



**BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT**

**BOARD OF DIRECTORS  
CLIMATE PROTECTION COMMITTEE  
COMMITTEE MEMBERS**

**JOHN AVALOS - CHAIR  
SUSAN ADAMS  
JOHN GIOIA  
JAN PEPPER  
SHIRLEE ZANE**

**ASH KALRA - VICE CHAIR  
TERESA BARRETT  
SCOTT HAGGERTY  
MARK ROSS**

**THURSDAY  
JANUARY 15, 2015  
9:30 A.M.**

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

**AGENDA**

**1. CALL TO ORDER - ROLL CALL**

*The Committee Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Committee members.*

**2. PUBLIC COMMENT ON NON-AGENDA MATTERS**

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

**3. APPROVAL OF THE MINUTES OF DECEMBER 1, 2014**

**Clerk of the Boards/5073**

*The Committee will consider approving the attached draft minutes of the Climate Protection Committee meeting of December 1, 2014.*

**4. UPDATE ON REGIONAL CLIMATE PROTECTION WORK PROGRAM, RULE DEVELOPMENT, AND STAFFING**

**J. Roggenkamp/4646  
[jroggenkamp@baaqmd.gov](mailto:jroggenkamp@baaqmd.gov)**

*The Committee will receive an update on progress in implementing the 10-point Climate Action Work Program, including rule development activities, and Air District staffing for the Climate Protection Program.*

5. **UC BERKELEY CARBON DIOXIDE AND AIR QUALITY MONITORING STUDY**

**J. Roggenkamp/4646**  
[jroggenkamp@baaqmd.gov](mailto:jroggenkamp@baaqmd.gov)

*The Committee will receive a briefing on a UC Berkeley research project, BEACON, or the Berkeley Atmospheric CO2 Observation Network, which measures carbon dioxide and air pollution in Western Alameda County and San Francisco.*

6. **COMMITTEE MEMBER COMMENTS/ OTHER BUSINESS**

*Any member of the Board, or its staff, on his or her own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda. (Gov't Code § 54954.2)*

7. **TIME AND PLACE OF NEXT MEETING**

*Thursday, March 19, 2015, Bay Area Air Quality Management District Office, 939 Ellis Street, San Francisco, California 94109 at 9:30 a.m.*

8. **ADJOURNMENT**

*The Committee meeting shall be adjourned by the Committee Chair.*

CONTACT:

**MANAGER, EXECUTIVE OPERATIONS**  
**939 ELLIS STREET, SAN FRANCISCO, CA 94109**  
**mmartinez@baaqmd.gov**

**(415) 749-5016**  
**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. Please note that all correspondence must be addressed to the "Members of the Climate Protection Committee" and received at least 24 hours prior, excluding weekends and holidays, in order to be presented at that Committee meeting. Any correspondence received after that time will be presented to the Committee at the following 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.

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT  
939 ELLIS STREET, SAN FRANCISCO, CALIFORNIA 94109  
FOR QUESTIONS PLEASE CALL (415) 749-5016 or (415) 749-4941**

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

**JANUARY 2015**

<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 Special Meeting/Retreat</b> <i>(Meets on the 2<sup>nd</sup> Wednesday of each Month)</i>	Wednesday	14	9:00 a.m.	Board Room
<b>Board of Directors Climate Protection Committee</b> – <i>(Meets 3<sup>rd</sup> Thursday every other Month)</i>	Thursday	15	9:30 a.m.	Board Room
<b>Board of Directors Executive Committee</b> <i>(Meets on the 3<sup>rd</sup> Monday of each Month) - CANCELLED</i>	Monday	19	9:30 a.m.	Board Room
<b>Board of Directors Special Meeting/Retreat</b> <i>(Meets on the 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	21	9:45 a.m.	City of SSF Municipal Services Building – 33 Arroyo Drive, South San Francisco, CA 94080
<b>Board of Directors Mobile Source Committee</b> <i>(Meets on the 4<sup>th</sup> Thursday of each Month)</i>	Thursday	22	9:30 a.m.	Board Room
<b>Board of Directors Personnel Committee</b> <i>(At the Call of the Chair)</i>	Monday	26	9:30 a.m.	Board Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets on the 4<sup>th</sup> Wednesday of each Month)</i>	Wednesday	28	9:30 a.m.	Board Room

**FEBRUARY 2015**

<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 Regular Meeting</b> <i>(Meets on the 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	4	9:45 a.m.	Board Room
<b>Advisory Council Meeting</b> <i>(Meets on the 2<sup>nd</sup> Wednesday of each Month)</i>	Wednesday	11	9:00 a.m.	Board Room
<b>Board of Directors Executive Committee</b> <i>(Meets on the 3<sup>rd</sup> Monday of each Month)</i>	Monday	16	9:30 a.m.	Board Room
<b>Board of Directors Regular Meeting</b> <i>(Meets on the 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	18	9:45 a.m.	Board Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets on the 4<sup>th</sup> Wednesday of each Month)</i>	Wednesday	25	9:30 a.m.	Board Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets on the 4<sup>th</sup> Thursday of each Month)</i>	Thursday	26	9:30 a.m.	Board Room

## MARCH 2015

<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 on the 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	4	9:45 a.m.	Board Room
<b>Advisory Council Special Meeting</b> <i>(Meets on the 2<sup>nd</sup> Wednesday of each Month)</i>	Wednesday	11	9:00 a.m.	Board Room
<b>Board of Directors Executive Committee</b> <i>(Meets on the 3<sup>rd</sup> Monday of each Month)</i>	Monday	16	9:30 a.m.	Board Room
<b>Board of Directors Regular Meeting</b> <i>(Meets on the 1<sup>st</sup> &amp; 3<sup>rd</sup> Wednesday of each Month)</i>	Wednesday	18	9:45 a.m.	Board Room
<b>Board of Directors Climate Protection Committee</b> – <i>(Meets 3<sup>rd</sup> Thursday every other Month)</i>	Thursday	19	9:30 a.m.	Board Room
<b>Board of Directors Budget &amp; Finance Committee</b> <i>(Meets on the 4<sup>th</sup> Wednesday of each Month)</i>	Wednesday	25	9:30 a.m.	Board Room
<b>Board of Directors Mobile Source Committee</b> <i>(Meets on the 4<sup>th</sup> Thursday of each Month)</i>	Thursday	26	9:30 a.m.	Board Room

VJ – 1/7/15 (10:30 a.m.)

P/Library/Forms/Calendar/Calendar/Moncal

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson John Avalos and Members  
of the Climate Protection Committee

From: Jack P. Broadbent  
Executive Officer/Air Pollution Control Officer

Date: December 31, 2014

Re: Approval of the Minutes of December 1, 2014

RECOMMENDED ACTION

Approve attached draft minutes of the Climate Protection Committee meeting of December 1, 2014.

DISCUSSION

Attached for your review and approval are the draft minutes of the Climate Protection Committee meeting of December 1, 2014.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Sean Gallagher  
Reviewed by: Maricela Martinez

Attachment: Draft Minutes of the Climate Protection Meeting of December 1, 2014

Draft Minutes – Climate Protection Committee Meeting of December 1, 2014

Bay Area Air Quality Management District  
939 Ellis Street  
San Francisco, California 94109  
(415) 749-5073

**DRAFT MINUTES**

Summary of Board of Directors  
Climate Protection Committee Meeting  
Monday, December 1, 2014

**1. Call to Order – Roll Call**

Climate Protection Committee (Committee) Chairperson John Avalos called the meeting to order at 9:36 a.m.

Present: Committee Chairperson John Avalos; and Directors Susan Adams, Teresa Barrett, John Gioia, Scott Haggerty and Mark Ross.

Absent: Vice-Chairperson Ash Kalra; and Directors Jan Pepper and Shirlee Zane.

Also Present: Board of Directors (Board) Chairperson Nate Miley.

**2. Public Comment Period:**

Floyd Earl Smith, 350 Bay Area, addressed the Committee to express concern at the pace of work on the climate action strategy and to request project prioritization and a shift to longer-term strategic planning by the Air District.

NOTED PRESENT: Board Chairperson Miley and Director Haggerty were noted present at 9:38 a.m.

Sara Greenwald, 350 San Francisco, addressed the Committee to request a reconciliation of the varying numbers being discussed relative to refinery emissions under Assembly Bill (AB) 32; and to request that Air District permits be required for all sources that emit at least 5,000 tons of greenhouse gases (GHG) per year, maximum emissions limit be imposed for all sources, toxics be included in the permit and limits, and the initiation of a no-net increase plan with hard emissions caps and requirements for the implementation of best alternative technologies.

**3. Approval of Minutes of September 29, 2014**

Committee Comments: None.

Public Comments: No requests received.

Committee Action:

Director Adams made a motion, seconded by Director Haggerty, to approve the Minutes of September 29, 2014; and the motion carried by the following vote of the Committee:

AYES: Adams, Avalos, Barrett, Gioia, Haggerty, Miley and Ross.  
NOES: None.  
ABSTAIN: None.  
ABSENT: Kalra, Pepper and Zane.

**4. Marin Carbon Project**

Henry Hilken, Director of Planning, Rules and Research, introduced Jeff Creque, Carbon Cycle Institute, who gave the presentation *The Marin Carbon Project, Carbon Farming: Increasing Carbon Capture on California's Working Lands*, including above-ground production increases and carbon levels in soil since compost application in 2008; models for carbon increase persistence; offsets achieved through diverting organic materials from anaerobic storage and disposal to aerobic composting and land application; GHG mitigation potential statewide; California rangelands carbon sequestration potential; increases in soil moisture; material illustrating the concept of moderating climate change with soil carbon management and carbon farm planning and implementation; draft Corda Ranch carbon farm plan; quantification of carbon farm impacts; carbon capture synergies; and estimated biomass carbon of farm riparian buffers and silvopasture.

At slide 12, *Marin Carbon Project Draft Carbon Farm Plan Corda Ranch*, the Committee and Mr. Creque discussed the number and location of currently active and anticipated project sites.

Mr. Creque concluded the presentation.

Committee Comments:

The Committee, Mr. Creque and staff discussed who owns the land used in the project, how the sites were selected and how the project can be expanded; the involvement of the Marin Resource Conservation District and Sonoma-Marine Cattlemen's Association, Inc.; the site selection criteria; the source of the compost and what, if any, water runoff issues arose; the importance of sharing this presentation; the inclusion of these sequestrations in the Marin CAP; the economic benefits of these activities for landowners; future plans for statewide project expansion; how many resource conservation districts exist in California, how they were established and are funded; the next step for expanding the project beyond rangelands; the existence of the necessary materials onsite at many agricultural operations; additional details about the hydration benefits of the process; precedents for the process prior to this project; a request to staff to invite the Board to tour an involved facility; and related advancements in science.

Public Comments: No requests received.

Committee Action: None; receive and file.

## 5. Local Clean Action Plan (CAP)

Mr. Hilken introduced Abby Young, Principal Environmental Planner of the Planning, Rules and Research Division, who gave the presentation *Local CAPs*, including background on the Air District and CAPs; regional climate protection strategy considerations; a summary of Bay Area cities with adopted CAPs; current targets; GHG reductions, both measured in tons and by sector; common and particularly innovative GHG reduction measures; examples of voluntary versus mandatory measures; implementation strategies; CAPs as related to cap-and-trade; and next steps.

The Committee and staff discussed, at slide 5, *Targets*, how many plans were developed through Air District funding; the funding amounts for grants; whether an active CAP grant program exists and the history of the climate grant program; the possibility of some funding for these plans from sustainable communities strategies resources directly, not through Air District programs; and the prime motivators for local governments to create and implement local CAPs.

The Committee and staff discussed slide 4, *Bay Area CAPs*, including whether those cities and counties that do not have local CAPs in place are in progress, ignoring the need or otherwise; whether money is an issue for those that have not completed a plan and whether another round of grants would make a difference; Contra Costa County's situation of having a nearly complete, but unapproved, plan that remains in need of funding in order to be completed; whether conversations are occurring with and between local governments to craft plans that will have some level of data compatibility; and whether the Air District is compiling data and details from the local plans.

Ms. Young continued the presentation.

The Committee and staff discussed, at slide 9, *GHG Reduction Measures*, how some local CAPs have strong language but no plan on how to achieve those goals or to implement programs that will.

Ms. Young concluded the presentation.

### Committee Comments:

The Committee and staff discussed the importance of reviewing the impediments to implementation and preparing a cost-benefit analysis; the possibility of a future conference to review progress and needs; the desire to help educate local communities' planning and funding departments to ease their access to cap-and-trade revenue; the usefulness of highlighting the co-benefits of these efforts; the importance of Air District assistance to local communities with identifying cost-effective and easier measures; the value of local CAPs that make explicit what is being achieved or trying to be achieved; whether another round of plan updates are expected or being pushed by outside forces; whether the Air District has a role in setting standards or issuing guidance for local goal-setting and the measure development process; how the plans fit together regionally; Air District staffing for this effort; and the importance of increased Air District staffing relative to climate protection planning.

Public Comments:

Mark Roest, Bay Area 350.org / Seawave Battery, Inc. / Silicon Valley Clean Cities Coalition, provided the Committee with written material “BAAQMD Climate Protection Committee, 350 Bay Area’s GHG Rule Development Proposals, December 1, 2014” and read from the same.

Charles Davidson, 350 Bay Area / Sunflower Alliance, addressed the Committee regarding an opportunity to work in partnership with state agencies on solar photovoltaic installations; to urge the Air District to identify gaps between AB 32 and other related measures for opportunities to achieve additional reductions; to request the inclusion of provisions in the permitting process that cap GHG emissions and require sources to achieve mandated GHG reduction targets; and in support of a partnership with the Metropolitan Transportation Commission (MTC) on bus fleet conversions to clean energy alternatives.

Committee Action: None; receive and file.

**6. Committee Members’ Comments/Other Business:**

Committee Chairperson Avalos asked staff to agendaize updates on the work done relative to the 10-Point Climate Action Work Program, specifically item 6, Initiate Rule Development; increased Air District staffing level relative to climate protection projects; and opportunities to harness the synergy of efforts by MTC and other regional agencies to attain regional goals. Director Haggerty suggested a meeting of the Joint Policy Committee to discuss the same.

Committee Chairperson Avalos asked staff to work with Jeremy Pollock in his office on future draft Committee agendas.

**7. Time and Place of Next Meeting:**

Thursday, January 15, 2015, Bay Area Air Quality Management District Headquarters, 939 Ellis Street, San Francisco, California 94109 at 9:30 a.m.

**8. Adjournment:** The meeting adjourned at 11:29 a.m.

Sean Gallagher  
Clerk of the Boards

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

## Memorandum

To: Chairperson John Avalos and Members  
of the Climate Protection Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: January 7, 2015

Re: Update on Regional Climate Protection Work Program, Rule Development, and Staffing

RECOMMENDED ACTION

None. Receive and file.

BACKGROUND

At the April 2, 2014, Board of Directors meeting, the Board adopted a 10-Point Climate Action Work Program (Attachment A) to guide the Air District's climate protection activities in the near term. This Program includes the development of a Regional Climate Protection Strategy, which will support progress toward achieving the Air District's regional goal of reducing greenhouse gas emissions 80% below 1990 levels by 2050. This goal was established on November 6, 2013, when the Air District Board of Directors unanimously adopted Resolution 2013-11, *Resolution Adopting a Greenhouse Gas Reduction Goal and Commitment to Develop a Regional Climate Action Strategy*.

At the June 4, 2014, Board of Directors meeting the Board approved an increase to the Air District's Greenhouse Gas (GHG) fee for permitted sources, which would support additional staff for the Climate Protection program. The Board approved a two-year phase-in to the fee, such that two Full Time Employees (FTEs) could be hired in Fiscal Year Ending (FYE) 2015, and two FTEs could be hired in FYE 2016, pending Board approval of the Fiscal Year Ending 2016 budget.

Air District staff has taken a variety of steps to implement the 10-Point Work Program, and has periodically updated the Climate Protection Committee on these activities. At the December 1, 2014, Committee meeting, the Committee requested more information on rule development activity and on staff resources assigned to the Climate Protection Program.

DISCUSSION

Staff will update the Committee on progress made to date to implement each of the 10 points in the Program, including rule development; next steps; and how existing and potential additional staff will support implementation of the Program.

BUDGET CONSIDERATION / FINANCIAL IMPACT

Enhanced climate protection activities require additional resources that have been included in the FYE 2015 budget, with additional resources anticipated in the FYE 2016 budget.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: Abby Young  
Reviewed by: Henry Hilken

Attachment A: 10-Point Climate Action Work Program for the Bay Area

## 10-Point Climate Action Work Program

*March 25, 2014*

This 10-Point Climate Action Work Program represents the focus and direction of the Air District's Climate Protection Program in 2014 and 2015. This Work Program reflects the Air District's strength in playing a coordinating role for policy implementation at the federal, state, regional and local levels. The actions described below will serve as the Air District's priorities for the next two years as it continues to work with many stakeholders to reduce the Bay Area's greenhouse gas (GHG) emissions.

1. **Set GHG Reduction Goal** – Set a goal to reduce GHG emissions in the Bay Area 80% below 1990 levels by 2050 to align the Air District with Executive Order S-3-05, and work with stakeholders to develop interim targets and performance objectives, including per capita targets, to support this goal.
2. **Update GHG Inventory and Forecasting** – Update the Air District's regional GHG emissions inventory for the Bay Area. Conduct GHG emissions forecasts for 2020, a mid-term year and 2050. Use input from stakeholders, including local governments, to develop different GHG emissions scenarios, which will lay a foundation for the development of the Regional Climate Action Strategy described below. Seek to incorporate effects of federal, state (Scoping Plan), regional (Plan Bay Area and 2015 Clean Air Plan), and local (local climate action plans) initiatives. Identify gaps between forecast reductions from existing and proposed plans and measures, and the 2050 goal.
3. **Implement GHG Emissions Monitoring** – Initiate local monitoring of certain greenhouse gases, including methane and carbon dioxide. The Air District will integrate monitoring of methane within its current air monitoring network. The Air District will work with UC Berkeley researchers to collect local CO<sub>2</sub> emissions data through a university-led network of local CO<sub>2</sub> monitoring stations. Data collected will help develop a better understanding of ambient concentrations, variability and trends over time, as well as provide more specific local data for the regional GHG inventory.
4. **Develop Regional Climate Action Strategy** – Identify policy gaps between the 2050 GHG goal and interim GHG reduction targets and local climate action plans, Plan Bay Area, federal and state regulations and programs, and policies where the Air District has authority or influence to control GHG emissions. These potential Air District actions could be included in the 2015 Clean Air Plan and serve as a Regional Climate Action Strategy. The Strategy will encourage regional and local economic approaches that support the 2050 goal and interim targets of this Work Program. Conduct an economic and public health impacts study of the Strategy, including a focus on disadvantaged communities. Continue to work with the Joint Policy Committee and its member agencies to support regional planning efforts to reduce GHG emissions and benefit public health. Conduct a robust public outreach effort, as part of the 2015 Clean Air Plan process, including work with local researchers, representatives of affected industry, commercial interests, governing bodies, environmental organizations and community groups to engage them in discussion about the need, and path forward, for significant GHG reductions.
5. **Support and Enhance Local Action** – Increase the local implementation of GHG-reducing policies and programs through enhanced technical assistance to cities and counties and special districts in preparing and implementing local Climate Action Plans. Expand technical assistance to local governments through development of incentive programs, CEQA mechanisms and providing necessary data:
  - Support local climate action planning through data delivery, technical tools, providing a clearinghouse of information and promoting best practices;
  - Promote EV readiness and best practices in local plans;

- Explore funding sources for incentives to improve energy efficiency, including work with ARB to potentially use Cap and Trade auction proceeds, and working with other potential sources of funding to increase investment in local and regional GHG reduction;
  - Update CEQA thresholds for GHGs and update CEQA Guidelines to assist cities, counties and other lead agencies;
  - Work with lead agencies to use the CAPCOA GHG Exchange for offsite mitigation under CEQA (e.g., work with organizations such as the Marin Carbon Project to develop protocols for GHG reduction credits); develop offset protocols that support GHG reduction projects in the Bay Area;
  - Work with GHG emissions data providers to provide regular and consistent data to local governments;
6. **Initiate Rule Development** – Initiate rule development to advance GHG reduction in sources subject to Air District regulatory authority, and identify opportunities to require GHG emission reductions in existing rules and policies. Examples may include:
- Integrate GHG emission reduction into the Air District’s permitting program to facilitate GHG emission reductions consistent with California’s Cap and Trade program and other federal and state provisions;
  - Reduce methane emissions and other short-lived climate pollutants, such as black carbon;
  - Enhance and/or backstop upcoming federal requirements to control GHG emissions from new and existing power plants;
  - Increase deployment of heat mitigating technologies and policies, such as cool roofing and cool paving;
  - Explore opportunities to reduce energy use in the residential, commercial and industrial sectors;
  - Work with stakeholder groups to identify additional opportunities to reduce GHG emissions through Air District rule-making.
7. **Expand Enforcement** – Expand enforcement of statewide regulations to reduce GHGs, especially short-term climate pollutants. Continue working with the Air Resources Board (ARB) to enforce existing Scoping Plan regulations addressing landfills, semiconductors and refrigerants. Work with ARB to explore further opportunities through the development of the Scoping Plan Update.
8. **Launch Climate Change & Public Health Impacts Initiative** – Collect and synthesize information, reports and data on climate change impacts related to air quality, public health and disproportionate impacts. Work with state and local public health professionals to identify policies and programs targeting impacts that affect air quality and public health, including wildfires and extreme heat. Include impacts associated with black carbon emissions. Identify strategies and funding opportunities to assist the most vulnerable populations and disadvantaged communities.
9. **Report Progress to the Public** – Select indicators to measure, track and report on progress toward the 2050 goal and related performance objectives. Report this information publicly, presented in a manner that informs and engages the public, such as Berkeley’s Climate Action Plan Results web page.
10. **Explore the Bay Area’s Energy Future** – Assign the Air District’s Advisory Council the role of investigating technical issues related to the Air District’s Climate Protection Program. Initially focus on the energy future of the Bay Area, including examining trends in Bay Area fossil fuel demand and production, and exploring opportunities for the Air District to promote and support the development of clean energy options.

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

Memorandum

To: Chairperson John Avalos and Members  
of the Climate Protection Committee

From: Jack P. Broadbent  
Executive Officer/APCO

Date: January 8, 2015

Re: UC Berkeley Carbon Dioxide and Air Quality Monitoring Study

RECOMMENDED ACTION

None. Receive and file.

BACKGROUND

The BEACON Project (Berkeley Atmospheric CO<sub>2</sub> Observing Network), led by researchers at the University of California, Berkeley, is a new approach to observing air pollution at a very localized level. In contrast to the high-precision measurements that form the backbone of the Air District's regional monitoring network, BEACON's objective is to explore the usefulness of a dense network of moderate-quality instruments in constructing a highly detailed, real-time picture of local pollution sources and sinks. The Air District has partnered with BEACON researchers to support the deployment and evaluation of data from low-cost air quality sensors in laboratory experiments and field trials.

For the past 5 years, BEACON has been collecting CO<sub>2</sub> measurements at 5-minute intervals through a dense network of approximately 20 low-cost (\$5,000 each) stations in the Bay Area. Most are located on school rooftops in Western Alameda County. A new site was recently installed at the San Francisco Exploratorium; BEACON is actively seeking to expand coverage within the Bay Area, as well as other cities within the United States and across the globe. Low-cost sensors for co-pollutants, including particulate matter (PM), nitrogen oxides (NO<sub>x</sub>), and ozone, are also being evaluated with Air District support.

Through the construction and analysis of its unique, highly localized, measurement-based datasets, BEACON aims to provide information crucial to the evaluation of sector-specific and source-specific emission management strategies. The identification and promotion of the most effective strategies, based on real-world data, will be critical to meeting greenhouse gas (GHG) reduction goals in a timely and efficient manner.

BEACON has recently been recognized as a "Climate Data in Action" effort by the White House, and been profiled by ABC 7 News. As part of its local educational outreach, BEACON

has also forged partnerships with the San Francisco Exploratorium, the Chabot Space & Science Center, and K-12 science teachers working for the Oakland Unified School District.

## DISCUSSION

Preliminary results presented at the Fall 2014 American Geophysical Union (AGU) conference have demonstrated that the BEACON approach can, in fact, generate improved CO<sub>2</sub> estimates at a very localized level. Research conducted in partnership with the Air District has also indicated that uniquely valuable, highly localized air quality data can be derived from air pollution sensors deployed in conjunction with traditional networks.

Work is under way at UC Berkeley to combine data from BEACON's innovative CO<sub>2</sub> monitoring approach with new fuel-based GHG emissions estimates. The resulting inventory provides a high-definition, real-time picture of transportation emissions in the urban core and includes thousands of Bay Area point sources of GHGs.

Air District staff anticipates that the BEACON Project will advance scientific and public understandings of GHG-related processes in the Bay Area and will provide concrete measurements that are suitable for comparison with more conventional GHG emission inventories. It can thereby serve multiple important roles in the Regional Climate Protection Strategy. As the BEACON network improves its capacity to monitor other air pollutants at a very localized level, Air District staff also anticipates that the network will be helpful in improving estimates of localized patterns of exposure to health-damaging co-pollutants, including exposures that occur along transportation corridors.

Prof. Ronald C. Cohen, Director of the Berkeley Atmospheric Science Center and the Project's principal investigator, will present a briefing on the BEACON Project to the Committee.

## BUDGET CONSIDERATION / FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent  
Executive Officer/APCO

Prepared by: David Holstius  
Reviewed by: Henry Hilken