

All You Need to Know about Your EV and Utility Provider

A guide to understanding different utility rate plans
that apply to electric vehicle charging



When you made the decision to purchase an electric vehicle, you probably didn't think too much about your electric utility provider. Sure, you know that the power to charge your battery will come from your home electric service and that your local utility provides the power through the electric grid. But did you know that your local utility might offer discounted rate plans to encourage EV adoption and make charging your EV more affordable? It also ensures their business runs more smoothly.

These rate plans are designed to provide reduced electricity prices for off-peak consumption. For example, most EV drivers will commute during the day and then recharge overnight. At night, overall power demand is much lower, therefore the utility is able to charge you less when you plug-in your vehicle.

Before purchasing a new EV, it's important to understand any special rates and programs your local utility offers for EV drivers and how to qualify for them. This document is intended to provide an overview of varying rate plans and give a checklist of items to review with your local power company.

How It All Works: From the Grid to Your EV

Let's start with the basics of how an EV battery gets recharged with the use of a home charging station or EVSE, the commonly used acronym for Electric Vehicle Service Equipment.

A complete home charging system for a plug-in vehicle looks like this:

- The utility delivers 240V alternating current (AC) power to the main distribution panel and meter in the house.
- The panel subsequently distributes power at 120V and 240V levels to outlets or to appliances around the home.
- For a Level 2 EVSE installation, the unit is typically mounted on a wall and connected to a dedicated 240V circuit for incoming power distributed from the main panel. The unit's output is directed through a cable fitted with a "SAE J1772" connector (as standard connector that has been defined by the Society of Automotive Engineers) that plugs into the vehicle.
- Once connected, the EVSE is ready to transmit AC power to the car's onboard battery charger.
- When the connector is inserted and locked into the vehicle's mating port, a communication pilot signal is sent to the EVSE to begin delivery of power according to the needs and direction of the onboard vehicle electronics.

- The onboard vehicle charger and electronics convert the incoming power to direct current (DC) and control the battery's rate of charge within parameters that are unique to the vehicle.
- Upon completion of battery charging, the onboard charger sends additional pilot signals to the EVSE to terminate power delivery.

How Much Electricity Will My EV Really Use?

This is a very common question among EV buyers, and the short answer is "it depends." It depends on the how often the car is driven, under what conditions and for what distance.

Assuming that you want to make best use of the electric drive capabilities of your car, and that you drive it daily for a significant number of miles, then it's likely that you will discharge – and need to recharge – most of the battery capacity on a daily basis. This consumption pattern is equivalent to about one half to two-thirds of an average home's power usage each day.

Although the miles traveled in electric drive mode are considerably less expensive than miles driven on gasoline fuel, drivers should know how the increased energy consumption impacts their monthly utility bill. This requires a detailed review of the different rate plans for EV charging.

Utility Rate Plans

Utilities charge customers for power delivered using different published rates. The two most common rate plans are "standard" and "time-of-use" plans.

The standard plan typically measures the total kilowatt-hours (kWh) consumed by the household during the billing period and applies a tariff based on this total. Many utilities offer tiered rates. This means households that consume electricity above pre-defined thresholds pay a premium for all of the power they consume in each range. For example, Southern California Edison employs a five-tiered plan with a baseline level and progressively higher tariffs for consumption at 100%, 130%, 200% and 300% of the baseline level.

Time-of-use ("TOU") plans differ from standard plans because they take into account both the amount of consumption and time in which consumption takes place. This allows the utility to charge higher rates for consumption during peak times (typically between the hours of 8:00 AM and 6:00 PM) and lower rates for consumption during off-peak times (typically between the hours of 10:00 PM and 6:00 AM).

TOU plans usually require a “TOU meter” that measures the amount of power used and the time it is used. There is generally an additional fee for the purchase and installation of this meter.

As more EVs hit the road, many utilities are offering or are planning to offer lower rates to plug-in EV owners. These rate plans may be referred to as “EV TOU” rate plans. Like traditional TOU plans deployed house-wide, EV TOU plans require a special meter that applies discounted rates for plug-in EV owners that charge during evening and night hours. The TOU meter may be either a single meter (the same one used with the whole house but with an extra plug-in EV owner discount) or a dual meter that is used for the EVSE dedicated circuit only.

Each of the rate plans offer different power costs for the same level of overall power consumption. An EV TOU rate plan may require a separate dedicated circuit for the EVSE or a second meter to assure the utility that the power consumed on this circuit is entirely for charging a plug-in EV. This allows the utility to significantly lower the costs for this usage versus the cost of power for the rest of the house. However, since there is additional cost in the installation of the meter, you should weigh the benefits of lower power costs versus the EVSE circuit installation cost.

The main thing to understand is that your utility is willing to reduce their price for power in exchange for your willingness to recharge your EV during off-peak consumption hours.

Talking to Your Utility Provider

Because the selected utility rate plan will affect the type of EVSE installation you may choose, it’s very important to consider your unique power consumption requirements and have a discussion with your utility provider before EV Connect performs the home assessment. This will allow you to make informed decisions concerning your EVSE installation and enable your EV Connect installer to best determine your specific home power situation and installation needs.

To best facilitate the discussion, make it clear to the utility that you are interested in a 240 volt Level 2 EVSE for home installation. Before picking up the phone, have ready access to the following information:

- Your latest power bill (account number, service address, zip code, etc.)
- A description of the vehicle which you intend to purchase or have purchased
- The approximate expected weekday and weekend recharge / plug-in times
- The approximate number of miles that you will drive your EV each year

Remember, the goal is to have a two-way dialog with your utility – typically with a service representative that specializes in, or has knowledge of, electric vehicle rate plans. The discussion will cover 1) what the utility offers, 2) your recent power consumption and 3) how the EV might affect power consumption when you begin charging it. In some instances, the utility representative may evaluate several alternative rate plans and make suggestions for you to consider. They will likely direct you to the utility website to find more information including their EVSE installation requirements.

Don't forget to ask what incentives, if any, the utility might apply to your rate or even the installation cost of the EVSE system.

After speaking with the utility representative, you should understand

- What your utility rate plan options are for EV charging
- How these rate plans fit with your lifestyle and anticipated recharge times
- What the EVSE installation requirements are to qualify for the desired rate plans

Making a Rate Selection

Once rate plan costs and the implications of charging system installation costs are evaluated together, an educated judgment that balances these two factors can be achieved. When a rate plan is selected and agreed upon with the utility, implementation will occur after the charging system is installed.

The final step is to notify the EV Connect installer of your selected rate plan prior to or during your home assessment. This will ensure the proposed EVSE charging system is consistent with the requirements imposed by the rate plan as described by your utility provider. Then sit back, relax and let EV Connect handle the rest.