## Chargers - in a perfect world on the top - more like reality below

Level one (AC)
yes its a standard 110 outlet
1.3 kw (kilowatt)

10 hours (a good night sleep)
13 kWh or 40 miles


Since fees are hard to collect for level 1 - often free. Bad news - slow and you have to bring your home charger with you. With no fees collected, some locations will be poorly maintained.

Level 2 (AC)
uses a 220 volt connection
6.6 kw (some are higher)

10 hours
66 kWh or 200 miles


The usual rate is $\$ .21 / \mathrm{kWh}$. Mostly, you will find a charger that is 6.6 kw . The charger may or may not tell you. Some charging stations that can do two cars at a time can give 6.6 kw to each - some share power and give 3.3 kw to each when two cars are connected.

Considering that most EVs use about 33 kWh to go 100 miles at Interstate speeds and no-one will drain a battery to zero. An EV with a 77 kWh battery will allow you to drive a little more than 2 hours at interstate speeds. (Based on $75 \%$ of battery used drivers braver than me might go farther by driving from $100 \%$ $5 \%$ ) After two hours, most of us would appreciate a break for a rest room and a snack. At a DCFC location you could be back on the road in less than a half hour.

DC Fast Charge (not AC) sometimes called Level 3 Approaching gas station speed. Most 150 kw More than 100 mi in 15 min
10. Hr -comparison N/A

Newest up to 350 kw


The usual rate is $\$ .43 / \mathrm{kWh}$ Charging speed will vary from car to car. ( a few )
Ford Mach E 115 kw
VW ID. 4 120kw
BMW i3 50 kw
Porsche Taycan 400kw
Don't worry - your car knows and tells the charger what to give. Also with all cars - the charging speed slows as the battery fills to avoid damage to battery and extend battery life.

Note: at all levels (one, two and DCFC) The chargers list how much electricity can be delivered. But each car determines how much it will accept. e.g. I have a car that will only accept 10 amps at level one, even when plugged into a 12 amp or higher charger.

How do drivers find them?
Newer cars include them on the navigation systems.
For myself, I like to look for chargers in the comfort of my home or at a restaurant or coffee shop.
Phone Apps. Plugshare finds the most. Chargepoint. ElectrifyAmerica, EVgo, Blink, Supercharger
(Tesla), etc. If there is a charging service you like - there is probably an app.

