

Renewable Energy For the Home



With rapidly rising costs of electricity and most of us wanting to reduce our environmental footprint, domestic scale renewable energy production is becoming more and more popular. There are currently 2 primary options that are suitable for residential homes in Australia, Solar Photovoltaic (PV) systems and Wind Turbine Generators. These can be used individually or in combination and can be grid connected or stand-alone systems (which are battery connected; these are also called Remote Area Power systems, or RAP).

The most common in Australia at this time is Solar Photovoltaic. Rebates are still available for installing renewable energy power systems which help to offset the initial cost of installation, although these are reducing each year.

Solar Photovoltaic (PV)

The solar PV panels convert sunlight into electricity. They have no moving parts and therefore are reliable and require little maintenance. PV panels can be expected to last for 20-25 years or more. They are generally suitable for use in any area where there is good, unobstructed north facing access to sunlight.

Most residential systems are grid connected which means you can feed excess energy back into the grid and get paid for it. To do this you will need a Smart Meter installed and have applied for the Premium Feed in Tariff. Current rates for are between 60c and 66c per kWh. Victoria uses a net feed in tariff.

Sizes of systems will differ dependent on your needs and start from 1.4 kWh system (which will generate approximately 5.1 kWh, on average, in Melbourne per day). Larger systems will generate larger amounts of energy. For example a 5.2 kWh system would on average generate 19.45 kWh of energy per day. Note that for systems over 5 kWh the premium feed in tariff will not apply.

There are a variety of Solar PV suppliers in the market with a wide range of products. Our advice would be to ensure your provider is reputable, is likely to be around for a long time (in case of warranty issues) and that they provide good quality systems. In this industry you really do get what you pay for.

The numbers to look out for are:

Warranty on panels

20 years minimum, preferably 25 years

Warranty on inverter

10 years minimum, preferably 15 years

Guaranteed output

90% over first 10 years, 80% over next 15 years



Wind Turbines

Wind power generation is progressing in leaps and bounds. Designers are coming up with smaller and better wind turbines so there will soon be a larger variety of these available. Currently the primary types are Horizontal Axis (HAWT) and Vertical Axis (VAWT) wind turbines. Some examples are below.



Vertical Axis Wind Turbine (VAWT)



Horizontal Axis Wind Turbine (HAWT)



Horizontal Axis Energy Ball

For an Urban location, the main difference between vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT) is their response to turbulent winds. A VAWT is better suited for Urban locations, where other buildings and trees cause the wind to be more turbulent (gusty, with severe direction changes). Both types of home wind turbine will function better with smooth air, but a VAWT does not need to be rotated to face the wind.

HAWT tend to produce more power with a smaller size, but historically have produced more noise. Modern designs have greatly reduced the amount of noise produced. You can normally mount a HAWT higher and thus get access to faster and smoother air (and therefore more power). Ideally a HAWT should be mounted 10 metres above the height of any obstacle within 500 metres.

Before you seriously consider a wind generation system you must check the wind maps for your area and ideally monitor the winds for at least 12 months. This will tell you if you get enough wind to make the investment viable. See the Bureau of Meteorology's website at www.bom.gov.au for wind information.

General Considerations

Before you consider investing in renewable energy for your home you should always look to reduce your energy consumption as much as possible before hand. This will minimise the size of the system you will need, therefore you can get away with installing a smaller system which will be more affordable. Your local home sustainability advisor or energy auditor would be able to help with this. See www.greenmoves.com.au/assess_list.php to find your local sustainability advisor.

For any queries or additional information on this tip sheet please contact Green Moves Australia on (03) 9024 5515 or 1300 898 742

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