DISCUSSION PAPER ON
PLANNING FOR RENEWABLE ENERGY GENERATION

Solar Energy

CONSULTATION DRAFT – NOT GOVERNMENT POLICY
APRIL 2010
DRAFT FOR PUBLIC COMMENT

This document titled Discussion Paper on Planning for Renewable Energy Generation – Solar Energy is a consultation paper outlining a proposed approach to streamline planning processes for solar energy systems in NSW.

Feedback is sought on the proposed approach.

Submissions may be emailed to innovation@planning.nsw.gov.au, faxed to 02 9228 6311, or mailed to:
Director, Policy, Planning Systems and Reform
NSW Department of Planning
GPO Box 39 Sydney NSW 2001.
1 Introduction

This paper presents a draft proposed ‘exempt’ and ‘complying’ development regime for small and large scale solar power systems including photovoltaic (PV), concentrating PV, and concentrating solar thermal systems. It has been prepared for public consultation purposes.

Recent changes in the Australian policy environment (for example, in response to climate change) have created an unprecedented opportunity for the development of the renewable energy sector at both a small/domestic and large/utility scale. It is important that NSW is positioned to attract and manage this growth in a streamlined and balanced way. The NSW planning system has an important role to play in this regard.

Subject to meeting predetermined performance standards, development classified as exempt development does not need to obtain planning approval, while development classified as complying development can obtain planning approval in as little as 10 days. The exempt and complying development framework is intended for predictable, low impact development. Providing appropriate performance standards are used, it is considered that the impacts of certain types of photovoltaic (PV), concentrating PV, and concentrating solar thermal systems can be maintained within predictable, low impact levels, consistent with an exempt and complying development framework.

48kW solar photovoltaic system installed on the roof of Sydney Town Hall by the City of Sydney in 2010. The system consists of 240 panels and will generate enough electricity to supply the Town Hall, the council chambers and the council offices next door. The system is the largest photovoltaic installation in the Sydney central business district.
2 The Solar Resource in NSW

Australia has the highest average solar radiation of any continent in the world, and solar power is Australia’s most abundant energy resource. NSW has excellent solar resources, as shown in the diagram below from the Renewable Energy Atlas of Australia. Annual average solar exposure exceeds 15MJ/m² per day throughout NSW and increases to 21MJ/m² per day in the north-west of the state. Globally, solar photovoltaic (PV) generation more than doubled in the 12 months from 2007 until 2008 (from 2.8GW to 6.0GW).

In Australia, up to 2% of all energy used is sourced from solar power. The hot, dry, and sunny climate make it ideal for solar energy generation. Feed-in tariffs and mandatory renewable energy targets will assist renewable energy commercialisation in Australia.

Some NSW solar power projects are listed overleaf. Please note that the list is not complete as there are many more sites that have solar power or hybrid solar systems to generate their own power needs. Projects with a power rating of less than 3kW are not listed.

In 2009 the Australian Government announced that it will provide $1.5 billion for the world’s largest solar power plant to be built in Australia under the “Solar Flagships” program. Up to four grid-tied generation plants will be constructed with a combined capacity of 1,000MW (equivalent to a standard coal fired power plant). Projects may demonstrate both solar thermal and solar PV technology.
Renewable energy generators in Australia

Selected solar energy systems (more than 3kW) in NSW

<table>
<thead>
<tr>
<th>Project / Location</th>
<th>Capacity (kW)</th>
<th>Status</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liddell Power Station (solar thermal)</td>
<td>1,000</td>
<td>2008</td>
<td>Solar Heat and Power / Macquarie Generation</td>
</tr>
<tr>
<td>Singleton</td>
<td>400</td>
<td>1998</td>
<td>Energy Australia</td>
</tr>
<tr>
<td>Kogarah Town Square</td>
<td>160</td>
<td>2003</td>
<td>Energy Australia</td>
</tr>
<tr>
<td>Acer Arena (formerly Sydney Superdome)</td>
<td>70</td>
<td>1999</td>
<td>Energy Australia</td>
</tr>
<tr>
<td>Newington Armoury (Building 46)</td>
<td>64</td>
<td>1999 refurbished 2007</td>
<td>Sydney Olympic Park Authority</td>
</tr>
<tr>
<td>Dubbo</td>
<td>50</td>
<td>1998</td>
<td>Country Energy</td>
</tr>
<tr>
<td>Queanbeyan</td>
<td>50</td>
<td>1999</td>
<td>Country Energy</td>
</tr>
<tr>
<td>NSW Parliament House</td>
<td>27</td>
<td>2008</td>
<td>NSW Parliament</td>
</tr>
<tr>
<td>Newington</td>
<td>10</td>
<td>1996</td>
<td>Energy Australia</td>
</tr>
<tr>
<td>Lord Howe Island</td>
<td>10</td>
<td>1997</td>
<td>SEDA</td>
</tr>
<tr>
<td>Sydney</td>
<td>7</td>
<td>1997</td>
<td>SEDA</td>
</tr>
<tr>
<td>Newcastle Foreshore</td>
<td>6</td>
<td>1996</td>
<td>Energy Australia</td>
</tr>
<tr>
<td>Pine Bluff</td>
<td>6</td>
<td>2002</td>
<td>Trinity Grammar School</td>
</tr>
<tr>
<td>Little Bay</td>
<td>4</td>
<td>1994</td>
<td>University of New South Wales</td>
</tr>
</tbody>
</table>
There are two main categories of technology available for solar generation:

- Photovoltaic (PV) systems
- Concentrating solar power systems (photovoltaic or solar thermal)

Area requirements for large / utility scale solar generation systems are typically in the order of 1.6–5.7 hectares (or 16,000–57,000 square metres) per megawatt.

Photovoltaic (PV) cells use semiconductor technology to convert solar radiation directly into an electric current which can be used immediately or stored for future use. PV cells are often grouped in the form of ‘modules’ to produce arrays.

Recently, with the continual decline of manufacturing costs (declining 3% to 5% per year in recent years), uses of PV technology have grown to include home power generation, and grid-connected electricity generation. Installations of PV systems have also been increasing due in large part to comprehensive incentive programs which help reduce the costs of these systems and also allows users to sell excess electricity back the public grid (‘feed-in’).

PV systems may be:
- Small / domestic scale – typically up to 20kW
- Intermediate / commercial scale – typically between 20 and 1,000 kW
- Large / industrial scale – typically more than 1,000kW (1mW)

PV systems may be ‘fixed’ or ‘track mounted’. A tracking array can move on one or two axises so that the PV module surface is able to follow the sun to increase the amount of solar radiation captured. The electrical output of track mounted systems is greater than fixed systems.

Ground mounted systems

Ground mounted systems can range in size from domestic (eg ‘backyard’) scale up to utility scale. As of August 2009, the largest ground mounted photovoltaic (PV) power plants in the world are:

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olmedilla PV Park</td>
<td>Spain</td>
<td>60MW</td>
</tr>
<tr>
<td>Puertollano PV Park</td>
<td>Spain</td>
<td>50MW</td>
</tr>
<tr>
<td>Moura PV power station</td>
<td>Portugal</td>
<td>46MW</td>
</tr>
<tr>
<td>Waldpolenz Solar Park</td>
<td>Germany</td>
<td>40MW</td>
</tr>
</tbody>
</table>

400kW solar farm in Singleton is the largest in the Southern Hemisphere.
**Roof mounted PV systems**

South Australia has about 40 percent of the nation’s grid-connected solar photovoltaic capacity with solar panels on major public buildings, such as the South Australian Museum, State Library, Art Gallery and Parliament House, as well as the Adelaide Airport and on 250 public schools across the State as part of the Solar Schools Program.

In September 2009, Australia’s largest rooftop PV system, with a capacity of 1 MW, was installed on the roof of the Goyder Pavilion as part of the Adelaide Showgrounds upgrade. This involved around 10,000 square meters of solar panels – the equivalent to powering over 200 South Australian homes per year.

Commissioned in 2003, Melbourne’s Victoria Markets has a 0.2 MW rooftop installation comprising 1,328 solar panels providing electricity generating 30% of the electrical needs for the Market’s activities. The panels follow the angle of the existing roof line, while the 80 inverters rest in the roof space under the eave line of the sheds minimising the visual impact of the installation on the heritage listed sheds.

Roof mounted PV systems in the residential suburb of Newington (former athletes village for the Sydney 2000 Olympic Games). A total of 780 x 1kW systems and 155 x 0.5kW systems are installed. Newington saves 1,400 tonnes of carbon dioxide (CO₂) each year, equivalent to taking almost 300 cars off the road. Combined with other energy conservation measures, Newington has halved the demands on non-renewable energy sources compared to other suburbs.
**Building integrated systems**

Building integrated photovoltaic (BIPV) are photovoltaic materials that are used to replace conventional building materials in parts of the building envelope such as the roof, skylights, or facades. They are increasingly being incorporated into the construction of new buildings as a principal or ancillary source of electrical power, although existing buildings may be retrofitted with BIPV modules as well.

BIPV modules are available in several forms:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat roofs</td>
<td>• The most widely installed to date is a thin-film cell integrated to a flexible polymer roofing membrane</td>
</tr>
</tbody>
</table>
| Pitched roofs | • Modules shaped like multiple roof tiles  
  • Solar shingles are modules designed to look and act like regular shingles, while incorporating a flexible thin film cell. |
| Facades    | • Modules mounted on exterior faces of buildings can provide additional weatherproofing or simply be used as a style element. |
| Glazing    | • (Semi) transparent modules can be used to replace a number of architectural elements commonly made with glass or similar materials, such as windows and skylights. |

Another significant rooftop solar PV array is the 0.16 MW system at Kogarah Town Square in Sydney which has delivered Australia’s largest BIPV medium density residential solar installation along with a range of complimentary energy efficiency features that demonstrates the practical application of these technologies in major urban renewal projects.
3.2 CONCENTRATING SOLAR POWER

Concentrating solar power (CSP) systems use lenses or mirrors combined with tracking systems to focus sunlight more efficiently generate heat and/or electricity. The concentrated light is then used as a heat source for a conventional power plant or is concentrated onto photovoltaic surfaces. Concentrating solar power systems are divided into:

- concentrating solar thermal (CST) and
- concentrating photovoltaics (CPV).

Concentrating solar thermal

Concentrating solar thermal (CST) is used to produce renewable heat or electricity (generally, in the latter case, through steam). CST systems use lenses or mirrors and tracking systems to focus a large area of sunlight into a small beam. The concentrated light is then used as heat or as a heat source for a conventional power plant (solar thermoelectric).

As shown in the diagram below, there are currently four main concentrating solar thermal (CST) power technologies:

- parabolic trough collectors
- linear Fresnel reflector systems
- power towers or central receiver systems
- dish/engine systems.

Parabolic trough collectors and linear Fresnel reflector systems are two dimensional concentrating systems, which focus solar radiation onto a receiving tube in the focal line of the one-axis tracking mirrors. From there, the concentrated radiation heats the fluid in the receiver tube and the fluid circulates, transforming solar radiation into heat of the fluid.

The longest running parabolic trough solar power station is the 354MW Solar Energy Generating System (SEGS) located in Southern California, which has been working since 1984. Linear Fresnel systems, while not as efficient as parabolic trough technology, are more compact and cheaper to assemble. It is projected that Linear Fresnel and trough collector power stations could range in size from 30–500MW.

Power towers have large semi-circular or circular two-axis tracking heliostat fields (individual fixed mirror dish units) that focus solar radiation on solar receivers located on top of a tower. The solar receivers transfer energy to a thermal fluid. From there the fluid is used to convert heat into electricity in a similar operating system to a fossil fuel power station. PS-10 in Spain, an 11MW power tower system built in 2007, is the first commercial scale power tower. Power tower systems are projected to range in size from 10–400MW.

Dish/engine systems, such as the ‘Big Dish’ developed at ANU, are individual parabolic dishes that track the sun on two axes. The concentrating dishes focus the solar radiation at a focal point which houses a boiler generating steam which can be pumped to a nearby generator or energy storage system. Individual dishes range in size from 5–25 kW, however Stirling Energy Systems has announced a 500MW Dish Stirling power plant in California, consisting of 20,000 modules.

1MW concentrating solar thermal system next Liddell Coal Power Station near Singleton in NSW. The system uses linear fresnel reflectors. The system generates hot water to replace some of the station’s boiler feed water.
Heat storage technologies

Concentrating solar thermal (CST) systems are most attractive when combined with heat storage technologies. All CST systems are able to integrate heat storage technologies. There are a number of heat storage technologies available and in commercialization, including ‘sensible’ heat storage systems, latent heat storage and solar thermochemical processes. ‘Sensible’ heat storage typically involves storing hot heat transfer fluids such as water, oils or molten salts in tanks or underground caverns. Other sensible heat storage approaches involve using concrete or castable ceramics to store sensible heat. Solar thermochemical processes convert radiant energy into chemical energy; examples include ammonia and methane based reactions.

Concentrating photovoltaics

To reduce the net cost of the expensive PV cells, mirrors or lenses can be used to focus solar energy onto a small area of PV material. Concentrating photovoltaics (CPV) systems concentrate sunlight onto photovoltaic surfaces for the purpose of electrical power production. Solar concentrators of all varieties may be used, and these are often mounted on a solar tracker in order to keep the focal point upon the cell as the sun moves across the sky. Technologies used for concentrating solar thermal can also be used for concentrating photovoltaics (CPV) including Parabolic Troughs, Linear Fresnel (LFR), Central Receiver, Parabolic Dish, Linear Fresnel (LFR), and Central Receiver.
4 Grid connection issues

Generally, transmission and distribution infrastructure such as poles, wires and substations will not be required for smaller scale solar generation systems. Transmission and distribution systems (including any associated easements) required for larger scale systems are not covered by the proposed exempt and complying development provisions. Where this type of infrastructure is required, it is the responsibility of the proponent to obtain any necessary approvals from the relevant energy authority and pay relevant costs. Where the infrastructure is installed by the energy authority a planning approval for the infrastructure does not need to be obtained. Instead, the energy authority would undertake a self assessment under Part 5 of the Environmental Planning and Assessment Act 1979. Transmission infrastructure required as part of larger, utility scale energy generation systems, classified as major projects under Part 3A of the EP&A Act is normally included as part of the project application for planning approval.
5 Planning considerations

Issues depend on a range of factors and may include:

- Visual / landscape issues
- Glare / reflectivity
- Ecological issues
- Heritage issues
- Aviation issues

Factors that may influence the extent to which an issue is important include:

- the scale / height of the system
- the area in which the system is located and the surrounding land uses
- the sensitivity of the land on which the system is located

**Visual/landscape issues**

Flat plate PV systems and parabolic trough solar thermal systems are usually less than 10 metres in height and have limited potential to impact on views and landscapes. Linear Fresnel, dish / engine and central receiver systems can be higher than 10 metres, with an associated increased potential to impact on views and landscapes. The central receiver system in Central Australia and the dish system at Australian National University are both approximately 20 metres high. The towers for the 154 MW concentrating PV system announced for Mildura, Victoria, are up to 55 metres in height with the majority proposed to be approximately 20–25 metres in height. Large scale central solar concentrating systems can have towers ranging from up to 200 metres.

Impacts on views of building mounted PV systems in urban areas may be addressed by requiring the systems to be:

- integrated into the building or
- partly or wholly attached to the surface of the roof.

In residential areas, the impacts on view or landscapes of ground mounted solar systems can be avoided or mitigated by visual barriers or setting the facilities back from viewing areas such as public roads. In the context of an exempt and complying development framework, impacts can be addressed by controlling:

- boundary setback distances
- the height of systems

In non-residential areas, the performance criteria can be adjusted to reflect the surrounding land uses.

Taller solar generating systems may impact on neighbour’s views or alter the landscape. Systems taller than 10 metres in height in any zone are not considered suitable for an exempt and complying development framework, and would require a greater level of assessment.

**Glare/reflectivity**

The potential for glare associated with non-concentrating PV systems which do not involve mirrors or lenses is relatively limited. The reason is that PV panels are designed to absorb as much solar energy as possible in order to generate the maximum amount of electricity or heat. As such, PV panels will not generally create noticeable glare compared with an existing roof or building surface.

Concentrating PV or solar thermal systems which involve mirrors or lenses have a greater potential to generate glare impacts due to their reflective rather than absorptive nature. With parabolic trough concentrating solar thermal systems, glare issues can be addressed by specifying a development standard that the system does not create excessive glare or reflection onto any nearby or adjacent property or roadway.
Ecological issues

Ecological issues can occur in the event that:

- trees are removed to improve solar access
- flora and fauna is disturbed during earthworks undertaken to prepare a site for the development of a solar facility.

The tree issue can be addressed within the exempt and complying development framework by specifying a development standard preventing the removal of trees to improve solar access. Disturbance of native vegetation should be avoided and the site should be selected so as not to require on-going pruning of trees to maintain solar access. Depending on the type of facility, wildlife and farm animals may be permitted to graze around the facilities.

Flora and fauna issues are addressed by virtue of Sections 76 and Section 76A of the EP&A Act:

- under Section 76 of the Act, development cannot be exempt development unless it is of minimal environmental impact and is not on land that is critical habitat or a wilderness area.
- under Section 76A of the Act, development cannot be complying development if it is on land that is critical habitat, is a wilderness area, contains an item of environmental heritage, identified as an environmentally sensitive area in the environmental planning instrument that makes provision for the complying development.

Heritage issues

Aboriginal cultural heritage impacts can occur from any earthworks undertaken to prepare the site for the installation of a ground mounted solar system. Disturbance of areas of aboriginal significance should be avoided.

Other heritage issue can occur where a system is proposed to be mounted on a heritage building or in a conservation area. Under the EP&A Act, development cannot be categorised as complying development if located land on which a building that is a State or local heritage item is located or in a heritage conservation area. However, this is not an issue with exempt development, providing it involves no more than minimal impact on the heritage significance of the item or area.

Solar generating system impacts on European heritage can be addressed through an exempt development framework by:

- requiring that, where the system is located on a building is not visible from the primary street frontage
- requiring that the system is integrated into the building or is flush or parallel with the surface of its roof
- excluding concentrating systems from being mounted on buildings, as such systems tend to be more visible

Aviation issues

Depending on the height of towers associated with concentrating PV or solar thermal receivers and the location of the towers to an airport, there may be a safety / obstacle hazard issues for aircraft. If the tower is more than 110 metres high above ground level the Civil Aviation Safety Authority (CASA) must be informed along with any nearby airport. Towers more than 110 metres high, require lighting consistent with CASA requirements. Different requirements apply to tall developments within 15 kilometres of an aerodrome.
6 Proposed approval regime

Existing provisions in the State Environmental Planning Policy (Infrastructure) 2007 (also known as the “Infrastructure SEPP”) impose restrictions on PV systems in terms of:

- being located on heritage buildings, and
- the proportion of energy that can be exported

Existing provisions in the Infrastructure SEPP are reproduced as Appendix A.

PROPOSED INFRASTRUCTURE SEPP PROVISIONS

A Complying development

1. Development for the purpose of a photovoltaic system (non-concentrating), or solar hot water system that is associated with a building for which the system generates electricity or hot water is complying development on any land if the development:
   a) does not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent, and
   b) does not involve mirrors or lenses to reflect or concentrate sunlight, and
   c) where the system is mounted on a building, it is integrated into the building or does not protrude more than 1 m from the surface of the roof, and
   d) does not create excessive glare or reflection onto any adjacent building, park, road or waterway, and
   e) does not reduce the structural integrity of, or involve structural alterations to, the building, and
   f) is installed according to manufacturer’s specifications, and
   g) is not located on land on which a building that is a State or local heritage item is located or is in a heritage conservation area.

2. Development for the purpose of solar energy electricity generating works or solar hot water system that is mounted on the ground is complying development (excluding any associated grid infrastructure or easements), if the development:
   a) is located on land that is zoned RU1, RU2, RU3, RU4, IN1, IN2, IN3, SP1, SP2 or is located on an equivalent zone, and
   b) is setback from every boundary of the lot by a minimum of 10 metres, and
   c) is no more than 10 metres in height and occupies an area less than 10,000 square metres, and
   d) where the system has a generating capacity of more than 20kW, is not located within 100 metres of a dwelling not associated with the system, and
e) does not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent, and
f) does not create excessive glare or reflection onto any adjacent building, park, road or waterway, and
g) is installed according to manufacturer’s specifications, and
h) is not located on land on which a building that is a State or local heritage item is located or is in a heritage conservation area.

B Exempt development

1. Development for the purpose of a solar photovoltaic system or solar hot water system that is associated with a building for which the system generates electricity or hot water is exempt development on any land if the development complies with clause 20 (2) (Exempt development) and:
   a) has a generating capacity of less than 20kW, and
   b) it does not involve mirrors or lenses to reflect or concentrate sunlight, and
   c) where the system is mounted on a building, it is integrated into the building or does not protrude more than 1 m from the surface of the roof, and
   d) does not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent, and
   e) does not create excessive glare or reflection onto any adjacent building, park, road or waterway, and
   f) does not involve mirrors or lenses to reflect or concentrate sunlight, and
   g) is installed according to manufacturer’s specifications, and
   h) is not located on a building that is a State or local heritage item or is in a heritage conservation area except where the photovoltaic system or solar hot water system is not visible from the primary street frontage at ground level from the property boundary.

2. Development for the purpose of solar energy electricity generating works or solar hot water system that is mounted on the ground is exempt development if it complies with clause 20 (2) Exempt Development and the system:
   a) has a generating capacity of less than 20kW, and
   b) is located on land that is zoned RU1, RU2, RU3, RU4, IN1, IN2, IN3, SP1, SP2 or is located on an equivalent zone, and
   c) is setback from every boundary of the lot by a minimum of 10 metres, and
   d) where the system has a generating capacity of more than 5kW, is not located within 20 metres of an existing dwelling not associated with the facility, and
   e) is no more than 10 metres in height and occupies an area less than 1,000 square metres, and
   f) does not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent, and
   g) does not create excessive glare or reflection onto any nearby or adjacent property or roadway, and
   h) is installed according to manufacturer’s specifications.
C Development permitted with consent

Development for the purpose of solar energy electricity generating works with a generating capacity of less than 100kW may be carried out by any person with consent on any land except where the development is classified as exempt or complying development under this policy.

D Development permitted without consent

It is also proposed to amend the Infrastructure SEPP to make solar energy electricity generating works on an existing infrastructure facility or site, development permitted without consent where the proponent is a public authority. Public authorities (government agencies and councils) must undertake an assessment under Part 5 of the Act for these classes of development.

1. Solar energy electricity generating works with a capacity of less than 100kW by a public authority which are ancillary to an existing infrastructure facility (including educational establishments, health service facilities, ports, rail infrastructure, and road infrastructure).

12.2kW PV system provides for the daily energy requirements of a holiday park on the NSW South Coast.
Appendix A

EXTRACT OF EXISTING PLANNING PROVISIONS IN THE INFRASTRUCTURE SEPP

Existing provisions in the State Environmental Planning Policy (Infrastructure) 2007 streamline the approvals regime for non-concentrating solar PV and solar hot water systems on existing buildings, making these works exempt or complying development if they meet prescribed provisions.

These exempt and complying provisions do not apply to:

- PV systems (including ground mounted or building mounted) that export a significant percentage of the energy generated to the grid; or
- do not comply with other prescribed provisions, such as being located on a heritage building or structure.

As a result, development consent from the consent authority (usually the relevant local council) would be required for these systems. A complete copy of the Infrastructure SEPP can be found at www.legislation.nsw.gov.au

EXISTING INFRASTRUCTURE SEPP PROVISIONS

34 Development permitted with consent

1. Development for the purpose of electricity generating works may be carried out by any person with consent on land in a prescribed zone.

2. Development for the purpose of a back-up electricity generating plant that operates for not more than 200 hours in any year may be carried out by any person with consent on any land.

3. Development for the purpose of, or resulting in, a change of fuel source of an existing coal or gas fired generating works by a proportion of more than 5 per cent in any 12 month period may only be carried out with consent.

4. If, under any environmental planning instrument (including this Policy), development for the purpose of:
   - a waste or
   - resource management facility,
   may be carried out on land with consent, development for the purpose of electricity generating works that generate energy from waste, or from gas generated by waste, may also be carried out by any person with consent on that land.

37 Complying development

1. Development for the purpose of a photovoltaic system or solar hot water system that is associated with an existing building for which the system generates electricity or hot water is complying development on any land if the development:
   - does not necessitate the removal of trees from near the building to ensure solar energy is available, and
   - does not create excessive glare or reflection onto any adjacent building, and
   - does not block views or otherwise adversely affect any adjacent property, and
   - is not located on a building that is a State or local heritage item or is in a heritage conservation area.
39 Exempt development

1. Development for the purpose of a photovoltaic system or solar hot water system for a building is exempt development if it complies with clause 20 (2) (Exempt development) and all of the following requirements are met:
   a) the system is integrated into the building or is flush or parallel with the surface of its roof,
   b) the development does not:
      i) reduce the structural integrity of, or involve structural alterations to, the building, or
      ii) necessitate the removal of trees from near the building to ensure that solar energy is available for the system,
   c) on average, over any 5 year period, at least 75 per cent of the electricity generated by the system in a 12 month period is used in or for the building,
   d) the system is not located on a building that is a State or local heritage item or is in a heritage conservation area.