

Solar Made Simple



Two great reasons to go solar

Save money

Solar is a great investment with a payback time of around 3 to 5 years depending on factors including how much of your solar generated electricity you use and on the conditions of your energy retailer.

After the payback period you'll be generating your own free electricity. Quality has improved with most solar panels manufacturers providing a warranty of 25 years and most inverters offering 10 year warranties.

Ways to pay includes paying up-front, using your mortgage or taking out a low interest green loan. The Federal Government administers an incentive scheme which is included in the installers quote.

Healthier Community

The burning of fossil fuels to produce electricity is the largest single source of greenhouse gas emissions in Australia.

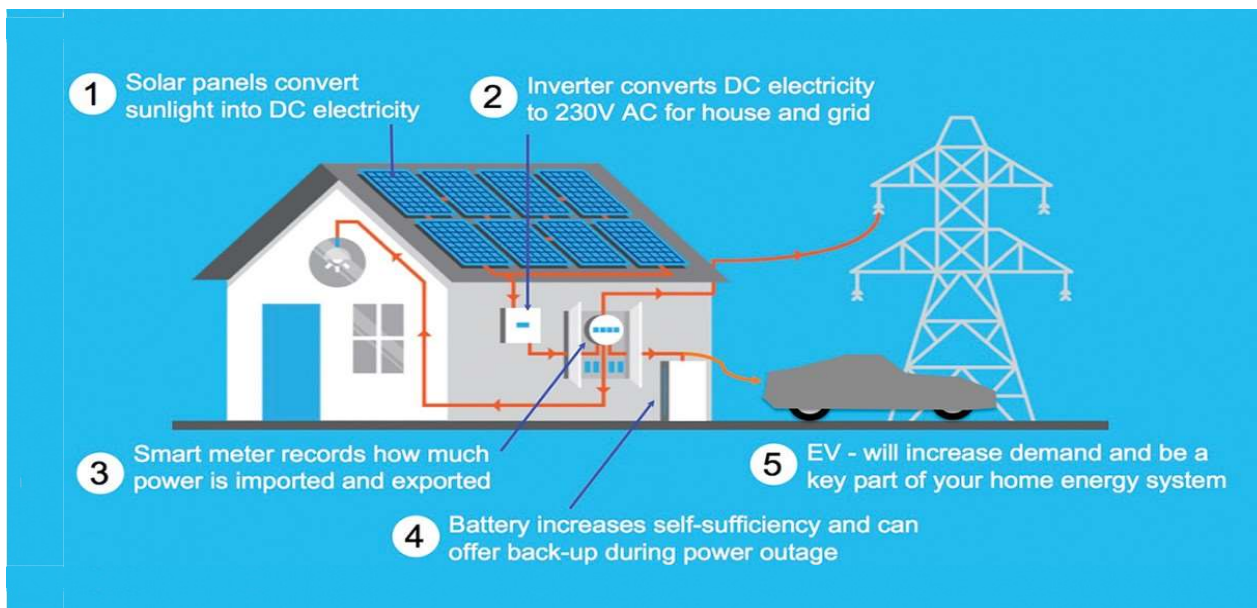
On the Central Coast around half of residential emissions come from electricity use.

Switching to solar power in our homes is one of the most important things we can do for ours and future generations.

We're one of the sunniest countries in the world, but only approximately 20-25% of Peninsula households have solar.

Acknowledgement to Zero Emissions Sydney North, Climate Future Central Coast, Zero Emissions Noosa, Inner West Council.

How does solar work?



Residential solar

When sunlight hits the solar panels they convert the sun's energy into Direct Current (DC) electricity which is sent to your inverter. Your inverter converts the DC into Alternating Current (AC) electricity ready for your home.

When your solar energy system produces more electricity than you need, excess electricity flows back into the grid and will be sold to other consumers. You will be credited for this. The price varies according to the power company's Feed in Tariff (FiT), in 2023 it's between 0 and 12 cents/Kwh.

If you add a battery...

Any surplus solar energy charges your battery, ready to power your house after daylight (to avoid paying peak grid tariffs), or when you use more than you generate. If your battery needs top-up, you can charge your battery using cheap off-peak grid power.

Generally, battery systems need to reduce in price to become financially viable for most people.

Inverter

There are three types of inverter:

String inverter: the solar panels are connected together in series, individual panel outputs are not optimised. Lower cost, reliable, fine if panels are not shaded.

Inverter & panel optimisers: A panel optimiser is attached to each solar panel, with the benefits of panel level optimisation under a wider variety of conditions.

Micro inverters: each solar panel has its own integrated inverter attached on or under each individual solar panel, with AC wiring to couple it to the system.

Electricity Trading

You can also participate in virtual power plants, selling electricity back to the grid. New developments allow trading between users of electricity in NSW.

A system such as Powertracer (by Enosi) facilitates trading amongst the community.

What solar system do I need?

Disclaimer. The information is general in nature, is not professional advice and should not be relied upon when making decisions. Individuals need to conduct their own assessment and gain individual advice to suit their own circumstances.

What size system to install?

The size of system depends on your energy needs, use and the area of suitable roof. You can install up to 13.3kW of panels on a single phase connection, or up to 40kW with a 3-phase connection

A guide is to divide your average daily energy use in KWh by 4, for system size in kW, but if your focus is making a difference then install as much as you can!

Average household use per day in kWh's	Recommended solar system size in kW
15-35	6.6
40+	10

How much does it cost?

The cost of a system depends on the roof configuration and choice of panels, inverter(s) and other equipment, within a range of \$900 to \$1,500 per kW. Costs continue to decrease, making solar relatively cheap.

Batteries cost from \$1,000 to \$1,300 per kWh of storage (approx). Actual cost of a battery system (approx. \$10,000 are usually not financially viable.

Choose Size	Cost
6.6kW of panels, 5kw inverter	\$5,500 to \$8,000
13.3 kW of panels, 10 kW inverter	\$9,000 to \$15,000

What will I save?

Power bill savings depend on your system size, your electricity deal in terms of price per kWh consumed and feed-in-tariff per kWh exported, and the percentage of self consumption. The table below gives some indicative figures. (Assumptions: 30c/kWh tariff paid for grid electricity; 5c/kWh received as solar feed-in-tariff, average orientation of panels, simple margin of error 20%)

System Size	Estimated kWh's produced p.a	Savings if use 40% of solar	Savings if use 60% of solar	Savings if use 85%
6.6kW	7,800 kWh	\$1,200	\$1,500	\$2,000

For further calculations, go to <https://climatefuture.org.au/solar-calculator/>

Making a difference to your community

Here's the impact you could make through CO2 emissions reduction every year.

National Transport Commission Australia: Australia's average emissions intensity for passenger vehicles was 171.5g/km in 2017. www.ntc.gov.au/sites/default/files/assets/files/CO2-report-2017.pdf. Carbon Neutral: 15 trees per tonne CO2 as conservative estimate. carbonneutral.com.au/faqs.

System Size	CO2 emissions saved (tonnes)	Trees planted	Car Km saved
6.6kW	7.1	106	41,500
10kW	10.8	160	62,800

Next Steps

1. Consider the System Size

Get a rough idea about the size and type of system you would like so you can ask questions and provide information to installers. See earlier examples.

2. Five key questions to ask an installer

- What is the maximum size that can be installed on my roof?
- Are there any shading issues? How to deal with it?
- Warranties for i) panels, ii) inverter and iii) workmanship
- Service (help after installation)
- Cost

Comment: Don't worry too much about brands. Everything sold by reputable installers is at least acceptable quality and you should be covered by good warranties anyway.

3. Seek quotes from installers

We recommend seeking at least 3 quotes from installers with a good reputation. SolarQuotes (solarquotes.com.au) provides independent and verified solar installer recommendations.

Some installers may quote without visiting, but it is important that they check your home and roof and work out how to position the panels and the inverter for the best performance. Ensure this is addressed in the quote.

You can ask to have a battery as an option in the quote. But crunch the numbers. At the current prices batteries are not a viable investment.

4. Choose your solar system and installer

Quotations from different installers will likely involve different types and arrangement of panels, different inverters and/or options for other equipment.

5. Schedule installation

Lead time to installation is several weeks. Systems are usually installed in one day unless they are complex or large.

6. Energy retailer

Carefully consider the selection of your energy retailer with feed in tariffs (typically \$0.05kwh) and renewable generated sources.

A website which helps compare different retailers is Energy Made Easy
<https://www.energymadeeasy.gov.au/>

7. Change Behaviour

Consider running appliances during the day when your solar system is generating power. Even run air conditioning to cool or warm earlier in the day before the afternoon/evening peak to minimise running on grid power.

As you will produce much more energy than you need, you can look into community or peer to peer trading of electricity.



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