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, April 23, 2019
9:30 a.m.
Training Resource Center

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

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.	Photovoltaic Update	(Briggs)
2.	Climate Action Policy	(Chan)
3.	Wastewater Biogas Utilization Update	(White)

ADJOURNMENT:

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: April 18, 2019

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager ARC

FROM: David A. Briggs, Manager of Water Operations DAB

SUBJECT: Photovoltaic Update

INTRODUCTION

This memo provides an update on the District's efforts to develop photovoltaic (PV) projects on District property to reduce operational costs and increase the use of renewable, emissions-free energy sources. This information will be presented at the April 23, 2019 Sustainability/Energy Committee meeting.

DISCUSSION

Since 2003, the District has developed nine PV projects under various contractual arrangements. A tenth project was initiated in 2016 adjacent to Camanche Dam through a Power Purchase Agreement (PPA) with SolarCity (now Tesla). Construction of the 363 kilowatt (kW) system began in September 2018 and is scheduled to be completed in May 2019. The project will operate under Pacific Gas and Electric's (PG&E) Net Energy Metering Aggregation (NEMA) program and supply power to District facilities in the Camanche and Pardee areas including the Mokelumne River Fish Hatchery. In total, the ten PV projects will provide nearly two megawatts (MW) of PV capacity and will produce up to 3,200 MW-hours of electricity annually or about two percent of the District's total annual energy use.

Large-Scale PV

Larger PV installations up to 5 MW are potentially feasible under PG&E's Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) program. Two available properties in the District's East Bay watershed, the Duffel site in the City of Orinda and the Navy Flat site north of Castro Valley, are actively being pursued. A third potential site was recently identified adjacent to Amador Reservoir in San Ramon which could support an installation of up to 3 MW. The site is near a PG&E substation and may prove more feasible than the Navy Flat site. The District will not likely implement more than two large scale PV projects.

For each 5 MW implemented, the District could offset up to 10 percent of its energy purchases from PG&E and substantially green the District's energy portfolio. Development costs for each

site can be recovered within five to eight years allowing future District-wide operational costs to be offset for the remaining useable life of the project (about 20 years).

On March 5, 2019, staff presented the proposed Duffel site project to the Orinda City Council in collaboration with Orinda staff, and reviewed the project's consistency with the Orinda General Plan and zoning ordinances. Comments from council members and the public related to general design parameters, including under-grounding electrical connections, preventing wildfire when new power poles are added, reducing potential noise from the electrical inverters, and reducing glare.

Floating Photovoltaics

Installation of a PV system on top of a water body is not a new concept, and various projects have periodically been proposed to the District. A floating PV system on the District's open water reservoirs would have greater operation and maintenance costs compared to ground-based PV systems. Floating PV systems are difficult to engineer after accounting for changes in reservoir elevation, have higher interconnect costs, may require approval from California Division of Safety of Dams or the Federal Energy Regulatory Commission, and would interfere with recreational activities. Floating PV systems are usually implemented where land is scarce and the water body is static (e.g., a sedimentation basin in an urban setting).

NEXT STEPS

Future Board consideration for the Duffel site will require three separate Board actions: approval of the interconnection agreement with PG&E (August 2019), approval of a PPA (August 2019), and approval of the CEQA document (November 2019). Additional public review will occur during the CEQA and design phases.

The project approval process for the Navy Flat site will begin after PG&E completes their interconnection study. Staff will then submit a pre-application for a county use permit. Following review of the project application by Alameda County, the District will present the project to the Castro Valley Municipal Advisory Council, which would make a recommendation to the Alameda County Board of Zoning Adjustments.

While waiting for PG&E's Navy Flat interconnection cost estimate, staff will evaluate the implementation cost, potential energy generation, and potential environmental impacts of a PV project near Amador Reservoir as a backup site.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: April 18, 2019

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager ARC

FROM: Clifford C. Chan, Director of Operations and Maintenance CCC

SUBJECT: Climate Action Policy

INTRODUCTION

The initial draft of the Climate Action Policy was presented to the Sustainability/Energy Committee on February 26, 2019. The policy was revised based on Committee feedback. This item will be presented at the April 23, 2019 Sustainability/Energy Committee meeting.

DISCUSSION

In response to comments from Committee members at the February 26, 2019 Sustainability/Energy Committee meeting, staff updated the draft policy to incorporate sustainability (i.e., the triple bottom line which addresses social, environmental, and financial factors) and reference the District's Climate Change Monitoring and Response Plan.

The policy affirms the District's commitment to:

- Plan for climate change by applying the best available science
- Integrate climate science into the District's planning, design, and operations
- Complete an annual GHG emissions inventory and reduce GHG emissions
- Support legislation and regulations to address the impact of climate change
- Continue to consider environmental, social, and governance factors when investing as part of the District's retirement system
- Collaborate with utilities, agencies, researchers, regulators and the community
- Educate communities and employees on the impacts of climate change
- Take a leadership role in the industry and the community in addressing climate change
- Consider sustainability (social, environmental, financial) in decision making

NEXT STEPS

Staff will incorporate any additional feedback from the Committee on the draft policy and will bring it to the Finance/Administration Committee on May 28, 2019, and to the full Board for consideration on June 11, 2019. In addition, staff is updating the District's Climate Change Monitoring and Response Plan and Policy 7.07 - Energy. The revised plan and Policy 7.07 will be presented at the next Sustainability/Energy Committee meeting.

Attachments

ARC:CCC:rk

EBMUD

Policy 7.XX

EFFECTIVE

CLIMATE ACTION

IT IS THE POLICY OF THE EAST BAY MUNICIPAL UTILITY DISTRICT TO:

Consider the impacts of climate change and take appropriate action to understand, mitigate and adapt to those impacts through sustainable activities that manage long-term economic, environmental and human resource benefits.

Overview

The District recognizes that climate change will result in rising sea levels, reduced snowpack, increased climate variability, and impacts to ecosystems on District watersheds, Furthermore, the District recognizes that these changes will impact water and wastewater operations and infrastructure, and our communitiesy.

In addition, tThe District further recognizes that climate change will have significant impacts worldwide and may have disproportionate impacts to marginalized populations. The potential impacts of climate change are well-documented by the United Nations Intergovernmental Panel on Climate Change, in California's Climate Change Assessment, and the United States' National Climate Assessment reports.

The District maintains a Climate Change Monitoring and Response Plan to inform the District's planning efforts for future water supply, water quality and infrastructure and to support sound water and wastewater infrastructure investment decisions.

Objective

The District will consider climate change impacts in its policies, procedures, projects, and work practices. In doing so, the District will:

- Monitor climate science and identify the potential impacts to the District;
- Plan for climate change by applying the best available science to understand climate risks and implement adaptation and mitigation strategies to improve resilience;
- Integrate climate science into planning, design, construction, watershed land management, and operations and maintenance;
- Complete an annual greenhouse gas (GHG) emissions inventory;
- Reduce GHG emissions consistent with the District's Energy Policy;
- Support federal, state, and regional action to respond to the impacts of climate change;
- Support appropriate legislation and regulations to fund and mitigate climate change impacts and promote collaborative adaptation measures;
- Continue to consider environmental, social, and governance factors in the portfolio management of the District's retirement system to address sustainability and evaluate climate change exposure
- Collaborate with public agencies, researchers, regulators, and the communitiesy to develop sustainable solutions;
- Educate the communitiesy and its employees on the impacts of climate change; and
- Take a leadership role in the industry and the community inwith respect to addressing climate change.

References

Policy 7.05 – Sustainability and Resilience
Policy 7.07 – Energy
Policy 9.04 – Watershed Management and Use
Policy 9.06 – Bay-Delta Protection

EBMUD

Policy 7.XX

EFFECTIVE

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- Collaborate with public agencies, researchers, regulators and communities to develop sustainable solutions
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Policy 9.06 – Bay-Delta Protection

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: April 18, 2019

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager ARC

FROM: Eileen M. White, Director of Wastewater Eileen M. White

SUBJECT: Wastewater Biogas Utilization Update

SUMMARY

At the Sustainability/Energy Committee meeting on February 26, 2019, staff presented a proposed biogas upgrade project at the Main Wastewater Treatment Plant (MWWTP). The presentation included discussion of a proposed $3 million grant award from the California Energy Commission (CEC) for the project. At the time of the presentation, staff was evaluating two critical project risk factors: the PG&E bankruptcy proceeding and the potential loss of a regulatory exemption. On March 14, 2019, staff sent a memo to the Board explaining staff's rationale for not proceeding with the biogas upgrade project, and notifying the CEC that the District would not accept the grant award. The CEC was notified of this decision on March 18, 2019. An update on this evaluation, staff conclusions, and alternatives raised by the Committee on February 26, 2019 will be presented at the April 23, 2019 Sustainability/Energy Committee meeting.

DISCUSSION

The digesters produce biogas that is used to generate electricity onsite to power the MWWTP. Surplus electricity is sold to the Port of Oakland under a Power Purchase Agreement (PPA) that expires in 2022. The market price of surplus renewable energy has declined significantly over the last several years and is not expected to increase in the near term. Staff has investigated alternative uses for biogas to ensure that it can continue to be beneficially reused. Upgrading biogas to pipeline quality for injection into the PG&E natural gas pipeline network for use as a transportation fuel appeared to be a favorable alternative with a much greater product value than using it to generate electricity. The CEC had proposed to award the District a $3 million grant for a biogas upgrade project.

Determination Not to Proceed with Biogas Upgrading

The determination not to accept the grant award was based on two primary risks. The first risk to the project was the PG&E bankruptcy proceeding. The bankruptcy could have presented unforeseen complications with the potential to delay the interconnection and/or jeopardize the

District's ability to receive the expected incentive funding to offset a portion of the interconnection costs. Because staff estimates there is a limited window to obtain maximum value for biogas as transportation fuel, any project delay due to the PG&E bankruptcy would reduce the expected overall revenue and cost-effectiveness of the project.

The second risk was regulatory in nature. Although the District currently operates a large and complex biogas system, the MWWTP is not subject to a particular set of stringent workplace health and safety regulations because of an exemption for onsite fuel use. Following discussions with internal experts, other wastewater agencies, and industry groups, staff concluded the MWWTP would no longer be exempt if biogas were upgraded and sent offsite. These regulations, which ordinarily apply to refineries and large chemical production facilities, would result in significant implications for project costs and schedule. Staff estimated the project would require up to seven additional staff and $500,000 in consulting costs over the first several years, with unknown capital costs to replace current equipment to meet documentation requirements.

Impact on Other Biogas Projects

The onsite fuel use exemption that currently applies to the MWWTP is relatively narrow and only applies as long as biogas is used as a fuel onsite or held onsite for retail sale as a fuel. Selling raw biogas to a third party or upgrading the biogas and moving it offsite would result in loss of the exemption, despite the fact that added equipment and process changes are relatively minor. Biogas projects that use the gas as a fuel onsite, like electricity production or biosolids drying, would maintain the exemption. Fuel sold by the District at an onsite fueling station would also maintain the exemption. Some wastewater facilities without the exemption are currently operating under these regulations at great cost. The regulations are likely to deter facilities similar to the MWWTP from developing these sorts of projects in the future.

Impact on Resource Recovery Program

Over the past two decades, the Resource Recovery (R2) Program has been focused on increasing the amount of high-strength waste for additional biogas and energy generation. By not pursuing the proposed biogas upgrade project, the R2 Program will need to adjust its strategies to reduce flaring in the near term while preserving flexibility for growth in the longer term. Several efforts are underway to reduce flaring due to variability in deliveries. Staff will use variable pricing to attract more waste when the resulting biogas can best be utilized. In addition, upcoming capital improvements for the digesters will add additional onsite storage to dampen the fluctuations.

Over the longer term, it is expected that many high-strength waste generators will ultimately find alternative treatment and disposal options that are closer to the waste source, resulting in losses to the R2 Program. This is especially true for those trucked long distances through the Central Valley. In the future, expanding biogas utilization capacity may become financially viable due to changing regulations, technologies, and markets. For these two reasons, the R2 Program will focus growth efforts on attracting incremental growth in high-value wastes that are likely to be long-term customers (e.g., local sources of food waste). Staff will also continue to examine and

evaluate alternative biogas utilization projects to reduce flaring and increase the beneficial use of biogas.

Biogas Utilization Alternatives Discussed by Committee

At the Sustainability/Energy Committee meeting on February 26, 2019, the Committee raised several alternatives for further analysis. Some of these alternatives were specifically related to the biogas upgrade project (e.g., gas leakage). As that project is no longer moving forward, those items are not addressed here. The other suggestions are discussed below.

Explore expanding Power Generation Station capacity. Anticipated renewable power prices do not support major capital investments, such as adding a second turbine or a fuel cell. If the market value of renewable electricity continues to decline, the revenues may not even cover the costs to operate the existing facilities; however, staff will explore lower capital cost improvements that may be cost-effective depending on the future electricity value.

Explore the possibility of selling power to East Bay Community Energy (EBCE). Under the current PPA, the District is required to sell excess power exclusively to the Port of Oakland until November 2022. Towards the end of the current PPA, in 2021, staff will evaluate selling excess power to alternative buyers including EBCE.

Evaluate a partnership with AC Transit. Staff reached out to AC Transit to explore opportunities for collaboration on a project. AC Transit was receptive to the idea; however, to be feasible, any project would need to ensure that the MWWTP maintains its regulatory exemption. Staff will work with AC Transit to explore what projects might be possible given this restriction.

Explore whether the CEC grant funding could be used for a hydrogen project. The grant awarded to the District specifically excludes the production of hydrogen because hydrogen has its own dedicated grant opportunities, which the District could explore in the future if relevant.

NEXT STEPS

Staff will continue to work with industry groups and regulators to better understand the intent of the regulatory exemption and the possibility for it to be modified to allow beneficial reuse of biogas offsite. The current limits on biogas utilization capacity will guide the overall R2 Program growth strategies and limit any large-scale projects (e.g., food waste) in the near term. Over the longer term, staff will continue to study biogas utilization alternatives, with an emphasis on working with local partner agencies and organizations.

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