

Equipment

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Project Title:

Battery-Electric Sweeper Evaluation

Task Number: 4137

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Task Manager:

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Field Study of Battery-Electric Sweepers

Evaluating the effectiveness, benefits, drawbacks, and special use cases of Battery-Electric (BE) street sweepers as alternatives for traditional fuel technologies.

WHAT IS THE NEED?

The largest source of the state's greenhouse gas (GHG) and several smog-causing pollutant emissions is California's transportation sector including tailpipe emissions, oil extraction, and oil refining (https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf). In order to reduce GHG emissions and improve air quality, California is moving towards Zero-Emission Vehicles (ZEVs), which do not produce any on-road GHG emissions or criteria pollutants. The California Air Resource Board (CARB) has ZEV targets in place for light-duty vehicles and in 2020 CARB adopted ZEV requirements for heavy trucks (<https://ww2.arb.ca.gov/news/california-takes-bold-step-reduce-truck-pollution>). Caltrans' Division of Equipment (DOE) will be acquiring eighteen BE street sweepers in the spring of 2023 to help the state meet its climate and air quality goals. With the implementation of this new street sweeper technology, there will be a need to understand specific usage and performance characteristics for the new technology in order to help evaluate the benefits, drawbacks and nuances of the introduction of this new equipment to the Caltrans fleet.

WHAT ARE WE DOING?

This research project will collect and evaluate detailed activity and Controller Area Network (CAN Bus) data from a subset of at least five BE street sweepers and fleet management level activity data from the Geotab fleet management system for all eighteen newly acquired BE street sweepers in the Caltrans fleet. Additionally, survey of Caltrans BE sweeper operators and mechanics will be conducted to help characterize function and performance of the BE sweepers.



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WHAT IS OUR GOAL?

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WHAT IS THE BENEFIT?

The researchers at UC Riverside sent the Operator and Mechanic surveys to Caltrans District 03 and District 08 attendees. The team sent initial operator survey request on July 11, 2024. The team discussed with the BE sweeper manufacturer on options for acquiring continuous CAN bus data. There is one BE sweeper deployed in District 08 and there are two BE sweepers deployed in District 03. The project panel held a status update meeting on August 15, 2024.