

Guide to Installing Electric Vehicle Charging Equipment

City of Somerville

Office of Sustainability and Environment



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Purpose

The purpose of this guide is to provide guidance on how to install Electric Vehicle Supply Equipment (EVSE) in Somerville and to help you understand your options for charging an electric vehicle. This guide was developed with multi-family property owners and renters in mind, but much of this guidance is also relevant for EV drivers who own single-family homes.

How to Install Your EV Charger



1. Hire an Electrician

Any licensed electrician should be qualified to install residential electric vehicle (EV) charging equipment. However, hiring an electrician who is experienced in EV charging installation can make the process easier. To get the best price, you should reach out to multiple electricians to compare quotes.

An electrician will be responsible for load calculations, filing of permits and the installation of your charger. Filing of permits can be done by your electrician online at [somervillema.gov/citizenserve](https://www.somervillema.gov/citizenserve).

I want to charge directly from an existing outlet, do I really need to hire an electrician?

Yes. Do not plug your EV into an outlet without checking with your electrician to make sure your outlet can support it. Plugging an EV into an outlet on an overloaded circuit or with old wiring can result in damage to your home.

2. Determine Your Charging Needs: Choosing Between Level 1 & Level 2 Chargers

The two most common types of chargers used in residential settings are Level 1 and Level 2.

Level 1: This type of charger uses a regular 3-prong household outlet (i.e. 120 volt) that is already available in most homes. Electric vehicles are also often sold with Level 1 chargers for no extra cost. In order to get a second charger or a replacement, you should expect to pay up to \$300.¹

A vehicle can typically charge at a rate of 2-5 miles per hour using Level 1 charging. This is known as a 'trickle-charge' and can be slow, but if you don't drive many miles, this rate may be enough. On average, it would take seventeen to twenty-five hours to fully charge an electric vehicle with a 100-mile battery.² If you can park and charge overnight regularly, this level of charge might be sufficient for meeting most of your charging needs. Level 1 charging is often sufficient for Plug-In Hybrid Electric Vehicles.

Level 2: These chargers charge EVs at a much faster rate of 8-24 mph which would require around 4-6 hours of charging to fully charge an electric vehicle with a 100-mile battery.³ Level 2 chargers require a

¹ "How Much Does It Cost to Install an Electric Vehicle Charging Station at Home?" <https://www.fixr.com/costs/home-electric-vehicle-charging-station#:~:text=Costs%20vary%20depending%20on%20where,%2C%20and%20wall%2Dmounted%20system>.

² "Level Up Your EV Charging Knowledge" <https://www.chargepoint.com/blog/level-your-ev-charging-knowledge/>

³ "Level Up Your EV Charging Knowledge" <https://www.chargepoint.com/blog/level-your-ev-charging-knowledge/>

240-volt outlet, which is what is needed for large appliances like electric stoves and dryers.⁴ On average, Level 2 chargers can cost from \$300 to \$1200.⁵

Some questions to ask yourself to determine which level is right for you include:

How many miles do I typically drive each day?

If you drive fewer than 40 miles a day, then a Level 1 at home charger could be a good fit assuming you would be able to recharge each night for several hours.

How often and for how long can I leave the car plugged in?

If you can leave your car plugged in for an extended period of time, for example overnight, then a Level 1 might be sufficient. If you don't have a reserved parking space or have to move your car frequently, a Level 2 charger might be more appropriate.

Will I be sharing this charger with other people?

If you plan on sharing the charger with other, a Level 2 charger may be better suited to allow for shorter charging sessions shared between neighbors or housemates.

Are there public chargers near where I live, work, or travel that can supplement charging if needed?

Public chargers are a good option to provide the occasional faster charge when you need to top off your battery in a pinch. Having access to workplace charging or charging near regular destinations you travel can make it easier to rely on Level 1 charging at home.

Will I be able to get permission from my landlord or condo association to install Level 2 charging?

Condo-owners and renters will most likely need approval of their condo association or landlord to install Level 2 charging equipment because this often requires electrical service upgrades. Be sure to also get updated information on your building's policy regarding EV charging installation. If you can't get permission, you will need to rely on Level 1 or use public charging. Additionally, check with other residents in your building to see if anyone would be interested in sharing the EV charger with you to reduce installation and maintenance costs.⁶ Here is an example of a letter requesting approval for EVSE installation from your condo board: Condo [Request Letter Template](#).

If you have asked yourself these questions and still cannot decide, try a Level 1 charger first and see if it meets your charging needs. You can always look into upgrading to a faster charge later if needed.

⁴ "About 220 Volt Outlets" <https://modernize.com/homeowner-resources/17689/220-volt-electrical-outlets>

⁵ "How Much Does It Cost to Install an Electric Vehicle Charging Station at Home?" <https://www.fixr.com/costs/home-electric-vehicle-charging-station#:~:text=Costs%20vary%20depending%20on%20where,%2C%20and%20wall%2Dmounted%20system>.

⁶ "EV Charging for Condos: Get Your HOA to Say 'Yes'", 2017, <https://www.chargepoint.com/blog/ev-charging-condos-get-your-hoa-say-yes/>

Inside EVs, "How to Get an EVSE For My Condominium / Apartment," 2014, <https://insideevs.com/news/320624/how-to-get-an-evse-for-my-condominium-apartment/>

Level 1 EVSE

Great for: infrequent trips, short commutes, drivers who can charge for long periods of time

Pros	Cons
<ul style="list-style-type: none">• Uses a regular standard 3-prong plug outlet (120 volt) and is often already available near parking.• Typically lower cost for charger, installation, and electricity than Level 2.• Can be ideal for Plug-In Hybrid Electric Vehicles, which do not only rely on chargers to recharge their batteries and so aren't deterred by a slower charging rate.• Typically will need fewer electrical upgrades.	<ul style="list-style-type: none">• Slow charging rate. Charges at a rate of 2-5 miles per hour. Usually takes 8 to 12 hours to charge a depleted battery. This can be slow and may only be suitable for PEV drivers who don't drive many miles regularly.

Level 2 EVSE

Great for: frequent trips, longer commutes, drivers who are unable to charge for long periods of time, sharing with other EV drivers

Pros	Cons
<ul style="list-style-type: none">• Charges at a much faster rate than Level 1 chargers of 8-24 mph. On average, it only takes 4 to 6 hours to charge your vehicle.• Better for shared usage than Level 1 EV charger. This can help to reduce installation and maintenance costs.	<ul style="list-style-type: none">• Costs for EV charger, installation and electricity can be higher than those associated with Level 1 chargers.• Requires a 240-volt outlet and will be more likely to require electrical upgrades than Level 1 chargers.

3. Choose Your Charging Equipment

Different electric vehicle models charge at different speeds based on the capacity of the vehicle's onboard charger. Make sure you buy a charging unit that delivers as much power as your electric vehicle can accept. Your car will not charge faster if you buy an EV charger, or electric vehicle supply equipment (EVSE), that delivers more power than your electric can accept.

EV charger features to consider include:

Amperage: Amperage determines the rate of charge. Different models of EVs are able to accept different levels of amperage. Installing charging equipment with a higher amperage than your vehicle will not provide a charging benefit, so it is a good idea to match the amperage of your charging equipment with your vehicle.

Smart EVSE vs Basic EVSE: There are two types of EVSE, smart EVSE and basic EVSE. Basic EVSE can only communicate with the vehicle while it is charging. Smart EVSE are typically WIFI enabled and offer features such as:

- Connectivity - When EVSE is networked, it can communicate with other internet-enabled devices, such as your vehicle, smartphone, and your payment network. This can allow you to monitor energy consumption, charging rate and other data remotely from your smartphone.
- Scheduling - This allows you to schedule charging from your smartphone. This can be done remotely or according to price signals from your utility company. For example, Eversource provides financial incentives to people who are willing to reduce their charging rate during peak hours. This can help to reduce the cost of installation. Find out more [here](#).

While smart EVSE are attractive and can potentially save money in the long run, their upfront costs will be more expensive than those of basic EVSE.⁷ Basic chargers usually cost from \$300-\$500 but smart chargers typically cost around \$600-\$800 more.⁸

Cord Length: Ensure that your cord is long enough to reach your vehicle. The maximum length of EVSE cords is twenty-five feet. Keep in mind that it is dangerous to use extension cords when charging your vehicle.

Safety: Ensure that the charging device is certified by an established testing organization such as Underwriters Laboratory (UL) and/or certified to be safe by an independent laboratory.

Portability: If you expect to be charging in different locations, you might want to think about getting a portable EVSE so that you can charge your vehicle away from home. This could simply be the Level 1

⁷ "How-To Guide: electric vehicle charger installation"

<https://www.boston.gov/sites/default/files/file/2019/12/How%20To%20Install%20an%20EVSE.pdf>

⁸ "Buying and Using a 'Smart' Electric Car Charger," <https://www.myev.com/research/ev-101/buying-and-using-a-smart-electric-car-charger>

EVSE that are often provided with new electric vehicles. In addition, you can also purchase separate portable electric EVSE. There are portable charger models that can offer a faster charge than a Level 1 EVSE (up to 3 times faster) but a slower charge than Level 2 EVSE. These chargers can be carried everywhere and can be transported in the trunk of your car.⁹

Internal Metering: Some chargers are equipped with an internal meter to keep track of energy usage. This could be useful for multifamily properties where multiple people want to share use of the EVSE and divide costs accordingly.

4. Determine if electrical upgrades are necessary

Your electrician will identify any electrical upgrades that may be necessary to support EV charging. This is more likely if you are looking to install Level 2 charging capacity.

There are two types of electrical upgrades that might be required:

- Adding capacity to the unit or house panel and/or
- Upgrading electric service capacity to the MUD from the utility

Adding capacity to the unit or house panel

Level 1 charging requires a dedicated 20-amp circuit and a regular 120 volt 3-pronged outlet. To assess the feasibility of Level 1 charging and prevent the main breaker from tripping, you and your electrician should review the annual peak load of the house panel to determine if there is available capacity. This information can be requested from the electric utility at the request of the person named on the bill.

Level 2 charging requires at least a dedicated 40-amp circuit. If there is sufficient capacity and breaker space on the panel, then your electrician can add breakers to the panel to create the necessary dedicated circuits. When there is insufficient capacity or space on the panel for a dedicated circuit your electrician can create additional capacity by choosing one of the following methods:

- a. Upgrading to a new panel. This replaces the existing panel with one that has additional breaker space or additional capacity.
- b. Reconfiguring the current panel to provide more breaker space.
- c. Adding a subpanel for the EVSE unit.
- d. Adding a separate panel from the existing service.

All of these options require an electrical permit from the City.

⁹ "Level 1 vs. Level 2 Electric Vehicle Charging Stations" <https://www.homechargingstations.com/level-1-vs-level-2-charging-stations/#:~:text=There%20is%20a%20huge%20difference,miles%20of%20Range%20per%20Hour.>

Upgrading electric service capacity to a multifamily property from the utility

To add capacity at the panel level for your EVSE, you need to receive enough power from the utility to support the added load. If there is insufficient power, tenants or owners must apply for a utility service upgrade to replace service wires fed to your multifamily property and/or upgrade distribution lines.

Adding capacity at the panel level may require upgrading the property's electricity service. This may be more likely if the property is located at the end of the utility's electrical lines served by a substation or where building density has already maximized electric service capacity. In order to accommodate additional capacity, the utility may need to perform service line and/or distribution line upgrades.¹⁰

More recently constructed multifamily properties may have advantages when installing EVSE on site. The electrical service provided by a utility to newer multifamily properties is more likely to have sufficient capacity for supporting Plug-in Electric Vehicle (PEV) charging, reducing the need for potentially expensive service upgrades. However, always consult an electrician before making a final decision.

5. Choose the Location for your EV Charger

There are a few things that you should consider while choosing where to install your charger.

Wall-Mounted vs Floor Mounted: You have the option to choose whether your EVSE will be mounted on the wall or the floor. This can be determined based on how much physical space you have allocated for the device.

Wall mounted chargers are most common for personal or residential use. They are cheaper to install and require less space than floor mounted chargers. If you have a wall near where you park, this is the best option.

Floor mounted, or a pedestal charger, might be appropriate for a large multifamily property that has parking in a garage or large lot. If not planned for during construction, it can be expensive to run the wiring to EVSE that are farther away from the electrical panel in the building.

Number of Ports: Additionally, some Level 2 EVSE can have multiple connectors, which can be used to serve multiple parking spaces with the same EVSE. While this is convenient, it is important to ensure that each connector is able to reach the intended parking space. Different mounting configurations should be considered to effectively take advantage of this.

¹⁰ Information for this section sourced from "Overcoming Barriers to Electric Vehicle Charging in Multi-unit Dwellings: A Westside Cities Case Study" https://innovation.luskin.ucla.edu/wp-content/uploads/2019/03/Overcoming_Barriers_to_EV_Charging_in_MUDs-A_Westside_Cities_Case_Study.pdf

If neither a wall-mounted nor a floor-mounted EVSE would work, try using a portable EVSE. They are relatively less costly and can be carried from location to location, requiring only a safe outlet to plug into.

Accessibility: Shared chargers in multifamily properties should be accessible to drivers of all physical abilities and should be compliant with the requirements outlined by the Americans with Disabilities Act.

Lighting: Make sure that there is enough lighting in the location you have chosen. This can prevent injury as the EVSE and objects in its surroundings can be a tripping hazard. A well lit EVSE can increase your safety and security.

Inside vs Outside: Installing your charger indoors, such as in a garage, will help to protect your equipment and could make installation cheaper. EVSEs that will be used outside will have to be installed directly into your electrical panel (hardwired). In addition, a protective enclosure may be necessary to protect it from being damaged over time from potential hazards, such as the weather or vandalism.

Most EV chargers are designed to be insulated and waterproof. So, it is typically safe to charge your vehicle outside in rain or snow, with the exception of extreme events such as floods. However, to be absolutely sure, check your manufacturer's instructions. It is important to ensure that your electricity connections are not in water and that all cords are intended for use with EVSE. Also, be careful to avoid it while snowplowing.

Proximity to power: Generally, the closer EVSE is to the power source, the lower installation costs will be. If the power source is not close to the location, your electrician will have to run a conduit from your electrical panel to where your EVSE is located. This is site specific and costs will vary from site to site.

Connection to Meter: For multifamily properties where multiple people want to share use of the EVSE, dedicated meters can prove to be especially useful. They make sure that whoever uses the EVSE pays for the electricity they use and the burden isn't unfairly shouldered by others.¹¹ Bear in mind that installing a separate meter for EVSE can increase installation costs. If you don't already have a common meter, check to see if you have enough space for an additional meter. If separate metering is a challenge in your property, some EVSE have integrated meters that can be used to calculate the energy used for charging from the rest of the energy used by the property.

6. Obtain Electrical Permits

A licensed electrician is required to obtain all necessary permits from the city. The permit application should be filed before the installation begins. Your electrician will need to submit a load calculation for the installation along with the standard electrical permit application. The permit will only be approved if all the necessary documents are submitted and the permit fee is paid. On average, permit applications

¹¹ Information for this section sourced from "How-To Guide: electric vehicle charger installation"
<https://www.boston.gov/sites/default/files/file/2019/12/How%20to%20Install%20an%20EVSE.pdf>

cost \$75 but costs could vary depending on a variety of factors, such as the need for electrical upgrades. You can find more information about the process online somervillema.gov/citizenserve or by visiting the Inspectional Services Division at 1 Franey Road, Somerville, MA 02145.

Submittal requirements for permit applications can be found online [here](#).

7. Install EVSE

Level 1 Chargers: These are generally easier to install than Level 2 chargers. Installation is simply plugging the EVSE (most commonly the charger provided with the car) into an outlet, after your electrician does any necessary electrical upgrades. Do not plug your EVSE into an outlet without checking with your electrician. This is dangerous and can result in damage to your home.

Level 2 Chargers: Installation should be done by your electrician. In addition to the cost of the equipment, be prepared to pay permitting and inspection fees and for the work performed by the licensed electrician. To get the best price, you should reach out to multiple electricians to compare quotes and references.

Your electrician may need to run wires from the electrical panel to the desired location for the EVSE connection. If the panel is close to the EVSE location, then the installation can be straightforward. As the distance between the panel and the EVSE site increases, additional costs can arise from materials and labor.

If you are planning to install EVSE in an underground parking garage or other structurally significant location, EVSE installation may require engineering tests like x-raying concrete to ensure structural integrity. Therefore, the cost of installing EVSE at MUDs can vary from site to site as parking environments are not the same.¹²

In a multifamily building, make sure that the outlet you are using is connected to your meter so that you pay for the electricity that you use. If EVSE is connected to a common meter, consider choosing a model that has internal metering to allow for separating out charging costs from common uses.

¹² Information for this section sourced from “Overcoming Barriers to Electric Vehicle Charging in Multi-unit Dwellings: A Westside Cities Case Study” https://innovation.luskin.ucla.edu/wp-content/uploads/2019/03/Overcoming_Barriers_to_EV_Charging_in_MUDs-A_Westside_Cities_Case_Study.pdf

Saving Opportunities

- Identify parking layouts and electrical configurations that lend themselves to lower cost charging infrastructure installation e.g. parking spots close to existing electrical outlets.
- Consider enrolling in Eversource's [EV Home Charger Demand Response](#) program to earn a rebate on a connected charger.
- Apply for rebates on your electric vehicle. Find out more at [Massachusetts Offers Rebates for Electric Vehicles \(MOR-EV\)](#)
- In addition to the service upgrades needed to install EVSE, think about what service upgrades would be able to accommodate other electrical appliances such as air source heat pumps or solar PV. This will work out to be cheaper for you down the road if you are able to plan for future improvements. Visit [Somerville Energy Efficiency Now \(SEEN\)](#) to learn more about heat pumps and installing solar.
- Sharing the EVSE with other residents on the property can help to reduce installation and maintenance costs. This is easier done with a Level 2 EVSE that allows for faster charging and can include multiple connectors.
- For owners of larger multifamily properties with at least ten residential units, you could be eligible for incentive funding from the Massachusetts Department of Environmental Protection (MassDEP) that will help to cover the costs for EVSE installation. Visit [Massachusetts Electric Vehicle Incentive Program \(MassEVIP\) Multi-Unit Dwelling \(MUD\) Charging Program](#) to find out more.

Frequently Asked Questions

What if I don't have an off-street parking spot?

One option could be to use the public charging stations that are conveniently located around Somerville. This [link](#) takes you to a map of where to find them. If you drive to work, you could also petition your workplace to install EV charging for employees.

What if I don't have enough room in my electrical panel to dedicate a circuit to Level 2 charging?

When there is insufficient capacity or space on the panel for a dedicated circuit your electrician can create additional capacity by choosing one of the following methods:

- Upgrading to a new panel. This replaces the existing panel with one that has additional breaker space or additional capacity.
- Reconfiguring the current panel to provide more breaker space.
- Adding a subpanel for the EVSE unit.
- Adding a separate panel from the existing service.

You could consider trying Level 1 charging which may not require as many electrical upgrades, but check with your electrician to make sure the outlet you are using is safe for EV charging.

What if the permit process is taking much longer than I had anticipated and is holding up the installation process?

Your electrician can contact the Inspectional Services Division of the City of Somerville to find out more. This can be done at somerillema.gov/citizenserve or by visiting the Inspectional Services Division at 1 Franey Road, Somerville, MA 02145.

What if I want a Level 2 charger but the installation process is too expensive?

Instead of getting a Level 2 charger, you could get a Level 1 charger and use it in addition to the public chargers located around Somerville. Additionally, there are a variety of options outlined in the "Savings Opportunities" section which could help to reduce installation costs.

Is running extension cords or charging cables across the sidewalk allowed?

It is never safe to use an extension cord to charge a vehicle. In Somerville, you are not allowed to run a charging cable across the sidewalk under any circumstances. This is a liability and could be hazardous. Active electric wires running across public spaces present many dangers, such as tripping and accessibility hazards, and could be a source of potential electrocution.

Who takes care of electrical permits?

Your electrician is responsible for applying for a permit with the Inspectional Services Division of the City of Somerville. This can be done at somerillema.gov/citizenserve or by visiting the Inspectional Services Division at 1 Franey Road, Somerville, MA 02145.

Where are public chargers located?

Click this [link](#) to see a map showing the location of all public EVSE in the City of Somerville.

Should I put EVSE on a common meter?

If you live in a multi-family building, you might already have a common meter for common lights and appliances, like shared laundry. Installing your EVSE on the common meter is one strategy for multi-family properties where tenants or condo owners want to share use of a charging station and its associated costs. Be sure to look at your Eversource bill to see what rate your common meter is on as this might be different from the residential rate on your household's meter.

If only one tenant will have exclusive use over the station, it might be the best option to connect it directly to their meter. As always, consult with your electrician. If you are a tenant or a condo owner, also consult with the relevant parties (e.g. your landlord or condo board).

Keep in mind that adding a third meter **does not** replace doing a service upgrade. Also, you could be charged at a commercial electricity rate instead of a residential electricity rate which could increase your electricity bill.

How do I know if I need an electrical service upgrade?

Consult with your electrician. While newer buildings are less likely to require electrical service upgrades than older ones, check with your electrician to make sure.

Can I just plug my vehicle into the outlet?

No. Talk to your electrician to make sure your outlet is safe for EV charging before plugging in. Plugging your car into an outdated outlet can be dangerous and can result in damage to your home.

How much will I save if my vehicle is charged using solar power?

Pairing EV charging with solar is a great strategy to save money and to minimize your own greenhouse gas emissions. Check out this [solar calculator](#) to find out more. Visit somerillema.gov/seen for more information about installing solar on your home.

Can I charge my vehicle in the rain or snow?

Most EV chargers are designed to be insulated and waterproof. So, it is typically safe to charge your vehicle in rain or snow. However, to be absolutely sure, check your manufacturer's instructions. It is also

important to ensure that your electricity connections are not in water and that all cords are intended for EV charging (do not use an extension cord for charging).¹³

If I live in a condominium and would like to install EVSE, what are some things that I should consider?

Be sure to get updated information on your building's policies regarding parking, EVSE installation and electrical upgrades. In most cases you will have to get permission from your condo board to install your EVSE. Additionally, check with other residents to see if anyone would be interested in sharing the EVSE with you to reduce installation and maintenance costs.¹⁴

Here is an example of a letter requesting approval for EVSE installation from your condo board: [Request Letter Template](#)¹⁵

¹³ "The Art of Charging an Electric Car in the Rain", <https://cleantechnica.com/2020/10/02/the-art-of-charging-an-electric-car-in-the-rain-autotrader-report/>

¹⁴ "EV Charging for Condos: Get Your HOA to Say "Yes," " 2017, <https://www.chargepoint.com/blog/ev-charging-condos-get-your-hoa-say-yes/>
Inside EVs, "How to Get an EVSE For My Condominium / Apartment," 2014, <https://insideevs.com/news/320624/how-to-get-an-evse-for-my-condominium-apartment/>

¹⁵ "Letter Requesting Approval Charging Installation," <https://www.tesla.com/sites/default/files/support/home-charging-installation/letter-requesting-approval-charging-installation.docx>

Glossary

Connector: Car charging cables typically have connectors on each end. One that connects to the vehicle socket and the other than connects to the EVSE.¹⁶ Most EVSE and electric vehicles use a standard SAE J1772 connector that is compatible with both Level 1 and II chargers.¹⁷

Current: This is the flow of electricity over time caused when voltage is applied to a load. Most charging stations are rated and advertised by how much current they deliver. Current is measured in amps.

Circuit Breaker: Circuit breakers are located in the electrical panel and control and protect your electrical power system and can be operated manually or automatically.

Electrical Energy: This is the total capacity to do work (e.g., turn the wheels of a car). Electrical energy is measured in kilowatt-hours (kWh).

Electrical Meter: Meters measure how much electricity a home, building, or other electrical device uses.



Example of an electrical meter

Electrical Outlet: This is also known as an electrical socket or plug. They enable electrical equipment to connect to the electrical power system.

Electrical Panel: This is the metal box where all your circuit breaker switches are located. It accepts the property's main electrical power and distributes electrical current to the circuits.

¹⁶ "EV Charging Connector Types and Speeds", <https://pod-point.com/guides/driver/ev-connector-types-speed>

¹⁷ "How-To Guide: electric vehicle charger installation"
<https://www.boston.gov/sites/default/files/file/2019/12/How%20To%20Install%20an%20EVSE.pdf>



Example of an electrical panel (interior)



Example of an electrical panel (exterior)

Electrical Power: This is the energy output over time. It increases with higher voltage and higher current and is measured in kilowatts (kW). Higher power enables you to charge your electric vehicle in less time. As a safety measure, most electric vehicles have a limit that puts a cap on how quickly they can charge at a level 2 station.

Electric Vehicle Supply Equipment (EVSE): This is another term for charging station. All Plug-in Electric Vehicle drivers need EVSE equipment for plugging their vehicle into an electrical outlet.

All electric vehicles come with a charging cable for a regular 120-volt outlet. In order to charge at a higher rate you need:

- 240 volt outlet (if you don't have one, must be installed by electrician)
- Cable to connect car to outlet
- Way to manage the electrical current running between them

EVSE takes care of the last two points. EVSE is the cable and the box that makes sure that the car doesn't draw more current than it can accept or that the outlet can deliver, protecting the car and your home from electrical surges. It also prevents current from flowing if the charging port and cable are not properly connected.



Image by (Joenomias) Menno de Jong from Pixabay



Image by Hookyung Lee from Pixabay

Onboard Charger: This is the device in an electric car that converts AC power from the wall outlet to the DC power stored in an electric vehicle's battery. For level 1 and level 2 charging, maximum charging is limited by the onboard charger's power.

Plug-In Electric Vehicle (PEV): A vehicle that operates exclusively on electrical energy from a charged battery and does not have an internal combustion engine.

Plug-In Hybrid Electric Vehicle (PHEV): A vehicle that operates on energy from a rechargeable battery and an internal combustion engine. PHEVs can be plugged in to recharge the battery.

Voltage: A measure of how much electrical force is available to generate energy. It is measured in volts and is used to describe wall outlets and other power sources.

Other Helpful Resources

- [Fuel and savings cost calculator](#) for electric vehicles
- [Green Energy Consumer Alliance's Information on Electric Vehicles](#)
- Eversource's Information on [Electric Vehicle and Charging Stations](#)
- [Eversource's Preferred Vendor List](#)
- [Green Energy Consumer Alliance's List of Licensed and Insured Electricians for Home EVSE Installations](#)

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