



**BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT**

**ADVISORY COUNCIL  
MEETING**

**WEDNESDAY  
NOVEMBER 14, 2012  
9:00 A.M.**

**7<sup>TH</sup> FLOOR BOARD ROOM  
939 ELLIS STREET  
SAN FRANCISCO, CA 94109**

**AGENDA**

**CALL TO ORDER**

Opening Comments  
Roll Call

Stan Hayes, 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 are posted at the District, 939 Ellis Street, San Francisco, at least 72 hours before a meeting. At the beginning of the meeting, an opportunity is also provided for the public to speak on any subject within the Council's purview. Speakers are limited to three minutes each.*

**CONSENT CALENDAR**

1. Approval of Minutes of the October 10, 2012 Advisory Council meeting.

**DISCUSSION**

2. Approval of draft report on the Advisory Council's September 12, 2012 meeting.

*The Advisory Council will finalize the draft report of the September 12, 2012 meeting on Ultrafine Particles: Reducing Exposure.*

3. Discussion, Recommendation and Selection of Slate of Officers for 2013

*The Advisory Council will discuss, recommend and select a Slate of Officers for 2013.*

4. Discussion of the Report to the Board of Directors on Ultrafine Particulate Matter Topics of 2012

*The Advisory Council will discuss the report summarizing information on ultrafine particulate matter topics addressed by the Council during 2012 and select members to present this report to the Board of Directors on December 19, 2012.*

**OTHER BUSINESS**

5. Council Member Comments/Other Business

*Council Members may make a brief announcement, provide a reference to staff about factual information, or ask questions about subsequent meetings.*

6. Time and Place of Next Meeting

*Wednesday, January 9, 2013 at 9:00 a.m. at 939 Ellis Street, San Francisco, CA 94109.*

7. Adjournment

**CONTACT EXECUTIVE OFFICE - 939 ELLIS STREET SF, CA 94109**

**(415) 749-5130**  
**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.
- Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the District's offices at 939 Ellis Street, San Francisco, CA 94109, at the time such writing is made available to all, or a majority of all, members of that body. Such writing(s) may also be posted on the District's website ([www.baaqmd.gov](http://www.baaqmd.gov)) at that time.

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
**939 ELLIS STREET, SAN FRANCISCO, CALIFORNIA 94109**  
**(415) 771-4963**

**EXECUTIVE OFFICE:**  
**MONTHLY CALENDAR OF DISTRICT MEETINGS**

**NOVEMBER 2012**

<b><u>TYPE OF MEETING</u></b>	<b><u>DAY</u></b>	<b><u>DATE</u></b>	<b><u>TIME</u></b>	<b><u>ROOM</u></b>
<b>Advisory Council Regular Meeting</b> <i>(Meets 2<sup>nd</sup> Wednesday of each Month)</i>	Wednesday	14	9:00 a.m.	Board Room
<b>Special Board of Directors Meeting</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Monday	19	9:45 a.m.	Board Room
<b>Board of Directors Executive Committee</b> <i>(Meets 3<sup>rd</sup> Monday of each Month)</i> - CANCELLED	Monday	19	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Stationary Source Committee</b> <i>(Meets the 3<sup>rd</sup> Monday of Every Other Month)</i> - CANCELLED	Monday	19	10:30 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> - CANCELLED	Wednesday	21	9:45 a.m.	Board Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 4<sup>th</sup> Thursday of each Month)</i> - CANCELLED	Thursday	22	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 4<sup>th</sup> Thursday of each Month)</i> - CANCELLED	Monday	26	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets the 4<sup>th</sup> Wednesday of each Month)</i> - CANCELLED	Wednesday	28	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room

**DECEMBER 2012**

<b><u>TYPE OF MEETING</u></b>	<b><u>DAY</u></b>	<b><u>DATE</u></b>	<b><u>TIME</u></b>	<b><u>ROOM</u></b>
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 4<sup>th</sup> Thursday of each Month)</i>	Monday	3	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Legislative Committee</b> <i>(At the Call of the Chair)</i>	Monday	3	10:30 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	5	9:45 a.m.	Board Room
<b>Board of Directors Executive Committee</b> <i>(Meets 3<sup>rd</sup> Monday of each Month)</i>	Monday	17	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room

## DECEMBER 2012

<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	19	9:45 a.m.	Board Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets the 4th Wednesday of each Month)</i>	Wednesday	26	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 4<sup>th</sup> Thursday of each Month)</i>	Thursday	27	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room

## JANUARY 2013

<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	2	9:45 a.m.	Board Room
<b>Advisory Council Regular Meeting/Retreat</b> <i>(Meets 2<sup>nd</sup> Wednesday of each Month)</i>	Wednesday	9	9:00 a.m.	Board Room
<b>Special Board of Directors Meeting/Retreat</b> <i>(Meets 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	16	9:45 a.m.	Meeting Location TBD
<b>Board of Directors Executive Committee</b> <i>(Meets 3<sup>rd</sup> Monday of each Month)</i>	Monday	21	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Stationary Source Committee</b> <i>(Meets the 3<sup>rd</sup> Monday of Every Other Month)</i>	Monday	21	10:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets the 4th Wednesday of each Month)</i>	Wednesday	23	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets 4<sup>th</sup> Thursday of each Month)</i>	Thursday	24	9:30 a.m.	4 <sup>th</sup> Floor Conf. Room

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Stan Hayes and Members  
of the Advisory Council

From: Jack P. Broadbent  
Executive Officer/APCO

Date: October 31, 2012

Re: Approval of Minutes of the October 10, 2012 Advisory Council Meeting

RECOMMENDED ACTION

Approve attached draft minutes of the October 10, 2012, Advisory Council meeting.

DISCUSSION

Attached for your review and approval are the draft minutes of the October 10, 2012, Advisory Council meeting.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Sean Gallagher  
Reviewed by: Ana Sandoval

Attachment

Bay Area Air Quality Management District  
939 Ellis Street  
San Francisco, CA 94109  
(415) 749-5000

**DRAFT MINUTES**

Advisory Council Regular Meeting  
Wednesday, October 10, 2012

**CALL TO ORDER**

Chairperson Stan Hayes called the meeting to order at 9:08 a.m.

**OPENING COMMENTS**

Chairperson Hayes welcomed Council Member Rick Marshall (*Transportation*). Member Marshall took the oath of office and made introductory remarks.

**ROLL CALL**

Present: Chairperson Stan Hayes; Vice-Chairperson Robert Bornstein, Ph.D.; Secretary Sam Altshuler, P.E.; and Council Members Jennifer Bard, Benjamin Bolles, Jeffrey Bramlett, M.S., C.S.P., Harold Brazil, Jonathan Cherry, A.I.A., LEED A.P., John Holtzclaw, Ph.D., Liza Lutzker, M.P.H., Rick Marshall, P.E., P.L.S., Jane Martin, Dr.P.H., Jessica Range, LEED A.P., Dorothy Vura-Weis, M.D., M.P.H. and Murray Wood.

Absent: Council Members Caryl Hart, J.D., Ph.D., Kraig Kurucz, Gary Lucks, J.D., C.P.E.A., Kathryn Lyddan, J.D., and Estes Al Phillips.

Also Present: None.

**PUBLIC COMMENT:** None.

**CONSENT CALENDAR**

**1. Approval of Minutes of the July 11, 2012, and September 12, 2012, Advisory Council Regular Meetings**

Member Altshuler requested an amendment to the minutes of July 11, 2012, page 3, second paragraph, to read as follows:

Member Altshuler said he is troubled by the information about smoking outside next to a roadway, the data were inconsistent with prior presentations to the Council~~was totally useless yet included in the report, and now the Council is working on the proper method to discredit the statement.~~ The Council decided the item for discussion is bullet 5, sub-bullet 2. Member Lutzker asked which specific part seems inconsistent~~inaccurate~~. Member Altshuler said that it dilutes prior reports from the Council regarding roadside exposure show the significant impact from vehicles~~by saying that smoking is worse.~~

Member Altshuler requested an amendment to the minutes of July 11, 2012, page 4, second paragraph, to read as follows:

Member Altshuler said that the science of UFP dates as far back as the 1960s, that he is concerned~~has issue with much of the information~~~~nearly everything~~ attributed to Dr. Hildemann, ~~the Council knew going into the review process that this topic would not be an easy one, various aspects of Dr. Hildemann's research methods are questionable, the really valuable information is contained in the first four bullets, and the research of cigarette smoke and motor vehicle emissions was too casual in nature to attribute value to.~~ Member Bolles stated that he is not a scientist and agrees. Member Altshuler clarified that he is not downplaying the health consequences of either source and is not advocating on behalf of either group but the data are~~is~~ not quantified.

Member Bornstein requested an amendment to the minutes of July 11, 2012, page 3, second paragraph, to insert “somewhat” before “inconsistent.”

Council Action: Member Altshuler made a motion to approve the minutes of July 11, 2012, as amended; Member Holtzclaw seconded; and the motion was unanimously approved without objection.

Member Altshuler requested an amendment to the minutes of September 12, 2012, page 5, third paragraph, to read as follows:

“Member Altshuler said the Air District Council does not address~~discuss~~ noise pollution and asked how closely linked it is to air pollution.”

Member Bornstein suggested a formatting revision to the minutes of July 11, 2012, and withdrew the same.

Council Action: Member Holtzclaw made a motion to approve the minutes of September 12, 2012, as amended; Member Altshuler seconded; and the motion was unanimously approved without objection.

## DISCUSSION

### **2. Approval of draft report of the Advisory Council's September 12, 2012 meeting**

Chairperson Hayes made introductory comments regarding the speakers and report drafting process. Eric Stevenson, Director of Technical Services, made introductory comments regarding the draft report process and possible technological issues with the Board room equipment. Chairperson Hayes invited input from the Members on the sections within the report as follows:

“SUMMARY”

None.

“KEY POINTS – Yifang Zhu, Ph.D. – “Exposure to Ultrafine Particles on and Near Roadways”

Member Altshuler suggested “ultrafine particle” be added to the Glossary.

Member Holtzlaw suggested adding a Glossary.

Member Lutzker said this is the last of many ultrafine particle (UFP) presentations, most of which open with background information, and asked if the background information belongs in the Key Points for every report. Chairperson Hayes said the report drafting committee had the same discussion. Member Bolles asked if the individual reports will be wrapped into a larger, summary report. Member Lutzker said the presentation to the Board of Directors is summary in nature but the individual reports are submitted as well. Member Bramlett said that repetition can be instructive either by reinforcing what was read before or by communicating things anew to those who may have overlooked something previously and noted his appreciation for Dr. Zhu’s summary. Member Range suggested that repetition in Key Points may be appropriate but not in Emerging Issues. Member Bornstein said the work is done so suggested leaving them in and perhaps noting those items which are new. Member Lutzker suggested instead separating out those that are repetitious and noting the same, in this case the first four bullets. Chairperson Hayes argued for the continued inclusion of bullet 4. Member Lutzker clarified the suggestion is not to drop but to collapse some set of bullets into one bullet that is provided as a summary of reiterated points.

Member Vura-Weis agreed with the introductory comment approach for dealing with reiterated points and suggested the insertion of “small size and” before “mobility” in the second bullet. Member Lutzker asked if mobility is an actual characteristic. Chairperson Hayes alternately suggested replacing “mobility” with “small size” to which Member Vura-Weis agreed. Member Holtzclaw noted the mobility of UFP within the body. Member Lutzker seconded Chairperson Hayes’ suggestion to replace “mobility” with “small size.” Member Holtzclaw said that because of their size they are more mobile. Member Lutzker agreed and suggested they are not mobile but by virtue of their size. Member Vura-Weis suggested “small size and ability to cross cell membranes.” Chairperson Hayes said these bullets will get restated in the reorganization of the bullets under the introductory phrase. Member Bornstein asked if the Council is accepting the proposed edit and Chairperson Hayes said yes.

Member Vura-Weis suggested, regarding bullet 3, replacing “Unlike” with “Compared to”, “high” with “higher,” and “low” with “lower.” Member Holtzclaw said that particulate matter (PM<sub>10</sub>) includes fine particulate matter (PM<sub>2.5</sub>) and UFP so the statement is technically troublesome. Member Bornstein suggested inserting “total” or something similar before “PM<sub>10</sub>” to differentiate the particulate classes. Chairperson Hayes restated the suggested revision.



Member Bornstein suggested “highest” and “lowest” instead. Member Holtzclaw suggested instead inserting “relatively” before “high.” Member Altshuler agreed with the revision suggested by Member Vura-Weis. Member Bornstein said it is incorrect and Member Vura-Weis agreed. Chairperson Hayes again restated the suggested revision. Member Bornstein said the important part is that a fraction of the total cannot be described as having less or more than the total of which it is a part. Member Holtzclaw commended the proposed revision. Member Bramlett noted that the revised statement relies heavily on the current understanding that is itself limited by measurement technology, method and data set. Member Bornstein said it is sound. Member Bramlett said he will go with the will of the group but expressed his opinion that it is still somewhat inaccurate. Member Holtzclaw and Mr. Stevenson said that both are correct. Chairperson Hayes said it will be revisited.

Member Marshall said, regarding bullet 5, that peak commute periods are not actually 6-9 in either the a.m. or p.m. Chairperson Hayes said he struggled with that as well but it is consistent with Dr. Zhu’s data. Member Marshall asked if Dr. Zhu characterized those hours as “peak commute.” Chairperson Hayes suggested replacing “peak commute periods” with something along the lines of “during the hours of.” Member Marshall said that weakens the point that vehicles are a major contributor. Member Bornstein suggested the second half of the sentence resolves that. Member Marshall said it will still be lacking. Chairperson Hayes suggested replacing “peak” with “elevated.” Member Bornstein alternately suggested removing “peak” only. Member Bramlett asked why it cannot be different in the Los Angeles (LA) area to which Member Marshall responded that it very likely is different but he is inquiring after what was said. Member Lutzker asked if these are her words or if they were extrapolated. Chairperson Hayes said he believes they were extrapolated. Member Bornstein restated his suggestion to remove “peak.” Member Martin suggested calling attention to the section for Dr. Zhu to review. Chairperson Hayes agreed and deleted “peak.”

Member Lutzker suggested an opening paragraph of “Dr. Zhu reiterated and reinforced the following four points on UFP that have been previously presented to the Advisory Council” and suggested reordering the bullets so that bullet 2 comes first, followed by bullet 1 and then 3 or 4, as preferred. Member Bornstein suggested only “reiterated.”

Member Lutzker suggested, regarding bullet 1, replacing “freeway” with “roadway” and switching the placement of bullets 1 and 2. Chairperson Hayes disagreed and said the emphasis is on heavily-travelled roadways. Member Lutzker said “heavily-travelled roadways” is fine and asked the definition of freeway. Chairperson Hayes said studies show heavily-travelled roadways, which happen to be freeways in the LA area, to be the contributing factor. Member Bornstein agreed with the collaborative revision. Chairperson Hayes agreed to the change.

Member Lutzker said, regarding bullet 5, that the two monitors were not in LA. Member Vura-Weis suggested “LA Basin.” Various members simultaneously discussed LA terminology. Chairperson Hayes suggested “Greater LA” throughout. Member Lutzker said any term is acceptable so long as it is accurate. Chairperson Hayes suggested changing all references to “LA” to “South Coast Air Basin.” Member Bard suggested that was too large of an area. Member Bornstein proposed the continued use “LA” but with a modifier at its first use that clarifies it is the LA Basin. Various members simultaneously discussed wording and format. Chairperson Hayes called for a consensus. Member Vura-Weis suggested that including “South Coast Air Quality Management District” is good as the two monitoring points span much of that area.

Various members discussed wording. Chairperson Hayes concluded that inserting “Area” after all occurrences of “LA” was the most satisfactory to the Council.

Member Marshall suggested, regarding bullet 7, the addition of “Higher” at the beginning of the first sentence and “more” before “heavily” in order to fully execute the attempted comparison.

Member Altshuler said one of the freeways described is absent of diesel trucks and suggested it is Interstate 710 (I-710) because it is certainly not the Interstate 405 (I-405). Member Lutzker said it is not the I-710. Member Altshuler suggested the Council should ask for Dr. Zhu’s input because this is an important difference.

Member Holtzclaw suggested, regarding bullet 7, that “with less such traffic” is redundant.

Member Altshuler said one freeway was described as absent of diesel trucks but that UFP were still found near both. Member Bard said that Dr. Zhu presented the I-405 as having fewer diesels than the I-710. Chairperson Hayes said he was unable to find it in the slides but that it might have been said, the take away is that more diesel trucks means more UFP but that UFP is everywhere, and asked if anyone knew whether diesels are banned from the I-405. Member Altshuler speculated that they are not. Member Lutzker said I-710 comes straight from the Port of Long Beach and has a great deal of diesel traffic. Member Vura-Weis asked if this item can be referred to the report drafting committee. Chairperson Hayes agreed.

Member Marshall noted, regarding bullet 8, that the use of “90%” twice seems like an error. Chairperson Hayes said the first will be changed to “80%.”

Member Vura-Weis said, regarding bullet 8, that the last sentence is counter-intuitive and deserves an explanation of the behavior of these particles. Member Holtzclaw asked for clarification of the proposed edit and Member Vura-Weis suggested inserting, “because these smaller particles often stick to surfaces they contact and in addition, they tend to aggregate into larger particles.” Chairperson Hayes said UFP are as large as 100 nanometers (nm) but the drastic change in behavior was shown to exist at 50nm. Member Vura-Weis agreed but suggested prior presentations have shown the smallest particles do not penetrate as readily because they stick to surfaces upon contact. Chairperson Hayes said that is true for particles larger than UFP but that UFP seem to go with the air flow. Member Vura-Weis said perhaps it is aggregation then. Member Bornstein said there are three regions of particle behavior with efficiencies in the middle of the size range that result in similar particle behavior but for different reasons and urged specificity and accuracy. Member Vura-Weis asked that someone research it further for the benefit of this report. Chairperson Hayes suggested replacing “Particles” with “UFP” or that the entire last sentence be deleted as the point that UFP penetrate indoors is redundant. Member Vura-Weis agreed. Member Bornstein said the sentence should be fixed if retained. Member Altshuler said it is good to reiterate the point but the reason why was not communicated by this speaker and the Council should not speculate as to the cause in Key Points. Member Bornstein said “no reason was given” could be inserted. Member Altshuler said it could be highlighted for further investigation but that would go beyond Key Points. Chairperson Hayes referred the issue back to the report drafting committee.

Member Lutzker suggested, regarding bullet 6, second sentence, to delete “particle” and that although meteorology and time of day are relevant, the current description goes beyond the key

point that wind patterns are variable and have an effect. Member Bornstein suggested “wind variation.” Member Lutzker suggested striking portions of the bullet and revising what remains to make the language more pointed. Chairperson Hayes noted the mention of UFP levels persisting up to a mile from freeways and a state law that prohibits construction of schools within certain distances from roadways in Dr. Zhu’s presentation, stated the information is relevant, and asked about its implication in the context of the presentation. Member Lutzker admitted that parts of LA may be meteorologically unique, suggested parts of the Bay Area may have similar patterns, and said the take away is that in some places “down wind” is not static, as it is often assumed to be. Member Bornstein said the first sentence is important but the second can be compressed and suggested deleting “diurnal.” Member Lutzker agreed. Chairperson Hayes said the relevance for schools of this type of pattern is that children are not in attendance during night hours. Member Cherry suggested instead adding “wind flow reversals and changes in wind speed.” Member Bornstein said “wind velocity changes” would work as well but Member Cherry’s suggestion is more accessible for readers. Chairperson Hayes suggested “changes in the winds.” Member Bornstein noted that the changes in wind are not relevant to which side of the freeway. Member Cherry suggested it is relevant to the width of the band of high concentrations of UFP. Member Altshuler suggested this information is not profound. Member Lutzker countered that it is important as she previously understood downwind to be a constant. Chairperson Hayes revised the report to read, “Shifts in wind speed and direction can affect UFP on either side of a roadway.”

Member Vura-Weis suggested, regarding bullet 10, clarifying the meaning of “air recirculation (RC)” by replacing “air recirculation” with “recirculating cabin air.”

Member Marshall suggested, regarding bullet 12, that sub-bullet 2 is contradictory to the opening phrase. Member Lutzker said perhaps “recommended measures” is inaccurate. Chairperson Hayes revised the report to insert “roadway” before “UFP” and delete “near roadways.”

Member Bornstein asked, regarding bullet 10, what “RC” is an abbreviation for. Chairperson Hayes said RC was Dr. Zhu’s acronym. Member Lutzker sought clarification on what feature RC is in a typical vehicle. Various members responded simultaneously. Member Bramlett suggested that the Council does not know the exact meaning so it is important to use what was used by a presenter rather than make up a definition. Chairperson Hayes referred the issue back to the report drafting committee and suggested asking Dr. Zhu for clarification.

Member Lutzker suggested, regarding bullet 11, inserting “Advances in” at the beginning and “technology” after “filtration.” Member Bornstein suggested inserting “Future” before “advances.” Chairperson Hayes and the Council agreed to all. Member Bornstein said that will result in two “in’s” in a row and asked if that is acceptable. Member Lutzker said yes.

Member Bolles asked if this is an area the Air District has the authority to regulate. Mr. Stevenson replied that it is not, as it is a mobile source. Member Bolles noted that the Ford Ranger truck does not have an in-cabin filter or the recirculation feature. Mr. Stevenson said that likely falls to the California Air Resources Board (ARB). Chairperson Hayes suggested forwarding the comment to Ford and doubted whether the ARB even has jurisdiction. Member Bolles said it seems like an item that should be in Recommendations. Member Vura-Weis suggested the Air District has two roles in this, one, relative to public education and, two, opportunities provided staff to provide feedback on other agencies’ actions, and concluded that it

is reasonable to include something of this sort in Recommendations. Chairperson Hayes said this is a bigger and broader issue, albeit an important one.

Member Bornstein said, regarding bullet 10, that he does not recall Dr. Zhu mentioning air conditioning (AC) and there is nothing in the sub-bullets regarding AC. Chairperson Hayes confirmed that there is not anything on AC in the report. Member Lutzker recalled that when Dr. Zhu was asked about the contribution of AC, she said that no noticeable difference was discovered. Member Bornstein asked if a sub-bullet should be added to clarify that three different systems are involved. Chairperson Hayes said it would be referred to Dr. Zhu for clarification.

Member Range suggested, regarding bullet 14, that “clunkers” be replaced with any other word. Chairperson Hayes suggested “older, higher-emitting vehicles.” Member Altshuler asked what term Dr. Zhu used. Member Range said “clunker.”

Member Vura-Weis asked, regarding bullet 14, if “filters” means exhaust filters and various Council members simultaneously discussed its meaning. Member Vura-Weis suggested alternately that it is referring to the indoor air on all freeways. Chairperson Hayes conceded the point and asked what the Council is referring to. Member Vura-Weis asked if it should be referred back to the report drafting committee. Member Altshuler suggested the insertion of “catalytic exhaust” before filters. Chairperson Hayes agreed. Member Bramlett urged the Council to use what was said by the speaker with added clarification, if necessary. Member Bornstein suggested inserting “(older, higher emitters)” after “clunker.” Chairperson Hayes suggested adding “(high emitters)” after “clunker” and “other” before “modern.”

“KEY POINTS – Rajiv Bhatia, MD, MPH – “Policy Strategies to Reduce Health Impacts from Urban Particulate Pollution”

Member Lutzker suggested, regarding bullet 2, adding “and manage exposure” or something that more accurately shows the varying results. Member Bornstein noted that the policies actually had more to do with exposure than emissions. Member Lutzker said it was both. Member Holtzclaw agreed with Member Lutzker and provided the example of buses. Member Lutzker provided the example of parking. Chairperson Hayes revised the report to insert “and exposures.”

Member Lutzker noted regarding bullet 4, that Health Code Article 38 is only regarding new residential buildings. Chairperson Hayes clarified that the insertion should be, “for new residential development” before “areas with high air pollution.” Member Cherry suggested adding “indoor” after “reduce.” Member Holtzclaw asked if retrofits are included. Member Bramlett said they are captured as new residential.

Member Altshuler suggested, regarding bullet 9, replacing “means” with “model.” Member Bornstein suggested replacing “be a means for addressing” with “can address.” Member Altshuler said no and explained that addressing noise is not a means to addressing air quality but those efforts to address noise may serve as a model to addressing air quality. Member Holtzclaw suggested instead “can also reduce.” Member Altshuler said no and restated that the technique or policy is the conceptual model. Member Bornstein suggested instead “can also address.” Member Lutzker said no and echoed Member Altshuler’s comments. Member Holtzclaw suggested that noise reductions equate to air pollution reductions. Member Altshuler said that is not what was said. Member Bramlett agreed it was said but that it is anecdotal and echoed Member Altshuler’s

comment. Member Wood agreed. Member Lutzker added that Dr. Bhatia did not say the insulation itself helps with the air quality but instead that there was a 90% correlation between noise pollution and indoor air pollution simply because they are related in his city. Member Altshuler agreed they have the same source in Dr. Bhatia's case. Chairperson Hayes suggested the Council select a word that most accurately depicts what Dr. Bhatia said. Various members simultaneously suggested "model." Chairperson Hayes revised the report to replace "means" with "model" and suggested the bullet still lacks clarity. Member Bornstein asked if the Council should ask Dr. Bhatia.

Member Lutzker said the report is missing a key point, the need for more neighborhood level modeling as it was key to Dr. Bhatia's work in San Francisco (SF), and is needed for neighborhoods across the Bay Area. Various members pointed out bullet 1. Member Lutzker retracted her comment.

Member Altshuler asked if the Council wants to introduce the term "horizontal smoke stacks" in reference to heavily-travelled roadways. Member Holtzclaw said it was removed from an earlier draft of the report. Chairperson Hayes said it was softened. Member Holtzclaw suggested it was deemed anti-business.

#### "EMERGING ISSUES"

Member Lutzker mentioned the hierarchy of controls concept introduced by Dr. Bhatia, suggested both speakers spoke to the concept, Dr. Bhatia to policies and Dr. Zhu to personal measures, and urged the Council to introduce the concept in Emerging Issues and/or Recommendations. Member Lutzker added that there are multiple levels at which exposure reduction can occur and their combination is valuable and effective. Member Holtzclaw suggested the item is an important Emerging Issue and an opening phrase is needed. Member Bard said this was attempted in bullet 1 and conceded more work is needed. Member Lutzker said it does not have to include the entire framework of the hierarchy of control and suggested using "policies and personal practices." Member Holtzclaw suggested a phrase that includes "public health strategy." Member Lutzker clarified that it is called "Hierarchy of Control." Chairperson Hayes said the bottom line is that there are technological solutions and behavioral solutions to exposure reduction. Member Bramlett said there has been a lengthy battle, most of it in litigation, with significant history that goes beyond the labeling of categories into the idea that it is an edict to employers to provide elimination first, and then substitution and on down the line, all of which is known in an occupational setting but is somehow lost in different contexts, but the law and a big body of discussion are out there to tap into. Member Holtzclaw said it is worth including. Members Lutzker and Bramlett explained the hierarchy further, suggesting that one does not want to merely wait for individuals to take action but instead should work at a systemic level to lower speed limits, improve emissions and so forth, and then leave it to individuals to take additional action. Chairperson Hayes clarified the exact name and source of the concept, suggested that the intent of bullet 1 is to get at this idea, and referred the issue back to the report drafting committee. Member Lutzker said the elimination and substitution categories were not parts of the two presentations but engineering, administrative and personal were. Member Bard asked what the Emerging Issue is as the comments speak only to how to frame the language. Member Lutzker said the Emerging Issue is that there are multiple levels at which this can be controlled and that working at a higher level is most effective. Chairperson Hayes asked what the need is. Member Bramlett there is a need to recognize the hierarchy of controls in the Air

District's control measures. Member Bard suggested adding a phrase about working higher up in the controls as the more effective measure. Member Vura-Weis asked if Dr. Bhatia mentioned the hierarchy and Member Lutzker confirmed. Member Vura-Weis suggested including it in Key Points for reference in the following sections of the report.

Member Bornstein asked if the opening line of Emerging Issues should be revised to reflect the source of the issues. Chairperson Hayes said he has always understood Emerging Issues to be the Council's issues as drawn from the presentations. Member Bornstein asked if his opening phrase is needed. Various members responded no.

Member Bornstein said, regarding bullet 1, that the three examples provided at the end are not parallel in that the first two refer to location and the third to controlling sources. Chairperson Hayes suggested that it will be worked out in the course of revising the sections in response to the hierarchy discussion.

Member Marshall suggested, regarding bullet 7, replacing "vehicles" with "vehicular." Member Lutzker suggested excluding either term in light of pedestrians. Member Marshall alternately suggested deleting "vehicles" and inserting "in roadway collisions" after "fatalities." Member Lutzker suggesting inserting "reducing" before "noise" to which Chairperson Hayes agreed.

Member Altshuler said exposure was discussed but not aerobic exposure, recalled that it was passed over in the presentations, and suggested it is an important message in light of the number of sports fields located right next to freeways. Member Holtzclaw suggested, regarding bullet 2, adding "playgrounds and sports fields." Member Bolles noted the bike lanes being constructed immediately adjacent to various heavily-travelled roadways throughout the Bay Area. Chairperson Hayes clarified the revisions to bullet 2 to read, "cyclists, pedestrians, near-roadway occupations, and sports fields and playgrounds."

Member Altshuler suggested, regarding bullet 4, inserting "exposure" after "UFP." Chairperson Hayes agreed.

Member Altshuler noted, regarding bullet 6, the reference is more accurately described as local mitigation strategies, not laws. Member Cherry suggested replacing "laws with "building codes." Member Range suggested deleting "Noise" as well. Member Altshuler said the Council was trying to make the connection with noise. Member Holtzclaw asked if there are requirements that motorcycles have to stay below a certain level.

Member Bornstein asked why the codes are considered a model. Member Range said they can be a model both in terms of how to structure law and because they use building techniques to add co-beneficial value rather than solutions working at odds. Member Bornstein suggested replacing "reducing" with "crafting code for addressing." Member Altshuler said that is what he heard. Member Range agreed and suggested adding something about the co-benefits of technological solutions. Member Bornstein agreed. Chairperson Hayes re-read the proposed phrase. Member Altshuler suggested "crafting strategies" instead. Member Vura-Weis asked if it would be beneficial to add "often have the co-benefit" in the bullet. Chairperson Hayes said the reverse can be true. Member Altshuler said that is not what he heard. Member Bramlett said that Dr. Bhatia specifically said that weatherizing efforts to benefit noise often have the unintended consequence of improving indoor air quality. Member Lutzker said Dr. Bhatia was instead suggesting that

when remodeling for an identified issue, one should consider other issues as well, and noted that sealing a building tightly is not always beneficial in terms of air quality. Chairperson Hayes asked if the bullet is meant to suggest that noise control law should be crafted to include considerations relative to air quality. Various members said no. Member Cherry said there are different two issues, the first is the noise issue in terms of strategies developed in the building code to deal with noise pollution and that air quality strategies could be developed similarly to deal with air pollution, and the second is the weatherization issue in terms of energy efficiency and if there is investment in programs to seal up buildings it would be more efficient for local governments to simultaneously deal with air pollution issues. Member Cherry suggested that Dr. Bhatia was not speaking to the application of techniques for noise issues to air issues. Member Bornstein suggested referring the issue back to the report drafting committee. Member Holtzclaw suggested the siting of a manufacturing facility up against a freeway, with residences located a distance from both, as an example of Member Cherry's first issue. Member Altshuler disagreed that was the point. Member Cherry said that may be the case but was not Dr. Bhatia's message. Member Lutzker recalled the building of a wall on a freeway does not necessarily help. Member Altshuler provided the example of a proposed building up for review and a local government directs the developer to stay within the prescribed criteria for noise control and that Dr. Bhatia suggested the same methodology can be used for indoor air quality, without the two being connected, as neither is very well controlled at this time. Member Bornstein reminded the Council that they are not limited to what the speaker said. Member Holtzclaw said the current language is indefinite enough to apply to both. Member Range said Dr. Bhatia could have pointed to other ordinances that are very similar in terms of mandating remediation of certain variables that result from proposed siting. Chairperson Hayes asked what the need is in this bullet and whether it is the need to better understand noise control code as a potential model for air quality control. Member Range said the need is to use existing regulations and code to address air quality concerns. Member Bornstein suggested they should also be used as a model to develop. Member Bard noted that if the Council is confused, the Board of Directors likely will be, and that highlights the need to amplify what this means exactly, because her take away was that when noise pollution reaches a particular decibel level a developer must implement certain mitigation measures, and that the same should be true for air quality. Member Bolles asked why remodels were not included. Member Lutzker said that is another question and that SF law does not apply to currently existing buildings because they are more difficult to improve. Member Bolles asked for an example of a noise control law that serves to control air quality. Member Cherry said that is not the point and it is instead about utilizing existing forms of regulations, and provided the example from the building code that certain types of dwellings have requirements on how a wall is built to mitigate a perceived noise issue and that local government could similarly integrate into the code similar techniques relative to air quality. Member Altshuler said the world has a great deal of ambient air quality standards that are used to control emissions and, to a lesser extent, there are noise standards or guidance points in building development, so SF has taken steps to make sure new buildings are within certain parameters for the sake of noise reduction and have set up a procedure for dealing with those requirements. Member Altshuler said that indoor air quality is playing catch up and if someone wants to construct next to a freeway, the freeway cannot be changed but the building can be designed to respond to the freeway's presence. Chairperson Hayes referred the issue back to the report drafting committee. Member Altshuler said noise is overlooked in his opinion and suggested there are a lot of opportunities to bring the two sciences together.

Member Bornstein suggested, regarding bullet 7, inserting “UFP” after “gases” and “other” before “air”, replacing “pollution” with “pollutants”, and deleting “and it should also reduce UFP.”

Member Lutzker suggested, regarding bullet 5, that it does not speak to the need for more modeling at the local level in a very pointed way and noted SF would not have established the code without local modeling. Member Holtzclaw suggested inserting “modeling” before “establishing.” Member Lutzker suggested also adding, “in part because they lack neighborhood-level air quality monitoring.” Chairperson Hayes said there is a question about the capability to model at that scale. Member Lutzker said Dr. Bhatia said it may not be as exact as SF it should be possible in some form. Chairperson Hayes said he has done air modeling for more than 30 years and localized modeling to identify trouble freeways for surrounding areas is one thing but it is entirely another to pinpoint risk at any given point in a neighborhood, requiring a scale of model that is not currently possible. Member Lutzker said she asked Dr. Bhatia if SF is unique in that respect and he said no. Chairperson Hayes agreed that it is a good thing and that it should be done but disagreed that it can be currently and suggested perhaps identifying that need as an Emerging Issue. Various members discussed various things simultaneously. Chairperson Hayes noted that just because the SF model exists does not mean it is correct. Member Bramlett questioned the Council process. Chairperson Hayes said Dr. Bhatia built a map showing areas where air pollution is greater but it should be understood that the skill of models is not such that you can go into a particular neighborhood as accurately as desired. Member Lutzker countered that Dr. Bhatia did. Member Bornstein noted that coming up with a number does not mean the methodology is sound. Chairperson Hayes agreed. Member Lutzker posed the question of whether the Council feels that Dr. Bhatia’ methodology is sound. Member Bornstein said the methodology is the best that can be done with existing resources. Member Lutzker said SF has code based on the data. Member Bolles asked for clarification from staff. Mr. Stevenson agreed with Chairperson Hayes and explained that localized meteorological and traffic data are needed to develop an accurate and definitive risk assessment but, that being said, SF is using the most current and technologically advanced models available. Member Lutzker noted they are acting on it. Mr. Stevenson agreed and said it may not be perfect but that does not preclude action. Chairperson Hayes suggested the need to improve modeling and locally appropriate data as an Emerging Issue, said the SF effort is an important one, and suggested the current data is lacking for the Air District. Various members simultaneously discussed whether it is appropriate to take action based on imperfect data. Chairperson Hayes said the Council has an obligation to use the best information available to make the best decisions regarding public health but that it is important to note that better models and data are important. Member Lutzker said that goes back to the point of the need for local modeling as an Emerging Issue. Member Vura-Weis suggested adding the need for more localized monitoring as well. Member Bard suggested carrying over Dr. Bhatia’s Key Point bullet 1 to Emerging Issues. Member Bornstein suggested the Emerging Issue is refining neighborhood-scale modeling. Member Lutzker asked if they exist outside of SF. Member Bornstein said yes, SF did not develop the models but instead used those supplied by others. Members Lutzker and Bramlett discussed the availability of models. Member Bolles noted the presentation slide that showed only the area around U.S. Route 101 (101) as problematic in terms of emissions and noted a series of places in SF that are known to be problematic as well. Member Bornstein said the winds blow west to east most of the time and the major sources are to the east so the SF map is not far from reality. Member Bolles said he would rather be under the 101 than be one block from 19<sup>th</sup> Avenue. Member Bornstein agreed, said the model not differentiating between elevated and surface elevations is an example of one of the



limitations, and noted that the Air District has been regulating air for forty years but doing so based on the best available, yet primitive models, and must continue to do so. Member Lutzker said that one cannot develop effective policies without data. Member Bornstein said the terminology is confusing and asked for another term to replace “model.” Member Lutzker suggested there is no confusion between “model” and “model policy,” deferred to the group if they feel otherwise, and stated her point as being the need to develop an ordinance based on neighborhood-scale modeling and if the proper scale of data is unavailable then the policies become useless. Member Bramlett suggested the Council agree it does not know how to regulate indoor air quality and the take away message needs to be that there are examples to consider. Member Bornstein suggested “policies.” Member Cherry agreed with Member Lutzker, said some of the points are already in Recommendations and suggested adding something similar in Emerging Issues. Chairperson Hayes asked for suggested changes. Member Lutzker said she did not know who would do the modeling. Member Brazil suggested it was too restrictive to try to contain this in one bullet point. Chairperson Hayes clarified that the intent is to say that SF has something good that may be a useful to others as an example of a policy model. Member Lutzker noted that one of the reasons the 100 cities do not have mechanisms in place is the lack of modeling that shows where the exposures are. Member Bornstein said SF does not either, the Air District has the model and SF chose to apply it. Member Holtzclaw disagreed. Chairperson Hayes asked if there is agreement on the basics as previously stated. Member Brazil responded yes. Member Bornstein agreed but suggested adding to Recommendations the dissemination to all of the cities. Member Bard suggested adding Member Lutzker’s language and a second bullet regarding the priority need for neighborhood-scale models then move on to Recommendations.

Member Bornstein suggested, regarding bullet 5, replacing “ahead of the curve” with “in the lead” and replacing “BAAQMD” with “Air District.” Member Altshuler instead suggested “state of the art.” Member Holtzclaw instead suggested “playing above its category.” Member Altshuler said there is a question of what gases and pollutants are being discussed because if UFP, this conversation is premature based on the information available, and asked what pollutants SF was addressing. Member Range said  $PM_{2.5}$  but a revision is underway to include those considered a cancer risk. Member Altshuler said it is a bit distant from the Council’s focus on UFP and that he was unsure how to address it. Member Bard said  $PM_{2.5}$  includes UFP. Members Bornstein and Altshuler disagreed. Member Bard said the message in the report should then be for  $PM_{2.5}$ . Member Bornstein said efforts to address  $PM_{2.5}$  could have no effect on UFP and asked, regarding bullet 5, if the vague term “fine particulate levels” was intentionally used.

Chairperson Hayes suggested, regarding bullet 5, revising the second to last paragraph to encourage model policies and add a final sentence regarding SF is already doing it. Member Altshuler asked what would be the target of control. Member Holtzclaw said there is a benefit in reducing fine particles even in the absence of a standard. Chairperson Hayes restated his suggestion.

Member Bornstein questioned, regarding bullet 5, the need for the last sentence regarding energy efficiency. Member Lutzker suggested it be a separate bullet. Chairperson Hayes and various members of the Council agreed and decided to revise the sentence beginning “State/regional” and move it to the beginning of the bullet point. Member Altshuler suggested clarifying that SF is in the lead in the U.S. Chairperson Hayes suggested instead “in the lead in the Bay Area.”

Member Range asked, regarding bullet 2, what is meant by “cumulative impacts” as it is an overly broad term. Member Altshuler said it is as to multiple pollutants. Member Lutzker said the term goes beyond that, including poverty, race, and basic needs, among other things. Member Range agreed. Member Altshuler said the Air District cannot model multiple pollutants much less those additional factors. Member Lutzker agreed but said that term means something else in the public health field. Member Holtzclaw asked if that understanding is used in public health messaging. Member Lutzker said it is used in trying to understand risk and it is itself an emerging issue. Member Martin speculated that the Air District defined it by having a cumulative impact work group. Mr. Stevenson agreed but said there are two different uses at play, one associated to air quality, as used by the Air District, and the other is regarding public health. Chairperson Hayes suggested modifying or deleting the last sentence. Member Bramlett suggested inserting “air quality” after “cumulative.” Member Altshuler and Chairperson Hayes agreed. Member Bornstein suggested also replacing “impacts” with “impact issues.”

Member Range asked, regarding bullet 3, what is meant by “siting criteria.” Member Bornstein responded sources and monitoring. Chairperson Hayes said sources not monitoring. Member Bard agreed and said it is relative to criteria for new development. Various members simultaneously discussed the meaning and intent. Chairperson Hayes suggested inserting “source and receptor” before “siting.” Member Bard said this came out of the discussion about shifting wind patterns. Chairperson Hayes said his suggested revision should cover it. Member Bornstein said “other factors” is vague and suggested it be deleted. Chairperson Hayes revised the report as suggested.

#### “RECOMMENDATIONS”

Member Bornstein suggested, regarding the opening line, inserting “Air” before “District.”

Member Altshuler suggested focusing on what was heard by the Council in this report and expanding upon it in the year-end summary report to the Board of Directors and offered bullet 8 as an example. Member Holtzclaw said the concept was discussed. Member Bard asked for clarification about whether Recommendations are to be restricted to what was heard or if the application of individual expertise is welcome or encouraged and suggested it is the latter. Member Holtzclaw agreed. Member Vura-Weis said it is more useful if things in the final report can be found in at least one of the initial reports. Member Lutzker said there was agreement that Key Points are restricted to the presentations by speakers but Emerging Issues and Recommendations are the Council’s. Member Bolles agreed. Chairperson Hayes agreed and argued for not restricting member insights but for not repeating what was said unless modified and to remain focused on UFP. Member Bornstein asked, regarding the opening line, if “thus” should be inserted before “recommends” to emphasize that it is a conclusion based on that which precedes it, leaving open the option to add things that are not. Member Altshuler said there are grey areas and recalled last year’s recommendation that the Air District hire a public health officer. Member Bornstein said that came out of what was heard. Member Altshuler disagreed. Member Bornstein said the list is not too long so it can stay. Member Altshuler clarified that he was not urging for its deletion but making a broader point about approach.

Chairperson Hayes asked for revisions.

Member Lutzker suggested there may be a couple missing points, one, regarding the development and dissemination of model policies by state/regional agencies regarding emissions reduction and exposure management, and, two, regarding the regulation of freeways as stationary sources. Chairperson Hayes asked if bullet 5 is responsive. Member Lutzker said there is a difference between guidance and the creation of a document and noted that Dr. Bhatia mentioned a number of measures that are not represented. Member Holtzclaw noted that Member Lutzker is discussing bullet 6 and suggested adding another sentence regarding working with other agencies regarding freeway use. Member Bramlett suggested adding language related to considering the development of a draft policy for other agencies' benefit because the Air District knows things that should be passed along. Member Cherry suggested merging bullets 5 and 6 under an introductory phase regarding the Air District's willingness to help develop policies and standards, including in-vehicle exposure, infiltration into buildings, and model codes for reducing emissions. Member Range agreed and added that some of those items are at the state level and suggested instead that the recommendation be to advocate for statewide laws.

Member Holtzclaw suggested the continued inclusion of bullet 8 is justified. Member Bornstein suggested that educating the public should be a separate bullet point and the smart phone app could follow.

Member Vura-Weis said that Emerging Issues includes mention of lowering speed limits and suggested it be included in Recommendations in terms of educating the public and policy advocacy. Member Lutzker clarified the Air District has two separate roles in this, regulatory and advocacy. Chairperson Hayes noted bullet 7 in Emerging Issues and said it is necessary to figure out what the best policy choices would be, and speed limit reduction is likely one of them. Member Lutzker noted that speed limit reduction cuts across so many health issues and, as a result, is really good policy and seconded Member Vura-Weis' suggestion. Member Bard agreed. Chairperson Hayes said it is a good idea and it will likely emerge but suggested the Council needs to consider its choices to figure it out. Member Lutzker suggested "develop these model policies, including measures such as" or "examine strategies including." Member Bard said one of the preliminary drafts included "examine the effect of speed control on UFP" and suggested reinserting it with "and other air pollutants and health co-benefits." Member Lutzker said it could be a separate Recommendation or folded into an existing one about developing model policies. Member Bard said there is a need to investigate first because the health benefits are unknown. Member Lutzker clarified that the Council is not asking the Air District to do the study. Member Bard asked staff what they think of speed reduction. Mr. Stevenson said the Council's ultimate goals should determine how it is worded and explained that an example is very different than a statement to the Board that something should be investigated. Chairperson Hayes agreed and suggested that the recommendation be to cast a wide net in order to be better informed about options before getting specific. Mr. Stevenson said "to consider" is communicated by examples and a Recommendation communicates "focus on." Member Holtzclaw recalled a Metropolitan Transportation Commission (MTC) message from ten years ago that if the Bay Area speed limit were reduced to 55 mph, emissions would be reduced by a factor. Member Lutzker said the information is already there. Mr. Stevenson said it is not necessarily there for UFP. Member Lutzker conceded the point and said it could be called out specifically as a strategy among others. Mr. Stevenson agreed with that approach. Member Bard said the Council does not want staff spending a lot of time investigating. Mr. Stevenson suggested "utilize strategies such as speed control." Member Bornstein said these are twenty-year old studies that were not focusing on UFP and said it is unknown whether the same conclusion holds true for UFP. Mr. Stevenson said that

is the subtlety he has been trying to get at. Member Bolles noted a presentation about two years ago regarding metered entry points on roadways and the effect on air quality. Member Bornstein suggested referring the item to the report drafting committee.

Member Lutzker asked if “freeways as stationary sources” can be included. Brian Bunger, District Counsel, said the problem with freeways is that without cars they are not sources and are instead considered indirect sources that attract things that have emissions, which leaves the problem of how to control that particular indirect source, and noted the Air District has some authority on traffic measures through its collaboration with MTC. Member Lutzker suggested they behave in much the same way as inactive factories. Mr. Bunger said that is a great argument but generally speaking, stationary sources are defined as things that emit pollutants and stay in place for a year or more, and factories fit the definition and added that their processes can run even with no one present. Member Lutzker asked if the Council can say anything acceptable in this vein. Member Vura-Weis said it can be included in suggestions if nothing else. Member Bramlett said information and advocacy are crucial and continuing to apply pressure in these forms is important. Mr. Bunger said the biggest effect that could be had on this issue is that of land use controls, through a city or county, as already discussed by the Council this morning. Mr. Stevenson added that a similar structure is beginning to be put in place with near-roadway monitoring, whereby data show that the roadway is the reason why ambient standards are not being met and the realization that it must be controlled, but no statutory authority is in place at this time. Member Lutzker asked if the Air District may advocate. Mr. Bunger responded yes but the response to advocacy on this topic is generally no and noted that this particular issue has a long history that goes back to the 1970s, when the EPA tried to force the states to do something and were shut down by Congress. Mr. Bunger added that it is a land use issue and whenever something incurs into that realm of authority, those with the current authority rise up in opposition and yet, do not address the issue but for SF to a limited extent. Member Lutzker suggested that something should be included at however minimal a level. Chairperson Hayes referred the item back to the report drafting committee and invited input from Member Lutzker to the committee. Member Holtzclaw said he would do the first run of edits and add a glossary.

Member Bornstein suggested deleting bullet 1 and adding “modeling” before “multi-pollutant” in bullet 2. Chairperson Hayes disagreed and said to keep bullet 1 as they are different issues. Member Bornstein suggested amplifying efforts. Chairperson Hayes clarified that the Air District is already doing this. Member Bornstein reiterated his suggestion regarding bullet 2. Chairperson Hayes said it is not just modeling. Member Bornstein suggested instead “modeling and mitigation strategies.” Chairperson Hayes alternately suggested deleting the entire first sentence after “planning.” Member Bornstein said that is too vague and suggested coming back to it.

Member Bornstein suggested, regarding bullet 3, that more is involved than nitrogen dioxide (NO<sub>2</sub>) and monitoring. Chairperson Hayes said what emerged was the suggestion to integrate new efforts into those already underway. Member Bornstein asked if only NO<sub>2</sub> is being monitored at the roadside. Member Altshuler said the Bay Area regional modeling network is made up of over 20 stations measuring ozone, PM<sub>10</sub>, PM<sub>2.5</sub>, carbon monoxide, sulfur dioxide, hydrocarbons and NO<sub>2</sub> to capture regional exposure; said the EPA has recently started requiring NO<sub>2</sub> to be measured along the roadside because diesel traps are creating NO<sub>2</sub> hotspots and this has or will result in a separate network to that end; and asked staff how many monitors are in that new roadside network. Mr. Stevenson responded there are currently none located near roadway but three are in development. Member Altshuler said the Air District is going in that direction to

better understand NO<sub>2</sub> and, despite the lack of standards for UFP, it makes some sense to collect data to explore possible correlations. Member Bornstein confirmed the status of the monitoring systems and clarified the intent of the Recommendations as currently drafted.

Member Bornstein suggested, regarding bullet 4, replacing “model UFP and develop a” with “develop a fine-scale” based on the assumption that the modeling is captured elsewhere. Chairperson Hayes agreed there is some overlap but suggested bullet 4 puts a finer point on a specific Recommendation. Member Bornstein suggested fine tuning and grouping bullet points 1 through 4 with a focus on the varied models being recommended and that the emission inventory be included in the same.

Member Bramlett asked if this issue is part of the Community Air Risk Evaluation (CARE) and, if not, why. Member Bramlett said the original CARE request was for a multi-pollutant analysis. Mr. Stevenson said CARE was supposed to do a multi-pollutant look but it is only an investigatory, modeling exercise to identify impacted communities and then to focus resources and actions in those areas. Member Bramlett asked how that is different and noted past direction to the Council to look at where efforts should be directed three to five years in the future. Mr. Stevenson said the Council work today has a different focus than CARE, which was looking at many factors for specific places, whereas today’s work is looking to reduce UFP exposure for all. Member Bramlett said that may be how CARE was implemented but it was not the initial request and the divergence is something he has never understood. Mr. Stevenson agreed and said there is a somewhat duplicative recommendation here but that may not be a bad thing as repeated recommendations in regard to the hiring of a public health officer were successful. Member Bornstein asked if CARE still exists. Mr. Stevenson responded that it is more of a study, not dissimilar to Multiple Air Toxics Exposure Study done by the South Coast Air Quality Management District. Member Bornstein clarified that CARE is a study not a program so today’s recommendation should not be to add onto or supplement CARE. Member Bramlett said they seem the same and asked why they are not being talked about together. Mr. Stevenson said the goal of CARE is similar to today’s recommendation but provides substance to the initial concept behind CARE, which came from an environmental justice platform, and makes it a broader issue, rather than solely an issue relative to impacted communities. Mr. Stevenson said he would bring back clarification of the differences at the next meeting.

Chairperson Hayes conducted a time check and invited remaining comments to be emailed to the report drafting committee.

Member Marshall suggested the use of numbers and letters, instead of bullet points, for ease of reference.

Member Altshuler invited Member Lutzker to join the report drafting committee.

Council Comments: None.

Public Comments: None.

## **OTHER BUSINESS**

### **3. Report from the Air District (added item)**

Mr. Stevenson invited Council members to suggest topics and speakers for next year for executive officer consideration. Member Bornstein asked if there must be three related topics, in conformance with the recent structure. Mr. Stevenson said the current form has been well received and is preferable, but not required. Chairperson Hayes asked for a deadline. Mr. Stevenson said within the next two weeks. Member Bolles asked if the Council will continue with the two-year study cycle. Mr. Stevenson responded yes, to the extent the topics allow or require it. Member Lutzker asked for a list of recent topics. Mr. Stevenson agreed and said they include greenhouse gases (GHG), UFP and the public health aspects of air pollution. Member Bard asked for them in writing, with specifics. Mr. Stevenson agreed. Member Bornstein asked that the speakers also be included. Member Stevenson agreed. Member Bramlett noted that it has not been the norm for a topic discussion to span two years. Member Bolles said the past two years were great. Member Bard asked for context in the form of key documents and an implementation update from the Air District. Mr. Stevenson agreed and cited the recent issuance of the PM Report by the Air District. Chairperson Hayes echoed Mr. Stevenson's positive assessment of the PM Report.

Mr. Stevenson said the Air District recently passed a regulation regarding cement kilns, much of which contains EPA regulations that the EPA is currently backing away from but the Air District back-stopped with the adoption of the resolution; the Air District also has a couple regulations in process, including metal-melting; and the Council officers will now be involved in meetings of the Personnel Committee of the Board of Directors when Council member appointments are agendaized and its officers will be providing periodic updates to the Executive Committee of the Board of Directors in addition to the annual report to the full Board.

Mr. Stevenson expressed his appreciation for the efforts of the Council in crafting the exacting language that has become a customary part of their reports.

#### **4. Council Member Comments/Other Business**

Chairperson Hayes said the Council will be presenting its annual report to the Board of Directors in the near term and said the preparatory work to summarize and present that report needs to be done; said that some form of draft should be pulled together by the November meeting as it is the last meeting of the Council this year; thanked Members Martin and Vura-Weis for their service to and on the Council; described the brief to the Executive Committee as not containing any findings, just an update on work to date; said Air District staff are trying to involve the Council more in the selection process and invited members to the Personnel Committee meeting on November 8, 2012. Mr. Bunker clarified that Council members will not have a vote in the process. Chairperson Hayes clarified that Council members would have an advisory role, if any. Member Bornstein asked that staff relay to the Executive Committee that suggestions regarding Council topics and speakers are welcome. Chairperson Hayes noted that the Council has expressed a desire to be more engaged in the topic selection process and staff has described the first step today.

Member Lutzker announced that the California Breathing Asthma program of the California Department of Public Health is hosting its Asthma Summit December 5<sup>th</sup> and 6<sup>th</sup> in SF, with the support of the Air District and others, and briefly described some of the focused topics.

Member Bard said the American Lung Association will hold its annual Hike for Air Walk on Saturday, November 3, in Fremont at Quarry Lakes Regional Park; reminded the Council of the expected issuance of a final decision by the EPA regarding the PM<sub>2.5</sub> annual standard; and noted the PM<sub>2.5</sub> information provided in the Bay Area Monitor.

Member Bornstein asked if Mr. Stevenson remembered to invite staff to lunch with the Council today. Mr. Stevenson said yes but they would be unable to attend because of an emergency.

Member Altshuler asked if the pending health effects analysis of UFP by the Health Effects Institute, as mentioned at the last meeting, had been investigated and resulted in anything. Mr. Stevenson said he had not.

Member Altshuler said the Air District website could be improved. Mr. Stevenson agreed and said it is a work in progress. Member Altshuler said the website should include work of the Council going much further back in time.

**5. Time and Place of Next Meeting:** Wednesday, November 14, 2012, Bay Area Air Quality Management District Office, 939 Ellis Street, San Francisco, CA 94109 at 9:00 a.m.

**6. Adjournment:** The meeting adjourned at 12:17 p.m.

Sean Gallagher  
Clerk of the Boards

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Stan Hayes and Members  
of the Advisory Council

From: Jack P. Broadbent  
Executive Officer/APCO

Date: October 31, 2012

Re: Approval of Draft Report on the Advisory Council's September 12, 2012 Meeting

RECOMMENDED ACTION

The Advisory Council will approve the draft report of September 12, 2012 meeting on Ultrafine Particles: Exposure Reduction.

DISCUSSION

The draft report on the September 12, 2012, Advisory Council Meeting on Ultrafine Particles: Exposure Reduction was initially prepared by Advisory Council Chairperson Hayes and Members Sam Altshuler, Jennifer Bard, and John Holtzclaw.

The draft report was discussed by the Advisory Council at its October 10, 2012, meeting. Following the discussion at the October 10, 2012 meeting, the draft report was revised by Advisory Council Chairperson Hayes and Members Sam Altshuler, Jennifer Bard, John Holtzclaw, and Liza Lutzker.

The revised draft report is attached.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Sean Gallagher  
Reviewed by: Ana Sandoval

Attachment



**DRAFT REPORT ON THE SEPTEMBER 12, 2012 ADVISORY COUNCIL MEETING ON ULTRAFINE PARTICLES: EXPOSURE REDUCTION****SUMMARY**

The following presentations were made at the September 12, 2012 Advisory Council meeting on Ultrafine Particles: Exposure Reduction:

1. ***Exposure to Ultrafine Particles On and Near Roadways*** by Yifang Zhu, Ph.D. Professor Zhu is currently an Associate Professor at the University of California, Los Angeles in the Environmental Health Sciences Department in the Fielding School of Public Health. Prior to that, she worked as an Assistant Professor in the Environmental Engineering Department at Texas A&M-Kingsville. Her research focuses primarily in the field of environmental exposure assessment and aerosol science and technology. Specifically, she is interested in determining the data necessary to fill the knowledge gap in quantitative exposure/risk assessments on vehicular emitted ultrafine particles that have shown higher toxicity than larger particles on a unit mass basis. Her current research focuses on identifying key factors that affect human exposure to ultrafine particles on and near roadways by measuring and modeling their emissions, transport, and transformation in the atmosphere as well as into the in-cabin and indoor environments. These research efforts are supported by two prestigious national awards, the National Science Foundation Faculty Early Career Development (CAREER) Award and the Walter Rosenblith New Investigator Award from the Health Effects Institute.
2. ***Policy Strategies to Reduce Health Effects from Particulates*** by Rajiv Bhatia, MD, MPH. Dr. Bhatia is the Director of Occupational and Environmental Health for the San Francisco Department of Public Health and an Assistant Clinical Professor of Medicine at the University of California San Francisco. He has been responsible for environmental health law and policy in San Francisco since 1998 and has broadened the scope of local environmental health to include issues of labor rights, working conditions, housing, land use, transportation, injury prevention, and food security. He has pioneered the practice of health impact assessment (HIA) in the US, institutionalizing a HIA unit in San Francisco government, teaching the first US graduate course on HIA at the University of California at Berkeley, and co-founding Human Impact Partners, a non-profit organization working nationally to build the field. He is a founding member of the Health and Social Justice Team for the National Association of County and City Health Officials and the co-editor of *Tackling Health Inequities through Public Health Practice: Theory to Action*. Dr. Bhatia earned a MD from Stanford University in 1989.

## KEY POINTS

### Yifang Zhu, Ph.D. - "Exposure to Ultrafine Particles on and Near Roadways"

Dr. Zhu reiterated the following points that have been previously presented to the Advisory Council:

1. Most ultrafine particle (UFP) deposition occurs in the deep-lung alveolar (gas-blood interface) region. Deposited UFP can result in alveolar inflammation and, because of their small size and ability to cross membranes, UFP can migrate from the lung and nasal passages to the heart, brain, and other areas of the body.
2. Recent studies have examined the air pollution health effects of ultrafine particles (UFP) related to exposures near heavily trafficked roadways, and these health effects have included cardiac and pulmonary health risks, adverse effects on children's lung development, decreased lung function in adult asthmatics, and autism incidence.
3. Compared to PM10 and PM2.5, the UFP fraction has relatively higher particle numbers, but lower mass.
4. Vehicle emissions usually constitute the most significant source of primary UFPs in an urban environment.

Dr. Zhu also reported:

1. UFP numbers measured at two monitoring locations in the LA area were highest during commute periods (6-9am, 6-9pm), consistent with vehicle emissions as a major contributor. Also consistent with vehicle emissions as a major UFP contributor, particle numbers in the air over an LA freeway were measured at nearly seven times higher than background, while particle mass increased only about 10 percent.
2. UFP numbers decayed exponentially with distance downwind of two LA freeways, dropping by nearly an order of magnitude within 100 meters of the roadway; this is a faster reduction than what occurs with gaseous emissions. Elevated UFP numbers downwind of one freeway in LA persisted during the night at a distance of up to a mile, a greater distance than during the day. It is important to note that shifts in wind speed and direction can affect and even reverse UFP concentrations on either side of a roadway.
3. Higher UFP numbers were measured on a freeway (I-710) more heavily travelled by heavy-duty diesel trucks than on another freeway (I-405) with less such traffic, indicating diesel trucks as a significant contributor to UFP. However, UFP was measured at significant levels along both freeways, not just those with diesels. Thus gasoline engines also contribute to UFP emissions.
4. Significant numbers of UFP can penetrate indoors into residences near roadways. This can be a significant contributor to UFP exposure for residents, given that people spend more than 80% (and often more than 90%) of their time indoors. Of note, UFPs that are greater in size than 50 nanometers (nm) penetrate indoors more easily than those that are less than 50 nm.
5. In-vehicle cab recirculation using a filter reduced UFP exposure measured in three different makes/models of vehicles to between 5% and 40% of UFP levels in outside air. The degree of UFP reduction depends on age and model/make of vehicle and such factors as cabin tightness and type of filter, which can influence outdoor air penetration, deposition efficiency, and degree of filtration. However, with reduced air

penetration while air is recirculating, carbon dioxide (CO<sub>2</sub>) levels can build up inside the car significantly, creating a secondary concern.

6. Using a mathematical model, in-cabin ventilation measures, including recirculating cabin air (RC) and a fan, were calculated to affect in-cabin UFP exposure while in a new and tight vehicle as follows:
  - a) Fan off and RC off: ~40% of outdoor on-roadway levels.
  - b) Fan on and RC off: ~20% of outdoor on-roadway levels.
  - c) Fan on and RC on: <10% of outdoor on-roadway levels (i.e., this combination affords the greatest protection).
7. Future advances in in-cabin filtration technology have significant potential to reduce commuters' exposure to ultrafine particles while at the same time solving the CO<sub>2</sub> build-up problem. HEPA filters provide the greatest protection, though stand-alone air purifiers can also significantly reduce PM<sub>2.5</sub> and UFP levels inside vehicles, as has been done in school buses.
8. 2011 data show that UFP concentrations on and near the freeways tested have decreased with low sulfur fuel, exhaust catalytic converters, diesel particulate filters, removal of clunkers (high emitters), and other modern technological changes.
9. Factors that can reduce UFP exposure near roadways include:
  - a) Meteorological: Staying on the upwind side of major roadways or 100+ m downwind
  - b) Spatial: Staying away from major roadways
  - c) Temporal: Avoiding roadways during heavy traffic hours.
10. Factors that can reduce UFP exposure inside vehicles include:
  - a) Route-related: Avoiding driving on heavy-duty vehicle routes
  - b) Driving-related: Avoiding idling (this includes turning off bus engines at transfer points)
  - c) In-cabin ventilation usage: Closing windows and turning on recirculation and fan
  - d) In-cabin filtration usage: Using HEPA filters/air purifiers.

Rajiv Bhatia, MD, MPH – “Policy Strategies to Reduce Health Impacts from Urban Particulate Pollution”

1. Regional monitors are not adequate for assessing localized exposure levels in close proximity to significant local sources, such as freeways, and do not provide adequate data for policies directed at such exposures. Europe has been doing localized monitoring for some time. There is a priority need for neighborhood scale air pollution monitors and models.
2. For a variety of reasons, infill growth has been concentrated near eastern SF freeways. San Francisco is a leader in air pollution exposure assessment and mitigation. To guide policy, the city has developed maps showing model-estimated traffic-related PM<sub>2.5</sub> concentrations along roadways. These maps are useful in determining where PM<sub>2.5</sub> exposure reduction measures are required for new development projects and have been extremely helpful in building public support for policies to mitigate emissions and exposures.
3. Compared to many areas around the state, San Francisco has good overall air quality. All areas of San Francisco meet both federal and state annual PM<sub>2.5</sub> standards, and few areas of SF have PM<sub>2.5</sub> levels

higher than 10 ug/m<sup>3</sup> (the state annual standard is 12 ug/m<sup>3</sup> and the federal annual standard is 15 ug/m<sup>3</sup>). Background levels in SF are approximately 8 ug/m<sup>3</sup>. SFDPH has estimated there are 103 annual premature deaths due to exposures in areas with annual PM<sub>2.5</sub> levels at or above 8 ug/m<sup>3</sup>. This illustrates the value of continued PM<sub>2.5</sub> exposure reductions, even when clean air standards are met.

4. Local strategies to reduce PM<sub>2.5</sub> exposure include:
  - a) Emission reductions (e.g., reducing growth of traffic density through measures such as land use zoning, pricing, parking control, impact fees, improved transit, improved bicycle and pedestrian environments)
  - b) Exposure management (e.g., enhanced ventilation systems for new residences in areas with high particulate levels or cancer risks; improving ventilation in existing residential dwellings).
5. To reduce indoor exposures to urban air pollution in infill areas, SF developed [Health Code Article 38](#) for new residential development in areas in proximity to freeways and major roadways. Under the requirements of this article, dwelling units proposed to be located within a potential roadway exposure zone at a location having PM<sub>2.5</sub> greater than 0.2 ug/m<sup>3</sup> attributable to local roadway traffic sources would have to install a ventilation system capable of removing at least 80 percent of ambient PM<sub>2.5</sub> from habitable areas. It is important to note, however, that this regulation applies to new construction, and does not protect existing residential or other uses in such areas.
6. A number of thoughts for regional air pollution policy were listed, including:
  - a) Regulation of traffic corridors as emissions sources (e.g., limits on highway capacity expansion, urban freeway speed and flow control).
  - b) Identification and prevention of local air pollution use conflicts (e.g., commercial exhausts)
  - c) Regionalization of local best practices (e.g., instituting ventilation upgrades to accompany weatherization work, prioritizing near-roadway areas).
7. Because more mid to upper income residents are choosing to move into infill areas with higher levels of PM, air pollution exposure disparity by income levels is decreasing.
8. Both noise and pollution emission levels increase with traffic. Noise control ordinances and other building code laws can be used as a model for addressing indoor air quality via an air pollution exposure reduction ordinance (i.e., by requiring mitigation via building design when pollution exceeds a certain level).
9. Air quality solutions can be integrated into existing programs and regulations to produce desired co-benefits (i.e., some technologies that protect interior noise levels may also work to reduce interior air pollutants; programs that target energy efficiency/home weatherization can be expanded to include concepts of ventilation and air filtration).

## EMERGING ISSUES

The Advisory Council has identified the following emerging issues:

1. Proximity to traffic and vehicle emissions are keys to UFP exposure. There is a need to better understand the relative effectiveness of various strategies to reduce UFP and other sources of air pollution, as well as their interaction. In doing so, there is a need to recognize the following hierarchy of exposure reduction mechanisms, with the higher-tier ones, though often harder to implement, more effective and able to protect a larger proportion of the population:
  - a) Reduce sources (e.g., reduce the number of vehicle miles traveled, as well as high emitting vehicles; incentivize more user-friendly bicycle and pedestrian environments)
  - b) Replace or substitute (e.g., increase the number of electric or alternative fuel vehicles)
  - c) Engineering controls (e.g., lower-emitting vehicles; more effective in-cabin filters; improved building ventilation near roadways)
  - d) Administrative (e.g., reducing/enforcing speed limits; congestion pricing; parking controls; changes in land use zoning; improved incentives for biking, walking and public transportation; location of residential development further from busy roadways; traffic emission exposure mitigation )
  - e) Personal control (e.g., more effective in-cabin ventilation practices, lower driving speeds, altered travel routes and trip timing; expanded use of public transit).
2. It will be important to craft effective public education messages that help the public understand how to reduce UFP exposure, especially for neighborhoods, sports fields and playgrounds closest to freeways, while commuting, and for age or occupation groups expected to have higher UFP exposures (e.g., cyclists, pedestrians and those in near-roadway occupations). Messaging should incorporate social vulnerability and cumulative air quality impact issues.
3. There is a need to consider source and receptor siting criteria that better take into account local conditions to most effectively reduce UFP exposure. Neighborhood scale exposure models coupled with monitoring could assist local governments in identifying locations where resources should be expended to reduce emissions and/or exposures most effectively (e.g., in determining areas to site new sources or receptors, as well as areas of existing sources and receptors that need attention).
4. There is a need to develop measures to reduce UFP exposures while driving. This is expected to include enhanced vehicle cabin recirculation and filtration. There is a wide range of filter efficiencies for in-cabin filters, and none approach HEPA level efficiencies at the particle size distribution experienced by the drivers.
5. There is a need for state/regional agencies to further develop model policies for UFP exposure and disseminate them to local governments. San Francisco leads in modeling at the neighborhood level and in establishing building code standards to minimize air pollution exposures (e.g., enhanced ventilation systems for new residences with higher fine particulate levels or cancer risks). There are 100 cities and 8 counties within the BAAQMD jurisdiction that do not have any such mechanisms in place.
6. Regional monitors are not adequate to assess localized exposure levels in close proximity to significant local sources, such as freeways and do not provide adequate data for policies directed at such

exposures. Europe has been doing localized monitoring for some time. There is a priority need for neighborhood scale air pollution models.

7. Energy efficiency programs to weatherize existing housing stock could be expanded upon to help ensure that ventilation systems are also improved as air penetration is tightened.
8. Noise control codes for new construction can be a model for crafting code-related strategies to reduce indoor air quality exposures.
9. There is a need to better understand the range of measures available to reduce UFP and PM2.5 and their co-benefits (e.g., reducing traffic speed to 50 MPH may have a significant and immediate impact on reducing greenhouse gases, UFP, and other air pollutants, with reductions in noise, injuries and fatalities as co-benefits). Technologies that result in air pollution exposure reduction that also have positive co-benefits also should be pursued.

## RECOMMENDATIONS

The Advisory Council recommends that the Air District:

1. Continue planning to integrate UFP into its efforts to reduce PM exposure.
2. Continue to follow the development of, and incorporate into the District's existing multi-pollutant approach to air quality planning, emerging methods for analyzing UFP exposures, health risks, and mitigation.
3. Integrate UFP monitoring with required NO<sub>2</sub> roadside monitoring. Consider supplementing the District's regional monitoring network with localized monitoring to gain a better understanding of UFP exposures in varying traffic and neighborhood environments.
4. Continue efforts to model UFP at a regional level and the development and refinement of a UFP emission inventory.
5. Assist in developing neighborhood level air pollution models for the region, validated by monitoring data, to provide local governments with the information necessary to take steps to protect the health of its community.
6. Work with other agencies to encourage development of standards and incorporation of measures to reduce UFP and other air pollutant exposures in vehicles (e.g., in-cabin vehicle filtration and recirculation systems). Educate the public regarding the use of such measures.
7. Provide guidance to regional and local agencies, particularly those with land use authority, on systematic approaches for evaluating and reducing exposures to UFP and other air pollutants in both outdoor air and indoor spaces, and develop model policies and regulations to address PM<sub>2.5</sub>, UFP and other air pollutant exposures (e.g., criteria/guidelines for siting sensitive land uses and/or technological solutions for improving indoor air quality in both new and existing buildings; education programs that provide information on reducing personal exposure to UFP and to support existing strategies to reduce PM<sub>2.5</sub> and other pollutants).
8. Present material to the Advisory Council on the state of the science of cumulative impacts analyses.
9. Consider developing, or offer a prize for developing, a District smart-phone and/or iPad app that can improve public understanding of the dangers of air pollution and provide information about current air quality, Spare-the-Air alerts, personal actions that could be taken, news and events, alternative fueling station locations, calculation of carbon footprints, smoking vehicle complaints, and other useful information.
10. Work jointly with the Advisory Council to identify and implement means for the Council to support the efforts of the District's Health and Science Officer.

## GLOSSARY

CO<sub>2</sub> – Carbon Dioxide

HEPA – High Efficiency Particulate Air

NO<sub>2</sub> – Nitrogen Dioxide

nm – Nanometer (one billionth of a meter)

PM – Particulate Matter

RC – Recirculate

UFP – Ultrafine Particulates



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Stan Hayes and  
Members of the Advisory Council

From: Jack P. Broadbent  
Executive Officer/APCO

Date: November 5, 2012

Re: Discussion, Recommendation and Selection of Slate Officers for 2013

RECOMMENDED ACTION

The Advisory Council will consider approving a Slate of Officers for 2013.

BACKGROUND

The Advisory Council will discuss a Slate of Officers for 2013.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Maricela Martinez  
Reviewed by: Ana Sandoval

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson Stan Hayes and Members  
of the Advisory Council

From: Jack P. Broadbent  
Executive Officer

Date: November 8, 2012

Re: Discussion of the Report to the Board of Directors on Ultrafine Particulate Matter  
Topics of 2012

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RECOMMENDED ACTION

The Advisory Council will select member(s) to present the report on ultrafine particulate matter to the Air District Board of Directors.

DISCUSSION

The Advisory Council will discuss the content and format of the report on ultrafine particulate matter topics addressed by the Advisory Council throughout 2012. The Advisory Council will select members to present this report to the Board of Directors at their regular Board meeting on December 19, 2012.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Eric Stevenson  
Reviewed by: Jean Roggenkamp