

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

ADVISORY COUNCIL REGULAR MEETING & RETREAT
and
MEETING OF THE PUBLIC HEALTH COMMITTEE
MEETING OF THE AIR QUALITY PLANNING COMMITTEE
MEETING OF THE TECHNICAL COMMITTEE
10:00 a.m., Wednesday, January 8, 2003 – Board Room

AGENDA

1. Call to Order – Roll Call

2. Public Comment Period

The public has the opportunity to speak on any agenda item. All agendas for Advisory Council meetings are posted at the District, 939 Ellis Street, San Francisco, at least 72 hours before a meeting. At the beginning of the meeting, an opportunity is also provided for the public to speak on any subject within the Council's purview. Speakers are limited to five minutes each.

3. Recognition of Outgoing Council and Committee Chairs - William Hanna, Chairperson

4. Approval of Minutes of November 13, 2002

5. Staff Presentations:

(A) Greenhouse Gas Emissions Inventory

Staff will address the Council on a recent proposal by the Sonoma County Climate Protection Group regarding development of a regional greenhouse gases emission inventory.

(B) 2004 Ozone Attainment Plan

Staff will provide an update on the 2004 Ozone Attainment Plan.

6. Reports of Standing Committees

(A) Public Health Committee Meeting of December 9, 2002

The Committee will present recommendations on particulate matter abatement for consideration by the Council.

(B) Air Quality Planning Committee Meetings of December 9, 2002 and January 6, 2003

The Council will receive and discuss some preliminary recommendations from the Committee on vehicle Inspection & Maintenance (I&M).

(C) Technical Committee Meeting of December 3, 2002

(D) Executive Committee Meeting of January 8, 2003

The Council Chair will report on study topic assignments and referrals made to the Standing Committees. The Council will hold a round-table discussion of the Committee assignments.

7. Working Lunch for Meetings and Discussion Sessions of the Public Health Committee, Air Quality Planning Committee and Technical Committee

The Council will participate in a working lunch/Standing Committee format in which each Standing Committee will separately meet to discuss and give priority to the study topics referred by the Executive Committee as well as those suggested by individual Committee members. The Committees will also establish a meeting schedule for the year.

8. Reconvene to Full Council Format for Follow-up on Committee Discussion Sessions

The Advisory Council will reconvene to receive the reports of the Standing Committees on their study topic priorities and meeting schedule, and to conduct any further round table discussion concerning them.

9. Council Members Comments/Other Business

Any member of the Council, or its staff, on his or her own initiative, or in response to question 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 on any matter or take action to direct staff to place an issue on a future agenda.

10. Time and Place of Next Meeting

10:00 a.m., Wednesday, March 12, 2003, 939 Ellis Street, San Francisco, California 94109.

11. Tour of District Divisions & Facility

District staff will provide Council members with a tour of the District facility and its Divisions.

12. Adjournment

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

CLERK OF THE BOARDS OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS
JANUARY 2003

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Air Quality Planning Committee	Monday	6	9:30 a.m.	Room 716
Advisory Council Executive Committee	Wednesday	8	9:00 a.m.	Room 716
Advisory Council Regular Meeting/Retreat	Wednesday	8	9:30 a.m.	Board Room
Board of Directors Mobile Source Committee	Thursday	9	9:30 a.m.	4th Floor Conf. Room
Board of Directors Regular Meeting	Wednesday	15	9:45 a.m.	Board Room
Board of Directors Budget & Finance Committee	Wednesday	22	9:30 a.m.	4th Floor Conf. Room
Board of Directors Personnel Committee	Friday	24	9:30 a.m.	4th Floor Conf. Room
- CANCELLED -				
Board of Directors Executive Committee	Wednesday	29	9:30 a.m.	4th Floor Conf. Room

MR:mr
12/17/02 (11:20 a.m.)
P/Library/Calendar/Moncal

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

CLERK OF THE BOARDS OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS
F E B R U A R Y 2 0 0 3

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Technical Committee	Tuesday	4	10:00 a.m.	4th Floor Conference Room
Board of Directors Regular Meeting	Wednesday	5	9:45 a.m.	Board Room
Board of Directors Public Outreach Committee	Monday	10	10:00 a.m.	4th Floor Conf. Room
Board of Directors Mobile Source Committee	Thursday	13	9:30 a.m.	4th Floor Conf. Room
Board of Directors Regular Meeting	Wednesday	19	9:45 a.m.	Board Room
Board of Directors Budget & Finance Committee	Wednesday	26	9:30 a.m.	4th Floor Conference Room

MR:mr
12/16/02 (3:07 p.m.)
P/Library/Calendar/Moncal

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

DRAFT MINUTES

Advisory Council Regular Meeting
10:00 a.m., Wednesday, November 13, 2002

1. **Call to Order – Roll Call.** 10:13 a.m. Quorum present: Robert F. Sawyer, Ph.D., P.E., Sam Altshuler, P.E., Elinor Blake, Harold Brazil, Patrick Congdon, Ignatius Ding, Fred Glueck, William Hanna, Rob Harley, Ph.D., Jane Kelly, Kraig Kurucz, Norman A. Lopera, Jane Seleznow, Kevin Shanahan, Brian Zamora. Absent: Stan Hayes, William A. Nack, Jill Stoner.

Chairperson Sawyer welcomed new “Public Mass Transportation” category member Harold M. Brazil of the Metropolitan Transportation Commission to the Advisory Council. He fills an unexpired term that concludes in December of 2003.

2. **Public Comment Period.** There were no public comments.
3. **Approval of Minutes of September 11, 2002.** Mr. Lopera moved approval of the minutes; seconded by Ms. Blake; carried.
4. **Reports of Committees.**

(A) Standing Committees:

- (1) Public Health Committee Meeting of October 28, 2002. Mr. Zamora stated the Committee received an update from staff on the progress of the adoption of the model wood smoke ordinance. Marin County will soon hold a public hearing on the ordinance, and Solano County will likely do so next year. Staff also provided a presentation on the District’s emissions offset program for ozone and particulate matter (PM). The Committee is discussing the program from a public health standpoint and may consider the possibility of providing for a percentage lapse of emission credits over time. It is also in the process of developing some preliminary recommendations on PM abatement at the District.
- (2) Air Quality Planning Committee Meetings of September 24 and October 31, 2002. Mr. Glueck stated the Committee is developing preliminary recommendations on vehicle Inspection & Maintenance (I&M) which include the following:
- reducing emissions from gross polluting vehicles (GPVs) through the use of remote sensing devices and by improving repairs to ensure greater repair longevity.
 - reinstating the Bureau of Automotive Repair (BAR) vehicle buy-back program, and coordinating it with the District’s program, and increasing vehicle buy-back funding.
 - improving the Emission Factor (EMFAC) model so that it accounts for real-world, on-road emissions data and focuses more effectively on hydrocarbon (HC) emissions.

- basing cost-benefit analyses of emissions impacts on the statistic that 5% of vehicles are responsible for 83% of the HC, carbon monoxide (CO) and nitric oxide (NO_x) emissions, although the 5% vehicle subsets for each pollutant are distinct from each other.
- eliminating the two-year waiver program because waived vehicles, which include GPVs, contradict the purpose of the I&M program.
- accounting for social equity impacts associated with any of the proposals.
- proposing legislation authorizing a \$1-\$3 increase in vehicle registration fees to support remote sensing pilot programs and augment repair assistance and buy-back/scrappage programs. Significant revenue would be generated for the region from the 2.2 million vehicles that are tested annually in the Bay Area's I&M program.
- placing older vehicles on an annual testing schedule to obtain more frequent emission monitoring and assessment of repair longevity.
- adopting an aggressive public relations program to support these recommendations.
- forwarding the recommendations with statewide implications to the state I&M Review Committee (I&MRC) for an additional level of expert evaluation and comment.

In discussion of whether such high-use vehicles as taxis and government fleets were self-certifying, Mr. Norton stated he is in contact with a company that installs emissions diagnostic equipment in taxis and paratransit vehicles. Data is relayed to a satellite and onto the Internet, notifying the company and owner of vehicular non-compliance. The company must secure the necessary repairs within 14 days of the notification. Staff requests the Council to evaluate whether the District should test such equipment in a pilot project, which is a variation of remote sensing. Chairperson Sawyer opined that the installation of such diagnostic equipment in taxicabs would provide useful data and avoids privacy concerns.

Mr. Altshuler noted that as a vehicle travels on the roadway on hot days, highway temperatures could increase evaporative emissions. Mr. Glueck suggested that the Technical Committee analyze the impact of temperature variation on mobile source emissions. Chairperson Sawyer suggested staff assist in analyzing data for the EMFAC 2002 model with regard to temperature variation and speed correction factors. This could lead to an intermittent control measure containing special speed restrictions for Spare the Air days.

In reply to Dr. Harley, Mr. Glueck noted that the vehicles affected by the 30-year rolling exemption are less mileage intensive. Chairperson Sawyer suggested that this matter be further examined within the context of evaluating the EMFAC 2002 model.

- (3) Technical Committee Meeting of October 8, 2002. Mr. Altshuler stated the Committee received two presentations. Dr. Mark Sztenderowicz of ChevronTexaco Global Lubricants addressed the role of lubricating oil in vehicle emissions. Phosphorus in lubricating oil can poison a catalyst, and sulfur can be combusted in certain ways to produce ultrafine particular matter (PM). The petroleum industry is working to minimize these effects.

Dr. Alberto Ayala of CARB reviewed a CARB laboratory study in Los Angeles comparing a bus CNG engine equipped with an oxidation catalyst with both a conventional diesel engine as well as a diesel engine fitted with a PM filter. The results showed that the oxidation catalyst reduces formaldehyde emissions from the CNG engine as well as ultrafine PM.

While PM emissions were comparable between the two engines, ultrafine PM levels were slightly higher from the CNG engine, possibly due to lubricating oil. However, the CNG engine emits less NOx and therefore less NO2. CARB has not concluded its analysis of the Ames Assay tests in which counter-intuitive results showed higher numbers of mutagens from the natural gas engine without the oxidation catalyst than from the conventional diesel. These results are presently undergoing peer review.

On December 3, the Committee will evaluate biogenic emissions from a eucalyptus tree grove upwind of Livermore. Current literature indicates that eucalyptus trees significantly emit the highly reactive HC isoprene. The issue concerns what impact the removal the grove would have on ozone levels in Livermore. Klaus Scott from the CARB and Jim Wilkinson from Alpine Geophysics will provide presentations on the issue. Mr. Lapera indicated he could arrange for Council members to attend an aerial tour of the grove.

- (4) Executive Committee Meeting of November 13, 2002. Chairperson Sawyer stated the Committee dealt with two procedural issues. District Counsel Brian Bunger reaffirmed the inapplicability of the Brown Act to the Applicant Selection Working Group. Also, the Committee endorsed a procedure for the preparation, review and approval of Council draft minutes that will ensure their integrity and the timeliness of their submittal.

The Committee and Executive Officer/APCO William C. Norton also discussed topics for Council review. These include the District's State Implementation Plan (SIP) submittals, intermittent ozone reduction strategies, fence line monitoring for stationary sources, emissions from marine shipping and port facilities, and the District's role in catastrophic events such as the September 11 tragedy. The District has asked the Advisory Council to assist in evaluating the development of a regional greenhouse gas emission inventory.

Chairperson Sawyer called for public comment, and the following individual came forward:

Irvin Dawid
San Jose State University

inquired if certain classifications of vehicles, such as motorcycles, light-duty trucks and sports utility vehicles were particularly high emitters. Mr. Glueck noted that the data reviewed by the Air Quality Planning Committee did not provide such a level of specificity.

- (B) Applicant Selection Working Group (ASWG). Chairperson Sawyer stated the ASWG met in October to interview candidates for four Council vacancies. Its recommendations were conveyed to the Board, which approved them on November 6, 2002. The applications of those not selected will be retained on file for reconsideration in filling future vacancies.

5. Report of the Executive Officer/APCO. Mr. Norton stated he is looking forward to working with the Advisory Council and to more fully integrating its expertise within the District's activities. He reported on the following items:

- the summer *Spare the Air* program ended in mid-October. The winter *Spare the Air Tonight* program will begin on November 20 and continue through the end of January 2003. Program advisories will be based on projections based on the federal PM2.5 24-hour standard.

- staff will provide an update on the 2004 Ozone Plan to the full Council on January 8, 2003.
- the state budget crisis may significantly reduce subvention funds to the District on the order of \$1.6 million. Staff will keep the Council apprised of this fiscal situation.
- The Board has asked staff to examine a request from the Sonoma County Climate Protection Program regarding the development of a regional greenhouse gases emission inventory and a program that would work with local jurisdictions to reduce greenhouse gas emissions. The Sonoma County program is also seeking \$25,000 in financial support for this program and so resource evaluation is required. Staff requests the Advisory Council's input on this matter.
- with the arrival of three new Advisory Council members in January, the District would like to hold a briefing and orientation on the District's goals and objectives, its respective Divisions, and conduct a tour of the building. All Advisory Council members are invited to attend.

Mr. Norton presented Henry Hilken, Senior Planner, to update the Council on the progress of its recommendations on aircraft and air quality that it adopted last Spring. Mr. Hilken stated:

- in September the District obtained a seat on the Regional Airport Planning Committee (RAPC) and is represented by Board of Directors member Shelia Young of San Leandro.
- the District's Transportation Fund for Clean Air (TFCA) fund has recently provided major support for clean air ground service at San Francisco International Airport by allocating \$440,000 to 31 natural gas shuttles, \$325,000 to 14 propane shuttles, and \$200,000 to a marketing campaign promoting greater public use of Samtrans/BART stations.
- former Air Pollution Control Officer Ellen Garvey advocated for stricter aircraft emission standards before the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA ALAPCO). Ms. Blake stated it is desirable that such advocacy continues and that the Council is kept apprised of its progress.
- the District continues to refine its emission inventory data and will continue to work with RAPC to obtain more accurate airport and aircraft emission projections.
- in participating on the Interagency Task Force Technical Advisory Committee to the Oakland International Airport expansion project, the District will review the modeling protocols for health risk assessment. This will include estimates of emissions from increased aircraft traffic.

Mr. Kurucz inquired if ambient data from September 12 and 13, 2001 indicates that the grounding of commercial aircraft had any discernable impact on air quality. Mr. Hilken replied that monitoring data is available from those dates and could be evaluated. Mr. Shanahan requested the Council receive the data from the 12th and 13th, and Mr. Hess stated staff would provide it to the Public Health Committee. Dr. Sawyer suggested that ambient data also be evaluated for any impacts associated with the recent Port shutdown arising from a prolonged labor dispute.

- 6. Report of the Advisory Council Chairperson.** Chairperson Sawyer thanked Jane Seleznow for her two years of service on the Council. Ms. Seleznow urged the Council to evaluate its role at the District because its expertise is insufficiently utilized. Chairperson Sawyer stated the Council is also interested in improving its effectiveness. The Council Executive Committee and Mr. Norton have been working together to improve coordination between the Council, the staff and the Board.

7. Election of Advisory Council Officers for Calendar Year 2003. Chairperson Sawyer stated that the Advisory Council Executive Committee has nominated William Hanna for Chairperson, Elinor Blake for Vice-Chairperson and Brian Zamora for Secretary. Mr. Glueck moved adoption of the slate of Officers; seconded by Jane Seleznow; carried unanimously. Chairperson Sawyer added that Chair-Elect Hanna has appointed Kraig Kurucz as Chair of the Air Quality Planning Committee, Rob Harley, Ph.D., as Chair of the Technical Committee, and Brian Zamora as Chair of the Public Health Committee. The Advisory Council thanked Chairperson Sawyer and the Committee Chairs for their leadership this year.

8. Council Members Comments/Other Business. Ms. Blake inquired as to proposed modifications to the Conoco Phillips refinery, and noted that this provides the District with an opportunity to apply its Environmental Justice policies. Mr. Norton replied that the refinery is seeking to modify its facility to produce ultra low sulfur diesel fuel to meet a state requirement in 2006. The District is responsible for issuing the permit and has urged the facility to receive and respond to community concerns over emissions associated with the project. Contra Costa County will be the lead agency for environmental review. The District will formally comment on associated land-use issues.

Mr. Kurucz suggested that with regard to the Sonoma County Greenhouse Gas inventory, the District coordinate with the California Global Climate Change Registry.

Mr. Altshuler inquired about a proposed Liquid Natural Gas terminal in Vallejo. Mr. Norton responded that he would provide him with the relevant information on that project.

Mr. Lopera inquired about Mr. Norton's status at the District. Mr. Norton replied that his contract was extended through December of 2003, and that the Board has combined the position of Chief Executive Officer/Executive Secretary with that of Air Pollution Control Officer (APCO) into a single position entitled Executive Officer/APCO. The Board of Directors will have additional time to recruit for this position. The selected candidate will have enough time to give notice and the opportunity to work for several months with current executive management in a transitional period.

10. Time and Place of Next Meeting. 10:00 a.m., Wednesday, January 8, 2003, 7th Floor Board Room, 939 Ellis Street, San Francisco, California 94109.

11. Adjournment. 11:45 a.m.

Respectfully submitted by,

James N. Corazza
Deputy Clerk of the Boards

December 10, 2002

Draft resolution concerning PM2.5, for consideration by the Public Health Committee

DRAFT

To: William Hanna, Chairperson, and Members of the Advisory Council
From: Brian Zamora, Chairperson, and Members of the Public Health Committee
Subject: Particulate Matter

Topic

Reduction of particulate matter (PM).

Importance/Implications

The District will soon be responsible to further reduce PM10 and PM2.5 in the Bay Area as a result of more stringent state standards. The revised standards result from a large body of evidence that PM contributes to premature death and multiple health conditions in the population; there is particular concern about the growing numbers of children with asthma. Continuing reductions in PM will require multiple and creative programs on the part of the District.

Recommendations

1) The Council applauds the District's rejuvenation of the "Don't light tonight" program. We strongly recommend that the District develop and implement a multi-year plan, with milestones and a timetable, to reduce the District's current 65 ug/m3 trigger (the national 24-hour standard) to the PM 2.5 air quality subindex of 40. u/m3. That is a level which USEPA has determined causes unhealthful effects in sensitive groups.

We also recommend that the District:

2) evaluate the "Don't light tonight" program with regard to public awareness and actions taken in response to the alerts.

3) map PM concentrations in areas of likely concern (e.g., populated inland valleys) during winter days and nights, including weekends, using appropriate portable PM monitoring devices. These efforts should examine temporal PM profiles, not just 24-hour averages. The information will assist in determining control strategies, publicizing the problem, and building public awareness and support for District efforts.

4) for both educational and data-gathering purposes, give grants and support others' grants to school districts to buy portable PM monitoring devices for student use, or loan such devices to school districts

to map local emissions. Provide technical support for this effort, and seek coordination with local health and environmental health officials. (Appropriate devices are now relatively inexpensive.)

5) compare real-time and 24-hour average PM data from regional District monitors to see if they reflect micro-environmental PM concentrations tracked under (2) and (3) (above).

6) consider making the case for fireplace change-out on sale of a home, a provision omitted from the District's model ordinance on wood smoke, which now addresses only new sources of wood smoke, i.e. new home construction. Continue to seek funding for change-out programs and other incentive programs, especially in areas of likely concerned and other areas identified through activities in (3) above.

7) continue to provide dedicated staff support for advocacy of the wood smoke ordinance and its adoption by local jurisdictions.

8) continue its support for a CARB resolution on diesel bus idling near schools. Support bus design changes so that air conditioning and heat do not require idling. Look at other situations where buses congregate and idle where there are large numbers of people (e.g., airports) to see whether a similar ban would be warranted.

9) reconsider the use of emissions credits for PM reductions.

10) *[Additions e.g. from the Technical Committee re: particulate trap retrofit program for public transit buses?]*

Key Issues

1. Particulate matter (PM) is associated with an increased death rate overall and from specific diseases, such as respiratory and cardiovascular disease. Between the least and most polluted cities in the United States, the average life expectancy reduction is estimated at 1.5 years less for every PM increase of 50 ug/m³. Some 200 Bay Area residents die prematurely from elevated PM levels, according to risk assessments.

2. PM is also associated with many illnesses, as reflected in studies showing associations with cardiovascular and respiratory hospitalizations, emergency room visits, school absenteeism, asthma attacks, bronchitis and other respiratory symptoms in children, and decreased lung function. Recent studies suggest that exposure during pregnancy may be related to birth defects, low birth weight, prematurity and infant mortality.

Another recent study showed elevated lung cancer deaths in areas with higher PM.

[C. Arden Pope et al. (2002) "Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Pollution," *Journal of the American Medical Association*, Vol. 287, No. 9.]

3. Studies also point to woodburning as a significant source (when multiplied by thousands of lighted fireplaces) of two of the toxics that were recently identified as having a differential impact on children: dioxin and dioxin-like compounds, and polycyclic aromatic hydrocarbons. CARB is in the process of evaluating these compounds under SB 25 for further toxic control measures.

4. No threshold has been detected below which health effects do not occur.

5. A number of issues remain unresolved, including the PM size and composition most associated with various health effects and the mechanism(s) that causes the effects. Nonetheless, the consistency in the research findings noted above has produced a consensus that PM is a significant public health problem.

6. CARB is expected to issue new regulations to achieve the lower standards for PM10 and PM2.5, likely early in 2003.

7. Bay Area monitoring data show that, although the District has a long history of regulating PM and trends in PM10 are downward for the last 15 years, several sites will not meet the new annual-average state standards of 20 ug/m³ for PM10 and 12 ug/m³ for PM2.5. Elevated PM here occurs especially from October through January; the two principal (and roughly equal during this time period) sources on an annual basis are wood smoke and cooking, and fossil fuels (principally from mobile sources).

Information Considered

Members considered reports to the Committee from:

- Dr. Bart Ostro, Cal/EPA-OEHHA, co-author of “Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates,” May 3, 2002 (Cal/EPA-OEHHA and ARB);
- Dr. David Fairley, District Statistician, BAAQMD, author of “Daily Mortality and Air Pollution in Santa Clara County, California: 1989-1996,” Environmental Health Perspectives, Vol. 107, No. 8, August 1999;
- Mr. Thomas Perardi, Planning Division Director, BAAQMD;
- and information from Michael Lipsett et al., “Air Pollution and Emergency Room Visits for Asthma in Santa Clara County, California,” 1997 Environmental Health Perspectives, Vol. 105, pp. 216-22.

Deliberative Process

The Public Health Committee was asked to consider this topic by Council Chairperson Sawyer as part of its work for 2002. The Committee met on February 25, April 29, June 17, September 9, October 28, and December 9, 2002 to receive and discuss presentations on the issues. The Committee unanimously arrived at its recommendation for forwarding to and consideration by the full Advisory Council.

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

DRAFT MINUTES

Public Health Committee Meeting
9:30 a.m., Monday, December 9, 2003

1. **Call to Order – Roll Call.** 1:32 p.m. Quorum Present: Brian Zamora, Chairperson, Elinor Blake, Ignatius Ding, Jane Seleznow. Absent: Jane Kelly. Also present: Advisory Council Chairperson-Elect William Hanna, and Linda Weiner, American Lung Association, the new Advisory Council member in the “Public Health Agency” category whose term will begin effective January 1, 2003:
2. **Public Comment Period.** There were no public comments.
3. **Approval of Minutes of October 28, 2002.** Ms. Blake moved approved of the minutes; seconded by Ms. Seleznow; carried unanimously.
4. **Update on Model Woodsmoke Ordinance.** Luna Salaver, Public Information Officer, stated that Marin County has concluded its community meetings on the ordinance, which will be presented to the Board of Supervisors next year. The Santa Clara County Board of Supervisors will vote to accept staff recommendations on the ordinance tomorrow. Last week the City of Sebastopol introduced the ordinance. It included a provision to change-out uncertified woodstoves upon change of home ownership, which realtors opposed. Since the District was not notified of this meeting it was not present to support the ordinance. Staff subsequently contacted the Sebastopol Mayor’s office, offering technical assistance. Staff has also contacted the Mayors of the Cities of Oakland and El Cerrito about the ordinance, and the City of Oakland has expressed an interest in it. To date, the ordinance has been adopted in 22 cities and four counties in the Bay Area. On December 7 the District issued its first *Spare the Air Tonight* wintertime advisory notice in nearly a decade.

Ms. Salaver added that the San Joaquin Valley Air Pollution Control District will adopt a wood-smoke rule that contains a mandatory no burn provision based on the federal PM10 standard. The Committee requested that at its next meeting, further information be presented on whether this regulation requires woodstove change-out and/or fireplace removal upon change of home ownership and if the mandatory no burn advisory exempts wood burning in EPA-certified equipment. The manner in which the rule will be enforced also requires further investigation.

5. **Continued Discussion of Particulate Matter (PM).** Ms. Blake reviewed her “Draft resolution concerning PM2.5, for consideration by the Public Health Committee,” dated December 10, 2002, as follows:
 - 1) *the Council applauds the District’s rejuvenation of the “Don’t light tonight” program. We recommend that the 65 mg/m³ trigger (the national 24-hour standard) be phased quickly downward to the PM 2.5 air quality sub index of 40 mg/m³, a level at which the US Environmental Protection Agency (EPA) has determined causes unhealthful effects in sensitive groups.*

Ms. Blake stated this is based on EPA's determination of the level at which PM health effects occur for sensitive groups. Mr. Hess replied that by lowering the threshold to 40 mg/m³, program advisories would be issued on almost every winter day, thus reducing the urgency with which they are perceived. Mr. Ding suggested that advisories could be issued every third day if the forecasted PM levels would generate advisories on consecutive days. Ms. Salaver added that the 65 mg/m³ level is considered unhealthy for all groups and therefore carries greater weight with the media. Mr. Hanna recommended the language indicate that although health benefits would accrue from a lower threshold, less compliance with such advisories might follow. Chairperson Zamora replied that the Committee typically sets forth a recommendation based on a public health perspective and the District staff and the Board of Directors are best positioned to assess its political implications.

2) *evaluate the "Don't light tonight" program with regard to public awareness and actions taken in response to the alerts. (Is this already in Terry's plan??).* In response to questions, Ms. Salaver indicated she would inquire whether a follow-up survey is intended for this program. The Committee agreed to further address this aspect at the January 8, 2003 Advisory Council Retreat.

3) *map PM concentrations in areas of likely concern (e.g., populated inland valleys) during winter days and nights, including weekends, using appropriate portable PM monitoring devices. These efforts should examine temporal PM profiles, not just 24-hour averages. The information will assist in determining control strategies, publicizing the problem, and building public awareness and support for District efforts.* Ms. Blake stated that portable PM monitoring devices are widely available, easy to use and could provide detailed information from the local community level.

4) *for both educational and data-gathering purposes, give grants and support others' grants to school districts to buy portable PM monitoring devices for student use, or loan such devices to school districts to map local emissions. Provide technical support for this effort, and seek coordination with local health and environmental health officials. (Appropriate devices are now relatively inexpensive.)* Ms. Blake opined that this type of program is analogous with the current nationwide creek-monitoring program that is associated with school districts as well.

5) *compare real-time and 24-hour average PM data from regional District monitors to see if they reflect micro-environmental PM concentrations tracked under #(3) and (4) (above).*

6) *consider making the case for fireplace change-out on sale of a home, a provision omitted from the District's model ordinance on wood smoke, which now addresses only new sources of wood smoke, i.e. new home construction.* Ms. Salaver noted that the ordinance has been more successful where proposed without a strong change-out provision due to opposition from realtors at public hearings and community meetings. Sensitive groups have tended to be less vocal. Mr. Hanna opined that a change-out provision will hardly affect the already high prices of homes and therefore should be included as one of the options that a city is free to accept or reject. Mr. Ding suggested that homes also be certified as "smoke free" by real estate boards just as appliances are marked as energy saving, thus earning a "brownie point." Chairperson Zamora called for public comment:

Linda Weiner
American Lung Association (ALA)

stated the ALA could arrange for asthmatics to speak at the community meetings and public hearings on the ordinance. Such advocacy is analogous with the efforts concerning tobacco legislation.

7) *continue to provide dedicated staff support for advocacy of the wood smoke ordinance and its adoption by local jurisdictions.*

8) *support a ban on diesel bus idling near schools. Support bus design changes so that air conditioning and heat do not require idling. Look at other situations where buses congregate and idle where there are large numbers of people (e.g., airports) to see whether a similar ban would be warranted.* Mr. Hess suggested changing “ban” to “regulation” because this week the California Air Resources Board (CARB) will consider adoption of a regulation to reduce diesel bus idling, which the District supports. Chairperson Zamora called for public comment:

Linda Weiner, ALA

stated that for the last three years she has been working with San Francisco MUNI on the conversion of its bus fleet from diesel to alternative fuel. MUNI had previously agreed to retrofit the diesel half of its fleet with particulate traps but has not yet done so, despite having indicated otherwise to the San Francisco Board of Supervisors. Recently, MUNI prepared a two-year particulate trap retrofit plan. The ALA has asked it be reduced to one-year given the practicality of doing so.

No. 9: *reconsider the use of emissions credits for PM reductions.*

No. 10: *(Additions e.g. from the Technical Committee re: particulate trap retrofit program for public transit buses?)*

Ms. Blake proposed the following revisions to the foregoing recommendations:

- No. 1: add after the first sentence: “We strongly urge a several year plan be developed and put in place with milestones towards the PM_{2.5} air quality sub index of 40 mg/m³.” Delete “at” before “which” in line four.
- No. 8: delete “support a ban” and replace with “continue its support for a CARB regulation”

In discussion, Ms. Blake suggested the District make arrangements with health education departments at local colleges for a student project to augment the District’s social marketing for health in the event the District opts to phase-in a lower PM program threshold. The District should also continue to seek funding for targeted change-out programs and other incentive efforts. Mr. Ding suggested the recommendations include suggesting the District work with schools, media and legislative groups in Sacramento. Efforts by Senator Byron Sher to promote the use of recycled computer parts has had little impact until the publication of a three-part series by the *San Jose Mercury News*, after which Hewlett-Packard reversed its recycling-unfriendly policies. Ms. Blake noted the articles were written because of the efforts of the Silicon Valley Toxics Group.

Ms. Blake referred to an e-mail from District staff members David Fairley, Ph.D., and Thomasina Mayfield, which contains an abstract from an unpublished EPA study of woodsmoke in the Bay Area. The abstract sets forth the emission factors for toxic pollutants when burning certain fuels. It would be helpful to be able refer to the contents of this text if it is published by the January Retreat. The Committee expressed its consensus on including this information as an addendum.

Chairperson Zamora stated he would entertain a motion to endorse these changes and allow Ms. Blake to make other conceptual as changes discussed today for inclusion in the agenda packet of the January Retreat. So moved by Mr. Ding; seconded by Ms. Seleznow; carried.

6. **Committee Member Comments/Other Business.** Chairperson Zamora stated that at the Retreat the Committee would develop its work plan for the year. In the interim, Committee members should think about its contents. Chairperson-Elect Hanna clarified that at the Council Executive Committee meeting that will precede the Retreat, staff will provide further input on the issues for which it is requesting Council advice. The Executive Committee will then assign the study topics to the Standing Committees. During the working lunches the Committees may generate additional topics, give priority to them, and then report out on their final work plans to the full Council.

Chairperson Zamora inquired as to the staff's interest in fence line monitoring. Mr. Hess replied that this issue arose in connection with community outreach meetings for the Clean Air Plan. It concerns the ability of community members near a major facility such as a refinery to access the District's website for on-line, real-time and speciated air quality data concerning emissions crossing the fence line. A guest speaker from Texas will address the Committee on the state-of-the-art for such equipment. Ms. Blake stated that staff from the Contra Costa County Health Department would also be interested in giving a presentation on this matter. This would broaden the Committee's perspective and information base.

Chairperson Zamora added that the Council has been asked to provide its input on the possible development of a greenhouse gases emissions inventory in the region. In reply, Ms. Salaver suggested the District could start a recognition program for those cities that have completed a greenhouse gas inventory and reduce emissions of greenhouse gases in the region.

Mr. Ding suggested that Bay Area TV media routinely broadcast an icon on air quality.

Chairperson Zamora thanked Jane Seleznow for her two years of frank and energetic service on the Council. Ms. Seleznow urged the Committee to work with the full Advisory Council to evaluate and improve the role of the Council at the District.

6. **Time and Place of Next Meeting.** Chairperson Zamora stated this would be determined at the January 8, 2003 Council Retreat.

7. **Adjournment.** 2:30 p.m.

Respectfully submitted,

James N. Corazza
Deputy Clerk of the Boards

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

DRAFT MINUTES

Advisory Council Air Quality Planning Committee Meeting
9:30 a.m., Monday, December 9, 2002

1. **Call to Order** – Roll Call. 9:32 a.m. Quorum Present: Kraig Kurucz, Harold M. Brazil, William A. Nack, Jill Stoner. Absent: Fred Glueck, Chairperson, Patrick Congdon, Kevin Shanahan. Also present: William Hanna, Advisory Council Chairperson-Elect for 2003, and Irvin Dawid, Sierra Club, new Council member in the “Conservation Organization” category effective January 1, 2003.
2. **Public Comment Period**. Charlie Peters, Clean Air Performance Professionals, stated District Executive Officer/APCO William C. Norton had invited him to present his comments on I&M at today’s meeting. Mr. Kurucz requested that Mr. Peters address the Committee under Item No. 6.
3. **Approval of Minutes of October 31, 2002**. Mr. Nack moved approval of the minutes; seconded by Mr. Brazil; carried unanimously.
4. **TFCA Transportation Fund for Clean Air (TFCA) Policy Regarding Heavy-Duty Diesel Engines**. Liz Berdugo, Manager, TFCA, stated that the District is proposing to revise TFCA Policy No. 27 which allows an applicant with a heavy-duty diesel (HDD) vehicle to either replace the entire vehicle or re-power its engine, but in both cases only in an alternate fuel mode. The revised policy would allow for engine re-powering with diesel, as long as the engine meets California Air Resources Board (CARB) specifications, or retrofitting an existing engine with a particulate trap, if ultra-low sulfur diesel fuel is used. This fuel will not be funded by the TFCA as many fleets are already transitioning toward its use. Fuel substitutes or additives are also allowed.

The revision considers “clean diesel” feasible and improves the cost-effectiveness of the TFCA. Numerous retrofits on diesel engines can be made for the cost of one new alternative fuel vehicle and reduce emissions from engines otherwise ineligible for TFCA funding. Both the Metropolitan Transportation Commission (MTC) and San Francisco Municipal Railway (MUNI) have advocated for particulate filters and clean fuels. Dr. Alan Lloyd, Chair of the CARB recently endorsed clean diesel as reducing global climate change and US dependence on foreign oil due to greater fuel economy. The District will score all project applications with the same criteria. It will calculate emission reductions of nitric oxide (NO_x), reactive organic compounds (ROG), particulate matter (PM) by comparing emissions with and without the retrofit devices over the estimated lifetime of the vehicle. While this new policy increases TFCA program flexibility and robustness by increasing program options, the District will nevertheless continue to pursue the development and use of alternate fuels. Mr. Kurucz called for public comment:

Irvin Dawid
Sierra Club

stated the proposed revisions directly apply TFCA funds to achieve vehicle emission reductions.

Ms. Stoner moved the Committee recommend the Council endorse the proposed policy change; seconded by Mr. Nack; carried unanimously. Ms. Stoner departed the meeting at 10:15 a.m.

- 5. Presentation on Networkcar System Capabilities.** Donald Brady, Vice President of Sales, Networkcar, stated that in 1999 students from the Massachusetts Institute of Technology founded Networkcar and invented a remote monitoring device for use in 1996 and newer vehicles equipped with on-board diagnostics (OBD II). This commercial “after market” device with global positioning system capabilities was originally developed as a locating device for vehicle safety and security. The device was later modified to transmit vehicle emissions information through a cellular network and in turn to a database that fleet managers can access through the Internet.

Two years ago the Environmental Protection Agency (EPA), California Bureau of Automotive Repair (BAR) and CARB examined this device’s applicability for remote vehicle emissions monitoring. The BAR subsequently authorized its use and exempts from Smog Check the vehicle owners who use it in its Continuous Testing Pilot (CTP) Program. A CARB grant to Networkcar with funds from the Carl Moyer program supports the installation of the Networkcar devices in 1,000 high mileage vehicles in the Los Angeles basin. So far, approximately 700 devices have been installed in taxis and paratransit vehicles in Southern California.

Every 20 minutes the device collects and transmits OBD II and other data, including “check engine light” or Malfunction Indicator Light (MIL) events, mileage, temperature, engine load and other data. If there is a failure in the emission system, the system automatically sends the owner an e-mail alerting him or her to an emissions system failure. When the codes associated with an emissions failure are cleared by a mechanic they are stored in an Alert History Register that is accessible to the dealer and/or the repair facility. Fleet managers routinely receive one e-mail daily concerning the total fleet, identifying any problem vehicles. Networkcar also conducts third party monitoring for the BAR’s Continuous Monitoring Pilot Program. If a car is found non-compliant, repairs must be made within 45 days. If repairs are not made within that time frame the owner is removed from the program.

Remote emissions monitoring based on OBD II diagnostics provides an “on-line emissions test.” The system monitors for various readiness tests that lead to the clearing of a MIL event. The continuous monitoring of the engine computer permits remote detection of any type of fraud or emissions system tampering. In the CARB program, repairs are required on vehicles with an extended MIL event that occurs for 14 continuous days. This criterion allows for important data generation and the identification of the most serious violators. Networkcar pays for before-and-after emissions tests to measure results of a repair. This data is forwarded to the CARB program office in El Monte. Fraud events are also tracked. If a vehicle is repaired and suddenly all of its problems re-emerge, CARB asks the taxi to come in for further evaluation. Conversely, some repair shops have fraudulently claimed to have made repairs, and have in some cases used old, defective, or even incorrect parts in making vehicle repairs.

Remote monitoring also allows for deeper vehicle operational assessment beyond Smog Check. Recently, paratransit vehicle emission failures reported under the Networkcar system lead to the discovery and repair of faulty hoses and oxygen sensors that had been damaged by previous and improper vehicular modifications. Also, emissions failures recorded from remote monitoring on a model year 2000 Chevy Ventures lead CARB to require that GM recall these vehicles. Therefore, an added side benefit of remote monitoring is its ability to assist fleet managers in assessing and repairing specific vehicle defects, and even in identifying systemic model year problems.

Vehicles with a MIL continuously on for 14 days must be repaired within 14 days under the CARB program. This eliminates many months of pollution that might otherwise occur under the normal Smog Check program inspection cycle for those vehicles that fail shortly after inspection. Program benefits were calculated by using empirical CARB data on high mileage fleet vehicles and EMFAC modeling. The cost for measurable emission reductions on high mileage vehicles was \$3,000 per ton of NO_x over the five-year life of the CARB program. The data also show that Carbon Monoxide (CO) emissions are significantly reduced by early detection and repair using continuous monitoring.

CARB program participants benefit from being exempted from Smog Check and by maximizing the emission system warranty. CARB also provides some funding for vehicle repairs. Remote monitoring is a practical alternative to remote sensing and avoids the latter's drawbacks in equipment siting and fleet capture. High mileage vehicles are ideal candidates for continuous monitoring, and the emission reductions achieved from this program can be quantified. CARB has expressed a willingness to expand the program to include the Bay Area in the Continuous Monitoring Program. This would entail deploying the devices in a significant portion of the 300 remaining vehicles. The CARB grant for this program will last through March.

In discussion, Mr. Brady noted that larger taxi fleets and Para transit fleets are more receptive to this program than the independent cabs. Southern California exempts participants from the \$1,500 fine levied by the ARB on fleet vehicles operating with an activated MIL. As to the relationship between a MIL event and an actual or potential failure, trouble codes appear and the MIL will not activate until the car has completed a specific driving cycle. At this point the car would also fail the Smog Check test. In a MIL event, emissions are at approximately 1.5x the level that would register as an I&M failure.

Mr. Brady stated the results demonstrate that high mileage fleets need to be treated differently from the general fleet because high mileage vehicles have higher failure rates. The South Coast AQMD has a rule requiring annual tests for high mileage vehicle fleets. CARB is responsible for monitoring taxis and paratransit vehicles, while the BAR oversees the general fleet. Mr. Kurucz requested District staff further inquire into the particulars of the South Coast AQMD regulation. Mr. Hess inquired as to how the Networkcar program could be initiated in the Bay Area. Mr. Brady replied that a letter should be sent to CARB program manager Harold Mace in El Monte, California.

Noting the absence of a quorum, Mr. Kurucz inquired as to the remaining members' views on this program. Consensus was reached that such a program should be instituted in the Bay Area for cabs and paratransit vehicles, and possibly government and other public agency vehicles as well.

- 6. Continued Discussion of Vehicle Inspection & Maintenance (I&M).** Mr. Kurucz stated that the Committee is developing background data for its recommendations. District staff will determine whether a given recommendation is to be forwarded to the state I&M Review Committee or the District for consideration. Mr. Kurucz called for public comment:

Charlie Peters
Clean Air Performance Professionals (CAPP)

noted that the 1.5x emissions level at which a MIL event occurs is measured with regard to engine certification standards and may indicate an anticipation of a failure rather than a failure *per se*. He requested the Committee consider the CAPP proposal for Smog Check inspection and repair audit,

gasoline oxygen cap and elimination of dual fuel credit that could cut vehicular emissions by 50% in a single year. Other specifics of the CAPP proposal include the following measures:

- conduct an audit to improve Smog Check performance and institute a post-test audit flag
- create vehicle-specific emissions standards and tailpipe smoke standards to reduce PM
- evaluate Smog Check ancillary benefits. Cars that are repaired by unlicensed stations, public and repair industry behavior changes preventing a car from becoming non-compliant
- require that all persons performing Smog Checks to be licensed, i.e., government fleets
- catch the cars that manipulate zip codes to slip by Smog Check requirements
- require Smog Checks by providers who do not have an ownership in the car being tested
- evaluate the level of unlicensed Smog Check repairs provided for pay
- develop an audit procedure to improve compliance with the licensing rule
- correct the informational conflict that currently exists between approved manuals required for Smog Check stations and set up a continuous correction procedure.

Mr. Peters distributed copies of (a) *Los Angeles Times* article entitled “A Bumper Crop of Bad Air in San Joaquin Valley,” dated December 8, 2002, and (b) *Petitioners’ Reply Brief in the Gray Davis, Governor of the State of California and the California Air Resources Board, Petitioners v. United States Environmental Protection Agency, and Christine Todd Whitman, its Administrator, Respondents, Case No. 01-71356.*

Mr. Peters inquired as to the impact of the Basic Smog Check program. Mr. Kurucz indicated that District staff has provided data on the emissions differential between the Basic and the Enhanced I&M programs. The University of California at Riverside has recently estimated the emissions impacts associated with Enhanced I&M in both the District and downwind areas. Rather marginal benefits and disbenefits, amounting to no more than one part per million, were projected.

Mr. Kurucz indicated he would request Chairperson Glueck to submit his background information at the next Committee meeting, at which consideration of I&M will be the lone agenda item. Mr. Nack requested District staff to provide its comments on the recommendations at the next meeting.

7. Committee Member Comments/Other Business. There were none.

8. Time and Place of Next Meeting. Monday, January 6, 2003, 9:30 a.m., Conference Room 716, 939 Ellis Street, San Francisco, CA 94109.

9. Adjournment. 11:03 a.m.

Respectfully submitted by:

James N. Corazza
Deputy Clerk of the Boards

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

DRAFT MINUTES

Advisory Council Technical Committee Meeting
10:00 a.m., Tuesday, December 3, 2002

1. **Call to Order – Roll Call.** 10:03 a.m. Quorum Present: Sam Altshuler, P.E., Chairperson, Bill Hanna, Rob Harley, Ph.D., Stan Hayes. Absent: Norman Lapera, Robert F. Sawyer, Ph.D., P.E.
2. **Public Comment Period.** There were no public comments.
3. **Approval of Minutes of October 8, 2002.** Chairperson Altshuler requested the addition of the following sentence after the first sentence in paragraph four on page four: “Organic carbon is associated with lube oil and elemental carbon is associated with the combustion process.” Mr. Hanna requested “on” be changed to “of” on page two, line five, last paragraph, and the replacement of “Oakbay” with “Oak-Bay” on third line of paragraph two of page seven. Dr. Harley requested that “to two tons” be added after “one” on the final line of the last paragraph of page six, and that “0.1-0.2 tpd” replace “0.01-0.02 tpd” on the first line of paragraph one of page seven. Dr. Harley moved adoption of the minutes as corrected; seconded by Mr. Hayes; carried.
4. **Presentations on Biogenic Emission Inventories**

(A) Development of Biogenic VOC Emission Inventories Using a Geographic Information System (GIS). Development of Biogenic VOC Emission Inventories Using a Geographic Information System (GIS). Klaus Scott, Planning & Technical Support Division, California Air Resources Board (CARB) stated that CARB’s biogenic modeling for the Central California Ozone Study (CCOS) addresses three categories of volatile organic compounds (VOCs): monoterpenes, isoprene and other VOCs (OVOCs) among which methylbutenol is the most important. Foliar emissions of isoprene depend on solar radiation and temperature, while monoterpene emissions are a function of temperature. A number of models indicate that OVOCs comprise between 8-73% of the biogenic VOC emissions in some landscapes. Not all plant species emit these compounds and those that do emit them at various rates and in varying quantities and orders of magnitude.

Modeling efforts attempt to ascertain which plant species dominate a landscape and then evaluate emissions from a variety of adjacent landscapes. Land-use/land-cover databases describe the predominant growth within a modeled domain to obtain biogenic parameters. In addition to the CCOS database, CARB uses a database from the US Geological Survey Biological Resources Division (“GAP layer”) for descriptions of rural canopy cover, and a crop GIS database from the Department of Water Resources that is resolved down to the field level. Few crops emit significant biogenic emissions and those that do emit monoterpenes, which are half as reactive as isoprene. CARB also uses the satellite-derived Leaf Area Index (LAI) database, which provides one square kilometer resolution for the global monthly production of leaf area. California geography is excerpted from the database for use in various state modeling domains.

Using the Mesoscale Modeling System (MM5) to generate temperature and solar radiation fields at 1-km² resolution, the calculation of emissions for the CCOS domain employs an emission algorithms within a GIS-based model that account for hourly varying temperature and solar radiation. Species emission factors are provided by Benjamin et al. (1996) and Harley et. al. (1998). Specific leaf weight factors (biomass) are provided by Nowak (USDA Forest Service, Northeast Research Station, Syracuse, New York, 2000). Specific leaf weight factors and leaf area indices are used to calculate leaf mass density in a given area. In his Ph.D. dissertation, Nowak used vegetation surveys to develop profiles of species found in Bay Area urban land uses, which CARB uses. Emission modeling for landscapes is conducted either by assigning emission factors to a variety of predominant plant species and then aggregating them or by applying a generic emission factor to a landscape or ecosystem type. The emission factor is modified by time of day variation in temperature and sunlight. The isoprene emission algorithm adjusts for both of these variables.

Data from the GIS modeling run for the July 29, 2000 ozone episode shows biogenic emissions increasing with temperature and solar radiation as the day progresses and ceasing at dusk. The GAP layer data is applied through detailed area polygons with three wildlife habitat resource and or plant assemblages, each of which contains three predominant plant species. The GAP land use/land cover database was generated through vegetation surveys, although some uncertainty remains in the registration of species per polygon.

Species canopy cover, specific leaf weight factors, LAI data and plant species emission factors are used to calculate landscape emission factors at reference conditions (30 °C and 1000 μmoles m⁻² s⁻¹ solar radiation in the photosynthetically active radiation wavelengths) which are diurnally modified using emission algorithms. Isoprene emissions are encoded in the GAP-layered model for such urban land-use contexts as commercial, residential, industrial, transportation and utilities, mixed urban and other urban. Uncertainty exists in the definition of species within a GAP layer. Differences also exist between the “branch enclosure” and “leaf cuvette” methods of measuring biogenic emissions because the latter are two to five times greater than the former. Emission factors are also assigned to some plant species without measurements (based upon taxonomic relationships), while some OVOCs lack emission factors and algorithms.

Approximately 1.3 milligrams of isoprene per square meter per hour are emitted at reference conditions from the polygon upwind of Livermore, which is dominated by Eucalyptus and Coast Live Oak woodlands. This estimate of isoprene emissions occurs prior to environmental adjustment by the isoprene emission algorithm. While Oak, Bay Laurel and Eucalyptus have similar isoprene emission factors, their woodland leaf mass densities significantly differ. While the thinning of the Eucalyptus near Livermore therefore offers diminishing air quality benefits over time, the fire hazard posed by Eucalyptus alone justifies the thinning out of the grove. Chairperson Altshuler suggested it would be helpful to ascertain whether high ozone levels and biogenic levels correlate on weekdays and weekends.

- (C) **Emissions from a Eucalyptus Forest.** Jim Wilkinson, Senior Engineer, Alpine Geophysics, stated that biogenic emissions models account for methane, non-methane VOCs (monoterpenes, isoprene and OVOCs) carbon monoxide (CO) and nitric oxide (NO_x). On a global scale, biogenic emissions of methane far exceed those from anthropogenic sources. Biogenic VOC's exceed those from anthropogenic sources by factor 1.5, while biogenic CO is about one quarter of the anthropogenic CO. Biogenic and anthropogenic emissions of NO_x are equivalent. Monoterpenes, isoprene and OVOCs are associated with plant biochemistry and modeled, whereas methane and CO are

currently omitted. The plant emission factor is multiplied by an environmental correction factor. This result is in turn multiplied by the geographical area. For isoprene, temperature and light correction factors are also used, while “parameterized equations” (i.e., which fit empirical observation) are used for OVOCs, monoterpenes and NO. Unlike the isoprene temperature correction factor, the correction factors for OVOCs and monoterpenes show a continuous emission increases with temperature. However, the potential is high for leaf death at very high temperatures.

From a 900-acre Eucalyptus grove approximately 200,000 grams per hour of isoprene (about two tons per day) would be emitted at peak capacity (cloudless sky on a summer day with temperatures peaking at 40°C (105°F) and 12 hours of daylight). Since the uncertainty factor for isoprene is two orders of magnitude, emissions would range from 0.2 tons to four tons per day. The uncertainty factor is three orders of magnitude for monoterpenes and OVOCs although smaller quantities are emitted. For OVOC and monoterpenes, about 0.1 tons per day would be emitted. It would be hard to pinpoint a signal in a modeling run of the elimination of two tons per day peak emitting capacity from the grove near Livermore. Native Oak and Eucalyptus emit equivalent levels of isoprene. Chairperson Altshuler opined that replacing the Eucalyptus with California Redwood might result in considerably fewer emissions of isoprene.

Chairperson Altshuler inquired if measurements could validate some of these summer estimates. Dr. Harley indicated these detailed calculations establish a maximum range and suggest that 10 tons per day of isoprene will not be eliminated. Also, the eventual replacement over time of a Eucalyptus grove with another tree species that also emits isoprene is of note for future scenarios. How this control measure compares with the total emissions in the Bay Area is less important than how it compares to other ozone precursor reduction measures. Even an interim reduction of two tons of highly reactive organic compounds near an ozone hot spot is desirable.

Chairperson Altshuler suggested that measurements be made to better assess the ozone photochemistry in the Livermore region. Dr. Harley suggested that data from the research site in Sunol that is upwind of Livermore would help in ascertaining to what extent isoprene and oxidation products appear in the samples. Mr. Hess indicated that he would provide that information to the Committee. Mr. Souten suggested adding trajectory analyses to the analysis of the empirical data.

5. **TFCA Transportation Fund for Clean Air (TFCA) Policy Regarding Heavy-Duty Diesel Engines** . Liz Berdugo, TFCA Supervisor, reviewed the history of the TFCA and noted its goal is to cost-effectively reduce vehicular emissions of ozone precursors and particulate matter (PM). Policies governing funding allocation were developed for the Board of Directors in 1992 and are reviewed annually. Presently, an owner of a heavy-duty diesel (HDD) can purchase a new vehicle or re-power it with a new engine with TFCA funds but in both cases only in an alternate fuel mode. Proposed new policy No. 27 would permit vehicle or engine replacement with diesel if it meets CARB standards. Retrofit devices may be installed in conjunction with the use of ultra low sulfur diesel. However, the low sulfur fuel itself will not be eligible for TFCA funding.

This policy will lead to cost-effective emission reductions from engines that would otherwise have continued to pollute. Such TFCA applicants as San Francisco Municipal Railway (MUNI) and the Metropolitan Transportation Commission (MTC) have advocated for PM filters and clean fuels. A new and positive attitude toward diesel has emerged in the environmental field. CARB Chair Alan Lloyd has stated it provides another way to reduce global climate change as well as dependence on foreign petroleum products. “Clean diesel” is now considered feasible with the use of retrofitted

particulate filters and oxidation catalysts. The policy will provide the District with another mobile source emissions reduction tool, thereby increasing the robustness of the TFCA program.

Chairperson Altshuler urged the quantification of all environmental factors in ranking the TFCA projects. Ms. Berdugo replied that emission calculation remains the same for NO_x, PM₁₀ and ROG for all proposed projects. Whether these are alternate fuel, diesel or biodiesel, they will be scored according to the same criteria and will have to meet the same cost-effectiveness threshold. Mr. Shanahan opined that the revision allows the District to significantly reduce NO_x and PM from current engines for the remainder of their operating life. TFCA customers may thus pursue a short-term emissions reduction approach and still aim in the long-term to purchase newer and cleaner vehicles. CNG is also becoming much more feasible for heavier duty vehicle applications.

Dr. Harley inquired if, along with re-powering an existing diesel or purchasing a new alternative fuel vehicle, an applicant can purchase a new, clean diesel vehicle that meets the 2007 emission standards. This would be consistent from an emissions standpoint. Ms. Berdugo replied that Policy No. 24 would not permit this. Mr. Perardi noted that “clean diesel” was previously not considered viable, and so TFCA policies were aimed at promoting alternate fuels. However, the purchase of an entirely new diesel vehicle is also much more costly than re-powering or retrofitting several vehicles. Dr. Harley replied that the new policy allows for funding the purchase of an entirely new alternate fuel vehicle that would also find difficulty in competing with retrofits. Mr. Perardi replied that the District could pay for a fraction of the cost of a new diesel vehicle if the overall cost-effectiveness of that project overall was competitive. This option may be worth further consideration. Mr. Hayes observed that re-powering will invariably achieve greater cost-effectiveness than new vehicle purchases and will lead to more engine re-powering projects.

Chairperson Altshuler opined that TFCA dollars would be better spent on hardware, engines and retrofit devices than on fuel additives, emulsions or biodiesel. The former have longer-term emission reduction implications and should be weighted accordingly. Ms. Berdugo replied that for ranking a project for cost-effectiveness, an applicant must provide an estimate of the lifetime of the equipment. A fuel additive program may last for only one year and the cost is spread out over that period. A retrofit device will last longer, and the benefits are spread out over that time period.

Chairperson Altshuler called for public comment:

Dave Souten
Environ International Corporation

suggested staff discuss this proposed policy revision with the Sacramento Emergency Clean Air and Transportation (SECAT) Program staff. He added that the restriction of TFCA funds to public sector projects excludes the private sector emission reductions. Mr. Shanahan noted that in every other air District, TFCA funding application is across the board. Mr. Hess responded that the District is treated differently from the rest of the state under the TFCA legislation and is even prohibited from using TFCA emission reductions for purposes of air quality planning.

Mr. Hayes inquired if one consequence of the proposed revision in the minds of some observers would be to perpetuate diesel through re-powering and thus continue some level of diesel PM emissions, which have been estimated by some studies to constitute 70% of the air toxics risk in the state. Mr. Shanahan responded that the new policy is an interim strategy to apply clean diesel and

aftertreatment between now and 2007 by using available funds to accelerate emission reductions on engines that would otherwise operate without controls. Major air quality benefits will result.

Mr. Hanna moved the Technical Committee endorse the staff proposal to add Policy No. 27 to the TFCA; seconded by Dr. Harley.

Chairperson Altshuler called for public comment:

Jim Larson
PG&E Clean Fuels Program

expressed concern that transit agencies that have opted for the CNG path may lose TFCA financial support unless there is a cap imposed on funding for these diesel retrofit projects. He inquired if the new policy eligibility includes (a) application of retrofit devices on engines manufactured prior to 1994 and to those that do not require low sulfur fuel, such as an oxidation catalyst applied a CNG engine, (b) CNG as an alternate fuel, along with biodiesel and ethanol. He indicated that he would transmit more detailed written comments to District staff in the near future.

Mr. Hanna observed that adding cost-effective emission reduction options to the TFCA program is inherently desirable. Chairperson Altshuler suggested that staff further facilitate program options by assigning different dollar values to different pollutants where appropriate and factoring in reductions of CO₂ or NO₂. Mr. Shanahan observed the NO₂ issue is being handled by CARB. Chairperson Altshuler replied that the 20% emissions cap for particulate filters becomes effective only in 2004. He added that he would like to see added better quantification of emissions in the TFCA program. Mr. Hanna responded that this might be dealt with elsewhere in the mechanics of the TFCA program. Ms. Berdugo added that there is a TFCA Guidebook that addresses this very issue. Dr. Harley called for the question. The motion carried unanimously.

Dr. Harley added that greater consistency in cost-effectiveness scoring should be given to hybrid and other vehicles in Policy No. 23.

6. **Committee Member Comments.** Chairperson Altshuler thanked the members of the Technical Committee for their participation in the Committee meetings this year.
7. **Time and Place of Next Meeting.** 10:00 a.m., Tuesday, February 4, 2003, 4th Floor Conference Room, 939 Ellis Street, San Francisco, California 94109.
8. **Adjournment.** 12:45 p.m.

Respectfully submitted by,

James N. Corazza
Deputy Clerk of the Boards