

Project Information Form

Project Title:	Eco-Friendly Intelligent Transportation System Technology for Freight Vehicles
University:	University of California, Riverside
Principal Investigator:	Matthew Barth
PI Contact Information:	Phone: 951-781-5782 Email: barth@ece.ucr.edu
Funding Source(s) and Amounts Provided (by each agency or organization):	California Energy Commission - \$150,000
Total Project Cost:	\$150,000
Agency ID or Contract Number:	California Energy Commission ARV-13-020, Task 2.3 UCR-CEC-2.3
Start and End Dates:	September 3, 2014 – March 31, 2017
Brief Description of Research Project:	<p>Heavy-duty freight vehicles contribute a disproportionate amount of emissions relative to the national fleet percentage and the relative vehicle miles traveled by heavy-duty freight vehicles. Accordingly, an environmentally-friendly Intelligent Transportation System application for improving arterial roadway performance is presented in this project. For arterial roadways, most Active Traffic and Demand Management strategies focus on traffic signal timing optimization at signalized intersections. A critical drawback of conventional traffic signal control strategies is that they rely on measurements from point detection, and estimate traffic states such as queue length based on very limited information. The introduction of Connected Vehicle technology can potentially address the limitations of point detection via wireless communications to assist signal phase and timing optimization.</p> <p>In this project, the researchers present an agent-based online adaptive signal control strategy based on real-time traffic information available from vehicles equipped with Connected Vehicle technology. They then evaluate the proposed strategy in terms of travel delay and energy consumption, relative to a Highway Capacity Manual based method in which hourly traffic demand is assumed to be known accurately <i>a priori</i>. This Connected Vehicle Adaptive Signal Control strategy has been applied to an isolated traffic intersection as well as to a corridor of traffic intersections. The baseline signalization strategy for the corridor of traffic intersections is coordinated signal control. Study results indicate that for both the isolated intersection and corridor contexts, the proposed strategy outperforms the Highway Capacity Manual based method and is</p>



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	very robust to traffic demand variations. The proposed system also provides a framework to flexibly modify signal timing in order to serve evolving localities' freight needs.
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/eco-friendly-intelligent-transportation-system-technology-for-freight-vehicles/