**Virginia Lau  
Senior Air Quality Specialist  
Planning and Research Division**

**And**

**Susan Adams  
Assistant Counsel**

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## **I. EXECUTIVE SUMMARY**

Each of the five Bay Area refineries has a system that collects and treats wastewater from refinery processes and operations prior to discharge as effluent into San Francisco Bay Area waters. Volatile organic compounds (VOC) are introduced into the wastewater system through refinery processes and are released into the atmosphere through volatilization from open tanks/ponds. The District regulates VOC emissions from wastewater collection and separation systems through Regulation 8, Rule 8. Currently, Regulation 8, Rule 8 requires the control of emissions and enclosure of all separator tanks, oil-water separators effluent channels, junction boxes, air-flotation units, and sludge-dewatering units.

In 2001, the District adopted the Revised San Francisco Bay Area 2001 Ozone Attainment Plan to attain the national one-hour ozone standard (the 2001 Ozone Plan). At that time, the District lacked adequate data to determine whether the imposition of controls or adoption of more stringent standards on then-uncontrolled components of a petroleum refinery's wastewater system would reduce volatile organic compound (VOC) emissions significantly at each of the five refineries. Accordingly, the District, jointly with the California Air Resources Board (CARB) undertook a two-phased study to investigate the wastewater collection and treatment systems components (Further Study Measure 9, "Refinery Wastewater Treatment Systems"). The District completed the first phase of the study in 2004, focusing primarily on wastewater collection systems that consist of drains from process units piped to mechanical separation, such as oil-water separators. On September 21, 2004, the District amended Regulation 8, Rule 8 to impose, among other measures, a more stringent vapor leak standard of 500 parts per million (ppm) on controlled wastewater collection systems components and oil-water separators and the requirement of a wastewater collection system inspection program. The District estimates that the September 2004 amendments to Regulation 8, Rule 8 will reduce VOC emissions by 2.1 tons per day (tpd).

This staff report describes the outcome from the study's second phase, which investigated whether there are potential significant VOC emissions reductions to be achieved from control of the refineries' secondary wastewater treatment components. Each refinery utilizes a treatment system that consists of various components, including oil-water separators, dissolved air/nitrogen flotation units, biological treatment units, clarifiers, and equalization ponds. To determine emissions from the uncontrolled units, District and CARB staff implemented a field investigation utilizing state-of-the art sampling and measurement techniques to collect direct vapor measurements from two of the refineries and wastewater samples from all five refineries. The field collected data were used in conjunction with refinery-specific process information to support development of a refinery-specific emission model for all five refineries. The District and CARB staff modeled the emissions from wastewater treatment systems because sampling at the large, open treatment units was physically infeasible, except at certain

locations.

The District estimates a total of 0.24 tons per day (tpd) of VOC emissions from the uncontrolled treatment units located at the five refineries. 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. The District selected for evaluation several control technologies known to reduce VOC emissions reliably and effectively 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.

Assuming a VOC emissions reduction of 0.14 tpd, 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 bermed 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 tpd, not including the costs of vapor control and construction of additional infrastructure to support the domes.

Since the beginning of this study, the District and CARB have invited representatives from the five Bay Area petroleum refineries, the Western States Petroleum Association (WSPA), the Regional Water Quality Control Board, Communities for a Better Environment (CBE), and outside environmental consultants to participate in technical working group meetings. The staff convened four working group meetings in 2005 to discuss the phase two work plan, proposed emissions models, sampling plan and methodology, and the control technologies and associated costs. In addition, the District held a Public Workshop on October 27, 2005 to solicit comments from the public on the District's determination not to amend the existing regulation. Summaries of public comments, with the staff's responses are included in Attachment A.

District staff has concluded that the estimated emissions reductions of 0.14 tpd to be achieved from additional controls of refinery wastewater treatment systems are not significant and that pursuant to Further Study Measure 9, additional amendments to Regulation 8, Rule 8 are not warranted at this time. The current costs to install, operate and maintain what are generally known as the proven wastewater treatment system control technologies and the uncertainty of their

compatibility with the refineries' existing treatment systems do not render additional controls viable at this time. Therefore, at this time, the District staff does not recommend any further rule amendments to existing Regulation 8, Rule 8.

## **II. BACKGROUND**

The District committed in its Revised San Francisco Bay Area 2001 Ozone Attainment Plan to examine whether the imposition of controls or adoption of more stringent standards on uncontrolled components of a petroleum refinery's wastewater system would reduce VOC emissions significantly at each of the five refineries. There are five petroleum refineries located within the District, which are owned and operated by Chevron, ConocoPhillips, Shell, Tesoro, and Valero. Each petroleum refinery has a unique configuration and system for collection and treatment of wastewater from refinery operations and processes. At the time of adoption of the 2001 Plan, the District lacked adequate data about each refinery to confirm whether there were significant VOC emissions from the refineries' wastewater systems.

Accordingly, the District and the California Air Resources Board (CARB) undertook a two-phased study to investigate the wastewater collection and treatment systems components (Further Study Measure 9, "Refinery Wastewater Treatment Systems"). In 2004, the District completed the study's first phase, which focused primarily on wastewater collection systems. Wastewater collection systems consist of drains from petroleum operations and process units that collect and transport effluent to the primary treatment systems. As a result of the study's first phase, District staff proposed amendments to the District's Regulation 8, Rule 8 pertaining to wastewater systems. The District's Board of Directors adopted the proposed amendments on September 21, 2004.

In 2005, the District and CARB staff commenced phase two of the study, pertaining to wastewater treatment processes. This Staff Report presents staff's findings.

### **A. Description of Petroleum Refinery Wastewater Treatment Systems**

Each Bay Area petroleum refinery collects wastewater from various refinery operations and transports it as influent to its wastewater treatment system. Figure 1 presents a simplified generic petroleum refinery wastewater treatment system. Each of the Bay Area refineries has a unique combination and configuration of some or all of the treatment processes shown in Figure 1.

Generally, primary wastewater treatment consists of oil-water separators and dissolved nitrogen flotation (DNF) or dissolved air flotation (DAF) units. An oil-water separator removes suspended solids and sludge, oil, and water from the influent. In the calm environment of the oil-water separator tanks, heavy organics and solids settle to the bottom and are removed as sludge or solids.

Lighter oils and organics float to the surface and are removed by mechanical skimmers and sent to slop oil tanks. In the slop oil tanks, the slop oil is treated for recycling or de-watered for disposal. The wastewater at all of the refineries undergoes oil-water separation. Regulation 8, Rule 8 requires enclosure of oil-water separators, oil-water separator effluent channels, and slop oil tanks.

Typically, the oil-water separator effluent is piped directly to DNF or DAF units. In the DAF and DNF units, air or gas percolates through the wastewater stream, causing floating oils and other floating liquid organic materials to float to the surface for removal by skimmers to slop oil tanks. Regulation 8, Rule 8 requires enclosure of DAF and DNF units to reduce VOC emissions. Shell, Tesoro, and Valero petroleum refineries operate DNF units. Vapor recovery systems abate VOC emissions from the DNF units. The ConocoPhillips petroleum refinery operates a four-cell DAF unit, which includes four uncontrolled, passive atmospheric vents to prevent the buildup of oxygen. A grated channel and a weir (channel/weir) transport the wastewater effluent from the DAF unit to secondary treatment. The Chevron petroleum refinery operates neither a DAF unit nor a DNF unit in its treatment system. The oil-water separator effluent is piped directly to the refinery's secondary treatment units.

Secondary treatment commences where wastewater leaves the dissolved gas flotation units or, in the case of the Chevron refinery, where the wastewater leaves the oil-water separator, and enters either equalization tanks or begins biological treatment. Equalization, which reduces fluctuations in the wastewater flow rate and organic content, results in a more uniform effluent quality for biological treatment. ConocoPhillips and Shell refineries utilize dedicated equalization tanks while Valero, Tesoro, and Chevron refineries pipe their effluent to biological treatment units. The Tesoro refinery pre-treats the wastewater (after dissolved gas flotation) by processing it through an air stripper to reduce hydrocarbon and volatile concentrations.

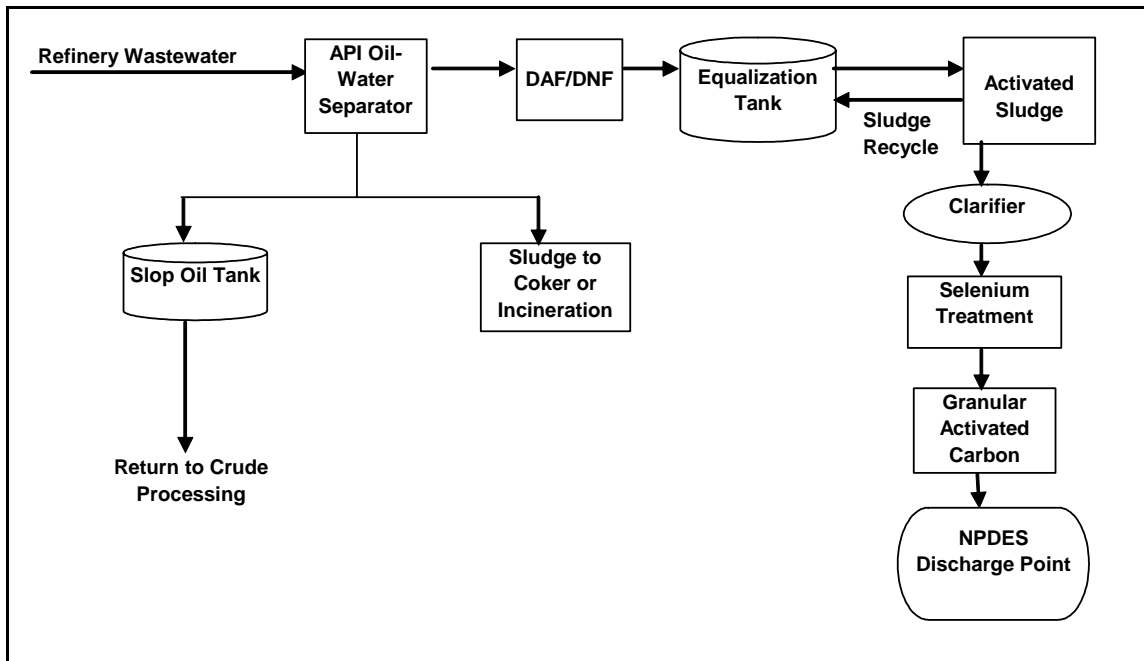
Biological treatment is the traditional method to remove dissolved and/or suspended organic and inorganic compounds from wastewater. Microorganisms used in the treatment feed on, and remove, the majority of the organic materials from the wastewater. Chevron and Tesoro biologically treat their wastewater in large, open and aerated, uncontrolled bermed ponds and lagoons that also act as equalization ponds. The ConocoPhillips and Valero refineries utilize activated sludge as their biological treatment process, which occurs in constructed tanks. Shell refinery's biological treatment includes activated sludge in an open, uncontrolled tank, as well as an aerated pond open to the atmosphere.

All of the Bay Area refineries utilize a combination of additional secondary processes to treat the effluent prior to discharge. Such processes include: flow controls; pH balancing; the addition of nutrients to protect the microorganisms; selenium removal; carbon filtration; and water-enhanced wetland treatment. The treated effluent must meet all applicable California Regional Water Quality

Control Board standards prior to discharge into San Francisco Bay Area waters.

During primary and secondary wastewater treatment operations, most VOC emissions occur as a result of volatilization through passive or active systems. Passive volatilization (i.e., diffusion) of VOCs occurs in open tanks, ponds, lagoons, and channels without aerators, where petroleum or partially-processed petroleum products in wastewater are much higher than ambient concentrations in air and thus, organics volatilize into air in an attempt to reach equilibrium between liquid and vapor phases. Active volatilization (i.e., convection) occurs when air flows or is injected into the water surface through mechanical energy, sweeping organic vapors from the water surface into the air. Active volatilization occurs in aerated portions of the biological treatment units and in the activated sludge tanks. Factors that affect the extent of volatilization include the physical properties of the contaminants (such as vapor pressure, Henry's Law Constant, solubility, and the gas/liquid partition coefficient), temperature of the wastewater, and the design and operation of the treatment units (such as the surface area, presence of foam, and turbulence).

**Figure 1: Simplified Refinery Wastewater Treatment System**



Source: U.S. EPA

## **B. Regulation 8, Rule 8**

The District regulates emissions from wastewater collection and separation systems in Regulation 8, Rule 8: Wastewater Collection and Separation Systems. The regulation requires refineries to enclose and control emissions from all wastewater collection system components: wastewater separators, wastewater separator forebays and oil-water separator effluent channels; air



flotation units; and sludge-dewatering units. These units must have a solid, gasketed, fixed cover; a floating vapor-tight cover; or abatement by a vapor recovery system that emits less than 1,000 parts per million (ppm) (expressed as methane).

The District amended Regulation 8, Rule 8 in September 2004, following completion of the CARB and District study of emissions from wastewater collection systems (drains, manholes, and junction boxes). The study, part one of a two-part study, determined that potentially significant emission reductions could be achieved from installing controls on refinery wastewater collection systems. Accordingly, the District amended Regulation 8, Rule 8 to require petroleum refineries to either install controls on, or institute a rigorous inspection and maintenance plan for, all wastewater collection systems components (drains, manholes, and junction boxes). Controls include installation of water seals or equivalent control measures. The inspection and maintenance plan requires that any uncontrolled wastewater collection component that is found not to be vapor-tight during three inspections within a five-year period must be equipped with a water seal or equivalent control. The District also amended the definition of "vapor-tight" to describe leaks of less than 500 ppm (expressed as methane) above background measured at the interface of the component.

The District estimates the September 2004 amendments to Regulation 8-8 will reduce VOC emissions by 2.1 tons per day (tpd).

### **C. Applicable Federal Regulations**

The federal New Source Performance Standards (NSPS) for VOC Emissions from Petroleum Wastewater Systems (40 C.F.R. Part 60, Subpart QQQ) and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Benzene Waste Operations (40 C.F.R. Part 61, Subpart FF) regulate the emissions of VOCs and toxic compounds from petroleum refinery wastewater systems.

The above-referenced New Source Performance Standards established performance standards for oil-water separators, individual wastewater collection drain systems, closed vent systems and control devices. Petroleum refineries must inspect and maintain their wastewater systems regularly. Any control device shall operate with an efficiency of 95 percent or greater to reduce VOC emissions vented to them. These standards apply to the five Bay Area petroleum refineries.

The Benzene NESHAP regulations apply to refineries that emit 10 tons per year (tpy) of any one hazardous air pollutant (HAP), or 25 tpy or more of total HAPs. All of the Bay Area refineries are subject to the Benzene NESHAP regulations. The regulations require petroleum refineries to use maximum achievable control technology (MACT) to control emissions of benzene from waste operations, including certain wastewater systems. The five Bay Area refineries use either

carbon adsorption or the collection and venting of wastewater gases to the refinery flare system (vent flap system) as their MACT to control benzene emissions from wastewater systems. Biological treatment units are not subject to these requirements if the benzene concentration in the influent entering the unit is less than 10 ppm by weight. District inspectors conduct unannounced inspections of the refineries' wastewater systems to ensure compliance with the Benzene NESHAP regulations.

### **III. SUMMARY OF TECHNICAL REVIEW**

The goal of phase two of the study was to determine whether there were significant potential VOC emissions from the petroleum refineries' wastewater treatment systems. The unique design of each refinery presented a challenge to District and CARB staff in conducting this study. It was infeasible to collect samples at each refinery to fully characterize emissions from the individual process units because they are large and open to the atmosphere. Instead, District and CARB staff modeled the emissions from each process unit by replicating each refinery's treatment system and calibrating the emissions based on direct vapor measurements.

Set forth below is a summary of the District and CARB modeling approach, the quantification of VOC emissions from the refineries' wastewater treatment operations, and the evaluation of the effectiveness of selected, known control measures to reduce emissions from wastewater streams at the five refineries.

#### **A. Evaluation and Quantification of Emissions**

##### **1. TOXCHEM+ Emissions Modeling**

Measuring air emissions from large and open treatment units is extremely difficult, if not impossible. Standard source test methods are infeasible because these units are not enclosed and the emission "points" can be several acres in area. In addition to the sampling constraints, the lack of sufficient walkways and piers along the perimeter of the lagoons and ponds limited accessibility and precluded the possibility of collecting samples from the shoreline. An alternative method was to estimate VOC emissions from treatment units by using modeling techniques that incorporate a set of complex mathematic equations to simulate real-life conditions. The advantage of modeling is that a user can develop refinery-specific treatment systems utilizing a combination of site-specific process conditions and default parameters based on studies conducted on similar systems.

District and CARB staff selected the state-of-the-art TOXCHEM+ empirical model to estimate VOC emissions from each refinery's wastewater treatment system. The TOXCHEM+ model is an EPA-approved model designed to quantify emissions from wastewater treatment systems and provides a method to

comprehensively evaluate the fate and transport of multiple organic compounds in wastewater during treatment.

To improve the accuracy of the modeling, District and CARB staff collected a representative subset of direct vapor measurements from treatment units at two of the refineries (Valero and ConocoPhillips) that the staff determined were the probable sources of a refinery's highest VOC emissions. Vapor measurements were collected in accordance with EPA's surface isolation emission flux chamber technology. The flux chamber technology is a validated EPA sampling approach for measuring the mass of contaminants that volatilizes from a surface area over time.

In addition to the vapor measurements, the District collected wastewater grab samples at the same locations as that of the flux chamber sampling, the purpose of which was to estimate the mass transfer of hydrocarbons that volatilize into the atmosphere from wastewater.

The District also collected influent wastewater samples at the entry to the biological treatment units and at the point of discharge into San Francisco Bay Area waters and used the sampling data as inputs into the TOXCHEM+ model runs for each refinery's process units. The model calculated potential emissions from each process unit, using a single gasoline range compound that was representative of each refinery's wastewater stream component.

Finally, the District measured emissions from the ConocoPhillips DAF vents. The District conducted a source test on the four DAF vents at ConocoPhillips by measuring the volumetric flow rate and individual chemical concentration emitted from each vent. The vent-specific VOC emissions were estimated by multiplying the sum of the individual non-methane hydrocarbon concentrations by the vent flow rates.

## 2. Emissions Estimates

The District has estimated that the uncontrolled secondary treatment units at all of the refineries and the uncontrolled primary units located at ConocoPhillips (i.e., DAF vents, channel/weir) emit a total of 0.24 tons per day (tpd) of VOCs (see Table 1). Of that total, ConocoPhillips contributes approximately 0.11 tpd. At four of the refineries, most VOC emissions occurred in the biological treatment units, which include activated sludge tanks. The District attributes the emissions to the volatilization that results from turbulent conditions. The open equalization ponds and clarifiers at all of the refineries had negligible emissions.

It is known that modeling emission estimates have some inherent uncertainties because mathematic equations approximate real life conditions. For example, a model computes a single concentration value for a component, but actual emissions of a component in the system can vary temporally, spatially, and

seasonally. Indeed, the District calibrated the TOXCHEM+ model based on direct vapor measurements collected on a single day of sampling at ConocoPhillips and Valero to estimate the VOC emissions from the biological treatment units and clarifiers at the Shell, Tesoro, and Chevron refineries. However, the District verified the estimations, by comparing the wastewater sample results collected from the point of discharge at these three refineries to the predicted discharge concentrations from TOXCHEM+. Using actual vapor emissions measured from ConocoPhillips and Valero refineries improved the accuracy of the estimated emissions. Actual VOC emissions are likely to be even lower than estimated emissions from the TOXCHEM+ model as calibrated for the specific refineries.

**Table 1: VOC Emission Estimates for Refinery Wastewater Treatment Units**

| Refinery       | DAF Vents (tpd) | Effluent Channels/ Weir (tpd) | Biological Treatment Units (tpd) | Equalization Ponds and Clarifiers (tpd) | Total Estimated VOC Emissions (tpd) |
|----------------|-----------------|-------------------------------|----------------------------------|---|-------------------------------------|
| ConocoPhillips | 0.083           | 0.022                         | 0.0026                           | *                                       | 0.108                               |
| Shell          | n/a             | n/a                           | 0.023                            | 0.0004                                  | 0.023                               |
| Tesoro         | n/a             | n/a                           | 0.049                            | *                                       | 0.049                               |
| Valero         | n/a             | n/a                           | 0.023                            | *                                       | 0.023                               |
| Chevron        | n/a             | n/a                           | 0.033                            | *                                       | 0.033                               |
| <b>TOTAL</b>   | <b>0.083</b>    | <b>0.022</b>                  | <b>0.131</b>                     | <b>0.0004</b>                           | <b>0.236</b>                        |

Note:

n/a: not applicable, these units are not presented at the refinery

\*: the model estimated that emissions from these process units were negligible (less than  $5 \times 10^{-10}$  tpd)

EPA has determined that the accuracy of the flux chamber sampling test method to measure vapor emissions is +/- 30%. The model could be refined even further by using other gasoline range compounds or using an alternative fate and transport model. However, District and CARB staff anticipates that such refinements would only increase the accuracy of the total estimated emissions to within a range of less than +/- 15%, which falls within the range of accuracy of the flux chamber test method. Moreover, further refinements introduce additional, unquantifiable uncertainties to the emission estimates.

## **B. Identification and Evaluation of Potential Controls**

As shown above, biological treatment units and the ConocoPhillips DAF vents generate the majority of VOC emissions during secondary treatment. In general, petroleum refineries can reduce VOC emissions from their secondary treatment processes either by removing VOCs from the wastewater stream prior to secondary treatment or by reducing the stream's exposure to the atmosphere during secondary treatment. Accordingly, District staff investigated several

control measures that are designed to achieve one or the other results. The District reviewed reports and studies on wastewater treatment operations and found that steam stripping and liquid phase carbon adsorption were the most reliable, proven, and commonly-used methods to reduce VOCs from wastewater streams. These controls could also reduce VOC emissions from the ConocoPhillips channel/weir depending on their placement. The District evaluated these two control technologies, the results of which are provided in this Staff Report.

The District also evaluated the use of membrane separation and chemical oxidation to reduce VOCs concentrations in the wastewater stream prior to, or during, biological treatment. The District determined that both of these measures were ineffective. Membrane separation is sensitive to fluctuations in the VOC content in the wastewater stream and hydrocarbons in the wastewater would deactivate particular catalysts used in chemical oxidation. The District also evaluated the installation of high-efficiency oil-water separators to reduce a stream's VOC content prior to secondary treatment. The results of that evaluation are also included in this Staff Report.

Last, the District identified installation of aluminum dome covers on activated sludge tanks as a method to reduce exposure of VOCs to atmosphere during biological treatment. This option is technically feasible at the ConocoPhillips and Valero refineries, which utilize activated sludge treatment in constructed tanks, and it is evaluated in this Staff Report.

### **Steam Stripping**

Steam stripping is a proven technology that removes volatile organic compounds from the wastewater stream prior to secondary treatment. Steam stripping removes organic compounds by placing the steam in direct contact with the wastewater. A typical steam stripping system is shown in Figure 2. Wastewater flowing down the steam stripper column comes into contact with the steam flowing up the column. The steam's heat vaporizes organic compounds in the stream. The vaporized organic compounds and uncondensed steam flow out the top of the column and are converted to liquid in an overhead condenser. That liquid flows to a decanter, where the organic compounds are captured on the liquid's surface and are either recycled or incinerated for heat recovery. The treated wastewater is transported from the bottom of the steam stripper to the secondary treatment system.

The efficiency of a steam stripper to remove VOCs ranges from 90 to 99 percent<sup>1</sup>. The VOC removal efficiency varies based upon the volatility and solubility of the particular volatile organic compounds in the stream. Steam

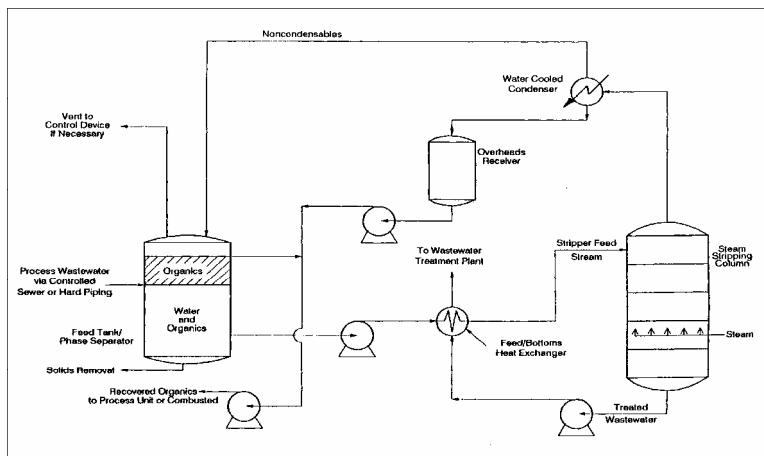
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<sup>1</sup> Highly volatile compounds that have Henry's Law Constant greater than  $1 \times 10^{-3}$  atm-m<sup>3</sup>/mole are reduced by 95 to 99 percent. Removal efficiencies decrease to 90 to 95 percent for medium volatility compounds that have Henry's Law Constant between  $1 \times 10^{-5}$  and  $1 \times 10^{-3}$  atm-m<sup>3</sup>/mole.

strippers require proper venting to a secondary control device to ensure optimal operation. Steam stripping is effective at removing the majority of petroleum-related volatile compounds, including benzene, ethylbenzene, toluene, and xylenes, from a refinery's wastewater stream.

This control technology requires monitoring to assure optimal operation.

**Figure 2: Typical Steam Stripper Design**



Source: U.S. EPA

### Liquid Phase Carbon Adsorption

Liquid phase carbon adsorption may be used as a stand-alone control device and as a secondary control device to reduce VOC emissions from the

gas-phase streams from a steam stripper. Liquid phase carbon adsorption utilizes “activated” carbon, i.e. carbon that has been processed to produce a porous structure. As wastewater passes through the activated carbon bed, organic compounds in the stream are adsorbed to the carbon and are removed.

Two types of liquid phase carbon adsorption are the fixed bed and moving bed systems. The fixed-bed system is ideal for low-flow wastewater streams where multiple carbon beds can be taken off-line and regenerated. A moving bed carbon adsorption system is in continuous operation with wastewater entering from the bottom of the column and regenerated carbon introduced from the top. Spent carbon is continuously removed from the bottom of the bed.

As a stand-alone control device, liquid phase carbon adsorption typically treats wastewater streams containing low concentrations of nonvolatile compounds and high concentrations of non-degradable compounds, such as polychlorinated biphenyls (PCBs). The removal efficiency ranges generally from 90 to 99 percent. This device is also suitable as a secondary control device to reduce VOC emissions from the feed tank of the steam stripper.

Refineries must continuously monitor liquid phase adsorption equipment to ensure that the carbon beds are regenerated.

### External Roof Tanks

An external floating roof for storage tanks is typically used to reduce volatilization

of VOCs from stored organic liquids. A typical floating roof tank consists of an open-topped cylindrical steel shell with a roof floating on the liquid that rises and falls with the liquid level in the tank. Because the tanks used at ConocoPhillips and Valero refineries were originally designed as open tanks, appropriate deck, fittings, and rim seal system are not available to support a floating roof. Instead, a domed (covered) external roof, which consists of a structure typically made of aluminum that is self-supporting from its periphery, may be installed on the constructed activated sludge tanks. The aluminum dome can be built on the ground and placed on top of the tank without removing the tank from service. Domed external roofs are anticipated to be almost maintenance-free.

A domed (covered) external floating roof would accommodate only the activated sludge tanks at the ConocoPhillips and Valero refineries.

The domed roof tanks require the installation of a vapor recovery system or a vapor control system to reduce VOC emissions. Typically, such vapor controls can reduce emissions up to 99 percent.

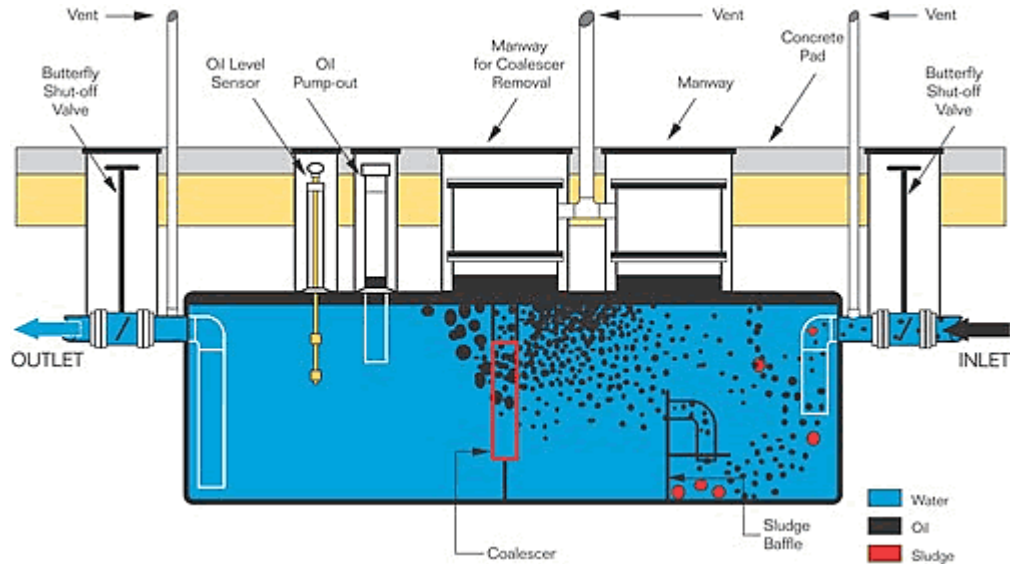
### **Emerging Technology**

The DAF vents at ConocoPhillips are responsible for 35% of the total VOC emissions from all five refineries. Although carbon adsorption canisters may be installed over each vent, the District has encountered problems with the canisters that may affect their long-term performance at reducing VOC emissions. For example, long chain hydrocarbons tend to clog the carbon pores, thus reducing the adsorption capacity of the carbon and requiring continuous regeneration and disposal. Another option is to reduce the VOC content of the wastewater stream prior to entry into the DAF unit through source control or installation of a high efficiency oil-water separation unit.

Petroleum refineries may improve recovery of petroleum products prior to entering the wastewater treatment systems by use of a higher performance oil-water separator that can reduce the hydrocarbon concentration in the effluent. Kleerwater© Oil-Water separators use coalescer balls to separate free-floating oils and greases from water mixtures.

Figure 3 presents a schematic of the Kleerwater technology. Influent enters the separator and passes through an inlet diffuser that reduces the velocity of the influent to facilitate deposition of the heavier matter. Large oil droplets begin to rise toward the oil-water interface. The remaining oil droplets attach to the surface of the coalescer balls which grow larger, release and rise to the oil/water interface. In tests, the separator has reduced hydrocarbon concentrations in effluent to as low as 5 parts per million (ppm). However, none of the Bay Area refineries has installed this technology and there is no certainty that the technology would exhibit the same level of performance at the refineries as demonstrated in the tests.

**Figure 3: Kleerwater© Oil Water Separator**



Source: US EPA

### **C. Evaluation of Cost and Cost-Effectiveness of Controls**

The District investigated the technical feasibility, potential emission reductions, and costs of installing and operating the control strategies identified in Section II.B. The District estimated the total annual costs of potential control technologies installed at all refineries, where feasible. The total annual costs for a control technology are calculated based on a ten-year period and are comprised of the annualized capital costs and the annual recurring operation and maintenance (O & M) costs.

Capital costs were estimated using the capital recovery method, which accounts for depreciation and interest (i.e., inflation) costs over the useful life of the control.



The District annualized the capital costs using the following equation:

$$\text{Annualized Cost} = (\text{Capital Recovery Factor}) \times (\text{Capital Expenditure})$$

Where:

*Capital Expenditure* is the equipment and installation costs

*Capital Recovery Factor* is 14.2% (7% per year over 10 years)

The District estimated the annual recurring O & M costs, which include expenditures for utilities, replacement of adsorption material, and inspections.

District staff estimated a control technology's' cost effectiveness by summing the total annual costs for the control technology installed at all of the refineries and dividing that sum by the total annual VOC emissions reductions to be achieved from all refineries.

### **Steam Stripper**

Capital costs to install a steam stripper at each petroleum refinery were based on EPA (1992) estimated costs that the District adjusted to reflect 2005 U.S. dollars based on the consumer price index. These costs are based also on the number and size of steam strippers needed to treat the average wastewater flow at each of the refineries.

The capital costs to install a steam stripper at each refinery are estimated to be between about \$11.7 million and \$40.9 million, as shown in Table 2. When annualized over ten years, the total annual costs are between \$7.1 million and \$24.8 million per year, including annual O&M costs. The costs include equipment and direct installation costs, based on engineering cost estimation techniques. The purchased equipment costs assume a carbon steel construction system that consists of the feed tank and stripper column, auxiliary piping and equipment, and instrumentation, plus freight and taxes. The direct installation costs include engineering design and construction, start-up and testing, electrical wiring, insulation, equipment support, and painting.

The total capital costs do not include the necessary additional costs to install a control device at each refinery to vent emissions from the steam stripper. All of the Bay Area refineries have such controls already. However, the District staff understands that the refineries' existing vapor recovery units operate at or near capacity. Accordingly, the refineries must modify their control systems extensively to accommodate the additional vapor load from a steam stripper to the existing recovery unit or to install additional vapor recovery devices.

In addition, the estimated total capital costs do not include capital equipment expenditures (such as a new boiler to generate steam), installing scrubbers, land acquisition to contain the system, and construction of a structure to house the

system. Moreover, the estimated capital costs do not account for system upgrades, expansions or additional systems to treat the refineries' wet weather flow conditions.

Annual recurring costs are comprised of direct and indirect costs. The direct expenses include utility costs to operate the steam stripper, such as electricity, steam, and water, and general maintenance and repair costs. The refineries will have increased recurring costs of periodically monitoring the performance of the stripper. Indirect costs include property taxes, insurance, and administrative costs, estimated based on a percentage of the total capital costs. The annual recurring cost do not account for any benefit derived from the recovery of organic material.

**Table 2: Annual Costs for Steam Stripper**

| <b>Refinery</b> | <b>Capital Cost<br/>(Thousand Dollars)</b> | <b>Annualized<br/>Capital Cost<br/>(Thousand Dollars<br/>per Year)</b> | <b>Annual<br/>Recurring<br/>O&amp;M Costs<br/>(Thousand Dollars per<br/>Year)</b> | <b>Total Annual<br/>Cost<br/>(Thousand Dollars<br/>per Year over 10<br/>years)</b> |
|-----------------|--|--|---|--|
| ConocoPhillips  | 14,320                                     | 2,033  | 6,655   | 8,689  |
| Shell           | 29,515                                     | 4,191  | 13,739  | 17,930   |
| Tesoro          | 21,164                                     | 3,005  | 9,832   | 12,837   |
| Valero          | 11,725                                     | 1,665  | 5,435   | 7,100  |
| Chevron         | 40,860                                     | 5,802  | 19,016  | 24,819   |
| <b>Total</b>    | <b>117,584</b>                             | <b>16,696</b>  | <b>54,677</b>   | <b>71,375</b>  |

Based on the estimates of 0.15 tpd of VOC emissions (Table 1) from biological treatment units and channel/weir, it is expected that 0.14 tpd (50.3 tons per year) of emission reductions can be achieved by installing a steam stripper, assuming a 90% removal efficiency. The cost-effectiveness to reduce emissions from all refineries from their biological treatment units and ConocoPhillips' channel/weir is \$1.42 million per ton of VOCs reduced. This cost does not include the additional expenses noted above, such as installation or modification of existing vapor recovery systems. This control technology applied to the refineries' current treatment systems does not achieve adequate VOC reductions to warrant the costs.

### **Carbon Adsorption**

Capital costs for installation of liquid phase carbon adsorption units to handle flow rates exceeding 100,000 gallons per day are generally \$8.38 per 1,000 gallons of treated wastewater. This cost is based on EPA estimates, adjusted to reflect 2005 dollars. The actual unit construction cost may vary, depending upon the chemical concentrations and flow rates of the particular wastewater stream, the type of contaminants in the stream, mass loading, required effluent concentration, and site/timing requirements. The estimated annual installation

and operating costs for a carbon adsorption unit at each refinery are presented in Table 3. The costs are based on the estimated general unit cost of \$8.38 per 1,000 gallons of treated wastewater.

The listed costs include neither the additional costs to dispose of spent carbon nor the costs to modify the existing vapor recovery unit to treat the additional vapor load.

The refineries must conduct pilot tests to verify the effectiveness of the control at reducing VOC emissions from their particular wastewater treatment system. The total capital costs do not include the cost of such pilot tests.

The cost-effectiveness of installing a liquid phase carbon adsorption system was estimated assuming that 0.14 tpd of VOCs would be removed based on a 90% removal efficiency. The total annualized costs from all refineries ranged from \$6.7 million to \$24 million. Therefore, the cost-effectiveness to reduce emissions from the biological treatment units and channel/weir is \$1.35 million per ton of VOC reduced. This technology, as applied to the refineries' current treatment systems does not cost-effectively reduce the estimated VOC emissions.

**Table 3: Annual Costs for Carbon Adsorption Equipment**

| Refinery       | Total Annual Cost of Installing and Operating a Carbon Adsorption Unit<br>(Thousand Dollars per Year) |
|----------------|---|
| ConocoPhillips | 8,258   |
| Shell          | 17,126  |
| Tesoro         | 12,233  |
| Valero         | 6,728   |
| Chevron        | 23,733  |
| Total          | 68,078  |

Source: Federal Remediation Technology Roundtable (FRTR). Downloaded from [www.frtr.gov/matrix2/section4/4-47.html](http://www.frtr.gov/matrix2/section4/4-47.html)

Moreover, there are several limitations with this control technology that may restrict its effectiveness at removing hydrocarbons from individual refinery wastewater streams and render it less effective than that of a comparably-priced steam stripper. For example, the presence of multiple contaminants can possibly impact the performance of the unit. Influent with high suspended solids and oil and grease may also cause fouling of the carbon and require extensive pretreatment.

**External Roof Tanks**

District staff also considered the possibility of installing a domed roof on top of the biological treatment units to reduce VOC emissions. Only ConocoPhillips and Valero refineries have activated sludge tanks that can actually sustain an

external domed roof. Neither refinery could utilize a floating roof tank. The Tesoro and Chevron refineries would have to replace their existing biological treatment system in bermed, aerated lagoons and ponds with tanks and install foundations/infrastructure to support the domes and tanks. The Shell refinery has a tank and pond treatment system. The District did not estimate the costs to install a dome on the tank because the aerated pond was the major source of emissions.

To evaluate the feasibility of doming the tanks, District staff reviewed the staff report prepared by South Coast Air Quality Management District (SCAQMD) in 2001. That year, SCAQMD adopted Rule 1178 to reduce VOC emissions from storage tanks at petroleum facilities by doming tanks that store high vapor pressure material. The SCAQMD staff report provided costs to install a domed roof on external floating roof tanks containing liquids with vapor pressures greater than or equal to 3 psia. SCAQMD staff contacted three manufacturers and found that tank costs depended on the diameter of the tanks.

For ConocoPhillips and Valero refineries, each tank ranged from 40 to 100 feet in diameter. Based on the costs provided in the SCAQMD report, the capital cost to install a single aluminum dome roof on an existing external floating roof tank would range from \$80,000 to \$153,000 depending on the diameter of the tank. That cost includes the installation of a fire-suppression system, which requires additional fixed or semi-fixed piping and foam nozzles to dispense fire suppressant foam. Capital costs were estimated assuming that two 100-foot diameter tanks would be domed at the ConocoPhillips refinery and five 50-foot tanks would be covered at the Valero refinery. This cost estimate does not include the additional expenses to modify the existing activated sludge tanks, by installing proper seals and deck fittings and ensuring that a suitable foundation and infrastructure with utility lines are in place to sustain the dome roof.

Annual operation and maintenance costs were estimated as 9% (4% for administrative costs and 5% for maintenance cost) of the capital cost. Table 4 presents the average total annualized cost for doming the activated sludge units.

The estimated emission reductions from doming the tanks at ConocoPhillips and Valero refineries, assuming a 95% removal efficiency, would total 0.025 tpd (nine tons per year) from the biological treatment units. The total annual costs for doming these tanks ranged from \$82,600 to \$139,000. Therefore, the cost-effectiveness to reduce emissions from biological treatment units is \$25,000 per ton of VOCs reduced.

**Table 4: Annual Costs for Dome Roof**

| <b>Refinery</b> | <b>Capital Cost</b><br>(Thousand Dollars) | <b>Annualized Capital Cost</b><br>(Thousand Dollars per Year) | <b>Annual Recurring O&amp;M Costs</b><br>(Thousand Dollars per Year) | <b>Total Annual Cost</b><br>(Thousand Dollars per Year over 10 years) |
|-----------------|---|---|--|---|
| ConocoPhillips  | 365                                       | 50  | 32   | 83  |
| Valero          | 600                                       | 85  | 54   | 139   |
| <b>Total</b>    | <b>965</b>                                | <b>135</b>  | <b>86</b>  | <b>222</b>  |

Since issuance of the SCAQMD report, stakeholders in the South Coast region have reviewed SCAQMD cost estimates and concluded that their cost estimates were 30 percent lower than actual costs for installing a dome. In addition, since adoption of Rule 1178, industries at SCAQMD have proposed to dome only tanks less than 95 feet in diameter due to cost effectiveness considerations.

In addition to the structural limitations described above, the Bay Area refineries would need to vent the vapor losses to either an existing vapor recovery system that can handle the additional load or modify or construct an on-site vapor control system. Although the costs to install aluminum domes are substantially lower than the other two control options, the emission reductions are also significantly lower and there are significant uncertainties regarding the feasibility of installing domes on existing tanks that were not originally designed to handle a roof. Overall, this option has many uncertainties that make it an unreliable VOC control measure.

For all the remaining refineries, doming the biological treatment units would be cost prohibitive. The refineries would have to construct tanks to replace the existing lagoons and ponds. One refinery provided a summary of actual capital costs spent on constructing a single activated sludge tank that exceeded \$30 million dollars.

#### **IV. SUMMARY OF PUBLIC CONSULTATION PROCESS**

District staff has undertaken a comprehensive evaluation of refineries' treatment systems in order to complete Phase Two of the study under Further Study Measure 9. The process involved extensive participation from the public and affected parties. District staff met with its advisory technical working group and held a public workshop prior to a public hearing before the Board of Directors.

##### **A. Technical Working Group**

District staff formed a Regulation 8, Rule 8 working group in 2002 to review technical issues concerning wastewater collection and treatment systems during Phases One and Two of the Further Study Measure 9 study. The technical

working group was comprised of representatives from CARB, Western States Petroleum Association (WSPA), the five Bay Area Refineries, the California Regional Water Quality Control Board, Communities for a Better Environment (CBE), and District staff. For phase two of the study, District convened four meetings and held conference calls. The group participated in the development of the work plan, the refineries' sampling plans, and modeling approach. The group also discussed the wastewater emission estimates, potential control technologies, costs of emissions controls, and treatment of confidential information. The following is a summary of the meetings:

#### April 4, 2005 Meeting

The kick-off meeting began with introductions followed by a discussion of the Draft Phase Two Work Plan. The purpose of the Work Plan was to provide a strategy for identifying uncontrolled sources and estimating VOC emissions from refinery wastewater treatment process. The Draft Work Plan included the proposed sampling methodology, sampling approach, overall costs of the project, and proposed schedule. Members discussed potential financial contributions from petroleum refining industry representatives to support the sampling plan and discussed a proposed schedule for refinery site visits.

#### June 8, 2005 Meeting

The members discussed the draft conceptual sampling plan that outlined the sampling methodologies to be used, laboratory analysis, emission modeling approach, and quality assurance protocol. Based on the modeling completed on the phase one study, the workgroup members agreed, based on consistency, to continue to use the TOXCHEM+ model to estimate emissions from the treatment systems. The members also agreed that the model results would be calibrated using the direct vapor measurements collected from the two refineries.

#### September 14, 2005

The members discussed the preliminary results of the sampling and modeling at the five Bay Area refineries. They also discussed VOC emissions estimated using the TOXCHEM+ model and calibration of the model using the flux chamber results.

#### October 20, 2005

The members discussed potential control technologies to reduce VOC emissions and the technical feasibility of installing the technologies. The discussion included a summary of costs for installing and operating the control strategies as well as anticipated emission reductions.

### **B. Public Workshop**

On September 27, 2005, staff published a Workshop Staff Report that presented staff's technical analysis and recommendations not to amend Regulation 8, Rule 8 at this time. Staff held one workshop in Martinez, California on October 27, 2005 to solicit public comments on District staff's recommendation. The District

also provided a public comment period from September 27 – November 3, 2005 for interested parties to submit written comments to the District. Discussions and responses to comments received during the public comment period are presented in Attachment A.

## **V. REASONS FOR NOT PROPOSING FURTHER AMENDMENTS TO REGULATION 8, RULE 8 AT THIS TIME**

The District staff has determined that significant VOC emission reductions from existing secondary treatment systems would not be obtained at this time at a reasonable cost. Staff has estimated that conservatively, the five refineries emit up to a total of 0.24 tpd of VOCs into the atmosphere. Control of the wastewater treatment systems will not produce significant reductions of VOC emissions in the Bay Area. The imposition of controls will reduce VOC emissions by 0.14 tpd. At this time, further amendments to Regulation 8, Rule 8 are not viable options to reduce VOC emissions.

If the District determines to adopt or amend a District regulation, it must consider the cost to implement the rule and achieve air quality improvements. There is no such requirement where the District investigates whether, and determines not to adopt or amend a District regulation. That said, District staff have considered the cost-effectiveness of potential further controls in phase two of its Further Study Measure 9 study as one factor in its determination not to propose further controls on refinery wastewater treatment systems. The District staff identified, and estimated the costs to install, the three most reliable, proven technologies to control VOCs in refinery wastewater treatment systems, either by removing VOC emissions from the wastewater streams prior to secondary treatment or by controlling VOCs during treatment. Staff estimated the direct capital costs and limited O & M costs to install these control technologies, conservatively excluding the necessary appurtenant costs to install new control devices at the existing facilities. For example, the costs did not include the construction expenses to contain open bermed ponds. Similarly, the capital costs did not cover installation of additional control devices to treat high wastewater flows during wet weather conditions. Under the District's traditional cost-effectiveness analysis for proposed rule amendments, the District found that even the most reliable measures to control VOC emissions in wastewater treatment systems were not cost-effective measures at the refineries for addressing ozone.

Moreover, District staff could not confirm that these technologies, while proven generally, are feasible to install at the any of the Bay Area refineries or are compatible with the refineries' current treatment systems. For example, each of the refineries must conduct pilot testing of a carbon adsorption system to confirm its efficiency to remove hydrocarbons from that refinery's wastewater stream.

## **VI. CONCLUSION**

The District and CARB committed in the 2001 Ozone Plan to assess whether there are potential significant VOC emissions from refinery wastewater collection and treatment systems as a measure to reduce ozone. Last year, the District adopted requirements that impose stringent controls on the collection systems. This year, District staff has evaluated refinery wastewater treatment systems. Based on emission estimates developed from field tests and modeling techniques, staff estimated that a total of 0.24 tpd of VOCs are emitted to the atmosphere from the treatment process from all five refineries. During secondary treatment, the majority of emissions are produced from biological treatment units, where the wastewater is exposed to the atmosphere. District staff has determined that the imposition of even the most reliable, proven technologies will reduce VOC emissions by 0.14 tpd.

The District staff has determined that significant VOC emission reductions from existing secondary treatment systems would not be obtained at this time at a reasonable cost. Further, there is a potential incompatibility of installing of these proven control technologies at these refineries.

Accordingly, controlling emissions from wastewater treatment systems is not a viable measure to address ozone at this time. District staff does not find that further amendments of Regulation 8, Rule 8 are warranted.

## **VII. REFERENCES**

1. California Air Resources Board Draft Technical Assessment Document (TAD) "Potential Control Strategies to Reduce Emissions for Refinery wastewater Collection and Treatment Systems." January 2003.
2. South Coast Air Quality Management District, "Draft Staff Report Proposed Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities," October 26, 2001.
3. The TGB Partnership. Letter submitted from Rob Ferry to the BAAQMD entitled, "Commentary on the WSPA Cost-Effectiveness Analysis of Requiring Domes for EFRTs at Bay Area Refineries." Dated October 27, 2004.
4. United States Environmental Protection Agency, AP-42 "Waste Water Collection, Treatment And Storage," January 1995.
5. United States Environmental Protection Agency, 1989 "Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry – Background Information for Proposed Standards. Volume 1B, Control Technologies," November 1992.



## **ATTACHMENT A: RESPONSES TO PUBLIC COMMENTS**

This section presents a summary of public comments that were received during the workgroup meeting, public workshop, or as part of the public consultation process.

### **Workgroup Meeting**

Following the October 20, 2005 workgroup meeting, WSPA submitted written comments on the Workshop Staff Report. First, WSPA noted that the costs listed in the Workshop Staff Report to implement the control technology for steam strippers were inconsistent with the cost analysis provided during the October 20 technical working group meeting. Second, WSPA noted that the District did not estimate the cost of installing the steam stripper and liquid phase carbon adsorption unit based on maximum flow rates, which occur during wet weather conditions, thereby affecting the size of the particular controls required for each refinery. Also, WSPA stated that a liquid phase carbon adsorption unit is not a reliable control for treating wastewater influent. Last, WSPA stated that the costs to install and operate many of the controls were under-estimated because the District did not include the costs for installing supporting units and infrastructure in its cost analysis. Staff has corrected the cost analysis and included an itemization of probable additional capital expenses into Section III C.

### **Public Workshop**

During the public workshop on October 27, 2005, CBE proposed that the District amend Regulation 8, Rule 8 to require monitoring of the wastewater entering the wastewater treatment systems to determine whether the new controls required on upstream collection components by the September 2004 amendments will increase hydrocarbon concentrations in the downstream treatment systems. District and CARB staff have estimated that less than 1 part per million (ppm) to 26 ppm of additional hydrocarbon would be introduced into the separation system, depending on the refinery, based on refinery-specific wastewater concentrations and flow rates. The hydrocarbon concentration at the separator is anticipated to incrementally increase by less than <0.5% to 16%. Although the hydrocarbon concentration would significantly decrease once it is processed through the oil-water separators and dissolved gas flotation units, the incremental increase in hydrocarbon concentrations is within the natural variation seen during normal operations and within the boundaries of wet weather seasonal variations. Moreover, increased hydrocarbon concentrations do not correlate directly to more VOC emissions. District staff does not expect VOC emissions from the treatment system to increase beyond levels typical of seasonal and wet weather flow conditions. Therefore, additional monitoring of the effluent into the biological treatment units is not warranted.

CBE also suggested that the District's review of Regulation 8, Rule 8 should include an evaluation of the toxicity of the volatile organic compounds released from wastewater treatment systems and the impact of those releases on refinery

workers and nearby communities. CBE noted the potential impact in particular upon the working and residential communities adjacent to ConocoPhillips, which the District has estimated is the refinery with the highest uncontrolled VOC emissions from its wastewater treatment system.

The District has conducted a preliminary risk evaluation of potential health risks from VOC emissions from the ConocoPhillips wastewater treatment system to the refinery's nearest resident and to workers in the nearby community. District staff estimated downwind annual air concentrations for off-site workers and the nearest resident (using EPA's air dispersion model, SCREEN) and compared the estimated air concentrations to acceptable, health-protective concentration limits promulgated by EPA Region 9 for which an individual may be exposed to VOC compounds over their lifetime. District staff determined that under these worst-case conditions, the predicted annual air concentrations of residents and off-site workers were below EPA limits<sup>2</sup>, applying EPA's risk assessment methodology.

District staff also conducted a similar preliminary risk evaluation for on-site workers in the vicinity of the wastewater treatment system. The American Conference of Government Industrial Hygienists (ACGIH) sets limits of air concentrations for which workers may be repeatedly exposed daily without adverse effect (based on an 8-hour day, 40-hour workweek). Staff estimates that the on-site workers' exposures to air concentrations are significantly below the ACGIH time-weighted average threshold limits<sup>3</sup>.

The District staff's preliminary risk evaluation does not identify adverse effects overall to off-site residents, off-site workers, or on-site workers from uncontrolled VOC emissions from ConocoPhillips' wastewater treatment system. Because emissions from the other refineries' wastewater treatment systems are much lower, the worker and off-site exposures would be much lower as well. The results of this evaluation further support the District staff's recommendation not to amend Regulation 8 Rule 8 at this time as an ozone measure.

### **Public Comment Period**

During the public comment period, the District received one comment letter from CBE dated November 3, 2005. First, CBE commented that the District staff did not evaluate the feasibility and cost-effectiveness of reducing VOC emissions through operational changes by implementing pollution prevention controls. Potential pollution prevention strategies designed to reduce the VOC concentrations entering the collection systems were discussed in the phase one staff report. The District staff has included the option of implementing pollution prevention strategies to the refineries for controlling wastewater collection system

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<sup>2</sup> US EPA Region 9 Preliminary Remediation Goals (PRGs) 2004 Table.  
<http://www.epa.gov/region09/waste/sfund/prg/>

<sup>3</sup> American Conference of Governmental Industrial Hygienists (2004), 2004 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.

components in the phase one staff report and as noted by CBE, some of the refineries have implemented such programs in order to comply with the September 15, 2004 amendments to Regulation 8, Rule 8. Any reductions of VOCs in the wastewater stream will reduce VOCs at the treatment systems. No additional pollution prevention strategies are available that would solely be applicable to the treatment systems without impacting, at the outset, the collection and separation systems. Consequently, no additional pollution prevention programs were discussed in the phase two staff report.

Second, CBE commented that the feasibility of implementing controls has not been evaluated adequately for ConocoPhillips which is responsible for over 45% of all emissions from wastewater treatment systems. CBE adds that the District ignores factors such as hot spots emissions, toxicity risk, and outdated technology and environmental justice in its feasibility analysis. As stated in response to the CBE comments on the public workshop, the District staff took into account many factors in considering its recommendation not to amend Regulation 8, Rule 8. ConocoPhillips is cooperating with the District to evaluate options to reduce emissions from the channel/weir and DAF vents.

Lastly, CBE recommends that additional monitoring of VOC inputs to the refinery wastewater treatment systems is required. As discussed in the response to CBE comments on the public workshop, VOC concentrations in the wastewater stream are not anticipated to increase by more than 16% due to controls placed on upstream collection systems. This incremental increase is within the natural variation seen during normal operations and within the boundaries of wet weather seasonal variations. Consequently, a requirement for additional monitoring of the effluent into the biological treatment units is not warranted. However, the District may use its existing authority to sample, source test, or periodically monitor hydrocarbon concentrations at any of refineries' wastewater systems.