

REDUCING FLEET EMISSIONS: EBMUD

Oakland, California



One of EBMUD's zero-emission fleet vehicles

PROJECT DESCRIPTION

East Bay Municipal Utility District (EBMUD or the District) is a water and wastewater utility that provides water services to 1.4 million people and wastewater services to 685,000 people. EBMUD has a goal to eliminate all indirect and direct GHG emissions from the water system by 2030. They have reduced their annual fleet greenhouse gas emissions from 7,523 metric tons in 2012 to 4,310 metric tons in 2020. The District fleet includes 433 light-duty vehicles (e.g., sedans, pickups, and SUVs), 499 medium and heavy-duty vehicles (e.g., utility trucks, dump trucks, water tankers), and 225 pieces of construction equipment (e.g., backhoes, excavators, and rollers). The four main strategies to reduce fleet emissions are switching to alternative fuels, procuring more efficient vehicles, changing drive train technologies (e.g., hybrid or battery-electric), and/or reducing vehicle miles traveled.

The District has been investing in more fuel-efficient, light-duty vehicles to reduce operating costs and carbon emissions. In addition, the District purchased eight battery-electric Chevrolet Bolts for the vehicle pool and an additional eight sedans are forecast for replacement in Fiscal Year 2022. Advanced technologies for medium and heavy-duty vehicles have not yet become readily available, so the District's strategy has been limited to use of lower-emission alternative fuels. In Fiscal Year 2020, 97 percent of diesel purchased by the District was renewable diesel (not to be confused with biodiesel), which is manufactured using organic materials such as waste animal fat or used cooking oil.

The District can quickly switch between regular diesel or renewable diesel in an emergency depending on availability. The District joined [CALSTART](#), which is a nonprofit organization working with businesses and governments to develop clean, efficient transportation solutions. The District was also the first water utility to sign the [Drive to Zero pledge](#), committing its support to accelerate the growth of global zero- and near-zero-emission (ZE) commercial vehicles. The Drive to Zero effort envisions that zero emissions technology will be commercially viable by 2025 and dominate by 2040 in specific vehicle segments and regions. In addition, EBMUD is taking the following steps to help reduce fleet emissions:

1. Install telematics systems in all on-road vehicles to collect driving utilization data (how far vehicles travel, how long they idle, etc.) for compliance with the [Advanced Clean Trucks rule](#) and identify appropriate technologies.
2. Engage with CALSTART and other water and electric utilities to identify and develop technologies to meet the District's needs.
3. Review all fleet replacement and new procurement activities to identify zero emission, hybrid technology, or alternative fueled vehicles.
4. Work with the local electric utility to evaluate electrification of our existing fleet vehicles.
5. Incorporate vehicle charging infrastructure into some new service yards and evaluating addition of charging infrastructure at existing facilities.

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MAKING THE PROJECT HAPPEN

These fleet emissions reduction efforts are guided by EBMUD's goal to eliminate GHG emissions from water system operations for indirect and direct emissions by 2030. Additionally, California is pushing the envelope on reducing emissions from transportation, which means regulations and laws are coming down the pipeline. Knowing this, EBMUD has taken the proactive approach of getting ahead of the game regarding fleet efficiencies. A lot of motivation for these fleet efforts comes directly from EBMUD's Board, as the Board has encouraged the District to directly reduce emissions instead of purchasing carbon offsets or credits to meet their mitigation goals.

FINANCES

Most electric vehicles have tax credits, but since EBMUD doesn't pay taxes, these credits are not available to them. However, there are other incentive programs currently in place to promote adoption of zero-emission vehicles (ZEVs) for private and commercial use, such as [California's Low Carbon Fuel Standard](#) or the [Hybrid and Zero-Emission Truck and Bus Voucher Program \(HVIP\)](#). These incentives can offset capital costs for vehicles or infrastructure, operating costs for charging to reduce the total cost of ownership. Also, the local electric utility (PG&E) has some funding opportunities for infrastructure upgrades.



IMPLEMENTATION

The fleet efficiency work has been led by EBMUD's Maintenance and Construction Department. Environmental Compliance, which performs the utility's GHG inventory, has also been involved—this helps catalog how much emissions are changing and track program progress. Importantly, the end users of vehicles have been involved to get their buy-in. This two-way feedback network allows all to understand what the goals of efficiency are and what the needs of the vehicle users are, which has allowed the efforts to move forward in a more efficient manner than just putting something in place and forcing people to adapt. For example, changing from petroleum diesel to renewable diesel turned out to be a small change, but made a huge impact in GHG emissions. However, biodiesel has challenges in cold weather. Therefore, bringing the fleet team into discussion was important before making change.



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CHALLENGES

A primary challenge in this project has been the availability of equipment that meets EBMUD's needs. EBMUD has a heterogenous fleet and a lot of specialized medium and heavy-duty vehicles, as well as many vehicles with variable use cases which is not ideal for ZEV application. One of the things EBMUD wished they would have done a long time ago was install a telematics system that they could leverage to understand their vehicle driving trends (distanced traveled, idling time, etc.). These data would help in selecting the correct vehicles for the energy efficient vehicle transitions. Additional challenges noted are the cost and complexity of developing the District's facility fueling/charging infrastructure to support ZEVs, the fueling/charging supply infrastructure is not well developed, and that events such as an earthquake could disrupt the fueling/charging infrastructure and hinder emergency response.



ADVICE AND LESSONS LEARNED

EBMUD's primary advice for increasing fleet efficiencies is to really understand how your vehicles are used in order to plan the efficiency improvement efforts in ways that work for efficiency goals and for the needs of the utility. For example, alternative fuels are a good strategy to reduce GHG emissions, but they can pose operational challenges and might be more difficult to obtain during an emergency. EBMUD suggests getting all your field teams involved and making sure they understand the goal of the efficiency efforts and that you're trying to find solutions that work for them. Additionally, EBMUD suggests working with your local electric utility so that you can partner toward a common goal. Finally, EBMUD suggests making sure your fleet remains resilient and can respond in an emergency, including a power outage.

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