

Mapping Out an Electric-Car Future

Companies are starting to compete to provide services, but a dominant approach and standard have yet to emerge

By [Alan Ohnsman](#)

Anton Klima is a self-described electric car fanatic. The Los Angeles television cameraman is already on his second electric vehicle, a battery-powered BMW Mini E. To make sure he's carbon-free, he charges the car from solar panels on the roof of his Hollywood Hills home. But when he's out and about, Klima has to make do with a patchy network of public chargers left over from California's original electric-car campaign a decade ago. Though he can now track down chargers with an iPhone app, the shape of the plugs has changed, so Klima has to carry three adapters to be sure he can power up. "After a while you get used to [the hassles]," Klima says.

U.S. policymakers can't count on that kind of dedication as they map out the electric-car future. President Barack Obama aims to get a million electric cars and plug-in hybrids on U.S. roads by 2015 to ease U.S. reliance on imported oil and cut carbon emissions. The first two mass-market electrics, Nissan's Leaf and the Chevy Volt, are set to hit the streets this fall.

The problem will be finding places to charge all those vehicles. To eliminate "range anxiety"—EV-speak for the fear of being stranded with drained batteries—drivers will need to know they can plug in at shopping centers, restaurants, or parking meters. "Two chargers are needed for each car—one where you live and one where you work," says Richard Lowenthal, chief executive officer of Coulomb Technologies, a California-based maker of electric car charging stations. Building that infrastructure, he estimates, "may be a \$12 billion industry."

Recognizing the need for charging stations, Democratic and Republican House and Senate members on May 27 proposed legislation to expand tax credits for the installation of charging equipment as well as electric vehicle purchases. The measure would direct the Energy Dept. to award \$800 million in grants to support charging facilities for 700,000 electric vehicles within six years.

Coulomb is one of at least a half-dozen companies aiming to win some of that cash and build the fuel stations of the 21st century. Lowenthal plans to install 4,600 chargers in nine U.S. metropolitan areas by the end of 2011 at a cost of \$2,000-\$5,000 each. The company also aims to offer smartphone apps and navigation software that will guide drivers to the nearest available charger.

Arizona-based ECotality has won a \$100 million federal grant and is working with Nissan to install more than 11,000 chargers in five U.S. states within three years. Nissan is also working with a company called AeroVironment to put charging equipment in homes, and it hopes to build a network of public chargers as well. Better Place, based in Palo Alto, Calif., is taking a different approach: Instead of simply charging cars, the company plans to open stations where drained batteries can be swapped for charged ones. The startup expects to introduce its service next year in Israel and Denmark; Hawaii and the San Francisco Bay Area will likely be its first U.S. markets.

SemaConnect, based in Annapolis, Md., has developed a \$2,500 wall-mounted charger for public use. The company has sold the devices to three locations in the Washington area. At one, a hotel in Annapolis, Md., Russell Rankin charges a fleet of 10 electric cars that he uses to shuttle guests to local attractions. Rankin says he plans to order more chargers as his company grows. "Our expansion plans are facilitated by these chargers," he says.

Utilities are preparing for the shift as well. While they say they should be able to handle the extra load, upgrades are needed. These include transformers to keep neighborhood circuits from overloading if multiple cars are plugged in at once, smart meters to monitor how vehicles charge, and rewiring older homes to handle 220-volt charging devices, says Pedro Pizarro, an executive vice-president at Southern California Edison, California's largest utility. "We need to know when people are charging, what vehicles they're charging," he says.

Some experts caution against moving too fast. Mark Duvall, director of electric transportation for the Electric Power Research Institute, an industry group, believes it may be hard for the U.S. to reach Obama's target. He predicts sales are unlikely to top 15,000 electric cars annually before 2013. "If you build some solid gold-plated infrastructure before you understand what the public wants or needs," he says, "you're going to squander a lot of resources."

The bottom line: As companies compete to provide charging services, a dominant approach and technical standard have yet to emerge.

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