

Project Information Form

Project Title:	A tool to predict fleet-wide heavy-duty vehicle fuel-saving benefits from low rolling resistance tires
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Funding Source(s) and Amounts Provided (by each agency or organization):	\$30,000 USDOT \$30,000 Match
Total Project Cost:	\$60,000
Agency ID or Contract Number:	GT-DOT-311
Start and End Dates:	April 1, 2017 – September 30, 2017
Brief Description of Research Project:	<p>In recent years, fuel consumption from the heavy-duty vehicle (HDV) sector has been increasing due to the growing freight demand, urging the need to improve HDV fuel efficiency by employing advanced technologies. One of the most effective technologies is using low rolling resistance tires. However, the same as other proposed technologies, adopting low rolling resistance tires has market barriers due to the technological uncertainties. That is, the claimed fuel-saving benefits from the generalized operations differ from the practical benefits of a specific fleet due to the wide range of vehicle characteristics, fleet operations, and environmental conditions. This study aims to develop a tool to predict fleet-wide fuel-saving benefits based on fleet-specific characteristics and real-world operating cycles. We narrow the scope of this tool to tractor-trailers in the US market as a first attempt to predict the fleet-wide technology potential. The tool is developed in four main steps: 1) pre-process raw data as inputs for simulations, 2) conduct simulations to explore the impact of fleet-wide characteristics on the effectiveness of low rolling resistance tires, 3) develop an empirical model to build the relationship between influencing factors and fuel-saving benefits of low rolling resistance tires, and 4) develop a tool in the Matlab environment to predict the fleet-wide fuel-saving benefits. Several case studies are conducted by implementing the developed tool</p>



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	<p>to several fleets with different operating characteristics to showcase the effectiveness of this tool. This tool can assist fleet operators with decision-making on adopting low rolling resistance tires, and assist regulators with providing policy incentives on fuel-saving technologies. In the future, this tool can be extended to other vehicle segments and other global markets.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented):</p> <p>Place any photos here</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/a-tool-to-predict-fleet-wide-heavy-duty-vehicle-fuel-saving-benefits-from-low-rolling-resistance-tires/</p>