

Project Information Form

Project Title:	Utilizing Highway Rest Stops for Electric Vehicle Charging: Economics and Impacts on Renewable Energy Penetration in California
University:	University of California, Davis
Principal Investigator:	Behdad Kiani Co-PI: Joan Ogden
PI Contact Information:	Email: bkiani@ucdavis.edu
Funding Source(s) and Amounts Provided (by each agency or organization):	California Department of Transportation (Caltrans) - \$87,725.00
Total Project Cost:	\$87,275.00
Agency ID or Contract Number:	Caltrans 65A0686 Task Order 011 UCD-CT-FAST-011
Start and End Dates:	December 1, 2018 – October 31, 2019
Brief Description of Project:	In this project, the researchers will explore how locating charging facilities at California’s highway rest stops might impact electricity demand, grid operation, and integration of renewables like solar and wind into California’s energy mix. Assuming a growing population of electric vehicles to meet state goals, there is an estimated state-wide growth of electricity demand. Using a California-specific electricity dispatch model developed at the UC Davis Institute of Transportation Studies, the researchers will identify the most attractive rest stop locations for siting chargers and estimate how charging vehicles at these stations would impact renewable energy curtailment in California. The researchers will explore potential advantages if charging stations are installed in locations near renewable energy generation plants, lowering electricity losses and renewable energy curtailments. The researchers will estimate economic impacts of these charging infrastructures on California’s electricity system and how they can be utilized to decrease the duck curve effect resulting from a large amount of solar energy penetration by 2050. Greenhouse gas mitigation effects through the increase in EVs and larger penetration of renewable energy by year 2050 is also analyzed. This study is in accordance with California Transportation Plan 2040, California Sustainable Freight Action Plan and California Executive Order B-30-15 establishing a 2030 greenhouse gas emissions reduction target of 40 percent below 1990 levels.
Describe Implementation of Research Outcomes (or why not implemented):	



National Center for Sustainable Transportation

Place any photos here	
Impacts/Benefits of Implementation (actual, not anticipated):	
Web Links <ul style="list-style-type: none">• Reports• Project website	https://ncst.ucdavis.edu/project/utilizing-highway-rest-stops-for-ev-charging/