THE EV HOME CHARGING CHEAT SHEET

Charging your EV at home has never been easier with so many great options available. This cheat sheet breaks down the considerations for 240-volt or “Level 2” chargers.

Depending on factors such as income and location, you might also snag some incentives for installing and/or buying a home EV charger (details below).

In many states, EV drivers spend just 3 to 6 cents per mile on electricity, compared to 10 to 30 cents per mile for gas.

Overall, EV drivers slash fuel costs by 60% and cut maintenance and repair expenses by half, saving tens of thousands of dollars over the car’s lifetime.

Are you or is someone you know thinking about switching to an EV? Try our nonprofit’s free EV Cost Savings Calculator to see your potential monthly savings!

A Bit About Us

Coltura is a 501(c)3 nonprofit leading the charge in the Beyond Gasoline Movement. It’s very important to us that consumers like you are well-informed about EVs.

You can learn more about us at coltura.org.

COLTURA

Why settle for gasoline when there is a better alternative?

Last Updated

November 2024 - You can download the most recent version here:
coltura.org/home-ev-charger-cheat-sheet

Table of Contents

EV Charging Overview

Unlike gasoline cars, which can only be fueled at gas stations, EVs can be fueled wherever there's electricity.

You can fuel on your own time: at home, at work, or while you sleep. Many new EV batteries also go for well over 300 miles on a single charge, and technology is improving every day.

Fueling an EV is different from fueling a gas-powered car, but most people adjust easily within a few days of switching to an EV. Those with home charging quickly come to enjoy the convenience and cost savings. Plus, no more gas station fumes!

Level 1 Charging

EVs come with a charger that plugs into a regular household 110-volt outlet. If you have access to an electrical outlet, you can add 40 to 60 miles of charge to your car every night while you sleep. Only 5% of all trips are longer than 30 miles - for most commutes, 60 miles of charge is more than enough.

Level 2 Charging

If you need more range or to charge your car faster, you'll want to install a 240-volt outlet like the one an electric clothes dryer uses (a "Level 2" charger) to get between 14 and 35 miles of range per hour for

a full charge overnight. A level 2 charger can commonly be found in garages, parking lots, motels, truck stops, and gas stations.

Level 3 Charging

"Level 3" chargers are now frequently found in commercial and roadside locations, capable of recharging 10 miles of range per minute. This rapid charging speed allows most vehicles to be recharged and back on the road in just 20 minutes.

Electricity rates at home are generally cheaper than public charging, however, you can also find free and inexpensive public charging stations.

EV Charging Time

How long it takes to charge your EV depends largely on your charging station's power capacity (whether it's level 1, 2, or 3 as well as a few other factors). Even if your EV is ready to handle more juice, it'll still charge slowly if your home charger can't keep up. Plus, larger EV batteries need more time to fill up. Your car's onboard charger also manages the pace, dialing it back if it's trying to push more power than your car can handle. And let's not forget the weather - extreme heat or cold can slow things down by making your battery less efficient. A 2025 report busts the myth that EVs can't handle winter - none stopped working in sub-zero temps, and many regained range rapidly with just 15 minutes of charging.

EV Charging Incentives

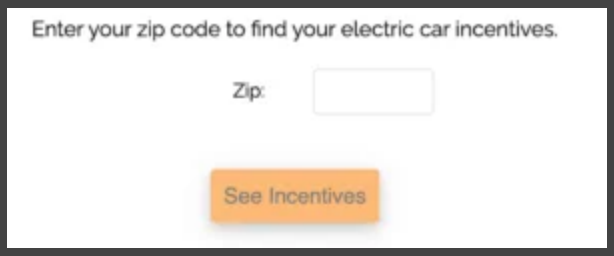
Many states, localities, and utility companies offer incentives for EVs, including discounts on charging station installations.

Income-qualifying households can also often claim discounts on electricity bills. In California for example, you could qualify for electric utilities incentives including the California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) to receive a big monthly discount on electricity.

Doing your homework on these incentives could save you a nice chunk of change!

How To Find State And Local EV Incentives

You can see a list of the state and local incentives you could qualify for by entering your location on Plugstar.



The Department of Energy is another good place to look for EV incentives and check against Plugstar.

Once you spot incentives on a directory, be sure to double-check your state or city government page, as these incentives do change periodically.

Our nonprofit also offers a free EV incentive checklist to help you uncover all the ways to save money on your EV.

The Alternative Fuel Vehicle Refueling Property Credit

The U.S. Federal Tax Credit offers 30% off on home charging stations and can cover up to $1,000 of installation costs. Just remember to claim the credit on your federal tax return. It's a deal too good to pass up!

Read more about the tax credit

"Level 2" Home Charging Overview

While EVs can be charged to add 4 to 6 miles of range per hour by plugging into a regular household wall outlet, many EV drivers opt to install a faster charging station at home to top up to a full charge overnight. Called a "Level 2" charger, this type uses a 240-volt outlet like the ones that serve most electric clothes dryers.

EV Connector Types

In the US and Canada, home chargers generally use two types of connectors: the J1772 and Tesla's North American Charging Standard (NACS).

Most EVs from brands like Audi, Chevrolet, Hyundai, and Toyota use the J1772 plug, also known as the "J plug" or "Type 1 connector" (see left). Tesla is the lone exception, using NACS (or J3400) but including an adapter for J1772 plugs.

The good news? No need to lose sleep over connector compatibility—adapters are easy to find and will bridge any gap between different plug types.

Level 2 Charging Installation Cost

When calculating the total cost, remember you might qualify for some incentives to lower the bill.

Also, whether you spend $500 or $2,000, the savings on your EV will likely cover the cost of your charger within a year.

A Level 2 charger typically costs between $400 and $700. Beyond the charger's sticker price, professional installation will likely cost you between $400 and $1,200. Don't forget about the federal tax credit, which covers 30% of your total costs, up to $1,000. This includes the charger, electrical upgrades, and wiring, and it's available through 2032.

If your home already has 240V service (like for your dryer), the installation might cost just a few hundred bucks. But if you need to upgrade your electrical system, it could run $650 to $800, or even $1,000 to $2,500 for older homes. Your main breaker's amperage rating will help determine if you need an upgrade—150 or 200 amps should be sufficient for most Level 2 chargers.

Installing the charger close to the service box can save you money, potentially costing as little as $200. For the best estimate, consult an electrician. Many EV manufacturers, dealerships, and local utilities recommend reliable installers or services like Qmerit, which handle everything from permits to finding deals.

Don't Own a House?

If you live in a condo or townhome, don't forget to get the green light from your homeowners' association before installing an EV charger. It might be as simple as filling out a form or could involve a few more hoops—so start by reaching out to them.

Renting a house or apartment with a reserved parking spot or garage? You're not out of luck, but you'll still need your landlord's OK. Also, check the power availability and how it's metered in your parking area.

If you live in a condo or apartment, check out these resources from the Department of Energy.

Do You Need Home Level 2 Charging Equipment?

A Level 2 charger charges faster than the standard Level 1 that comes with most EVs, but whether you need one depends on you.

The biggest perk of home charging is the long-term cost savings. Charging at home is usually cheaper per kilowatt-hour than fast charging, especially during off-peak hours when rates drop. Though the initial cost of a Level 2 charger can be high, it can save you money over time by reducing trips to pricey public chargers.

If you want the convenience of quicker home charging and prefer to avoid public stations, investing in a Level 2 charger might make your EV experience smoother and less stressful. Ultimately, it boils down to your driving habits, your EV's range, and how easy it is to access public chargers.

Your Driving Habits

Think first and foremost about your daily commute and secondarily how often you travel long distances. The average American drives 37 miles per day. A range of 74 miles would suffice for 84% of all driving days across the United States.

If you don't drive more than 40-50 miles a day then plugging into a standard "Level 1" 110-volt charger every night

could provide enough energy for your daily commute.

For the times you do take a road trip, you will want to plan your roadside charging along the way regardless of the charger you have at home.

Consider also how long you need to drive in cold weather. Much like the loss of energy efficiency of gasoline-powered vehicles, the EV battery range can drop significantly in cold weather.

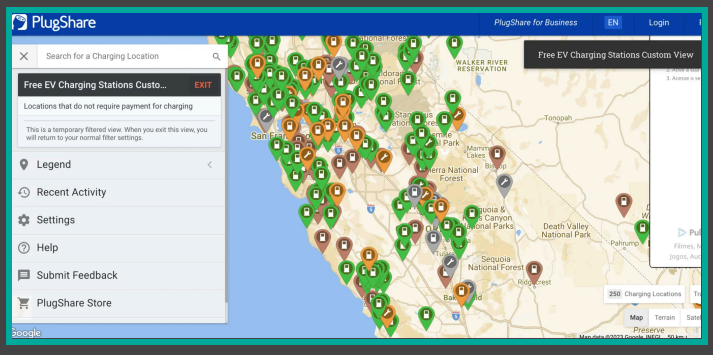
Your EV's Range

Before choosing an EV charger, understand the maximum range (miles per full charge) of your make and model. You want to ensure it's enough for your usual commute. You'll have more range in cities than on highways as every time you brake, you regenerate the battery. You'll get very familiar with your EV's range once you test it out at different speeds and under different terrains and weather conditions.

You can find more info on EV ranges here

Finding Public Places To Charge For Free

Not only are EV stations free of toxic gasoline fumes, but a number are free of charge. There could be a free public charging station near your office or home. You could charge while shopping as well. It's worth spending some time to check



A number of apps, including Plugshare, ChargePoint, and ChargeHub let you filter by price to look for free chargers. You can filter by price with “free” or “$0” as an option to find an EV charging station free of charge.

Plugshare also has an excellent map for finding free EV charging stations.

Some electric vehicle purchases also come with as much as 3 years of free fast charging. Check if your vehicle qualifies.

Have you ever seen free gasoline?

More info on finding public charging stations here

Where Can You Purchase An EV Charger?

You can find excellent home EV charging stations online. Take your time checking out the specifications, reviews, and questions others have asked.

You can also buy it in person by searching nearby or asking at the location where you purchased or leased your vehicle.

We recommend doing some research online first - this way you’ll know the type of questions to ask and better understand the price points and options available. Many charging stations have special offers and discounts. It can be helpful to shop around.

PlugStar has a great list of EV chargers. First, you can add your car's make and model at the top.

Once you select the car make & model, you can see the battery size and max charging rate. It will also show you an estimate of how long it will take each charger to charge your particular make and model.

Then you can filter price, cord length, type, socket, and WiFi connectivity on the side. You can also sort by price, charging speed, time to full charge, and cord length at the top.

The prices listed are before incentives. Make sure you check for incentives before purchasing.

Some popular home EV charging brands available in the US include Autel, Chargepoint, Emporia, Tesla (they offer chargers just for Tesla vehicles and a universal charger), and United Chargers Grizzl-E.

Check the tips below to decide which charger is right for you. You can also look up customer reviews on independent websites for particular home charging equipment and brands.

EV Home Charger Considerations

Why At Least 30 Amps

In general, the more amps, the faster your vehicle will charge. A 30 amp charger means you'll get roughly 25-30 miles of charge an hour. Your vehicle might not be able to use all 30 amps but it's better to get at least 30 amps to be ready for any future EVs you drive. You will likely want to consider 40 to 50 amps - especially if your vehicle can already handle it.

- Don't worry about damaging your vehicle if it uses less than 30 amps. It uses what it can.

- Your vehicle can only use 80% of the total capacity of the circuit breaker or electric service panel. So for a 30 amp charger, you'll need an electric service panel of at least 40 amps.
- Consult an electrician to price out the cost of installation and determine the capacity of your electric service panel before purchasing a charger. You could find that installing a charger with 40 amps is much more expensive than 30 amps if your electric service panel doesn't have enough space capacity for 40 amps.

Why A UL Certification

You might find a good charger from a start-up without it, but it's best to trust a company that has gone through the process of getting a UL certification. You'll also likely want a warranty of at least one year.

Why A Movable EV Charger

You can hardwire, or fix, your EV charger to one location. This will likely look cleaner as more of it will be hidden. But the better visual appeal might not be worth the limited flexibility. If you have a second home, change vehicles, or move where you want to park, you'll be thankful for the added flexibility of a plug-in charger.

The installation can cost significantly less as well. On top of all that, if there's an issue with your charger, you can send it back and get a new one. If it's permanently installed, you'll have to have an electrician take it out and install a new one.

Why A Longer Cord

Twelve feet might sound like a lot—until you realize it isn't. Flexibility is key, especially if you change or add EVs. Aim for a cord length of at least 18 feet, and ideally closer to the maximum 25 feet.

Since charging ports vary by vehicle, a cord length that works for one car might not suit another. Check if your vehicle can neatly store any extra cord if aesthetics are a concern.

A longer cord might also help cut installation costs by letting you position the charger closer to your electric service box.

Other EV Home Charging Considerations

Once you decide on the above points, there are a few more points to consider.

Use this list to get a better idea of the specifications that make the most sense for you:

- **Outdoor rating:** Residential EV chargers are usually installed in garages, but they can safely be used outdoors, even in the rain, as long as they're rated for outdoor use. If installing outside, look for chargers with a NEMA 3 or NEMA 4 rating, with NEMA 4X offering extra protection as it's watertight (moisture could potentially seep into an enclosure with a NEMA 3R rating - more info here).
    - When installing charging equipment outside, ensure the electrical feed line is in an outdoor-rated enclosure. If you're using a plug-in unit, the outlet's enclosure must also be rated for outdoor use
- **Smart charging:** Most chargers connect to WiFi or Bluetooth so you can monitor the charging and set the charging time to coincide with the times your electric rates are lowest (e.g., 11 pm

to 7 am) which over time can save you money - though many EVs have their own apps that provide similar functionalities.

- **Using certified installers:** They can be recommended by manufacturers and may charge more, but it can be worth the cost to avoid hiring an electrician who isn't qualified and could make a mistake with your charger.
- **Rooftop solar:** About 1/3 of electric car drivers have rooftop solar, so their electricity is coming from sunshine – saving fuel costs as well as the environment. Learn more about charging your EV with solar panels.
- **Multiple EVs:** If you have multiple EVs to charge, you have two main options. One is to install a dual charging station that can charge both vehicles at once, provided it's positioned so the cables reach both cars. The other option is to install two smart chargers on a single circuit and link them. While this setup offers more flexibility, it tends to be more expensive.
- **Cord organizer:** Some models come with a holster or hook to hold the cable and connector, keeping them safe and reducing clutter.
- **Locking mechanism:** If you're installing a portable home charger outdoors, ensure both the unit and the non-EV connector cable can be locked. This deters theft and keeps children or animals from tampering with the 240V outlet

Extending Your Battery's Range

The further you can extend your EV range, the less you'll need to pay to charge it. To extend your EV battery range:

1. Time Your Charge
2. Drive Smoothly at Lower Speeds

3. Maximize Regenerative Braking
4. Travel Light
5. Take Care of Your Tires
6. Use Your Heater and AC Sparingly

Check out this article for more in-depth tips on extending battery range or download the EV Battery Guide

CONCLUSION

Purchasing your home EV charger doesn't need to be a long, drawn-out decision. Find a good electrician, ask the right questions, and choose the specifications that make sense for you. Then, you can purchase the right charging station and be thankful every day for the financial and health benefits of not buying gas.

We hope this overview of EV home chargers has been helpful. If you have benefitted from it, we invite you to consider supporting Coltura's efforts to move the country beyond gasoline.

MAKE A DONATION TODAY