

Can Electricians Plug Into the Electric Vehicle Market?

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You probably haven't seen one yet on the road—or even in the showroom.

But in eerie silence, electric vehicles are rolling our way.



They run and rely on the same electric power resources that electricians know and live by. So do electric vehicles (EVs) bring an opportunity for new business . . . or are they just a dream, already running on empty? Some big players are betting on the opportunity side.

With a touching commercial featuring a globe-roaming, grateful polar bear, Nissan has introduced its all-electric [Leaf](#), with range up to 100 miles or more. GM has the [Chevrolet Volt](#), which runs up to 40 miles in electric mode before its auxiliary gas motor kicks on to recharge the batteries. Tesla offers a hot rod [electric roadster](#), with a sedan in the works. Toyota will soon introduce a plug-in version of its Prius hybrid. The [Mitsubishi "i"](#) is expected to hit the market during the fall of 2011, when Ford will have an [electric Focus](#). [Navistar](#), Ford, Smith Electric Vehicles, and Miles Electric offer electric delivery trucks—or soon will.

These vehicles are still a rare sight on the road. Early adopters love their green image, their ability to cut tailpipe emissions, and to reduce the country's dependence on foreign oil. Though some legislators are considering ways to apply highway taxes to electrics, right now a "fill up" off the electric power grid can cost as little as 2 cents a mile. Nissan says operating an average gasoline-powered car costs more than six times as much.

Yet plug-ins have their doubters. They don't really become price competitive with fossil fuel vehicles until federal tax credits of \$7,500 and state credits and

rebates (available in 16 states) come into play. Then there's that issue of range. Who wants to be stuck 40 miles from home when your battery has 20 miles left? Better search the web to find a charging station! (Yes, you already can—just go to Google Maps and type in "ev charging station" and the name of your city.)

Somebody's going to build it

All of these vehicles will require periodic, relatively frequent recharging through home charging stations and via public chargers at theaters, shopping malls, groceries, hotels, and out on the highway. GM says the Volt's 16-kWh lithium-ion battery needs 10 hours to charge from a 110-120 V "Level I" outlet, or 4 hours from a 220-240 V charging station (Level II). Charging the Leaf's 24 kWh lithium-ion battery on 120 V can take 12 to 24 hours, or far less time using a 240 V charger. A "quick charge" from a 480 V Level III station (most likely a public facility on the highway) can boost the Leaf to 80 percent of capacity in 30 minutes—just enough time to enjoy a cup of java and a slice of pie.

As the number of plug-in vehicles grows (Nissan needs to sell a half million Leafs a year to maximize production efficiency), more charging facilities will be needed. Organizations including the National Electrical Contractors Association (NECA) have been focused on the opportunity for years. Somebody's going to install those charging facilities. And already, somebody is.

The early entries in the car charger market have been mainly smaller operators, such as ParkPod or Coulomb Technologies. But some very large players indeed are jumpstarting the car charger business: *The Wall Street Journal* (WSJ) reported in February 2011 that Eaton, GE, and Siemens are rolling in. The newspaper quoted a Siemens executive as saying "there is a clear picture of a big, big opportunity coming." ABB has invested \$10 million in San Francisco-based ECOTALITY, to foster its expansion and finance initial requirements of the EV Project, a program to install more than 15,000 chargers in 16 major US cities funded by a \$115 million grant from the US Department of Energy. Schneider Electric offers its EVLink™ system, installed by a network of "EcoXpert" certified contractors.

GE plans to sell its WattStation home charging station for about \$1,000 and its commercial-grade chargers for \$3,000 to \$5,000, the WSJ reported.

Who are the customers? Every homeowner who buys a plug-in vehicle will need a charging station at home,

running on either 120 V or (better) 240 V circuits. Nissan sells its own home stations in collaboration with an outfit named AeroVironment. GM works with SPX, which maintains its own network of electrical contractors to perform the installations. Diversified industrial manufacturer Eaton Corp. and consumer electronics retailer Best Buy are teaming up to provide facilities for the Mitsubishi. Best Buy will provide site analysis and help upgrade electrical infrastructure at home, while Eaton will provide the electrical infrastructural support and Level II chargers to Mitsubishi's dealerships. Eaton will design and build the stations sold by Best Buy, and will be the exclusive supplier and installer.

Power utilities and municipalities are involved in the permitting and approval processes. In some locations the local power grid could be overloaded if multiple neighbors decided to add Level II charging stations. Utilities must also manage rates to encourage charging at off-peak times.

Into the wide world

Out in the wide world, pace-setting organizations are already installing charging facilities, and thousands more are in the planning stage. Coulomb Technologies is developing networked charging stations installed in municipalities and organizations worldwide. Its ChargePoint Network provides multiple web-based portals for hosts, fleet managers, drivers, and utilities. In Bellevue, Washington, 15 ChargePoint stations recently powered up at the Bellevue Square and Lincoln Square shopping centers.

The Washington Transportation and Commerce departments plan to set up fast-charging stations along remote US 2 across the Cascade Mountains to allow

electric vehicles to travel between western and central Washington. Chargers are also being set up in the Seattle area and along the Interstate 5 corridor. Similar efforts are underway across the country, involving utilities, government agencies, regulators, equipment manufacturers, and contractors.

It takes some savvy to manage public charging stations. Vehicles need to stay plugged in long enough for a charge, then moved so the next vehicle can plug in. A movie theater, shopping mall or grocery could be just the right spot, while a fast food restaurant might not. Hotels, where valets can take charge of moving vehicles in and out of the charging slots, could be ideal. And does the property owner bill users for the charging service, or just chalk it up as a shopping incentive?

The intelligence built into many stations can help. Some can automatically bill the user, communicate their status over the Internet ("Hey, I'm available!"), alert the user with a note when the charge is complete, and bill by credit card.

So, is now the right time for contractors to plug into the electrical vehicle market? In a world where the economy is still recovering and other opportunities are scarce, electrical vehicle infrastructure looks like a rare growth industry. In its [position statement on EVs](#), NECA says that "beyond any other stakeholder in the electric vehicle market, NECA contractors have the technical expertise, manpower, customer service, and integration skills to create a safe and accessible vehicle charging network from the ground up."

Sure, the competition is stiff. But you deal with that every day. This could be your time to drive into a great new opportunity.

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