

Your guide to creating a solar-powered, all-electric home

solar.vic.gov.au





Every day, more and more Victorians are making the switch to all-electric homes powered by solar. This guide explains how you can do it too.



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# What is an all-electric home?

All-electric homes use electricity instead of gas for heating, cooking and hot water.

'Going electric', also called home electrification, refers to gradually upgrading gas appliances in your home to more modern, energy-efficient replacements powered by electricity.

Upgrading to an all-electric home can save you thousands on energy bills every year – especially when you have solar panels.

That's because your energy-efficient electric appliances can be powered by free energy from the sun.



# Six benefits of electrifying your home

#### 1. You'll save on bills

Modern electric appliances are more efficient and cheaper to run than their gas counterparts. If you have solar, you can power your electric appliances with free energy from the sun.

Transitioning an existing home with solar panels from gas to electricity can save you around \$1,700\* every year on bills. Adding a battery can help you save even more.

# 4. You'll reduce your carbon footprint

Using gas to power appliances (or petrol to fuel our cars) emits greenhouse gases that contribute to climate change. Over time, all-electric homes will also become zero-emissions homes as Victoria's electricity grid transitions away from fossil fuels. And if you have solar, you can run your all-electric home on renewables right away.

# 2. You'll enjoy more control of your home energy supply



When you electrify your home with solar, you'll be generating and using your own energy. Your energy independence will be even greater if you invest in a home battery, so you can store power from your solar panels to use when you need it.

# 5. Your home will be more comfortable

Electrification can make it more affordable to heat or cool your home to comfortable temperatures all year round.
Reverse-cycle air conditioning can help maintain good humidity levels and clean air, too.

# 3. Your home will be safer and healthier to live in



Gas systems can present risks like naked flames, gas leaks and carbon monoxide leaks. Modern electric alternatives don't produce fumes or emissions in your home, and can protect you with advanced safety features.

# 6. Boost your home's value

You could also enjoy peace of mind as energy-efficient improvements help future-proof your home, potentially boosting its value and making it more appealing when you sell it or rent it out.





# Step 1: Install solar

Getting a rooftop solar PV system is a great place to start. It means you can generate your own free, clean electricity to power your home.

# Solar 101

## Let's shed some light on the basics

Solar power is energy from sunlight that is converted into electricity.

**Solar cells**, also known as **photovoltaic cells (PV)**, are put together to make **solar panels**.

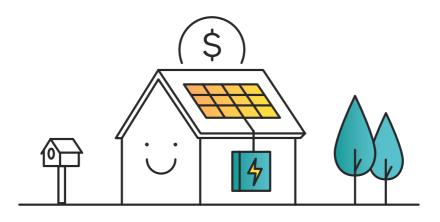
When the sun is shining, solar panels convert sunlight into DC (direct current) electricity. A solar inverter converts the DC electricity into alternating current (AC) energy for use in your home.

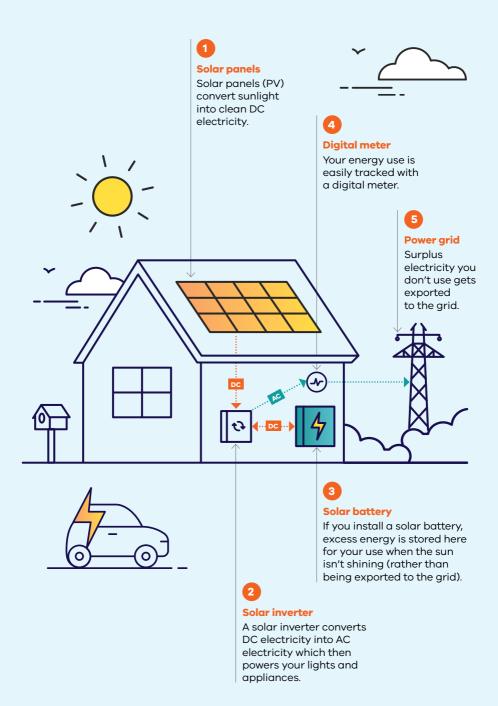
Solar energy is the cleanest renewable energy source and creates far less of an environmental impact than electricity generated by fossil fuels. It also does not create any greenhouse gases when generating or storing electricity.

And since sunlight is free, you can enjoy electricity at no cost from your solar panels.

Any solar power that you don't use in your home can be stored in a **solar battery** or fed into the **grid** (the shared electricity network).

Tip: Click on the bolded words in the guide to learn more.





# Solar panels

Installing a solar PV system will help you generate your own electricity using free energy from the sun.

### Parts of a solar system

A solar PV system has two main components:

- solar panels made up of solar (aka photovoltaic) cells, which produce DC electricity from sunlight
- a solar inverter, which converts the DC current generated by your solar panels to the 230 volt AC current needed to run lights and appliances in your home.

## **Grid connection**

Most solar customers choose a mains grid-connected system. This means your home can draw electricity from the grid when electricity isn't being generated by the solar panels. And any electricity produced by your solar system that exceeds your needs at the time is simply fed into the mains grid, with your electricity retailer paying you a feed-in tariff. A digital electricity meter will measure how much you import and export.

Having a grid-connected solar system allows you to reduce your energy costs by covering some of your needs with free energy from the sun, while still having the reliability of grid electricity supply for other times.

Going off-grid requires enough solar generation capacity and battery storage to cover all your energy needs. This option is generally only taken up by households in remote areas.

# What happens during a power outage?

A grid-interactive inverter requires the mains grid voltage to be present or it will shut down for safety. This means that if there is a power failure, your solar system will shut down and will not supply energy until the mains grid returns to normal

If you would like to be able to use solar power during grid outages, you will need to get a solar battery and hybrid inverter (see page 12).

## **Solar Superheroes:**

Deborah wanted to do her bit for the climate, so she upgraded the solar PV system on her 130-year-old weatherboard home and went all-electric. Now she feels great about living in a home powered by clean energy.

"The bonus is we've saved a heap of money as well."





# What are the financial benefits?

You could save hundreds of dollars on energy bills every year by using electricity generated for free on your rooftop.

Eligible Victorian homeowners and rental providers can claim a rebate of up to \$1,400 off the upfront cost of a solar PV system, with the option of an interest-free loan as well.

Your savings on electricity bills could exceed the installation cost within a few years, and quality solar panels last at least 25 years.

See <u>Saving with solar (page 14)</u> for more information.

## Interested in learning more?

Explore <u>info about solar panels</u> on our Solar Hub.

## Building a new home?

Solar PV rebates and interest-free loans are available for homes under construction. Reduce your costs by installing solar while your home is being built.

Find out more



#### Rebate amount:

Up to \$1,400



## Interest-free loan amount:

Up to \$1,400



#### **Bill savings:**

Average of \$750 every year – or more than \$1,000 every year when you maximise the use of solar energy generated from your system\*



#### More information:

PV rebate for homeowners
PV rebate for rental providers

\*Based on savings reported by Solar Homes customers

# Solar batteries

Make the most of your solar power by adding a battery to your PV system.

## How does a solar battery work?

Solar batteries store excess energy produced by your solar panels for you to use later, instead of sending it back to the grid.

In a typical home with solar panels, part or all of your energy usage may be met by solar generation while the sun is shining. Any excess solar energy is exported to the grid. Shortfalls, most often experienced in the early morning, evening, overnight or in cloudy weather, are met by importing electricity from the arid.

But when you add a battery to your system, the excess solar energy not used at home during the day can be used to charge the battery instead of being exported.

A solar battery can help your household get the most out of your solar system, reducing your reliance on the grid and making your energy bills even smaller.

You can arrange to have solar panels and a battery installed at the same time, or add a battery to an existing solar PV system.

# Can a battery provide backup power during an outage?

Grid-connected solar PV systems are often designed to switch off during an outage on the grid. This is to protect homes from power surges and protect the people who may be working on nearby electricity lines.

But if you get a battery, it's possible to have your system designed so it can be isolated from the grid and continue to provide stored energy to your home. This is known as 'islanding'. Typically, systems with islanding are set up to provide power for certain things such as lights and your fridge.

If you would like to be able to run essential appliances on solar power during outages, talk to your installer about the best system setup to meet your needs. They can recommend suitable equipment, such as a hybrid inverter and battery with the right functionality.

Find out more about <u>batteries and backup power</u>.





## What is a VPP-ready battery?

A virtual power plant, or VPP, connects batteries in an energy sharing network and allows households to drive down their energy costs even further by sharing their excess energy.

Battery systems that are 'VPP ready' meet the technology requirements to participate in these energy sharing networks. Find out more about VPPs.

#### What are the financial benefits?

Adding a battery will increase the amount of money you save on energy each year by allowing you to store solar energy to use later, so you don't have to pay for as much grid electricity. For example, your oven, TV and lights can run off your solar power even once the sun has set in the evening.

A typical household can save up to an additional \$650 a year by adding a solar battery to their solar panel (PV) system.

Eligible households can reduce the upfront cost of installing a solar battery with an interest-free loan up to \$8,800, with repayments made over a four-year period.

## Solar battery loan

#### Interest-free loan amount: Up to \$8,800



**Bill savings**Up to \$650 every year\*



#### More information:

Solar battery loans

\*Based on savings reported by Solar Homes customers

# Interested in learning more?

Explore <u>info about solar</u> batteries on our Solar Hub.

## **Solar Superheroes:**

Since installing a solar battery and storing the excess energy they generate, Rushin and his family are reaping the benefits.

"My advice to other people? Go for it!"



# Saving with solar

## Costs and benefits

While there's an upfront cost to install a solar (PV) system, you can start saving straight away and it can really pay off in the long run. Consider these financial factors when weighing up a switch to solar.

#### How much will it cost?

The cost of a solar (PV) system depends on many factors. The <u>SunSPOT solar calculator</u> provides a free, independent assessment of the best size solar system for your home. It also estimates the cost and your potential bill savings.

We recommend getting at least three quotes from solar retailers to compare.

As an indication, in FY 2023-24, the average system installed by Solar Victoria customers was around 8 **kilowatts (kW)** and cost around \$11,000 (including GST and before any rebates, loans or discounts were applied).

Many customers are also now getting a solar battery, at an average size of around 10 **kilowatt-hours (kWh)** and average cost of around \$17,000 (including GST, before any rebates, loans or discounts) in FY 2023-24.



- Victorian government financial support available through us at Solar Victoria for eligible households:
  - » \$1,400 rebates and \$1,400 interest-free loans for solar PV systems (see page 11)
  - » \$8,800 interest-free loans for solar batteries (see page 13)
- Small-scale Technology Certificates from the Federal Government (see below).

# Small-scale Technology Certificates (STCs)

A Small-scale Technology Certificate is a payment made by the Federal Government to purchasers of renewable energy systems (including solar panels).

STCs are calculated based on the amount of electricity a system produces. Think of them as individual 'credits' that can be applied to the purchase price of your solar system.

The quoted price of a solar system from an installer will typically have the STC discount included in the final price.



### How much could you save?

Our Solar Homes customers report average savings of \$750 every year on energy bills with solar panels (or more than \$1,000 for those who maximise the use of their solar power), and an extra \$650 with a solar battery installed.

You can make the most of your solar power and maximise your bill savings by:

- replacing gas appliances (like heating and hot water systems) with efficient electric versions that can run off your solar power
- timing your appliance use for the middle of the day when the most solar power is being generated
- adding a battery to your system, to store energy for you to use when you need it
- earning a feed-in tariff for solar energy you don't need and supply to the grid.

Your energy bills are likely to vary throughout the year. That's because your energy use and the amount of electricity produced by your solar panels are impacted by the seasons.

Many households with solar find they have very low bills in summer, or even receive a credit from their electricity provider. That then helps offset bills in winter, when they may need to draw more power from the grid.

# Selling your surplus electricity with feed-in tariffs

Solar energy that you generate but don't use (or store in a solar battery) is sent to the grid. You'll receive a fixed rate paid to you per kilowatt-hour (kWh) of electricity exported to the grid. This rate is known as the feed-in tariff (FiT).

FiTs are determined by your electricity retailer and will vary. The minimum FiT amount that retailers must pay is set by the Essential Services Commission and changes each year. Find the current minimum FiT amounts.

Generally, households save most by maximising their use of the electricity they generate. But selling any extra electricity generated to the grid can further reduce your bills. And it means you're helping supply clean energy for other households, lowering our overall religance on fossil fuels.



<sup>\*</sup>When you maximise the use of solar power





# Step 2: Switch your appliances

Once you have solar, you'll want to make the most of it by running major household appliances on your free solar power.

# Hot water

Tap into savings by upgrading to an energy-efficient hot water system.

# When should you replace your hot water system?

Hot water systems typically last 8 to 10 years on average. You can check the age of your system by looking at the manufacturer's sticker, normally located on the upper portion of the unit.

It's best to replace a hot water system pre-emptively rather than waiting for it to break down – after all, no-one wants to be stuck with cold water for days. That will also allow you the time to do your research on the best options. Remember: you don't have to replace your system with the same type you had before.

# What type of hot water system is best?

Heat pump hot water systems have become the leading choice in energy-efficient electric systems in recent years. They use 60 to 75% less electricity than conventional electric water heaters. Plus, if you have solar, you can set the timer on your heat pump to run during the day, taking advantage of free power from the sun to fill your tank with hot water.

For a more affordable option, electricboosted solar hot water systems have been popular in Australia for many years.

Heating water accounts for around 20% of the average household's energy use. By choosing an energy-efficient option when it's time to replace your hot water system, you could make a big difference to your bills.

# How does a heat pump hot water system work?

Air conditioners and refrigerators are two common forms of heat pumps. They work by moving or 'pumping' heat from one place to another. For example, your fridge extracts heat from inside and dumps warm air out the back.

A hot water heat pump extracts heat from the surrounding air and uses it to warm water in the tank. Heat pumps are very efficient because for every unit of electricity used to run them, they can extract several units of energy from heat in the surrounding air.

And don't worry: they still work effectively even when it's cold outside.



Tip: Do your research to find a quality product that suits your household. Choosing a trusted installer and buying a reputable brand and model will ensure your hot water system works as it should.



## What are the financial benefits?

Households that replace a gas hot water system with a quality heat pump hot water system can save around \$250 a year on energy bills.

Eligible households can receive a Solar Victoria rebate of 50% of the purchase price (after other discounts) of an eligible solar or heat pump hot water system, to a maximum of \$1,000.

The Victorian Energy Upgrades (VEU) program also offers <u>discounts on hot water system upgrades</u> to Victorian households replacing inefficient electric or gas hot water systems with heat pump or electric-boosted solar hot water systems.

You can claim both the Solar Victoria rebate and the VEU discount if you choose a retailer that is part of both programs.

## Interested in learning more?

Explore <u>info about hot water systems</u> on our Solar Hub.

#### Hot water rebate

## Rebate amount:

Up to \$1,000



#### **Bill savings**

Around \$250 per year\*



#### More information:

Hot water rebate

\*When replacing a gas hot water system with a quality heat pump hot water system



## **Solar Superheroes:**

Shane installed a heat pump as part of his journey to an all-electric, solar-powered home.

"It doesn't use much energy as I time it during the day to coincide with solar."



# Heating and cooling

Warm your home; cool your bills.

# Save with solar-powered electric heating and cooling

In Australia, 40% of energy usage in the home comes from heating and cooling. Investing in an energy-efficient heating and cooling system can help you stay comfortable all year round, while lowering your energy bills – especially when you power it with solar.

# What heating and cooling options could you consider?

- Reverse-cycle air conditioners (RCAC) can provide both heating and cooling. There are two types:
  - » Split systems (with a wallmounted unit inside and an external unit outside) are great for single rooms or small homes, with a lower upfront cost.
  - » Ducted systems (with vents in multiple rooms linked to a central unit) are great for larger homes but more expensive to install.

- Portable electric heaters, fans and air coolers are cheap solutions for short periods of use in small areas. They can be affordable to buy, don't require installation and are easily moved around to heat whichever room you're in.
- Hydronic heat pump systems circulate hot or cold water through radiator panels in rooms or under the floor. They are significantly more expensive than RCAC. Some people find them to be comfortable and good for respiratory issues.

Read more: <u>Heating and cooling:</u> what's best for your home?

Tip: If you already have a reversecycle air conditioning unit, turn it on to heat mode in winter instead of using other heaters. RCAC is about a third of the cost of an electric heater to warm the same space.

## **Solar Superheroes:**

Allan and Gail's house used to be unbearably cold in winter, until they invested in airtightness and insulation. Now, it's 22 to 24 °C year-round, with very little heating and no cooling.

"Our energy use is low, so the next step is to add a battery system to our solar and have no more energy bills."



# Other tips for temperature control

Along with installing energy-efficient heating and cooling, keep your cool or warm air inside where it belongs, and stop heat or cold getting in from outside.

Good <u>draughtproofing</u> and <u>insulation</u> will help maintain a comfortable temperature so you don't need to blast the air con or heater all the time.

Solutions range from quick fixes to bigger projects:

- Use draught stoppers under doors.
   You can buy door snakes for as little as \$10 or less, or simply roll up a towel.
- Close blinds and curtains after dark, and to block out sunlight on hot days.
- Add draught seals to exhaust fans.
- Put duct covers on evaporative air con outlets that aren't in use.
- Seal gaps around windows and doors.
- · Seal off chimneys.
- · Install thick curtains.
- Add insulation to ceilings, walls and underfloor spaces.

Tip: Set your heating to between 18 and 20 °C in winter, and air con to between 23 and 26 °C in summer. Every degree different can add 10% to your bills.

#### What are the financial benefits?

On average, Victorian households can spend up to \$800 a year, or a third of their energy bill, on heating. Replacing an electric heater with an RCAC system, which only costs a third of the amount to run, could save you hundreds of dollars a year.

The Victorian Energy Upgrades (VEU) program offers <u>discounts on RCAC systems</u> to Victorian households replacing old heating and cooling systems. The discount is calculated based on your current system type and the size of the system you install. It can total hundreds or even thousands of dollars.

There are also VEU discounts for weather sealing, window glazing and home energy rating assessments (which can help you identify where you make improvements).

With solar panels and a battery to power your RCAC, plus draughtproofing and insulation to reduce how often you need to turn it on, you can maximise your possible savings.

## Interested in learning more?

Explore <u>info about heating and cooling</u> on our Solar Hub.



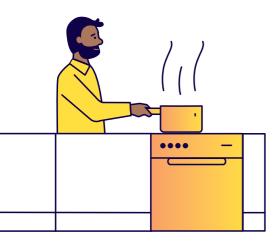
# Cooking

# Turn up the heat with a modern induction cooktop.

Induction cooktops are rising in popularity as a cheaper, cleaner alternative to gas stoves.

# How does an induction cooktop work?

While induction cooktops look like conventional electric models, they work differently. Instead of conducting heat from a coil to cookware, they create a magnetic field that sends pulses into the cookware. This prompts the electrons in the pot or pan to move faster and create heat. So the cookware heats up, but the cooktop itself remains cool enough to touch. Because no heat is lost in a transfer process, induction cooktops are more energy-efficient than electric or gas cooktops.



#### Reasons to choose induction

Here are five reasons more and more people are choosing induction:

- They're safer. There are no open flames, no risk of gas leaks, the cooking surface stays cool, and they can't be accidentally turned on or set objects on fire (because they'll only work if there's compatible cookware on top).
- They offer precise control. They're very quick to heat up, provide a more even temperature across their surface (so food is less likely to burn), and maintain a consistent temperature for as long as you desire.
- They're easy to clean. No need to scrub around knobs, grates and burners – just wipe over the flat surface.
- They're compatible with many pots and pans, such as cast iron and stainless steel. You can easily test if your cookware will work by seeing if a fridge magnet will stick to it. If so, you're good to go.
- They're more affordable than you might think. While induction cooktops have a reputation for being expensive, entry-level ones range from \$300 to \$750: comparable with gas and electric stoves.

### What are the financial benefits?

By investing in an induction cooktop, you'll be saving money in the long run – especially if you have solar panels and a battery, so you can power your cooktop with your own energy.

The Victorian Energy Upgrades program is aiming to introduce discounts for induction cooktops in late 2024.

## Interested in learning more?

Explore <u>info about induction</u> cooking on our Solar Hub.

Tip: Some local libraries loan out portable induction cooktops so you can try cooking with one before you invest in your own.



# **Vehicles**

Go EVerywhere and save on fuel and maintenance costs.

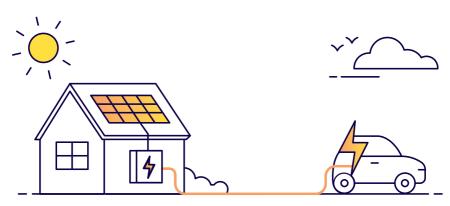
#### **Electric vehicles**

Replacing a petrol-driven car with a battery-powered electric vehicle can offer significant savings on running costs. And there are several other benefits.

- · Fuel and maintenance costs:
  - The electricity needed to run an EV is much cheaper than the fuel required to drive a petrol-driven car the same distance. And EVs require less maintenance than petrol-driven cars too. On average, it's estimated that you can expect to save up to \$1,600 a year on fuel and maintenance costs with an EV.
- Range: Many EV models can travel between 350 and 600 kilometres (in optimum conditions) on a single charge. With Victorians travelling an average of just 38 kilometres a day, that's more than enough for everyday needs. Plus, you can already drive between Melbourne and Adelaide or Sydney with easy access to ultra-rapid charging stations.

- Performance: EVs typically have better handling thanks to a lower centre of gravity; deliver great acceleration compared to internal combustion vehicle engines; and are more spacious inside due to the motor placement.
- Safety: Research shows that driving a vehicle with a battery is just as safe as driving a vehicle that runs on petrol or diesel. New models undergo rigorous safety testing before they can be sold in Australia.
- Environmental impact: EVs have proven to be more carbon-efficient than petrol-driven cars over their lifecycle (even when powered by fossil fuels), including raw material extraction, manufacturing, fuel cycle and end-of-life recycling.

Tip: The cleanest and cheapest way to charge your EV is by using a renewable energy source, such as solar.



### **Getting your home EV-ready**

You can charge your EV at home simply by plugging it into a standard power socket. Or for faster charging, get an electrician to install an EV home charger. Look for smart features like the ability to schedule when your vehicle charges.

Check your current plan with your energy retailer and ask about off-peak deals to cost-effectively charge your EV. Or if you have a solar PV system, great news: you can charge your car using free solar power during the day.

If you're looking at getting solar, ask your retailer about a suitable system size to cover your needs including EV charging.

Tip: If you don't have access to charging at home, then consider other options that fit into your routine, like using rapid chargers when parked at your workplace, gym or local shops.

## Interested in learning more?

Explore <u>info about electric vehicles</u> on our Solar Hub.



## **Solar Superheroes:**

Arun and Cherry's EV has plenty of space for their three kids, is cheap to run, and means they never need to go to the petrol station.

"It's been one of the best decisions we've made as a family."







# Step 3: Make the most of solar

Say goodbye to gas bills and enjoy a home powered by the sun.

# Leaving gas for good

## How to get rid of your gas connection (and bills)

Once you've replaced all the gas appliances in your home with electric, you can close your gas account. Otherwise you'll be paying a daily supply charge for gas even though you have no usage charges.

To do this, you'll need to disconnect or abolish your gas connection.

Disconnection simply requires someone to visit your property to do a final meter read and shut off the supply. The price depends on your gas distributor and is currently under \$100 with all Victorian distributors.

Abolishment goes a step further and involves removing the pipes that connect your house to gas. The price for abolishment is currently capped at \$220 in Victoria.



## Advice for getting the most out of your solar

With an all-electric home, you could be saving hundreds or thousands of dollars every year – especially with a solar PV system.

To maximise your savings, try to use your solar power rather than grid electricity as much as you can.

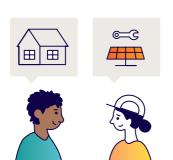
Here's some advice for getting the most out of your solar power:

- Monitor your use. Most solar inverters come with an app you can install on your phone or tablet. There are also third-party apps available. Monitoring apps can help you see how much solar power is generated and consumed in your home.
- Focus on self-consumption.

This means running your electrical appliances during the day while your solar system is generating energy, or from the solar power stored in your battery at night. With self-consumption, the energy you use is free. This normally leaves you better off than if you export solar power to the grid at one price and import power to use at another price.

- Compare offers with different electricity retailers. The solar feed-in tariff, daily supply charges and usage charges vary between different retailers and plans. And they can change over time. Visit the Victorian Energy Compare website at least once a year to see if you're getting a good deal.
- Don't forget about solar panel maintenance. To ensure your system is operating efficiently and safely, get your solar panels serviced at least once every two years by a licensed electrician.
- Upgrade lights, whitegoods and other household appliances to more energy-efficient versions. This will mean that your solar power can run more of your appliances, for longer. So it reduces the amount of electricity you need to draw from the grid (or increases the amount you can feed into it).

Tip: The <u>Victorian Energy Upgrades</u> <u>program</u> offers discounts on upgrades for a range of household appliances, including clothes dryers, fridges and freezers, pool pumps, shower heads and TVs.



# **Action plan**

Tick off what you've already done and plan your next steps towards a solar-powered, all-electric home.

## Step 1: Install solar

System	Installation date	Budget	Potential savings	Done
Solar PV panels				
Solar battery				

## Step 2: Replace appliances

System	Replacement date	Budget	Potential savings	Done
Hot water Tip: Check the label on the system. Hot water systems last 8-10 years.				
Heating and cooling				
Cooktop (and oven if applicable)				
Vehicles				

## Step 3: Get off gas

System	Disconnection date	Budget	Potential savings	Done
Gas connection				

# How Solar Victoria can help

### Rebates and loans

Interested in our rebates and interest-free loans to reduce the upfront costs of installing solar panels, a battery or an energy-efficient hot water system? Follow these steps:

## 1. Check your eligibility

You could be eligible if your household taxable income is less than \$210,000 per year, your property is valued at less than \$3 million, and the property hasn't received the same rebate before.

#### 2. Find a retailer

You'll need to use one of our **authorised retailers**. This ensures you get a quality product, installed safely by a trained professional. We recommend you get at least three quotes to compare. When contacting retailers, let them know you're interested in applying for a Solar Victoria rebate or loan.

## 3. Apply

Once you've chosen a retailer, lodge your rebate or loan application online. You'll need to provide a few documents to help us confirm your eligibility. We usually respond within 5-8 working days. We'll email you to request more information or provide the outcome of your application and let you know the next steps.

Tip: If you meet the eligibility criteria, you may be eligible for multiple incentives, including a solar panel (PV) rebate, a hot water rebate and a solar battery interest-free loan.

#### Solar Hub



Visit our online <u>Solar Hub</u>. It's packed with useful information about making the switch to a solar-powered, all-electric home.

# Glossary

#### **Authorised retailer**

To be eligible for a rebate or interestfree loan from Solar Victoria, you must use an authorised retailer for your purchase. This ensures you receive a quality product, installed safely by a qualified professional.

Authorised retailers meet our <u>quality</u> <u>and safety requirements</u> for sales and installation. Their installers must hold the appropriate electrical licence or plumbing accreditation. Installations by authorised retailers are also subject to safety and quality checks.

# Direct current (DC) and alternating current (AC)

These are two different types of electric currents. With DC current, electrons move continuously in one direction. With AC current, electrons move back and forth.

Solar panels produce DC current, but our homes use AC current. So, solar PV systems need an inverter to change the power from your solar panels from DC to AC.

## **Electricity meter**

An electricity meter is a device that measures the amount of electricity consumed by a household.

#### **Exports**

If you have extra solar electricity because you're using less than your solar system is generating, this is fed into the grid and called exported energy.

#### Feed-in tariff

When you export power to the grid, you will receive a payment known as a feed-in tariff (FiT) for each kWh of excess solar energy. The payment amount is set by your electricity retailer.

#### **Fossil fuel**

Coal, oil and gas are all types of fossil fuels. They were formed from the fossilised remains of dead prehistoric plants and animals. The planet has finite supplies of them, unlike renewable energy sources.

#### **Greenhouse gas**

Greenhouse gases are substances in the Earth's atmosphere (like carbon dioxide) that trap energy from the sun and heat the planet. Burning fossil fuels produces greenhouse gases.

#### Grid

The grid is the shared electricity network that most buildings are connected to

#### **Imports**

Whenever your solar system isn't generating and you use electricity, you're taking it from the grid just like you did before you had a solar PV system. That's imported energy.

#### Kilowatt (kW)

A kilowatt is the amount of power consumed or produced by an appliance at a given moment. The output of solar panels is measured in kilowatts – for example, an 8 kW solar PV system can produce more electricity than a 5 kW system under the same conditions.

#### Kilowatt-hour (kWh)

A kilowatt-hour is the amount of energy consumed by an appliance over time. For example, a 5 kW air conditioner running for 2 hours will use 10 kWh of electricity. The capacity of a solar battery is measured in kilowatt hours.

#### Renewable energy

Renewable energy is any form of energy that comes from natural resources that are constantly replaced and never run out, such as solar electricity produced from sunlight. Unlike fossil fuels, there is no limit to our supply of renewable energy sources.

#### Solar battery

An energy storage device that can be paired with solar panels. Solar batteries connect with a solar inverter to store your excess solar energy.



# Solar cells, solar energy, solar panels, photovoltaic (PV) cells

Solar energy is energy from the sun's heat and light. Solar cells turn light from the sun into electricity. Solar cells are put together to make solar panels, which can be placed on your roof to turn sunlight into solar energy.

Solar cells are also referred to as photovoltaic cells. 'Photo' is Latin for light and 'voltaic' means electricity.

#### Solar inverter

Inverters change the DC electricity produced by solar panels into AC electricity that can run your appliances.

Grid-interactive inverters can export energy into the grid, and require a grid connection (or an equivalent 230 volt AC supply) to operate. If there is a power outage then they stop operating.

Hybrid inverters have extra features that you might want if you have a solar battery. Many can power your home from your battery and solar panels during a power failure.



# Start putting the sun to work

## Have a question or want to know more about our programs?

Solar Victoria is dedicated to helping Victorians save on their energy bills, tackle climate change and build a cleaner, renewable future.

Get in touch with our friendly team if you have a question about our rebates and loans

#### Contact us

- **T** 1300 376 393 (Monday-Friday, 9am-5pm)
- E enquiries@team.solar.vic.gov.gu

## Non-English speakers

If you'd like to speak to us in your language, you can access free phone translation services by calling the National Translating and Interpreting Service on 131 450.



## **Accessibility**

If you would like to receive this publication in an alternative format, please contact Solar Victoria at comms@team.solar.vic.aov.au. This document is also available on the internet at solar.vic.gov.au.

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