

# UC Davis Will Study Users of New Plug-in Hybrid Cars

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The latest green car goes under the UC Davis microscope today: a hybrid sedan modified to recharge from a standard 110-volt electric outlet. It can travel as far as 20 miles on batteries before drinking a drop of gasoline, or get 100 miles per gallon in combined gasoline-electric mode.

Since three-fourths of drivers in the U.S. travel fewer than 40 miles a day, a car with that range on electricity alone should appeal to many people -- and that is what UC Davis transportation experts will be testing with their new fleet of 10 "plug-in hybrids."

During the next two years, the 10 UC Davis cars -- converted Toyota Priuses -- will be loaned to 100 families in Northern California for six to eight weeks each. The drivers will be surveyed about their automobile preferences and attitudes before, during and after they use the cars. The UC Davis analysis of their experiences will constitute the first comprehensive consumer report on plug-in hybrid electric vehicles.

"What we have seen is that, as consumers become more aware of hybrids, the cars are going beyond the innovators to the core market. The Prius is now the best-selling sedan in the San Francisco Bay Area and one of the most popular cars in California," said Tom Turrentine, a research anthropologist at the UC Davis Institute of Transportation Studies who directs the university's new Plug-in Hybrid Electric Vehicle Research Center.

Plug-in hybrids, however, are still virtually unknown to consumers.

There are fewer than 100 plug-in hybrids in the U.S. today. All are cars that were converted by their owners, since there are no commercially produced plug-ins for sale yet.

With so few on the road, little is known about how consumers will use them. Policymakers, energy suppliers and automakers are asking UC Davis to fill in some of the blanks.

"We know that existing hybrids offer environmental benefits and some savings on fuel costs," said Turrentine. "Plug-in hybrids offer improvements of those benefits, plus the ability to recharge at home and choice of fuel alternatives. It's your choice every day -- you can choose to use electricity or you can choose to use gasoline."

What is the difference between a conventional hybrid and a plug-in?

Hybrids are powered by a combination of electricity and gasoline, but are never plugged in. The electricity they use is generated "on board" when the driver steps on the brakes. Plug-in hybrids have bigger batteries to store more electricity, and can be plugged into the electricity grid for recharging. Designs vary, but some plug-in hybrids can operate on electricity alone for distances as long as 40 miles.

Plug-ins are less expensive to run, at about 2.7 cents per mile in electric-only mode, compared with 7 cents per mile for a conventional hybrid (and 10 cents per mile for an average gasoline-only car).

Moreover, while driving a hybrid reduces one's consumption of fossil fuel for transportation, driving a plug-in hybrid reduces it even more, by using less gasoline or diesel and more electricity. In states like California, where 45 percent of power comes from nuclear power and renewable sources such as hydro and wind, fueling vehicles with electricity is far cleaner than using oil.

The UC Davis Plug-in Hybrid Center was established in January with \$3 million in funding from the California Energy Commission's Public Interest Energy Research (PIER) program. The consumer-attitude research project being launched today is supported with an additional \$1.8 million from the California Air Resources Board.

Two other key partners in the Plug-in Hybrid Center are Pacific Gas & Electric Co. and the American Automobile Association of Northern California.

PG&E is one of the members of the center's Advisory Council, which guides its research agenda; the energy supplier for much of Northern and Central California hopes to gain an understanding of the potential impact of plug-in hybrid vehicles on California's electricity grid.

AAA of Northern California has a Greenlight Initiative to help educate customers on alternative fuels and vehicles. It will provide roadside assistance and insurance coverage for the plug-in hybrids, and many study families will be chosen from the AAA membership rolls.

"We have not identified the survey drivers yet," said Turrentine. "We will take a scientific sample of the marketplace -- people who represent typical new-car buyers and have secure garages where they will recharge the cars."

Other center partners include:

- California utilities (including Sacramento Municipal Utility District, Southern California Edison, and San Diego Gas and Electric);
- California government agencies (including the South Coast Air Quality Management - -- District and the California Air Resources Board);
- Automakers (including Nissan, Daimler and Ford);

- Electric Power Research Institute; and
- U.S. Department of Energy.

Source: UC Davis

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