

Charging your EV at home



Part of Energy Queensland

In this factsheet we talk about different ways to charge your EV at home, and rules you need to follow to connect to our electricity network.

Charging from a powerpoint

Some EVs come with three-pin charging cables that can be plugged into a powerpoint.

The rate of charging depends on the amperage (A) of the powerpoint. Most powerpoints are 10A (2.3kW), and it will take approximately 4 hours to charge your EV if you have travelled the average daily distance for Queenslanders of 40km. Charging will be faster with a 15A (3.4kW) powerpoint which must be fitted by a licensed electrical contractor.

These are some options for charging via a powerpoint:

- **Overnight charging** - If you regularly charge overnight and your EV battery is rarely below half full, then charging via a powerpoint could be fine for you most of the time
- **Day time charging** - If you mostly charge during the day and your EV battery is rarely below half full, then using a powerpoint should meet your EV charging needs. If you have a solar PV system, charging your EV during the day when your system is operating should help you save on your energy costs
- **Time-of-use tariffs** - These are a great option for charging via a powerpoint and could help you to reduce your power bill
- **Economy tariffs** - You can connect a powerpoint for EV charging to an economy tariff, but you will lose the ability to charge off your solar PV system with this setup.

Tip: The electricity demand of a charging EV can be high, even if only charging from a powerpoint. Powerpoint circuits are not typically designed to take such a high load for an extended period. A dedicated charger installed by a licensed electrical contractor may provide you with a safer solution, with a lower risk of electrical overload at your home.

Charging from a dedicated charger

Many EV owners choose to install a dedicated charger in their garage. The advantages are:

- **Faster charging** - The Tesla Model 3 will charge from 20% to 80% in around 7 hours, more than three times faster than charging from a powerpoint. This can be handy when the car is used often and/or not at home for long periods, or you don't want to be plugging it in regularly
- **Three-phase charging** - If your home has three-phase electrical wiring, you can install a three-phase 32A (22kW) dedicated charger for the fastest and most convenient at-home charging possible.

Most homes have single-phase electrical wiring which allows you to have a 32A (7kW) dedicated charger. More information is below for single-phase and three-phase wiring.

The cost for supply and installation of a dedicated charger starts at around \$1,500 but could be higher depending on the type of charger and your electrical set-up at home. You will need a licensed electrical contractor to install a dedicated charger, and we recommend asking them for advice on options available to you.



Single-phase wiring options for dedicated chargers

There are three options to choose from to install a 32A (7kW) dedicated charger on single-phase wiring. All these options require a licensed electrical contractor to undertake work at your premise.

Option 1: Economy tariff

Economy tariffs are great for appliances that don't need a constant supply of power. They're cheaper because the supply on these tariffs is interruptible and the network manages the times when power is available.

The time of day this will occur may change from day to day and vary in duration and location. Economy Tariff 33 (sometimes referred to as a controlled load tariff or Controlled Load 2) has a minimum of 16 hours of supply available per day, which is typically only interrupted during the evening in summer. This option won't allow you to charge off a solar PV system.

Option 2: Primary tariff with a dynamic connection

Dynamic connections are a new technology where there is two-way communication between the dedicated charger and us. With this connection type you can charge off your solar PV system and take advantage of a time-of-use tariff.

You can charge your EV at any time, however if there is high demand on the network during peak times, we may reduce the charging rate via a signal to a device installed on your dedicated charger (the dedicated charger will still have a minimum supply of 1.5kW). These peak times are typically during the late afternoon or early evening. All power usage is charged at your primary tariff rate.

Option 3: Primary tariff with basic active management

This option also allows you to charge off a solar PV system, with a device installed in your meter board and connected directly to your dedicated charger.

The device may be operated if the network is under pressure, to turn off power to the circuit supplying the dedicated charger. These supply interruptions are generally during the late afternoon or early evening peak period and only when the network is in high demand.

With this connection type, your dedicated charger is connected to your primary tariff and energy usage is charged at that rate. It's not available in some areas, such as remote communities, and you can use our NMI* Search tool to check your premises on our Charging your EV webpage at ergon.com.au/electricvehicles or energex.com.au/electricvehicles.

* Your premises National Metering Identifier (NMI) can be found on your electricity bill.

Three-phase wiring for dedicated chargers

If you have three-phase wiring in your home, you can install a dedicated charger up to 22kW, if it is connected and switched simultaneously across all three phases. This setup will allow for much faster charging, and does not require active device management.

If you don't have three-phase wiring in your home, talk to your licensed electrical contractor about whether you can upgrade your wiring and the costs involved.

Charging from solar PV or battery system

Many EV owners also have a solar PV system and are keen to run their EV on renewable energy as much as possible. However, many EVs consume much more power than the existing solar PV system can provide. And it's often challenging to charge an EV in the middle of the day when there is most likely to be excess solar.

The average EV uses around 10kWh/day. The average 5kW solar PV system generates around 23kWh/day and exports around half of that to the grid. Therefore, if you want to maximise charging your EV from renewable energy, you'll need to prioritise charging in the middle of the day, almost every day.

Another option is to install a battery energy storage system to store your renewable energy, so you can use it to charge your EV at night. This setup should be designed by an experienced professional to optimise the benefits and minimise upfront and ongoing costs.

Choosing the best option for you

Consider your charging options before purchasing your EV and talk to a specialist dedicated charger installer or a licensed electrical contractor about costs.

When you first purchase your EV, it's also a good idea to charge your EV via a powerpoint for a few months until you have a better understanding of your charging needs and whether you think you need to have a dedicated charger installed.

Some electricity retailers offer attractive rates for EV charging so make sure you do some research on what's available in your area.

Tip: Be prepared for some potential additional costs when setting up your EV charging, to cover upgrades to your switchboard, wiring, electricity metering and electrical safety measures if needed. You also need to consider the practicalities of charging at home, e.g. can you provide a suitably weatherproof and secure environment for charging?

More information for licensed electrical contractors and installers is available at ergon.com.au/evse and energex.com.au/evse.