BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

375 - 11th Street, Oakland, CA 94607 Office of the Secretary: (510) 287-0404

AGENDA
Sustainability Committee
Tuesday, November 25, 2025
10:15 a.m.
Boardroom
375 11th Street
Oakland, CA 94607

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

Committee Members: Joey D. Smith {Chair}, Luz Gómez, and Andy 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. Calendar Year 2024 Greenhouse Gas Inventory (Briggs)

ADJOURNMENT:

Disability Notice

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Document Availability

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APPENDIX

Sustainability Committee
10:15 a.m.

EBMUD public meetings of the Board will be conducted in person and via Zoom. These meetings are recorded, live-streamed, and posted on the District's website.

*Online**
https://ebmud.zoom.us/j/94804788254?pwd=Z2duWU9RZzVqb3RMd1RlNXVISjNsUT09
Webinar ID**:** 948 0478 8254
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*****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: November 20, 2025

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager

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

SUBJECT: Calendar Year 2024 Greenhouse Gas Inventory

SUMMARY

The District's Policy 7.07 – Energy contains an annual greenhouse gas (GHG) reduction goal to achieve carbon neutrality for the water and wastewater systems by 2030. Since 2005, the District has tracked and reported its GHG emissions to measure progress towards the goal. While the District met its goal of 18,458 metric tons of carbon dioxide equivalent (MT CO_2^e) in 2024 with GHG emissions totaling 15,583 MT CO_2^e, continued progress will involve additional investments and expenditures. This item will be presented at the November 25, 2025 Sustainability Committee meeting.

DISCUSSION

The District's GHG inventory is comprised of direct and indirect emissions. Direct emissions result from the combustion of fuels to support operations, including gasoline, natural gas, propane, and diesel, as well as losses from refrigerant usage. Indirect emissions derive from the use of electricity. The 2024 inventory is based on the Water Energy Nexus (WEN) 2.0 protocol developed by The Climate Registry. Pursuant to WEN 2.0, the District estimates process emissions of methane and nitrous oxide related to the treatment and discharge of wastewater. According to Policy 7.07, these process emissions will be estimated and tracked but not included as part of the District's GHG goal.

The 2024 inventory is compared to the baseline year (2000) and 2023 in Table 1.

Table 1. 2024 GHG Inventory

Year	Total Emissions (MT CO_2^e)	District Goal (MT CO_2^e)	Wastewater Process Emissions (MT CO_2^e)
2000	46,519	--	35,520
2023	17,322	21,535	53,625
2024	**15,583**	**18,458**	**49,547**

The 2024 inventory is summarized by source and compared to 2023 in Table 2.

Table 2. 2024 GHG Inventory by Source

GHG Source	2024 GHG Emissions (MT CO_2^e)	Percent of Total in 2024	2023 GHG Emissions (MT CO_2^e)	Percent Change in 2024
Electricity	7,545	48%	9,390	-19%
Fleet	3,823	25%	4,026	-5%
Wastewater*	2,141	14%	1,544	+39%
Natural Gas	1,749	11%	1,830	-4%
Refrigerants	318	2%	309	+3%
Other	6	0%	223	-97%
Total	**15,583**	**100%**	**17,322**	**-10%**

**Includes stationary combustion sources at the Main Wastewater Treatment Plant (e.g. cogeneration engines, turbines). Other wastewater sources are reported in appropriate categories (e.g. electricity).*

The 2024 GHG emissions are 10 percent lower than the prior year. The following items are noted for the 2024 inventory:

- Electricity: Emissions dropped considerably in 2024 due to lower emission factors from suppliers and the retirement of renewable energy certificates (RECs) applied to electricity from the Western Area Power Administration (WAPA).
- Fleet: Emissions were slightly lower in 2024. Zero emission vehicle (ZEV) deployment increased in 2024, but the emission reduction is within typical year-to-year variations.
- Wastewater: Emissions were significantly higher in 2024 since more biogas was generated from larger deliveries to the Resource Recovery Program and turbine outages caused more biogas combustion in the boiler and cogeneration engines, which have higher methane emissions.
- Natural Gas: Emissions were slightly lower in 2024. No significant program changes were made to reduce emissions.
- Refrigerants: Emissions were slightly higher in 2024 due to changes in heating, ventilation, and air conditioning equipment.
- Other: Emissions in this category were much lower since stationary emergency generators at outlying facilities used renewable diesel instead of regular diesel and sulfur hexafluoride emissions returned to zero after an unusual release in the prior year.

GHG Reduction Plan

At its June 24, 2025 meeting, the Sustainability Committee requested information on the District's implementation plan to achieve the GHG goals outlined in Policy 7.07. Options to achieve the annual GHG reduction goals are summarized in Table 3. The current plan aligns with existing policy and involves purchasing greener power over time, a gradual fleet conversion to

ZEVs, and purchasing RECs and offsets. The accelerated plan includes a more aggressive transition to ZEVs, where possible, moving away from purchasing power from WAPA, and accelerating certain capital projects at the Main Wastewater Treatment Plant (MWWTP) and administration buildings.

Both plans to carbon neutrality will require the use of offsets since the inventory will always contain residual GHG emissions that cannot be eliminated. Costs in Table 3 represent estimates for annual costs in 2030. While care has been taken to provide credible cost estimates, future cost of equipment, electricity, offsets, and other factors are difficult to predict.

Table 3. Options for Achieving Carbon Neutrality by 2030

Source	**Current Plan**	**Estimated Annual Cost**	**Accelerated Plan**	**Estimated Annual Cost**
Electricity	Purchase RECs for high-emission electricity (e.g. WAPA)	$160,000	Purchase retail electricity instead of WAPA	$6,000,000
	Purchase offsets for low-emission electricity (e.g. PG&E)	$30,000	Purchase all zero-emission electricity	$1,000,000
Fleet*	Replace ~50 vehicles per year with ZEVs	$0	Replace ~100 vehicles per year with ZEVs	$4,000,000
	Install related chargers	$0	Install related chargers (if possible)	$3,000,000
	Purchase offsets for remaining emissions	$75,000	Purchase offsets for remaining emissions	$24,000
Wastewater	Purchase offsets for all stationary combustion emissions	$60,000	Replace engines and flares	$5,000,000
			Purchase offsets for remaining emissions	$9,000
Natural Gas	Purchase offsets for all natural gas emissions	$52,500	Replace natural gas appliances with electric	$500,000
			Purchase offsets for remaining emissions	$37,500
Refrigerants	Purchase offsets for all refrigerant emissions	$10,000	Purchase offsets (no viable alternative)	$10,000
Total Cost		**$387,500**		**$19,580,500**

**The District is gradually replacing vehicles with ZEVs when possible, although the exact rate of replacement and installation of related charging infrastructure is uncertain. Regulatory changes, equipment availability, and other factors may also greatly affect ZEV conversion in the fleet.*

Wastewater Process Emissions

Additional information about wastewater process emissions was requested at the June 24, 2025 Sustainability Committee meeting. Since 2019, wastewater process emissions have been part of the WEN reporting requirements for water and wastewater utilities. The emissions include methane and nitrous oxide emissions from the on-site treatment of wastewater and the discharge of treated wastewater to surface water. The emission estimates are based on biochemical oxygen demand and nitrogen loads in the wastewater influent and effluent, multiplied by the related international emission factor for the emission type. These emissions were included in the District's inventory beginning in 2019. In 2022, a large increase in these emissions occurred when the WEN was revised to adopt higher international emission factors issued by the Intergovernmental Panel on Climate Change. These emissions are currently excluded from District GHG goals due to the relatively new accounting techniques and uncertainty in the actual emission levels. Process emission sources and emission estimates for 2024 are in Table 4.

Table 4. Wastewater Process Emissions

Process Emission	**2024 Emissions (MT CO_2^e)**
Treatment methane	9,157
Treatment nitrous oxide	31,358
Discharge methane	2,156
Discharge nitrous oxide	6,812
Total	**49,547**

The science related to process emissions quantification and reduction is evolving slowly. While measurement and quantification of methane emissions is well understood, nitrous oxide emissions are very difficult to measure and quantify since process parameter control and other factors impact the emissions and cause significant variability. Upcoming changes to remove nutrients at the MWWTP through biological nutrient removal are expected to increase nitrous oxide emissions. The reduction and/or abatement of methane and nitrous oxide emissions from these processes is still an emerging science.

If process emissions are included in the District's goal to be carbon neutral by 2030, an estimated cost of about $1,500,000 per year would be required to balance them with offsets.

NEXT STEPS

Staff seeks input from the Sustainability Committee on the approach to meet the carbon neutrality goal by 2030. Based on feedback from the committee, staff will discuss the fiscal impact with the Finance/Administration Committee. After receiving direction from both committees, staff will present revisions to policies 7.15 Climate Action, 7.07 Energy, and 7.05 Sustainability and Resilience to the Board for consideration in 2026.

CCC:DAB:sd