

EV Charging at Home: Empower Your Home with Smart EV Solutions

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Elevate your home charging experience with Savant Power's advanced EV home charger solutions. Learn more about smart EV chargers' unmatched control, efficiency, and convenience.

Unleashing the potential of smart EV charging

Are you among the [40%](#) of Americans considering an electric vehicle? Whether you already own an EV or are thinking about getting one, this article is for you. Discover how smart EV charging works, the associated benefits and costs, and how to install an EV charger at home. Let's dive in!

What is smart EV charging?

With smart charging, you can avoid peak demand hours, save on electricity costs, and still ensure your car is ready when you need it. Simply plug your EV into the smart charger and let it handle the rest. The cloud-based software automatically identifies the driver, assesses the EV battery's state of charge, and begins charging at the optimal time for convenience, efficiency, and cost-effectiveness.

Types of EV chargers and can your electrical service support EV charging?

Depending on your needs, car battery size, and home power capacity, there are several EV chargers to choose from.

Level 1 charger:

Level 1 chargers use a standard 120-volt wall outlet and can charge up to [5 miles of range per hour](#). No installation is required—just plug your EV into your outlet to begin charging. These chargers are best for low-mileage daily driving or occasional top-ups, as 8 hours of overnight charging will only provide about 40 miles of range.

Level 2 charger:

Level 2 chargers allow EV users to fully charge their vehicle overnight (8 to 10 hours), making them much more convenient and practical than Level 1 chargers. These chargers use a 240-volt outlet, similar to those used for clothes dryers, and can provide an average of 25 miles of range per hour for a faster charge. Level 2 chargers must be installed by a qualified electrician or can be plugged into an existing 240-volt outlet;

however, you should first contact an electrician to make sure your home can handle the extra load.

Alternatively, homeowners can use an energy management system, like Savant's Smart Budget, to install a [Savant Level 2 EV charger](#) without upgrading their existing electrical service. This streamlined solution eliminates the need for expensive and time-consuming upgrades, allowing you to power your EV from day one.

DC fast chargers:

DC fast chargers are known for their exceptional charging speed, capable of charging up to [300 miles of range in 30 minutes](#). Unfortunately, DC fast chargers require a 480-volt connection, making them unsuitable for home use. Also, not all electric cars are compatible with DC fast chargers. You can find DC fast chargers in shopping malls, convenience stores, and near major highways, with [8,200 public DC fast charger stations](#) across the US—or one for every 15 gas stations.

Why you should power your home with an EV charging station

Integrating an EV charging station at home not only supports your electric vehicle needs but also maximizes your vehicle's range, reducing on-the-road charging for added convenience. Home EV chargers offer many valuable features, such as smart charging, a remote [EV charging monitoring system](#), and smart home integration. These benefits lead to reduced energy costs, enhanced control over the charging experience, and optimized charging schedules. Additionally, utilities benefit from smart charging by preventing grid overload, reducing the risk of blackouts, and conserving the planet's natural resources.

How much does it cost to charge an EV?

Charging an EV typically costs less than fueling a gas-guzzling car. On average, the cost to charge an EV is equivalent to about [\\$1 to \\$2 per gallon](#) across the US—far less than the national gas price average of [\\$3.50 per gallon](#) as of June 2024.

The cost to charge an EV depends on many factors, such as battery size, charger type, residential electricity rate, battery's state of charge, weather conditions, and time of day.

Here are some average charging costs for different EV charger types, assuming that EVs get about [3 to 4 miles of range per kWh](#):

- **Level 1 charger:** [\\$0.10-\\$0.44 per kWh](#) (depending on your state's residential rate), or \$0.03-\$0.15 per mile
- **Level 2 charger:** \$0.10-\$0.44 per kWh (depending on your state's residential rate), or \$0.03-\$0.15 per mile
- **DC fast charger:** [\\$0.30-\\$0.48 per kWh](#), or \$0.08-\$0.16 per mile

Level 1 and Level 2 home charging costs about the same, with the primary difference being the time required to charge. If your electricity plan is time-of-use rather than flat rate, the cost will vary based on whether you charge during on-peak or off-peak hours.

For comparison, a gas-powered car with an average fuel efficiency of [25](#) miles per gallon, using today's average cost of \$3.50 per gallon, will cost about \$0.14 per mile—fluctuating based on driving conditions and gas prices.

With time-of-use (TOU) rates, utilities incentivize using electricity at different times of the day, lowering the cost to charge your EV during off-peak hours. For more information about how to save with TOU rates, check out our recent blog, “Understanding Time-of-Use Rates: A Guide to Saving on Your Electricity Bills”.

Do I need a permit to install an EV charger?

It depends. In most jurisdictions, installing new EV charging equipment requires a [permit](#), similar to installing any new electrical components in your home. To ensure the utmost safety and code compliance, it's recommended to have a licensed electrician handle the entire permitting process, preventing potential electrical issues like shocks or fires. Contact your local building department to learn more about specific requirements.

A permit is not required for Level 1 chargers that plug directly into a standard 120-volt wall outlet. You also won't need a permit to plug a Level 2 charger into an existing 240-volt outlet, although most homes still need to install these outlets in the garage (which will require a permit). Even if you already have a 240-volt outlet, consult an electrician to ensure your home can handle the additional load without risking electrical hazards.

Importance of integrating EV charging into your smart home ecosystem

Integrating a [home EV charging station](#) into your overall smart home ecosystem ensures a seamless and sustainable home energy management system with many associated benefits.

Unified control and management:

Integrating EV charging stations into a smart home system provides unified control and management of all energy-consuming devices, optimizing home energy usage, and reducing costs. Bidirectional chargers enable your EV to act as a [home battery backup](#) or to send energy back to the grid, maintaining grid reliability and achieving significant cost savings.

Sustainable mobility for a greener future:

Transportation accounts for [28%](#) of all greenhouse gas emissions in the US, making it the largest GHG emitter. Installing electric car charging stations at home is a monumental step towards sustainable mobility and reducing reliance on fossil fuels for

transportation. EVs don't produce any emissions, and smart charging can integrate with rooftop solar panels to charge your electric vehicle from renewable sources to support a more sustainable future.

Complying with regulations

Charging equipment installations must adhere to local and state codes and regulations. In many states, this involves submitting a site installation plan for the permitting authority's approval prior to installation.

This process ensures that all electrical work meets safety standards and is performed correctly. Additionally, some regions may have specific requirements regarding the placement and type of electrical equipment used, so it's essential to stay informed about local laws. Working with a licensed electrician can help navigate these regulations smoothly and ensure a safe and compliant installation.

Revolutionize your EV charging with Savant's Level 2 EV Charger

Take control of your EV charging experience with Savant Power's innovative [EV home charger solutions](#), designed for convenience, efficiency, and cost savings. Our Level 2 EV charger offers advanced features, including:

- **On-demand or scheduled charging:** Optimize charging times to take advantage of lower utility rates.
- **Variable charge rates:** Minimize energy consumption and extend off-grid energy storage runtime.
- **Flex charging:** Automatically adjust the charge rate based on available power in your Smart Budget, staying within your current electrical service.
- **Smart notifications:** Receive alerts when your EV is fully charged.
- **EV charging insights:** Manage all of your home's power and smart technology in the Savant app.

[Contact us today](#) to unlock the full potential of smart EV charging at your home.