

What Homeowners Need to Know About EV Charger Installation

Why Your Home's Electrical System Matters

When I first started working with homeowners on EV charger installation, the most common assumption was that any outlet would do. That's like plugging a modern refrigerator into a lamp socket. It might work for a minute, but it won't end well. The reality is that electric vehicles draw a lot of current, and your home's electrical panel was likely designed decades before anyone imagined a 7.2 kW charger in the garage.

I learned this the hard way on a job in a 1980s subdivision. The homeowner had bought a popular EV and assumed the builder had prepared for future needs. They hadn't. The panel was maxed out, and the wiring to the garage was only 12-gauge Romex. That job turned into a full panel upgrade before we could even touch the EV charger installation. It's a story I hear again and again.

The first step in any [EV charger installation](#) is a load calculation. You need to know what your home already pulls from the grid - air conditioning, water heater, oven, dryer - and then add the charger's draw. A typical Level 2 charger pulls between 30 and 50 amps. That's roughly the same as an electric range running on high. If your panel has no room, you either upgrade the panel or install a load management device that shares the available capacity between the charger and your major appliances.

Hardwired vs. Plug-In: Which Makes Sense?

Most homeowners face a choice between a hardwired charger and a plug-in unit with a NEMA 14-50 receptacle. The plug-in option seems simpler, and it is, but there are trade-offs. A plug-in unit can be unplugged and moved, which sounds great until you realize that the 14-50 receptacle is itself a point of failure. I've seen receptacles melt because they weren't rated for continuous high-current draw. A hardwired connection eliminates that failure point and gives a cleaner install.

[View the location on Google Maps](#)

On the other hand, if you rent or plan to move within a few years, a plug-in unit lets you take the charger with you. I've done both types of EV charger installation for clients, and my honest advice is this: if you own your home and plan to stay put, hardwire it. The connection is more reliable, and the charger typically sits flush against the wall instead of dangling from a cord.

Permits and Inspections Are Not Optional

I know it's tempting to skip the permit. It saves time and a few hundred dollars. But here's what I've seen happen when people go that route. A guy in a nearby neighborhood did his own EV charger installation, ran the wiring himself, and didn't call for inspection. Six months later, his garage smelled like burning plastic. The wire had been undersized for the run length, and the insulation was melting. He was lucky the house didn't catch fire. The city made him rip it all out and start over, plus a fine.

Permits exist because electrical work can kill you or burn your house down. A licensed electrician pulls the permit, does the work to code, and the inspector verifies it. In most jurisdictions, the inspection includes checking that the ground fault protection is correct, that the conduit is properly secured, and that the breaker is the right size. It's not red tape for the sake of it.

What a Typical Permit Covers

- Load calculation and panel capacity verification
- Proper wire gauge for the distance from panel to charger
- GFCI protection on the circuit
- Conduit type and burial depth if the run is underground
- Final inspection sign-off

I've done EV charger installation in four different cities, and every one required a permit for any new circuit over 240 volts or 50 amps. Some also require a separate electrical permit if you're adding a sub-panel. Check with your local building department before you buy anything.

Distance and Wire Sizing: The Hidden Cost

The distance between your electrical panel and the charger location matters more than most people realize. Copper is expensive, and voltage drop over a long run means you either upsize the wire or accept slower charging. For a 50-foot run, 6-gauge wire is typically sufficient for a 40-amp charger. For a 100-foot run, you might need 4-gauge or even 2-gauge wire. That adds cost quickly.

I had a customer who wanted the charger at the far end of a three-car garage, about 120 feet from the panel. The wire alone for that run cost over \$400. Plus the conduit, the breaker, and the labor. He ended up drilling a hole through the wall and placing the charger closer to the panel, reducing the run to 30 feet. The EV charger installation ended up costing half of his original estimate. Plan the location carefully.

Load Management: A Smart Solution for Tight Panels

If your panel is near capacity but you don't want a full upgrade, load management devices are worth considering. These devices sit between the charger and the panel and monitor the total current draw of the house. When the oven, dryer, and AC are all running, the load manager tells the charger to throttle back. When those appliances cycle off, the charger ramps back up to full power.

I installed one of these for a customer whose 100-amp panel was already at 85 amps with normal household loads. The load manager kept everything safe and he never had a tripped breaker. It's not a perfect solution - if you need a full charge fast, you might have to wait until the house load drops - but for most people, it works fine. The EV charger installation using a load manager cost about \$1,200 less than a panel upgrade.

When a Panel Upgrade Is Unavoidable

- Your panel is a 60-amp service from the 1960s
- You have a Federal Pacific or Zinsco panel (these are known fire hazards)
- You plan to add solar or a battery storage system later
- The breaker slots are full and there's no tandem breaker option
- Your electrician finds aluminum wiring in the panel

I don't recommend a panel upgrade lightly. It can cost between \$1,500 and \$3,000 depending on your area and the complexity of the service entrance. But if your panel is outdated or unsafe, you can't just ignore it. A new 200-amp panel gives you room for the charger and future expansion. It's an investment in your home's electrical infrastructure that pays off if you ever sell.

My Advice on Choosing an Electrician

Not every electrician knows EV charger installation well. Some know how to wire a house but have never installed a charger. Ask potential contractors how many EV chargers they've installed. Ask if they're familiar with your charger model. A good electrician will also help you pick the right charger for your needs rather than pushing the most expensive one. I recommend getting at least three quotes and asking each electrician to walk through the load calculation with you.

Also, ask about the warranty on the work. Most chargers come with a manufacturer warranty, but the installation should be backed by the electrician's workmanship guarantee. I've seen installations where the conduit wasn't glued properly and water got into the box, or the breaker

wasn't torqued to spec and the connection arced. A reputable electrician stands behind their work.

Simply Wired Electrical, located at 1821 SW 23rd Terrace, Fort Lauderdale, FL 33312, can be reached at +19544660475 for any EV charger installation needs or questions about your home's electrical readiness.