

Planning, Policy
and
Programming

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Project Title:
UTC - National Center for
Sustainable Transportation,
(NCST-FAST Act) DOTP

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Assessment Of Requirements, Costs, And Benefits Of Providing Battery Charging For Battery Electric Heavy- Duty Trucks At Safety Roadside Rest Areas Facilities

Define possibilities for and barriers to the provision of battery charging infrastructure for heavy-duty electric trucks at roadside rest areas along main highways in California.

WHAT IS THE NEED?

The purpose of the proposed research is to better define possibilities for and barriers to the provision of battery charging infrastructure for heavy-duty electric trucks at roadside rest areas. The California Department of Transportation (Caltrans) maintains an extensive series of roadside rest areas throughout California that are widely used by long-haul trucks. By 2030, it is expected that a significant fraction of those trucks will be electrified and some of them will have the need for recharging their batteries away from their home base. In this research, it will be determined whether charging at roadside rest areas, especially those along interstate highways, are likely to meet the needs of the trucks that have multi-day trips.

The first step in the research will be to determine whether providing the charging at the rest stops is practical for Caltrans to consider. The second step is to assess whether it is likely that the trucking companies and drivers, who will have multiple options for recharging their batteries, will utilize charging at rest stops. The final step in the research will be to determine under what circumstances providing recharging at rest stops makes sense for Caltrans.

WHAT ARE WE DOING?

The plan for performing the project can be seen in terms of the six (6) tasks listed below. Much of the information and data needed to start the proposed project is available from the concurrent and previous studies of the technologies and associated costs



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

at University of California (UC) Davis, Institute of Transportation Studies, of battery-electric Class 8 long haul trucks.

Tasks

1. Battery requirements for medium- and heavy-duty (MD/HD) trucks and buses in 2025-2030.
2. Use patterns of MD/HD vehicles in roadside rest areas in California.
3. Infrastructure design requirements and costs for battery charging facilities in roadside rest areas for likely electric vehicle use in 2025-2030.
4. Trucking industry and driver options for multi-day long-haul trips with battery-electric trucks requiring along highway battery recharging.
5. Assessment of the likely choice/use of roadside rest areas by long-haul electric trucks.
6. Assessment of how Caltrans can best serve the needs of the trucking industry as it transitions to electrified vehicles.

The initial tasks of the study will be done in close consultation with appropriate personnel at Caltrans. The Caltrans personnel will be familiar with the use of the safety rest stops by diesel long haul trucks to determine how the rest stops are presently being used.

Later tasks will be performed in consultation with large trucking companies to determine their plans for incorporating electric trucks in their fleets and how they envision charging the large batteries in the trucks. The battery charging facility design and cost estimates will require consultation with electric utilities. Finally, discussions with Caltrans personnel will be needed to assess their reaction to the information developed in the study.

WHAT IS OUR GOAL?

The goals of this research are to determine whether providing the charging at the rest stops is practical for Caltrans to consider and to assess whether it is likely that the truck companies and drivers

will utilize charging at rest stops. The final step in the research will be to determine under what circumstances providing recharging at rest stops makes sense for Caltrans. The results of the study will be summarized in the final report.

WHAT IS THE BENEFIT?

Caltrans is the state agency responsible for the California system of roadside rest areas. This project is concerned directly with the roadside rest areas and how they can be utilized to charge the batteries of electric long-haul trucks.

The research will determine whether providing the charging at the rest stops is practical for Caltrans to consider and whether it is likely that the truck companies and drivers would utilize battery charging at rest stops. As a final step, the research will determine under what circumstances providing battery recharging for electric long-haul trucks at rest stops makes sense for Caltrans.

WHAT IS THE PROGRESS TO DATE?

This project began February 1, 2021, so contract work is only now starting.

IMAGE



Image 1: A battery-electric long-haul truck