

EV Charging Infrastructure

JOHN DAVIS: Virtually anywhere in the U.S. you can bring light to a room with the flick of a finger. We take it for granted, but creating the national electric grid to make that possible took decades to accomplish. Now, in just a few years, we've seen the birth of a new infrastructure that allows electric vehicles to quickly recharge their batteries at home, work, or wherever they may roam. But this rapid growth has come with a few growing pains.

Starting with less than 500 in 2009, there are now over 19,000 public-access charging outlets available to electric vehicles owners at commuter lots, parking garages, airports, retail areas and thousands of locations where EV owners can conveniently plug in as part of their daily routines.

There are thousands more located in private residences. And for the most part, these installations have been relatively easy, presenting few hurdles in terms of the physical space and power requirements for the new equipment.

But, it's not always quick. Charging an EV through a standard 110 volt outlet is slow going, adding just 2 to 5 miles of range per hour of charging time. Level 2 charging, using a 240-volt circuit, adds 10-20 miles of range per hour, and is the best choice for a homeowner.

But level 2 chargers can require a dedicated circuit of 40 amps or more, which can be a problem in many homes, where electrical panels are already maxed out. And what about apartments and condos, or city dwellers with on-street parking?

Thankfully, American ingenuity is already at work finding solutions. EVSC, LLC a small company near Hartford, Connecticut has come up with a clever and inexpensive control panel that piggybacks onto an existing 240-volt appliance circuit like a stove or clothes dryer, eliminating the need to upgrade the home's electric service.

The device, called power share, senses when the dryer or stove is turned on, and automatically scales back or completely shuts off power to the vehicle charger and diverts that power to the appliance for as long as needed.

The company also produces this ADA-compliant charging station, with a retractable overhead-mounted cord. There's no tangled cables to trip over, and it's less prone to vandalism when retracted.

For long-term lots and fleet facilities, EVSE offers this portable level 2 charger. Outlets are installed at each parking space, and the actual charge unit can be moved from car to car as needed.

Even when hardware is not an issue, there are still hurdles to overcome.

Baltimore City resident John Segal has been waiting months for permission from the city to install a curbside EV charger for his Tesla Model S.

JOHN SEGAL: The city told us that we were the first residential home-owner to request a charging outlet in the right-of-way, in city property, and even though they are, as is the state, very pro-electric vehicles.

They're trying to create a policy that's equitable for everybody, and every neighborhood.

Rather than wait, we moved ahead and put a 240-outlet on our side of the sidewalk, on our property, and when necessary we plug in, stretch our tesla charging cable across the sidewalk, and charge the car. but for now, that's what we have

JOHN DAVIS: Over the past three years, the U.S. Department of Energy's Clean Cities program has awarded 36 community readiness grants to solve infrastructure related barriers for home, workplace and public recharging and to help streamline the permitting process. Programs are under way in 24 states.

For those in uncommon situations like the Segals, obtaining permits, figuring out where to safely place equipment, and the need to upgrade electrical service to existing panels are just some of the problems that must be addressed before electric vehicle chargers can be universally available.

Innovative hardware solutions, along with the continuing education of permitting officials, utilities and consumers, are working to make the U.S. charging infrastructure viable for everyone and will help drive further acceptance of plug-in EVs as vehicles for change.