

Clemson researchers study energy savings with electric cars and IntelliDrive technology

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Clemson University researchers have been awarded a \$470,000 National Science Foundation grant to study making plug-in hybrid electric vehicles (PHEVs) more efficient to reduce fossil fuel use.

The researchers will study integrating the vehicles with infrastructure where they act as probes that generate continuous detailed [traffic data](#), such as speed profiles and travel time in cooperation with roadside devices to optimize the total energy used. The purpose is to minimize the total cost of a trip.

The hybrid [electric vehicles](#) will work with the Vehicle Infrastructure Integration (VII) system, also known as IntelliDrive. It's an initiative that will improve traffic operations and safety in the future by linking vehicles to their physical surroundings. The VII systems can act as probes, providing detailed traffic data of any monitored highway that can be used by roadside sensors, along with data from other sources, to provide predicted trip information to the vehicles.

"For instance, a roadside sensor could collect data on acceleration and deceleration of the vehicles and use the information to predict operational conditions," said lead investigator Ronnie Chowdhury, associate professor of civil engineering at Clemson.

He added that in this case, hybrid electric vehicles would "talk to" sensors that are set up in a road's infrastructure to improve [fuel efficiency](#) and overall costs by monitoring and predicting trip conditions.

"We're doing the study because we anticipate increases in the number of consumers who will drive PHEVs," said Chowdhury. "These electric vehicles would be integrated with a VII system that provides detailed traffic data as a person drives past points outfitted to collect data. With this information we can come up with mathematical models that predict detailed traffic conditions which will be used to optimize [fuel consumption](#) and total energy used. It will also minimize the total cost of a trip."

"We are looking at a new paradigm," said co-principal investigator Pierluigi Pisu, assistant professor of mechanical engineering. "We're providing the drivers with alternative routes to maximize fuel economy instead of just improving travel time."

The researchers expect it has the potential to reduce U.S. reliance on petroleum and other greenhouse gas-producing fuels, reduce pollution, save energy, minimize the long-term cost of living expenses and improve driving conditions. Researchers will collaborate with Ford for real-world evaluation of the system integration and plan to implement results after the completion of the project.

Source: Clemson University ([news](#) : [web](#))

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