

## Equipment

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**Project Title:** Optimal Planning for EV Charger Deployment

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## Optimal Planning for EV Charger Deployment

Developing a tool to enable Caltrans to make well-informed decisions regarding the deployment of Electric Vehicles chargers at Caltrans facilities.

### WHAT IS THE NEED?

To effectively advance its electrification goals, the California Department of Transportation (Caltrans) needs to strategically plan its charging infrastructure. This involves a comprehensive assessment to determine the optimal number and specifications of chargers for each facility. Key considerations include the type and quantity of electric vehicles (EVs) and thus specific charging demands at each location, existing power grid restrictions, and economic factors. Additionally, it is critical to incorporate forward-looking projections to anticipate and meet future needs, ensuring the infrastructure remains robust and adaptable over time. This approach will enable Caltrans to optimize its investment and support the transition to sustainable operations efficiently.

### WHAT ARE WE DOING?

This research will analyze various factors influencing charger deployment and formulates the charger placement challenge as an optimal planning problem that minimizes operational expenses subject to various key constraints. A tool will be developed through this study that will facilitate the integration with Caltrans operations, enabling informed decisions about charger deployment and specifications at each designated site. The successful completion of this research will ensure a smooth and efficient transition to an all-electric vehicle fleet.

### WHAT IS OUR GOAL?

The goal of this research is to develop an advisory tool for optimal planning for EV charging infrastructure at Caltrans locations. The product of this research enables Caltrans to make well-informed decisions regarding the deployment and specifications of EV chargers at each site.



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## WHAT IS THE BENEFIT?

The results of this research will allow Caltrans to efficiently use resources by considering the specific charging needs of each location and accounting for various costs associated with installing and maintaining EV chargers. This research will facilitate a smooth transition to an all-electric vehicle fleet by minimizing downtime of Equipment and enhancing fleet productivity, which leads to long-term cost savings.

## WHAT IS THE PROGRESS TO DATE?

The research team conducted additional site-level energy demand analysis and provided reports on each of the following topics: available charger options in the market, infrastructure to install each type of charger, and cost of new EV charges.