



**BOARD OF DIRECTORS  
EAST BAY MUNICIPAL UTILITY DISTRICT**

375 - 11th Street, Oakland, CA 94607

Office of the Secretary: (510) 287-0440

## **AGENDA**

### **Sustainability/Energy Committee**

**Tuesday, June 24, 2014**

**10:00 a.m.**

**Training Resource Center**

**(Committee Members: Directors Linney {Chair}, Foulkes, and Katz)**

#### **ROLL CALL:**

**PUBLIC COMMENT:** The Board of Directors is limited by State law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.

#### **DETERMINATION AND DISCUSSION:**

1. 2013 Greenhouse Gas Inventory and Mitigation Efforts (Wallis)
2. Climate Change Update (Wallis)
3. Climate Change Monitoring and Response Plan (Wallis)

#### **ADJOURNMENT:**

##### **Disability Notice**

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##### **Document Availability**

*Materials related to an item on this Agenda that have been submitted to the EBMUD Board of Directors within 72 hours prior to this meeting are available for public inspection in EBMUD's Office of the Secretary at 375 11th Street, Oakland, California, during normal business hours.*



## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: June 19, 2014

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Michael J. Wallis, Director of Operations and Maintenance *MJW*

SUBJECT: 2013 Greenhouse Gas Inventory and Mitigation Efforts

### INTRODUCTION

An objective of District Policy 7.05, Sustainability, is to identify projects and plans that mitigate climate change impacts and reduce greenhouse gas (GHG) emissions. District Policy 7.07, Energy, includes the goals to be carbon free for indirect emissions and achieve a 50 percent reduction in direct emissions compared to 2000 levels by 2040. This memo provides a summary of the District's 2013 GHG emissions inventory and progress towards the District's GHG emission goals. These items will be discussed at the June 24, 2014 Sustainability/Energy Committee meeting.

### SUMMARY

The District has been tracking and reporting District-wide GHG emissions since 2005. GHG emissions are not measured directly but are calculated according to generally accepted protocols using emissions factors. In 2013, GHG emissions totaled 31,244 Metric Tons (MT) of carbon dioxide which represents a 31 percent reduction from year 2000 levels, and a slight increase over the 2012 emissions inventory (31,106 MT). The District met its goal for indirect GHG emissions and exceeded the goal for direct emissions by approximately 5 percent. Staff continues to investigate alternatives to reduce GHG emissions.

### DISCUSSION

There are many different activities and energy sources that result in GHG emissions and the factors that affect the District's GHG emissions are complex. Many of these factors are outside the District's control. The District's direct emissions are primarily from stationary and mobile combustion sources. Direct emissions from combustion are calculated using the total annual fuel consumption multiplied by an emissions factor (pounds of CO<sub>2</sub>/gallon of fuel used) for each specific fuel (i.e., natural gas, gasoline, or diesel). The District's indirect emissions result from the use of electricity. To calculate the emissions from consumption of electrical power, the annual electrical use is multiplied by an emissions factor (pounds of CO<sub>2</sub>/kWh) for the electricity source. The emissions factor is derived based on the fuel used for generation by the electrical utility.

### **GHG Emissions on a Sector-Specific Basis**

In order to evaluate and understand the District's GHG emissions inventory, GHG emissions are categorized into five sectors representing major areas of operations. The table below summarizes the 2013 GHG emissions for each of these sectors. In 2013, the Treatment and Distribution sector was the most significant source of GHG emissions. Although the Raw Water (Other) sector was the smallest source of emissions, this sector can vary significantly from year to year based on operation of raw water pumps (e.g., Folsom South Canal Connection).

<b>Sector</b>	<b>Direct GHG Emissions (MT)</b>	<b>Indirect GHG Emissions (MT)</b>	<b>Percent of Total Emissions</b>
Treatment and Distribution	32	15,775	50.6%
Wastewater	722	2,488	10.3%
Fleet	6,701	0	21.5%
Buildings	2,783	1,406	13.4%
Raw Water (Other)	0	1,337	4.3%
Total	10,238	21,006	100%

### **Indirect Emissions Goal**

Based on the goals established in Policy 7.07, indirect emissions were not to exceed 31,761 MT in 2013. Prior to 2013, the District's goal was a 10 percent reduction in GHG emissions from 2000 levels by 2015. In 2013, the goal was revised to carbon free by 2040. The goals for intermediate years are derived by a straight line projection.

Considering indirect emissions were 21,006 MT in 2013, the District met its goal for this year. However, operation of the Folsom South Canal Connection (FSCC) in conjunction with the conventional water treatment plants (Sobrante and USL) in 2014 will require a significant amount of power. The additional power is estimated to increase indirect emissions in 2014 to 4,164 MT over its goal.

The District continues to invest in and investigate renewable energy projects to reduce its indirect emissions. The District currently has 41 Megawatts (MW) of hydropower at Pardee and Camanche Reservoirs, 11 MW of cogeneration at its Main Wastewater Treatment Plant, and 1.3 MW of photovoltaic (PV) at various District facilities. Recently, staff investigated installation of an in-conduit hydrogeneration facility at Briones Reservoir. Although the evaluation of this project showed that it was not cost-effective, the District is exploring the use of smaller in-conduit generation at some of its smaller distribution facilities. Staff also investigated a large PV project at the Camanche Pumping Plant and determined it was not cost-effective, but is investigating development of smaller PV systems (1 MW or less) at 25 other District facilities.

### **Direct Emissions Goal**

Based on the goals established in Policy 7.07, direct emissions were not to exceed 9,777 MT in 2013. Actual direct emissions in 2013 were 10,238 MT. So, the District did not meet its goal. Policy 7.07 was approved in November 2013 and it was expected to take time to achieve the goal. Staff continues to make efforts to reduce direct emissions by purchasing more efficient vehicles, alternative fueled vehicles, and reducing vehicle miles traveled.

The District is performing pilot programs for use of alternate-fuel vehicles and more efficient vehicles for supervisory personnel. The Alternative Fuel Vehicle Pilot is utilizing the Chevrolet Volt, an electric/gas vehicle, to evaluate its fuel efficiency and effectiveness for District staff. The Volt gets a 98 miles per gallon equivalent for electric only operation, and 37 miles per gallon for gasoline-only. However, the user must start and end their day in the same place for a fast charge. The pilot will be completed in July.

As vehicles are replaced, the individual workgroup needs are evaluated to determine the availability of alternative-energy or more fuel-efficient vehicles as alternatives. In FY14, the District replaced 28 vehicles to improve fuel efficiency. Overall, the new vehicles are 34 percent more efficient than the vehicles they replaced.

Staff is also working with District units and outside agencies to reduce the vehicle miles traveled for the District's fleet. The District presently has a central location in the city of Oakland where the majority of maintenance services and repairs for the District's fleet are performed. There is an identified cost associated with transporting these vehicles to and from this central location. Staff is working to establish a satellite location east of the hills to provide the same level of servicing and repair to reduce the miles traveled for vehicles and equipment on that side of the hills.

Finally, the District is installing a new fuel management system to effectively measure and manage fuel use throughout the organization. Fuel is an expensive commodity which has an impact on the environment. Managing the District's fuel use makes good financial sense and supports our sustainability goals.

### **NEXT STEPS**

Policy 7.07 directs staff to utilize the least-cost option to achieve the GHG goals. Currently, the least-cost option is tradable renewable energy credits (TRECs). TRECS are non-tangible energy commodities that represent proof a megawatt-hour of power was produced from a renewable energy source. GHG emissions are projected to exceed the goal by 4,164 MT of CO<sub>2</sub> in FY15. Purchasing TRECs to offset the projected overage would cost \$10,500.

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## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: June 19, 2014

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Michael J. Wallis, Director of Operations and Maintenance *MJW*

SUBJECT: Climate Change Update

### INTRODUCTION

Two major reports on climate change were recently released with updated information on climate science, projections, and a summary of the impacts of climate change globally and in the United States. In April 2014, the Intergovernmental Panel on Climate Change (IPCC) released its final report as part of the Fifth Assessment Report (AR5), and in May 2014 the US Global Change Research Program released its National Climate Assessment Report. Information from these reports will be discussed at the June 24, 2014 Sustainability/Energy Committee meeting.

### SUMMARY

The IPCC AR5 concluded that warming of the climate is unequivocal and that human influence on the climate is clear. Atmospheric carbon dioxide (CO<sub>2</sub>) levels are trending on the high end of the projections used in the IPCC's Fourth Assessment Report, and climate models project that the climate will continue to warm and sea level will continue to rise. Changes in the climate are expected to impact water resources globally and in the western US, including more frequent and intense droughts and changes in water demand.

### DISCUSSION

The IPCC is comprised of three working groups, each responsible for reporting on specific areas related to climate change. Each working group released its report as part of the IPCC's AR5 at different times, summarized below.

- Working Group I – Science and Assessment (September 2013)
- Working Group II – Impacts, Adaptation and Vulnerability (March 2014)
- Working Group III – Mitigation of Climate Change (April 2014)

The final synthesis report for the IPCC's AR5 will not be released until October 2014. Below are some of the key findings from the report:

- Warming of the climate is unequivocal and the human influence on the climate is clear.
- Atmospheric concentrations of greenhouse gas emissions are at unprecedented levels in at least the last 800,000 years.
- Each of the last three decades have been successively warmer than any period since 1850.
- The northern hemisphere has seen the warmest 30-year period in the last 1400 years.
- Greenland and Antarctica are continuing to lose ice mass and the rate of sea level rise since the mid-19<sup>th</sup> century has been larger than the previous two millennia.

Atmospheric levels of CO<sub>2</sub> reached a new milestone this past April 2014 when the concentration exceeded 400 parts per million (ppm) for the first time in human history. Although this threshold does not represent a tipping point, CO<sub>2</sub> levels have never been above 400 ppm in at least the last 800,000 years and are trending on the high end of the projections used in the IPCC Fourth Assessment Report.

The AR5 report also includes climate projections through 2100 based on different emissions scenarios. Some of the significant projections are summarized below.

- Global mean surface temperature for 2081 to 2100 relative to 1986 to 2005 could increase by 4.8°C under the worst-case emissions scenario.
- Global mean sea level will rise between 0.9 to 2.7 feet by 2081 to 2100.
- Changes in global water cycle in response to the warming over the 21<sup>st</sup> century will not be uniform, and the contrast in precipitation between wet and dry regions, and between wet and dry seasons, will increase.

Sea level rise is a large threat, and the IPCC AR5's projection may underestimate the actual increase in sea level rise. A recent 2014 paper in the Geophysical Research Letter concluded that the glaciers in West Antarctica are in a "terminal decline" or past the point of no return, and their loss will raise sea level by up to 4 feet in the next few centuries. Another study in the May 2014 journal Nature reported that the Antarctic ice sheet may be on the brink of a massive retreat last seen 15,000 years ago. This report estimated that loss of the ice sheet could raise sea level by 6.5 feet within a 100 year period, and 46 to 59 feet over a 300 year period.

The 2014 US National Climate Assessment had similar findings with respect to observed and projected changes in the climate. For our region, the report concluded that the western US could expect more intense short-term droughts and more long-term droughts, a longer fire season, increased competition for water resources for people and ecosystems, changes in water demand, more intense precipitation and runoff, and impacts to hydropower generation.

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DATE: June 19, 2014

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Michael J. Wallis, Director of Operations and Maintenance *MJW*

SUBJECT: Climate Change Monitoring and Response Plan

### INTRODUCTION

One of the key performance indicators under the Long-Term Water Supply Goal in the District's Strategic Plan is to develop a District Climate Change Monitoring and Response Plan (CCMRP) to inform the District of future water supply, water quality, and infrastructure planning, and to mitigate the District's greenhouse gas (GHG) emissions. The latest update to the CCMRP, which will be completed June 2014, summarizes the District's work on climate change, information from the latest Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5), and information in the 2014 US National Climate Assessment Report. This information will be discussed at the June 24, 2014 Sustainability/Energy Committee meeting.

### SUMMARY

The District's Climate Change Committee was formed in 2008 to coordinate its work on climate change since it impacts many areas of the District. The Climate Change Committee is comprised of five working groups:

- **Science and Assessment** to identify and evaluate the science of climate change.
- **Impacts, Vulnerability, and Adaptation** to assess the impacts, determine the vulnerability of District assets, and evaluate the potential for response through adaptation.
- **Mitigation** to identify and evaluate policies or projects to reduce GHG emissions.
- **Legislation and Regulation** to identify, evaluate, and influence legislation and regulations.
- **Public Outreach** to inform the public and ratepayers about climate change, potential impacts to the District, and actions the District is taking.

Since 2008, the Committee has prepared three CCMRP's and will complete its fourth update in June 2014. The District has also updated its energy policy, invested in renewable energy projects, and continues to participate in national activities related to climate change.

## DISCUSSION

The purpose of the CCMRP is to advise the District of future water supply, water quality, and infrastructure planning, to support “no regrets” infrastructure investment decisions, and to guide mitigation of District GHG emissions that contribute to climate change. The first CCMRP was prepared in 2008, and the plan was updated in 2010 and 2011. In 2003, the District updated Policy 7.07 and created GHG emission reduction goals. The next update will be completed in June 2014. The latest CCMRP includes updates of District activities related to climate change and information from the IPCC’s AR5 and the 2014 US National Climate Assessment.

New or revised recommended actions in the revised CCMRP include:

- Inventory the District’s GHG emissions annually to evaluate performance in achieving goals established in Policy 7.07.
- Investigate new renewable energy projects consistent with Policy 7.07 on energy. An updated review of photovoltaic projects will be presented at the next Sustainability/ Energy Committee meeting.
- Update the District’s Energy Management Strategy to address opportunities to reduce energy use and GHG emissions.

District staff has participated in a number of EPA working groups on climate change, including the National Drinking Water Advisory Committee’s Climate Change Working Group and the EPA Office of Water’s Climate Change Risk Assessment and Awareness Working Group. District staff is currently participating in the EPA’s working group to develop the third version of its Climate Resilience Evaluation and Awareness Tool (CREAT). CREAT is a risk assessment software package for water and wastewater utilities to better prepare utilities for understanding, planning, and developing long-range plans to adapt to potential climate change impacts, and to mitigate their contribution to climate change. Version 3.0 of CREAT will be released in 2015.

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