

## Know How and Where to Charge Your EV

### DESCRIPTIVE AUDIO SCRIPT

This is an animated video.

A dusty blue sedan drives on a freeway with wind turbines and solar panels in the background. The sedan drives into a neighborhood. The license plate reads “ev”. It pulls up at a suburban house, reversing into the garage. The garage door stays open.

There is an outlet with a large black car charger plugged into it on the wall of the garage. A white circle label pops up. It says, “Level 1 charger – 110 volt”.

There is another, second, open garage with a parked red car charging from a cable coming from a red charger box on the wall. The box has a white lightning bolt on it. The new label reads “Level 2 charger – 240 volt”.

A woman takes the charging plug from the red box and plugs it into the front of the red vehicle.

In the first garage, where the blue car is charging from the wall outlet, a rectangular white label pops up. It says, “Level 1 charger – 5 miles per hour of charge”. Then it says “Level 1 is a good choice for” – now the words and icons showing the choices pop up as the narrator says them.

The perspective now is from inside a car driving down a highway. The navigation screen on the dashboard shows the direction the car is driving. As the narrator talks, the screen changes and shows words that mirror what the narrator says.

We see the garage with the red car parked inside. A title appears that says, “Installing a Level 2 Charging Station”.

The woman talks to an electrician in blue clothing and a yellow hard hat. Behind them is an electrical panel on the wall.

A circuit on the electric panel is outlined in yellow and a circular pop-up label appears that says “Level 2 -240 volts may require a service upgrade.”

On a garage wall, in front of a red car there is a three-prong grounded electrical outlet. The outlet has a black car charger plugged in and charging the car.

Inside the living room of a house the woman holds up an iPad that has a screen displayed from the PG&E website. The heading says, “Charging your electric vehicle”. As the narrator talks we see the woman click the corresponding tabs on the website.

Words pop up on a white background as the narrator says them.

On the iPad the heading on the PG&E website says Electric Vehicle (EV) rate plans. Below this a line of text says. "Find the best EV rate with our EV savings calculator".

The woman's finger taps a yellow rectangle on the page."

Web pages load which show a rate comparison for EV cars on a bar graph. The next page says, "Get Started with Customer Connections Online".

The woman in the white top makes a call on her mobile phone.

A female PGE representative with a white PGE hard hat, arrives at the woman's house. The electrician is there as well. The three people talk. The phone number appears on screen as the narrator reads it. The woman takes the charger from the red box on the garage wall and plugs the charger into her red car.

The web address appears on the screen as the Narrator reads it.

A woman backs her red electric vehicle into the garage. She takes the charging cord from a charging station that has a white lightning bolt on it and plugs it into her car.

In the living room, with a cup of coffee and a pen on the coffee table in front of her, the woman picks up and reads a spiral bound book that has the title, "EV User Manual".

On a page of the manual is a wide yellow/orange arrow labelled "Pressure" – it is pointing down a plumbing pipe.

The title says "Voltage is like water pressure." The next image shows water flowing through the pipe and arrows point in towards the sides of the pipe. Inside the pipe it says, "size of hose" ,and at the bottom of the page it says, "Current Flow Rate Equals Amps".

Over this image a title appears that says, "Amp rating – the maximum amount of electrical current that can be delivered to your vehicle's battery".

At the end of the plumbing pipe is a faucet and a glass below it. Next to the glass is a label that reads, "Your EV battery"

Water flows into the glass from the pipe and a title appears that says "V plus A equals KW".

A circular label appears that says, "kw value equals charging rate."

As the narrator talks equations appear on the screen.

A green circle pops on the screen, it says, "Hours for a full charge".

A white car drives on a white road. There is a geometric city scape in the background. The Narrator's words are shown in titles. The white electric car is parked near a charging station with trees in the background.

A title appears on the screen that says "Maximum Charge Rate". An equation appears which shows, "Hours for a Full Charge" on the left and a proportion on the right which says, "Battery Capacity", on top and, "Vehicle charging rate or EV charging station output" on the bottom.

A full screen title on a light green background reads, "Level 2 – residential chargers typically range from 16 to 80 amps".

There is an overhead perspective of the white car driving on a highway. A faster red car passes it. As the narrator discusses the equations they appear in titles on the screen.

In the EV manual we see a page with the Title, "Future Changes" with three squares that enlarge in turn as the narrator discusses each one. The first says, "All Electric Vehicles", the second says, "Multiple Electric Vehicles", and the third says, "Driving Habits".

The last page of the manual says, "Enjoy your new EV".

The woman waves good-bye to a PGE vehicle leaving her driveway as she plugs in her red EV inside the garage.

On the final slide bullet points with URL's in them appear as the narrator says them.

## **ORIGINAL VIDEO TRANSCRIPT**

- [Narrator] One of the biggest perceived hurdles of owning an electric vehicle is knowing how and where to charge. The majority of EV owners charge their cars at home and are provided with a Level One charger upon purchase of their EV. But you have options on the type of charger you use, based on your needs. In this video, we'll explain the difference between a Level One and Level Two charging station, how you can get a Level Two charging station installed, how the charging station receives power, and how much power you need to fully charge your EV. Let's get started. Think about which charging station best fits your needs. A Level One charger plugs into a standard household 110-volt grounded wall outlet and delivers about five miles per hour of charge. It might be the right choice if you have a short commute, a plug-in hybrid, access to workplace charging, or the ability to charge eight hours or more. If these criteria do not apply to you, a Level Two charging station might be the right choice for you. A Level Two charging station is up to four times faster than a Level One and can

provide about 25 miles per hour of charge. This is a great choice for cars with larger batteries that require longer charging times and for those who simply want to fully charge their EV in a shorter length of time. For a Level One charging station, you can simply plug the charger into a wall outlet, but a Level Two charging station requires installation from an electrician. Let's review the process of installing a Level Two charging station at your home. First, talk to a qualified electrician to get an electrical assessment of your home and determine whether your electrical panel has capacity for a Level Two charging station, which requires a dedicated 240-volt outlet, similar to an electric dryer. Your safety is our top priority, which is why we strongly encourage having an electrician perform electrical assessment prior to installing a charging station. If an electrician determines your panel doesn't have the capacity for a Level Two charging station and you're not able to upgrade your panel at the time, you can request to install a 110-volt grounded outlet at an accessible location for Level One charging. Next, you'll need to connect with EV charging station installers in your area. Visit PG&E's EV charging page at [pge.com/evcharging](http://pge.com/evcharging) and click on the local charging station installers tab to find a home services vendor who can connect you with qualified electricians. On average, installation costs range from 400 to \$1,200. This does not include the costs of the charging station. This is a good time to consider which electric rate best fits your charging needs. In addition to general residential rates, PG&E offers to EV rates. Get a comparison of PG&E residential rates based on your driving habits and home energy usage with the EV Savings Calculator at [ev.pge.com/rates](http://ev.pge.com/rates). After you determine which EV charging station and rate plan is right for your home, contact PG&E. If the installation of your Level Two charging station will require a service panel upgrade, a PG&E field technician will need to assist with turning power off to allow the electrician to safely upgrade electrical equipment. Contact PG&E's service planning department to schedule the appointment with the field technician. You can submit the request online through the customer connections portal or by calling 743-7782. Once you follow these steps and your electrician has completed the installation of your Level Two charging station, you'll be ready to charge up. learn more about EV charging stations and review the charging installation checklist at [pge.com/evcharging](http://pge.com/evcharging). Charging stations are rated by kilowatts, volts, and amps, but what do those terms mean? And how do you choose the charging station that best fits your needs? To understand how EV charging works, think of the electricity flowing into your car like a plumbing system. The voltage, measured in volts, is like water pressure and pushes electrical current to the charging station. The electrical current flow, measured in amps, is similar to the water's volume. The maximum amount of electrical current that can be delivered to your vehicle's battery is the amp rating. Volts and amps deliver kilowatts, KW, of power to your EV's battery, which means the kilowatt value listed in the charging station specifications is the rate at which your vehicle will charge. To determine how much power will flow to your car's battery, multiply the volts by the amps and divide by 1000. For example, a 240-volt Level Two charging station with a 30 amp rating will supply 7.2 kilowatts per hour. After one hour of charging, your EV will have added 7.2 kilowatt hours of energy to your vehicle. To calculate how long it will take to charge your entire battery based on your EV charging station, take the vehicle's battery capacity, found in the owner's manual, which is in kilowatt hours, and divide that by the charging station's kilowatt output. For instance, here's a fully electric EV model that has a 42 kilowatt hour battery capacity.

And we know that the EV charging station output is 7.2 kilowatts, which means it'll take approximately six hours for a full charge. Each EV also has a charging rate, which indicates the amount of power the battery can safely accept, regardless of the amount of power being delivered by the EV charging station. To find your vehicle's charging rate, enter the make, model, year, and type "maximum charge rate" into an internet search engine. When deciding how many amps your charging station should have, consider your average miles driven per day, how often you would be able to charge at home, and your vehicle's charging rate. For example, using a 16 amp charging station for eight hours would provide you 95 miles of range each time you charge. If you normally drive 30 miles per day, then you would only need to charge your EV overnight three times a week. If you drive longer distances more often, you might consider a higher amp charging station for fewer charges per week. Be sure to think about any future changes you might have, such as transitioning from a plug-in hybrid to an all-electric EV, owning multiple EVs, or any potential changes to your driving habits. We hope this video has been a helpful resource. Here are some additional resources when considering which EV and charging station is right for you. Review the EV buyer's checklist before purchasing an EV at [pge.com/ev](https://www.pge.com/ev). Learn more about EV charging stations and review the charging checklist at [pge.com/evcharging](https://www.pge.com/evcharging). Both checklists are offered in Spanish and Chinese. Research available EV model, costs, savings, and incentives at [ev.pge.com](https://www.ev.pge.com).