

# What I Learned From Installing Dozens of EV Chargers at Home

## Why Home EV Charger Installation Is More Than Just Plugging In

When I started working on residential electrical projects fifteen years ago, nobody asked about electric vehicles. Now it is rare to go a week without a call from a homeowner who just bought an EV or is about to take delivery of one. The question is almost always the same: "Can you install a charger in my garage?" The answer is usually yes, but the path from yes to a working charger is rarely straightforward. I have done well over fifty residential EV charger installations at this point, and I still run into surprises. The good news is that most of those surprises are avoidable if you know what to look for.

This article covers the practical side of EV charger installation from the perspective of someone who has been on the job site, under the panel, and behind the drywall. I am not going to sell you on why you need an EV. I am going to tell you what actually happens when an electrician shows up to put a charger on your wall, what can go wrong, and how to make sure the job goes smoothly.

## Know Your Panel Before You Call Anyone

The single biggest variable in any [EV charger installation](#) is the electrical panel. I have opened panels from the 1950s that still had cloth-insulated wiring and panels that were installed last year with plenty of spare breaker slots. The age and condition of your panel determine whether the job is a quick swap or a major service upgrade. Most modern homes have a 200-amp main breaker, but many older homes, especially those built before the 1980s, are still running on 100-amp or 125-amp service. Adding a 50-amp or 60-amp breaker for a Level 2 charger can push that total past the limit. When that happens, you need a service upgrade from the utility company, which adds weeks and significant cost to the timeline.

I always tell homeowners to take a picture of their panel label and send it to me before I even schedule a visit. That photo tells me the brand, the model, the bus rating, and the number of available spaces. It saves everyone time. If you have a panel that is full, the electrician can install a sub-panel or tandem breakers in some cases, but that adds labor and materials. If you have an old Federal Pacific or Zinsco panel, replacement is almost mandatory because those panels are known safety hazards and replacement breakers are hard to find. Plan for that cost upfront.

[View the location on Google Maps](#)

## **Load Calculations Are Not Optional**

An EV charger is a continuous high-load device. Unlike a dryer or an oven which runs for an hour at a time, a charger can pull its full rated current for six to ten hours straight. That sustained draw changes how you calculate load on a panel. A good electrician will perform a formal load calculation based on the National Electrical Code, Article 220. That calculation adds up all the existing loads in the home, applies demand factors, then checks whether adding the charger keeps you under 100 percent of the panel rating for continuous loads. I have seen installs where the homeowner had a spa, a heat pump, an electric range, and two air conditioners all on the same 200-amp panel. Adding a 60-amp charger pushed it over the edge. The fix was a load management device that cycles the charger off when other large loads are active. It is a clean solution but adds hardware cost and complexity.

If you are planning an EV charger installation in a home with all-electric appliances or a large family that runs everything at once, ask the electrician about load management before you buy a charger. Some chargers have built-in load balancing or can communicate with a home energy management system. That integration can save you from needing a service upgrade.

## **Location, Location, Location**

Where you put the charger matters more than most people think. The obvious spot is right next to where you park, but that is not always the best spot. I have installed chargers in garages, carports, driveways, and even on a post at the end of a long driveway. The key factors are cable reach, weather exposure, and proximity to the panel. Every foot of wire run adds cost, especially if the path involves drilling through studs, running conduit underground, or fishing wire through finished walls. I once ran 120 feet of conduit from a panel in a basement to a garage on the opposite side of the house. That was a two-day job just for the wiring. The homeowner could have saved half the cost by parking on the other side of the garage, twenty feet from the panel.

Outdoor installations require a charger rated for wet locations, typically NEMA 3R or higher. Indoor-rated chargers will fail quickly if exposed to rain or direct sun. Also consider the cable. A twenty-five-foot cable is standard, but if your EV has the charge port on the rear corner and you park nose-in, that cable might not reach. I have seen people buy an expensive charger and then have to park backwards every night. Measure the distance from the proposed charger location to your charge port before you buy anything.

## **Hardwired vs. Plug-In: The Trade-Offs**

Most Level 2 chargers come in two flavors: hardwired direct to a circuit or plug-in with a NEMA 14-50 receptacle. Hardwired is more common for permanent installations because it

eliminates a potential failure point and looks cleaner. But plug-in has advantages. If you move houses, you can unplug the charger and take it with you. The receptacle stays, and the next owner can use it for an RV or a different charger. I have done both, and I lean toward hardwired for a primary residence where the owner plans to stay for years. For a rental property or a home you might sell soon, a plug-in setup with a high-quality receptacle is the smarter choice.

One thing to watch with plug-in installations is that the receptacle and the breaker must match the charger amperage. A common mistake is installing a 50-amp breaker with a 40-amp charger. That works but leaves a few amps on the table. More dangerous is the opposite: a 40-amp breaker with a 50-amp charger. That will trip the breaker under full load and can overheat the wiring over time. Stick to the manufacturer specifications.

## **Permits and Inspections: Boring but Essential**

I have pulled permits for EV charger installation in about a dozen different jurisdictions. Requirements vary widely. Some cities require a permit for any new circuit, others exempt low-power chargers or replacements of existing outlets. A few require a load calculation to be submitted with the permit application. Skipping the permit is tempting, and I have seen plenty of unpermitted work in the field. But here is the thing: if that unpermitted installation causes a fire or an injury, your insurance company may deny the claim. And when you sell the house, the home inspection will catch an unpermitted electrical modification. Then you either pay for a retrofit or negotiate a lower sale price. The cost of a permit is usually under two hundred dollars. It is cheap insurance.

I also recommend having the inspection done even if your jurisdiction does not require a permit for this specific job. An inspector will verify that the ground is solid, the conduit is properly supported, and the breaker is correctly sized. That third-party verification catches the kind of mistake that even good electricians make under time pressure. I have had inspections save me from a loose neutral that would have caused intermittent charging failures. I was grateful for it.

## **What About the Charger Itself?**

I do not have a single brand that I recommend for every situation. The market has matured fast, and most major brands make reliable hardware. What matters more than the brand is the installation quality. A cheap charger installed with care will outlast an expensive charger installed sloppily. That said, I have noticed that chargers with a longer cable, a robust strain relief at the handle, and a warranty of at least three years tend to hold up better in daily use. Smart features like scheduling and usage tracking are nice, but they rely on Wi-Fi that sometimes drops or a phone app that gets abandoned after a software update. I tell homeowners to buy a charger that works without the app first and treats the smart features as a bonus, not a requirement.

## **EV Charger Installation Is a System, Not an Appliance**

After doing this work for years, I have settled on a simple philosophy: treat EV charger installation as a whole-house electrical project, not a plug-and-play accessory. That means considering the panel, the wire path, the load calculation, the weather, and the future. If you plan to add solar panels or a battery storage system later, the charger load interacts with those systems too. A good electrician will ask about your future plans and design the installation to accommodate them, even if you are not ready to install everything today.

For example, I recently worked with a homeowner who wanted a charger now and a heat pump water heater next year. By running a larger conduit and pulling a heavier wire than the charger required today, we saved him from having to open the walls twice. That kind of forward thinking costs maybe a hundred dollars extra in materials but saves thousands in future labor.

If you are in South Florida and need a reliable installer, Simply Wired Electrical at 1821 SW 23rd Terrace, Fort Lauderdale, FL 33312, phone +19544660475, handles residential EV charger installation with the kind of thoroughness described here.