



**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, July 23, 2013

8:30 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. Energy Policy and Greenhouse Gas Emissions Reduction Goal (Wallis)
2. Food Waste Update (Horenstein)

ADJOURNMENT:

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: July 18, 2013

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager 

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

SUBJECT: Energy Policy and Greenhouse Gas Emissions Reduction Goal

INTRODUCTION

In 2003, the District adopted Policy 7.07, Renewable Energy, to guide cost-effective investments in renewable energy that preserve natural resources, reduce pollution, and protect the environment. In 2008, the District added an objective to its Strategic Plan to ensure the District mitigates its own contributions to greenhouse gases (GHGs) in the environment as part of its response to climate change. This memo summarizes the District's current policy and GHG emissions reduction goal, its energy use and generation, and options for a GHG emissions goal through 2040. This information will be discussed at the July 23, 2013 Sustainability/Energy Committee.

RECOMMENDATION

Revise Policy 7.07, Renewable Energy, to be a comprehensive energy policy and establish a long-term GHG emissions reduction goal through 2040.

SUMMARY

The District's renewable energy policy is being revised to provide a comprehensive energy policy to deal with all energy sources. The current policy focuses on the pursuit of renewable energy projects that result in no long-term increase in cost to customers and includes annual expenditure limits. Related to the current policy, the District's Strategic Plan has a Key Performance Indicator to achieve a 10 percent reduction in GHG emissions from District facilities and operations from 2000 levels by 2015. Under the current water demand growth projections, the District will be able to meet this goal through 2040 without taking any action.

The intent of the new policy is to establish a new GHG emissions goal for 2040 and consider renewable energy and energy conservation in daily operations and administrative facilities to meet that goal as well as economic and reliability goals. In addition, energy-saving practices and alternative energy sources will be considered as part of capital projects and facility upgrades, consistent with the triple bottom line concept in the sustainability policy.

Energy Use and Generation

In 2012, the District purchased approximately 89,000 megawatt-hours (MWh) of electricity from PG&E, the Western Area Power Administration (WAPA), and the Sacramento Municipal Utility District. Approximately 28 percent of the energy was used for water treatment, 53 percent for distribution water system pumping to our customers, and 11 percent at administration and maintenance facilities and for raw water pumping. The remaining 8 percent was used by the wastewater system. The District strives to reduce energy use through conservation and reduce energy costs by developing renewable energy projects, participating in demand reduction programs, and expanding its use of WAPA power. The District is evaluating joining a joint powers authority (JPA) to expand access to WAPA power for other District facilities; this will be discussed at the July 23, 2013 Finance Committee meeting.

The District generates electricity at a number of facilities including Pardee and Camanche Powerhouses, the Main Wastewater Treatment Plant cogeneration facility, the photovoltaic systems at various District facilities, and the Administration Building natural gas microturbines. In 2012, the District produced approximately 167,000 MWh of electricity. Hydropower is the largest component of the District's electricity generation. Overall, the District is a net energy producer.

GHG Emissions

With the projected increase in water demands to 230 million gallons a day, the planned increase in recycled water projects and the projected use of the supplemental supply facilities, the total energy purchases is estimated to increase to 127,000 MWh by 2040. Based on this estimate, the 2040 average GHG emissions are projected to increase to 41,121 metric tons (MT) CO₂ compared to 31,106 MT of CO₂ in 2012.

Public Agency GHG Emissions Goals

Attachment 1 summarizes the published GHG emissions goals for eight public agencies. They range from expressing a general policy to reduce GHG emissions to committing to become carbon neutral by 2015. Most agencies have established short-term and long-term goals.

Greenhouse Gas Key Performance Indicator

As noted in the 2012 GHG Inventory Report (Attachment 2), the District met its current GHG goal to achieve a 10 percent reduction in GHG emissions from 2000 levels by 2015, largely due to a decrease in water demands and PG&E's emissions factor. The District will continue to meet this GHG reduction goal through 2040 without taking any additional action. Three options for more aggressive GHG emissions goals have been evaluated and are presented in Figures 1 to 4 (attached). The options include:

- Option 1 – 30 Percent Goal: Baseline goal increasing to a 30 percent reduction in GHG emissions by 2040 and offsetting 100 percent of emissions from future growth.
- Option 2 – 50 Percent Goal: Baseline goal increasing to a 50 percent reduction in GHG emissions by 2040 and offsetting 100 percent of emissions from future growth.
- Carbon Free: Baseline goal increasing to a 100 percent reduction in GHG emissions by 2040 and offsetting 100 percent of emissions from future growth.

The cost for each option uses unbundled renewable energy credits (TRECs) as a baseline since it is currently the least cost and easiest to implement option. The table below summarizes the projected emissions generated in 2040 and the cost to achieve each option.

Option	2013		2040		2013 to 2040		
	Emissions Generated (MT CO ₂)	% Reduction from 2000 Levels	Emissions Generated (MT CO ₂)	% Reduction from 2000 Levels	Emissions Generated (MT CO ₂)	Emissions Offset (MT CO ₂)	Cost with TRECs
Baseline	29,420	35%	35,305	22%	920,000	1,700	\$0
Option 1 - 30%	29,420	35%	31,106	30%	920,000	51,000	\$240,000
Option 2 - 50%	29,420	35%	22,674	50%	920,000	103,400	\$490,000
Carbon Free	29,420	35%	0	100%	920,000	384,300	\$1,820,000

Criteria for Selecting Options to Meet GHG Goal

Participation in the City of Richmond's Community Choice Aggregation (CCA) program (Light Green 50 percent reduction; Dark Green 100 percent reduction) will be used to illustrate the decision-making process for selecting projects/programs to reduce GHG emissions. The current CCA program relies mainly on TRECs. To achieve more aggressive GHG emissions reductions, the District could participate in CCA programs, develop renewable energy projects, expand use of WAPA, and purchase TRECs. Two criteria would be considered in the decision-making:

1. Will the project/program provide an economic benefit to the District?
2. If further reduction in GHG emissions is needed, compare the cost per lb CO₂ reduction for the project/program to the cost of purchasing TRECs and select the least cost option.

Criteria 1 – Cost Savings

The annual PG&E cost for 23 accounts in the City of Richmond totals \$43,414 compared to the estimated cost of participating in the City's Light Green program of \$42,102. Switching to the Light Green program meets the criteria. Participation in the Deep Green program would cost \$44,703 annually, which is more expensive than PG&E and does not meet the criteria.

Criteria 2 – Compare Cost to Reduce GHG Emissions to TREC Option

Assuming further GHG emission reductions are necessary, the incremental cost difference to participate in the Deep Green program is \$2,601 (i.e., \$44,703 minus \$42,102) and would reduce GHG emissions by 100,370 lbs. of CO₂ or \$0.026 per lb. CO₂. TRECs currently cost \$0.80 per MWh, or \$0.002 per lb. CO₂. In this example, the most cost-effective option would be to select the Light Green program and meet the GHG goal through the purchase of TRECs. Based on input from the Sustainability/Energy Committee, the District has switched 23 accounts in Richmond to the Deep Green program.

NEXT STEPS

Setting a GHG emissions goal will be a key driver in providing policy direction to staff. The goal recommended by the Sustainability/Energy Committee will be included in a revised energy policy, and will be presented to the Board of Directors following the normal review process.

ARC:MJW:ss

PUBLIC AGENCY GHG EMISSIONS GOALS	
Agency	Greenhouse Gas Reduction Goals
East Bay Municipal Utility District	Short-Term Goal: 10% reduction below 2000 levels by 2015
California's Executive Order (EO) S-3-05 (2005) (only applies to State agencies)	<ul style="list-style-type: none"> • Short-Term Goal: Reduce statewide emissions to 2000 levels by 2010 • Intermediate Goal: Reduce statewide emissions to 1990 levels by 2020 • Long-Term Goal: Reduce statewide emissions to 80% below 1990 levels by 2050
California Department of Water Resources	<ul style="list-style-type: none"> • Short-Term Goal: 50% reduction below 1990 levels by 2020 • Long-Term Goal: 80% reduction below 1990 levels by 2050
City of Seattle	<ul style="list-style-type: none"> • Short-Term Goal: 30% reduction in GHG below 2008 baseline by 2020 • Intermediate Goal: 58% reduction in GHG below 2008 baseline by 2030 • Long-Term Goal: GHG emissions to zero by 2050
Sonoma County Water Agency	Goal is to achieve a carbon neutral energy supply by 2015
Santa Clara Valley Water District	<ul style="list-style-type: none"> • Goal: Reduce GHG emissions when reasonable and appropriate • Increase feet fuel use efficiency • Maintain a portfolio of alternative energy supplies • Increase energy use efficiency • Identify and develop opportunities for the District to employ cost-effective alternative sources of alternative energy that reduce GHG emissions
City of San Francisco	<ul style="list-style-type: none"> • Short-Term Goal: 20% reduction below 1990 levels by 2012 • Intermediate Goal: 25% reduction in GHG below 1990 levels by July 2017 • Long-Term Goal: 80% reduction below 1990 levels by 2050
Los Angeles Department of Water and Power	<ul style="list-style-type: none"> • Short-Term Goal: 20% of power is from renewable sources by 2020 • Long-Term Goal: 60% reduction in GHG below 1990 levels by 2020
Metropolitan Water District of Southern California	Carbon Reduction Goals: Develop cost-effective projects and programs identified in the EMP which, if implemented, could reduce Metropolitan's carbon footprint at the retail level in 2015 by 50 percent, at the retail level in 2020 by 100 percent, and at both retail and wholesale levels in 2030 by 100 percent

2012 GREENHOUSE GAS INVENTORY REPORT

SUMMARY

In 2006, the District was the first water utility to join the California Climate Action Registry (CCAR). The CCAR was formerly a non-profit public/private partnership that served as a voluntary Greenhouse Gas (GHG) registry to encourage and promote early actions to reduce GHG emissions. The District participated in the CCAR for three years and calculated, verified, and publicly-reported its District-wide CO₂ emissions inventories for calendar years 2005, 2006, and 2007. The District ended its participation in the CCAR since the benefits did not justify the verification and reporting costs. However, the District continues to quantify and track District-wide GHG emissions using CCAR protocols. GHG emissions are not measured directly but are calculated indirectly using emissions factors. In 2012, GHG emissions totaled 31,106 Metric Tons (MT) that resulted in a 32 percent reduction from year 2000 levels and meets the District's Key Performance Indicator.

2012 GREENHOUSE GAS INVENTORY

There are many different activities and a variety of 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, although some minor emissions also occur from process activities and other fugitive emissions. Direct emissions from combustion (MT of CO₂) are calculated using the total annual fuel consumption multiplied by an emissions factor (lbs. CO₂/gallon of fuels used) for that specific fuel (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 (lbs. CO₂/kWh) for the electricity source. The emissions factor is derived based on the fuel used by the electrical utility to generate.

Electricity Emissions Factors

The District has used the CCAR protocols for calculating its GHG inventory. The CCAR protocols rely upon an emissions factor from the Western United States electrical grid. The District acquires power from several sources and will use renewable energy projects in part based on the electrical emissions factors for the specific power providers (e.g., PG&E) for establishing the inventory. The inventories for the previous years, including the baseline (year 2000), have been revised to reflect actual emissions factors.

Comparison to Key Performance Indicator in Strategic Plan

The District's total GHG emissions were 31,106 MT in 2012 compared to baseline GHG emissions of 45,479 MT in 2000, which amounts to a reduction of 32 percent on an absolute

basis. These results demonstrate that the District has already met the current Key Performance Indicator of achieving a 10 percent reduction in GHG emissions from District facilities from 2000 levels by 2015.

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. The table below summarizes the 2012 GHG emissions for each of the sectors. In 2012, the Treatment and Distribution sector was the most significant source of GHG emissions, while the Raw Water (Other) sector was the least significant source. However, the Raw Water sector can vary widely from year to year based on operation of raw water pumps.

Sector	GHG Emissions (MT)	Percent of Total
Treatment and Distribution	14,071	45.2%
Wastewater	4,260	13.7%
Fleet	7,523	24.2%
Buildings	4,485	14.4%
Raw Water (Other)	767	2.5%
Total	31,106	100.0%

The majority of the District's emissions come from the use of electricity to pump and treat water and wastewater. The primary reasons our emissions are falling is because the electricity we use is from more renewable sources and we are using less electricity to pump and treat water and wastewater due to reduced water production. California's Renewable Portfolio Standard will continue to drive increased use of renewable energy sources, which will drive the emissions factor and associated GHG emissions, even lower in future years.

Figure 1: Baseline Greenhouse Gas Emissions Goal

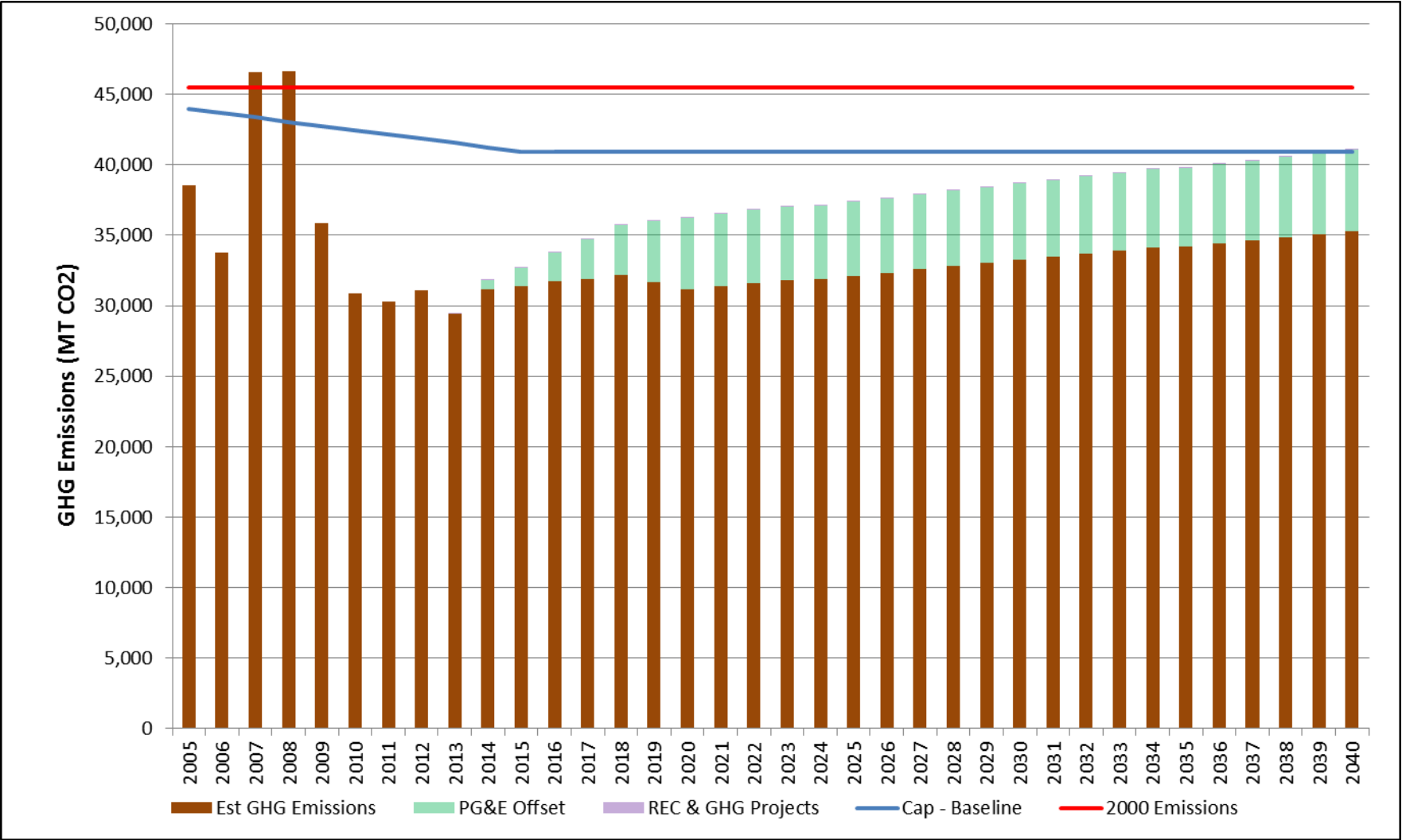


Figure 2: Option 1 - Offset Future Growth, Increase GHG Reduction Goal to 30% by 2040

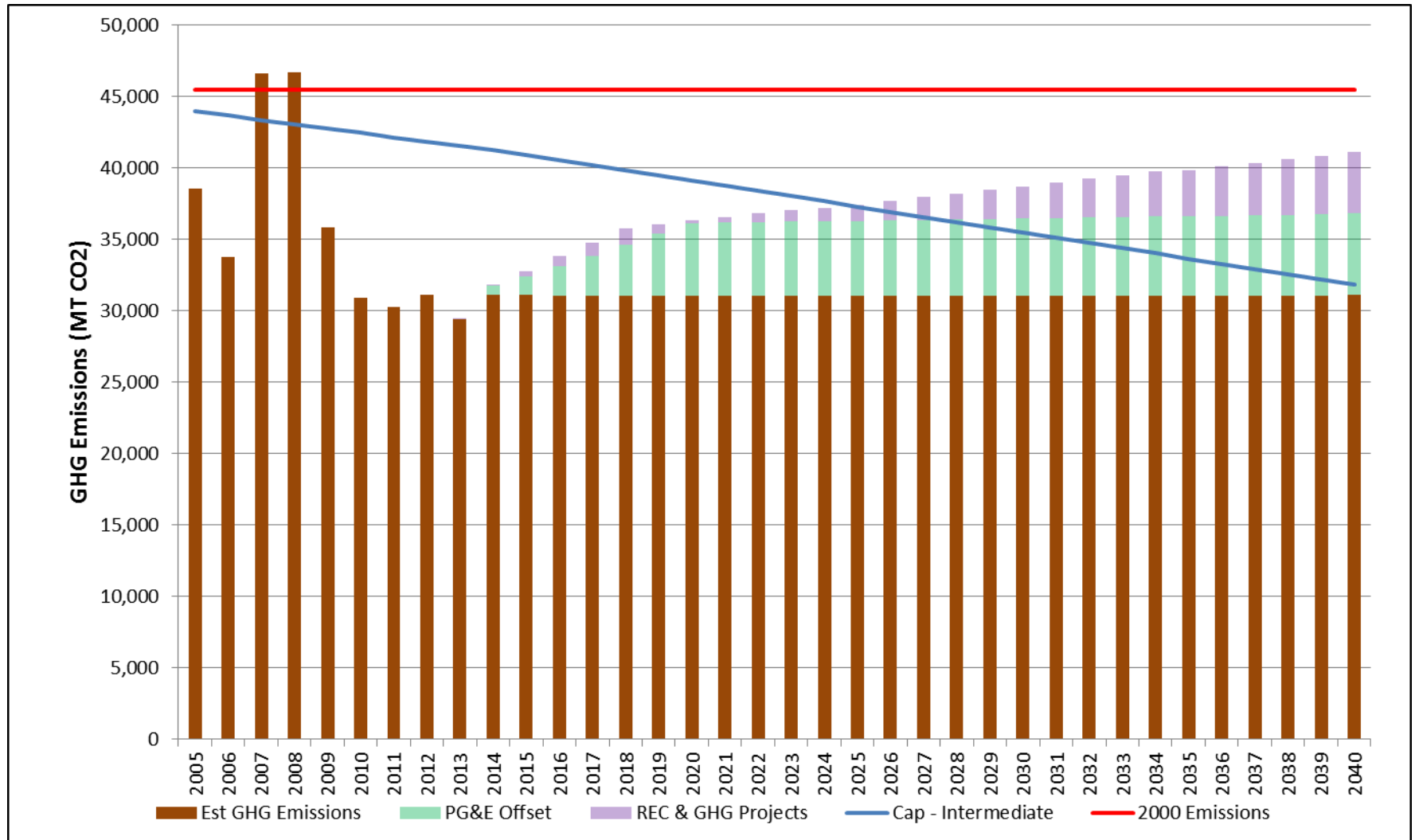


Figure 3: Option 2 - Offset Future Growth, Increase GHG Reduction Goal to 50% by 2040

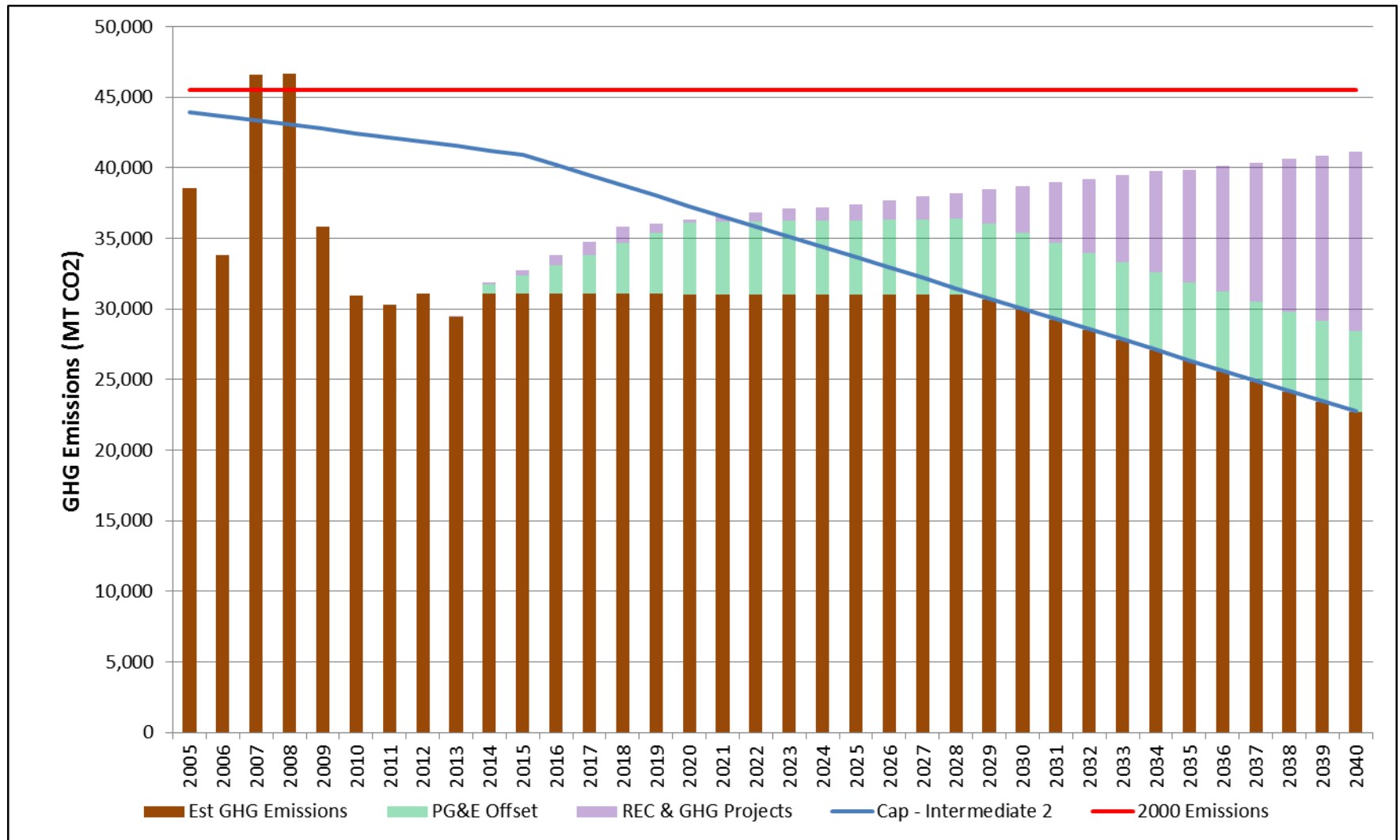
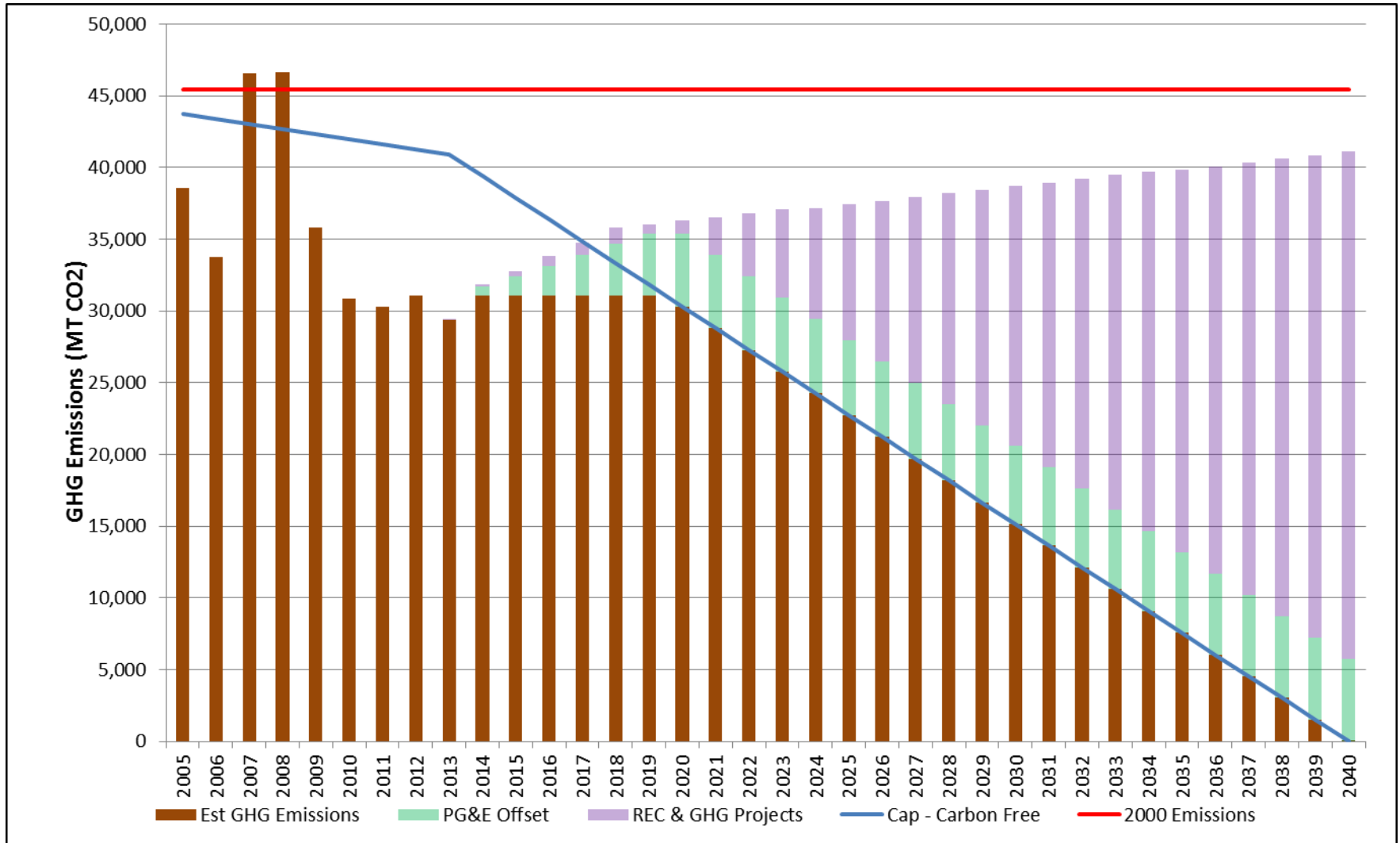


Figure 4: Offset Future Growth, Carbon Free by 2040



EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: July 18, 2013

MEMO TO: Board of Directors

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

FROM: Bennett K. Horenstein, Director of Wastewater *BH*

SUBJECT: Food Waste Update

SUMMARY

The District has been pursuing high strength energy producing wastes to grow the District's Resource Recovery Program. As competition has grown for fats, oils and grease (FOG) and food processing by-products traveling long distances to Oakland from the Central Valley and other regions of the state, the District has been working to expand sourcing and processing of local food waste. Food waste is the single largest, locally available high strength material suitable for digestion. Staff will provide further information on the status of the District's food waste efforts to the Sustainability/Energy Committee at its July 23, 2013 meeting.

DISCUSSION

Three major opportunities for local food waste sources are described below.

Recology

Recology is a solid waste hauler that has served San Francisco and other Bay Area communities for over 90 years. In 2011, the District signed contracts with Recology for lease of land for pre-processing of food waste, and sourcing of pre-processed food waste. Recology recently approached the District with a proposal for a pilot project in which Recology would process smaller amounts of material on the leased area as an initial step towards the full project. The District is currently in discussions with Recology to develop an amendment to the current agreement for the pilot project.

The pilot amendment would grant Recology the ability to use up to 1 acre of the leased area to locate Recology food waste pre-processing equipment for a period of approximately 2.5 years. Other terms under discussion include the amounts and types of material that could be processed, how odors would be controlled, facility construction, including provision of utilities such as power, recycled water, and piping of the food waste slurry resulting from Recology pre-processing to the District. Benefits to the District of the pilot program would include ability to process and digest materials on-site as soon as late fall 2013, ability to attract new materials such as off-spec foods requiring de-packaging, in addition to tip fee and energy value. If negotiations with Recology are successful, the amendment is expected to be brought to the Board on August 13, 2013.

With regard to the full-scale project, Recology has been working on steps to site the food waste pre-processing facility which requires approval of a Solid Waste Facilities Permit by the State of California's solid waste management authority, CalRecycle. The first step towards this permit, naming of the proposed pre-processing facility on District land in the City of Oakland's Nondisposal Facility Element (NDFE) has been completed. The next step is obtaining an amendment to Alameda County's Integrated Waste Management Plan (CoIWMP) by StopWaste.org, the Alameda County Waste Management Authority/Alameda County Recycling Board. The first hearing on this amendment was held on July 11, 2013 and the second reading is scheduled for September 25, 2013. After this amendment is complete, the District anticipates that Recology will submit an application for a Solid Waste Facilities Permit to CalRecycle. Permit processing could take up to one year.

Oakland

The City of Oakland issued an RFP for Zero Waste Services in September 2012, and received two proposals deemed responsive. The District was not included in these two proposals from Waste Management and California Waste Solutions and the District's direct submittal as part of this process was deemed non-responsive. On May 28, 2013, the Oakland City Council voted to begin negotiations with the two firms and directed City staff to return to the Council with further information on processing Oakland's organics at EBMUD. District staff estimates that up to 100 tons per day of commercial food waste and 50 tons per day of multi-family food waste will be collected under the new franchise agreement which will start in 2015.

CCCSWA

The Central Contra Costa Solid Waste Authority (CCCSWA) serves Danville, Lafayette, Moraga, Orinda, Walnut Creek, and unincorporated areas of Contra Costa County with solid waste services. The District has a current agreement with CCCSWA, under which the District receives approximately 10 tons per day of CCCSWA's source-separated food waste. CCCSWA's franchise agreements for solid waste services will terminate in 2015 and CCCSWA is currently entering into a competitive RFP process for 10-12 years of materials collection and processing services. Proposals are due to CCCSWA by October 1, 2013.

CCCSWA has expressed interest in continuing to use District processing services for its commercial food waste. The CCCSWA RFP states "CCCSWA intends to continue its partnership with EBMUD beyond that time, but would like to understand what other processing options may be available that offer the same types of benefits. As a result, through this RFP, CCCSWA is accepting proposals from proposers that can process the CCCSWA's commercial food waste and produce both digestate/compost and energy from it and will consider any options it receives along with the EBMUD option." District staff will continue to work with CCCSWA and with haulers expected to submit proposals to CCCSWA with the goal of continuing to process CCCSWA's commercial food waste.

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