

# DRISI

CALTRANS DIVISION OF RESEARCH,  
INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

# Research

# Notes

Equipment

MAY 2024

Project Title:  
Battery-Electric Sweeper Evaluation

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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](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.



DRISI provides solutions and knowledge that improves California's transportation system

## WHAT IS OUR GOAL?

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## WHAT IS THE BENEFIT?

This research will provide necessary information to help assess the effectiveness, benefits, drawbacks, and special use cases of BE street sweepers as alternatives for traditional or competing fuel technologies.

## WHAT IS THE PROGRESS TO DATE?

The research team at UC Riverside collected all Caltrans street sweeper data from GeoTab fleet management software via the GeoTab Application Programming Interface for this year. The team worked on initial data analysis of GeoTab level street sweeper data. This will help provide a basis for comparison of BE street sweepers once in service. Following delivery of the BE sweepers to Caltrans, the research team will start the evaluation of the sweepers based on the contract specifications.