



RENEWABLE ENERGY TECHNOLOGY TYPES

for your home or business

North Sydney Council has a plan to help the community transition to a smart energy future through a higher uptake of renewable energy such as solar. This fact sheet aims to clarify what renewable energy technologies there are and how they work.

What is renewable energy?

Unlike fossil fuels or uranium, renewable energy is infinite. There are many natural sources of energy, like solar, wind or hydro. You can generate renewable energy at any home or business as either renewable heat or renewable electricity. 'Renewable heat' has not been given much credit, even though a study done by the University of Melbourne in 2014 showed that more renewable heat was generated in Australia than solar electricity.

What is a heat pump?

Heat pump is a technical term for technologies like a refrigerator or an air conditioner. You can think of a heat pump like a reverse refrigerator – it takes heat from the outside air and uses it for space heating and water heating..

How are heat pumps generating renewable energy?

If the purpose of a heat pump is to use the heat, then that is renewable energy in the form of heat in the air (not electricity). If the purpose is to reject heat such as in a refrigerator, or with a reverse cycle air conditioner on cooling mode, then that is not regarded as renewable energy, as the heat is unwanted. Costs of renewable heat have a high purchase price but very low operating cost.

Solar electric panels (solar PV)



Solar PV (photovoltaic) panels convert sunlight into renewable electricity. Solar electricity replaces grid-supplied electricity, and can generate income.

Space heating with renewable energy



When a reverse cycle air conditioner (RC/AC) is on heating mode, it is harvesting heat from the outside air. Even when the air seems cool, heat pumps can extract heat. These systems will also work on **cloudy days**, in **shaded places**, or **overnight**. Modern heat pumps are generally quiet and are very reliable.

Using heat pumps is the cheapest form of heating compared to gas or electric resistance heating. The only cheaper method of heating is by passive solar heating with clever building design.

Heat pumps need electricity to run and this is best coming from solar electric (PV) panels while the sun is shining and by purchasing GreenPower®.

Heating water with renewable energy

Renewable heat energy can be harvested by radiant heat from the sun (solar hot water systems), or from the surrounding air (heat pumps).

Hot water heat pumps



These work in cloudy conditions, as well as at night. You can request your installer to remove the off-peak circuit so that the heat pump can run during the daytime. Storing spare solar electricity in hot water systems in the form of heat is a much cheaper way to store energy than in batteries.

Solar hot water systems










These harvest radiant heat from the sun and need direct sunlight. They usually work by having a solar collector on a roof, which is connected to a storage tank on the roof or on the ground. If roof space is limited, it is better to dedicate it to generating electricity and then using a heat pump to heat water for greater value.



PREPARING FOR Renewable Energy Systems

Who do you need to contact?

Sometimes, it can be confusing to know who to contact when thinking about installing renewable energy systems. Use the table below as a guide or otherwise call Our Energy Future helpline on 1300 339 915.

Solar electric panels		<u>Call Our Energy Future</u> for 2 quotes, or ask someone who has solar at their place
Hot water heat pumps	 	Heat pump supplier, plumber, or renewable energy multi-service providers.
Solar hot water	 	Online, or contacts from word of mouth (i.e. asking someone who has solar hot water at their place).
Reverse cycle air conditioners	 	Air conditioning installers, retailers (seek advice from renewable multi-providers for most efficient appliances).

Who is doing what?

Here is a summary of what the area of expertise is for various organisations.

Energy retailer

An energy retailer provides and bills you for your electricity or gas. They are also the organisation you need to contact for the installation of 'smart meters' to replace traditional dial-type electricity meters. Smart meters are essential for solar electricity and peer-to-peer electricity trading.

You can change electricity retailers at any time. Some retailers sell carbon neutral electricity by default. All can sell GreenPower which is verified to originate from an Australian renewable energy generator.

Consultant for renewable energy and energy efficiency

These consultants are most helpful for apartments, residential and commercial strata, or large/complex installations such as Wattblock, Sustainability Now and Huxham Energy Consulting.

Plumber

A plumber installs your hot water system and may provide help for selecting the right system. **Please note** that not many plumbers are experienced with heat pumps. Ring Our Energy Future helpline at 1300 339 915 to confirm advice received or to get help from a consultant.

Electrician

An electrician installs lighting and may provide help in selecting energy efficient lights. Electricians may also install metering and solar electric (PV) panels.

Online groups

Online groups are a great way to exchange renewable energy project ideas and experiences. One example is the Facebook group My efficient electric home.

This fact sheet is best viewed electronically

Download these fact sheets on the "Smart Energy Future" homepage to be able to click on links directly.

OUR ENERGY FUTURE HELPLINE

Our Energy Future is an organisation that provides independent energy efficiency and renewable energy advice for residents in the North Sydney area.
Call 1300 339 915.



CONTACT COUNCIL'S PLANNING DEPARTMENT
Call 02 9936 8100

www.northsydney.nsw.gov.au