Charging-Station Types for Electric Vehicles

There are three levels of charging stations (semantics: they are “charging stations”, not “chargers” as some call them; the chargers are in the vehicles):

1. **Level-1**: 120-volts AC standard electrical outlets. I do not know of any of these charging stations that require payment for their use. They provide about 1.14 kWh/hour. Electric cars vary between 3.5 and 4 mile/kWh, so 1.14 kWh/hour will allow travel distance of 3.99 to 4.56 miles for each hour of charging. Benefits: Cars parked for several hours possibly can get enough charge to travel back to their home locations. E.g., a completely empty Nissan LEAF parked overnight for twenty hours could be full when it leaves.

2. **Level-2**: 240-volts AC charging station. Typically the charge is $1/hour. Electric cars have either a 3.3 kW charger (2012 LEAF and Mitsubishi i-MiEV) or a 6.6 kW charger (2013 LEAF and 2012 Ford Fusion EV). For a 3.3 kW-charger an hour of level-2 charging gives 3.5 kWh; it is twice that for a 6.6-kW charger. So, a car that can go 3.8 miles/kWh can travel 13.3 miles after one hour of a 3.3-kW charging and 26.6 miles after one hour of a 6.6-kW charging. Benefits: A completely empty 2012 Nissan LEAF can charge to full in 6.5 hours; a completely empty 2013 Nissan LEAF will charge to full in 3.25 hours.

3. **Level-3**: 480-volts DC charging station, such as Tennessee is installing all along Interstate 40. These typically provide 25 kW up to 50 kW power. So, a car that can go 3.8 mile/kWh can travel 95 up to 190 miles after one hour of charging. There are very few of these in the U.S. that do not charge for their use. Benefits: A shopper/diner can get a full charge from empty while shopping and/or dining.

Both level-2 and level-3 charging stations can be used in the near future to recharge an electric car after it has been used for power backup at a home during a power outage at the home:

Here are some available signs for electric charging stations:

http://www.amazon.com/ELECTRIC-VEHICLE-CHARGING-STATION-sign/dp/B000ODR3GW/ref=sr_1_1?ie=UTF8&qid=1342636598&sr=8-1&keywords=sign+electric+charging

http://www.amazon.com/Parking-Except-Electric-Vehicle-Charging/dp/B005X0233Y/ref=sr_1_5?ie=UTF8&qid=1342636598&sr=8-5&keywords=sign+electric+charging
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