Getting your home set up for EV charging

Let's first take a look at how most houses are configured. This is a general overview of the many differences and processes that have changed over the years.

Most houses will have single-phase power. A single-phase house has an 80amp service fuse connection the house to the grid. **Please note that this is not a resettable breaker. Do not allow this service fuse to blow.** Your house will be without power until an electrician can visit to rectify it. The TOTAL house draw must be at most 80amps. Most homes will have a few power circuits hosting some power outlets (GPOs). These are connected in your meter box by old-style fuses, circuit breakers or modern safety switches (RCDs).

- **Can't I plug my electric vehicle into any outlet in my house?**
- **Using multiple devices simultaneously on the same circuit can lead to circuits tripping or worse.**
- **[TIP] Get your EV charger on its dedicated circuit.**
- **What size circuit should I use?**
- **What options are available?**

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Option 1

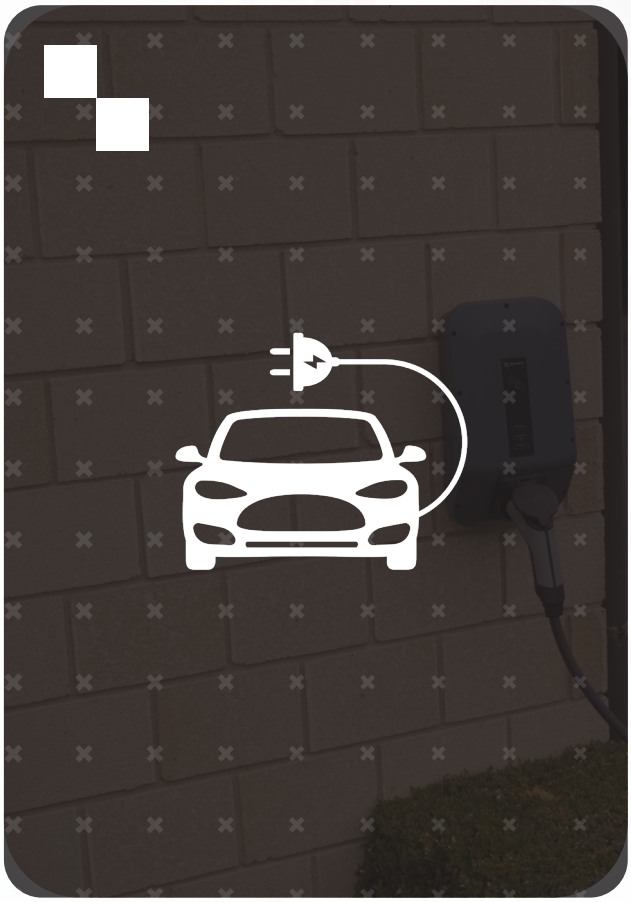
The most basic would be a 10amp GPO on a dedicated circuit. **This is your cheapest option.** Charging will take a long time, like all night. It is not a great idea to run 10amp circuits at full capacity for long periods. Check if your lead is getting warm. This is the first sign that something is not correct.

Option 2

The next option is to get a 15amp plug and GPO; this will give you slightly faster charging.

Option 3

The first two options require an electrician's visit, so why not go for the superior 32amp circuit option? The labour cost is the same. In single-phase setups, the best you could achieve is an EV charger circuit running **7.1kW** (32amps) hard-wired into your home.



Option 4

If you are one of the lucky ones with **three-phase power**, or you can quickly get access to three-phase power, you could opt for a 22kW EV charger. Again, on a dedicated circuit.

If you are stuck with **single-phase power**, you can still do several things.

Turning down. Some EV chargers can drop down or regulate the level of power they send to your vehicle. This is handy if you want your charger output reduced to not trip the circuit.

Future-proofing your EV charger. If you are thinking of adding solar or moving to three-phase power, or adding a battery, then an EV charger that can take a range of power inputs has merit. EV chargers work with a range of power inputs from single-phase to three-phase.

Portability. If you are going to the effort to get set up correctly, think about putting a dedicated outlet for the EV charger. You can then get a plug added to the EV charger that can allow the EV charger to be portable and moved around.

Where does Solar fit with EVs?

Solar is an excellent way of generating power and charging your vehicle. It is worthy of its own article, where we investigate prioritising self-consumption, managing outputs and exploring what level of panels you need to **charge an EV**.

Setting up a new home.

The modern houses of the future should look at three-phase power. There are several reasons why. Modern homes with high-powered appliances like air conditioners, large stoves and pool pumps are already reaching the single phase's capabilities. EV charging potentially pushes them to or over the 80 amp service fuse limit. With three phases, you effectively get three single-phase circuits (3 x 80amp circuits)
Can you retrofit an existing home from a single phase to three phases? Great question. Short answer yes, mostly.

When is the best time to charge your EV?

You can't beat self-consumption from your existing solar; there will be **no cheaper power source**. If you don't have solar, think about adding it. For those where adding solar is not an option, there are a few things you can look at.
Ask your retailer if they have a discounted rate for EV charging; some proactive retailers are now offering EV charger plans.
If you have a smart meter, you may have a discounted rate at night; think about setting up a timer or scheduling when you charge to make the cheaper rates.

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Off-peak versus controlled load charging

Please refer to this great article by Tim Hiley.
Ref: https://wattever.com.au/home-ev-charging-rates-in-australia/

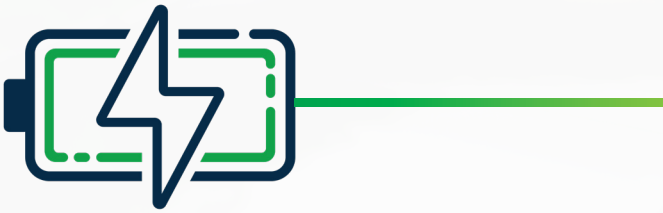
"As an EV owner of more than 10 years, I would strongly recommend having an off-peak time of use or controlled load charging option.
This minimises the costs of recharging your EV and allows you to leave home every day with a high state of charge.

Traditionally off-peak tariffs support charging from 10 pm-7 am each night (see Time Of Use periods for your network), with an increasing number of networks supporting off-peak tariffs in the middle of the day to take advantage of lower network utilisation and lower generation prices due to low cost solar. That's plenty of time to fully charge your EV using its onboard charger at full power. Controlled loads are turned on by your electricity network and are available from 6-16 hours per day, depending on the tariff and network.

Controlled Loads rates are only shown where that network supports charging EVs on that controlled load tariff and via a dedicated circuit (hard-wired to a fixed charging station). The specific controlled load tariff is shown in brackets in the table above. General/anytime and off-peak tariffs allow portable or fixed charging stations to be plugged into general-purpose electrical sockets providing greater flexibility than charging stations hard-wired to a dedicated controlled load circuit."

What about batteries?

In another article, we consider under what circumstances having a battery connected to your solar makes sense and how else can your **home battery save you money.**



Cost of Installation.

The cost of setting up an electric vehicle (EV) charging station at home can vary based on several factors. This guide provides information on the main considerations when setting up an **EV charger at home.**

EV Charger

The cost of the EV charger is an important factor to consider. The type and brand of charger will influence the price, with level 2 chargers being more expensive than level 1 chargers.

Level 1 Chargers: These only require a standard electrical outlet and come with the car, making them free for most people. However, it is possible to purchase a different level 1 charger, which can cost between $0 and $450.

Level 2 Chargers: These are more powerful charging stations that connect to a dedicated circuit and charge faster than level 1 chargers. Level 2 chargers are more expensive, with additional costs for connecting to a power circuit and installation. The average price for a level 2 charger ranges from $400 to $1700.

Labour Costs

The cost of installing an EV charger includes the **labour involved.** Factors such as the time, materials, and difficulty of the job can affect the price. An electrician's experience, the materials needed, and the time taken will all impact the cost. It is important to compare prices from different electricians and not always choose the cheapest option as this may not result in proper service work. Our blog **'how to choose a good electrician'** provides more information on finding the right electrician for the job.

Power Upgrades

In some cases, a switchboard upgrade may be needed to safely operate a level 2 charger. A level 2 electrician will upgrade the switchboard and connect and install the electric car charger. It is important to contact a reliable electrician to discuss whether or not the switchboard upgrade is needed.

In conclusion, when setting up an EV charger at home, it is important to consider the cost of the charger, labour, and power upgrades. By understanding these factors, you can make an informed decision and choose the right option for your needs.