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Ricardo presents road map for attaining 2025 US fuel economy standards

Ricardo has presented a comprehensive road map with a range of technologies that will be required to attain the United States Environmental Protection Agency’s 2025 Corporate Average Fuel Economy (CAFE) standards.

During the “Getting to 2025” conference hosted by Ricardo yesterday at Detroit’s Renaissance Center, the company and industry experts explained the ruling and the tools, technologies and innovation that will play an integral role in meeting the 54.5 mpg CAFE requirements. “We recognize that there is no simple solution to this complex equation,” said Tom Apostolos, president of Ricardo Inc., during his opening remarks at the conference. “Automakers are taking a total systems approach to fuel economy optimization, and the business and product challenge is to balance the vehicle imperatives.”

Ricardo engineers used their technical expertise and advanced vehicle performance simulation tool to provide analytical research to the EPA during the development of the 2025 fuel economy standards. The tool’s math-based models can account for powertrain technologies available today and next-generation technologies that would be ready for production by 2025. Focused on removing inefficiencies from the vehicle, Ricardo’s model also considers consumer acceptance along with related cost pressures, drivability and performance expectations. Ricardo recognizes that consumers buy vehicles, not powertrains, so technologies must also compete on image, utility and lifestyle requirements.
Ricardo’s road map to 2025 shows there is no single “silver bullet” solution to improving fuel economy. The industry can adopt a range of technologies and approaches to meet targets, which can include engine downsizing, enhanced boost systems, electric drive systems, hybrid-electric systems, advanced combustion controls, lightweight architectures, intelligent vehicles and vehicle connectivity. During his keynote address at the conference, Dr. Ed Nam, director of the Air Quality Modeling Center in the Office of Transportation and Air Quality at the U.S. EPA, said that the new ruling will result in four billion fewer barrels of oil consumed, and produce two billion fewer tonnes of greenhouse gas with net benefits outweighing the costs over the lifetime of a vehicle.

In the short term, through 2015, Ricardo projects the industry will focus on boosting and downsizing engines, with an emphasis on turbocharging and supercharging. The short term will also see low-speed torque enhancements, evolution of low-cost micro-hybrid technology, friction reduction and advanced thermal systems along with further development of the aforementioned niche hybrids, plug-in hybrids and electric vehicles. Electrification will have increasing importance, as improved energy storage solutions and charging infrastructure are developed.

Under the new 54.5 mpg standard, the need for mass reduction becomes increasingly important as part of a manufacturer’s tool kit for improving fuel economy. Reducing vehicle weight lessens need for fuel economy improvements from other vehicle systems and enables further mass savings through the compounding effect. There are a variety of means to achieve mass reduction and solutions will vary by vehicle class. However, in 2025 the typical vehicle will likely feature increased use of aluminium and magnesium alloys and reinforced plastics along with some continued use of steel in a variety of grades.

Ricardo is working with automakers, suppliers and other companies throughout the automotive industry to reduce greenhouse gas emissions and improve fuel economy toward achieving the new 54.5 mpg standard. Ricardo takes a holistic approach to fuel economy improvements using a portfolio of analytical software tools to model and predict system performance.

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NOTES TO EDITORS:

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