

## Alice Solar City guide to installing a rooftop solar photovoltaic (PV) system

### What is a solar PV system?

A solar photovoltaic (PV) power system is a technology that converts sunlight directly into grid friendly electricity. PV systems should not be confused with solar hot water systems where solar collectors on your roof use the sun's energy to heat water, which is then stored in a tank.

### Why install a solar PV system?

There are many reasons to have a PV system installed:

- You will be generating clean, renewable energy, reducing the need to burn fossil fuels.
- The electricity generated by your PV system will reduce your power bills
- Excess electricity generated by your PV system may be sold back to Power & Water (PWC)
- The value of your home may increase as demand for sustainability and energy efficiency features in homes (and businesses) increases.



*Roof top showing solar hot water (left) and solar PV (on the right)*

### How does a PV system work?



In a typical system, there are two main components – the solar panels (also known as photovoltaic modules or the array) which capture the sun's energy, and a device called an inverter which converts the captured energy into grid friendly electricity. The array is installed on your roof, however ground mounted systems may be possible if installation on the roof is not feasible.

If your home is connected to the electricity grid then it's not normally cost effective to purchase batteries to store the excess power generated; instead your surplus is sold to PWC for use on their grid. A new electricity meter is installed to record the electricity produced and, depending on the power purchase agreement you enter into with PWC, the electricity generated will appear as a credit on your power bill.

## How much will it cost to install a PV system?

The price of the solar PV system will depend on how big a system you install, the quality of that system and its components as well as any additional work that needs to be carried out, e.g. a new meter box or a tilt frame.

By becoming as energy efficient as possible before installing a solar PV system, you can reduce the size and the cost of the system you will need. Alice Solar City can help you identify cost effective ways to reduce your power bill to complement an investment in solar PV.

The price of installing a solar PV system as of 1 July 2012 varies between \$3 -\$5 per watt installed (before rebates are deducted). Use this as a guide to give an approximate installation cost for different system sizes. Prices will vary between installers and technologies.

You will also need to pay for any additional work required to install the PV system, the cost of any building approvals required for your property and the application and connection fees with PWC (refer to [www.powerwater.com.au](http://www.powerwater.com.au) for more information on connecting your PV system to the grid.).

## How much power can a PV system generate and is my house or business suitable?

The amount of energy generated by a solar PV system is directly related to the size of the system installed – the bigger the system the more electricity will generally be produced per year. See the table below which sets out a likely cost range for the system, the expected generation in Alice Springs and the expected annual revenue for residents.

### Expected generation in Alice Springs and the expected annual revenue for residents

System Size (kW)	Typical Cost (including fees and after STC rebate)	Expected annual generation (KWh)	Typical annual savings on your power bill**	Annual Greenhouse Gas savings (tonnes CO <sub>2</sub> equivalent)
			Jan 1 <sup>st</sup> 2013 (@25.83 c/KWh)	
1.5	\$5,000-\$6,500	2400	\$ 620	1.66
2	\$5,500-\$7,500	3200	\$ 826	2.21
3	\$8,500-\$11,000	4800	\$ 1,240	3.31
4.5*	\$11,000-\$17,000	7300	\$ 1,885	5.52

*\*Power and Water currently allow for up to 4.5kW per residential customer. Talk to your installer for more details on the application process for larger systems.*

*\*\* Rates are subject to change*

There are site specific factors that can limit the amount of electricity that can be produced from a solar PV system, including:

- having a less than optimum roof orientation and pitch (optimum is north facing at 23° tilt),
- shading from nearby trees or other buildings, or
- the amount of available, useful roof space.

To get a more accurate estimate of output, solar installers can carry out a roof top inspection to calculate the expected output of a PV system.

## Can I cover my whole power bill with a solar PV system?

The answer to this question will depend on how much electricity you use, what size solar PV system you install and the power purchase agreement with PWC. The size of system that you are allowed to connect to the grid at your property will need to be confirmed with PWC] if the system is larger than 4.5kW.

You can use the information on your power bills to determine your annual consumption – check your KWh usage for the last four quarterly bills. ASC customers can also access this information on their customer portal – ask us how. Compare your annual consumption to the table above to see what size system would cover your annual consumption.

It is also important to note that installing a grid connected solar PV system will not provide you with electricity during power outages or blackouts. For safety reasons, solar PV systems are designed to shut down immediately when an interruption in the electricity supply from the grid is detected.



## What financial incentives are available?

An Australia-wide funding scheme is in place for small scale renewable energy technologies, including solar PV systems. The scheme allows the owner to sell the **Small-scale Technology Certificates (STC's)** that their system is eligible for. Your solar PV installer may offer to purchase these from you as an up-front discount on the quoted cost of the system. The value of STC's is set by a regulated market and so changes frequently, but can represent a significant discount off the cost of the system. When comparing quotes for solar PV systems, it is important to check whether the price is inclusive of the value of STC's or not.

It is not compulsory to 'sell' your STC's at point of sale and you may instead choose to pay the full system cost and handle sale of the STC's separately. You then have the choice of selling your STC's to an agent like PWC, through the open STC market or through the Clearing House. The price offered for STCs can vary between your PV installer and other agents – check what price your PV installer is offering. For a full explanation of the pro's and cons of different methods of selling your STC's, contact Alice Solar City or check out the Clean Energy Regulator's website.

## Potential value of STC's\*

Solar System (kWp)	STC discount – PWC price (\$34.00)**	STC discount – Market Price (\$34)***
1	\$816	\$816
1.5	\$1,224	\$1,224
2	\$1,333	\$1,333
2.5	\$1,666	\$1,666
3	\$2,448	\$2,448
4.5	\$3,706	\$3,706

\*STC values apply to Zone 1 Only (Alice Springs)

\*\*PWC Price as of 03/05/2013 (Price subject to change)

\*\*\*Market Price based on <http://www.greenenergytrading.com.au/> price as of 2/04/2013 (Price subject to change)

## Do I need a building permit to install solar panels?

You will not require a building permit to install solar panels on residential properties in Alice Springs **provided** the installer and the panels are accredited with the Clean Energy Council (see their website) and

- the roof has been certified as being structurally sound by a structural engineer, building certifier, or building contractor registered with the NT Building Practitioners Board;
- Or a building permit was issued within the last five years.

If the installation needs to be certified, your installer can direct you to a registered building professional or you can visit the NT Building Practitioners Board website.

## Questions to ask your solar PV installer

Purchasing a solar power system is a major investment for your home. Alice Solar City encourages householders to undertake an appropriate amount of research to ensure that they choose a quality system, at a cost effective price. The following are questions householders or business owners considering installing a solar PV system should ask any proposed installer:

- What brand of solar panels and inverter will be used
  - are these guaranteed to be used, or will the supplier substitute equipment according to availability of supply?
- If product substitution does take place, will the householder be informed in advance or given the option to withdraw?
- Where does the installer intend to install the inverter?  
As inverters do produce a 'humming' noise while operating, it should be located away from day time living areas. Depending on the inverter, this should be outside in a sheltered position out of direct sunlight.
- Does the installer do a formal inspection of the site, assess expected output and provide a written quote including for any extra costs before asking for a deposit or a commitment from the householder? Alice Solar City highly recommends having a site inspection prior to accepting a quote or paying any deposits.
- What is the length and type of warranty? A 5 year warranty on inverter; 10 year product warranty and a 25 year (at 80% output) warranty is recommended as a minimum for solar panels.
- What is the track record of performance *and* servicing in Australia of the major components to be used?
- What is the track record of the company itself (ask for references) and who will they use to carry out the installation — are they local or 'fly in'?
- Are there extra costs involved? For example meter installation, grid connection, building permit costs, two storey buildings, or any upgrades to the meter panel or switchboard.
- How does the installer propose to provide local support for warranty and service claims?
- Does the installer manage the process of connecting the solar system to the electricity grid or obtaining applicable certification of the installation?
- Does the installer require a deposit and what is the timeframe between paying a deposit and installation?
- Does the company provide a point of sale discount through the purchase of Certificates (STC's) and if so, what price is paid for each STC?



## What are the steps involved in 'going solar'?

- Get an idea of the size of system you are interested in.
- Speak to one or more solar installers who are accredited through the Clean Energy Council (CEC) to arrange a site inspection and quote and to confirm what size system PWC will approve for your property. Alice Solar City can provide names of installers who are active in Alice Springs – see our list or check out the CEC website.

- As part of your decision on which installer or package to proceed with, refer to the *Questions to ask your solar PV installer* on the previous page.
- Obtain any necessary certification of the installation – see ‘Do I need a building permit’ above.
- Once you have accepted a quote and paid any applicable deposit, your installer will schedule an installation date.
- Before the installation goes ahead you need to ensure that :
  - The proposed system has been certified as suitable by a registered building professional
  - You have completed and lodged the necessary Agreements with Power and Water (Network Connection Agreement and Power Purchase Agreement) and paid the applicable fee. Power and Water should approve the connection prior to the installation commencing. PWC may take 6 to 8 weeks from receipt of these documents until providing the required metering so it is important to get this process started early.
  - Your installer should assist you with these processes.
- Installer carries out the installation (usually completed in less than 1 day) and will require full payment. The installer should provide you with a system manual, and copies of a commissioning sheet and Certificate of Compliance.
- Installer provides relevant documentation to Power and Water. Subject to the documentation being correct and the installation being in compliance, Power and Water will install the new electricity meter and the system is ‘turned-on’. Delays in turning the system on can result if the completion advice provided to Power and Water is incomplete or if PWC require any issues to be rectified.
- If your installer has not provided the STC’s as a point of purchase discount you will need to separately lodge paperwork to sell these, which may require input from your installer. For advice contact the Renewable Energy Regulator.

### For further information:

- Visit the Alice Solar City website [www.alicesolarcity.com.au](http://www.alicesolarcity.com.au)
- For more information about applicable buy-back tariffs for homes or businesses, visit [http://www.powerwater.com.au/sustainability\\_and\\_environment/renewable\\_products\\_and\\_rebates/photovoltaic\\_pv\\_solar\\_systems](http://www.powerwater.com.au/sustainability_and_environment/renewable_products_and_rebates/photovoltaic_pv_solar_systems) or phone PWC on 1800 245 092
- The Clean Energy Council ‘Consumer Guide to Buying Solar Panels’ [www.cleanenergycouncil.org.au/cec/resourcecentre/Consumer-Info/solarPV-guide](http://www.cleanenergycouncil.org.au/cec/resourcecentre/Consumer-Info/solarPV-guide)
- The Clean Energy Council’s list of Accredited Designers/Installers of PV systems [www.solaraccreditation.com.au/acccec.html](http://www.solaraccreditation.com.au/acccec.html)
- The ‘Install Solar Power’ guide at Living Greener (Government website) <http://www.livinggreener.gov.au/energy/renewable-energy/install-solar-power>
- The Clean Energy Regulator’s guide to installing solar panels: <http://ret.cleanenergyregulator.gov.au/Solar-Panels/installing-solar-panels>
- For information about Small Scale Technology Certificates contact the Office Clean Energy Regulator <http://ret.cleanenergyregulator.gov.au/Certificates/Small-scale-Technology-Certificates/what-is-stc>
- For more information on PV systems and how they work <http://www.yourhome.gov.au/technical/fs67.html>
- Desert Knowledge Solar Centre – shows the performance of difference types of solar systems <http://www.dkasolarcentre.com.au/>
- Building Practitioners Board website to search for registered building professionals <http://www.ntlis.nt.gov.au/building-practitioners/>
- Building Advisory Committee Policy re installation of photovoltaic panels in non-cyclonic areas [http://www.bac.nt.gov.au/data/assets/pdf\\_file/0015/18303/BAC-2011-001.pdf](http://www.bac.nt.gov.au/data/assets/pdf_file/0015/18303/BAC-2011-001.pdf)