BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

375 - 11th Street, Oakland, CA 94607 Office of the Secretary: (510) 287-0440

AGENDA
Sustainability Committee
Tuesday, June 27, 2023
9:00 a.m.
Boardroom, 2nd Floor
375 11th Street
Oakland, CA 94607

***** Please see appendix for public participation instructions*****

Committee Members: Marguerite Young {Chair}, Andy Katz, and Doug A. Linney

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 Update (Briggs)
2. Renewable Energy Projects (Briggs)

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, and can be viewed on our website at www.ebmud.com.

APPENDIX

Sustainability Committee Meeting
Tuesday, June 27, 2023 – 9:00 a.m.

EBMUD Board committee meetings will be conducted in person and accessible via Zoom.
These meetings are live streamed on the District website.

*Online**
https://ebmud.zoom.us/j/91818373049?pwd=MTl1UHpFaU54SjJzZmV0QlhmUkJTQT09
Webinar ID: 918 1837 3049
Passcode: 834363

*By Phone**
Telephone: 1 669 900 6833
Webinar ID: 918 1837 3049
Passcode: 834363
International numbers available: https://ebmud.zoom.us/u/kdjdx0Kd06

*To familiarize yourself with Zoom, please visit https://support.zoom.us/hc/en-us/articles/201362193-Joining-a-Meeting

Providing public comment - *The EBMUD 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.*

- Each speaker is allotted 3 minutes to speak; the Board President has the discretion to amend this time based on the number of speakers
- The Secretary will track time and inform each speaker when the allotted time has concluded
- Comments on **non-agenda items** will be heard at the beginning of the meeting
- Comments on **agenda items** will be heard when the item is up for consideration
- The Secretary will call each speaker in the order received

In person
- Fill out and submit a blue speaker card which is available in the meeting room

Via Zoom
- Use the raise hand feature in Zoom to indicate you wish to make a public comment https://support.zoom.us/hc/en-us/articles/205566129-Raising-your-hand-in-a-webinar
  - If you participate by phone, press *9 to raise your hand
- When prompted by the Secretary, please state your name, affiliation if applicable, and topic

Submitting written comments or materials
- Email written comments or other materials for the Board of Directors to SecOffice@ebmud.com
- Please indicate the meeting date and agenda item number or non-agenda item in the subject of the email. Contact information is optional.
- **Please email by 4 p.m. the day prior to the scheduled regular meeting**; written comments and other materials submitted to the Board of Directors will be filed in the record.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: June 22, 2023

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager CCC

FROM: David A. Briggs, Director of Operations and Maintenance *for DAB*

SUBJECT: Energy Policy Update

SUMMARY

Policy 7.07 – Energy (Energy Policy) establishes greenhouse gas (GHG) emission targets for the District. At the October 25, 2022 Sustainability Committee meeting, the Committee requested staff to outline various options for mitigating emissions and provide the Committee with earlier notification to allow input from the Committee. This information will be presented at the June 27, 2023 Sustainability Committee meeting.

DISCUSSION

In 2003, the District adopted the Energy Policy to guide cost-effective investments in renewable energy and encourage efficient energy use. In September 2020, the District updated the policy and established a GHG reduction goal for the water system to eliminate indirect emissions (e.g., electricity use) and direct emissions (e.g., fuel use) by 2030. The goal for the wastewater system is to eliminate indirect emissions and achieve a 50 percent reduction in direct emissions by 2040 using 2000 as a baseline year. The policy allows goals to be achieved with "net zero" emissions instead of eliminating all GHG emissions. As emissions goals are lowered each year, emission credits may be needed to meet the GHG emissions goal in the future.

Inventory Methodology

The District uses the Water Energy Nexus 2.0 (WEN 2.0) protocol to inventory its GHG emissions. WEN 2.0 represents the best available and most recognized methodology for inventory calculation, and the new protocol substantially increases the emissions for wastewater operations by including process-related emissions. These process-related emissions have not been accounted for in the past, and the protocol requires estimating GHG emissions of methane and nitrous oxide from wastewater treatment and discharge. The District participated in a Princeton University study to screen wastewater treatment plants for methane and nitrous oxide emissions in 2021 and 2022. The results found the District's Main Wastewater Treatment Plant has significant methane and nitrous oxide emissions, in the range of 30,000-70,000 metric tons of carbon dioxide equivalent (MT CO2e) per year.

Staff proposes to include the methane and nitrous oxide emissions from wastewater treatment and discharge in future inventories as a separate reporting category and outside of District goals. Separating these emissions from the GHG accounting is recommended until the emissions estimations become more precise and are backed by additional studies.

Calculating and Forecasting Emissions

The District's emissions are quantified from multiple data sources as they become available, usually many months after the end of the calendar year. The indirect emissions factors can change without notice and are often applied retroactively. This lack of data availability makes accurate forecasts of emissions difficult, even when the District's planned water and wastewater operations are known.

For 2022, staff estimates the Water and Wastewater systems' emissions will be 19,557 MT CO2e and 4,430 MT CO2e, respectively. The Water System's emissions are higher than the 2022 GHG goal of 18,468 MT CO2e by about 761 MT CO2e. Energy use associated with supplemental water during the drought contributed an estimated 5,531 MT CO2e. Without this additional energy use, Water System emissions would have met the goal. Supplemental water pumping will not occur in 2023 and is unlikely to occur in 2024. Combined with the expected commission of the Duffel Photovoltaic (PV) system at the end of 2023, the Water System's emissions totals are expected to remain below the goals through 2025. The Wastewater System's emissions estimate is expected to be lower than the 2022 GHG goal once a new goal is established without process emissions.

Mitigation Options

There are options available to the District, at varying costs, to reduce GHG emissions. These options include purchasing carbon credits which will offset the exact quantity of CO2e retrospectively to meet GHG goals. Offsets can be purchased and applied to earlier time periods for inventory accounting purposes. Alternatively, the District can purchase a zero-emission product from an energy service provider. This alternative can only be used prospectively which would be challenging to implement given the current accuracy of emissions accounting. Currently, only Sacramento Municipal Utility District (SMUD) and the two Community Choice Aggregators offer a zero-emission energy product. The District's Energy Policy directs staff to choose the least-cost option to meet annual GHG goals. The lowest cost option would be to purchase credits. Other options could be considered if the Energy Policy was amended to include factors other than cost. The other options include purchasing zero-emission energy if offered by an energy service provider and forfeiting discounted wholesales electric service from the Western Area Power Administrator (WAPA) to purchase energy from a zero-emissions provider. The current cost of various options is summarized below:

Costs to Reduce or Eliminate GHGs from Electricity Purchases (Calendar Year 2022 data)				
	Including Freeport Operation		Not including Freeport Operation	
Mitigation Options	**Annual Cost ($)**	**GHG Offset (MT C02e)**	**Annual Cost ($)**	**GHG Offset (MT C02e)**
Purchase Carbon Credits	$15,000	761	N/A	N/A
Purchase zero-emission product as needed to meet GHG goal	$20,000	761	N/A	N/A
Purchase zero-emission product as available[1]	$520,000	7,850	$250,000	3,820
Forfeit WAPA service to purchase green power	$1,000,000	3,982	$1,000,000	3,982

1. Only Marin Clean Energy, East Bay Community Energy and SMUD offer a zero-emission energy product.

Advanced Clean Fleet Regulations

California is addressing direct emissions through the California Air Resources Board (CARB) under the Advanced Clean Fleets (ACF) regulation. Direct emissions associated with vehicle use will soon become the District's largest source of emissions. The ACF regulation, approved by CARB in April 2023, requires a phased transition toward zero-emission medium-and-heavy duty vehicles. Fleet owners, such as the District, must ensure 50 percent of vehicle purchases are zero-emission vehicles beginning in 2024 and 100 percent of vehicle purchases are zero-emission by 2027. The ACF includes an end to combustion truck sales in 2036.

The CARB also directed staff to consult with relevant state agencies on how non-fossil biomethane from sources related to the state's wastewater and food waste diversion requirements under Senate Bill 1383 can be utilized in hard-to-decarbonize sectors to aid transition. The District has some battery-electric sedans, but the availability of medium or heavy-duty electric vehicles that would meet the District's duty requirements is very limited or not available. Further, the District will need to invest in charging infrastructure that is resilient and sustainable including finding space for vehicles that are parked at District facilities and those that are parked remotely.

NEXT STEPS

The District will continue to track, identify, and implement opportunities to reduce GHG emissions. Staff will continue to develop cost-effective renewable energy projects. For vehicles, staff continue to pursue low and zero-emission options with manufacturers, pilot new vehicles, and plan facility modifications to accommodate charging infrastructure. To the extent possible, staff will forecast emissions, take action, and will inform the Board as early as possible regarding mitigation options. Staff will also seek direction from the Committee regarding the accounting for process emissions and options to accelerate reducing indirect emissions.

CCC:DAB:sd

Attachment: Policy 7.07 – Energy

EBMUD

Policy 7.07

EFFECTIVE 22 SEP 20

SUPERSEDES 26 JUN 18

ENERGY

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

Promote energy efficient practices within the District's water and wastewater systems, service area, and watersheds, minimize reliance on fossil fuels, diversify energy sources, reduce energy costs, and achieve the District's goal to be carbon free for direct and indirect emissions.

Objectives

To support this policy, the District will:

- Implement the following greenhouse gas (GHG) reduction goals:
  - Water system: eliminate GHG emissions for indirect and direct emissions by 2030.
  - Wastewater system: eliminate GHG emissions for indirect emissions and reduce direct GHG emissions by 50 percent compared to 2000 levels by 2040.
- Promote and encourage energy management and energy efficient practices both in design and operations of the District.
- Efficiently use all forms of energy including electricity, petroleum-based fuels, and natural gas to reduce costs and energy consumption, conserve natural resources, and minimize impacts on the environment.
- Increase the use and generation of renewable energy to preserve natural resources, reduce environmental pollution and GHG emissions, and support the District's mission to protect and preserve the environment for future generations.
- Secure reliable energy supplies at the most advantageous rates and implement economical projects to protect operations from interruptions and minimize future costs.
- Support the State of California's and other regulatory renewable energy goals.
- Promote its energy policy by informing staff and the public of its efforts to use energy efficiently, raising awareness of the nexus between water and energy, and increasing generation of economical renewable energy.

Method

To meet these objectives, the District will:

- Track GHG emissions associated with water and wastewater systems separately using The Climate Registry Water Energy Nexus protocol.
- Review new and existing facilities and capital improvement projects for opportunities to include energy efficiency, renewable energy, reduction of on-site emissions and water conservation features.
- Evaluate consistency with existing master plans, and impacts to the environment and natural resources.
- Consider purchasing electrical energy from renewable energy projects, community choice aggregators, electric utilities or other sources to reduce the District's cost of power and GHG emissions.
- Review and evaluate opportunities to increase hydropower generation and revenue.
- Consider establishing public-private partnerships that would increase renewable energy generation capacity when economically feasible and beneficial to the District.
- Identify and implement cost competitive projects to offset GHG emissions through sequestration of carbon.
- Develop local renewable energy and carbon sequestering project.
- Purchase California Renewable Portfolio Standard compliant Renewable Energy Credits (RECs) to meet the District's indirect GHG emission goals.

- Purchase carbon credits to meet the District's direct GHG emissions goals, and indirect GHG emission goals only if cost competitive with RECs.
- Consider reducing vehicle miles traveled, changing operational behaviors, and using alternative energy sources for operating vehicles and equipment.
- Invest in equipment, develop programs, and support industry efforts to increase overall District vehicle fuel economy and efficiency.
- Continue to cost-effectively expand the sourcing and digestion of organic material for producing energy from biogas while maintaining the lowest GHG emission possible.
- Inform District staff and the public of the benefits realized from experiences in energy efficiency and purchasing and operating renewable energy generation equipment.

The District's energy management strategy reinforces the Energy Policy by providing guidance on reducing energy use, increasing renewable energy generation, diversifying energy supplies, improving energy efficiency, and pursuing economical projects that offset/reduce GHG emissions.

Energy use (including conservation, efficiency, optimization and purchase) and generation projects must be at least economically neutral to the District or support the District's wastewater and water systems' GHG reduction goals.

To support the state of California's renewable energy goal, the District will increase its use and generation of renewable energy from a range of sustainable renewable sources while continuing to generate renewable energy from its existing generation facilities, including hydropower, photovoltaic systems, and anaerobic digestion/biogas facilities.

Direct emissions are emissions from sources controlled by the District, including the burning of fossil fuels and emissions related to wastewater processes. To meet the District's direct emissions GHG goals, the District will develop programs to reduce vehicle miles traveled, investigate alternative fuel sources for operating vehicles, work with the industry to increase overall fuel economy and efficiency, and work to improve the science of GHG emission estimates due to wastewater processes and discharge. In addition, the District will offset direct GHG emissions by investigating projects through the sequestration of carbon or the purchase of carbon credits.

Indirect emissions are emissions from the District's purchase of electricity. To meet the District's indirect emissions GHG goals, the District will focus on energy conservation, development of economical renewable energy projects, and GHG offset projects, and the purchase of RECs or carbon credits. Renewable energy programs or projects will be evaluated against the cost of purchasing power.

To promote projects that are cost neutral over their life, the District will pursue low-cost public financing, grants, and favorable electric rate structures. Project cost evaluations will include consideration of public financing and will be evaluated over the useful life of the project with consideration given to the avoided cost of traditional power supply and distribution, as well as the operational reliability of on-site generation. The District will choose the least cost option to meet its overall GHG reduction goal.

Authority

Resolution No. 33369-03, August 12, 2003
As amended by Resolution No. 33465-05, March 8, 2005
As amended by Resolution No. 33594-07, April 10, 2007
As amended by Resolution No. 33703-09, February 24, 2009
As amended by Resolution No. 33793-10, November 23, 2010
As amended by Resolution No. 33904-12, November 27, 2012
As amended by Resolution No. 33950-13, November 12, 2013
As amended by Resolution No. 34064-16, January 26, 2016
As amended by Resolution No. 35099-18, June 26, 2018
As amended by Resolution No. 35203-20, September 22, 2020

Reference

Policy 7.05 – Sustainability and Resilience

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: June 22, 2023

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager CCC

FROM: David A. Briggs, Director of Operations and Maintenance *for DAB*

SUBJECT: Renewable Energy Projects

SUMMARY

This memo provides an update on the District's renewable energy projects. The projects include the five-megawatt (MW) photovoltaic (PV) project in the City of Orinda, two smaller PV projects to be developed under the recently closed Net Energy Metering 2.0 (NEM2) tariff, and the in-conduit hydroelectric project at Piedmont Regulator. These projects will reduce operating costs and increase the District's use of renewable, emissions-free energy sources. Other projects include exploration of a large battery project adjacent to the Camanche Pumping Plant and developing a hydrogen fueling station in West Oakland. This information will be presented at the June 27, 2023 Sustainability Committee meeting.

DISCUSSION

Since 2003, the District has successfully developed 11 PV projects under various contractual arrangements, providing nearly two MWs of PV capacity. Collectively, these projects offset approximately two percent of the District's annual energy consumption. The District's renewable energy projects are cost-effective and ensure the District's indirect emissions are reduced in support of District Policy 7.07 – Energy. The policy sets the goal for the Water System to be carbon neutral by 2030.

In late 2022, pre-construction began on the five MW PV project in Orinda known as the Duffel Project. After an exceptionally wet winter, site grading and access road construction are nearly complete. Tracker mounting structures and panel installation will occur this summer and fall. Final commissioning is expected by the end of 2023. The economic viability of the project depends on admittance into PG&E's Renewal Energy Self-Generation Bill Credit Transfer (RES-BCT) program which has a limited capacity of 105 MW. Progress on the project must be maintained to ensure admittance into the program. Under the RES-BCT program, the project's net present value could exceed $14 million over the lifetime of the project while offsetting approximately 15 million kilowatt-hours (kWh) annually or nearly 11 percent of the District's current total electric load.

NEM2

On December 22, 2022, the California Public Utilities Commission closed the NEM2 tariff for renewable energy generation projects (i.e., PV, wind, and hydroelectric) initiated after April 13, 2023. This announcement prompted the District to accelerate two projects – one in Stockton and one at the Oakport facility in Oakland – that are only economically viable under NEM2. The estimated present value of the two projects over a 20-year period is $167,000 for the Stockton site and $290,000 for the Oakport site. The projects will generate an estimated 360,000 kWh of energy and offset about 80 percent of the onsite electric load annually. The projects are also eligible to receive funding under the Incentive Tax Credit and Production Tax Credit. Prior to the passing of the Inflation Reduction Act on August 16, 2022, the District and other tax-exempt agencies were not eligible for these credits.

In-Conduit Hydroelectric

The installation of a 30 kW hydroelectric generator parallel to the Piedmont Regulator in Piedmont is complete. This generator will recover energy as water flows through the distribution system. However, the interconnection of the project to the electric grid by PG&E is pending approval of a new utility pole by the City of Piedmont. The project should generate electricity by late 2023. If the pole is not approved, alternatives will need to be studied by PG&E and the project commissioning would be delayed until late 2024.

Electrical Energy Storage

Energy storage systems are integral to the State's plan to establish a carbon-free electrical grid because many renewable energy sources, such as PV, do not continuously generate energy. Staff is exploring the feasibility of a large battery storage project at the 230 kilovolt (kV) electrical substation which supplies power to the Camanche Pumping Plant, adjacent to Camanche Dam. The electrical substation has an unused connection point and approximately 40,000 square feet of available space. The battery system would be charged from PG&E's transmission system. Charging all or part of the system from an adjacent PV project or even from the Camanche hydropower plant are options that will be considered.

Energy storage can also be achieved through pumped storage. Energy is generated from a standard hydropower generation (turbine) system from a high-elevation reservoir when energy is needed (or sold at high value) and released to a lower elevation reservoir. The same water is pumped and returned to the upper elevation reservoir when energy prices are lower. The District has several locations with upper and lower reservoir configurations that could conceptually be used for such projects. The feasibility of these concepts would need to consider construction costs, wholesale energy prices, and environmental, water quality, water rights, and regulatory requirements.

Alternative Fuels

Vehicles powered by hydrogen fuel cells are another zero-emission alternative. On May 26, 2022, the District started a 10-year agreement with FirstElement Fuel, Inc. (FE Fuel) to lease property at the Main Wastewater Treatment Plant. FE Fuel is building a hydrogen fueling station on site and will supply the hydrogen fuel. The fuel station will support zero-emission drayage truck usage at the Port of Oakland which will improve local air quality in West Oakland. Project costs are offset with grants from the California Air Resources Board and the California Energy Commission. The District will receive lease revenue and have access to excess hydrogen fuel if the District decides to use hydrogen fueled vehicles. Construction is expected to be completed in the second half of 2023.

NEXT STEPS

Staff will provide updates to the Board as construction of the Duffel PV project and smaller net metering projects in Stockton and Oakport proceed. Staff will complete the initial analysis of a battery storage project at Camanche Pumping Plant.

CCC:DAB:sd

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