

THE HOME CHARGING EQUIPMENT

HOME CHARGING EQUIPMENT IS MADE UP OF THE FOLLOWING KEY COMPONENTS:

- **Power supply device (charging station):** For Level 2 charging, this is a piece of equipment that mounts on your garage wall to safely supply 240 volts of electric power.
- **Power cord:** For Level 1 and Level 2 charging, this cord or cable conducts electricity from the power supply device to the vehicle's onboard charger.
- **Connector/charge coupler:** This is a plug on the power cord that connects the supply device to the onboard charger. The Society of Automotive Engineers (SAE) has approved the J1772 "Electric Vehicle Conductive Charge Coupler" as the national standard for charging equipment connectors. EVs sold in the United States come equipped with an SAE J1772 plug that can accommodate both Level 1 and Level 2 charging.



More information on electric vehicles is available at:

- **Oregon Building Codes Division:**
<http://BCD.Oregon.Gov/green.html>
- **List of state and federal tax credits, Plug in America:**
<http://www.pluginamerica.org/incentives>
- **Charging station locations:**
<http://www.afdc.energy.gov>
- **EV Road Map:**
<http://evroadmap.us>
- **Charge Portland:**
<http://chargeportland.com>
- **Oregon Electric Vehicle Association:**
<http://www.oeva.org>
- **Electric Drive Transportation Association:**
<http://www.electricdrive.org>
- **Portland General Electric:**
http://www.portlandgeneral.com/community_environment/initiatives/electric_vehicles/default.aspx
- **Pacific Power:**
<http://www.pacificpower.net/env/ev.html>
- **Oregon Dept. of Transportation:**
http://www.oregon.gov/odot/hwy/oipp/inn_ev-charging.shtml
- **Drive Oregon:**
<http://driveoregon.org>

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ELECTRIC VEHICLE CHARGING AT HOME

HELPING YOU UNDERSTAND MORE ABOUT INSTALLING ELECTRIC VEHICLE CHARGING EQUIPMENT IN YOUR HOME

FACTS ABOUT ELECTRIC VEHICLES (EV) AND CHARGING THEM IN OREGON

Electric-powered transportation has become a viable alternative to the internal-combustion engine. Oregon is at the forefront of the nation in building an infrastructure to support EV owners. Consumer interest in fuel efficiency is spurring them to give EVs a serious look.

What types of EVs are available?

The **Plug-in Hybrid Electric Vehicle (PHEV)** has an electric engine run by rechargeable batteries that are charged by a plug-in device. It also has a gasoline engine to provide mechanical energy to the drive train. The **Battery Electric Vehicle (BEV)** is powered 100 percent by the battery energy storage system on board the vehicle. Both the BEV and PHEV require the owner to charge the car's batteries by plugging into a charging unit. The **Extended Range Electric Vehicle (EREV)** is an electric vehicle that has a gasoline engine serving as an electric generator, but does not power the wheels. Owners can also plug the car in to a charging unit to charge the batteries.

Although there is a network of public charging stations popping up across the state, the first priority for EV owners is to be able to charge their cars at home. Home charging equipment can be available as part of the EV purchase or sold directly from charging equipment manufacturers.

This guide is designed to help you get started on installing a charging unit in your home.

THINGS TO CONSIDER

CHARGING REQUIREMENTS

Check with the manufacturer's representative to find out what the charging requirements are for your EV.

Electric vehicle charging can be performed at three levels.

- **Level 1** uses 120 volts and takes roughly eight to 12 hours to fully charge a car's batteries.
- **Level 2** uses 240 volts and takes roughly four to six hours to fully charge a car's batteries.
- **Level 3**, also known as fast charging, converts 480 volts into direct current (DC). While it can take as little as 30 minutes to fully charge a car's batteries, DC fast-charging technology is currently impractical for home-based charging units.

Here are some questions to ask the manufacturer:

- **What levels of charging can the vehicle use?**
- **Does the vehicle or battery system require ventilation during charging?**
- **How long will it take to fully charge the batteries?**
- **What recommendations does the manufacturer have for home charging unit locations?**

PURCHASING OPTIONS

You can purchase the basic charging equipment or participate in a subscription program that might include other services for your vehicle. The cost of the charging equipment, installation, and subscriptions will vary.

Be sure to research the availability of state and federal tax credits for both the vehicle and the charging unit.

PERMITTING AND INSTALLATION

In Oregon, a homeowner or by a licensed electrical contractor can install a charging station. Make sure you, or your contractor, obtain required permits and inspections from your local building department.

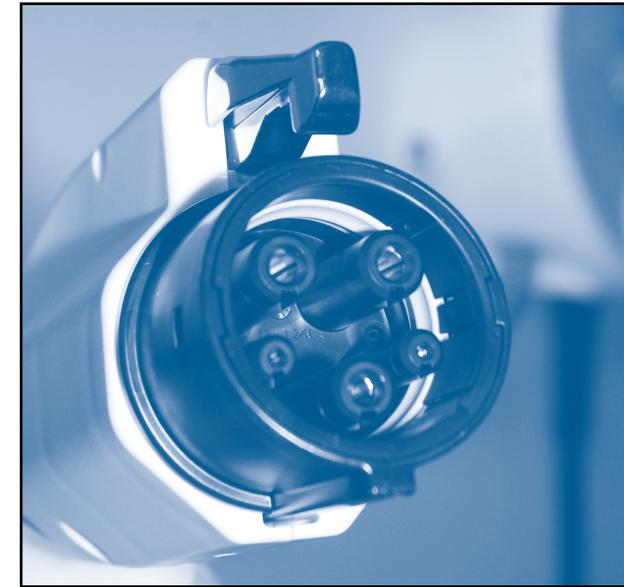
EVALUATING YOUR HOME FOR CHARGING EQUIPMENT

Check with your utility or a licensed electrical contractor to make sure the existing electrical service in your home is adequate to support the additional load of the charging equipment. With this information, you may decide to upgrade your service.

Many homes already have sufficient electrical capacity to accommodate Level 1 or 2 charging units.

- **Level 1 charging** uses a regular three-prong 120-volt outlet.
- **Level 2 charging** uses 240 volts, the same voltage as most electric clothes dryers or kitchen stoves.

If the location of existing outlets is not convenient for vehicle charging, consider having new wiring and outlets installed in strategic locations in your garage.



The following elements of your home's electrical system should be evaluated to see that they are adequate for EV charging:

- **Electrical service:** This includes the utility lines and electric meter, which are owned and controlled by the local electric utility.
- **Electrical panel:** This regulates the flow of electricity to individual circuits in your home.
- **Premises wiring:** The wiring delivers electricity from the panel to the circuit that services either a 120-volt outlet (Level 1) or the EV power supply device (Level 2).

A licensed electrician can determine if an upgrade is needed to support an electric vehicle charging system and work with your utility. Check with your local building department about permit requirements if you need to make any changes to your electrical service, wiring, or outlets.