

Home EV Charging

Whether you're new to EVs or are looking to optimize your EV charging set up, here are some helpful tips.

Charging Levels

EV chargers are classified into 3 levels, but not all EVs can utilize the most powerful chargers. Hybrid electric vehicles (HEV) don't require any external charging. All plug-in hybrids can be charged with Level 1 and 2 chargers (and a few offer Level 3 charging). All battery-electric EVs can be charged using all three levels:

Level 1 chargers often come with your EV, and use a standard 120V outlet delivering between 1-2kW of charging power. This equates to 3-5 miles of range for every hour of charging. While this solution delivers the slowest charge, this is the simplest and least expensive option for daily charging. Since typical in-town errands and short commutes average less than 35 miles/day, plugging your EV into a Level 1 charger at night will usually provide you with adequate charging to ensure your vehicle is fully charged for the next day.

Level 2 home chargers require a 240V outlet or circuit, similar to what's used for a conventional electric stove or dryer and deliver 4-12kW of charging power. This equates to 12-35 miles of charge for every hour of charging for a mid-sized EV (less for a large truck). Even the lower-powered Level 2 chargers can typically recharge a low EV battery overnight, which makes them a great option for people who drive more than 50 miles per day.

Level 3 chargers (also known as DC Fast chargers) are the quickest charging option, and are only available through public charging networks. They're capable of delivering between 50-350 kW of power for very rapid charging. Level 3 charging usually takes 20-40 minutes to charge a low battery up to 80%, depending on the vehicle and charger. They're great for longer road trips and when you need to charge your EV quickly.



When to charge

Charging at home is the most convenient and cost-effective option—typically $\frac{1}{3}$ the cost of DC fast charging. If you have a dedicated parking spot with access to electrical power, simply plug in whenever you're home to keep your car charged up and ready. A plugged-in EV is a happy EV.

Time of use pricing

If your electric utility offers Time of Use pricing, meaning the cost of electricity changes depending on the time of day, you can schedule your EV to charge during off-peak hours at a lower cost than if you were to charge during high demand times. Most EVs now allow you to schedule charging through the dashboard screen or the vehicle's app, and many Level 2 chargers also offer scheduling capability.

Charging at work

Charging at work effectively doubles your EV's daily range, paired with charging at home. Check to see if your employer offers free or subsidized charging.

Installing a Level 2 Charger

- When selecting a Level 2 charger, note the variants: hard-wired or plug-in, different output capabilities, varying cord lengths, and different outdoor ratings (important to consider if you plan to mount your charger outside in the elements).
- Level 2 chargers also vary by the amperage they draw from your electrical panel and range from 20Amp models to 50Amps or more. Higher amperage equates to faster charging, but for most situations, the lower amperage units will provide more than adequate charging speeds to completely charge overnight.
- If you already have a 240V dryer plug in your garage or near your driveway, then you're ahead of the game! You can easily plug a Level 2 charger in yourself, no electrician required. You can even plug an EV charger into the same outlet used by your dryer by installing an off-the-shelf circuit sharing device. This small box plugs into the 240V outlet and will only supply power to the EV when the dryer's not in use. Since most EV charging happens at night, this won't affect your ability to keep your EV fully charged.
- If a 240V plug is not already available where you park, you will need to have an electrician run a new circuit from your electrical panel to your charging location. The electrician can install a hard-wired charger (recommended for outdoor locations) or a new 240V outlet in your garage.
- EV chargers can be a significant additional load to your electrical panel, so consider this if you're thinking of future electrification measures like a heat pump or induction range. Modern 200 Amp panels are usually more than sufficient for complete home electrification including a Level 2 charger, but if your panel is 100 Amps, you'll want to choose a low amperage Level 2 charger to leave enough power for other devices. Panels smaller than 100 Amps will usually need to be upgraded to allow for Level 2 charging. Talk to your electrician about your electrification plans so they can give you the best advice to save you money.

Charging tips:

Don't charge your EV to the max: with lithium-ion batteries, it's best to charge to around 80% rather than to a full charge. Most EVs let you set a "target charge" so you can charge to the optimal level. And make sure you don't deplete your car's battery completely, as that can reduce overall battery life. Try to charge when the battery level goes below 30%.

Precondition to save time and money: EV batteries work best under optimal conditions. They charge fastest between 60-80F degrees, so preconditioning the battery will heat or cool the battery to accept the fastest charge. For many EVs, the best way to do this is to program the (Level 3) charger as your destination in the car's navigation system.

Limit EV quick charging: Every time you use quick charging it takes a little life away from the battery, especially in cold conditions. Charging slowly is ideal for long battery life.



[Neo Charge Smart Splitter](#)

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	ChargePoint Flex	Emporia	Tesla Wall Connector	Grizzl E Duo	Wallbox Pulsar Plus
Price	\$549	\$399	\$420	\$799	\$649
Input	16 – 50 Amps	6 – 48 Amps	12 – 48 Amps	16 – 40 Amps	6 – 48 Amps
Output	3.8-12kW	1.4 – 11.5kW	2.9 – 11.5kW	3.8 – 9.6kW	1.4 – 11.5kW
Outdoor Rating	NEMA 3R	NEMA 4	NEMA 3R	NEMA 4	NEMA 4
Wifi App	Yes	Yes	Yes	No	Yes
Load Mng	No	\$200	No	No	No
Dual Cable	No	No	No	Yes	No

