

Project Information Form

Project Title:	Program for Vehicle Regulatory Reform: Assessing Life Cycle-Based Greenhouse Gas Standards
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Funding Source(s) and Amounts Provided (by each agency or organization):	U.S. Department of Transportation (US DOT) - \$184,993.29
Total Project Cost:	\$184,993.29
Agency ID or Contract Number:	DTRT13-G-UTC29 UCD-DOT-213
Start and End Dates:	October 1, 2014 – August 31, 2018
Brief Description of Research Project:	<p>In the U.S., the transportation sector is responsible for 36% of greenhouse gas (GHG) emissions, with light-duty vehicles (LDVs) comprising the largest contribution. Globally, transportation is responsible for approximately 24% of energy-related GHG emissions, of which road transport constitutes over 70%. In addition to other measures, rapid and extensive deployment of renewable and energy-efficient technologies is seen as a crucial intervention necessary to reduce transportation sector emissions in coming decades.</p> <p>Current GHG emissions and fuel economy standards for passenger vehicles only address vehicle operation, omitting non-operation emissions such as those associated with vehicle production and other life cycle emissions. Plug-in electric vehicles (PEVs) and many other advanced technology vehicles are often promoted as means for achieving significant GHG reductions from the light-duty vehicle (LDV) sector. However, non-operation emissions for these vehicles tend to be higher than for conventional internal combustion engine vehicles (ICEVs), which means the singular focus on operation emissions could be insufficient to achieve reduction targets. The overarching goals of this research project are to examine (i), the effect of including or excluding life cycle vehicle emissions in LDV GHG emissions standards, and (ii), the potential strategies that might be pursued to effectively incorporate life cycle emissions in LDV GHG policy. The research approach applies coupled system dynamics and life cycle assessment (LCA) modeling for vehicles and fleets.</p> <p>This report documents the cumulative results of the project and presents both published findings and on-going research. The researchers provide</p>

	<p>two recommendations based on their global review of life cycle-based policies that explicitly include life cycle thinking. The first builds on biofuel policy and particularly California’s Low Carbon Fuel Standard, where a government-sanctioned model supplies either default values or underlying emissions factors to be used producer-generated life cycle GHG intensity estimates. The second looks to Environmental Product Declarations (EPDs) and, coupled with some of the mechanisms implemented for extended producer responsibility programs in Europe for vehicles, appear to provide an alternative approach that would require EPDs generated throughout the automotive supply chain or at least by supplier companies and original equipment manufacturers.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented): Place any photos here</p>	<p>While life cycle-based vehicle regulatory reform has not yet been implemented, a Transportation Research Board workshop held January 8, 2017, entitled “Life-Cycle Based Regulatory Reform for the Light Duty Vehicle Sector,” engaged industry and agency leaders and helped develop a conversation around the potential need and barriers to life cycle based vehicle regulatory reform. So, while no evidence exists that it has led to adoption, it does seem to have informed policy.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated):</p>	
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>https://ncst.ucdavis.edu/project/program-for-vehicle-regulatory-reform/</p>