



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

## ADVISORY COUNCIL REGULAR MEETING

WEDNESDAY  
MAY 10, 2006  
10:00 A.M.

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

### AGENDA

#### CALL TO ORDER

Opening Comments  
Roll Call

Fred Glueck, Vice-Chairperson  
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 March 22, 2006

#### COMMITTEE REPORTS

2. Public Health Committee Meeting of April 11, 2006 Jeffrey Bramlett
3. Air Quality Planning Committee Meeting of April 12, 2006 Stan Hayes
4. Technical Committee Meeting of April 12, 2006 Robert Bornstein, Ph.D.
5. Executive Committee Meeting of May 10, 2006 Fred Glueck

## **PRESENTATION**

### 6. California Goods Movement Action Plan

Peter Hess

*Cindy Tuck, Assistant Secretary for Policy at the California Environmental Protection Agency, will present an overview of the State's development of the Goods Movement Action Plan. Ms. Tuck will explain the linkage between the Goods Movement Action Plan and the Air Resources Board's Emission Reduction Plan for Ports and Goods Movement in California.*

## **AIR DISTRICT OVERVIEW**

### 7. 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**

### 8. Report of Advisory Council Chair

Fred Glueck

### 9. 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.*

### 10. Time and Place of Next Meeting

*10:00 a.m., Wednesday, July 12, 2006, 939 Ellis Street, San Francisco, CA 94109.*

### 11. 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](http://www.baaqmd.gov)**

- To submit written comments on an agenda item in advance of the meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- To request special accommodations for those persons with disabilities notification to the Clerk's Office should be given 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**

**CLERK OF THE BOARDS OFFICE:  
MONTHLY CALENDAR OF DISTRICT MEETINGS**

**MAY 2006**

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 2nd Monday of each Month)</i> - RESCHEDULED TO 5/15/06	Monday	8	9:30 a.m.	4th Floor Conf. Room
<b>Advisory Council Executive Committee</b>	Wednesday	10	9:00 a.m.	Room 716
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets 4th Wednesday of each Month )</i>	Wednesday	10	9:45 a.m.	4th Floor Conf. Room
<b>Advisory Council Regular Meeting</b>	Wednesday	10	10:00 a.m.	Board Room
<b>Advisory Council Public Health Committee</b>	Wednesday	10	12:30 p.m.	Room 716
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 2nd Monday of each Month)</i>	Monday	15	9:30 a.m.	4th Floor Conf. Room
<b>Board of Directors Regular Meeting</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	17	9:45 a.m.	Board Room
<b>Joint Policy Committee</b>	Friday	19	10:00 a.m. – Noon	MetroCenter Auditorium 101 8th Street Oakland, CA 94607
<b>Board of Directors Legislative Committee</b> – <i>(At the Call of the Chair)</i>	Monday	22	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets 4th Wednesday of each Month )</i>	Wednesday	24	9:45 a.m.	4th Floor Conf. Room
<b>Board of Directors Executive Committee</b> <i>(At the Call of the Chair)</i>	Tuesday	30	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Personnel Committee</b> <i>(At the Call of the Chair)</i>	Wednesday	31	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room

**JUNE 2006**

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
<b>Board of Directors Ad Hoc Cme. On Climate Protection</b> – <i>(At the Call of the Chair)</i>	Thursday	1	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Regular Meeting</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	7	9:45 a.m.	Board Room

## JUNE 2006

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 2<sup>nd</sup> Monday of each Month)</i>	Monday	12	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Advisory Council Public Health Committee</b>	Tuesday	13	10:00 a.m.	Board Room
<b>Board of Directors Regular Meeting</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	21	9:45 a.m.	Board Room
<b>Board of Directors Stationary Source committee</b> <i>(Meets 4<sup>th</sup> Monday of every quarter)</i> - TO BE RESCHEDULED	Monday	26	9:30 a.m.	Board Room
<b>Board of Directors Public Outreach Committee</b> <i>(Meets 4<sup>th</sup> Monday every other Month)</i>	Monday	26	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets 4th Wednesday of each Month )</i>	Wednesday	28	9:45 a.m.	4th Floor Conf. Room

## JULY 2006

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
<b>Board of Directors Regular Meeting</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	5	9:45 a.m.	Board Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 2nd Monday of each Month)</i>	Monday	10	9:30 a.m.	4th Floor Conf. Room
<b>Advisory Council Executive Committee</b>	Wednesday	12	9:00 a.m.	Room 716
<b>Advisory Council Regular Meeting</b>	Wednesday	12	10:00 a.m.	Board Room
<b>Advisory Council Public Health Committee</b>	Wednesday	12	12:30 p.m.	Room 716
<b>Board of Directors Regular Meeting</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	19	9:45 a.m.	Board Room
<b>Joint Policy Committee</b>	Friday	21	10:00 a.m. – Noon	MetroCenter Auditorium 101 8th Street Oakland, CA 94607
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets 4th Wednesday of each Month )</i>	Wednesday	26	9:45 a.m.	4th Floor Conf. Room

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

DRAFT MINUTES

Advisory Council Regular Meeting  
1:30 p.m., Wednesday, March 22, 2006

**CALL TO ORDER – ROLL CALL**

Opening Comments: Chairperson Kurucz called the meeting to order at 1:45 p.m.

Roll Call: Present: Kraig Kurucz, Chair, Cassandra Adams, Sam Altshuler, P.E., Louise Bedsworth, Ph.D., Ken Blonski, Robert Bornstein, Ph.D., Jeffrey Bramlett, Harold M. Brazil, Irvin Dawid, Emily Drennen, Fred Glueck, William Hanna, Stan Hayes, John Holtzclaw, Ph.D., Janice Kim, M.D., Steven Kmucha, M.D., Karen Licavoli-Farnkopf, MPH, Ed Proctor, Brian Zamora.

Absent: Linda Weiner.

Introduction of New Advisory Council Members: Chairperson Kurucz welcomed new Advisory Council members Janice Kim, M.D., Ed Proctor and Karen Licavoli-Farnkopf, MPH.

**PUBLIC COMMENT PERIOD:** There were no public comments.

**CONSENT CALENDAR:**

1. **Approval of Minutes of January 11, 2006.** Mr. Dawid moved approval of the minutes; seconded by Dr. Holtzclaw; carried unanimously.

**COMMITTEE REPORTS:**

2. **Executive Committee Meeting of March 22, 2006.** Chairperson Kurucz stated that the Committee met earlier this afternoon and received reports from the Standing Committee Chairs.
3. **Joint Air Quality Planning & Technical Committee Meeting of February 7, 2006.** Mr. Hayes stated that the joint Committee received a staff presentation on the District’s climate protection program and adopted a motion “expressing the Council’s support for the Board and staff’s leadership on the Climate Change issue, in particular on the current efforts and future direction.” He moved adoption of the motion for forwarding to the Board; seconded by Dr. Holtzclaw. Dr. Bornstein suggested the text reflect “proposed future direction.” This was accepted by the motion maker and seconder and the motion carried unanimously.
4. **Report of the Public Health Committee Meeting of February 14, 2006.** Mr. Bramlett stated that the Committee received a staff presentation on District wood smoke abatement measures. In April, the Committee will receive presentations on wood smoke abatement in the Puget Sound and San Joaquin air districts. The Committee may meet monthly in the near future to attend to certain topics. It will begin its work on indoor air quality and asthma in the summer.

## **PRESENTATION**

### **5. Particulate Matter (PM) Research and Abatement.**

(a) Dr. Eric Fujita, Division of Atmospheric Sciences, Desert Research Institute (DRI), Reno, Nevada, presented “Source Apportionment of Ambient PM,” which concerns DRI’s research on PM emission profiles for mobile sources, wood combustion and meat cooking. Source characterizations and profiles were applied in a chemical mass balance methodology in order to apportion the sources of ambient PM. The presentation will describe source attribution techniques and how they are in turn used in PM source apportionment analysis. Dr. Fujita described the chemical mass balance equation that is used to predict source contributions from knowledge of ambient constituents and source composition profiles. Model inputs include ambient concentrations and associated uncertainties, as well as source composition, to produce estimates of source contributions, with uncertainty factors. Measurements used include PM mass, elements, ions, organic carbon, elemental carbon, organic compound concentrations in both ambient and source samples. The model assumes that:

- Compositions of source emissions are constant during ambient and source sampling
- Chemical species do not react with each other
- All sources with a potential contribution are accounted for
- The number of sources is less than or equal to the number of chemical species
- Source compositions are linearly independent of each other
- Measurement errors are random, uncorrelated and normally distributed

Dr. Fujita displayed a pie chart containing data from the 1997 Denver North Front Range Air Quality Study in Colorado displaying the fraction of PM<sub>2.5</sub> and total carbon from diesel exhaust, gasoline, wood burning (hard and soft wood), ammonium nitrate, paved road dust, power plants, meat cooking and ammonium sulfate. The data indicate that PM nitrate and wood combustion are major contributors to the total PM<sub>2.5</sub>. DRI studied what molecular markers could be used in distinguishing various combustion sources.

In terms of markers for wood combustion, several classes of organic compounds are useful for identification: lignin pyrolysis products, guaiacols and syringols are emitted in certain ratios in hardwoods and softwoods: in softwoods guaiacols are found in higher ratios to syringols and in hardwoods guaiacols and syringols are emitted in roughly equal amounts. Resin acids and their oxidation products—such as dehydroabietic acid—are associated with softwoods. Cellulose pyrolysis products such as levoglucosan are also found in combusted wood products. These compounds are variously volatile: some are found in the PM phase, while others are found in the semi-volatile phase and distributed in the gas and PM phases.

In the Northern Front Range Study, softwoods and hardwoods were combusted and tested in fireplaces and woodstoves. Hardwoods emitted more water-soluble potassium (a long-standing marker for residential wood combustion) than softwoods. Emissions were also greater from a fireplace than from woodstoves because the latter have a higher temperature and combustion efficiency. The same study identified other organic compounds in wood smoke: polycyclic aromatic hydrocarbons (PAHs) such as hopanes and steranes, and gas phase and particle phase guaiacols.

The Central California Particle Study in 2005 shows similar results, and when levoglucosan is added in a category of source composition, it is found in higher quantities in wildland fuels and prescribed burns. For emissions from specific species of trees, levoglucosan emissions vary in relation to total elemental carbon. Data from the same study comparing laboratory experiments with prescribed burns provided diverse emission profiles. Dehydroabiatic acid is a major constituent in wildland burns and is associated with resin acids.

Data from a District study in San Jose of PM collected on quartz filters collected in 2004 reveals that the samples indicate higher amounts of wood combustion constituents such as dihydroabiatic acid and levoglucosan during the winter (especially holidays and cold days).

Molecular markers for meat cooking include fatty acids (palmitic acid, stearic acid, oleic acid); sterols (cholesterol); and lactones (lactonization of beta-hydroxy fatty acids and oxidation of alkenals and oleic acid). The Northern Front Range Study evaluated meat cooking tracer compounds in emissions from cooking operations with automated charbroiled hamburger, charbroiled hamburger, charbroiled chicken with skin, and charbroiled steak. It found that these molecular markers are emitted in varying levels in all forms of cooking.

Wolfgang Rogge studied a wide variety of cooking techniques and found that such organic compounds as cholesterol, alkanals, alkanols, amides, lactones, furans, dicarboxylic acids, alkanolic acids and alkanes are found in varying levels in all types of meat cooking.

For motor vehicle exhaust, the “Gasoline Diesel/PM Split Study” attempted to distinguish the relative contribution of gasoline and diesel to urban areas. In the vehicle testing phase, the study showed that many factors contribute to vehicle emission rates and composition. The main parameters that affect emission rates and composition are vehicle range and accumulated mileage (i.e., state and quality of maintenance), emission control technology, lubricating oil and age of lubricating, vehicle operating mode and the load it is driven in, ambient temperature, sampling conditions and methods of analysis, in which there are variations. As to the relationship between vehicle age, mileage rate and emissions, the data indicated that PM emissions do not increase significantly until after 10 or 11 years of vehicle age or 150,000 miles.

The vehicle emission test cycles may affect variation in vehicle emission rate and composition. The modified unified driving cycle varies somewhat from the federal test procedure and is a bit more aggressive in the hot stabilized phase of the test. Emissions of black carbon were measured in real time for four different vehicles on the modified unified cycle. Most emissions were associated with the cold start mode and a few hard accelerations for the newer and generally cleaner vehicles. For the dirtier vehicles, high amounts of PM are emitted throughout all the stages of the test procedure. The distribution of organic and elemental carbon for composites of higher emitters and lower emitters in light-duty gas vehicles and heavy-duty diesel trucks reveals that the distinguishing feature is the higher amount of elemental carbon found in emissions from heavy-duty diesel than from gasoline vehicles.

There is considerable variation in the volatility of PAHs (naphthalene, flouranthene, benz(a)anthracene, ideno(1,2,4-cd)pyrene, benzo(ghi)perylene, benzo(k)flouranthene, coronene, hopenes, and steranes. The gas phase PAHs are naphthalene and fluoranthene.

Benzathracadene is a transitional PAH. Indeno(1,2,3-cd)pyrene, benzo(ghi)perylene, benzo(k)fluoranthene) are particle phase PAHs and are markers for gasoline exhaust. Light-duty gasoline vehicle exhaust contains higher molecular weight PAHs in much higher quantity than diesel exhaust. Data from Kansas City and San Jose studies show that there is a linear relationship between the abundance of these particular markers to total carbon.

In a recent study of vehicular exhaust in selected areas in Los Angeles, data indicate that most of the total carbon is attributable to diesel exhaust. However, the results can be different depending on where measurements are made. Measurements taken at the Rose Bowl after a sporting event would reveal a predominance of gasoline exhaust, but in the central part of the Los Angeles basin there is an even distribution of gasoline and diesel exhaust. Charts with plots of black carbon on freeway arterials in the Los Angeles area near the port areas indicate considerable diesel exhaust as these have significant truck traffic.

Organic markers exist for most major combustion sources. However, the abundances of markers are variable and profiles must be specific to the region in which sampling is taking place. The particular analytical method for determining the ratio of organic to elemental carbon must be noted when setting forth results concerning this ratio.

- (b) Dr. David Fairley, District Statistician, presented “PM Source Apportionment for the Bay Area.” He stated he would review a summary of a previous study based on chemical mass balance analysis of filters loaded with ambient PM available from existing studies and review new studies conducted to fill information gaps, via carbon-14 analysis and organic speciation analysis.

Dr. Fairley noted that PM poses serious health problems, and that the District complies with the national, but not the state, annual and 24-hour standards for PM<sub>10</sub> and PM<sub>2.5</sub>. Peak periods of PM concentration in the Bay Area occur in the months of November through January. Wintertime periods of stagnation and cool temperatures tend to produce ammonium nitrate which is a constituent of PM<sub>2.5</sub>. The two most recent winters have had high levels of precipitation, whereas from 2001-2003 PM has been higher during the winter when there was less precipitation. Wood smoke emissions are highest during the winter season.

Two approaches are used to estimate PM sources: analysis of ambient PM sample filters, and engineering calculations based on the emissions inventory. Measurements of ambient air samples have been compared with measurements of the compounds sampled from various sources. The goal was to determine what the sources of PM are and if these were man-made or from secondary formation in the atmosphere. Chemical mass balance can discern the difference between directly emitted constituents and those constituents from secondary atmospheric formation. The data indicate that meat cooking, and also tire and break wear, are fairly minor sources of PM.

In measuring geological dust, higher levels were found at the Pt. Reyes station monitor than at other sites. Peak levels of PM<sub>2.5</sub> do not appear to be significant in evaluating the overall levels of particulate matter. Dr. Fairley noted that in his CMB analysis, he found that most of the PM<sub>2.5</sub> is carbonaceous.



The District has conducted a Carbon-14 study in order to distinguish between recent carbon and old carbon in the samples. New carbon tends to derive from meat cooking and wood burning, and old carbon from fossil fuel combustion. The analysis set forth in terms of annual averages at each site studied revealed that in 10 out of 14 cases for the data in 2004, more than 50% of the PM is new carbon. This suggests that wood burning and cooking contribute more carbon to the atmosphere than fossil fuel combustion from trucks and autos on an annual basis in the Bay Area. Filters from 1998 show higher levels of old carbon than in 2004, which may suggest that the vehicle fleet overall is getting cleaner.

In the efforts to separate sources of old and new carbon in the major sources of PM, further questions remain to be answered. Initial conclusions that have been drawn include (1) ammonium nitrate is a large contributor to both annual and PM<sub>2.5</sub>. (2) ammonium sulfate is a significant contributor to annual but not to peak PM<sub>2.5</sub>. (3) road dust/geological dust/break and tire wear are insignificant sources of PM<sub>2.5</sub> in the Bay Area. (4) most PM<sub>2.5</sub> derives from combustion, directly or indirectly.

- (c) Dave Vintze, Air Quality Planning Manager, presented “Bay Area PM Control Measures for SB656.” He stated that prior to the adoption of SB656 the District regulated PM through several rules: Regulation 5 on Open Burning, Regulation 6 on Particulate Matter and Visible Emissions, and Regulations 8, 9, and 12 on volatile organic compounds, nitrogen oxide and sulfur oxide, respectively. Mobile source incentive programs such as the Carl Moyer, Transportation Fund for Clean Air, Vehicle Buy-Back and Low Emission School Bus and Solid Waste Collection Vehicle programs also reduce emissions of PM and dust. Wood burning emissions are addressed through the Spare the Air Tonight program, a model wood burning ordinance and incentives to replace high polluting wood burning appliances.

SB 656 requires the California Air Resources Board (CARB), in consultation with local air districts, to develop a list of the most readily available, feasible, and cost effective control measures to be used by CARB and the districts to reduce PM<sub>10</sub> and PM<sub>2.5</sub>. CARB recently conducted a survey of air districts in the state and obtained 103 possible control measures for PM. Of these, 69 have already been implemented by the District; 13 are not significant for emission reductions; seven are part of the evaluation in the 2005 ozone study; 10 are slated for further study; two can enhance some existing PM reduction programs; and there are two new potential measures that can reduce PM emissions.

As to measures that can expand or enhance existing programs—in this case the Spare the Air Tonight program and the voluntary curtailment program—enhancement of these is possible. The District has expanded the number of residents that receive its survey for wood combustion, as well as the text of the survey itself. The District can also lower the threshold for the voluntary wood-burning curtailment advisories, amend the existing public awareness program to provide additional outreach and education resources, and enhance the existing wood-burning model ordinance program.

The two potential stationary source control measures include commercial charbroiling (conveyerized and under-fired boiler) operations and stationary and internal combustion engines. There are 500 conveyerized broilers and 5,000 under-fired broilers in the Bay Area. For conveyor char broilers there are control options that include catalytic oxidizers, fiber-bed filters, thermal incinerators, electrostatic precipitators and wet scrubbers.

For under-fired broilers, high efficiency multi-stage filters are under consideration as control measures. The rule development process for stationary and portable internal combustion engines is also underway; stakeholders are being contacted and a review is underway regarding existing regulations for such engines in other agencies.

## **AIR DISTRICT OVERVIEW**

### **6. Report of the Executive Officer/APCO.** Jean Roggenkamp, Deputy APCO, stated that:

- a) the District has selected Jack Colbourn as the new Director of the Outreach & Incentives Division (formerly entitled Public Information & Outreach Division).
- b) the Spare the Air Tonight program concluded in February and to date no exceedances of the ozone standard were recorded. The abundance of rainfall this winter contributed significantly to such monitoring results.
- c) the Spare the Air summertime program will begin on June 1 of this year and will differ from last year's program in that the free transit days on forecasted Spare the Air days will include free transit all day rather than only for the morning commute.
- d) staff continues to move forward with its work on climate protection as well as the Community Air Risk Evaluation (CARE) program.
- e) regulatory work will commence on commercial char broilers and agricultural sources of PM.
- f) the District's budgetary process for the next fiscal year is under way and the last two years of state subvention fund losses no longer occurs this year, but the District must still allocate funds with care.

Mr. Glueck inquired if the combustion of natural gas in home space and water heating in the Bay Area constituted a major source of carbon. Mr. Altshuler noted that, if burned correctly, natural gas does not create a significant source of carbon. Gary Kendall, Technical Division Director, agreed with Mr. Altshuler, and noted that residential space and water heating is included in the District's emission inventory but is generally considered clean burning. Mr. Kendall inquired of Dr. Fujita if this question could be assessed through sampling analysis and source apportionment. Dr. Fujita replied that to date no interest in conducting this type of analysis has been expressed.

## **OTHER BUSINESS**

- 7. Report of Advisory Council Chair.** Chairperson Kurucz stated that selections for Council member attendance at the Air & Waste Management Conference in New Orleans have been made. The Council has been able to fund an additional position due to obtaining one additional registration payment from another source.
- 8. Council Member Comments/Other Business.** Mr. Hanna inquired as to the status of the EPA proposal to eliminate the PM standard for sparsely populated areas. Ms. Roggenkamp replied that EPA has proposed to lower that standard, and staff is looking into it further. Mr. Hanna also requested that staff keep him apprised of developments relative to SB 700 which concerns emissions from agricultural equipment.

Mr. Dawid noted that the Sierra Club has testified at three EPA hearings opposing the lowering of the PM standard in rural areas. Mr. Dawid inquired if the District has adopted a position on Assemblyman Ruskin's currently proposed legislation concerning vehicular emissions. Ms. Roggenkamp indicated she would look into this matter and respond to Mr. Dawid at a later time.

## **PRESENTATION (continued)**

### **5. Particulate Matter (PM) Research and Abatement.**

Chairperson Kurucz stated that Council members who did not have to depart the building for other obligations could ask additional questions of the speakers on this item at this time.

Mr. Altshuler inquired of Dr. Fujita if there were any takeaways in what he had observed with respect to the common use of fireplaces: for instance, whether fireplace users should use soft or hardwood and how these influence start-up, smoldering and combustion temperatures. Dr. Fujita stated that within the context of residential wood combustion, indoor exposure is one of the most important criterion. The exposure to smoke from back draft is of particular concern. People need to be aware of the best way to start a fire and avoid indoor exposure. The same applies to meat cooking. Peter Hess, Deputy Air Pollution Control Officer, suggested that the Public Health Committee investigate the acids and phenols, and how these may be linked to asthma and asthma attacks, and any correlation with wintertime asthma data.

Chairperson Kurucz noted that the results from Dr. Fujita's and Dr. Fairley's studies seem to be in contradiction to one another, although some of the difference may lie in the methodologies that are applied. One set of results suggests that carbon comes from mobile sources, and the other set suggests it is from other sources. The question as to how this is resolved is important. Mr. Hess indicated this will require further evaluation. This will be a topic of discussion at the Air & Waste Management Association Conference in June in New Orleans.

Mr. Glueck inquired if the Community Air Risk Evaluation (CARE) program would address this PM exposure of residences near a freeway arterial or a cluster of several restaurants. Mr. Kendall replied that the grid scale for the CARE program is 2x2 kilometers, and does not reach the micro-scale level to which Mr. Glueck refers.

Mr. Hayes suggested that reductions in outdoor emissions that also reduce indoor emissions should be formally accounted for in evaluating a rule. Also, the large fraction of ammonium nitrate that contributes to PM levels at peak times and for annual averages is noteworthy. Dr. Fairley replied that although more information from additional monitoring sites is required, this result has consistently shown up in the studies that have been conducted to date in the District.

Dr. Holtzclaw suggested that the District take PM measurements downwind from freeways, which may be overlaid on gridded emissions mapping. Dr. Fujita noted that papers have indicated emissions from freeways drop off exponentially with distance away from the freeway. Dr. Fujita and Mr. Kendall indicated they would provide Dr. Holtzclaw with these studies.

Mr. Dawid noted that while truck and gasoline emissions have been the subjects of the speaker presentations today, vehicular congestion is another category of any vehicle emissions study.

He added that an elected official in his jurisdiction is concerned over exposure to freeway emissions of residences that are built next to arterials. Dr. Fujita replied that although the fleet is getting cleaner over time, gross polluting vehicles still contribute to most of the emissions.

Dr. Bornstein inquired if conclusions have been drawn on the basis of samples and measurements, but do not include dispersion. Dr. Fujita replied that at a monitoring site which is used for determining compliance with a standard, then it works for that standard. However, the issue is how representative is that monitoring site in the region in which it is located.

Mr. Altshuler urged that, in presentations such as those given today, the use of percentages of given constituents to the total picture is useful for source apportionment but does not provide the clearest picture in terms of questions for public exposure to pollution.

Mr. Altshuler thanked the Outreach & Incentives staff for sending out topical news articles. One article concerned how California was challenged by a manufacturer in Arkansas for setting strict standards for small engine lawnmowers, and, as a consequence, a national study was conducted. The outcome of the study was to confirm California's regulatory approach on this matter.

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

**10. Adjournment.** 4:12 p.m.

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 Public Health Committee Meeting  
10:00 a.m., Tuesday, April 11, 2006

- 1. Call to Order – Roll Call.** Chairperson Bramlett called the meeting to order at 10:00 a.m. Present: Jeffrey Bramlett, Chairperson, Cassandra Adams, Steven Kmucha, M.D., Linda Weiner, Brian Zamora. Absent: Janice Kim, M.D., Karen Licavoli-Farnkopf.
- 2. Public Comment Period.** There were no public comments.
- 3. Approval of Minutes of February 14, 2006.** Ms. Adams moved approval of the minutes; seconded by Mr. Zamora; carried unanimously.
- 4. Woodsmoke Abatement.** Jim Nolan, Director of Compliance, Puget Sound Clean Air Agency presented “The Puget Sound Wood Smoke Control Program, April 2006.” He stated that wood smoke abatement has been underway in the Puget Sound area since the 1980s, when serious particle (PM) problems were found in industrial areas. The high concentrations were initially thought to have originated in industrial operations, but it turns out that they were primarily derived from wood combustion from the surrounding residential community.

Mr. Nolan noted that two thirds of geographical territory in the Puget Sound agency is comprised of national forests and parks. The region has a population of four million people, approximately 1.2 million residences and 350,000 fireplaces and over 200,000 wood stoves. The types of units include certified stoves, pellet stoves, open fireplaces and uncertified units.

Data sets of PM<sub>2.5</sub> at continuous monitoring sites in the Seattle suburb of Lake forest Park, and from the Duvamish Valley area, in which concentrations of emissions from wood combustion vary significantly, show that PM<sub>2.5</sub> increases at 6:00 pm each night when residents return home from work, and decreases when residences retire for sleep in the evening.

Washington State has established more stringent emission standards for new wood-burning appliances than the federal Environmental Protection Agency (EPA). These impose limits on all existing wood stove and fireplaces include opacity standards, legal fuel types, burn bans and nuisance smoke laws. The Puget Sound agency promotes the change to a cleaner form of residential heating, pollution prevention, burn bans, responses to complaints, public education, and discourages the installation of wood burning devices in new residential developments.

The change-out of wood burning appliances involves the promotion of cleaner forms of residential heating. Joint projects often occur with the Puget Sound agency and hearth products and utilities, as well as promotional campaigns and programs by gas companies and other

companies. The change-out program is paid for by a \$30 fee that is imposed on the purchase of new woodstoves or fireplaces in Washington. The Puget Sound agency has also established a policy that excludes all civil penalties collected by the agency from supporting agency operations. These are instead applied to publication and other activities, such as supporting the woodstove change-out and incentive programs including the disposal of old wood stoves. Supplemental environmental projects are also sought out and implemented, such as the program at Boeing Corporation with its 100,000 employees, that provides large information and communication networks. The Puget Sound agency partners with this company in terms of arranging penalty mitigation in which company funds pay for the cost of changing out employee wood burning appliances. Funds to support such programs have also been obtained from permit mitigation. In one case, a saw mill that installed a large wood fired boiler paid for the wood stove change-outs for its employees. The Puget Sound agency also supports wood smoke media campaigns, and partners with fire departments during burn bans, which educates people on wood smoke health effects.

Pollution prevention programs provide instruction on the correct use of wood burning devices, weatherization programs that encourage residential installation of more insulation to reduce heating requirements, and the use of compressed wood fire logs for open fireplaces in particular. The latter reduce emissions of wood smoke by a range of 70-90% for the casual wood burner.

Calling and enforcing burn ban programs occurs at two stages: the Stage I trigger is  $35 \mu\text{g}/\text{m}^3$  for PM<sub>2.5</sub> and the Stage II trigger is  $60 \mu\text{g}/\text{m}^3$ . These must occur over a 24-hour period and be predicted to continue into the next day. Wood combustion in the Stage I alert is prohibited unless it is the sole source of heating in the residence. At Stage II, wood burning is prohibited without exception. These alerts provide major opportunities for public education. During a Stage I ban, news networks announce the event; however, public education only goes so far, and must be buttressed with enforcement. On the following morning after a Stage I alert, agency inspectors begin their rounds and focus on neighborhoods with high concentrations of wood smoke. With opacity readers, they evaluate smoke from chimneys. State law allows 20 minutes of smoke in excess of opacity standards every three hours for start-up. If they see a house emitting significant smoke, they use digital cameras equipped with date and time stamps to record the event, and return half an hour later to take opacity rating, and if the smoke has not abated, the residence is issued a notice of violation. In such cases, the issue that wood combustion is the sole source of heating does not arise. Upon receipt of a notice of violation, a resident has three choices: (a) if the wood combustion unit was an uncertified stove or fireplace, the old unit can be disposed of and upgraded; (b) if the unit is certified, the resident can visit the dealer and receive training on proper use, and the dealer will send the agency a letter indicating that the resident has received training, or (c) the resident can pay the violation fee of \$1,000. In cases of residential emissions, about half derive from rental facilities. When the landlord finds out that renters use wood combustion devices incorrectly, the devices are usually removed. In 2006, there have been ten burn ban days, and 50 violation notices, one of which paid the violation fee.

The process for agency response to complaints is as follows: the complainant receives and completes a complaint form and files it with the agency which then informs the resident about whom the complaint has been filed. The agency sends a brochure regarding PM health effects to the resident in question and requests a written response to the complaint, noting that a copy of the same will be forwarded to the complainant. Anonymous complaints are not accepted and the follow-up process is not confidential. The agency sends that response to the complainant. If

there are subsequent complaints, the agency sends an inspector to the location to check for violations. About 200-300 complaints are filed each year with the agency.

If there are violations observed as a result of the complaint, then the agency will take necessary enforcement action, but if there are none, then the case is closed. In some cases, only mediation between neighbors will lead to a resolution. In about 90% of the complaints, no further filings are received, as the receipt of a complaint is often sufficient to resolve the situation. In the case of the remaining 10%, an inspector will be sent to speak with each party. There are some instances in which a complaint is lodged for reasons other than actual wood smoke emissions. In other situations, when excess burning occurs at night, there is nothing the agency can do about that. In some cases where an inspector cannot help the parties resolve a dispute, they are referred to a professional mediator. The agency pays for the mediation, which is \$250 per session, and for the most part this has proven successful.

The agency promotes public education regarding wood smoke abatement, and partners with the American Lung Association on producing information on the health effects of wood smoke as well as the legal restrictions on wood burning activities. There are media releases during burn bans, brochures, website information, links to health sites and an electronic mailing list.

Agency efforts to discourage installation of wood combustion devices in new residences, and especially in condominiums, has not made a great deal of headway thus far.

Advice from the Puget Sound agency to the Bay Area AQMD regarding augmentation of its wood smoke abatement efforts would include the following:

- Patience – this will take years. People are in denial: burning is in our genes.
- Compressed wood fire logs are a cost effective option for open fireplaces (and have a huge potential for emission reduction, without significant capital investment requirements).
- Most importantly: focus the message on the wood smoke, and not on the wood burner. There is a strong political support for wood heating. There is no political support for wood smoke.

In response to questions, Mr. Nolan noted the following:

The town of Barrington, Washington is a rural community that is 40 miles from the nearest natural gas line and has a predominance of wood burning residences. Measurements of PM found levels two to three times in excess of the federal health standard. Residents have used wood heating there for generations. In working with the town council, the agency crafted a program to provide incentives to switch to a cleaner form of heat, including installation of a certified wood stove, pellet stove or a propane/oil heat system. The agency also offers to pay for the retrofit and installation of the systems: approximately \$2,500 for propane, \$1,200 for a pellet stove, and somewhat less for a certified wood stove less. The relative emission reduction is important to the agency as is the participation of the town in the solution of the problem. This year, 50 out of the 350 residences have elected some form of upgrade.

The agency provides information regarding the health effects of wood smoke, referencing the American Lung Association which indicates that emissions from wood combustion, especially

carbon monoxide, are significant indoors. The agency also informs people that wood combustion is inefficient on a BTU basis, and in the Pacific Northwest it is three times more costly than natural gas.

The agency did approach wood smoke abatement on a voluntary basis for the initial year that the program went into effect. When more mandatory approaches were adopted, significant challenges were encountered both in terms of cooperation and the receipt of adverse press.

With regard to exemptions from standards, and appeals of violation notices, an administrative hearing board does review appeals of penalties. The agency emphasizes that a wood burning device was excessively smoking during a burn ban day, for example, and not whether the device is certified or the only source of heating in the home. The only issue at the hearing concerns whether or not the penalty is reasonable. Typically, appeals of violation notices are very rare. The process is the same as for the appeal process that an industry would use to appeal a penalty.

The program went from a voluntary to a mandatory phase rather quickly as that is how the legislation set it up, with an initial year or two for practice. The agency was able to convince the hearth products companies that it was in their best interest to persuade their customers to acquire modern, certified devices. With regard to obtaining other “triggers” for changing-out old wood burning devices, such as at the point-of-sale or the remodeling of a house, these were very controversial and the dispute continues. In large urban areas, these measures are not trivial to the real estate community. Such matters will likely be revisited in the future when the federal PM standards are ratcheted down, and more stringent measures will have to be adopted. The prohibition on installing wood burning devices in new developments must come back to the table. Members of the design community continue to feature fireplaces and woodstoves in real estate advertisements as these have a sales attraction and the agency has had no traction with it.

Jami Aggers, Compliance Manager, Compliance Division, San Joaquin Valley Unified Air Pollution Control District stated that her air district is now in its third year of its woodsmoke abatement program. It has not implemented a change-out program at this time nor does it impose fees upon the purchase of wood burning devices. The requirements are that, at the point of sale, devices must be EPA Phase II or Pellet Fuel devices. Upon the change of property ownership, any non-Phase II device must be removed or disabled. An additional document in the escrow process requires a signature that the new owners are adhering to the rule, and the agency files that documentation. With regard to new construction, there are no exceptions allowed to the rule that there must be at least a half an acre or more distance in new construction from another residence in order to qualify for a wood burning device. This “density” requirement mandates no more than two homes with fireplaces per acre. Additional requirements in the sale of wood address levels of moisture content.

Programmatic curtailment of wood burning occurs at two different air quality index levels: the “discouraged” or voluntary level is between a particulate matter (PM<sub>10</sub>) range of 100-150 ppm and anything above that triggers a mandatory burn stage. From 2003-04, two mandatory curtailment days occurred and between one and 53 voluntary curtailment days throughout the eight counties in the district. During 2004-05, three mandatory curtailment days occurred and between 60 and 44 voluntary curtailment days. During 2005-06, there have been 19 mandatory curtailment days, between 14-34 voluntary curtailment days. There were no exceedances of the PM<sub>10</sub> exceedances, and the SJVUAPCD believes that attainment has been demonstrated. The decision of the Environmental Protection Agency (EPA) on this matter is pending.



Over 400 complaints were filed during this wood burning season. Violation notices are issued only when smoke is seen and recorded on a date- and time-stamped digital camera. Violation notices are mailed, as personal contact between residents and inspectors can be confrontational. The district has added a new component to Compliance School for general burning citations which contains a fireplace training component and recipients of violation notices that attend get a fee reduction or waiver.

The wood smoke abatement program was difficult to get off the ground. It is critical to engage in public outreach, to bring stakeholders to the table, and to hold public meetings where people can be heard. Some individuals believe wood burning is an inalienable personal right while others believe that no one should ever again be permitted to burn wood in the fireplace.

The day before a mandatory curtailment notice is to be issued, inspectors are prepared to be sent out the next day to survey areas with intensive complaints. Staff do not inspect in the evenings if they have inspected during the same day. If complaints occur on weekends, the district seeks inspectors to volunteer to work after regular shifts.

Ms. Aggers presented a copy of the request for exemption form, which is mailed with each violation notice. Exemptions are given for homes with sufficient distances from another residence, or if natural gas is unavailable and wood is the only source of home heating. The district may also grant a one time season exemption for hardship cases.

The process works well and the district usually resolves the issues arising from a complaint. Sometimes a warning notice is sent to a resident or owner. The threat of issuing citations in the first year of the program was highly unpopular with the public, therefore the district issued only warnings in the first year. Although such letters were sent, it was not possible to verify the smoke, and therefore this part of the program was abolished. All residents that received a warning letter complained about it.

In response to questions, Ms. Aggers stated:

- There are few situations in which wood is the sole source of heating a home and that same home is in a neighborhood with many residences closely aligned.
- Very few “one time” exemptions are issued, and after they are received, the resident is expected to make the appropriate change in heating methods for the home when the exemption expires. However, for extreme hardships, the agency will consider granting a second year of exemption.
- There is no variance process in the San Joaquin Valley air district for a violation notice.
- The requirements for removing old equipment upon change of residential ownership and upgrade to a type II wood burning device, as well as the limit of two homes equipped with wood burning devices per acre, were arrived at after discussion in public meetings that were very well attended.
- Primary stakeholders to this process were firewood, presto log and hearth product vendors.

- The ordinance on woodstove appliances applies only to new development and not retroactively to older residences. However, one subdivision did recently equip a large number of new homes with wood burning devices, and the contractor is going back to retrofit the units with artificial fire log devices.

Chairperson Bramlett called for public comments, and the following individual spoke:

Jenny Bard  
American Lung Association

Ms. Bard stated that the discussion of wood smoke abatement is not new in the Bay Area. A burn ban and a moisture content rule for fuel were proposed in the Bay Area, but the proposals had not moved forward owing to a lack of leadership. The local public is fairly well educated on wood smoke issues, and there is no public support for wood smoke. Many of the measures implemented in the Puget Sound air district could be quickly adopted in the Bay Area. Although a voluntary ordinance is available for adoption in the region, litigation is often required to prevent a neighbor from further wood burning. There is a lack of enforcement regarding wood smoke in the Bay Area. The Public Health Committee should identify best practices and urge the District's governing board to adopt them.

Chairperson Bramlett stated that the next steps would be to obtain additional presenters on this subject from the hearth products and real estate communities. Peter Hess, Deputy Air Pollution Control Officer, stated that District staff would arrange for presenters from these fields.

Chairperson Bramlett stated that the Committee would start work on indoor air quality and asthma on or about its July meeting.

- 5. Committee Member Comments/Other Business.** There were none.
- 6. Time and Place of Next Meetings.** 12:30 p.m., Wednesday, May 10; 10:00 a.m., Tuesday, June 13, and 12:30 p.m., Wednesday July 12, 2006, 939 Ellis Street, San Francisco, CA 94109.
- 7. Adjournment.** 11:19 a.m.

James N. Corazza  
Deputy Clerk of the Boards

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

DRAFT MINUTES

Air Quality Planning Committee  
1:00 p.m., Wednesday, April 12, 2006

1. **Call to Order – Roll Call.** Chairperson Hayes called the meeting to order at 1:07 p.m. Present: Stan R. Hayes, Chairperson, Ken Blonski, Harold Brazil, Irvin Dawid, Emily Drennen, Fred Glueck, John Holtzclaw, Ph.D., Kraig Kurucz, Ed Proctor.
2. **Public Comment Period.** There were no public comments.
3. **Approval of Minutes of Joint Technical & Air Quality Planning Committee Meeting of February 7, 2006.** Dr. Holtzclaw moved approval of the minutes; seconded by Mr. Glueck; carried with Mr. Hayes abstaining.
4. **Climate Protection Planning:** Abby Young, Director of Strategy Planning for the International Council for Local Environmental Initiatives (ICLEI) Local Governments for Sustainability, stated that ICLEI is now known as “Local Governments for Sustainability.” Its mission is to address global environmental problems through local environmental action. It conducts the largest program internationally and in the United States for addressing global warming. The “Cities for Climate Protection Campaign” began in 1995 and began to develop protocols for greenhouse gas emissions (GHGs) on a local level.

ICLEI engages local government through a five step process: (1) development of a baseline inventory; (2) adoption of an emission reduction target; (3) development of a local action plan; (4) implementation of the plan; and (5) monitoring and reporting of emissions. The baseline inventory of GHGs is not limited to municipal operations but includes the residential, commercial, industrial, transportation, and solid waste sectors. The adoption of an emission reduction target is on a voluntary basis for each local government. The next step is for the local government to develop a local action plan. It is based on the quantification of the results of emissions inventory and an assessment of the resources within the community. The plan is then implemented, and follow-up is conducted and involves monitoring and comparisons with the baseline inventory to assess effectiveness.

Regarding possible overlap between ICLEI and the California Climate Action Registry, comparatively few local governments have signed up with the Registry, and some have recently dropped out due to the costs of membership and emissions certification. ICLEI has discussed this problem with the Registry and has recently signed a Memorandum of Understanding with it regarding establishing ICLEI’s emissions quantification protocols as the standard. These would in part pre-certify a local government, and while a local government would still be required to obtain third party certification, the process would become streamlined and less costly. ICLEI and the Registry would explore ways to create technical bridges between their respective emissions software tools.

ICLEI holds workshops to assist local governments with setting emission reduction targets. The goal is to achieve an 80% reduction below 1990 levels by the year 2100 and to institutionalize emission reduction processes for long-term planning. Climate protection is neither a funded nor a mandated regulatory issue, and local governments do not take it on quickly. ICLEI has therefore linked climate protection to air quality. It developed tools to harmonize quantification for baseline inventories, forecasts and measured impacts—for both GHGs and criteria pollutants. The focus is on urban environments and this year ICLEI completed its development of a density calculator. Urban planning that reduces sprawl and encourages densification—thereby reducing vehicle miles traveled (VMT)—is among the most difficult and time-consuming processes to engage in, but it remains one of the most important goals to achieve. In its software tool refinement, ICLEI developed ways to quantify emission impacts from this type of urban development.

A number of local governments in the Bay Area participate in ICLEI's process and their number is increasing. To date, 17 local emission inventories have been completed; 14 emission reduction targets have been adopted; 10 municipal local action plans have been developed; and four community-wide local action plans have been developed as well. These address emissions in the city, including indirect emissions, and take into account power plant emissions on a customer demand basis. The goal is to empower local government to influence operations within its jurisdiction with respect to building, land-use, zoning and transit. When the emissions footprint is produced, the software tool contains default settings for assessing the energy mix that a city produces. ICLEI encourages local governments to obtain energy use data from local energy providers for use in this software.

In working with local entities, ICLEI has assisted Contra Costa County in addressing GHG emissions from its heavier industrial base. For counties that do not have a large industrial base, some emissions are generated within it but are not within its regulatory jurisdiction. For example, at the International Airport, San Francisco County includes the airport facility in its inventory lighting and alternative fuels for ground transport but does not include emissions from airplane jet engines, as the latter are regulated by the federal government.

In reply to Council member questions, Ms. Young noted that the goal of an 80% reduction in GHGs below 1990 levels by the end of this century was developed by Harvard University faculty that estimated the emission reductions required to contain global warming by the end of this century. The questions that remain to be answered are what emission reductions are to be expected from the developing countries that have not yet industrialized, and what is the expected balance remaining in emission reductions from the already industrialized countries.

With regard to the Air District's potential role in the field of climate protection, the key issues include measuring, planning and implementation. For example, the District could help local governments establish a local government protocol for quantifying emissions of GHGs. A local government staff member will want to know if the correct emissions assessment tool is being used. The District could also provide assistance with regard to the preparation of data and compile it in a way that makes it easy and ready to use. In fact, the District already has a large quantity of data that would be useful for a local government to incorporate into its software when composing a GHG emission inventory. One challenge would be whether the District's inventory could be scaled down from the county to the city level.

With regard to planning, the District role could help develop an approach in which general plans could include GHG emission reduction categories. This would help institutionalize climate protection awareness and planning over the long-term and provide a vehicle into which climate protection issues can be built. Three years ago Marin County began to update its local plan and added many references in it to climate protection. ICLEI is collaborating with Marin County to provide some financial support for interns from U.C. Berkeley to go through the general plan and identify any item that is related to climate protection. This exercise will provide the basis for creating a model or template for other local governments in updating their general plans. The District could look at this kind of process, and use its influence to integrate it into the California Environmental Quality Act (CEQA) review process for model impacts assessment. Canada evaluates climate change impacts under impacts assessment in which each project is evaluated for actual and potential climate change impacts. The District might consider this approach as well.

Ms. Young added that another issue in implementation arises for the District in terms of influencing financial resource flow. There is a ten-year window of opportunity to get into place the policies that will affect GHG emissions before the point of no return is reached. The implementation of no-cost incentives is desirable. The Metropolitan Transportation Commission (MTC) and the District have an excellent interrelationship and can influence the funding for transportation projects. ICLEI will convene a governmental stakeholder group in the Northeast to discuss the flow of financial resources in that area among regional and local governments.

Ms. Young noted that each county, or ideally each city, could have a climate and air quality officer. The communities around the country that receive most of the grant money are the ones that have a dedicated climate or environmental officer. ICLEI assisted Mayor Nichols of Seattle with that city's climate protection initiative, and he, in turn, worked with the National Mayors for Climate Protection and the US Conference of Mayors. ICLEI arranged for a contract with Seattle to be the implementing agency for the climate initiative, along with the US Conference of Mayors. The City of Portland is the first city to document a net reduction below 1990 levels of GHG emissions. The City of Santa Monica is also making significant headway in this area.

ICLEI commends the District for its leadership in the climate protection field and especially in sponsoring the climate protection summit process. This will influence planning in the Bay Area in a major way and serve as model to other air districts in the state and country in terms of how to take on a non-funded non-mandated issue and incorporate it into how business is conducted in a region. It can also be used at the state level to influence resource flow.

Mr. Dawid noted that AB 2444 (Clay) proposes a \$10 vehicle registration fee for the nine-county Bay Area, and the funds would be distributed in part by the Air District Board and the other part by a congestion management planning agency. This would influence the flow of finances for transportation projects. The language in this bill also addresses climate change.

Chairperson Hayes observed that the baseline inventory can be done in various ways. ICLEI is proposing to work with the Registry, and suggests the District could provide helpful data sliced into community slices, and to serve as a clearing house or arbiter of what protocol should be used for an inventory estimate. With respect to emission reduction targets, these are policy questions in nature and ought to be developed by a local entity exclusively.

Ms. Young replied that the latter are usually vetted by a City Council. Phased-in approaches to targeted areas are more helpful than making a target universal in a region. The most resource-demanding element of this entire process is the development of the plan and the development of the inventory. The local government usually comprises 3-5% of total community emissions. The City and County of San Francisco has considered a 20% emission reduction target.

Sonoma County is conducting a major public input process for its emission reduction target. Staff time required for this process varies depending on the size of the local entity staff and the region or area to be evaluated. One energy officer from the City of Berkeley completed an initial iteration in 20 hours. ICLEI advocates that a city or county fund university graduate student interns to conduct this type of work. ICLEI sometimes hires them and places them in a city or county, working full time for 12 weeks, to develop the inventory, conduct the forecasts, and inventory existing policies. In Alameda County, ICLEI is developing streamlining tools for model local action plan templates.

In reply to questions, Ms. Young noted that ICLEI does not have a formal relationship with the Association of Bay Area Governments (ABAG). Mr. Blonski observed that under the Disaster Management Act of 2000, any entity that seeks pre-disaster mitigation funding must develop a plan, and ABAG has written such a plan with 52 annexes. There could be a place for ICLEI's approach in the context of this type of plan development. Ms. Young indicated that local governments could look further into comprehensive climate action planning. With regard to the relationship between sustainability and population, the City of Portland, Oregon has been able to reduce its GHG emissions below the 1990 emissions threshold even in the midst of significant population growth.

- 5. Further Discussion of Climate Protection Issues.** Chairperson Hayes called for discussion on measures that could be set forth as recommendations. The following ideas were raised:
- a) reduction in VMT by employees of government entities, patterned after trip reduction measures that affect private industry. This will reduce mobile source emissions, as well as traffic congestion, and further reduce emission of GHGs. (Glueck)
  - b) the Council could help develop a standardized protocol for communities to develop carbon footprints and emission inventories. (Hayes) Henry Hilken, Planning Division Director, noted that the District is working on a regional emission inventory for GHGs patterned after the inventory for criteria pollutants, but this is not specific to a city. Breaking down the inventory at the county level poses less of a challenge than at the city level. This raises the question of what role the local government GHG emission calculator that ICLEI has developed could play in interfacing with this data. Ms. Young noted that ICLEI's emission calculation software has built-in tools for VMT calculation based on both national and statewide averages. Dr. Holtzclaw suggested that inclusion of vehicle data from the Department of Motor Vehicles (DMV) and the Bureau of Automotive Repair (BAR) would be helpful, as well as energy demand and consumption data from PG&E. Mr. Hilken noted that emissions and energy consumption data exists in the District's database for power plants and refineries. Ms. Young added that PG&E can provide annual data on the average CO<sub>2</sub> coefficient within a service area or zip code for residential, commercial and industrial uses.

- c) the District could potentially provide data in “community slices” to local entity planners and assist in the development of a standardized protocol for carbon footprints. (Hayes)
  - d) the District could further the adoption and modification of air quality elements in local general plans to include climate protection categories. (Hayes) Mr. Glueck replied that the City of Richmond is updating its general plan and has hired a consultant to assist it. Staff could interface with this process. Mr. Hilken suggested that the Committee, in order to get a sense of what is involved in this process, consider receiving a presentation from one of the Marin County staff that is working on the update to its general plan.
  - e) the District can further the advocacy of climate protection rating for projects evaluated in the Transportation Fund for Clean Air (TFCA) and the Carl Moyer Program. (Hayes) Mr. Hilken noted that this year’s TFCA regional fund guidelines propose to add GHG emission reductions as part of the project evaluation criteria, focusing on CO<sub>2</sub> reductions.
  - f) the District can continue its leadership activities on climate protection by such activities as its summit work as a model for other districts, as well as its continued sponsorship of the climate protection efforts of scientific organizations like the Air & Waste Management Association (AWMA). (Hayes)
  - g) regarding the suggested modification of project environmental review under the state Environmental Quality Act (CEQA), Mr. Hilken stated that the District intends to revise its CEQA guidelines and welcomes the Council’s thoughts and recommendations on the matter. The District supported legislation last year that would have mandated air quality elements in local general plans, but this legislation did not pass. Inclusion of such elements in general plans would be the more effective approach in the planning field. CEQA review is important, but when projects reach that stage they are fairly mature already. Air quality elements build in categories that influence land-use and transportation planning into the future, before a project takes form. The District could work with local governing planning associations to further climate awareness. (Glueck)
  - h) the Council should first get a baseline of what is being done and develop and review a list of best practices for distribution. Urban heat island mitigation measures are of interest since temperature reductions have a beneficial impact on emission reductions. (Kurucz)
  - i) the Council should adopt a resolution that identifies the District as having adopted climate protection as part of its mission statement, and is a recognized leader in climate protection program work in the Bay Area. The Council could resolve to urge the District to review current project and program work and to include climate protection activities; to partner with ICLEI for development of local government protocols; develop a District model general plan on which local entities can base their general plans; examine methods for providing monetary or no-cost incentives; offer incentives to encourage city and county governments to become involved in climate protection; and provide air quality data to local governments. (Drennen)
- 6. Committee Member Comments/Other Business.** Chairperson Kurucz stated that there are fewer members on the Technical Committee than on the Air Quality Planning Committee. He requested volunteers to shift Committee membership. Mr. Dawid volunteered to join the Technical Committee, and Chairperson Kurucz so ordered.

Chairperson Kurucz noted that ethics training for Council members on AB 1234 will be held on May 11 from 9:30-11:30 a.m. for members of the Council, Hearing Board and Board of

Directors. Mr. Bungler noted that those Council members that cannot attend the May 11 session will be notified as to other dates and locations for the training.

**6. Time and Place of Next Meeting.** 9:30 a.m., Wednesday, June 14, 2006, 939 Ellis Street, San Francisco, CA 94109.

**7. Adjournment.** 3:17 p.m.

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  
9:30 a.m., Wednesday, April 12, 2006

1. **Call to Order – Roll Call.** Chairperson Bornstein called the meeting to order at 9:44 a.m. Present: Robert Bornstein, Ph.D., Chairperson, Sam Altshuler, P.E., Louise Bedsworth, Ph.D., William Hanna, John Holtzclaw, Ph.D. Absent: Stan Hayes.
2. **Public Comment Period.** There were no public comments.
3. **Approval of Minutes of Technical & Air Quality Planning Committee Meeting of February 7, 2006.** Dr. Holtzclaw moved approval of the minutes; seconded by Dr. Bedsworth; carried.
4. **Climate Change Control Programs in California: An Overview.** Amy Luers, Climate Impact Scientist, Union of Concerned Scientists, presented “Global Warming in California: Choosing our Future,” stating that from 1880 global temperatures on the earth’s surface have risen from 0.2 C° to 0.6 C°. The effect of global warming since that time has increased sea levels by seven inches and significantly melt portions of large glaciers. Weather patterns are also becoming more extreme, with increased hurricane and tropical cyclone intensity, and heat waves such as the one in Europe in 2003 which killed 30,000 people. By 2040, European summer temperatures will more often be as warm as those of 2003.

The consensus in the scientific community is that the earth’s temperatures are increasing because of the deforestation of large segments of land and emissions from fossil fuel combustion for transportation and energy generation. While the rate of change in the global climate is unusual, it matches what is expected in climate models from increasing greenhouse gases (GHGs) and other human activities. Such warming is occurring despite natural solar and volcanic activities which would have contributed to cooling the earth’s surface.

Modeled responses to natural forcings differ from observed temperatures. That is, in the absence of human activities, little variation in temperatures would be expected. However, the contribution of GHGs and other emissions in contemporary models match well with observed temperatures. This type of match also extends to oceanic patterns of warming.

As temperatures increase, impacts will prove more severe and costly. The more severe impacts can be avoided by reducing greenhouse gases now. A compilation of various studies by scientific researchers and set forth in a White Paper entitled “Scenarios of Climate Change in California: An Overview” addresses the impacts of different global warming scenarios across several major sectors in California.

Three different warming emission projections were derived from the Intergovernmental Panel on Climate Change (IPCC) and address higher-, medium-high-, and lower emissions of CO<sub>2</sub>. These scenarios are linked with growth pattern projections. Taking three GHG emissions projections in three different climate models to capture differences in sensitivity, the researchers attempted to ascertain how much the climate responds to changes in GHG scenarios. One challenge which arises in such studies is the emergence of a feed-back event in the system: climate changes themselves influence the reflectivity of the sun and oceanic temperatures, and these changes, in turn, have further impacts on the overall warming phenomena. The models account for these variations in different ways.

Results for today's presentation were selected from a parallel climate model for the lower sensitivity temperature change, along with two medium- and medium-high sensitivity models. The Union of Concerned Scientists has evaluated the emission scenarios in California for each of the scenarios. The worst-case projection was for an 11°F increase in the summer by the end of the century, with other scenarios projecting smaller temperature increases. As global climate models, which are large-scale, were used, a statistical downscaling was conducted in order to achieve a smaller-scale prediction for California.

As to the findings on the impacts on air quality and public health from global temperature increases, 90% of the California population does not live in areas that meet the state air quality standards, and it will become even more difficult to meet these standards. There is the potential for up to 9,000 additional deaths annually from air pollution and \$3.5 billion in economic impacts. Significant increases in ozone exceedances will occur in Southern California and the San Joaquin Valley.

In reply to Dr. Bornstein's question on the impact of the sea breeze on mitigating temperature increases and therefore ozone concentrations in coastal areas, Ms. Luers noted that in terms of downscaled and non-downscaled data, there is an inland gradient with a slight cooling on the coast, but even so, temperatures in Los Angeles nevertheless increased in the scenarios evaluated.

If temperatures increase according to the mid-range scenario, air pollution will still be further aggravated by a doubling in the number of major wildfires, exposing the population to large amounts of particulate matter over several days. The cost of responding to such disturbances in the ecosystem in the state will prove costly, on the order of hundreds of millions of dollars.

The analysis on water resource impacts of various temperature projection scenarios indicates that precipitation levels will not vary that much from current levels, but significant losses in the snow pack in the Sierras will occur. Between 2070 and 2099 only 30 % of the current snow pack will remain in the lowest temperature rising model and 10% in the highest range. This has negative implications for the state's water supply and for the ski industry. The Sierra snow pack provides approximately one-third of California's surface water storage.

Global warming also presents challenges for the state's agricultural industry, which is dependent on the availability of water for irrigation. Increases in ozone concentrations can adversely affect crop productivity, and also the spread of weeds and pests. Temperature increases will reduce the number of chill hours (below 45°F) that are necessary for fruit trees to set their fruits properly, resulting in either deformed or no fruit produced.

Sea levels will rise in each of the global warming scenarios studied, such that between 2000 and 2100, there will be an increased likelihood of flooding and coastal erosion. In the highest warming scenario, the rise is predicted to be up to 30 inches, and up to 10 inches in the lower temperature scenario. The models that have been used show a slower rate of destabilization of the arctic glaciers than what is actually occurring.

In the overall context of global warming, however, the hopeful news is that the more severe impacts can be avoided if GHGs emissions are sufficiently reduced:

- In the high temperature increase scenario, there is an anticipated 90% loss of the Sierra snow pack, a 20-30 inch increase in the sea level, and an 85% increase in days conducive to ozone formation.
- In the medium-high scenario, there is an projected loss of 70-80% in the Sierra snow pack, a 12-20 inches in sea level, and a 75-85% increase in the days conducive to ozone formation.
- In the lowest temperature increase scenario, there is an anticipated 30-60% loss of the Sierra snow pack, a 4-12 inch rise in the sea level, and a 25-30% increase in the days conducive to ozone formation.

Ms. Luers concluded her presentation by noting that, in order to avoid the worst-case scenarios by 2050, the industrialized world must follow California's lead and reduce emissions of GHGs 80% below 1990 levels.

Chairperson Bornstein invited Ms. Luers to give her lecture to his students at San Jose State University. He added that the University has atmospheric models that can conduct simulations on a one-kilometer basis for California meteorology. While these focus on urban areas and sea breezes, there is interest in conducting further downscaling. Dr. Holtzclaw urged that Ms. Luers also provide her presentation to the District's Governing Board.

In reply to questions, Ms. Luers noted that the model assumes that CO<sub>2</sub> emissions have a consistent mix. California is the 12<sup>th</sup> largest emitter of GHGs in the world, and has the power to influence policy in the United States, which contributes 25% of worldwide GHG emissions. Dr. Bornstein replied that both China and India will contribute increasing GHG emissions in the coming years, but seem unwilling to take the emission reduction measures identified as necessary by scientists, unless the western developed countries are prepared to pay for such measures. Ms. Luers noted that in 30-40 years, China and India will compete with the United States, but the latter will still be a major contributor of emissions, especially on a *per capita* basis. While emission trading might be a component of emission reduction strategies, the inequity of emissions impacts needs to figure into the overall evaluation.

Ms. Luers noted that while additional study of global warming *per se* is not needed, three key steps should be taken now: (a) more study to evaluate better the dynamics of the impacts that must be avoided, and also how on to adjust to them; (b) investment in efficiency programs and clean technologies; and (c) setting a cap on GHG emissions based on current science.

Chairperson Bornstein inquired if Ms. Luers had studied the effect of coastal flooding in the San Francisco Bay Area if the sea level were to rise. Ms. Luers responded that the Union of Concerned Scientists assessed the San Francisco Bay for the additive effect of a sea rise, storm intensity and variations in oceanic warming patterns. The graph that resulted was complex from a technical perspective. She noted that there are two websites that address this and that she would forward that information to the Chairperson.

- 5. Committee Member Comments/Other Business.** Dr. Holtzclaw called attention to a letter from Jack P. Broadbent, Executive Officer/APCO to each Council member, which announces that ethics training will take place for the Board of Directors, Advisory Council and Hearing Board members regarding AB 1234 on Thursday, May 11, 2006, from 9:30 a.m. – 11:30 a.m. in the District's Board Room.
- 6. Time and Place of Next Meeting.** 10:00 a.m., Wednesday, June 14, 2006, 939 Ellis Street, San Francisco, CA 94109.
- 7. Adjournment.** 11:05 a.m.

James N. Corazza  
Deputy Clerk of the Boards