zero emissions SOLUTIONS

Solar made simple

Two great reasons to go solar

Save the planet

The burning of fossil fuels to produce electricity is the largest single source of greenhouse gas emissions in Australia.[1]

In Sydney North around half of residential emissions come from electricity use.[2]

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

We're one of the sunniest countries in the world, but less than 10% of Sydney North residents have solar – let's make that at least 50%!

Save money

Solar is a great investment with a pay back time of around 3 to 7 years depending on factors including how much of your solar generated electricity you use.

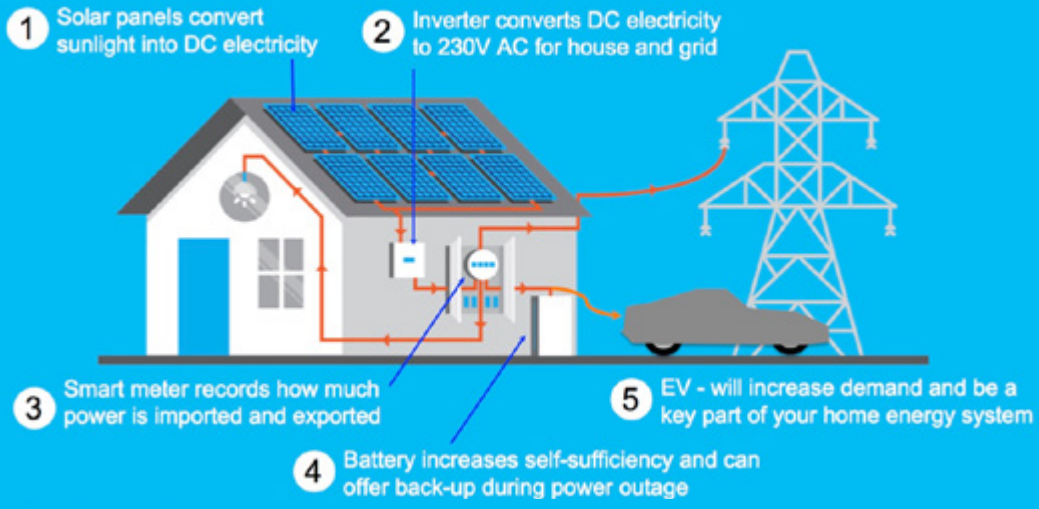
After that you'll be generating your own free electricity.

Good quality panels are designed to last for 25 years and inverters up to 15 years.

There are several ways to pay including paying up-front, adding your solar installation cost to the mortgage or taking out a low interest green loan. Plus, you can take advantage of the Federal Government solar rebate.

1. Source Dept of Energy & Environment.
2. Northern Beaches Kinesis Report, June 2018.

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 to the power company. You will be credited for this - the price varies according to the power company's Feed in Tariff (FiT).
- If you need more energy than your solar system produces, it's automatically drawn from the power grid - day or night.

If you add a battery...

- Any surplus solar energy charges your battery ready to power your house after daylight or when you use more than you generate (to avoid paying peak grid tariffs).
- You can charge your battery using cheap off-peak grid power.
- You can also participate in virtual power plants, selling electricity back to the grid.

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.
- **Optimised inverter:** panel optimizer is attached to each solar panel, with the benefits of panel level optimization under a wider variety of conditions, and with DC wiring to the central inverter.
- **Micro inverters:** each solar panel has its own integrated optimizer and inverter attached on or under each individual solar panel, with AC wiring, and an extra battery inverter to AC couple it to the system.

1. Calculations based on conservative assumptions: 30c/kWh tariff paid for grid electricity; 5c/kWh received as solar feed-in-tariff.
2. 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.

What size system to install?

Different homes need different sized solar systems

The size of system depends on your energy needs, use and the area of suitable roof. You can install up to 6.6kW of panels on a single phase connection, or up to 30kW with a 3-phase connection. A guide is to divide your energy use 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.

Batteries cost from $1,000 per kWh of storage (approx).

1. Choose size	2. Choose panels and inverter		
	Good	Better	Best
6.6kW System	$5,500+	$7,500+	$10,000+
10kW System	$9,000+	$11,000+	$16,000+

3. Optional: Choose a consumption monitor: Residential prices range from approx $450 (single phase) to $550 (three phase).

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[1].

	Estimated kWh's produced p.a	Savings if use 40% of solar	Savings if use 60% of solar	Savings if use 85% of solar with battery
6.6kW system	9,600	$1,450	$1,900	$2,300
10kW system	14,600	$2,200	$2,900	$3,400

Making a difference

Here's the impact you could make through CO^2 emissions reduction every year[2].

Solar system size	CO^2 emissions saved	Trees planted	Car Kms saved
6.6kW System	7.1 tonnes	106	41,500
10kW System	10.8 tonnes	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.

2. Seek quotes from installers

We recommend seeking quotes from installers with a good local reputation. Installers are busy and some 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.

3. 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. Review the details and ask questions as needed. Ask about the length of the product and performance warranties to help you make an informed decision.

4. Pay the deposit and schedule installation

Once you have accepted the quote and paid the deposit the lead time to installation is several weeks. Systems are usually installed in one day unless they are complex or large.

5. Switch to a solar friendly electricity retailer

Choose a retailer that supports new renewable energy in Australia. Diamond Energy, our retailer of choice, has been awarded 5 stars by Greenpeace and has been highly rated since 2009. It is also highly ranked in solar support and offers*.

6. Get your meter solar ready

If you choose to switch to Diamond Energy, they will install or upgrade your meter to be solar ready. If you don't yet have a smart meter, arrange for your retailer to install one. This needs to be done before you install your solar system.

7. Pat yourself on the back for reducing CO^2 and helping our community

If you choose our recommended installer, we receive a thank you contribution. This helps scale our impact as a not-for-profit run by volunteers and it funds solar installations for community charities. Go to: zeroemissionssolutions.org/request-a-solar-quote/

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E hello@zeroemissionssolutions.org

W zeroemissionssolutions.org

Online group:
facebook.com/groups/ZeroEmissionsSolutions

facebook.com/ZeroEmissionsSolutions
instagram.com/ZeroEmissionsSolutions
twitter.com/ZeroEmissionsS
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