BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ADVISORY COUNCIL
REGULAR MEETING

WEDNESDAY
SEPTEMBER 13, 2006
10:00 A.M.

SEVENTH FLOOR BOARD ROOM
939 ELLIS STREET
SAN FRANCISCO, CA 94109

AGENDA

CALL TO ORDER

Opening Comments — Kraig Kurucz, Chairperson
Roll Call — Clerk

PUBLIC COMMENT PERIOD

Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3. *The public has the opportunity to speak on any agenda item. All agendas for Advisory Council meetings and Committee 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 or Committee's purview. Speakers are limited to five minutes each.*

CONSENT CALENDAR

1. Approval of Minutes of July 12, 2006

COMMITTEE REPORTS

2. Air Quality Planning Committee Meeting of August 9, 2006 — Stan Hayes
3. Technical Committee Meeting of August 9, 2006 — Robert Bornstein, Ph.D.
4. Public Health Committee Meeting of September 6, 2006 — Jeffrey Bramlett

PRESENTATION

5. Observations of Long-term Global Warming and of Regional Summertime Daytime Cooling in Coastal California air-basins

Advisory Council "Colleges & Universities" category member Robert Bornstein, Ph.D., will present data regarding trends in global warming in light of observations made concerning regional patterns of annual-averaged daily minimum and maximum temperatures.

AIR DISTRICT OVERVIEW

6. Report of the Executive Officer/APCO — Jack Broadbent

Mr. Broadbent will provide an update on pending and planned District activities, policies and initiatives.

OTHER BUSINESS

7. Report of Advisory Council Chair — Kraig Kurucz

8. Council Member Comments/Other Business

Council or staff members on their own initiative, or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on their own activities, provide a reference to staff about 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.

9. Time and Place of Next Meeting

10:00 a.m., Wednesday, November 8, 2006, 939 Ellis Street, San Francisco, CA 94109.

10. Adjournment

KK:jc

CONTACT CLERK OF THE BOARDS - 939 ELLIS STREET SF, CA 94109 **(415) 749-4965**
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- To request special accommodations for those persons with disabilities notification to the Clerk's Office should be given in a timely manner, so that arrangements can be made accordingly.

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

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS

SEPTEMBER 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)* **- CANCELLED**	**Wednesday**	**6**	**9:45 a.m.**	**Board Room**
Advisory Council Public Health Committee	**Wednesday**	**6**	**10:00 a.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)*	**Monday**	**11**	**9:30 a.m.**	**4th Floor Conf. Room**
Advisory Council Executive Committee - CANCELLED	**Wednesday**	**13**	**9:00 a.m.**	**Room 716**
Board of Directors Executive Committee Meeting *(At the Call of the Chair)*	**Wednesday**	**13**	**9:30 a.m.**	**4th Floor Conf. Room**
Advisory Council Regular Meeting	**Wednesday**	**13**	**10:00 a.m.**	**Board Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**20**	**9:45 a.m.**	**Board Room**
Joint Policy Committee	**Friday**	**22**	**10:00 a.m. – Noon**	**MetroCenter Auditorium 101 – 8th Street Oakland, CA 94607**
Board of Directors Stationary Source Committee *(Meets 4th Monday of every Quarter)*	**Monday**	**25**	**9:30 a.m.**	**Board Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each Month)*	**Wednesday**	**27**	**9:45 a.m.**	**4th Floor Conf. Room**
Board of Directors Personnel Committee *(At the Call of the Chair)*	**Thursday**	**28**	**9:30 a.m.**	**4th Floor Conf. Room**

OCTOBER 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**4**	**9:45 a.m.**	**Board Room**
Advisory Council Public Health Committee	**Tuesday**	**10**	**10:00 a.m.**	**Room 716**
Advisory Council Air Quality Planning Committee	**Wednesday**	**11**	**9:30 a.m.**	**Board Room**

October 2006 Calendar Continued on Page 2

OCTOBER 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Technical Committee	**Wednesday**	**11**	**1:00 p.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)*	**Monday**	**16**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**18**	**9:45 a.m.**	**Board Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each Month)*	**Wednesday**	**25**	**9:45 a.m.**	**4th Floor Conf. Room**

NOVEMBER 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**1**	**9:45 a.m.**	**Board Room**
Advisory Council Executive Committee	**Wednesday**	**8**	**9:00 a.m.**	**Room 716**
Advisory Council Regular Meeting	**Wednesday**	**8**	**10:00 a.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)*	**Monday**	**13**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**15**	**9:45 a.m.**	**Board Room**
Joint Policy Committee	**Friday**	**17**	**10:00 a.m. – Noon**	**MetroCenter Auditorium 101 – 8th Street Oakland, CA 94607**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each Month)*	**Wednesday**	**22**	**9:45 a.m.**	**4th Floor Conf. Room**

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8/31/06 (9:30 a.m.)
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AGENDA: 1

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

DRAFT MINUTES

Advisory Council Regular Meeting
10:00 a.m., Wednesday, July 12, 2006

CALL TO ORDER

Opening Comments: Chairperson Kurucz called the meeting to order at 10:15 a.m.

Roll Call: Present: Kraig Kurucz, Chair, Sam Altshuler, P.E., Louise Bedsworth, Ph.D., Ken Blonski, Robert Bornstein, Ph.D., Jeffrey Bramlett, Harold Brazil, Irvin Dawid, Fred Glueck, William Hanna, Stan Hayes, Steven Kmucha, M.D., Karen Licavoli-Farnkopf, MPA, Ed Proctor, Linda Weiner, Brian Zamora.

Absent: Cassandra Adams, Emily Drennen, William Hanna, John Holtzclaw, Ph.D., Janice Kim, M.D.

PUBLIC COMMENT PERIOD:

Peter Holoyda
Senior Advisor, Market Research Lab
Hydrogen First - International Business Incubator of Silicon Valley

urging the District acquire a larger fleet of hydrogen fuel-cell vehicles and to participate in the fuel cell vehicle pilot program that is currently underway in the South Coast AQMD.

CONSENT CALENDAR:

1. **Approval of Minutes of May 10, 2006.** Mr. Glueck moved approval of the minutes; seconded by Mr. Dawid; carried unanimously.

COMMITTEE REPORTS

2. **Public Health Committee Meeting of May 10, 2006.** Mr. Bramlett stated that the Committee received presentations from John Crouch of the Hearth, Patio and Barbeque Association, and Kathy Hayes of the North Bay Association of Realtors.

3. **Air Quality Planning Committee Meeting of June 14, 2006.** Mr. Hayes stated that the Committee discussed incorporation of climate change concerns into local general plans, and received a presentation from Dawn Weisz of Marin County on that topic. The Committee also discussed developing a preliminary "carbon footprint" for the Committee.

4. **Technical Committee Meeting of June 14, 2006.** Dr. Bornstein stated that Committee member Altshuler gave a presentation on information presented at a recent conference held in the South Coast AQMD on ultrafine particulate matter (PM). Mr. Altshuler suggested that the Committee receive a presentation from Dr. Bart Ostro on individual chemistry and mortality. Dr. Bornstein added that he is available to give a presentation at the next Committee meeting on the decreasing temperature trends over the last 80 in coastal areas. Dr. Bornstein stated that large-scale models are insufficient to discern local or regional effects. Dr. Bedsworth replied that climate change as a global phenomenon is a subject on which the scientific community has reached widespread consensus, and that the observation of varying local effects should not have any impacts that would modify policy that endeavors to mitigate global warming. Mr. Dawid noted that a recent article cited one meteorologist as asserting there is no consensus on global warming. Dr. Bornstein replied that this author is ultimately in a small minority compared with the majority of scientists who opine otherwise.

5. **Executive Committee Meeting of July 12, 2006.** Chairperson Kurucz stated that the Committee met earlier this morning and discussed the Advisory Council's May 30, 2006 report to the Board Executive Committee. The Board members expressed their approval of the Council Committee and Regular minutes submitted to them for review, and it was clear that they had all read the minutes carefully and had come prepared with questions. At this morning's meeting, the Council Executive Committee also discussed the District's outreach program and what types of public outreach activities Council members might engage in.

PRESENTATION

6. **From Science to Regulation—Air Quality Successes and Challenges in California.** Robert F. Sawyer, P.E., Ph.D., Chairperson, California Air Resources Board (CARB), stated that he would review the history of air quality regulation in California and assess the major air quality successes and challenges facing the state. Dr. Sawyer stated that with regard to diesel emissions, the central issue concerns the heavy-duty truck rule that by 2007 would require installation of particulate traps on all new heavy-duty diesels sold in California. This will soon impact the off-road engine sector. In 2010, another regulatory step mandating a 90% reduction in emissions of nitrogen oxide (NOx) will take place. To date, the PM reduction has occurred by a factor of 10 in in-use vehicles. NOx reductions have not been as successful. California has an aggressive PM trap retrofit program that aims to retrofit every heavy-duty vehicle. This technology is attractive and even takes care of the nanoparticle problem.

   Given manufacturing trends, the state will see an increase in the number of light-duty diesel vehicles: these are high-performance, high-powered vehicles that meet stringent emission standards and have superior fuel economy to gasoline-powered vehicles. However, there are a few on-board diagnostic issues pending with these vehicles. The emission reduction issues awaiting resolution for these vehicles concern ultrafine PM and nitrogen dioxide (NO2).

   Regarding the history of air quality in California, during the 1950s, Professor Haagen-Smit identified the phenomenon of photochemical smog. At that time, there were 4.5 million vehicles on the road in California. In this millennium, notwithstanding the significant increase in vehicles traveling on the roadways, extreme levels of air pollution have been reduced such that there are no longer any Stage I smog alerts in the South Coast AQMD.

There are a number of emission reduction activities at the state level, such as the regulation of the movement of goods throughout the state. The state's shipping ports are particularly at issue in the context of these initiatives. The Governor is also committed to decreasing the state's dependence on petroleum and on increasing the use of renewable fuels. The major issue on the immediate horizon is climate change. AB 1493 (Pavley) is now being subjected to litigation. The Supreme Court will hear whether the Environmental Protection Agency has the authority and responsibility to control CO_2, and whether or not CO_2 is an air pollutant. CARB intends to move ahead with its regulatory program, notwithstanding such litigation.

The major challenges in California concern ozone and $PM_{2.5}$. The San Joaquin Valley has achieved compliance with the PM10 standard, but it is at the $PM_{2.5}$ level that the health effects are found. The observable trends for $PM_{2.5}$ in the San Joaquin Valley have reached a plateau, and require further examination of the science in order to understand why this is the case. Attainment of the eight-hour ozone standard also remains a major challenge in the state. This is largely a motor vehicle issue that concerns emissions from the in-use fleet.

Emission reductions have been achieved for lead, nitrogen dioxide, sulfur dioxide and carbon monoxide. In the South Coast AQMD, ozone levels are decreasing. In the San Joaquin Valley, growth and geography have stalled improvements in air quality. The debate continues over whether reducing emissions of hydrocarbons or NOx is the most effective ozone reduction strategy. The weekend ozone effect is real and well documented, and inter- and intra-basin pollutant transport remains a problem as well. The background levels of ozone coming off the Pacific Ocean are increasing, thereby adding to the ozone problem.

Another challenge in California concerns growth. The number of vehicles has increased fourfold. Vehicle miles traveled (VMT) and population are also increasing. Yet, at the same time, air quality is improving, and progress is being made in the face of growth. Regulation and education will constitute a two-pronged approach to dealing with these dynamics.

The new light-duty vehicle fleet is a success story. The auto industry deserves credit for developing the technology to achieve more stringent emission standards, although much prodding has had to take place in order for this to occur. California has focused on in-use exhaust and evaporative emissions, and is increasingly using on-board diagnostics.

Another major issue is land-use planning and the proximity of residential areas to freeways. In the nearest 100 meters to a freeway, there are high concentrations of ultrafine PM. Those who drive vehicles on freeways are also exposed to large amounts of ultrafine PM. A great deal of planning guidance strongly urges that schools not be located near freeways.

The Zero Emission Vehicle (ZEV) program has been very successful, not so much because of battery and fuel cell vehicles *per se*, but because these have enabled the manufacture of hybrid vehicles. Another review of the ZEV program will be conducted at the state level early next year. Hydrogen fuel cells are longer-term solutions. The dominance of the petroleum refining system will not be displaced in a short period of time.

Another challenge facing California is to reduce petroleum use by 15% by 2020. Given the growth that is expected, use of alternative fuel use will need to increase by 20% by 2020, and an increased focus on renewable and bio-fuels, ethanol and hydrogen. The debate over E10 and E85 ethanol continues, and the economics of ethanol will continue to be influential.

Reduction of risk from diesel PM is a major goal in California, which in 2000 set the goal to reduce such risk by 75% by 2010 and 85% by 2020. New engine standards, engine retrofit programs, such clean diesel fuels as ultra low sulfur diesel, and in-use compliance standards for heavy-duty diesel engines, will contribute significantly toward achieving this goal.

In reply to questions, Dr. Sawyer stated:

- The regulatory landscape has changed since CARB originally petitioned the EPA to grant the use of E10 ethanol. It is a complicated issue due to the subsidy to farmers.
- Implementation of AB 32 in the Governor's view begins with establishing a climate change board comprised of staff from key agencies to provide top-down coordination.
- Experts will report to CARB on the status of battery electric cars and the extent to which improvements in battery technology have been made.
- The increase in gasoline prices would be very positive if the revenues were going to the taxpayers rather than to the oil refiners.
- Nuclear power could be a sound source of energy but the inability to store the waste it generates renders its implementation problematic.
- Regarding the nexus between climate change and traditional air quality programs, it is desirable to seek to reduce urban high temperatures which are adverse both to air quality and daily life, and to strive to attain to efficiency wherever and whenever possible.
- Optical on-board diagnostics will be crucial to integrating on-board diagnostics with the state's Smog Check program.
- Eucalyptus forest waste and chips could be used to combust and generate electricity.
- In a CO_2 emission trading program, whoever can show reduction in carbon emissions should be allowed to enter the market, but the emission inventory must be correct.

AIR DISTRICT OVERVIEW

7. **Report of the Executive Officer/APCO.** Mr. Broadbent stated that this summer the District recorded four excesses of the national ozone standard, seven excesses of the state standard and one excess of the state one-hour standard. Temperatures were very high on three of the four days on which excesses occurred. The impact of these excesses on attainment in the region is an entirely different statistical matter. On those days the District called a Spare the Air day, transit ridership increased by 10%. Funding for free transit on three additional Spare the Air days during this year's ozone season has just been allocated by MTC.

   Mr. Dawid suggested focusing primarily on reducing vehicle miles traveled (VMT) on Spare the Air days and referencing toll bridge plaza data. Mr. Broadbent replied that the District has hired a firm to conduct the necessary marketing and survey work. From an air quality standpoint, VMT is utilized in analyses of longer-term issues. The Spare the Air program serves also as an educational tool to modify individual behavior and provide for a focused, episodic control that gives incentives to use public transit. Dr. Bornstein noted that recent research in the cities of Portland and Houston reveals that thermal heat stress is an additional reason to avoid travel on very hot days.

Chairperson Kurucz inquired as to a recent report that the District is facilitating marine diesel emission reductions by helping to negotiate an agreement between the City of San Francisco and a local cruise ship port. Mr. Broadbent replied that the District is assisting in that capacity and will also provide grant incentive funding to bring electric power to that ship port, thereby avoiding the need for the docked ship to be powered by its own diesel engines.

Mr. Broadbent added that the District is financially healthy this fiscal year and increased its fee schedule an average of 8.5% over last year to allow for the continuance of key programs, including the CARE, wood smoke outreach, and climate change programs.

OTHER BUSINESS

8. **Report of the Advisory Council Chair.** There was no report.

9. **Council Member Comments/Other Business.** Chairperson Kurucz called for reports from attendees at the 99th Air & Waste Management Association Conference in New Orleans:

- Mr. Hayes stated that, from a scientific standpoint, the conference was outstanding, particularly concerning information presented on PM and climate change.
- Mr. Altshuler observed that the sessions were well organized. In discussions on the weekend ozone effect, diverse views expressing preferences for strategies that would emphasize either NOx or hydrocarbon reductions were expressed.
- Mr. Brazil stated that the transportation courses emphasized PM reductions and mobile source emission inventory work.
- Dr. Bornstein stated that in classes on the weekend ozone effect, the diverse presentations expressed consensus on the effect as a phenomenon in the western United States. The weekend ozone effect is not observed east of the Mississippi River.
- Mr. Blonski stated that the conference is an excellent mix of industry, regulators and academics, and gave a clear indication of the District's air quality leadership.
- Chairperson Kurucz expressed his appreciation to the attendees for their active participation in the conference and noted that several of them also presented papers. He added that his course attendance focused on the weekend ozone effect and PM.
- Mr. Hess added that the conference was attended by 1,900 people from over 50 countries.

10. **Time and Place of Next Meeting.** 10:00 a.m., Wednesday, September 13, 2006, 939 Ellis Street, San Francisco, CA 94109.

11. **Adjournment.** The meeting was adjourned at 12:31 a.m.

James N. Corazza
Deputy Clerk of the Boards

:jc

AGENDA: 2

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

DRAFT MINUTES

Air Quality Planning Committee
9:30 a.m., Wednesday, August 9, 2006

1. **Call to Order – Roll Call.** Chairperson Hayes called the meeting to order at 9:35 a.m. Present: Stan R. Hayes, Chairperson, Ken Blonski, Harold Brazil, Emily Drennen, Fred Glueck, John Holtzclaw, Ph.D., Kraig Kurucz, Ed Proctor.

2. **Public Comment Period.** There were no public comments.

3. **Approval of June 14, 2006 Minutes.** Fred Glueck moved approval of the minutes; seconded by Emily Drennen; carried unanimously.

4. **Update on Development of Air Quality Guidelines for Local Jurisdictions.** David Vintze, Air Quality Planning Manager, stated that the District is developing general plan guidance and updating the existing California Environmental Quality Act (CEQA) guidelines. The air quality guidance will include background information on health effects, sources of air pollutants, reducing air quality impacts from land use, along with a sample air quality element and a method for evaluating a jurisdiction's general plan. The CEQA guidelines update will identify new analytical methods and significance thresholds and new strategies to mitigate emissions from indirect sources.

   The background information section will include an executive summary; identify the air quality standards that are in force and the implementation plans that have been adopted in response to the federal and state Clean Air Acts. It will describe the state of Bay Area air quality, the interrelationships between the federal, state, district and local jurisdictions, and how air quality fits into the other seven mandatory elements of a local general plan.

   The health effects section will address those issues associated with exposure to ozone, particulate matter (PM), toxic air contaminants, other criteria pollutants, naturally occurring asbestos, and odors and nuisances.

   The guidance document will address stationary, on- and off-road mobile, area, indirect, construction and indoor sources of air pollution. It will review land-use policies and cross-reference the 19 transportation control measures in the District's 2005 Ozone Strategy. It will identify mobile source control measures, green building designs, sample ordinances for vehicle idling, green procurements and contracting. A public outreach section will highlight the District's Outreach & Incentives division, and address indoor air quality issues.

   The sample air quality element will include background information, current monitoring data and links to obtain newer data, the attainment status of the region, land-use compatibility issues, sample goals and policies, implementation measures and performance standards.

In evaluating the air quality element, the guidance will include a checklist for a jurisdiction to ensure that consistency is achieved with other elements and policies in the general plan, and to evaluate the inclusion of transportation control measures in the general plan for CEQA review. The District is also developing a system by which to rate an air quality element.

Since the last update of the District's CEQA guidelines in 1999, diesel particulates have been designated as a toxic air contaminant, and this will be included as a category for evaluating project development. New analytical methodologies to assess impacts of sources of air pollution from a given project will also be included. Since 1999, new mitigation strategies have been used and tested in the field, such as green building design and the promotion of mixed-use development to reduce vehicle trips and emissions from various scenarios of landscaping maintenance. Significance thresholds for project emission reduction evaluation have not yet been adopted. The state's CEQA guidelines require that any new significance thresholds that will be adopted by an agency must demonstrate "substantial evidence" that a measure will, in fact, achieve a projected emission reduction.

In assessing air quality impacts, construction equipment emissions are under review along with the development of a methodology for significance thresholds for this emissions source. Methodologies will be further developed for assessing emissions from mobile sources, roadway congestion, area sources such as paint, fireplaces, and lawn equipment, as well as industrial processes.

The guidance document will also include Best Available Mitigation Measures (BAMM). These address a broad range of categories for dust stabilization, low energy use options, alternative travel mode options, alternative fuel/power construction equipment, low emissions product/material options, idling restrictions, re-power equipment and operational modifications.

In response to questions, Mr. Vintze noted that the guidance document will include green-house gas emissions and climate change categories. A significance threshold will have to be developed for greenhouse gases based on substantial evidence. This poses a considerable challenge especially in attempting to develop one that would withstand a legal challenge.

In terms of the indirect source issues, a lawsuit has been filed against the San Joaquin Valley air district, which requires that development projects must endeavor to reduce vehicular traffic associated with them or pay a residual fee for what cannot be mitigated. Funds from this fee bank funds incentive programs and emission reduction programs in that District. Regarding the menu of options for BAMM and the development of a cost/benefit assessment for each, emission reduction quantification can be achieved more easily for some projects than for others. Vehicular idling restriction and the re-powering of equipment offers an opportunity for quantifying emission reductions by referencing emission profiles for engines at particular loads and speeds, as well as manufacturer engine test data.

Local jurisdictions will likely track differently how their air quality elements are made consistent with other elements in their general plan. Chairperson Hayes suggested that an air quality element could be incorporated into a general plan when it is updated.

5. Update on Methane Capture at Landfills. Carol Allen, Senior Air Quality Engineer, stated that there are more than 140 landfills in the Bay Area: 19 are active and permitted by the District; 16 are inactive; and 109 are old and small, closed landfills. The total waste capacity amounts to 360 million tons: 309 million tons are at active sites and constitute 65% of total capacity. Inactive/closed sites contain 52 million tons of waste. Proposed expansions of existing landfill facilities will be able to contain 65 million additional tons.

Landfills emit PM, particularly from vehicular traffic associated with them, and from wind erosion. Landfills generate methane gas and carbon dioxide, and organic compound emissions that can contribute to ozone formation, along with some toxic air contaminants. Waste is broken down first in an aerobic environment, and after about two years in an anaerobic environment. As waste decomposes, gas pressures build up below the surface and seep upward toward the surface. The waste type, moisture and temperature in the landfill affect the speed of decomposition. Over the lifetime of a landfill, methane generation occurs at the greatest rate in the first third of the decomposition process. Methane from Bay Area landfills is generated in the amount of 525 tons per day, and precursor organic compounds at 3.1 tons per day. After the application of emission reduction strategies, methane is reduced to 137 tons per day and precursor organic compounds to 0.8 tons per day.

Regulatory requirements from the District and the federal government require landfills to reduce precursor organic compound emissions to mitigate ozone formation. State and solid waste regulations require landfill gas controls to mitigate odor nuisance and fire hazard. When a landfill has accumulated 1 million tons, the District regulations take effect. Due to District regulations, the collection of 24,000 cubic feet of gas is achieved from landfills on a daily basis, which is the equivalent of 720 BTU/hour or 74 MW of electricity on a daily basis.

Landfills collect gases to prevent off-site migration of landfill gases which can create underground fires. There are three elements of landfill gas control in use: landfill covers and caps—such as soil and other materials on top of the waste; landfill gas collection systems—with pipes that have perforated sections buried in the waste; and landfill gas control devices—which are typically flares, or internal combustion engines or turbines.

The District requires that at larger landfills the covers and caps be inspected monthly in order to mitigate seepage of landfill gases. Surface sweeps are required on a quarterly basis to assess methane seepage. District regulations require continuous operation of the gas collection systems. Combustion devices include 70% of gases to be combusted by enclosure flares and 30% by energy recovery devices, such as internal combustion engines, turbines, micro-turbines and boilers. There are some non-combustion methods for dealing with landfill gases, but none of these are in operation currently in the Bay Area: (1) carbon adsorption, (2) purification and separation into products—for which there are two proposed systems in the Bay Area; and (3) fuel cells, which is presently at the theoretical stage.

District regulations require annual source testing of landfill gas control devices. These are subject to Best Available Control Technology (BACT) or Reasonably Available Control Technology (RACT).

In reply to questions, Ms. Allen noted that the economics of converting methane into fuel, as opposed to flaring it, are unattractive. Selling back electricity generated from methane gases

in engines at a landfill does not offer major economic benefits and is subject to the variation in the electricity market. Offsets for emissions of nitric oxide are also costly. Moreover, the wear and tear on the engines fueled by gases from the landfill creates a disincentive for approaching the use of landfill gases with an energy recovery emphasis.

Composting operations greatly speed up the rate of waste decomposition. Emissions of methane are higher from composting operations than from a landfill facility. Methane can be collected and vented through biological filters, and this is the preferred method of control for composting operations. The District has not yet looked at an energy recovery approach to emissions from composting operations. Peter Hess, Deputy Air Pollution Control Officer, observed that recycling requirements are increasing for the Bay Area and minimizing the total quantity of waste going to a landfill, and this has a positive impact by reducing emissions of greenhouse gases from landfills.

6. **Discussion of Planning Committee Carbon Footprint.** Chairperson Hayes distributed "Carbon Footprint Analysis: BAAQMD Advisory Council Air Quality Planning Committee," which contains a calculation—based on the World Resources Institute methodology—of emissions based on member travel to and from meetings by Committee members, the use of electricity for meetings of the Committee at the District facility, and air travel to and from the Air & Waste Management Annual Exhibition & Meeting. The vast majority of emissions derive from the attendance of Council members at the latter. If an offset fee were tacked on to the 12,970 pounds of carbon generated annually by the Committee, a fee of $5.50 per tons per year of CO_2 would amount to $35.67. Chairperson Hayes noted that the company for which he works is striving to become carbon neutral in all of its planning activities globally, and has calculated that it can do so at a total cost of approximately $5,000. These funds could be donated to organizations that are also reducing carbon emissions.

   Mr. Proctor moved that the Committee recommend that a carbon footprint be developed for the Advisory Council; seconded by Dr. Holtzclaw; carried unanimously. Mr. Kurucz stated that further refinements to footprint calculations and the policy on the allocation of funds to emission mitigation in the District may be made as the discussion process moves forward.

7. **Committee Member Comments/Other Business.** Mr. Glueck inquired as to the negative publicity on the "Spare the Air" program that was recently heard during a heat spell last month in the Bay Area. Dr. Holtzclaw stated that during those "Spare the Air" days there was also press coverage of how people in San Francisco were walking and shopping, showing that neither vehicles nor increased parking are essential to a thriving economic activity in this sector. Ms. Drennen concurred with Mr. Glueck, and added that broader application of free transit in the Bay Area would be worth considering.

8. **Time and Place of Next Meeting**. At the call of the Chair.

9. **Adjournment.** 11:41 a.m.

James N. Corazza
Deputy Clerk of the Boards

AGENDA: 3

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

DRAFT MINUTES

Advisory Council Technical Committee
1:00 p.m., Wednesday, August 9, 2006

1. **Call to Order – Roll Call.** Chairperson Bornstein called the meeting to order at 1:10 p.m. Present: Robert Bornstein, Ph.D., Chairperson, Irvin Dawid, William Hanna, Stan Hayes, John Holtzclaw, Ph.D. Absent: Sam Altshuler, P.E., Louise Bedsworth, Ph.D.

2. **Public Comment Period.** There were no public comments.

3. **Approval of Minutes of April 12 and June 14, 2006.** Dr. Holtzclaw moved approval of the April 12, 2006 minutes; seconded by Mr. Hanna; carried, with Mr. Dawid abstaining. Dr. Holtzclaw moved approval of the June 14, 2006 minutes; seconded by Chairperson Bornstein; carried unanimously.

4. **Update on the District's Community Air Risk Evaluation (CARE) Program.** Dr. Phil Martien, Senior Advanced Projects Advisor and CARE Program Manager, stated that the CARE program objectives are to (1) evaluate community cancer and non-cancer health risk from ambient toxic air contaminants, and (2) focus the health risk mitigation measures on locations with higher risk levels and sensitive populations. The program is designed in threephases. Phase I concerns conducting scoping studies of the toxic emission inventory and further refinement of the inventory, along with initial mitigation measures. Phase II concerns modeling pollutant concentrations and continued development of mitigation measures. Phase III concerns exposure assessments and mitigation measures.

   Mitigation measures include targeting incentive funds for reducing mobile source emissions; regulating emissions from stationary and indirect sources; advising and collaborating on issues related to development, housing and transportation; sponsoring and supporting applicable legislation; developing model ordinances and enhancing information campaigns. To involve the community and obtain input from other agencies, a Task Force for the CARE program has been created and includes 15 members representing government, business, health and the community.

   Phase I of the CARE program is nearing completion. A preliminary toxic air contaminant emission inventory has been developed. Support studies have been conducted, such as a residential wood burning survey that will help to make corrections in the wood smoke inventory. Source apportionment studies for particulate matter (PM) have been conducted, and include refinements that distinguish new from old carbon in the chemical mass balance analyses, which will contribute to the further refinement of source apportionment. Desert Research Institute is assisting with the speciation of the organic portion of the PM. Demographic and health data will be used to target regions for the incentive programs that will reduce emissions within a given locale.

The development of the emission inventory for area and non-road, on-road mobile and point sources required further chemical speciation in order to obtain more accurate speciation profiles and cancer unit risk factors. Data from this effort are then spatially allocated throughout the map of the model domain. Among the findings and results observed to date, data has been generated for cancer toxicity-weighted emissions based on each pollutant—in which diesel particulate ranks as the foremost pollutant at 81%; and by source category in another rendering of the same data, in which on-road sources and construction equipment are the two major source categories.

With respect to diesel PM, the spatial distributions of this pollutant have been plotted, with highest concentrations found in West Oakland and San Francisco, and also in west Alameda County. The same data has been rendered with unit risk-factors applied.

For chronic, non-cancer toxicity-weighted emissions, acrolein at 48% and formaldehyde at 20% are the major pollutants when data are weighted by pollutant. For source category, on-road mobile sources at 33% and aircraft at 24% constitute the major sources. When the data for formaldehyde is applied to the map of the study domain, concentrations are highest near major roadways and military airports in the Bay Area.

In terms of acute toxicity-weighted emissions, acrolein is the major pollutant at 94%, and aircraft at 40% and on-road mobile sources at 38% are the major source categories of formaldehyde and acrolein. When acrolein emissions are plotted on the study domain, airports show the highest concentration levels.

Demographic and health data have been plotted on the map of the study domain. Data have been plotted for populations under age 18 and then adjusted with asthma hospitalization rates. The plotted data are consistent with the maps of emissions, with western Alameda as an area of particular attention. However, direct inferences of this data are not to be recommended, except insofar as the plots help identify areas with sensitive populations.

Phase I findings are that (1) 80% of cancer health risk is attributable to diesel PM; (2) 50% of chronic non-cancer risk is from acrolein; (3) more than 90% of acute non-cancer risk is also from acrolein; (4) on-road and off-road diesel emissions, including construction, shipping, and rail are large sources of cancer risk; and (5) gasoline powered vehicles and aircraft are the largest contributors to non-cancer risk. The highest concentrations of diesel PM and acrolein are found in eastern San Francisco and western Alameda and Contra Costa counties. These areas also have large numbers of sensitive receptors.

Policy recommendations from these findings are that (1) a gridded toxic air contaminant inventory will be used as a surrogate for exposure; (2) regional demographic data will be used to identify grid cells with sensitive populations; (3) mitigation measures will be targeted for areas with high concentrations of toxic air contaminant emissions and sensitive populations; and (4) follow-up will be conducted with more sophisticated techniques to evaluate population exposure.

Plots over the study domain of toxic air contaminants for total $PM_{2.5}$ weighted by groups under age 18 and over age 64 have been made for identifying projects in areas to which Carl Moyer program grants could be applied to mitigate high concentrations of diesel PM.

With regard to next steps, Phase II will include modeling concentrations and continuing development of mitigation measures. Preliminary modeling on a local and regional scale will also be conducted, along with health risk assessment for the Port of Oakland and large rail yards. Additional mitigation measures for these will be developed.

Phase III will contain the development of exposure assessments, refinement of modeling and measurements, and development of health risk assessments along with continuing work on emission mitigation measures.

In reply to questions, Dr. Martien noted that similar toxic air contaminant analysis has occurred in the South Coast AQMD, and that the plots of data have some degree of parallel with those developed in the Bay Area. Chairperson Bornstein inquired if it might be advisable to request a presentation from the South Coast AQMD staff on its modeling work and then to have a meeting between South Coast and Bay Area staff, as well as Dr. Eric Fujita from the Desert Research Institute (DRI). Dr. Martien replied that this could prove to be productive. The Committee members agreed with this suggestion and requested that the modeling staff of the South Coast be invited to give the Technical Committee a presentation on its toxic air contaminant modeling work to date. Dr. Bornstein suggested that the Public Health Committee be invited join the Technical Committee in receiving this presentation.

5. **Committee Member Comments/Other Business.** Chairperson Bornstein stated that the California Energy Commission is hosting its Third Annual Research Conference on Climate Change in Sacramento on September 13-15, 2006.

6. **Time and Place of Next Meeting**. 1:00 p.m., Wednesday, October 11, 2006, 939 Ellis Street, San Francisco, CA 94109.

7. **Adjournment.** 2:39 p.m.

James N. Corazza
Deputy Clerk of the Boards