



ELECTRIC VEHICLE (EV) DRIVER QUICK GUIDE

Before you hit the road...



The difference between driving an EV and gasoline-powered vehicle

In general, driving an EV is just like driving an internal combustion engine (ICE) vehicle. You may even find EVs especially enjoyable because they are nearly silent and have more torque. Some EVs come with a one-pedal driving option that can be turned on or off; this feature allows the driver to utilize varying pressure on the pedal to speed or slow the vehicle down and even come to a full stop. One-pedal driving enables regenerative braking, where kinetic energy is captured during deceleration and turned into electrical energy to recharge the battery, helping to elongate vehicle range. Some find this feature difficult to get used to, while others find it a much easier and more efficient way to drive. Otherwise, an EV acts similarly to vehicles you've been driving your whole life.



When, where, and how to charge

Your EV will let you know the battery's state of charge (like on a phone) as well as the approximate remaining mileage. Sometimes you may need to charge mid-drive. Use resources such as PlugShare (www.PlugShare.com or mobile app) to identify charging locations either at or on the way to your destination. For longer trips that will require charging, it is good practice to plan ahead and identify chargers you can use. If there's an onboard option to input your destination, some EVs will even plot charging stations along the route.

Once the EV is parked, plug the cord connected to the charging station (or the cable included with the vehicle) into the EV (much like inserting a gas pump). Depending on the charger, you can initiate charging simply by plugging in or by using an app, contactless card, RFID card, or a screen on the charger itself (much like selecting your grade of gasoline and paying for gas at the pump). Charge as you have time or until you get the range you need. Charging times vary depending on the size and charging speed capability of the battery, the charging station output, and the vehicle model.



Charging station types

Charging times vary depending on both the vehicle battery's capability and the power level of the charging station. There are three levels of chargers: Level 1, Level 2, and direct current fast charging (DCFCs) (see EV Charging Port Reference Guide below). **Level 1 charging** refers to simply plugging an EV into a standard 120-volt outlet with the charging cable that comes with the vehicle. Level 1 charging is slowest, adding approximately 5 miles per hour of charging, which may be sufficient for vehicles that are consistently plugged in overnight. **Level 2** chargers add approximately 25 miles per hour of charging, making them useful when drivers are likely to park for several hours like home, work, parks, or shopping centers. **DCFCs** provide the fastest charge and can add approximately 100 miles to over 200 miles per 30 minutes of charging. DCFCs are important for longer trips, where drivers need to stop mid-drive to charge. They are often located along major roadways.

Using DCFCs sparingly, if possible, and only charging the battery up to 80% can help extend your battery's lifetime. It is also important to note for planning purposes that charging speed at DCFCs slows down significantly after a battery is charged to 80%. There is no danger in keeping a vehicle plugged into any type of charger after



the battery is fully charged, as all vehicles come with battery management systems that regulate battery temperature and stop charging when the vehicle reaches 100% battery capacity. That said, drivers should leave public chargers as soon as they reach their required state of charge to make the chargers available for the next driver.

There are three types of connectors for DCFCs: CCS, CHAdeMO, and Tesla's connector (called the North American Charging Standard, or NACS) and each EV is built to accept a specific one (like iPhone chargers vs. Android chargers). However, adapters are becoming increasingly available to allow more EVs to use multiple types of DCFCs. Public Level 2 chargers only have two different connectors: J1772 and Tesla's connector. Many newer EVs are/will be adopting the NACS standard.

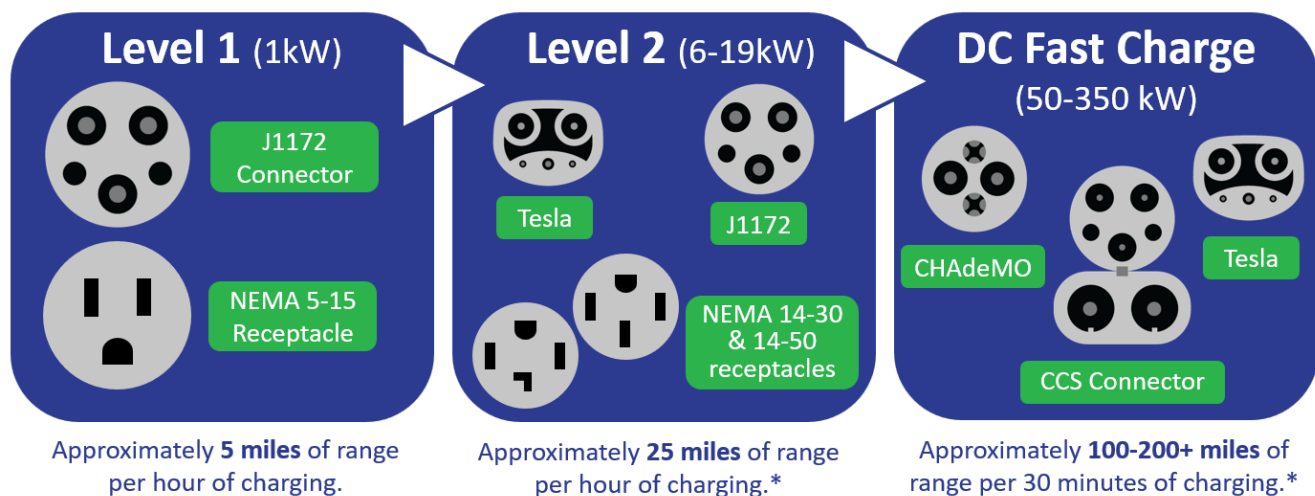


Factors that may impact EV battery range

The primary factors impacting an EV's battery range include cold weather (notably, cold weather reduces a gas car's fuel economy as well) and the use of cabin temperature controls (particularly heating). Other potential factors include repeated rapid acceleration, vehicle speed, payload, hills, and strong headwinds. These factors are akin to those that affect gasoline powered vehicles, but you might be more likely to notice the impact in an EV if you are paying close attention to your vehicle's remaining mileage. Many EVs come with heated seats and steering wheels that use much less energy than cabin heating and do not noticeably affect vehicle range. In some cases, those features may be enough to keep you warm without using cabin heating. Additionally, EVs are becoming more often equipped with heat-pumps, which have a lower impact on battery range than resistance heating.

A note to fleet drivers: Familiarize yourself with the specific manufacturer requirements and guidance for operation and charging, including the vehicle's range. Also, check with your fleet manager about agency-specific charging policies and to determine when and where to plug the vehicle in when bringing it back to its garaged location.

EV Charging Port Reference Guide



*Charging power varies by charger and vehicle.