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Electric cars that pay

By Mark Clayton | Staff writer of The Christian Science Monitor

So, you're thinking of buying one of those gas-electric hybrid cars like the Toyota Prius or Honda Insight. They're trendy, conserve fuel, and reduce pollution. But to really go "green," some entrepreneurs and academics say, you should try a Volkswagen Jetta.

Not just any Jetta. A dark blue one that a California electric-car company has modified so that it not only uses electricity but generates it for other purposes. So, once it's parked, you plug it in and sell excess electricity to a utility.

It sounds like a good way to meet car payments. But don't start counting the cash just yet.

Neither big auto-makers nor utility companies have yet seized on the idea, known as "vehicle-to-grid," or V2G. Still, V2G is an idea waiting to happen – and the push toward hybrids today is making it ever more likely, say scientists, entrepreneurs, and economists.

"As electric-drive hybrids begin to penetrate the auto market, you now have distributed power generation on wheels," says Stephen Letendre, an economist at Green Mountain College in Poultney, Vt. "You also have an asset that's sitting idle most of the time – just waiting to be connected."

Of the more than 235 million vehicles in the United States today, only a few thousand are hybrids. And these lack the extra internal circuitry and external plug necessary to give electricity back.

But if automakers were to make 1 million next-generation V2G vehicles by 2020, they could generate up to 10,000 megawatts of electricity – about the capacity of 20 average-size power plants, according to a 2001 study by AC Propulsion, the electric vehicle maker in San Dimas, Calif., that created the V2G Jetta.

While vehicles could generate plenty of power – studies show they sit idle 90 percent of the time – it would be far too costly to use as simple "base-load" power. Their main value would be in supplying spurts of peak and other specialty "ancillary" power for which utilities pay premium prices. It would be far cheaper for utilities to tap the batteries of thousands of cars, say, than the current practice of keeping huge turbines constantly spinning just to supply power at a moment's notice, studies show.

And there would be little risk of leaving the office to discover a car with a dead battery. That's because V2G cars would have on-board controls to prevent their batteries from being drawn below minimum travel needs set by the owner – say, a 50-mile trip.

There are signs V2G is beginning to generate more than just academic buzz.

. In Toronto, a V2G fuel-cell bus is to be in service in March.

. Power company PG&E is working with the electric industry's research arm and a contractor to develop a fleet of V2G "trouble trucks" that could generate and deliver power to entire neighborhoods when a storm knocks out power.

. DaimlerChrysler has reported it is working on a version of its popular pickup truck with V2G capability for supplying power at a work site.

. AC Propulsion has plans to make as many as 1,000 V2G electric-drive vehicles starting as soon as next year.

. A major Florida city is on the verge of buying more than 50 battery-powered buses, including several that are V2G capable.

But it's the idea of V2G on a larger scale that most awes Howard Ross, president of Ross Transportation Technology, which is getting set to build the Florida buses.

"There's enough wind power in three Plains states to provide power to the entire country – but there's no way today to store that power," Dr. Ross says. "If you have V2G auto storage, you can tap into renewables."

Wide use of V2G electric-drive vehicles could generate enough power to cut the requirement for central generating station capacity by as much as 20 percent by the year 2050, says the Electric Power Research Institute, a utility industry research center in Palo Alto, Calif.

But "if you asked 20 different utilities today what they thought of vehicles putting power back into the grid, you wouldn't get a very positive response," says Mark Duvall, EPRI's manager of technology development for electric transportation. "It took a long time to assure the utility industry that it was worthwhile just to plug solar and other

items into the grid. It's going to make them very nervous."

Today's Toyota Prius battery pack is too small to make it a viable V2G option, says V2G pioneer Willett Kempton, who estimates it would add roughly \$400 to a car's overall cost. In the long run, fuel-cell cars will far exceed hybrids in their electric generating potential, he adds.