



**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, February 26, 2013

9:15 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. Wastewater Energy System Master Plan Implementation Update (Haunschild)
2. CEC-Funded Biodiesel Study Update (Haunschild)
3. District Renewable Energy and Sustainability Policy Reviews (Wallis)

ADJOURNMENT:

Disability Notice

If you require a disability-related modification or accommodation to participate in an EBMUD public meeting please call the Office of the Secretary (510) 287-0404. We will make reasonable arrangements to ensure accessibility. Some special equipment arrangements may require 48 hours advance notice.

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

DATE: February 21, 2013

MEMO TO: Board of Directors

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

FROM: Kurt B. Haunschild, Acting Director of Wastewater *KBH*

SUBJECT: Wastewater Energy System Master Plan Implementation Update

SUMMARY

The Main Wastewater Treatment Plant (MWWTP) Energy System Master Plan (ESMP) identifies cost-effective measures to reduce on-site energy use, increase energy production, maximize the value obtained for energy exported, and formalize energy management practices to sustain the energy-efficiency improvements. The plan was completed in October 2012 and identified a suite of recommended energy conservation measures to be implemented at the MWWTP. Staff will provide an update on the findings of the ESMP and implementation status of these energy conservation measures to the Sustainability/Energy Committee on February 26, 2013.

BACKGROUND

Between 2000 and 2004, the average annual electricity consumption at the MWWTP was reduced by 20 percent through energy conservation projects. Since then, electricity consumption at the MWWTP increased due to higher organic loading and new facilities (e.g., East Bayshore Water Recycling Plant, two high-speed centrifuges). In 2011, staff conducted a field audit to identify new energy conservation opportunities. Based on a feasibility and cost-effectiveness review, 23 conservation measures were recommended for implementation. Many of the measures are being tested or have already been adopted. Implementation of energy conservation measures recommended in the Energy System Master Plan complements parallel, ongoing efforts to increase renewable energy production at the MWWTP. In 2012, it became the first wastewater treatment plant in North America to produce more renewable electricity on-site than is required for operation.

DISCUSSION

Many of the ESMP recommendations require operational changes rather than capital investments. These improvements are projected to cut energy use by 13 percent and generate annual savings/revenue of approximately \$467,000 by 2018. Three operational changes have been tested and implemented and are generating \$49,000 in annual savings. Seven additional operating energy conservation measures are scheduled to be implemented this year, with an estimated additional \$224,000 in annual cost savings. Eight capital improvement projects are scheduled for

implementation in 2013 and 2014, which will result in an additional annual savings of approximately \$93,000.

The remaining conservation measures will be refined and considered in the future. These measures have a longer payback or require additional, more complex testing prior to implementation. They would contribute an additional \$101,000 in annual savings.

The ESMP recommended organizational improvements to maintain the focus on energy savings into the future. An intradepartmental team with representatives from operations, maintenance and engineering work units was formed in 2011 to direct the initial energy field audit. The team shares the status of energy saving efforts with staff to educate employees about energy issues, address misconceptions and help maintain momentum for energy-saving improvements.

The team developed energy and sustainability checklists that will guide the planning and design review process for future wastewater projects. The planning checklist provides an extensive list of considerations and the design checklist provides targeted questions related to process equipment selection, pumping, aeration, office buildings and new sites. The checklists also provide a reporting tool to better understand how energy use is affected by planning and design decisions. The team maintains responsibility for implementing improvements, tracking progress toward goals, vetting new ideas and status reporting.

NEXT STEPS

Staff will continue to monitor progress on implementation of the ESMP and provide updates as warranted.

KBH:ARC:arc

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: February 21, 2013

MEMO TO: Board of Directors

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

FROM: Kurt B. Haunschild, Acting Director of Wastewater *KBH*

SUBJECT: CEC-Funded Biodiesel Study Update

INTRODUCTION

The District received a \$1 million grant from the California Energy Commission (CEC) in 2011 to investigate low-cost methods for producing biodiesel from waste grease and oils. Staff will provide an update on the status of the ongoing biodiesel research project to the Sustainability/Energy Committee on February 26, 2013.

DISCUSSION

Fats, oil, and grease waste (FOG) discharged to wastewater collection systems can cause sewer backups and overflows. Recently, wastewater treatment plants (WWTPs) have started accepting trucked FOG to feed directly to their anaerobic digesters to produce renewable energy. As an alternative, brown grease can be extracted from FOG and processed to produce biodiesel. Interest in this alternative has increased with rising fuel prices, concerns of greenhouse gas emissions, and negative impacts from diesel emissions on local air quality.

In 2007, the District completed a biodiesel pilot study which demonstrated that producing biodiesel from brown grease was technically feasible, but the method used was too expensive to be implemented at a larger scale. The District's 2007 study also showed that biodiesel produced from brown grease did not meet the ultra low sulfur standards required for U.S. vehicles made after 2006. The District then conducted sulfur removal bench tests and showed that vacuum distillation followed by activated carbon adsorption could remove biodiesel sulfur levels down to the ultra low standards, but at a high cost. The goal of the CEC-funded study is to identify and test lower cost alternatives to produce biodiesel from brown grease that meet the ultra low sulfur standards.

The CEC-funded study is approximately 50% complete. Staff is currently testing an alternative method for converting brown grease into biodiesel using a different catalyst, which could reduce production costs. In addition, staff has made substantial progress in achieving the ultra low sulfur standards using non-distillation methods. These methods have the potential to reduce treatment costs, but further study is needed to verify actual treatment costs to identify if these methods can be cost-effectively implemented in a full-scale biodiesel operation at the Main Wastewater Treatment Plant. However, the study findings to date suggest it may be difficult to transition

from a study environment to a biodiesel operation at the Main Wastewater Treatment Plant in a cost-effective way.

NEXT STEPS

In the next year of the biodiesel study, staff will continue to evaluate low-cost methods for sulfur removal and alternative brown grease biodiesel production. In addition, staff will investigate using materials harvested from sewage flowing into our wastewater treatment plant to produce biodiesel. If successful, the outcome from this work might allow wastewater agencies with sufficient feedstock to cost-effectively produce biodiesel from wastes and use them to fuel diesel vehicle fleets.

KBH:DMG:ls

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: February 21, 2013

MEMO TO: Board of Directors

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

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

SUBJECT: District Renewable Energy and Sustainability Policy Reviews

INTRODUCTION

District policies and the Strategic Plan support sustainable operations and reducing the District's environmental footprint. The policies and performance measures were discussed as part of the Board's review of Community Choice Aggregation (CCA) at the December 11, 2012 meeting. As a result, the Board directed staff to revisit Policy 7.07, Renewable Energy, which focuses on developing renewable energy projects as part of the District's ongoing infrastructure management effort, and to consider whether there are changes to its goals and objectives that could strengthen the policy. This memo describes the result of staff's review of the Renewable Energy policy and related policies, which will be discussed at the February 26, 2013 Sustainability/Energy Committee.

DISCUSSION

Policy 7.05, Sustainability, supports sustainable operations, maintenance, planning, design, and construction activities that avoid, minimize or mitigate adverse effects to the economy, environment, employees, and the public. The intent is to make decisions on investments in infrastructure, practices, etc. based on impacts to economic, environmental and human resources (i.e., triple bottom line).

Policy 7.07, Renewable Energy, supports the District's sustainability efforts that focus on developing cost-effective renewable energy projects that preserve natural resources, reduce pollution, and protect the environment. Investing in renewable energy projects supports the District's sustainability goals, increases energy reliability, and supports stable energy rates. Policy 7.07 currently provides direction on renewable energy production but does not address the purchase of renewable energy.

In addition, the District's Strategic Plan supports Policy 7.05 by including goals for water quality and environmental protection, and long term financial stability. One of our Key Performance Indicators for water quality and environmental protection is to achieve a 10 percent net reduction

in greenhouse gas (GHG) emissions from District operations and facilities over the 2000 baseline by 2015.

Policy Revisions

In general, the existing policies and the strategic plan goals are not well integrated and do not provide direction to staff on procurement of renewable energy. Consequently, staff recommends the following updates to our policies:

Policy 7.05, Sustainability

- Add an objective to establish a decision process that incorporates economic, environmental, and social factors. Procurement of renewable energy either directly or through a CCA must meet sustainability and renewable energy goals. Items that would be considered in this decision are the cost per kilowatt-hour, associated GHGs generated, and reliability.
- Add an objective to mitigate climate change and reduce GHG emissions.
- Add a requirement to provide an annual report to the Board of Directors.

Policy 7.07, Renewable Energy

- Expand the scope of this policy to include purchases of renewable energy as well as projects.
- Ensure the policy is consistent with and supports the objectives of the sustainability policy.
- Investments in renewable energy projects and procurement must consider a balance between economic, environmental, and social factors.
- Eliminate the limit on the net annual cost increase associated with all new Water System renewable energy projects. Renewable energy projects and purchases will be justified through the same benefit/cost analysis as other District projects and funded through the standard budget process.

NEXT STEPS

After receiving the Sustainability/Energy Committee's feedback on the types of changes proposed for the two policies, staff will prepare draft revisions and, as per standard practice, circulate the draft policies for staff review prior to bringing the recommended changes back to Finance Committee and the full Board for consideration of approval within the next few months.

ARC:MJW:ss