BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ADVISORY COUNCIL
REGULAR MEETING

WEDNESDAY
SEPTEMBER 8, 2010
9:00 A.M.

7TH FLOOR BOARD ROOM
939 ELLIS STREET
SAN FRANCISCO, CA 94109

AGENDA

CALL TO ORDER

Opening Comments — Jeffrey Bramlett, Chairperson
Roll Call — Clerk

PUBLIC COMMENT PERIOD

Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3. *The public has the opportunity to speak on any agenda item. All agendas for Advisory Council meetings and Committee meetings are posted at the District, 939 Ellis Street, San Francisco, at least 72 hours before a meeting. At the beginning of the meeting, an opportunity is also provided for the public to speak on any subject within the Council's or Committee's purview. Speakers are limited to five minutes each.*

CONSENT CALENDAR

1. Approval of Minutes of the July 14, 2010 Advisory Council Meeting

DISCUSSION

2. Continued Discussion of the Draft Report on the Advisory Council's June 9, 2010 Meeting on California's 2050 GHG Emission Reduction Target of 80% Below 1990 Levels – Control Technologies and Strategies for the Industrial and Electric Power Sectors

   The Advisory Council will discuss the revised draft report on the June 9, 2010 meeting with Air District staff and finalize the recommendations.

OTHER BUSINESS

3. Report from Advisory Council Members attending the CAPCOA Climate Change Forum on August 30-31, 2010.

   Advisory Council attendees will report on their attendance to the CAPCOA Climate Change Forum on August 30-31, 2010.

4. Council Member Comments/Other Business

   Council or staff members on their own initiative, or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on their own activities, provide a reference to staff about factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda.

5. Time and Place of Next Meeting

   9:00 a.m., Wednesday, October 13, 2010, 939 Ellis Street, San Francisco, CA 94109

6. Adjournment

CONTACT EXECUTIVE OFFICE - 939 ELLIS STREET SF, CA 94109

(415) 749-5130
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

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

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

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS

SEPTEMBER 2010

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Regular Meeting	**Wednesday**	**8**	**9:00 a.m.**	**Board Room**
Joint Policy Committee Special Meeting	**Friday**	**10**	**10:00 a.m.**	**MTC Auditorium 101 – 8th Street Oakland, CA 94607**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**15**	**9:45 a.m.**	**Board Room**
Joint Policy Committee Special Meeting – RESCHEDULED TO SEPTEMBER 10, 2010	**Friday**	**17**	**10:00 a.m.**	**MTC Auditorium 101 – 8th Street Oakland, CA 94607**
Board of Directors Strategic Facilities Planning Ad Hoc Committee *(At the Call of the Chair)* – **RESCHEDULED TO SEPTEMBER 23, 2010 AT 11:00 A.M.**	**Tuesday**	**21**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Mobile Source Committee *(Meets 4th Thursday each Month)*	**Thursday**	**23**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Strategic Facilities Planning Ad Hoc Committee *(At the Call of the Chair)*	**Thursday**	**23**	**11:00 a.m.**	**4th Floor Conf. Room**
Board of Directors Stationary Source Committee *(At the Call of the Chair)*	**Monday**	**27**	**9:30 a.m.**	**Board Room**
Board of Directors Maritime Sources & Ports Committee *(At the Call of the Chair)*	**Wednesday**	**29**	**9:30 a.m.**	**4th Floor Conf. Room**

OCTOBER 2010

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Legislative Committee *(At the Call of the Chair)*	**Monday**	**4**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**6**	**9:45 a.m.**	**Board Room**
Advisory Council Regular Meeting	**Wednesday**	**13**	**9:00 a.m.**	**Board Room**

October 2010 Calendar Continued on Next Page

OCTOBER 2010

Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**20**	**9:45 a.m.**	**Board Room**
Board of Directors Public Outreach Committee *(At the Call of the Chair)*	**Monday**	**25**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Mobile Source Committee *(Meets 4th Thursday each Month)*	**Thursday**	**28**	**9:30 a.m.**	**4th Floor Conf. Room**

NOVEMBER 2010

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting ***(Meets 1st & 3rd Wednesday of each Month)***	**Wednesday**	**3**	**9:45 a.m.**	**Board Room**
Advisory Council Regular Meeting	**Wednesday**	**10**	**9:00 a.m.**	**Board Room**
Joint Policy Committee Special Meeting	**Friday**	**12**	**10:00 a.m.**	**MTC Auditorium 101 – 8th Street Oakland, CA 94607**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**17**	**9:45 a.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 4th Thursday each Month)* **- CANCELLED**	**Thursday**	**25**	**9:30 a.m.**	**4th Floor Conf. Room**

HL – 9/1/10 (3:45 p.m.)
P/Library/Forms/Calendar/Calendar/Moncal

AGENDA: 1

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Bramlett and
Members of the Advisory Council

From: Jack P. Broadbent
Executive Officer/APCO

Date: August 30, 2010

Re: Advisory Council's Draft Meeting Minutes of July 14, 2010

RECOMMENDED ACTION

Approve attached draft minutes of the Regular Advisory Council's meeting of July 14, 2010.

DISCUSSION

Attached for your review and approval are the draft minutes of the July 14, 2010 Advisory Council meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

AGENDA: 1

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

DRAFT MINUTES

Advisory Council Regular Meeting
9:00 a.m., Wednesday, July 14, 2010

CALL TO ORDER

Opening Comment: Chairperson Bramlett called the meeting to order at 9:00 a.m.

Roll Call: Chairperson Jeffrey Bramlett, M.S., Vice Chairperson Ken Blonski, M.S.; Secretary Stan Hayes; Council Members Jennifer Bard, Benjamin Bolles, Harold Brazil, John Holtzclaw, Ph.D., Robert Huang, Ph.D., Kraig Kurucz, M.S., Gary Lucks, JD, CPEA, REA I, Kendall Oku, Michael Sandler, Jonathan Ruel and Dorothy Vura-Weis, M.D., M.P.H.

Absent: Council Members Louise Bedsworth, Ph.D., Robert Bornstein, Ph.D., Alexandra Desautels, and Rosanna Lerma, P.E., Jane Martin, Dr.Ph.D., and Debbie Mytels

Public Comment Period: There were no public comments.

Consent Calendar:

1. Approval of Minutes of the June 9, 2010 Advisory Council Meeting

Council Members requested the following corrections to the June 9, 2010 minutes:

- Page 13, last paragraph, 3rd sentence; replace the word, "photosynthetics" with "photosynthesis";
- Page 2, 2nd paragraph, replace "power plans" with "power plants";
- Page 4, 5th paragraph; "Mr. Carter added they believe this could be realistic to sell in the next few years as a ~~produce~~ product salable on market."
- Page 6; "He referred to the problem, stating that beginning in the industrial revolution the use of fossil fuels skyrocketed in the 1940's and it is now on the order of 25 billion tons per year of CO2 emitted by the burning of fossil fuels."
- Page 10; last sentence; "She described how cap and trade ~~compliments~~ complements the other components of AB 32 implementation plan,"
- Page 12, 3rd paragraph, 3rd line; "The beauty of the cap and trade compared to a BACT approach is that it gives companies under the cap flexibility."

Council Action: Member Hayes made a motion to approve the minutes of June 9, 2010, as amended; Member Holtzclaw seconded the motion; unanimously carried without objection.

PRESENTATION: CALIFORNIA'S 2050 GHG EMISSION REDUCTION TARGET – CONTROL TECHNOLOGIES & STRATEGIES FOR INDUSTRIAL & ELECTRIC POWER SECTORS

2. Discussion of Draft Report on the Advisory Council's June 9, 2010 Meeting on California's 2050 GHG Emission Reduction Target of 80% Below 1990 Levels – Control Technologies and Strategies for the Industrial and Electric Power Sectors

Council Member Sandler said he served as Lead Author and thanked participants for their feedback and work on the Draft Report. He grouped the categories of carbon capture, membrane capture, sequestration, and cap and trade, and identified their individual emerging issues and recommendations.

Council Members discussed the Draft Report section by section and provided additions, deletions, and statements for further refinement. They agreed that the work group members would further refine and finalize the Draft Report.

3. Report from Advisory Council Members attending the Annual Air & Waste Management Association (AWMA) Meeting June 22-25, 2010

It was noted that Secretary Blonski, and Council Members Holtzclaw and Bornstein attended the A&WMA Conference on behalf of the Air District, as well as Council Members Brazil and Hayes, who attended on behalf of their respective employers. Those Council Members attending the conference individually provided a brief report on highlights of conference sessions, presentations, and activities.

OTHER BUSINESS

4. Council Member Comments/Other Business

Council Member Lucks suggested work group members meet at the conclusion of the meeting to further refine the Draft Report, to be presented at the September 8, 2010 Advisory Council meeting.

Chairperson Bramlett reported that he and Council Member Kurucz attended the June 16, 2010 Board of Directors meeting. Mr. Kurucz served as lead author for the Final Report from the March 10, 2010 Advisory Council Meeting on California's 2050 Greenhouse Gas (GHG) Emission Reduction Target – Industrial Sector.

Council Member Kurucz said he provided a PowerPoint presentation to the Board, recapped discussions of the Advisory Council's work to date, presented recommendations developed by the Advisory Council work group, and identified industrial sector emerging issues.

Vice Chairperson Blonski noted that there is an excellent article in the Bay Area Monitor regarding volatile organic compounds and eucalyptus.

Council Member Bard reported that Sonoma County has identified its targets for reducing GHG's for land use and transportation for 2020 and 2035, which are 7% for 2020 and 10% for 2035. The California Air Resources Board (CARB) is hosting a workshop and will receive feedback on the targets on July 21, 2010 10:30 to 1:30 p.m. at Caltrans, 111 Grand Avenue, Oakland. The Metropolitan Transportation Commission (MTC) has reviewed additional models which show that up to 18% in reductions by 2035 is feasible with a variety of modeling that looks at land use, pricing, and additional technologies. The MTC Board will vote at its July 28, 2010 meeting on its final targets.

Additionally, Council Member Bard stated that CARB is updating its advanced clean cars regulations. She said the greatest emissions reductions will be from the transportation sector through advanced car technology, and it is important that regulations move forward to achieve goals. Four regulations are being updated. She asked for organizations to sign onto the campaign and distributed endorsement forms. She also reported that Proposition 23 will be on the November ballot and asked that individuals and organizations join the "No on 23 Campaign."

Council Member Kurucz provided an update on alternative energy projects at Lockheed Martin, referred to the 60 Minutes report on the blume energy fuel cells, and reported that they are moving forward with installing a ½ MW project at their site. He said the efficiency of electricity goes from 36% to 52% by producing it locally without the transmission losses. On a more personal note, he reported that he had solar panels installed at his own residence, and over a period of 3 days, his meter went negative for kilowatt hours.

Council Member Lucks reported that on July 27, 2010, he will attend the Annual Meeting of the West Coast Regional Auditing Roundtable. He also noted that he is teaching a course on Climate Change and California's AB 32 law on July 30, 2010, at UC Berkeley Extension in San Francisco.

5. **Time and Place of Next Meeting -** 9:00 a.m. – 11:00 a.m., Wednesday, September 8, 2010, 939 Ellis Street, San Francisco, CA 94109.

6. **Adjournment:** The meeting adjourned at 11:17 a.m.

Lisa Harper
Clerk of the Boards

AGENDA: 2

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jeffrey Bramlett and
Members of the Advisory Council

From: Jack P. Broadbent, Executive Officer

Date: September 1, 2010

Re: Continued Discussion of Draft Report on the Advisory Council's June 9, 2010 Meeting on California's 2050 GHG Emission Reduction Target of 80% Below 1990 Levels – Control Technologies & Strategies for Industrial & Electric Power Sectors

The attached *revised* Draft Report for the June 9, 2010 Advisory Council Meeting on California's 2050 GHG emission reduction target of 80% below 1990 levels – Control Technologies & Strategies for Industrial & Electric Power Sectors was prepared by Advisory Council Members Michael Sandler, Jenny Bard, John Holtzclaw, Jonathan Ruel, Robert Bornstein, Stan Hayes, Louise Bedsworth, and Robert Huang.

The Advisory Council will discuss the *revised* Draft Report with Air District staff and finalize recommendations and report.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Gary Kendall
Reviewed by: Jean Roggenkamp

REVISED DRAFT REPORT ON THE JUNE 9, 2010 ADVISORY COUNCIL MEETING ON CALIFORNIA'S 2050 GHG EMUISSION REDUCTION TARGET OF 80% BELOW 1990 LEVELS – CONTROL TECHNOLOGIES AND STRATEGIES FOR THE IDUSTRIAL AND ELECTRIC POWER SECTORS

FOR DISCUSSION BY THE ADVISORY COUNCIL AT THE SEPTEMBER 8, 2010 MEETING

SUMMARY

Based on the California Air Resources Board's 2006 GHG Emission Inventory, the industrial and electric power sectors combined contribute about 42 percent of California's GHG emissions, slightly more than the transportation sector's 39 percent. The Air District has regulatory authority for industrial sources and power plants and is also responsible for implementing AB32 measures for stationary sources in the Bay Area. The June 9, 2010 Advisory Council meeting was focused on technologies and strategies to reduce GHG emissions from the industrial and electric power sectors to 80 percent below 1990 levels by 2050.

The following presentations were given at that meeting:

1. ***Mineralization via Aqueous Precipitation (MAP) for Carbon Capture & Sequestration*** by Tom Carter, VP Government Affairs, Calera Corporation. Mr. Carter oversees Calera's federal, state, and international government affairs. He previously served a similar role as Senior Vice President of Government Affairs for the National Ready Mixed Concrete Association. Mr. Carter has over a dozen years of experience in advocacy, with an emphasis on global climate change, and legislation and regulations related to industrial emissions. Mr. Carter earned both a Juris Doctor and a Bachelor of Science in Business Administration from the University of North Carolina.

2. ***Membrane Technology for Carbon Capture*** by Richard Baker, Ph.D., Principal Scientist, Membrane Technology & Research (MTR). Dr. Baker founded MTR in 1982, and served as President for 25 years. He is currently leading MTR's new development program for membrane-based biomass/biofuel ethanol separations, is the author of more than 100 papers and over 100 patents, all in the membrane area. Two editions of his book, *Membrane Technology and Applications*, were published in 2000 and 2004, and a third edition is in progress. Dr. Baker serves on the Editorial Board of the *Journal of Membrane Science*, is founder and past president of the International Controlled Release Society, and co-founder of the North American Membrane Society (NAMS). In 2002, he was recipient of the first NAMS Alan S. Michaels Award for Innovation in Membrane Science and Technology.

3. ***Geologic Carbon Sequestration*** by John Beyer, Ph.D., Staff Scientist, Geophysics Department, Earth Sciences Division, Lawrence Berkeley National Laboratory. Dr. Beyer manages West Coast Regional Carbon Sequestration Partnership (WESTCARB) projects in California and Arizona. These U.S. Department of Energy/industry collaborative projects involve drilling wells and injecting CO_2 into deep saline aquifers, then using geophysical techniques to monitor the movement and stabilization of the CO_2 in the earth. Dr. Beyer previously worked at the California Energy Commission in the Public Interest Energy Research (PIER) Program, and a major part of his career has involved the exploration for and development of geothermal resources. As an independent consultant he planned and managed geophysical (magnetotelluric [MT]) surveys of geothermal prospects in Indonesia, the Azores, and Japan.

4. ***California Air Resources Board Draft Regulation for a Cap-and-Trade Program*** by Jan Mazurek, Ph.D., Advisor for Science and Technology Policy, Air Resources Board. Jan Mazurek is senior policy advisor to Air Resources Board Chair, Mary Nichols. Dr. Mazurek has worked in the environmental policy field for nearly 20 years. Before coming to the ARB, she directed the Washington D.C. office of Duke University's Nicholas Institute for Environmental Policy Solutions working closely on Congressional climate proposals. In 2008, Dr. Mazurek served as an EPA reviewer for the Obama-Biden Presidential Transition Team. Prior to this service, she directed the Energy & Environment Project at the Progressive Policy Institute. Dr. Mazurek is the author of "Making Microchips: Policy, Globalization, and Restructuring in the U.S." (MIT 2003), is the co-author with Terry Davies of "Pollution Control: Does the U.S. System Work?" (Johns Hopkins 1998) and holds a doctorate in Public Affairs from UCLA.

DISCUSSION MEETING

The Advisory Council held a meeting on July 14, 2010 to discuss the presentations from June 9, 2010 and a draft of this report. Minutes of the July 14 discussion meeting are attached to this report.

CARBON CAPTURE

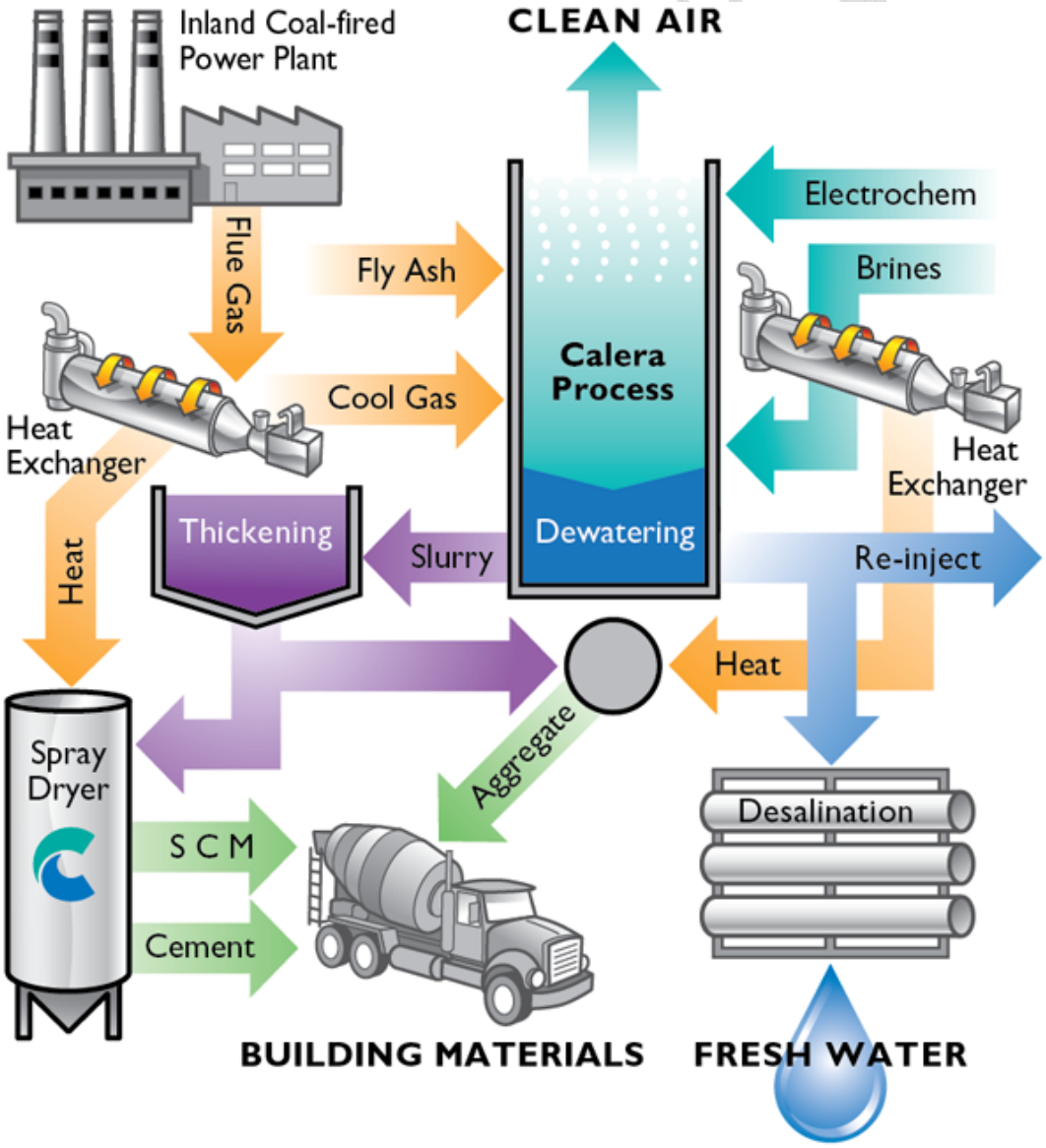
Carbon Capture Key Points

1. Capturing carbon emissions appears to be necessary to meet the 2050 target. Once captured, it must be stored somewhere. This may include storage underground, under water, or in cement.

2. Carbon capture alone does not solve the problem, but could help to buy us time.

3. Calera is a start-up company that is working on an alternative to traditional cement production, currently being tested in a pilot plant near Moss Landing. The Calera process converts CO_2 into “permanently” sequestered concrete (mineral

carbonates) to be used as building materials. This alternative cement production process may offer co-benefits such as sequestration of toxics from power plant flue gas (such as Mercury {Hg}, SOx, fly ash), the desalination of sea water and the reduction of mining operations for limestone and aggregate. If it is scaled up to meet global concrete demand (31-32 billion tons/year), it could sequester an estimated 16 billion tons CO_2, compared to 29 billion metric tons CO_2 emitted worldwide in 2007. The process described is still under development, and it needs carbon pricing such as a Cap & Trade system to make it cost effective. (Other groups working on similar technologies are Novacem - Imperial College London, Kurt Zenz House – MIT and Joseph Davidovits, Geopolymer Institute, Saint-Quentin, France).



Membrane Capture Key Points

1. CO_2 from industrial sources is often mixed with other gases. Advanced membrane technologies have the potential to capture and concentrate CO_2 significantly and are currently in trial at power plants in Arizona.

2. Placing a membrane filter at a power plant could capture 90% CO_2 from coal plant using 16-17% of the plant's generated energy. This technology also requires either legal mandate or a substantial carbon pricing system such as Cap & Trade to become commercially viable (perhaps a carbon price of $25-30/ton CO_2).

Capture Emerging Issues

- The mineralization via aqueous precipitation process is being tested for coal plants, but should also be considered for California's lower carbon-emitting natural gas plants or industrial sources.

- As this process is still in the pilot stage, additional information such as more detailed process flow diagrams, how it works, whether in gaseous or aqueous state, etc. would help others evaluate scaling, pollutants, etc.

- The environmental impacts of scaling up such technology, as well as cost with smaller & dispersed CO_2 sources require additional study.

- The Air District has not yet evaluated whether it is appropriate to "endorse" new technologies such as Calera's, or geological sequestration. Even if the Air District chooses to make such endorsements on its own in the future, it may or may not wish to play a role in encouraging state or federal (CARB or EPA) acceptance.

SEQUESTRATION

Sequestration Key Points

1. Geological sequestration refers to pumping the captured CO_2 deep into the ground. Proponents acknowledge this is a transition technology, not a long-term solution. It has been in use for over 35 years for enhanced oil recovery from oil fields (injected CO_2 squeezes oil through fractures toward other producing wells).

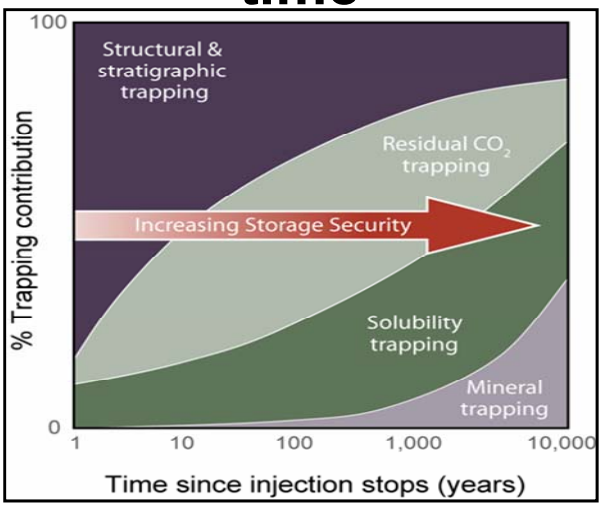
2. Carbon capture and sequestration of the CO_2 emitted by fossil fuel combustion in the industrial and electric power sectors will be expensive and not without risk. However, the use of some form of carbon capture and sequestration will be a necessary interim step to achieve California s 2050 GHG emission reduction

target of 80 percent below 1990 levels in the transition from fossil fuels to renewable energy.

3. Cost estimates for industrial scale range from \$20/t CO_2 (removed from natural gas) to \$50 (coal power plant) to \$90 (natural gas power plant), therefore requires a carbon pricing system such as Cap & Trade.

4. The sequestration sequence for captured CO_2 over time is as follows: structurally trapped -> residual small supercritical CO_2 bubbles & water in pores -> dissolved in water -> becomes mineralized.

CO_2 trapping mechanisms over time



Courtesy Sally Benson, Stanford University

5. California has large physical opportunities for geologic storage of CO_2, but may face long-term liability and regulatory issues.

6. The success of capture and sequestration processes will depend on the future price of carbon.

Sequestration Emerging Issues

- The seismic risks associated with geologic sequestration of carbon need to be well understood for application in California.

- The questions of permanence & hazards of various sequestration reservoirs (depleted, saline water, coal seams, etc) must be studied.

- Increased underground storage of CO_2 will depend on the resolution of many regulatory issues, some well beyond the scope of the District, including topics such as ownership of pore space. The California Air Resources Board (CARB) working with the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC), has a convened a panel to address regulatory and legal aspects of carbon capture and storage programs. Their report is expected in November 2010.

CAP & TRADE

Cap & Trade Key Points

1. CARB is developing rules for a Cap & Trade system to meet the 2020 emission reduction target under AB32. California is coordinating its market design with the Western Climate Initiative (WCI), which includes western US states, Canadian provinces and Mexican states. CARB plans to hold workshops and issue regulations later in 2010.

2. A statewide Cap & Trade program provides a flexible regulatory tool using a market-based approach to controlling and reducing GHG emissions, including those from industrial sources. It works in the following way: The "Cap" is a limited number of allowances (permits) needed by regulated sources to emit declines over time. When the demand for allowances exceeds the supply, scarcity exists, and the allowances become a valuable commodity, which may be traded between regulated entities. Ideally, the price of allowances provides an economic incentive to regulated entities to reduce their emissions at a reduced cost compared to "command and control" regulations, and can stimulate innovation, efficiency and green jobs in California. The total number of allowances multiplied times the price on each allowance represents the newly created "allowance value" which may be allocated to various sectors or towards public purposes.

3. Cap & Trade programs are complex and previous programs in other regions have not always been successful. Dangers include: over-allocation and free allowances, hot spots of non-CO_2 pollution, and equity issues, offsets and cost-containment, price spikes or market manipulation, and the power of special interest lobbyists in designing the system.

4. Design elements of a Cap & Trade system include the following:

    a. Scope: Which companies are covered under the cap? California plans to cover 85 percent of emissions, primarily in the energy and transportation fuels sectors. A key concept is whether the point of regulation is closer to "upstream" companies (where the fossil fuel enters the economy; i.e., coal mining or oil extraction) or "downstream" companies (i.e., end users, gas stations, etc.).

    b. Allocation: How are permits distributed? They can be given to companies for free or sold (auctioned) to them. Free allocations can assist trade-impacted industries, or municipal utilities that may not be able to pass costs on to consumers. Administrative allocation in the European Union resulted in over allocation, volatile prices, and fewer emission reductions than expected, but CARB hopes their baseline GHG emission inventories will help prevent that. Selling permits to regulated entities can generate revenue for climate change mitigation and adaptation programs. CARB's Economic and Allocation Advisory Committee (EAAC) recommended that CARB "should rely principally and perhaps exclusively, on auctioning as a mechanism for distributing allowances." CARB's AB32 Scoping Plan contains the goal of a 100 percent auction of allowances, which is widely accepted in the economic and environmental advocacy community.

    c. Use of allowance value: How auction revenues are used. Revenues should generally be used to support the public interest or complementary goals of AB32, such as reducing emissions, supporting public health, and addressing disproportionate impacts and social and economic justice and equity. The EAAC reviewed many options for the use of allowance value including returning revenues to consumers through a dividend check or through the tax system, supporting research and development, a Community Benefits Fund, and other programs.

    d. Offsets: Offsets are reductions made in uncapped sectors (such as agriculture) that can be sold as credits for other polluters excessive emissions. There are many design aspects of offsets, including whether they are "verifiable and additional" (in other words, do they actually reduce emissions, and did they occur as a result of the program). Offsets are thought to be one approach to cost-containment, by allowing industrial sources to substitute offsets when permits are scarce.

5. In addition to greenhouse gas reduction, AB32 requires the California Air Resources Board to maximize public health co-benefits, reduce air pollution, and avoid disproportionate impacts to low income communities. Evaluating public health outcomes is critical to all climate policy development, particularly in market-based strategies like the Cap & Trade program.

6. A carbon price can affect innovation in controlling emissions from power plants and other industrial sources. It seems less likely that it would result in decreased consumption of oil for transportation, and associated emissions, because, among other reasons, the transportation sector is not thought to be very price sensitive within the projected range. It is expected to only increase the price of gasoline 5 to 20 cents per gallon.

Cap & Trade Emerging Issues

- High Prices vs. Low Costs: There is a conflict between the interest in keeping costs low to consumers and encouraging a high cost in order to adequately reduce CO_2 emissions. An allowance price that is too high will place a burden on households and businesses. **A price set too low will not generate the pricing signal needed to encourage actual, operational reductions and investment in green technologies.**

- Free allocation of allowances to industrial sources may diminish the incentive to reduce emissions through investment in cleaner technologies that will have near term public health benefits.

- CARB is planning to set a price on carbon in 2012. **The proposed price of $12 to $18 per ton of CO_2 is not high enough ($30 is the minimum price signal needed to make alternatives and sequestration viable). Costs should be recovered.**

- Public health: Allocation of allowances under a cap and trade program needs to be designed to be cognizant of health impacts. The California Air Resources Board is conducting a Health Impact Assessment of a cap and trade program to help inform policy options such as allocation distribution, restrictions on trading in highly polluted areas or the appropriate quantitative and geographic limits on offsets. The HIA will also evaluate appropriate uses of program revenue to support public health goals of AB32.

- Just as California's market design could positively influence the national debate, Federal policy will have important implications for California – creation of a national-scale market and a market state by state will make it easier for industries to comply with regulations. The Kerry-Lieberman bill recently considered in the Senate would have limited the ability of states to undertake action on their own.

- Proposition 23 on the November 2010 ballot proposes to suspend AB32. This would eliminate California's ability to implement a cap and trade program under AB32. The state will be able to continue to implement several of the other climate change measures through other authority, but absent the Cap & Trade program, it is likely that the costs to reduce GHG emissions will be higher.

- Market design such as the role of offsets in the Cap & Trade program will be important in determining the viability of some forms of carbon capture and sequestration for California.

RECOMMENDATIONS

Carbon Capture Recommendations

1. The Air District should promote technologies that reduce air toxics, criteria pollutants and carbon emissions, as well as environmentally friendly carbon negative products.

2. The Air District should research and verify the air quality benefits of proposed alternative cement products such as Calera's and other companies. The Air District can advocate for the acceptance of lower carbon cement into building codes and specifications. The Air District can also look into encouraging the incorporation of near term uses for low carbon building materials by cities, regional transportation agencies and others. There may be future overlap with U.S. EPA's Performance Track permit streamlining, and performance based incentives.

3. The Air District can consider permitting processes that encourage compliance with new technologies that have multiple emission reduction benefits. Such emission reducing technology could become a possible approach to satisfy emission reduction requirements from certain industrial facilities, assuming the process achieves equivalent emissions reductions and cost savings). Eventually, the Air District could recognize reductions in embedded carbon in infrastructure projects and be able to distinguish between high-carbon and low- or negative—carbon building materials during environmental review.

Sequestration Recommendations

4. The Air District can track progress on membrane technology and geological sequestration, especially regarding public safety.

5. If determined to be a viable option by district staff, the Air District can participate in public outreach efforts about the issues involved. The potential for earthquakes will certainly be a major concern of residents in the Bay Area.

Cap & Trade Recommendations

6. The Air District should encourage the establishment of a price on carbon that will make alternative and low carbon energy and industrial technologies economically viable, and spur innovation and jobs. The Air District can take formal positions

supporting the creation of a "cost" to CO_2 emissions, via a carbon tax or well-designed Cap & Trade program.

7. As a public health agency, the Air District should support the incorporation of public health priorities into any State Cap & Trade program.

8. The Air District should encourage CARB to include the following elements in the final regulatory framework:

    a. A Cap & Trade framework that moves toward an auction of permits as quickly as possible to ensure that:
        i. Owners of sources of GHG emissions bear the cost of GHG emission reduction programs through their direct activities or through the purchase of permits or quality offsets
        ii. Local communities benefit from reductions in emissions
        iii. Emission reductions may be encouraged onsite, but a market will exist to allow for purchase of permits or quality offsets from other sites
        iv. Communities most impacted by industrial emissions are protected

    b. The Air District should support allowance values that are directed to support the complementary goals of AB32 and maximize the occurrence of co-benefits, from an economic and public health perspective.

        i. Allowance values should support community greenhouse gas reduction efforts to reduce air pollution, and avoid disproportionate impacts to low income communities. A community benefits fund could be established to help fund public health adaptation and mitigation as well as community greenhouse gas reduction efforts.
        ii. Allowance values could be returned to consumers as per capita dividend checks to help low-income and middle-class households afford the costs of transitioning to cleaner fuel and energy sources.
        iii. The Air District should continue to prioritize policies, programs and grant funding to vulnerable communities suffering the greatest health impacts from multiple sources of pollution. Public health and community protection must be considered as primary uses for allowance value.
        iv. Improve community emergency preparedness for extreme weather events caused by global warming.
        v. Invest in building and preparing the region's public health infrastructure to assist local governments in regional planning to reduce greenhouse gases and mitigating the impacts of climate change

9. The Air District should participate in the State's review process of definition and protocol for "offsets" in the state's Cap and Trade program. The Air District should follow any developments in this area to ensure that offsets meet standards

so that they result in emission reductions that are real, verifiable, additional, etc. In the Bay Area, the Air District should remain engaged in developments regarding high-quality offsets from biological sequestration by wetlands, forestry and agriculture, including bio-char, as well as more technological approaches.

10. The Air District should determine where it is the appropriate agency to engage in the above activities, and where it would be more appropriate to encourage others (including CARB or EPA) to do so. Air District involvement in these evolving policy issues should first and foremost strive to not create new problems. Integral to this learning process, the Board should conduct outreach to and allow for input from the public.