

Project Information Form

Project Title:	Modeling Electric Vehicle Charging Scenarios for New York and New England
University:	University of Vermont
Principal Investigator:	Jonathan Dowds
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Funding Source(s) and Amounts Provided (by each agency or organization):	U.S. Department of Transportation (US DOT) - \$123,171.00
Total Project Cost:	\$123,171.00
Agency ID or Contract Number:	DOT 69A3551747114 UVM-DOT-517
Start and End Dates:	September 1, 2018 – June 30, 2020
Brief Description of Research Project:	<p>This project will model hourly, plug-in electric vehicle (PEV) charging demand profiles using survey-derived trip-making data for a 7-state region comprised of New York and New England. Different PEV demand scenarios will be used in a regional electric power dispatch model to estimate generation costs and emissions. Trip lengths as well as duration at destinations will be used to model both at-home and away-from-home charging to generate hourly electricity demand from a future passenger vehicle fleet. Prior research on the grid impacts of vehicle electrification (conducted between 2006 and 2010) concluded that overnight vehicle charging, coinciding with periods of low existing electricity demand, offered significant benefits for management of the electric grid. However, in the last decade, the rapid deployment of solar generation has resulted in substantial changes in net load (electricity demand less wind and solar generation) throughout the day, resulting in idle generating capacity during daytime hours and increasing the rate at which fossil fueled power plants may need to ramp up generation through the late afternoon and evening. Mid-day generation from solar sources may represent a need to increase daytime vehicle charging that was not previously expected and which may require significantly more away-from-home charging than previously assumed.</p> <p>The overall goal of this project is to utilize detailed travel behavior data to calculate time-specific regional demand for vehicle charging and input this high-resolution PEV electricity demand into a dispatch model for New York and New England. This integration will facilitate the assessment of the combined impact of increased PEV charging and renewable electricity generation on the power sector as well as the total GHG emissions.</p>

	Results for a range of PEV penetration levels and charging behaviors will be unique in that they span across both the transportation and electricity sectors.
Describe Implementation of Research Outcomes (or why not implemented): 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/modeling-ev-charging-scenarios-for-new-york-new-england/