

Errata Sheet

Revised Agenda

Meeting of the Board of Directors
Climate Protection Committee

May 9, 2013

The Board of Directors Climate Protection Committee will start
at 10:00 a.m.



**BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT**

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

**JOHN AVALOS - CHAIR
SUSAN ADAMS
SCOTT HAGGERTY
SHIRLEE ZANE**

**DAVID HUDSON - VICE CHAIR
TERESA BARRETT
JOHN GIOIA
MARK ROSS**

**THURSDAY
MAY 9, 2013
10:00 A.M.
REVISED START TIME**

**AIR DISTRICT HEADQUARTERS
4th FLOOR CONFERENCE ROOM
939 ELLIS STREET
SAN FRANCISCO, CA 94109**

**VIDEOCONFERENCE LOCATION:
SANTA ROSA JUNIOR COLLEGE
DOYLE LIBRARY ROOM 4243
1501 MENDOCINO AVENUE
SANTA ROSA, CA 95401**

AGENDA

1. CALL TO ORDER - ROLL CALL

2. PUBLIC COMMENT PERIOD

(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 MINUTES OF MARCH 14, 2013

4. CLIMATE CHANGE SCIENCE OVERVIEW

**B. Bateman/4653
bbateman@baaqmd.gov**

The Committee will receive an overview of Climate Change Science.

5. OVERVIEW OF AIR DISTRICT CLIMATE PROTECTION PROGRAM

**J. Roggenkamp/4646
jroggenkamp@baaqmd.gov**

The Committee will receive an update on the Air District's Climate Protection activities.

6. **NEXT STEPS FOR AIR DISTRICT CLIMATE PROTECTION PROGRAM**

J. Roggenkamp/4646
jroggenkamp@baaqmd.gov

The Committee will discuss potential future Air District Climate Protection activities.

7. **DISCUSSION ON PROPOSED KEYSTONE PIPELINE**

J. Roggenkamp/4646
jroggenkamp@baaqmd.gov

The Committee will discuss the proposed Keystone XL pipeline and impacts to the Bay Area Air Quality.

8. **COMMITTEE MEMBERS' COMMENTS**

Any member of the Committee, 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. (Government Code § 54954.2)

9. **TIME AND PLACE OF NEXT MEETING – AT THE CALL OF THE CHAIR**

10. **ADJOURNMENT**

CONTACT THE CLERK OF THE BOARDS
939 ELLIS STREET, SF, CA 94109

(415) 749-5073
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 Executive Office should be given at least three working days prior to the date of the meeting 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) 749-4963**

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

MAY 2013

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Advisory Council Regular Meeting <i>(Meets on the 2nd Wednesday of each Month)</i>	Wednesday	8	9:00 a.m.	Board Room
Board of Directors Climate Protection Committee <i>(At the Call of the Chair)</i>	Thursday	9	10:00 a.m.	4 th Floor Conf. Room And via videoconference at Santa Rosa Junior College Doyle Library, Room 4243 1501 Mendocino Avenue Santa Rosa, CA
Special Board of Directors Meeting - Budget Hearing <i>(At the Call of the Chair)</i>	Wednesday	15	9:45 a.m.	Board Room
Board of Directors Regular Meeting <i>(Meets on the 1st & 3rd Wednesday of each Month)</i>	Wednesday	15	9:45 a.m.	Board Room
Board of Directors Executive Committee <i>(Meets on the 3rd Monday of each Month)</i>	Monday	20	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Stationary Source Committee <i>(Meets on the 3rd Monday of each Month)</i>	Monday	20	10:30 a.m.	4 th Floor Conf. Room
Board of Directors Budget & Finance Committee <i>(Meets on the 4th Wednesday of each Month) - CANCELLED</i>	Wednesday	22	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Mobile Source Committee <i>(Meets on the 4th Thursday of each Month)</i>	Thursday	23	9:30 a.m.	Board Room
Board of Directors Public Outreach Committee <i>(At the Call of the Chair)</i>	Wednesday	29	9:30 a.m.	4 th Floor Conf. Room

JUNE 2013

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Regular Meeting <i>(Meets on the 1st & 3rd Wednesday of each Month)</i>	Wednesday	5	9:45 a.m.	Board Room
Board of Directors Legislative Committee <i>(At the Call of the Chair)</i>	Thursday	6	9:30 a.m.	4 th Floor Conf. Room
Advisory Council Regular Meeting <i>(Meets on the 2nd Wednesday of each Month)</i>	Wednesday	12	9:00 a.m.	Board Room

JUNE 2013

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Executive Committee <i>(Meets on the 3rd Monday of each Month)</i>	Monday	17	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Stationary Source Committee <i>(Meets on the 3rd Monday of each Month)</i>	Monday	17	10:30 a.m.	4 th Floor Conf. Room
Board of Directors Regular Meeting <i>(Meets on the 1st & 3rd Wednesday of each Month)</i>	Wednesday	19	9:45 a.m.	Board Room
Board of Directors Budget & Finance Committee <i>(Meets on the 4th Wednesday of each Month)</i>	Wednesday	26	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Mobile Source Committee <i>(Meets on the 4th Thursday of each Month)</i>	Thursday	27	9:30 a.m.	Board Room

JULY 2013

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Regular Meeting <i>(Meets on the 1st & 3rd Wednesday of each Month)</i>	Wednesday	3	9:45 a.m.	Board Room
Advisory Council Regular Meeting <i>(Meets on the 2nd Wednesday of each Month)</i>	Wednesday	10	9:00 a.m.	Board Room
Board of Directors Executive Committee <i>(Meets on the 3rd Monday of each Month)</i>	Monday	15	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Stationary Source Committee <i>(Meets on the 3rd Monday of each Month)</i>	Monday	15	10:30 a.m.	4 th Floor Conf. Room
Board of Directors Regular Meeting <i>(Meets on the 1st & 3rd Wednesday of each Month)</i>	Wednesday	17	9:45 a.m.	Board Room
Board of Directors Budget & Finance Committee <i>(Meets on the 4th Wednesday of each Month)</i>	Wednesday	24	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Mobile Source Committee <i>(Meets on the 4th Thursday of each Month)</i>	Thursday	25	9:30 a.m.	Board Room

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: April 25, 2013

Re: Climate Protection Committee Draft Meeting Minutes

RECOMMENDED ACTION

Approve attached draft minutes of the Climate Protection Committee meeting of March 14, 2013.

DISCUSSION

Attached for your review and approval are the draft minutes of the March 14, 2013, Climate Protection Committee meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Sean Gallagher
Reviewed by: Ana Sandoval

Attachments

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
Thursday, March 14, 2013

1. Call to Order – Roll Call

Chairperson John Avalos called the meeting to order at 11:02 a.m.

Present: Chairperson John Avalos; Vice-Chairperson David Hudson; and Directors Susan Adams and Mark Ross.

Absent: Directors John Gioia, Scott Haggerty and Shirlee Zane.

Also Present: None.

2. Public Comment Period:

Pauravi Shah, 350 Bay Area, addressed the Committee in gratitude for its work and that of Chairperson Avalos.

Janet Stromberg, 350 Bay Area, addressed the Committee in gratitude for the work of Chairperson Avalos and to highlight the importance of the climate-related work ahead.

Patrick Kennedy, 350 Bay Area, addressed the Committee regarding the need for immediate action on climate change.

Gary Latshaw, Sierra Club, addressed the Committee to request that the Air District oppose the Keystone XL Pipeline project and to deliver a report from the National Academy of Sciences.

Kathy Kemp, 350 Bay Area, addressed the Committee regarding her desire to learn more about the obstacles to addressing climate change.

3. Approval of Minutes of October 21, 2011, and April 16, 2012

Approval of the minutes was postponed for lack of a quorum.

4. Letter of Understanding between California Air Resources Board (ARB) and California Air Pollution Control Officers Association (CAPCOA) Regarding Coordination and Collaboration on Climate Change [OUT-OF ORDER]

Jack Broadbent, Executive Officer/Air Pollution Control Officer (APCO), gave the staff presentation Collaboration with ARB on Climate Change, including a summary of possible areas for collaboration and next steps.

Director Ross asked, regarding slide #3, Areas for Collaboration, about projects currently included in the greenhouse gas (GHG) offset protocols, which questions were answered by Mr. Broadbent.

Chairperson Avalos asked for clarification regarding the role of the Air District in administering the program, which clarification was provided by Mr. Broadbent.

Director Hudson said the lack of state-wide recognition of the problem and a readiness to act is nonsensical, in response to which Mr. Broadbent explained the current state of discussions and program development.

Director Adams requested baseline figures and asked how emissions from sources outside the state are being calculated. Mr. Broadbent said a presentation at the next Committee meeting would address those questions.

Chairperson Avalos asked about the effect on the exchange of utility purchasing offsets, which question was answered by Mr. Broadbent.

Mr. Broadbent concluded the presentation.

Committee Comments:

Director Hudson asked about the next scheduled update of the scoping plan, which question was answered by Mr. Broadbent.

Director Adams recommended increasing the ease of access to materials relative to work being done by Board committees and Air District staff, including the scoping plan, and asked that the scoping plan be provided in PDF format.

Director Adams suggested establishing a list of available materials for sharing with cities and counties in the Bay Area, in response to which Jean Roggenkamp, Deputy APCO, explained the local government portal used to that end. Director Adams asked for information on the portal.

Public Comments: None.

Committee Action: None; informational only.

5. Consideration of Approval of Greenhouse Gas Reduction Grant Program (GGRGP) Project Components

Damien Breen, Director of Strategic Incentives, introduced Geraldina Grunbaum, Supervising Environmental Planner of Strategic Incentives, who gave the staff presentation Consideration of Approval of GGRGP Project Components, including the background, status of funds awarded, a

summary of projects remaining on the contingency list, expansion of the contingency list and allocation of funds, an overview of funds awarded by city and type, and recommendations.

Mr. Breen provided clarification regarding staff recommendations.

Committee Comments:

Chairperson Avalos asked about how staff prioritized projects and their ability to quantify reductions, which questions were answered by Mr. Breen.

Director Hudson asked if the Hercules Transit Center has solar power, which question was answered by Mr. Breen.

Director Adams asked how the allocation amount was defined and whether more revenue is expected, which questions were answered by Mr. Breen.

Public Comments: None.

Committee Action:

A consensus of the members present at the Committee meeting supported staff's recommendation for the Board of Directors to:

1. Allocate an additional up to \$435,907 in GGRGP derived funds;
2. Approve the addition of 17 GGRGP contingency project components listed in Attachment C; and
3. Authorize the Executive Officer/Air Pollution Control Officer (APCO) to execute all contracts and contingencies to expend the funding for the recommended GGRGP contingency project components listed in Attachment C.

6. CAPCOA GHG Reduction Exchange

Henry Hilken, Director of Planning, Rules & Research, introduced David Vintze, Air Quality Planning Manager of Planning, Rules & Research, who gave the staff presentation CAPCOA GHG Reduction Exchange, including an overview of the reasons for and functions of the exchange, how the Air District participates and a status report on the exchange.

Chairperson Avalos asked, regarding slide #5, How the District Participates, about the work load that will result for Air District staff, which question was answered by Messrs. Vintze and Hilken.

Mr. Vintze concluded the presentation.

Committee Comments:

Director Ross, Ms. Roggenkamp, and Mr. Hilken discussed minimum mitigations levels and credit valuation.

The Committee and staff discussed how the exchange will interplay with local mitigation measures.

Public Comments: None.

Committee Action: None; informational only.

7. Committee Member Comments/Other Business:

Director Adams gave a status update on the Marin Clean Energy project and its goals. The Committee discussed the initial steps in the project.

Director Hudson requested copies of Assembly Bill 32, the related Executive Order by Governor Schwarzenegger dated July 3, 2005, and the most recent Climate Scoping Plan, and suggested the Air District's PM Report be widely distributed and the Climate Protection Committee agendas be regularly delivered to the appropriate contact at ARB.

Chairperson Avalos requested a staff briefing on Air District activities related to climate protection before the next meeting of the Committee.

8. Time and Place of Next Meeting: At the call of the Chairperson.

9. Adjournment: The meeting adjourned at 12:06 p.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: April 30, 2013

Re: Climate Change Science Overview

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The Earth's climate, which had been relatively stable since the end of the last ice age several thousand years ago, has begun to shift over the past century and result in potentially dangerous effects to human health and welfare, and to ecosystems. Rising global temperatures have already resulted in significant changes in weather and climate, and the planet's oceans have also experienced some big changes such as melting ice caps that have caused sea levels to rise. Of even greater concern, climate models estimate that global warming will accelerate over the next 100 years.

The Earth's climate system is vastly complex, and it has only been in the past decade that scientists have reached consensus regarding the primary cause of climate change experienced in the past century. This has now been firmly linked to the large amounts of carbon dioxide and other greenhouse gases (GHGs) released into the atmosphere by human activities since the industrial revolution. The majority of greenhouse gases come from burning fossil fuels to produce energy, although deforestation, industrial processes, and some agricultural practices also emit GHGs into the atmosphere.

DISCUSSION

At the May 9, 2013 Climate Protection Committee meeting, staff will provide an overview of the scientific basis of the study of climate change. Topics to be covered include:

1. Definitions of "climate", "climate change", and "global warming".
2. Evidence of climate change.
3. Key milestones in the science of climate change.
4. The Earth's climate system.
5. The global energy balance, including the role of the Greenhouse Effect.

6. The role of water vapor and clouds in the Greenhouse Effect.
7. GHGs and other climate forcing agents.
8. Observed changes in atmospheric concentrations of GHGs.
9. Climate forcings of various GHGs and aerosols since the beginning of the industrial revolution.
10. Climate feedbacks, which affect the amount of warming resulting from increased GHG concentrations.
11. Projections of future global warming.
12. Global Warming Potentials (GWPs), which provide a common basis for evaluating the emissions of different types of GHGs.
13. GHG emission inventories for California, the United States, and other countries.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Brian Bateman
Reviewed by: Jean Roggenkamp

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: April 22, 2013

Re: Overview of Air District Climate Protection Program

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

In 2005, the Air District Board of Directors adopted a resolution establishing the Climate Protection Program. In doing so, the Board acknowledged the strong link between climate protection and efforts to reduce air pollution in the Bay Area. Since 2005, the Air District has demonstrated leadership in climate protection through its role as a regional convener, funder, technical expert, and regulatory agency. Internally, the Air District has pursued a strategy of integrating climate protection into all agency functions.

DISCUSSION

Staff will provide the Committee with an overview of the Air District's Climate Protection Program, including key milestones and accomplishments.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. Staff resources are currently included in FYE 2013 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Abby Young
Reviewed by: Henry Hilken

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: April 22, 2013

Re: Next Steps for Air District Climate Protection Program

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The Air District's Climate Protection Program was established in 2005 and has evolved over the past eight years. While the Air District's program has included many facets, a constant focus has been in providing leadership in climate protection to the Bay Area and beyond. Climate protection activities throughout the Bay Area region have also evolved, in part due to influence by the Air District's leadership.

DISCUSSION

As different challenges, opportunities, research and potential partnerships emerge, the Air District is continually faced with choices in how to develop and grow its Climate Protection Program. Staff will solicit the Committee's feedback on the strategic direction of the Air District's Climate Protection Program.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. Staff resources are currently included in FYE 2013 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Abby Young
Reviewed by: Henry Hilken

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: May 2, 2013

Re: Discussion on Proposed Keystone Pipeline

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Since 2008, TransCanada, a pipeline operator, has been seeking permission to construct a 36" diameter pipeline from Alberta, Canada to oil refineries in the Gulf Coast. The proposed Keystone XL Pipeline, shown as a dashed line in Figure 1, would be able to move 830,000 barrels a day of oil extracted from oil sands. (TransCanada operates an existing 30" pipeline, which is shown as a solid line in Figure 1.) Because the proposed pipeline would cross the Canada-United States border, a Presidential Permit is required; this Permit is issued by the United States Department of State if it is determined that the proposed pipeline is in the "national interest." In December 2011, the Department of State denied the application for a Presidential Permit. In response, TransCanada made a number of modifications to the proposed route to avoid concerns raised by the State of Nebraska and split the overall project into two distinct phases: one from Alberta to Steele City, Nebraska, and another from Cushing, Oklahoma to the Gulf Coast. (TransCanada proposes using existing pipelines to move the oil from Nebraska to Cushing, Oklahoma.) On May 4, 2012, TransCanada submitted a new application for a Presidential Permit covering the revised route from Alberta to Nebraska. Consideration of the new application is currently underway at the Department of State. A Draft Supplemental Environmental Impact Statement (SEIS) was issued by the Department of State on March 1, 2013; comments on the draft SEIS have closed. The Department of State has not issued a timeline for making a decision on the Presidential Permit, but is anticipated to act within the next two-three months.

Figure 1
Proposed Route of Keystone XL Pipeline

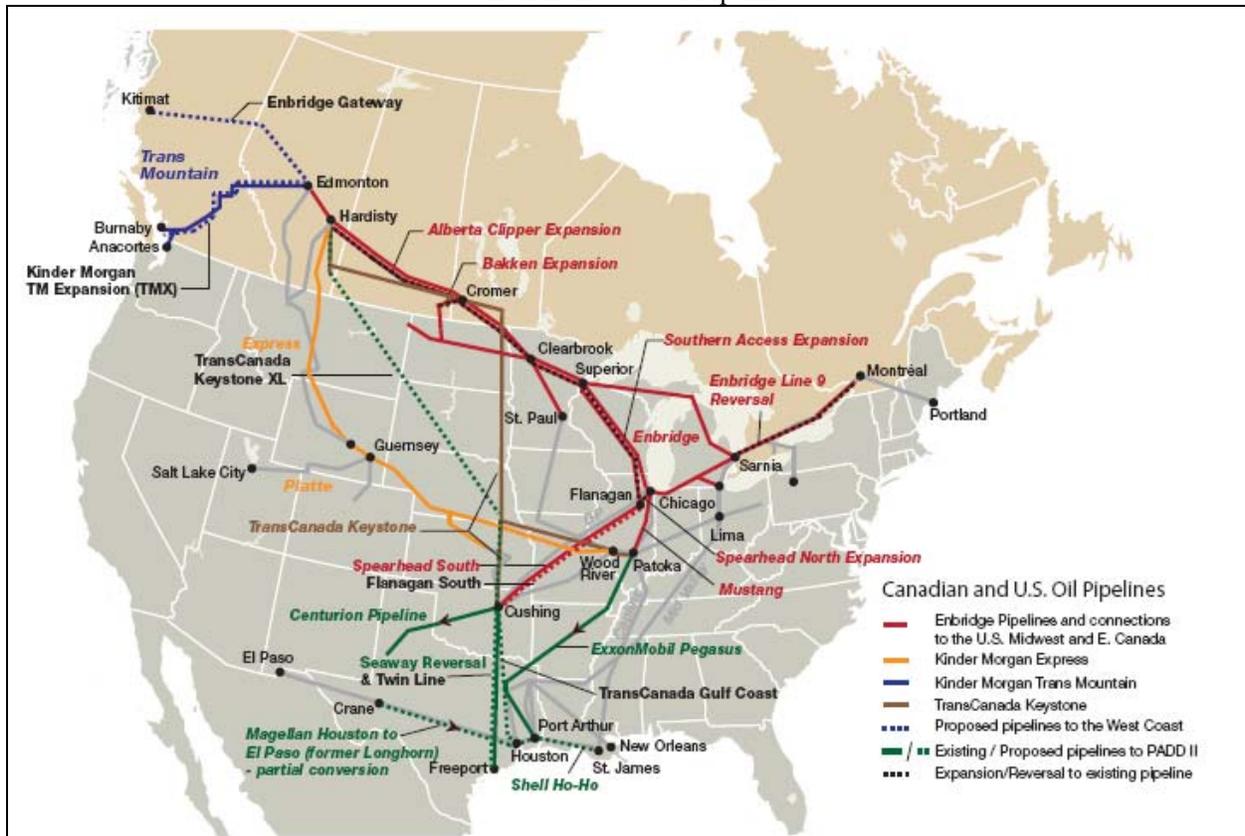


DISCUSSION

What are Oil Sands?

The boreal forests of Western Canada, especially in the Province of Alberta, grow in a large sedimentary basin. Underlying the basin are large deposits of oil sands, a mixture of sand, clay, various minerals and bitumen, a semi-solid to solid form of oil. The bitumen mixture is very dense and highly viscous, or resistant to flow. With a consistency at room temperature of thick molasses, oil sand bitumen is difficult to transport. The common method of transport is by pipeline. (See Figure 2.) To be transported in pipelines, the oil sand bitumen must be diluted using either lighter grade oil or synthetic diluents. The diluted bitumen is referred to popularly as either “dilbit” or “synbit,” depending on the product used as the diluent.

Figure 2
Canadian and U.S Oil Pipelines



Source: Canadian Association of Oil Producers, 2012

Oil sands bitumen is extracted using two main methods. The common method is “in situ” recovery, which consists of injecting steam into the oil sands to lower the viscosity of the bitumen, allowing for ready extraction using pumps. Producers in California also use “in situ” recovery to extract bitumen from oil sands located within the State. The less common method is strip mining.

Alberta, Canada has proven oil sands reserves of 166.7 billion barrels of oil, the third largest known oil reserves in the world. In 2011, production averaged 1.7 million barrels a day. Of this

amount, approximately 1.4 million barrels a day was exported to the United States and overseas. The current major market for the oil sands is the mid-West area of the United States. Production is forecast by the Canadian Association of Petroleum Producers to increase to 3.7 million barrels a day by the year 2020, and 5 million barrels a day by 2030. Additional pipeline capacity is a key component for achieving the forecasted growth.

In 2011, according to the California Energy Commission (CEC), refineries in California imported approximately 18,000 barrels a day of oil taken from the oil sands in Alberta. This was slightly more than 1% of the oil refined in California in 2011. Statistics were not available for the amount processed at Bay Area refineries; however, local refineries make up 39% of the State's refining capacity, so a reasonable estimate is 7,020 barrels a day.

Estimates of future California imports of Canadian oil sands are uncertain and subject to change based on conditions of the world oil market. If imports of oil sands grew at the same rate as the growth in exports from Alberta, then Bay Area refineries would refine approximately 15,000 barrels of oil sands a day by 2020, or 2% of current refinery capacity. This is consistent with current CEC estimates projecting low growth in the use of Canadian oil sands; the CEC cites both inadequate infrastructure and the difficulty for California refiners to meet the State's Low Carbon Fuel Standard when using the diluted bitumen as a feedstock. However, there are proposals in early planning stages to improve crude oil rail facilities in Benicia and Pittsburg. While it is unknown at this time whether or not those facilities will be used to import Canadian oil sands, their construction would expand available infrastructure to accommodate more oil from Alberta.

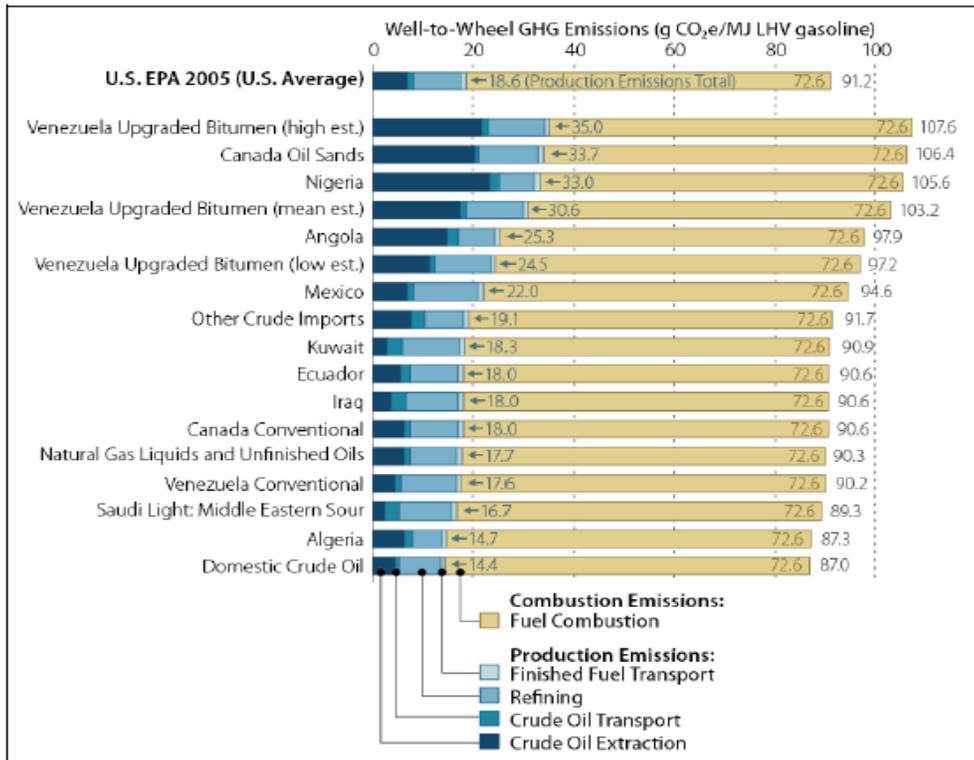
GHG Issues

In a March 2013 report, the Congressional Research Service reviewed the life-cycle greenhouse gas emissions associated with further development of the oil sands fields in Alberta. The major conclusions of this report include:

- GHG emissions from the production of oil sands (well-to-wheel) are on average 14%-20% higher than GHG emissions from the production of the average transportation fuel sold in the United States; this is largely due to the increased energy required to refine the heavy oil sands. As shown in Figure 3, combustion emissions of GHGs from gasoline refined from a variety of source oils remains constant. But the energy required to extract, transport and refine oil sands into a gallon of gasoline is significantly higher than for the average crude oil refined in the United States.
- The proposed Keystone XL Pipeline would increase annual GHG emissions in the United States by 3.7 million to 20.7 metric tons, or the equivalent of emissions from approximately 771,000 to 4,300,000 passenger vehicles.

Additionally, the Pembina Institute, a Canadian energy research group, reported that the refinement of oil from tar sands in 2005 released 37 megatons of greenhouse gases, compared with 23 megatons in 2000. The Institute estimated that GHG emissions could reach 164 megatons per year by 2015 due to rapidly increasing production.

Figure 3
Well-to-Wheel GHG Emissions



Source: Congressional Research Service, *Canadian Oil Sands: Life-Cycle Assessments of Greenhouse Gas Emissions*, Report R42537, March 15, 2013.

Local Emissions

The Air District currently does not have specific data on changes in the emissions of criteria and toxic emissions that may occur at local San Francisco Bay refineries if there were an increase in use of Canadian oil sands as a feedstock. Generally, however, low-quality, high-sulfur containing crudes such as oil sands require more intensive refining in order to produce transportation fuels that meet current low-sulfur specifications. The removal of sulfur from fuels has been a key step in lowering harmful sulfur dioxide and particulate matter pollution in the Bay Area. High-sulfur crude also may contribute to increased problems with corrosion of metallic equipment at refineries, which may result in increased risk of spills and accidental releases of emissions.

Air District staff is currently drafting a new rule that, if adopted, will require detailed tracking of emissions at, and increase air monitoring near, refineries. Tracking emissions over time and comparing them with baseline inventories will provide a greater understanding of impacts on local populations if oil sands become a prominent source of crude in the Bay Area.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Michael Murphy
Reviewed by: Henry Hilken