

What to Expect From a Professional EV Charger Installation

I have worked in electrical contracting for over a decade, and I can tell you that EV charger installation has changed how many homeowners think about their garage. It is not just about plugging in a unit. The process involves load calculations, panel upgrades, conduit routing, and sometimes trenching through a driveway. I have seen people buy a Level 2 charger online and then call me in a panic because the breaker trips every time they plug in. That is the moment they realize the difference between buying a charger and having a proper EV charger installation done.

Most people assume any electrician can handle the job. That is not always true. A standard outlet swap is one thing. Installing a 240-volt circuit with a dedicated breaker, GFCI protection, and a weatherproof exterior enclosure is another. I have been on jobs where the homeowner already had a charger mounted but had used a standard extension cord to reach it. That is dangerous. The cord overheats, the connections loosen, and you are looking at a fire risk. A proper installation means the charger is hardwired or connected through a manufacturer-approved plug, the cable is rated for the amperage, and the circuit is dedicated to that load.

Understanding Your Home's Electrical Capacity

Before any work begins, I always check the main service panel. Many homes built before 2010 have a 100-amp or 125-amp service. Adding a 50-amp EV circuit can push the panel past its rating if the home already has air conditioning, an electric range, and a pool pump. In those cases, a load management device or a service upgrade becomes necessary. I have done installations where we had to coordinate with the utility to increase the service from 100 to 200 amps. That takes time and adds cost, but it beats the alternative of tripping breakers every night.

Some newer homes have a 200-amp panel and plenty of spare breaker slots. Those are straightforward. But even then, the installer needs to verify the wire gauge, the conduit fill, and the distance from the panel to the charger location. Voltage drop becomes an issue if the run is over 100 feet. I once ran conduit through an attic and down an exterior wall to reach a detached garage. The run was about 150 feet. We had to upsize the wire from 6 AWG to 4 AWG to keep the voltage drop under three percent. That is the kind of detail a general handyman might miss but a qualified electrician catches.

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Permits and Inspections

A proper [EV charger installation](#) is not a DIY weekend project if you want it done safely and legally. Most municipalities require a permit for new circuits, especially for EV charging equipment. I have pulled permits in Broward County, Miami-Dade, and Palm Beach. Each jurisdiction has its own rules about conduit burial depth, working clearances, and labeling. Inspectors check for ground fault protection, proper bonding, and whether the charger is listed for the location if it is outdoors. I had one inspection where the inspector flagged the lack of a weatherproof bubble cover over the outdoor receptacle. That is a small thing, but it matters when rain blows sideways.

Skipping the permit might save a few hundred dollars upfront, but it can cause problems when you sell the house. A home inspector will flag an unpermitted electrical circuit, and the buyer might ask for a credit or walk away. I have seen that happen. Getting the permit also means the work is insured and the city has a record of it. That is peace of mind that a cash job cannot provide.

Choosing the Right Charger

The market has many options, but they fall into two categories: plug-in and hardwired. Plug-in units are easier to swap later, but they require a NEMA 14-50 receptacle and a GFCI breaker. Hardwired units are cleaner and often have a higher ingress protection rating for outdoor use. I usually recommend hardwiring for outdoor installations because the connection is sealed and there is no receptacle that can corrode. For indoor garages, a plug-in unit is fine and makes future upgrades simpler.

Another consideration is the amperage. Most Level 2 chargers pull 32 or 40 amps. A 40-amp charger needs a 50-amp breaker. If your panel is tight on capacity, a 32-amp charger on a 40-amp breaker might work without an upgrade. I have installed several 32-amp units for customers who wanted to avoid a service upgrade. They charge a bit slower, but overnight charging still gives a full battery for most commuters.

Installation Day: What Happens

On the day of the installation, I start by shutting off the main breaker. Then I run the conduit from the panel to the charger location. If the charger is outdoors, I use liquidtight flexible conduit and seal fittings to keep water out. I mount the charger to a wall or a pedestal, pull the wire, and terminate the connections. Then I turn the power back on and test the unit. I also walk the homeowner through the pairing process if the charger has a mobile app. That takes about 15 minutes, but it saves them a call to tech support later.

I have done installations in condos where the parking spot is a hundred feet from the electrical room. That requires trenching or surface-mounted conduit along a wall. The aesthetics matter

there. I use white conduit that blends with the wall and secure it every four feet. It is not invisible, but it looks intentional. I have also installed chargers on pedestals in open parking lots for commercial clients. Those jobs involve concrete footings, bollards to protect the unit, and coordination with the property manager for parking lot closures.

Cost and ROI

The price of an EV charger installation varies widely. A simple install with a panel next to the garage and a short conduit run might cost between \$600 and \$1,200. A complex install with a service upgrade, trenching, and long wire runs can go over \$3,000. The federal tax credit for EV charging equipment has expired in some years but may return. State and utility rebates are still available in Florida. I have helped customers file for rebates from their electric cooperative. Those can cover up to half the installation cost. It is worth checking before you schedule the work.

I have also seen homeowners recoup the cost when they sell. A house with a dedicated EV circuit and a mounted charger is more attractive to buyers who already own an EV or plan to buy one. It is one less thing they have to do. In a competitive market, that can make a difference.

Common Mistakes I See

- Using a standard outlet and a plug-in charger without checking the circuit rating. That outlet is often shared with other loads, and the breaker will trip.
- Mounting the charger too low or too high. The cable needs to reach the vehicle without stretching, but the unit should be above snow or flood level if outdoors.
- Forgetting to leave slack in the conduit. If the charger fails and needs replacement, tight conduit makes the swap harder.
- Not installing a dedicated circuit. Sharing a circuit with a refrigerator or sump pump can cause nuisance trips.
- Skipping the ground fault protection. Modern chargers have it built in, but older panels might not. The inspector will catch it.

Is It Worth Doing Yourself?

I am an electrician, so I am biased. But I have also fixed enough DIY installations to know that the cost of a mistake can exceed the savings. A loose connection can arc and start a fire. An undersized wire can melt the insulation. An ungrounded charger can shock someone. The National Electrical Code has specific articles for EV charging equipment, and they change

every cycle. A professional stays current. I take continuing education classes every year. That is the difference between a job that looks right and a job that is right.

If you are handy and understand electrical theory, you can do the rough-in work yourself and hire an electrician to make the final connections and pull the permit. That is a compromise I have seen work. But I do not recommend touching the panel if you are not comfortable. The danger is real.

Simply Wired Electrical, located at 1821 SW 23rd Terrace, Fort Lauderdale, FL 33312, can be reached at +19544660475 for anyone looking for a safe and code-compliant EV charger installation.