FREE HOMEOWNER GUIDE

Do I need a panel upgrade before installing an EV charger?

The honest answer: it depends on your load calculation

Not every home needs a panel upgrade to add a Level 2 EV charger, and not every home can skip one. The only way to know for certain is a load calculation. An electrician adds up the electrical demand your home already has (heating and cooling, range, dryer, water heater, and general circuits) and checks whether there is enough headroom left on your service to add a charger drawing 40 to 60 amps continuously.

This matters because an EV charger is one of the largest single loads most homes will ever add, and it runs for hours at a time. Installing one on a service that is already near capacity is how you get nuisance breaker trips, overheating, and a charger that never delivers its rated speed. A proper load calculation before installation is the difference between a charger that works every night and one that becomes a recurring service call. We run one on every EV charger installation.

When you most likely need an upgrade

Certain situations point strongly toward a service or panel upgrade before a charger goes in. None of these is an automatic yes on its own, but the more that apply to your home, the more likely an upgrade is part of the job.

- [ ] You have a 100-amp service and already run electric heat, a heat pump, an electric range, or an electric dryer
- [ ] Your panel is full, with no open breaker spaces or only tandem breakers left
- [ ] You want a 48-amp or 60-amp charger, which needs a 60-amp or 75-amp circuit
- [ ] You are planning to electrify more of the house (heat pump, induction range, heat-pump water heater) over the next few years
- [ ] Your panel is a known problem brand like Federal Pacific or Zinsco, in which case the panel should be replaced regardless of the charger

When you can often avoid a full upgrade

Just as often, we find a home has room to add a charger without touching the service. A modern 200-amp panel with open breaker spaces and moderate existing loads usually has capacity for a typical Level 2 charger. And even when raw capacity is tight, there are code-recognized ways to add charging without a full service upgrade.

- [ ] Dialing the charger down: most Level 2 chargers let the installer set a lower amperage, so a 48-amp unit can be commissioned at 32 or 40 amps to fit your available capacity

- [ ] Load management: an energy-management device monitors your home's demand and throttles or pauses the charger when the rest of the house is drawing heavily, which the code allows in place of extra service capacity
- [ ] A dedicated subpanel: if the issue is a lack of breaker spaces rather than a lack of service capacity, adding a subpanel can create room without upsizing the whole service
- [ ] Choosing a right-sized charger: many drivers are comfortably served by a 32-amp charger, which adds far more range overnight than most people use in a day

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How panel size and charger size relate

A charger's amperage is not the same as your panel's amperage, and people often confuse the two. Your service might be 100 or 200 amps, which is the total your home can draw at once. A Level 2 charger draws a slice of that: a 40-amp charger pulls 40 amps continuously, which the code requires be protected by a 50-amp breaker (breakers for continuous loads are sized at 125 percent of the load).

So a 40-amp charger does not "use up" 50 amps of your 200-amp service in the way it might sound. The load calculation is what reconciles the two. It accounts for the fact that not every circuit runs at once and tells the electrician how much of your service is genuinely spoken for. If you want to understand how the charger's amperage drives the wire and breaker size, see our guide on EV charger wire size and voltage drop.

What a panel upgrade involves if you do need one

If the load calculation shows you need more capacity, a service upgrade replaces your existing panel with a larger one, commonly 200 amps, with modern breakers, updated grounding, and current-code connections. In the Portland area that means an electrical permit, an inspection, and coordination with your utility (PGE or Pacific Power) for a temporary power shutoff. Most upgrades are completed in about a day, with inspection and utility timing adding to the overall schedule.

Panel upgrades in the Portland metro typically run somewhere between $2,500 and $7,500, depending on your existing service size, the condition of the meter and service mast, whether the panel is indoors or outdoors, and how much utility coordination is involved. If you are already planning a charger, combining the two into one project and one permit is usually the most cost-effective way to do it. A licensed electrician should assess your specific panel before quoting; the range is a starting point, not a promise.

Frequently asked questions

Can I install a Level 2 EV charger on a 100-amp panel?

Sometimes, but it depends on what else your home runs. A 100-amp service already supporting electric heat, an electric range, and an electric dryer often has little room left for a charger drawing 40 to 60 amps. A load calculation is the only reliable way to know. In many cases a lower-amperage charger or a load-management device makes it work without a full upgrade.

What is a load calculation and why does it matter?

A load calculation adds up your home's existing electrical demand and compares it to your service size to see how much capacity is left for a new charger. It matters because installing a large continuous load on a service

that is already near capacity can cause breaker trips and overheating. We perform one before every EV charger installation.

How can I add a charger without upgrading my whole panel?

Common options are setting the charger to a lower amperage, installing an energy-management device that throttles the charger when the house is busy, adding a subpanel if the problem is a lack of breaker spaces, or choosing a right-sized charger. Which one fits depends on your load calculation, so have a licensed electrician assess it.

How much does a panel upgrade cost in the Portland area?

Panel upgrades in the Portland metro typically range from $2,500 to $7,500, depending on your service size, the condition of the meter and service mast, indoor versus outdoor location, and utility coordination. Combining an upgrade with your EV charger installation into one permitted project is usually the most cost-effective approach.

Sources

1. Charging Electric Vehicles at Home, U.S. Department of Energy, Alternative Fuels Data Center. https://afdc.energy.gov/fuels/electricity-charging-home
2. Smart Charging Program, Portland General Electric. https://portlandgeneral.com/energy-choices/electric-vehicles-charging/charging-your-ev/charging-your-ev-at-home
3. Residential Electrical Permits, City of Portland Permitting & Development. https://www.portland.gov/ppd/residential-permitting/residential-electrical-permits

> **Need a licensed electrician in the Portland area?**
> Call Smiley Electric at (503) 484-7556 (Mon–Sat, 7am–5pm) or visit smileyelectric.net/contact. For sparks, smoke, a burning smell or a hot panel, turn off the power if it is safe and call right away.

Reviewed by Joshua Smiley, owner & master electrician, Smiley Electric. Last reviewed November 13, 2026. Online version: smileyelectric.net/help/do-i-need-a-panel-upgrade-for-an-ev-charger/. General information, not a substitute for an on-site inspection.

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