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CLEAN ENERGY COUNCIL
ACCREDITED INSTALLER

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1. INTRODUCTION

Thank you for choosing Eco Tech Electrical to install your PV solar system. By choosing to install solar you are offsetting green house gas emissions which when in a surplus are detrimental to the environment and atmosphere.

1.1 Installation process

To start the process once you have accepted the quote, Eco Tech Electrical will send off all relevant documents to Power and Water, the building certifier and engineer while you send off a Power Purchase Agreement document to your retailer. Once these documents are sent we can start the install as these systems (class 1 or 2) are pre-approved through Power and Water.

On the day of install our qualified installers would have explained to you the location/s of the array/s where the inverter or envoy is to be located, any variations in the job and a rough time frame of the install. Your electricity meter will most likely have to be swapped to a new bi-directional smart meter to register kilowatt-hours that are imported and exported between the grid and your premises, along with a lockable main switch at your meter box which is a national roll out in the NT. Once completed and commissioned the electrician will answer any questions you may have and show you how to use/monitor your new system via the screen on the inverter and/or the online app.

After the install we will assign you an account and link you to the online portal so you can monitor your system remotely via your phone or tablet. In the mean time you will receive a certificate of compliance, commissioning sheet, warranty sheets, engineering specifications and this manual.

2. SYSTEM DESCRIPTION

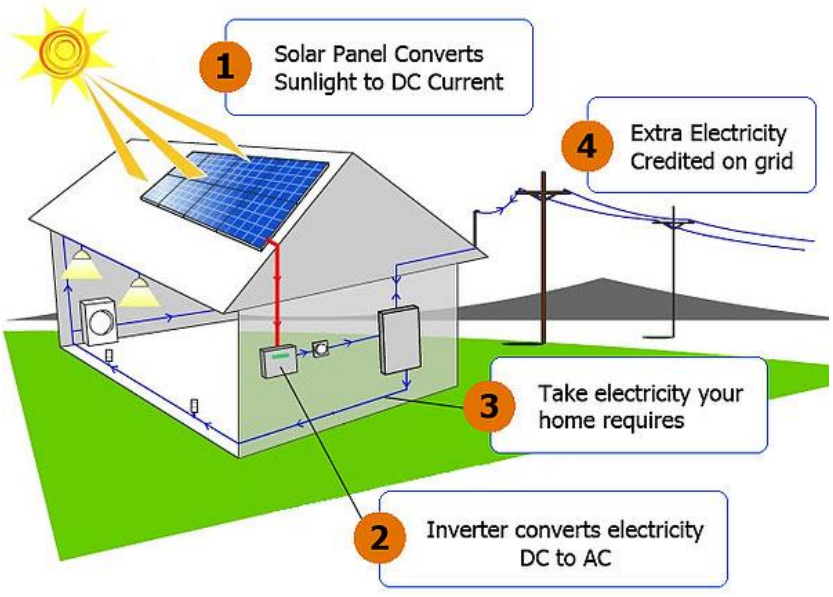
The sun produces photons which your solar panel cells capture and then produce a flow of electricity into the metal strands of the module through your array of panels down to your inverter which converts the voltage type from DC to AC which runs through your premises.

2.1 Private/Residential class 1 installs

If your solar system is producing more power than you are using, the excess power will go out to the grid through your new bi-directional meter in which you will sell back to your retailer at the same price you bought it for. (eg. If you pay 25c per kilowatt hour, you will receive a credit of 25c per kilowatt hour sent back to the grid). The amount of kilowatt hours exported can be viewed on your electricity meter under number 23 on the screen.

2.2 Private/Residential or Small Commercial Class 2

For class 2 type systems (larger than 5kw single phase or 7kw three phase but less than or equal to 30kw) there is no exporting of power from your solar system allowed, this type of solar system will have an export limiting device installed, so it will only offset the amount of power needed on the premises.



Solar systems work best when the sun is shining directly down on the panels and the ambient temperature is cooler. The panels will still generate power as long as there is enough ambient light even on cloudy days. It will shut itself down over night once there isn't enough light to keep the inverter running and start itself up in the morning. The inverter has an inbuilt mechanism called 'anti-islanding' which stops it from working once there grid voltage or frequency is out of order, this helps prevent any faults or spikes arising which could damage the inverter or sensitive equipment you have, it also prevents anyone working on the power lines from an electric shock.

3. SYSTEM SAVINGS

Living in the NT gives customers a one for one feed in tariff, as discussed in section 2 means you will receive a credit for the same amount of kilowatt hours you put back into the grid for class 1 users. Tariffs for the retailer Jacana can be found at this address: https://www.jacanaenergy.com.au/residential/pricing.

The average home in the NT uses around 25kwh per day which would amount to a system just over 5kw's worth, so in order to at least break even you would need a system of this size as a minimum which wold save approximately $2360.00 per annum. This figure is an estimation not taking into account shading issues and various other factors that affect the output of a solar system.

4. SYSTEM MAINTENANCE

Maintaining a solar system is integral to the output as dust and bird droppings accumulate on the panels decreasing the output sometimes quite significantly, so it is in your best interest to schedule a clean of your panels. Because the optimum angle for solar panels is about 10 degrees, the panels build up with a lot of dust especially in the dry season when there is no rain to wash it away. Below is a schedule for your system maintenance.

4.1 Maintenance schedule

Maintenance schedule			
Component	**What to Inspect**	**Quarterly**	**Anually**	**5 Yearly**
Solar Panels	Clean panels for dust and bird droppings	X		
	Inspect for panel discolouration and micro cracks	X		
	Monitor shading issues that may develop over time	X		
	Check for corrosion of frame and any visual defects		X	
Inverter & Switches	Inverter stops within 2 minutes of			
	disconnected grid voltage	X		
	Inverter start up takes a minimum of 60 seconds	X		
	Check continuity and disconnection of switches,	X		
	circuit breakers and fuses (if applicable)	X		
	Record string voc and isc values)	X		
	check integrity of surge diverters	X		
	check for correct labeling	X		
Wiring Systems &				
Enclosures	Verify integrity of cabling and enclosures including:			
	Junction boxes, isolators, conduits, cable tray, etc			X
	Check enclosures for: leaks, broken seals, tightness			
	of connections, entry glands, water accumulation, etc		X	
	Check all electrical connections for tightness and corrosion		X	
Earthing	Inspect earth wiring and clamps for corrosion			
	and tight connections		X	
	Test continuity from Main earth bar to Inverter			
	and Main earth bar to racking on roof		X	
Mounting System	Check for corrosion of rail and clamping devices			X
	Check clamping devices and mounting feet for tightness			X

Note: All maintenance work should be carried out by a licensed electrician as dangers of electric shock may be present under inspection conditions, as solar modules remain live and cannot be turned off.

5. SYSTEM OPERATION PROCEDURES AND ALARMS

5.1 Turning inverter on

To turn the inverter on there is a sequence in which you should follow as to not damage the inverter, the sequence is as follows:

1. Turn on the DC isolator/s or switch/es adjacent to inverters
2. Turn on the solar supply main switch located in the switchboard
3. Turn on the AC isolator located next to the inverter (if applicable)

5.2 Turning the inverter off

To turn the inverter off is the opposite to turning it on, this will be on rare occasions but is good to know in emergency situations.

1. Turn off the AC isolator located next to the inverter (if applicable)
2. Turn off solar supply main switch located in the switchboard
3. Turn off DC isolator/s or switch/es adjacent to inverter

5.3 System functioning correctly

The installer will run through these procedures with you on the day of commissioning.

To check if everything is functioning correctly there will be a green LED light being displayed on the front of the inverter with an output in watts, the amount of watts shown on your display screen will fluctuate as cloud cover appears and disappears which is normal. It will show a higher output when the sun is beaming down on the panels than when there is cloud cover.

Another way to check your system is functioning correctly is to check how many kilowatt hours it has generated for the day, (check this at the end of the day) you can also view it online through the portal on your phone app, as a general rule of thumb your system will produce on average 4.5 times the rated output of your solar panels. Eg for 5 kilowatts of solar panels you will produce around 22.5kwh per day (depending on shade and other factors).

If your system is producing close to zero kWh per day try turning the inverter on and off again as mentioned above, if this fails to rectify the problem please contact Eco Tech Electrical.

5.4 Earth fault alarm

In the event of an earth fault alarm which may be recognised by one of the following:

1. Red LED displayed on the inverter.
2. Fault code displayed on the inverter representing an earth fault alarm (fault code diagnosis can be found online or in the inverter manual).
3. An audible alarm could be heard coming from the inverter.

If you see or hear any of these symptoms coming from the inverter shutdown the inverter as stated above and contact Eco Tech Electrical.

5.5 Inverter faults & diagnosis

If there seems to be a fault with the system as displayed on the inverter screen there are a few things you can do:

1. Try turning the inverter off and on again as the procedure says written above.
2. If there is a fault code on the display screen, there is a fault diagnosis section in the inverter manual that will tell you what is wrong.
3. If all else fails contact Eco Tech Electrical.

Note: keep in mind if there is some type of grid failure the inverter will not turn on at all until the grid has been re-energised.

6. INSTALLATION AND MANUFACTURERS WARRANTIES AND OTHER DOCUMENTS

All products meet the relevant Australian standards, CEC guidelines and our goods are covered under consumer law.

The Australian Consumer Law covers general standards of business conduct, prohibits unfair trading practices, regulates specific types of business-to-consumer transactions, provides basic consumer guarantees for goods and services, and regulates the safety of consumer products and product-related services.

6.1 Guarantees applying to goods

A supplier and a manufacturer guarantee that:

• Goods are of acceptable quality

• Goods will match any description provided

• Any express warranties will be honoured.

A supplier guarantees that a consumer is buying goods:

• That have clear title, unless otherwise stated

• That do not have undisclosed securities

• That are fit for any disclosed purpose

• With a right to undisturbed possession

• That match the sample or demonstration model provided.

More information can be found at the ACL website:

http://consumerlaw.gov.au/business-and-the-acl/

6.2 Warranty information and other documents

Warranty information can be found on our website regarding manufacturing warranties, specifications, installation warranty and terms and conditions.

www.ecotechelectrical.com.au

A system performance estimation will be handed to you when we send through the quote to give you an idea of how well the solar system will perform for the first year.