Solar Rooftops Plan

TWEED SHIRE COUNCIL

AIMS

- To increase the number of solar photovoltaic systems on council properties.
- To establish a framework for maximising the economic, social and environmental benefit of solar power installations on council owned, community managed facilities.

SOLAR INCENTIVES

Solar Credits Scheme

The solar credits scheme is the new Australian Government rebate for solar photovoltaic (PV) systems. It commenced in June 2009 and will be phased out by 2016. The Solar Credits Scheme is available to all Australian property holders and applies to multiple properties under the same name. Solar credits apply to the first 1.5 kilowatt (kW) of capacity installed. As a rough guide, the solar credits rebate for a 1.5kW solar PV system is approximately $5500. The actual value of the solar credits rebate varies depending on the current market value of Renewable Energy Certificates. Suppliers of solar PV systems generally offer a point of sale discount to the value of the solar credits. This reduces up-front costs of system purchases.
Full details of the Solar Credits Scheme are available at: www.climatechange.gov.au

NSW Solar Bonus Scheme

The Solar Bonus Scheme is the name given to the NSW Government Feed-in Tariff (FiT).
The key features of NSW Solar Bonus Scheme include:

- It will credit customers with a 'gross' FiT rate of 60 cents per kilowatt hour (kWh) for all the electricity that their eligible solar PV system or wind turbine generates. In Northern NSW, properties that install a 1.5kW system can expect to generate up to $1642 worth of electricity every year until at least 2017.
- Only electricity customers with an annual electricity consumption of less than 160 megawatt hours are eligible to participate in the Scheme.
- Only solar PV systems and wind turbines up to 10 kW in size will be eligible for the Scheme.
- The Scheme will commence on 1 January 2010 and will operate for 7 years.
- The Scheme will be reviewed in 2012, or when the installed capacity of renewable energy generators participating in the Scheme reaches 50 megawatts (approx 33,000 x 1.5kW systems), whichever occurs first.
- To access the gross FiT, properties with grid-tied solar power systems must install a gross feed-in meter.
- Full details of the Solar Bonus Scheme are available at:

http://www.industry.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme

Council Eligibility for Solar Incentives

Tweed Shire Council is eligible for Australian Government Solar Credits Scheme.

Tweed Shire Council's eligibility for the NSW Solar Bonus Scheme varies depending on interpretation of the scheme guidelines by individual energy retailers. For example, one of Council's energy suppliers has determined that TSC is not eligible for the Solar Bonus Scheme because individual energy accounts aggregated into a single retail account that consumes more than 160 megawatts per year. Another energy supplier has determined that TSC is eligible for the Solar Bonus Scheme because it recognises individual energy accounts not aggregated accounts.

Council owned, community managed facilities such as community halls and sporting clubhouses may be eligible for the NSW Solar Bonus Scheme, regardless of energy supplier interpretation of the Solar Bonus Scheme guidelines because the energy account is often in the name of the association managing the facility.

SOLAR PV BACKGROUND

Solar Panels and Energy Payback

A commonly asked question about solar panels is "How long does it take to make back the energy used in the manufacture of the panel?" According to the US Department of Energy, NREL report "Energy Payback - Clean Energy from PV", the payback ranges from one to four years even accounting for all the energy costs including to make the aluminium frame, the glass front etc. A Dutch Utrecht University report places the Energy Payback at 1.3 to 4.6 years and Siemens Solar Industries suggested a 1.8 to 4.1 year payback. So, even if you assume the high end energy payback of 4.6 years, that gives around 20 years of clean, renewable electricity before the warranty even runs out.

Table: Indicative costs and payback periods for solar power

System Size (kW)	No. of panels	Annual energy production (kW)	Annual return on energy sales	System Value	Solar Credits Rebate (RECS)	System Cost	Annual RoI	Payback period (years)
1.5	9	2737	$1642	$10000	$5500	$4500	36%	2.7
5	30	9125	$5475	$40000	$8200	$31800	17%	5.8
7	42	12775	$7665	$54000	$14100	$39900	19%	5.2
10	60	18250	$10950	$80000	$16400	$63600	17%	5.8

1.5kW Solar Photovoltaic Systems

A 1.5kW solar photovoltaic (PV) system:

- Will cost between $4000 and $6000 after government incentives.
- Will generally pay for itself in less than four years.
- Consists of 9 panels that weigh around 15kg each and are 1290mm x 990mm per panel.
- Will reduce greenhouse gas emissions by around 2.7 tonnes of CO_2 per year, where it replaces a coal-fired electricity supply.

- Generates approximately 7.5kWh per day in Northern NSW. This equates to $4.50 per day or $1642 a year worth of electricity under the NSW FiT.

COMMUNITY HALLS AND SPORTS FACILITIES

Council owned, community managed facilities such as community halls and sports facilities have been identified as priority sites for the installation of solar PV systems for the following reasons:

- Solar Bonus Scheme eligibility
- Community hubs that can act as demonstration sites for 'green technology'.
- Financial benefit generated from the solar PV system can contribute towards maintenance of the building asset.

TSC has a preference to install 1.5kW solar PV systems on council owned, community managed facilities for the following reasons:

- A greater number of solar PV systems can be installed on community facilities, allowing more associations to benefit from the Solar Bonus Scheme.
- A greater number of small solar PV systems spread the asset management risks (detailed below) across a number of sites, rather than putting all the eggs in one basket.

Delivery Model

Where a TSC owned community managed facility is deemed suitable for the installation of a solar PV system, Council may make the following offer to the community association(s) responsible for day to day operation of the facility.

- Council will arrange installation of a suitably sized solar PV system onto the facility at no cost to the Association(s).
- The Association(s) agrees to provide Council with one third of annual financial benefit generated from the solar PV system for as long as the NSW Solar Bonus Scheme is operating. For example, if the Association(s) receive $1642 worth of electricity revenue from the system each year, it must provide Council with one third of this amount being $547.
- The Association agrees to use financial benefit generated from the solar PV system for the sole purpose of facility operation.
- The solar PV system forms part of the building asset and remains the property of TSC.
- The Association agrees to work with Council to improve the environmental performance of the facility, particularly energy and water efficiency and waste management / recycling.

REVOLVING ENERGY FUND

In December 2000 Council established a Revolving Energy Fund to set aside savings made from energy efficiency improvements on existing facilities. This fund is managed through Council's Sustainability Program and will aid in the delivery of the Solar Rooftops Plan.

ARRANGEMENTS WITH COMMUNITY ASSOCIATIONS

Prior to the installation of a solar PV system on a community managed facility a Memorandum of Understanding (MoU) must be signed between Tweed Shire Council and the community association to formalise the rights and responsibilities of each party.

MAXIMISING OPPORTUNITIES

Community facilities have potential to become showcases of sustainable design, fit-out and operations. Exposing users of a facility to renewable energy production, efficient use of energy and water, recycling systems to prevent waste to landfill, safe and convenient access for walking and cycling etc. will contribute towards the adoption of sustainable behaviours in the wider community.
Maximising these opportunities whilst installing the solar PV system will harness stakeholder enthusiasm and lead to better environmental outcomes.
Two examples of where this has occurred previously are Council's Sustainable Living Centre and the Chillingham Community Centre.

RISK MANAGEMENT

A number of asset management risks arise when solar PV systems are installed on Council facilities, including:

Maintenance

Maintenance of solar PV systems on Council assets will be relatively low due to the absence of batteries. Cleaning the solar panels and resetting the system in the event of power failure in the associated electricity grid are the most common maintenance requirements of grid-tied solar PV systems. Maintenance issues shall be managed in the following ways:

- Routine cleaning of the solar panels shall be undertaken by a nominated representative of the community facility in accordance with all relevant OHS requirements. Note: rainfall will clean solar panels of all but the most stubborn grime (e.g. bird / bat poo).
- A nominated representative of facility users shall be provided with an instruction manual and relevant training to conduct routine checks of system operation and reset procedures. Note: this is a very simple procedure similar to resetting the surge protection switch in a meter box.
- Larger maintenance / repair issues (such as inverter replacement) shall be met via Council's solar PV fund, which is funded from contributions from participating community associations.

Maintenance roles and responsibilities are set out in the Solar Rooftops MoU template.

Vandalism

The potential for vandalism of solar panels on Council assets is a risk that shall be managed in the following ways:

- Localities with low vandalism rates will generally be given preference over localities with high vandalism rates.

- Sites with high visibility and high occupancy rates will generally be given preference over sites with low visibility and low occupancy rates.
- Small capacity solar PV systems on multiple sites to spread asset management risks.
- All solar PV systems shall be insured appropriately.
- If a solar PV system is vandalised an assessment will be undertaken to determine if the system should be repaired or removed. If removed, all working parts shall be salvaged for future use.

Theft

The potential for theft of solar panels on Council assets is risk that shall be managed in the following ways:

- Sites with high visibility and high occupancy rates will generally be given preference over sites with low visibility and low occupancy rates.
- Sites with security systems / services will generally be given preference over sites without security systems / services.
- Solar panels shall be secured to the roof in a way that minimises potential for theft.
- All solar PV systems shall be insured appropriately.

Extreme Weather

The potential for damage to solar panels from extreme weather (e.g. hail storms) is a risk that shall be managed in the following ways:

- System installation must meet AS/NZS 5033 and AS/NZS 3000, and all relevant standards for components.
- The roof mounting system is in accordance with AS1170.2
- Small capacity solar PV systems on multiple sites to spread asset management risks.
- All solar PV systems shall be insured appropriately.

INSURANCE

Insurance providers are to be advised of solar PV system installations on Council facilities for the purpose of including the solar PV system in the relevant insurance policy. In practice this means advising Council's Manager Risk and Human Resources of the value of the solar asset and the installation address.

IDENTIFIED SITES

The following table lists a number of Council assets that may be suitable for the installation of grid-tied solar PV systems. These assets have been chosen in consultation with the relevant asset manager however it is important to note that some of these assets may not be suitable due to site constraints such as limited solar access or roof orientation / size.

Facility	Address	Asset Manager	System Size
Uki Sports Clubhouse	Kyogle Road, Uki	Recreation Services	1.5kW
Murwillumbah Netball Clubhouse	Condong Street, Murwillumbah	Recreation Services	1.5kW
Seabreeze Sports Clubhouse	Urunga Drive? Pottsville	Recreation Services	1.5kW
Koala Beach Clubhouse	Macadmia Drive / Johansens Rd Pottsville	Recreation Services	1.5kW
Crystal Creek Hall	845 Numinbah Road (near Chilcotts Rd)	Community & Cultural Services	1.5kW
Cooloon Child Care Centre	Cnr Recreation Street and Park St, Tweed Heads	Community & Cultural Services	1.5kW
Condong Hall	20 McLeod Street, Condong	Community & Cultural Services	1.5kW
Tyalgum Pre-school	Lot 10 Carraboi Terrace, Tyalgum	Community & Cultural Services	1.5kW
Mt Warning Pre-school	120 Glenock Road Uki	Community & Cultural Services	1.5kW
Wallum Pre-school	Woodlands Drive Banora Point	Community & Cultural Services	1.5kW
Chillingham Hall	Cnr Satinwood Place and Numinbah Road	Community & Cultural Services	1.5kW
Crabbes Creek Hall	29 Crabbes Creek Road	Community & Cultural Services	1.5kW
Tumbulgum Hall	Cnr Government Rd and Riverside Drive	Community & Cultural Services	1.5kW

APPENDIX 1 – System Specification Requirements for Quotes / Tenders

Description: ***1.5 kW Grid-tied Photovoltaic System***	***Details Provided (Y/N)***
Panel Information	
Name, type and place of manufacture	
Panel warranty document	
Evidence that panels are listed on the Clean Energy Council list of tested and approved panels	
Inverter Information	
Name, type and place of manufacture	
Inverter warranty document	
Evidence that inverter is listed on the Clean Energy Council list of tested and approved inverters.	
Roof mounting system information	
Roof mounting system is in accordance with AS1170.2	
Name and type of roof mounting system	
Cabling Information - name, type and place of manufacture	
System Information	
System warranty details provided by installer	
Single line diagram for system design	
System Datasheet	
Estimated annual energy performance – evidence of calculations to be supplied by installer. Information on panel de-rating over the life of the system should also be provided. Daily solar radiation from Brisbane weather data is acceptable. PVWatts is the preferred calculation tool.	

Solar Rooftops Plan

TWEED SHIRE COUNCIL

APPENDIX 2 – Checklist for Solar PV Installations

Facility name: _____ Property address: _____

Asset manager (i.e. Council unit): _____ Asset user: _____

User contact: person: _____ Contact details: _____

Criteria	Assessment
The property is made from	Brick / Weatherboard / Timber / Metal / Cladding / Other
The property is	1 storey / 2 storey / 3 or more storey
The roof is made from	Tiles / Metal / Other
The age of the roof is	Less than 5 years / 6 to 10 years / 10 to 15 years / 16+ years
The roof may need the following repairs before installation	Re-roof / Minor rust repairs / Major rust repairs / Leaks
The roof angle is	Flat / Mild (0-15 degree pitch) / Moderate (0-35) / Steep (>35)
The roof faces	North / South / East / West
Proposed system size (i.e. how many panels / kW capacity)	
Solar access issues (e.g. shading from trees)	
Fuse box located	With the meter box / inside the property
Meter box located on the _____ side of property	North / South / East / West
Building maintenance issues that may affect installation	Yes / No *Details:*
Any future works that may affect installation	Yes / No *Details:*
Any proposed sale of the asset	Yes / No
Vandalism potential (e.g. vandalism rates in the neighbourhood)	High / Medium / Low
Theft potential (e.g. poor visual access, no security service)	High / Medium / Low
Asset users happy to proceed	Yes / No
Priority (based on assessment of above criteria)	High / Medium / Low
Proceed to pre-inspection by solar installer?	Yes / No
Other sustainability measures in place / planned?	Describe:

Additional comments: _____

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