



ISMAPNG Environmental Sustainability Information Sheet - *Solar Energy*

September/October 2018

Over the last few months we have been collecting data on the solar already installed and to be installed on ISMAPNG properties, and the below is a snapshot of our current position. This includes the 30 Australian properties approved by the Institute leadership team at their September 2018 meeting, but excludes the additional Papua New Guinea site at Mt Hagen that is still being scoped for size and cost.

Already installed on -	36 Australian properties	658 panels	131.6 KW*
	2 Papua New Guinea properties	22 panels	5.1 KW
Newer projects -	12 properties at Adamstown	113 panels	26.4 KW
	4 properties North Queensland	65 panels	18.48 KW
	30 properties - Round 2 capital project	364 panels	102 KW

Total Solar installed (pending above installations)

84 Properties 1222 panels 283.58 KW

This highlights the significant commitment from ISMAPNG over many years with a large number of installations occurring before the stated public intent of addressing Energy as a theme in the Sustainable Living policy and the Directions of Leadership from the 2017 chapter to embed Environmental Sustainability across the Institute.



Panels installed at Simon Street Freshwater, Queensland

* What is a kilowatt?

A kilowatt is a measurement of energy generated over a period of time. When a light bulb with a 100W rating is left on for 1 hour, the energy used is 100 watt hours. A kilowatt (KW) is 1000 watts.

There are three main components to a solar power system:

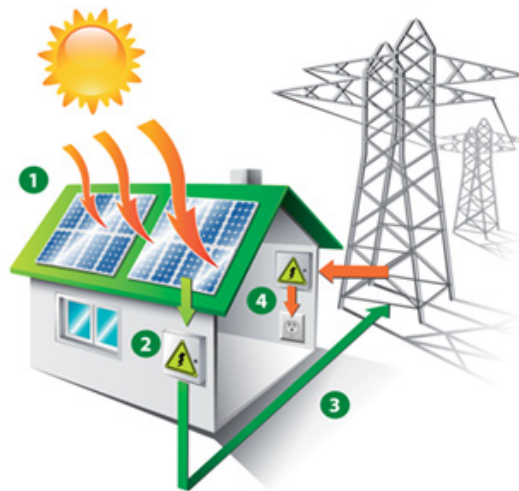
1. The Panels – they collect the light from the sun
2. The Inverter – this converts DC electricity into AC electricity which is used in the home
3. The Racking / Mounting system – these are attached securely to the roof supports and the panels are mounted on them.

How Solar Works

Solar electric systems, also called PV systems, use sunlight to produce electricity. Here's how:

- 1 Sunlight activates the panels, producing electricity.
- 2 Electricity passes through an inverter and is converted to usable power.
- 3 The inverter sends power to your house. Anything you don't use is transferred to the power grid.

Source: - Gridalternatives.org



It is better to use the solar generated by your system than export it. Consumed electricity saves more as you don't have to buy that energy from the electricity retailer via the grid. Retailer rates for electricity can vary for a variety of reasons dependent upon geographical areas and contract discounts but as a guide in Australia are approx. 18 to 32 cents per kWh. Any excess electricity produced and not used is exported back into the grid. The electricity retailer pays back a lower cost of approximately 8 -12 cents per kWh for energy that is exported back into the grid from your system.

If you have solar – run as many of your appliances, such as dishwashers, dryers and clothes washers, during the day. If you don't have solar, it is best to run the dishwasher at off peak times to lessen your electricity costs (Generally after 9pm and before 7am).

Batteries - At the present time, a battery is still an expensive investment and unless a specific property is identified as meeting relevant thresholds to make it financially or operationally viable then this is seen as a future opportunity. Current industry expectation is that battery costs will halve over the next 4 years.

Recycling – The design life of solar panels is roughly 20 to 30 years and the panels being used on current solar projects for ISMAPNG properties are covered under warranty for 25 years. Recycling of these panels is therefore not expected for many years in the future when there is expected to be a surge in solar panel disposal from the 2030's. However, there are a number of panels that were installed in the 1980's and 1990's throughout Australia that are now being replaced and recycled. Recycled panels are not recirculated, they are dismantled and resources such as glass, aluminum and the metal racking systems are recovered and recycled.

References

- <https://www.solarquotes.com.au/solar101.html>
- <https://institute.mercy.org.au/wp-content/uploads/2017/12/Simple-Daily-Gestures-booklet.pdf>
- <https://earth911.com/eco-tech/recycle-solar-panels/>
- <http://justiceandpeace.org.au/caring-for-creation-through-solar-2/>