

# Solar made simple

A guide to getting started with solar



Solar  
Victoria

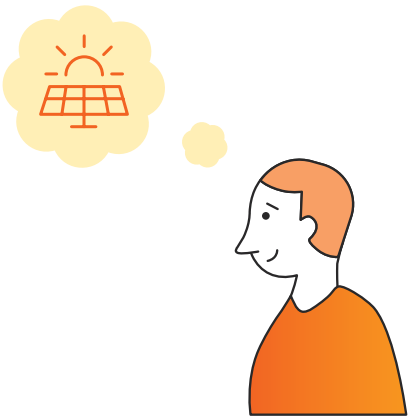


If you're thinking about switching to solar but aren't sure where to start, we've created a guide to keep solar as it should be – simple.



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# How solar works

## Let's shed some light on the basics

Solar power is energy from the sun that is converted into electricity.

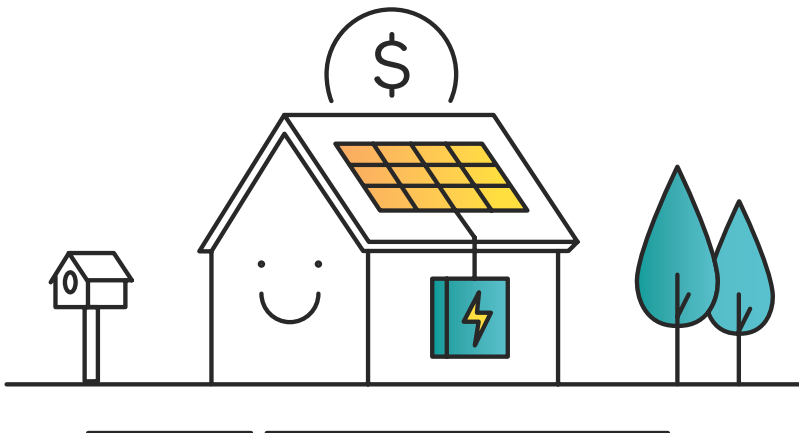
Solar power captures the sun's rays through **solar cells** to produce energy. Solar cells are put together to make solar panels. Solar cells are also called **photovoltaic cells (PV)**.

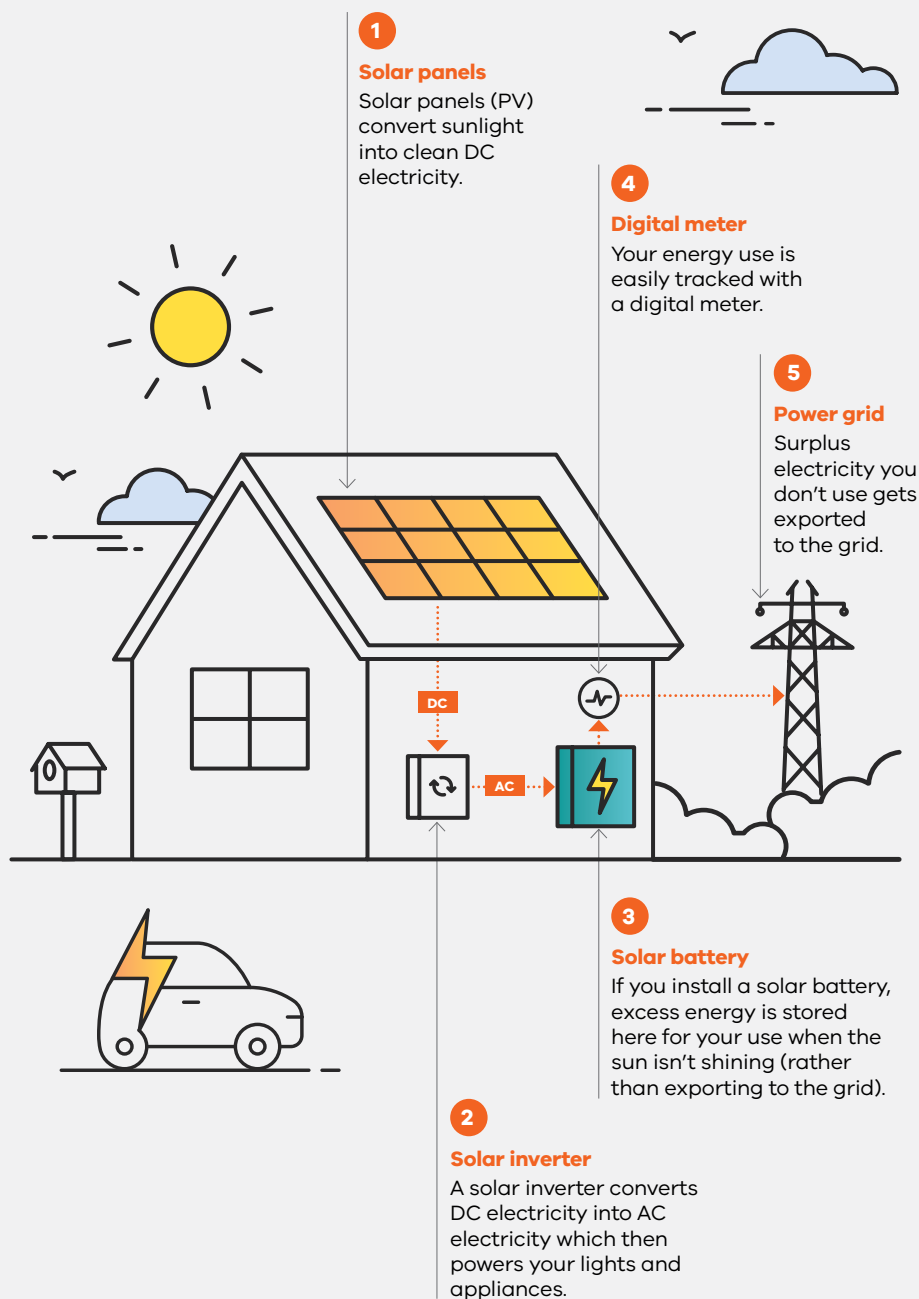
When the sun is shining, solar panels convert sunlight into **DC (direct current) electricity**. A solar inverter converts the DC electricity into **alternating current (AC)** energy for use in your home.

**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.

Energy from the sun is also affordably priced (the sun happens to be a very reasonable electricity provider) so it also provides you with free energy.

Handy tip: Click on the **bolded words** in the guide to learn more.





# Saving with solar

## Costs and benefits

Solar saves more than the environment. Consider these financial benefits when weighing up a switch to solar.

### Bill savings

With solar panels, a typical household can save more than \$1,000\* every year on energy bills, and an extra \$640 with a solar battery installed.

Solar energy is also the most energy efficient way to heat your water at home. The typical household can also save an extra \$400 per year with a heat pump or solar hot water system.

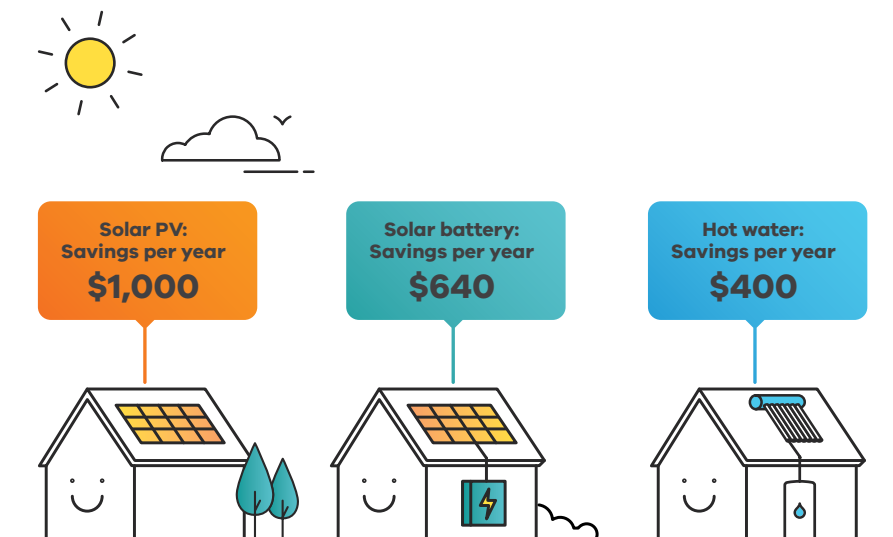
### Victoria Government Rebates

Rebates are available through Solar Victoria to help households switch to solar, with \$1,400 rebates available for installing solar panels (PV), as well as the option of an interest-free loan.

Rebates of up to \$2,950 are available to support eligible Victorian households to install a solar battery, and up to \$1,000 to install a solar hot water or heat pump hot water system.

Eligible businesses can also apply for a rebate of \$3,500 to install a solar panel system, with the option to take advantage of an interest-free loan up to \$5,000.

Read on to find out more about each rebate.



\*based on a typical 6.16 Kw system



## Small-scale Technology Certificates (STCs)

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

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

Small-scale technology certificates are calculated based on the amount of electricity a system produces. Think of these as individual 'credits' that can be applied to the purchase price of your solar system.

You can use this free [STC calculator](#) to see how much you can save off the upfront cost of installing a solar system at your home.

### *For example:*

Let's say John wants to install a 6.6kw solar system on his residential property in Melbourne. Here are John's results from the [STC calculator](#):

**System type: Small generation unit**

**Individual STC value: \$36.50\***

**Number of STCs: 70**

**70 STCs x \$36.50\* = \$2,450**

\*as of September 2022

The quoted price of John's system will have the STC discount included in the final price. Talk to your solar retailer about STCs to learn more.

## Selling your surplus electricity with Feed-in Tariffs (FiTs)

Solar energy that you generate but don't use is sent back to **the grid** (shared electricity network). If your home is generating more electricity than you use, you will receive a fixed rate paid to you per kilowatt-hour of electricity **exported** to the grid. This rate is known as the **Feed-in Tariff**.

FiT's are determined by your electricity retailer and will vary. The minimum FiT amount payable by retailers is set by the Essential Services Commission and changes each year. [Find out everything you need to know about FiT amounts here.](#)

Generally households save more by using the electricity they generate, but selling any surplus electricity generated back into the grid can also be a way to further reduce your bills by supplying clean energy for other households.



# Solar panels

## Owning your own power

### How do solar panels work?

Solar panels are a collection of solar cells. Each solar cell produces DC (direct current) electricity when sunlight hits it.

A **solar inverter** is a vital part of a grid-connect solar electricity system as it converts the DC current generated by your solar panels to the 230 volt AC (alternating current) needed to run lights and appliances in your home.

A **grid-interactive inverter** is the most common type of inverter available. It 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 after the mains grid returns to normal.

### How does grid-connected solar work?

Grid-connected systems have two main components, a solar panel array on the roof, and a grid-interactive inverter, connecting into a household's switchboard and electricity meter.

Most solar customers choose a mains grid-connected system for the reliability that such a system offers. Your home can draw electricity from the grid when insufficient electricity is being generated by the solar panels.

Any electricity produced by the solar electricity system but not needed by your house at the time it is produced is simply fed into the mains grid, with a feed-in tariff paid to the system owner.

*[Find out](#) the difference between off-grid and grid-connect solar battery systems, and how both systems can help you be more independent of the electricity grid.*

### Solar Superhero case study:

Chris runs Selvetica, a coffee roastery and indoor plant nursery. Before making the switch to solar, Chris says a lot of her profit went to energy bills. Now with solar, she is saving on costs, with a positive impact on her small business's bottom line.

*"There's no reason not to do it. It's sustainable, it's easy, you save so much money."*



**Read  
Chris'  
story**



## What are the financial benefits?

With the solar panel (PV) rebate of \$1,400 applied, a system in Victoria could pay itself back within three and five years.

Quality solar panels last at least 25 years, so that investment should repay itself several times over compared with the cost of buying electricity each month.

Eligible homeowners and rental providers can claim a discount of up to \$1,400 off the upfront cost of a solar PV system, with the additional option of an interest-free loan to offset installation costs.

Eligible businesses can apply for a rebate of \$3,500 with the option to take advantage of an interest-free loan up to \$5,000.

## Interested in learning more?

Find out more on the solar panel (PV) rebate page on [our website](#).

Find out more about the [Solar for Business rebate](#).

## Building a new home?

Solar panel (PV) rebates and interest-free loans are now available for homes under construction.

Reduce your costs by installing solar while your home is being built.

[Find out more](#)



## Solar panel (PV) rebate for homeowners and rental providers

### Rebate amount:

Up to \$1,400



### Interest-free loan:

Up to \$1,400



### Eligibility criteria:

[For homeowners](#)

[For rental providers](#)



## Solar panel (PV) rebate for businesses

### Rebate amount:

Up to \$3,500



### Interest-free loan:

Up to \$5,000



### Eligibility criteria:

[View here](#)



# Solar batteries

## Storing what's yours

### How does a solar battery work?

Solar batteries store energy produced by your solar panels, keeping excess energy within your home for future use, instead of sending it back to the grid.

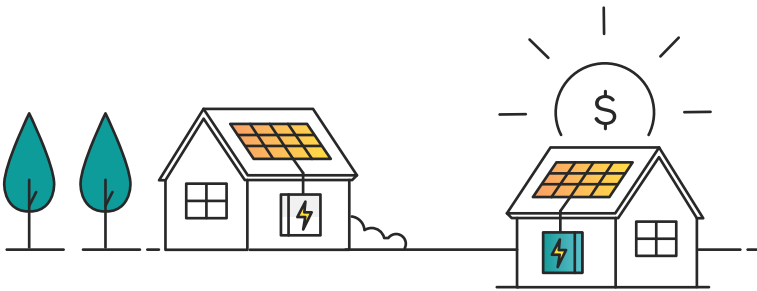
In a typical home with solar panels, part or all of your energy usage may be met by solar generation while the sun is shining. Any excess solar energy is exported to the grid. Shortfalls, most often experienced in the early morning, evening, overnight or in cloudy weather, are met by **importing** electricity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

This is where a solar battery system can help you save money.

When you add a battery to an existing rooftop solar system, or install rooftop solar panels and a battery together in a new system, the excess solar energy not used at home during the day can be used to charge the battery.

Solar batteries help households get the most out of their solar systems, reducing their reliance on the grid and making their energy bills even smaller.

You can arrange to have solar PV panels and a battery installed at the same time. However, battery rebate applicants can only receive one Solar Victoria rebate.



### Solar Superhero case study:

Since installing a solar battery and storing the excess energy they were generating, Rushin Patel and his family are now reaping the benefits.

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



**Read  
Rushin's  
story**



## 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 for use later in the day.

A typical household can save up to \$640 a year by adding a solar battery to an existing solar panel (PV) system.

Eligible households can claim a point-of-sale discount of up to a maximum of \$2,950.

## Will adding a battery ensure I have power during a power outage?

Grid-connected solar PV systems, with or without a battery, are designed to switch off during a power outage, to protect those potentially working on nearby electricity lines. Standard solar battery systems also do not provide backup power when the grid fails. However designing a solar battery system with battery backup is becoming more common, but make sure you tell your installer that's what you want, so the system can be designed properly with the right components.

## Interested in learning more?

Visit the solar battery rebate page on [our website](#).

## Solar battery rebate

### Rebate amount:

Up to \$2,950



### Bill savings

Up to \$640 every year\*



### Applications approved:

10,000+



### Eligibility criteria:

[View here](#)



\*based on a typical household

# Hot water

## Tapping into savings

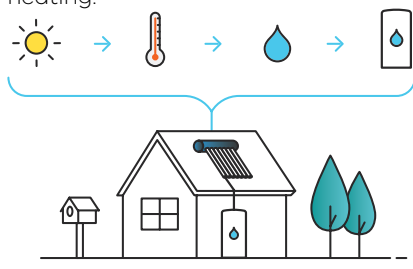
### How does a solar hot water system work?

A solar hot water system uses heat directly from the sun to heat water. A typical system consists of a **hot water storage tank** connected via pipework to **solar collector panels**, which heats the water in the tank.

As the sun shines on a collector panel, the water in the pipes inside the collector becomes hot. This heated water is circulated up the collector and out through a pipe to the storage tank. Cooler water from the bottom of the tank is then returned to the bottom of the collector, replacing the warmer water.

Standard electric storage water heaters use a heating element inside the tank to heat the water, just like an electric kettle. When powered using electricity from the grid, they are responsible for the most greenhouse gases of any water heater.

With a solar panel (PV) system at home you might be keen to make use of any excess solar electricity generated throughout the day to run your hot water system and reduce household energy costs due to water heating.

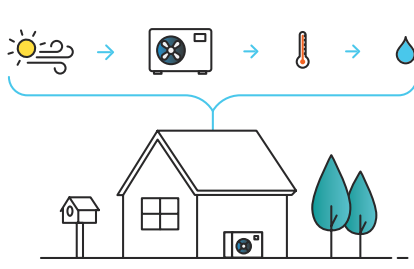


### How does a heat pump hot water system work?

Air conditioners and refrigerators are two common forms of heat pumps that you might be familiar with. They work by moving or 'pumping' heat from the surrounding air and use it to heat your water. For example, your fridge extracts heat from its freezer section and dumps warm air out the back. A heat pump uses renewable energy to heat your water, without the need for solar panels.

Hot water systems are one of the biggest energy users in the home, accounting for around 21% of total energy use. This can have a significant impact on household energy bills, but one way to keep these costs under control is to install an efficient hot water system such as a heat pump or solar hot water system.

[Find out more](#) about the two main types of energy efficient hot water systems to help you decide which best suits your needs.





## What are the financial benefits?

On average, households that install solar and heat pump hot water systems can expect to save between \$140-\$400 per year on their electricity bills.

Eligible households can receive a 50% rebate of up to \$1,000 on eligible solar hot water and heat pump hot water systems.

*Handy tip: Solar Victoria's hot water rebate applies to installations that replace an existing hot water system that is at least three years old (from the date of purchase).*

## Interested in learning more?

Visit the hot water rebate page on [our website](#).

### Hot water rebate

#### Rebate amount:

Up to \$1,000



#### Bill savings

Up to \$400 per year\*



#### Percentage of total home energy use:

21%



#### Eligibility criteria:

[View here](#)



\*based on a typical household

## Solar Superhero case study:

Find out how a family of four slashed their energy bills by flicking the switch to running an all-electric home.

*"I really like the fact that no matter what your motive is, you can get an outcome that both lowers costs and reduces environmental impact."*

**Read  
their  
story**



## Apply for a solar rebate

If you're interested in applying for a Solar Victoria rebate to install solar panels, a battery or hot water just follow these steps:

### 1 Check your eligibility

Once you have decided which rebate is right for you, check the eligibility criteria to make sure you can apply. Click the links (right) to view the eligibility criteria for each rebate.



**Solar panel (PV) rebate**



**Hot water rebate**



**Solar battery rebate**



**Solar for rental properties**



**Solar for Business**

### 2 Get a quote from an authorised retailer

If you're seeking quotes for a solar installation, you must use an **authorised solar retailer** to be eligible for a Solar Homes or Solar for Business rebate.

This ensures you receive a quality product, installed safely by a trained professional.

You can find an authorised retailer through the [authorised retailer page](#) on our website.

### 3 Apply for a rebate

Your retailer can upload your quote to the Solar Victoria Portal. We'll then send you an email with a link to the portal to retrieve the quote and start your application to receive a rebate.

You can access this portal by visiting the [Solar Victoria website](#), selecting the type of solar rebate you are applying for and clicking the 'Apply now' button.

## FAQ

### Solar panels, solar batteries & more

Get answers to commonly asked questions about different types of solar products and how Solar Victoria rebates work.

#### **How do I choose a good quality solar panel (PV) system?**

Solar Victoria maintains an [Approved Products List](#) containing systems accredited as Approved Products by the Clean Energy Council (CEC) and meeting all applicable Australian Standards. To be eligible for a Solar Victoria rebate, a chosen solar PV, battery or hot water system must be on our approved products list.

#### **I have an existing solar PV system and I want to add a battery storage system; will this change affect my eligibility to receive the feed-in tariff?**

Solar customers that install small-scale batteries as part of their current PV system will continue to be eligible to receive feed-in tariffs for the electricity generated and exported by their system to their retailer.

This also means that you can install a battery and still receive the feed-in tariffs as long as you maintain your eligibility requirements as outlined in your contract.

#### **Do I need to have a solar PV system installed to access the solar hot water rebate?**

No, you can install any system on the Solar Hot Water [Approved Products List](#).

This means that households that have no available or suitable roof space to install PV or solar hot water, such as apartments and townhouses will still be able to access the rebate to install a heat pump hot water system.

#### **What rebates are available for homes under construction?**

If you are building a new home, you can apply for a solar PV rebate and interest-free loan while your house is being built. However, while under construction, new homes will not be eligible for any other rebates under the Solar Homes Program.

You may be eligible for other rebates under the Solar Homes Program once construction is complete.





## FAQ

### Solar panels, solar batteries & more

#### What does a “VPP-ready” battery mean?

VPP is an acronym for Virtual Power Plant. A 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 a set of technology requirements that allow them to participate in these energy sharing networks.

Joining a VPP program can bring financial benefits, and provides additional consumer protections not available in the general market.

Visit our website to find out more about [VPPs and how they work](#).

Find more answers to frequently asked questions about [solar panels](#), [solar batteries](#) and [hot water](#) on our website.



# Glossary

## Authorised Retailers

Authorised Solar Retailers are CEC solar retailers who have promised to follow this Code of Conduct when doing business. All retailers taking part in the Solar Homes Program are required to be signatories to the CEC Retail Code of Conduct. Solar Victoria requires applicants to the program to use an Authorised Solar Retailer for their system installation if they intend to claim a rebate.

## Direct Current (DC) and Alternating Current (AC)

With DC current, electrons move in one direction, from (-) negative to (+) positive. It's a constant current, flowing continuously until either it's switched off or its power source runs out or stops generating power.

With AC current, electrons don't really flow, they simply vibrate back and forth from negative to positive and positive to negative. It isn't a continuous vibration either, like the constant flow in DC. The electrons vibrate in time or in sync with one another, and this timing is controlled by modifying the speed of the generator.

## Distributed Network Service Provider (DNSP)

DNSPs are the organisations that affect whether your solar panels or solar battery can be connected to the grid. Sometimes referred to as a 'distributor', this is the company that owns the poles and wires in your street and transports the electricity to your home. It is also the business you call to report faults and emergencies and is different to your electricity retailers who sends you your bills.

## Electricity meter

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

## Exports

If you have surplus solar electricity because you're using less than your solar system is generating, this is sold back to the grid and called exported energy.



## Feed-in tariff



Any solar generation that you don't use is sent back to the grid. In return, you will receive a fixed payment known as a feed-in tariff (FiT) for each kWh of excess solar energy.

# Glossary

## Fossil fuel

Coal, oil and gas are all types of fossil fuels. How fossil fuels were formed is all in the name – from the fossilised remains of dead prehistoric plants and animals.

## Greenhouse gas

When we talk about greenhouse gases, we're referring to gases in the Earth's atmosphere, (carbon dioxide for example), that trap energy from the sun. Without these gases, heat would escape back into space.

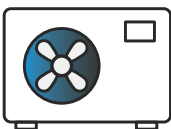
## Grid

The grid is a reference to the shared electricity network provided by your electricity retailer

## Heat pump hot water system

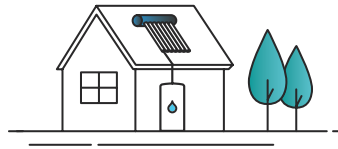
A heat pump looks similar to an air conditioner and works by absorbing heat from air and transferring it into water. This process uses 75% less power than a conventional electric system.

A heat pump uses renewable energy to heat your water, without the need for solar panels. They absorb the heat from the surrounding air and use it to heat your water.



## Hot water storage tank

A hot water storage tank is a water tank used for storing, heating and maintaining hot water. Solar hot water systems are configured as a tank and collectors.



## 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.

## Panel efficiency

Panel efficiency is a measure of the output of the panel in relation to its collection area. Currently, panel efficiencies are in the range of around 4% to 22%, with most being in the 14% to 18% range. If you have limited roof space, panels with higher efficiency will mean you can fit more generation capacity than you could with lower efficiency panels. Higher efficiency panels will generally cost more.

Panel efficiency is largely dependent on the technology used, though, and isn't necessarily an indicator of quality.

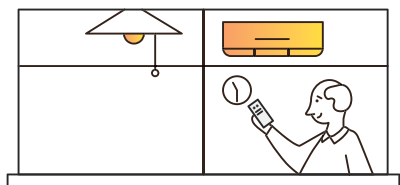
## Renewable energy

Renewable energy is any form of energy that comes from natural sources, e.g. sunlight to produce solar electricity.

# Glossary

## Self-consumption

When you use electrical appliances throughout the day while your solar system is generating energy, you're making the most out of your solar PV system's power. This is called self-consumption.



## Solar cells, Solar energy, Solar panels, Photovoltaic (PV)

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 capture sunlight and turn it into solar energy.

Solar cells are also referred to as photovoltaic cells. 'Photo' is Latin for light and 'voltaic' means electricity. So when you hear 'Solar Panel (PV)', it's a reference to capturing the light from the sun.

## Solar battery

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



## Solar collector panels

Solar collector panels convert sunlight to heat to provide hot water and space heating to a household.

## Solar hot water system

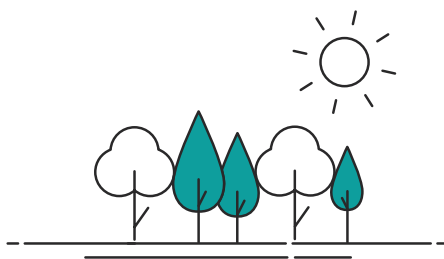
A solar hot water system uses heat directly from the sun to heat water. A typical system consists of a hot water storage tank connected via pipework to solar collector panels, which heats the water in the tank.

## Solar inverter

The electricity produced by solar panels is initially a direct current (DC). Inverters change the DC electricity into AC electricity so you can run your appliances.

## Switchboard

A switchboard is usually located on an outer wall in front of your home. It's responsible for distributing the power through your home.



# Taking the next step

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 us today if you have any questions

## Contact

Phone: 1300 376 393 (during business hours)

Email: [enquiries@team.solar.vic.gov.au](mailto:enquiries@team.solar.vic.gov.au)  
[solar.vic.gov.au](http://solar.vic.gov.au)



## 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.

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