



Industry &
Investment

NSW Solar Bonus Scheme

Statutory Review

Report to the Minister for Energy

October 2010

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1 Executive summary

The NSW Government's Solar Bonus Scheme ('the Scheme') provides support to people who produce renewable energy through eligible roof-top solar photovoltaic (PV) systems or wind turbines connected to the grid.

Under the *Electricity Supply Act 1995* ('the Act'), the Minister for Energy is required to review the Scheme when capacity reaches 50 megawatts (MW) or in 2012, whichever occurs first. The Scheme reached the 50 MW capacity in mid-2010.

The purpose of the Review is to determine whether the Scheme objectives remain valid and whether the terms of the Act remain appropriate for securing the objectives, which are:

- Encouraging and supporting those who want to generate renewable energy as a response to climate change.
- Developing jobs in the renewable energy sector by assisting renewable energy generation to compete with non-renewable energy generation.
- Increasing public exposure to renewable energy technology to encourage the whole community to respond to climate change.

The major finding of the Review is that the Scheme has significantly increased the number of customers in NSW with solar PV systems connected to the grid. Modelling forecasts that installed capacity under the Scheme will grow from around 25 MW at Scheme start to nearly 1,000 MW by the end of the Scheme (end 2016), if the Scheme continues in its current form.

The Review identifies the major reason for the rapid uptake under the Scheme is that customers are receiving high returns due to a rapid decline in the costs of purchasing solar PV generators since 2009. System prices have more than halved meaning that payback of a 1.5 kilowatt (kW) system now often occurs around two years after purchase, compared to eight years when the Scheme was first announced.

Benefits to the renewable energy industry and jobs growth are reported to be mixed. On the one hand, there is strong growth in installation jobs. On the other hand, some large generation companies, including those with renewable energy portfolios, have raised concerns that amount of new generation when combined with the Commonwealth's renewable energy multiplier for small generation has delayed investment in large-scale renewable projects.

There were nearly 260 submissions received in response to the Review. Many submissions expressed strong support for the Scheme, and put forward proposals for the future expansion of the Scheme. For example, expanding the Scheme to more customers, allowing larger sized systems, allowing different

types of renewable energy technologies and lengthening the duration of the Scheme (which is currently fixed at seven years) were the most common comments received. Many submissions raised concerns about the costs of the Scheme, particularly the sustainability of the current tariff rate.

Rapid uptake of the Scheme has implications for total tariff payments to customers with solar systems installed, as these are paid for by all NSW electricity consumers. The tariff payments associated with the Scheme have not yet been passed through to electricity consumers, and will be additional to already announced regulated retail electricity price rises.

Rapid uptake has primarily been driven by the significant reduction in the price of solar panels. Globally, solar panel prices have more than halved since mid-2009. This means that the payback period for solar panels has fallen from around eight years at the time the Scheme began to within two years for some systems.

In the context of high uptake and concerns about Scheme costs, the Review examined in detail the following options for the future of the Scheme:

- Continuing the Scheme unchanged;
- Ending the Scheme;
- Changing the Scheme length;
- Lowering the feed-in tariff rate; and
- Imposing a cap on total Scheme capacity.

The Review recommends substantially lowering the feed-in tariff rate so as to balance the Scheme costs against the objective of continuing to provide support for industry and households wishing to generate renewable energy as a response to climate change.

The Review also recommends imposing a cap on total Scheme capacity as a mechanism for limiting Scheme costs and ensuring the Government's goals on deployment of small-scale renewable energy generation are achieved.

The Review also found that the number and nature of complaints about PV installations has been relatively small and minor when compared to the number of installations across NSW. Nonetheless high, increasing and continuing demand for solar panels suggests that it would be prudent to undertake further work on developing a suitable compliance and safety regime that takes into account the nature and level of risk.

2 Solar Bonus Scheme Background

New South Wales customers are offered one of the most generous feed-in tariff rates for small scale solar photovoltaic (PV) systems in Australia. This tariff is in addition to generous incentives provided by the Commonwealth's Mandatory Renewable Energy Target scheme, which also supports small scale PV technologies through the Solar Credits Scheme.

NSW's feed-in tariff arrangements, known as the Solar Bonus Scheme ('the Scheme'), were developed from the work of the NSW Feed-in Tariff Taskforce. In late 2008, the NSW Feed-in Tariff Taskforce was established to advise the NSW Government on the design of a feed-in tariff scheme for NSW. The Report of the NSW Feed-in Tariff Taskforce was released in February 2009 and is available on the Industry & Investment NSW website at www.industry.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme/established

In considering options for the Scheme design in late 2008/early 2009, the NSW Feed-in Tariff Taskforce noted the importance of balancing renewable energy policy goals against the costs on consumers, particularly low income households. These policy goals and objectives, outlined in the terms for reference for the Taskforce, were to:

- Provide an additional means of support to NSW Solar PV consumers who wish to generate renewable energy locally;
- Build the state's green collar jobs sector (e.g. service, manufacturing or research and development), by helping solar technology compete with non-renewable energy sources; and
- Expand the visibility of renewable energy technologies to help motivate the whole community in responding to climate change.

At the time the Taskforce was considering design options there was limited actual experience with feed-in tariff schemes in Australia. Therefore, the Taskforce undertook scenario analysis (assuming uptake rates) to estimate the balance between supporting renewable energy against the costs on electricity consumers. The scenario analysis did not take into account the sensitivities of uptake rates to declining capital costs.

The final scheme design announced by the NSW Government on 10 November 2009 was for a seven year scheme ending 31 December 2016 and commencing on 1 January 2010. Eligibility under the Scheme was for small customers (households and small businesses consuming less than 160 megawatt hours of electricity each year) who produce renewable energy through solar PV systems and wind turbines connected to the grid and up to 10 kilowatts in capacity.

The objectives of the Scheme are similar to those provided to the Taskforce and are set out in section 15 of the *Electricity Supply Act 1995* (the Act). They are as follows:

- to encourage and support persons who want to generate renewable energy as a response to climate change
- to develop jobs in the renewable energy sector by assisting renewable energy generation to compete with non-renewable energy generation
- to increase public exposure to renewable energy technology in order to encourage the whole community to respond to climate change.

The Scheme has the following key features:

1. The tariff rate of 60 cents per kilowatt hour is fixed for the life of the Scheme, meaning it will not vary with the time of the day or during the life of the Scheme.
2. Costs are recovered from all NSW electricity consumers.
3. Small electricity customers (households and small businesses with an annual electricity consumption of up to 160 megawatt hours) are eligible to participate in the Scheme.
4. Only customers with solar PV panels and wind turbines (up to 10 kilowatts in capacity) that connect to the electricity network through an inverter (up to 10 kilowatts in capacity) are eligible to participate in the Scheme.
5. Each eligible small electricity customer is entitled to receive the Solar Bonus Scheme credit for one eligible renewable energy generator (solar PV system or wind turbine) only.
6. It credits eligible customers with a gross meter with a 'gross' feed-in tariff rate of 60 cents per kilowatt hour for all the electricity that their eligible solar PV system or wind turbine generates.
7. Solar PV systems installed and connected after 1 January 2010 must be installed by a person, who at the time of the installation had a Grid-Connect Design & Install accreditation from the Clean Energy Council to be eligible for the Solar Bonus Scheme.
8. Certain customers who meet all requirements for eligibility under the NSW Solar Bonus Scheme (other than having gross meters installed) and who prefer to install or remain on net metering, may choose to receive net credits for their generation.

Further background information on feed-in tariff schemes is at Appendix A.

3 Review scope and process

Under the Act, the Minister for Energy is required to review the Scheme as soon as possible after 1 July 2012, or as soon as the Minister becomes aware that the total generating capacity of all complying generators reaches 50 megawatts (MW), whichever occurs first. Under the Act, the Auditor-General is also required to review and report to each of the Houses of Parliament on the Scheme after 1 July 2011.

Scheme capacity reached 50 MW in mid-2010. This was confirmed when the NSW distribution network businesses submitted (July 2010) their six monthly reports on Scheme capacity as required by the legislation. The combined generating capacity of these reports was 52.33 MW. This is discussed in more detail in section 4 and the distribution network businesses' reports are available on the Industry and Investment NSW website.

The scope and purpose of this Review is set out in the Act. The Review is to determine whether the policy objectives of the Scheme remain valid and whether the terms of the Act remain appropriate for securing those objectives.

The Minister for Energy, the Hon Paul Lynch MP, announced the Review on 24 August 2010 and invited public submissions until 30 September 2010.

In announcing the Review, the Minister stated that the Review will impact only on new entrants to the Scheme. Consideration of changes that would be applied retrospectively to customers who have already joined the Scheme are not part of this Review.

In total, 259 submissions were received. Of these, 176 submissions were received from individuals with the remainder from a broad cross-section of the community, ranging from companies installing solar systems, industry organisations, consumer and environmental groups and electricity industry businesses. Submissions are available on the Industry & Investment NSW website, except where confidentiality has been requested at the time of lodging the submission.

Industry & Investment NSW (I&I NSW) engaged AECOM Australia Pty Ltd to provide advice on forecast capacity and tariff payments under the Scheme. AECOM's findings are included in this report.

This Report reviews the Scheme's performance (section 4), describes the market drivers behind the Scheme's performance (section 5), assesses performance against the Scheme's objectives (section 6), considers future options for the Scheme (section 7) and makes recommendations (section 8).

4 Review of Scheme Performance

The Scheme has experienced a strong uptake, which led to the triggering of the statutory review in mid-2010. The reports provided by each of the NSW distribution network businesses indicate that since the Scheme commenced there has been strong growth in the number, size and rate of installation of PV systems. The high level of interest in the Scheme has also been noted in the large number of submissions received in response to the Review.

This section examines the six monthly reports provided by each of the distribution network businesses, as well as the environmental impacts of the Scheme and consumer protection issues.

4.1 Participation and installed capacity

Each of the NSW distributors is required under the Act to provide six monthly reports to the Minister for Energy on:

- the total number of small retail customers in the distributor's distribution district who have installed and connected a complying generator;
- the postcodes of those small retail customers; and
- the total generating capacity of all such generators in the distribution district.

Distributors are also required to provide such information as is available to them about the amount of electricity supplied to the distribution network by complying generators in their distribution district during each month for the 12 month period ending on 30 June or 31 December as the case may be.

The distributors' first reports under the Scheme are summarised at Table 1. The full reports are available on the I&I NSW website.

Installed capacity reached 50MW (or approximately 28,000 connections) in the first six months of the Scheme's operation. As there is a limit of one system per customer, the number of connections equates to the number of customers participating in the Scheme.

I&I NSW has also obtained updated information (received early October) from the distributors on:

- the number of complying generators connected under the Scheme;
- the number of applications to connect (including connections); and
- the generating capacity of these generators.

This updated information is also included in Table 1.

All existing systems installed in NSW prior to 1 January 2010 may participate in the Scheme, in recognition that many customers may have installed systems throughout 2009 in anticipation of the introduction of a feed-in tariff in NSW. On 1 January 2010, around 25 MW was already installed in NSW, accounting for

approximately 15,000 customers. There was a rapid rise in connections over 2009 from around 2,900 to 15,000. This is likely to reflect the influence of the announced intention to establish a feed-in tariff. The Commonwealth Government's changes to the treatment of PV systems under the Mandatory Renewable Energy Target may also have impacted uptake rates in late 2009.

Table 1: NSW total connections, installed capacity and applications as at October 2010

<u>Date/Network</u>	<u>Energy Australia</u>	<u>Integral Energy</u>	<u>Country Energy</u>	<u>Total</u>
Prior 1 January 2010*				
<u>Connections</u>				
Number of Connections	6,554	3,346	5,179	15,079
Capacity (MW)	9.8	5.5	9.4	24.7
Average System Size	1.5	1.6	1.8	1.6
30 June 2010				
<u>Connections</u>				
Number of Connections	10,520	8,557	9,436	28,513
Capacity (MW)	16.5	15.9	20.0	52.3
Average System Size	1.6	1.9	2.1	1.8
Early October 2010				
<u>Connections</u>				
Number of Connections	17,456	15,388	17,448	50,292
Capacity (MW)	29.5	30.9	40.4	100.8
Average System Size	1.7	2.0	2.3	2.0
<u>Applications (includes connections)**</u>				
Number of applications	28,242	21,900	33,138	83,280
Capacity (MW)	53.2	47.0	92.7	193.0
Average System Size	1.9	2.1	2.8	2.3

Source: Distributor Reports to I&I NSW.

Notes: * Country Energy figures as at February 2010. All data are approximate and information about capacity is not known for some sites. EnergyAustralia figures are generator capacity. Integral Energy and Country Energy figures are for inverter capacity. Average system size is calculated for overall capacity rather than new connections.

**Applications data (including connections) for early October 2010 is from updated distributor reports and are approximate. Applications (including connections) data was not available and/or consistent across the distribution businesses at Scheme commencement. Formal June 2010 reports were not required to include applications data.

More recent (early October 2010) reports from the distribution businesses indicate that there are around 50,000 complying generators already connected, representing connected capacity of around 101 megawatts (MW). This is illustrated in Figures 1 and 2 below.

Figure 1: Number of PV Systems Connected in NSW

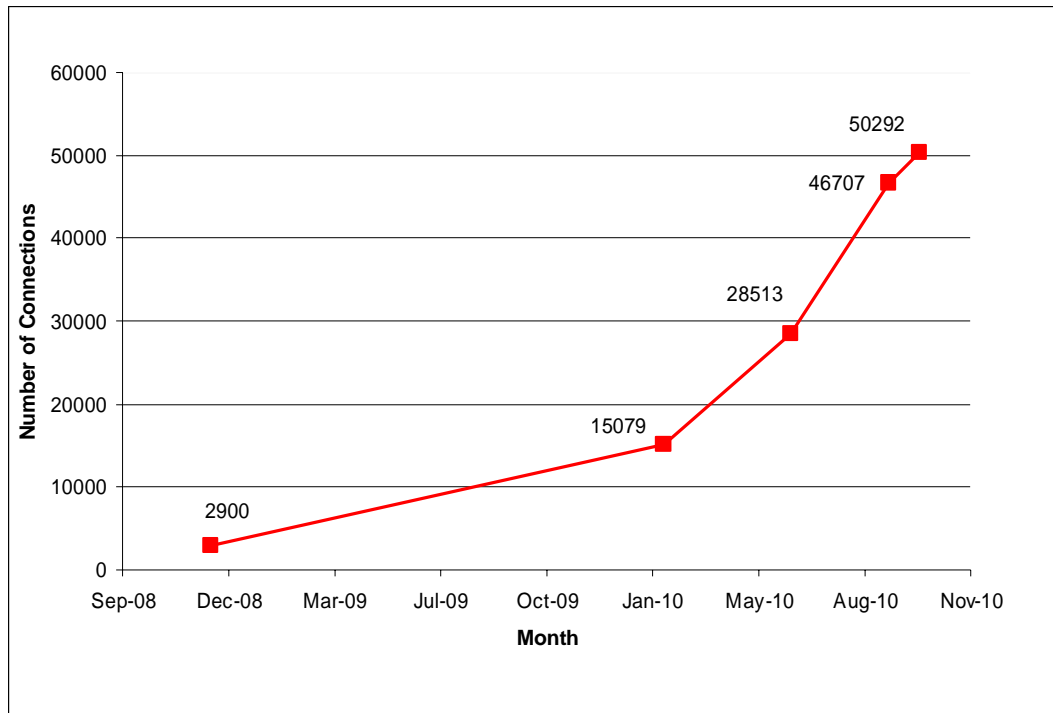
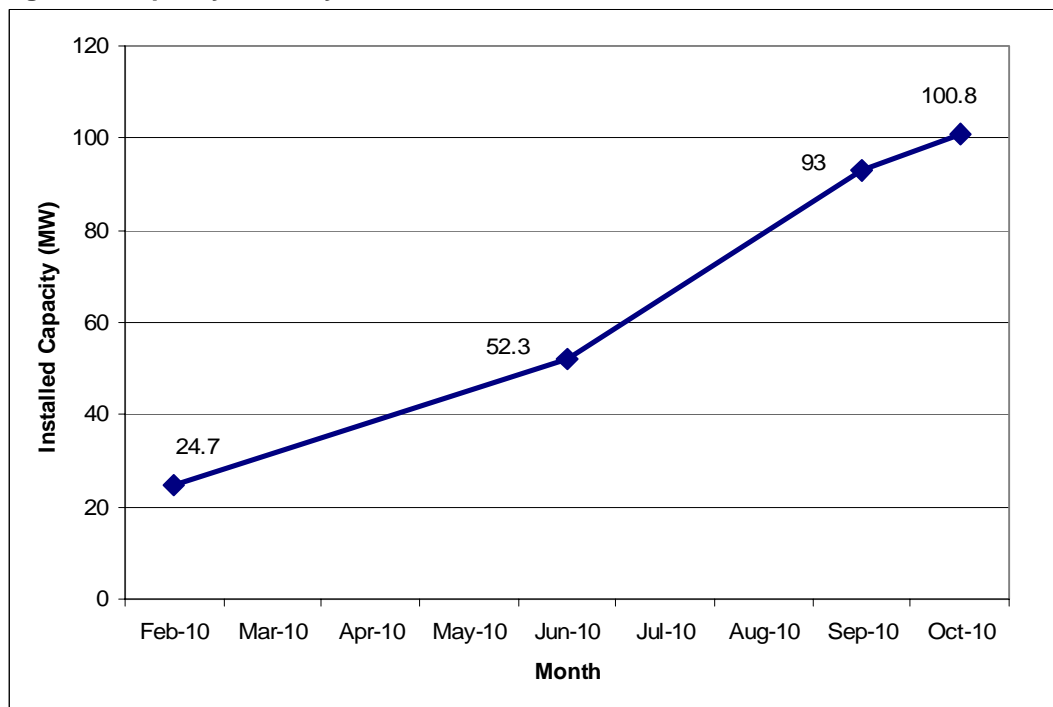


Figure 2: Capacity of PV Systems Connected in NSW

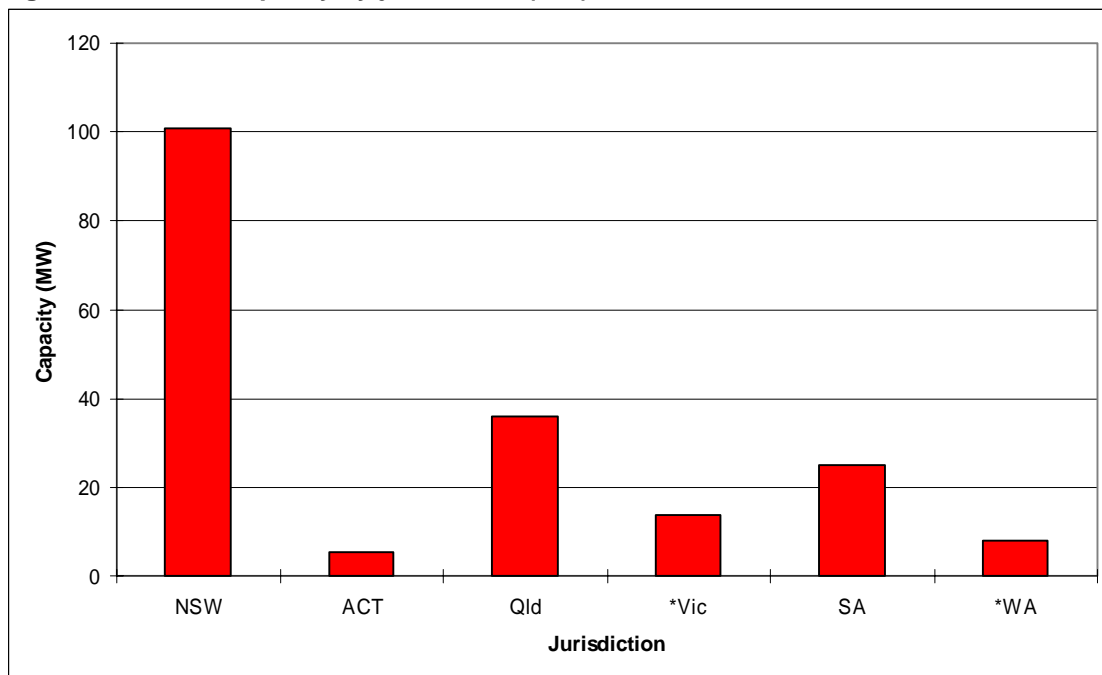


Figures 1 and 2: **Source** AECOM Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments October 2010, using Formal reporting from Country Energy, EnergyAustralia and Integral Energy. **Note:** Data are approximate and information about capacity is not known for some sites. EnergyAustralia figures are generator capacity. Integral Energy and Country Energy figures are for inverter capacity. October data is sourced from updated distributor reports.

The average system capacity being installed prior to the scheme was 1.6kW. However, the average system capacity as at 30 June 2010 had risen to 1.8kW, and in early October the average stands at 2kW. Customers in the Country Energy network area are installing larger systems, on average, than customers in the other two network areas. As at early October, connected capacity is 100.8MW with 50,292 participants.

NSW is understood to have the highest installed capacity of any jurisdiction (see Figure 3), although available data for some jurisdictions is not current.

Figure 3: Installed capacity by jurisdiction (MW)



* Vic and WA data as at 2009 – No 2010 data available. Sources: ACT www.environment.act.gov.au/_data/assets/pdf_file/0006/174795/Electricity_Feed-in_tariff_WEB.pdf#Discussion%20Paper. Qld (April 2010) www.cleanenergy.qld.gov.au/zone_files/Demand_side/solar_bonus_scheme_current_6.07.10.pdf Vic: new.dpi.vic.gov.au/energy-future/what-is-government-doing/info-library/opportunities-for-solar-energy-in-victoria SA and WA: www.climatechange.sa.gov.au/uploads/Feed-In%20Review/Media%20Release%20-%20Feed-In%20Review%20Aug2010.pdf (August 2010)

4.2 Environmental Benefits

Solar panels provide an opportunity for households to take personal action in response to climate change, and the uptake rate demonstrates the NSW community's enthusiasm for this.

Although carbon abatement is not among the set objectives of the Scheme, the community may consider this an additional Scheme performance criteria.

Renewable energy has zero or negligible emissions in operation compared to electricity generated from fossil fuels. To the extent that the Solar Bonus Scheme leads to renewable energy generation replacing electricity purchased from fossil-fuel generators, it will contribute to a reduction in greenhouse gas emissions from the electricity sector and an increase in the proportion of renewable energy consumed in NSW.

The renewable energy from any generator that is participating in the Scheme and has received renewable energy certificates will be counted towards the Commonwealth's Renewable Energy Target. For these generators, there is no 'additional' renewable energy which can be credited to the NSW Solar Bonus Scheme. This is because the renewable energy certificates are allocated based on the expected or forecast total renewable energy generated over the life of the system. In this situation, the NSW Scheme provides additional financial support to customers.

The National Generators Forum believes that for each tonne of carbon abated the cost is up to \$640 under the Scheme.¹ The Energy Supply Association of Australia cites studies saying that solar PV:

“... cost of abatement can range from \$484 per tonne of carbon to \$1,500 per tonne of carbon. This compares unfavourably in comparison with Certified Emission Reductions under the Kyoto Protocol's Clean Development Mechanism (sic) currently trade at around \$17 per tonne of CO₂e, and offset credits under Australian programs including the NSW Greenhouse Gas Reduction Scheme have typically ranged between \$3 and \$15 per tonne of CO₂e.”²

Feed-in tariffs may not be the most cost effective way to achieve carbon abatement. A more detailed cost benefit analysis of emission reduction potential was not undertaken as part of this Review, given this Review is examining the objectives of the Scheme.

Industry & Investment NSW is continuing to undertake analysis of the implications of the Solar Bonus Scheme on the electricity market. Analysis of the impact of the Solar Bonus Scheme on wholesale electricity purchases is complex and requires a detailed understanding of settlements in the National Electricity Market. Industry & Investment NSW is seeking expert advice from the Australian Energy Market Operator on these impacts. This analysis could be used to inform future arrangements about cost recovery for the Solar Bonus Scheme.

¹ National Generators Forum submission. The National Generators Forum gives several abatement figures for different sized systems. The figure of \$640 includes Commonwealth Renewable Energy certificates for a 1.5kW system. In this example, the system generates 5.3kWh per day and attracts \$8,125 in tariff payments to 2016. NGF deducts estimated avoided electricity purchases and avoided network costs, then divides by carbon abated.

² Energy Supply Association of Australia submission

4.3 Safety and Compliance

Generators must comply with safety, technical and metering requirements prescribed by the legislative framework of the Scheme, including the Act, Regulations and Market Operations Rules and other statutory requirements that generally relate to electrical installations.

Solar PV systems installed and connected since the Scheme began must be installed by a person who, at the time of the installation, had a Grid-connect Design & Install accreditation from the Clean Energy Council, to be eligible for the Scheme. Accreditation is given to individuals as opposed to companies.³

Once the solar PV system or wind turbine is installed, customers must ensure that only a suitably qualified person connects the installation to the electrical wiring on their property, e.g. to their switchboard. A list of level 2 accredited service providers who may provide this service is available from Industry & Investment NSW's website, by calling 9895 0008 or emailing asp.scheme@industry.nsw.gov.au.⁴

In addition to these requirements, network businesses are checking a large proportion of meters and connections in their area. EnergyAustralia did not make a submission to this review, but described its inspection process in their *September 2010 Pass Through Application: NSW Solar Bonus Scheme submission to the Australian Energy Regulator (AER)*:

“Meter installation inspection: EnergyAustralia operates an audit program inspecting installation work. Certain electrical installations are inspected on every occasion where it is deemed to be the type that has a higher level of risk to people and property. New, upgraded or altered grid connected generation systems (i.e. SBS) are inspected on every occasion. Therefore, we inspect 100% of all SBS connections.”⁵

However, as Country Energy explains in its submission, it does “not inspect the PV installation on the customer's premises - such as PV panels and the wiring on the customer's side of the meter.”⁶

Similarly, Integral Energy explains that it inspects, “the electrical safety aspects of the installation and does not inspect other aspects of the work such as mechanical, civil, structural and architectural works on the customer's premises,

³ To find an accredited installer visit:

www.cleanenergycouncil.org.au/cec/accreditation/Solar-PV-accreditation/findaninstaller.html

⁴ http://www.industry.nsw.gov.au/data/assets/pdf_file/0009/354528/Level-2-11-10-2010.pdf

⁵ Energy Australia AER submission <http://www.aer.gov.au/content/index.phtml?itemId=739762>

⁶ Country Energy submission

including the PV panels and wiring on the customers' side of the meter."⁷

There is a Commonwealth inspection scheme for systems installed under the Commonwealth Mandatory Renewable Energy Target scheme. Owners of systems eligible for the Solar Bonus Scheme can also participate in the Renewable Energy Target Scheme. This consists of random audits, being conducted nationally. In addition, the Commonwealth strengthened and clarified its safety and compliance requirements in mid-2010, by introducing new regulations that include:

“To be eligible for Renewable Energy Certificates (RECs), installations must now comply with state and territory regulations for siting panels and building codes, including for panel mountings and connection;

Installers must be both Clean Energy Council (CEC) accredited and licensed electricians, with the exception of some remote non-grid connections; and

Requiring installers of solar panels to retain documentation of how they have met the above requirements.”

The requirement to be a licensed electrician, which is already part of the CEC accreditation requirements, will now be an explicit requirement for the RET and its compliance regime. If these requirements are not met, installers will face penalties such as fines, injunctions, ineligibility to create RECs or criminal charges.⁸

Victoria is also strengthening its safety and compliance regime. Table 2 provides more information.

⁷ Integral Energy submission

⁸ The Hon Penny Wong “*Enhanced safety rules for Solar Panels*” Media Release 21 June 2010

Table 2: Victorian experience: Safety of Solar Panel Installations

Energy Safe Victoria oversees the safety of electrical installation work and administers a licensing system to ensure that only competent and qualified workers carry out electrical installation and inspection work.

An auditing program in Victoria revealed that out of 81 solar PV systems, 9 had an incorrect switch installed – a potential fire risk. Although the risk is low, this could result in damage to property, injury or death. A further 17 systems had incorrect labelling, in breach of the standards.

Following these audits, Energy Safe Victoria held seminars for installers to improve their technical knowledge and encourage them to attend training at the Royal Melbourne Institute of Technology (RMIT). Energy Safe Victoria will be introducing medium and longer term strategies to improve the safety of solar panel installations, these include:

- Courses by RMIT in inspection of solar installations
- Additional labelling to alert emergency services and tradespeople to isolation switches
- A working group to provide guidance and advice on training
- Regulatory arrangements for safely installing and operating emerging technologies.
- Additional targeted audits

Source: Energy Safe Victoria, Safety of Solar Panel Installations in Victoria, July 2010, www.esv.vic.gov.au/

The Federal and NSW Governments are ensuring NSW electrical installations are properly monitored. NSW Fair Trading legislation requires installers of renewable systems such as solar panels to hold a home building licence and meet strict competency requirements.

The installation must comply with the *NSW Service and Installation Rules* and the Australian and New Zealand AS/NZS3000:2007 Wiring Rules.

In accordance with the provisions of the *Electricity (Consumer Safety) Act 2004*, the electrical contractor is required to complete a Certificate of Compliance Electrical Work (CCEW).

For grid-connected and stand-alone installations, electrical contractors are required under the *Home Building Act 1989* to warrant their work for seven years. The Act also sets out the statutory warranties that apply to residential building work and mandates home warranty insurance for work over \$12,000.

The *Fair Trading Act 1987* provides further protections by the standard requirements for goods to be of merchantable quality and suitable for the intended purpose.

Despite the above framework some issues have emerged notably in the areas of:

- Incorrect installation or connection;
- Negative impacts on the grid or voltage issues;
- Marketing of systems;
- Delays in installation; and
- General compliance with eligibility criteria.

Incorrect installation or connection

Only three of the relevant complaints received by NSW Fair Trading related to safety issues. On investigation, Fair Trading found them to be of a minor nature, easily corrected by the trader.

The remainder of the complaints were largely related to contractual matters, such as delayed supply or commencement of work. A number of complaints related to allegations that traders were overstating the return on the solar panel investment.

Some submissions to the review included pictures or complaints about shaded solar PV systems. Shading will reduce the amount of electricity generated by the system and hence the total amount of feed-in tariff payments received. While this is not a safety issue, it may affect consumer satisfaction with the Scheme.

There is substantial information available to households about installing systems. Industry & Investment NSW has a question and answer section on its website advising customers of matters to consider when purchasing a PV system.⁹ The Clean Energy Council has released a consumer guide to solar PV.¹⁰ NSW Fair Trading also has information for consumers on its website.⁹

The Clean Energy Council also advises its accredited installers of best practice with respect to aspect and shadowing in their System Installation Guidelines:

“For best year-round performance, a fixed PV array should be mounted facing true north (+/- 10°) at an inclination equal to the latitude (+/- 10°) angle or at an angle that will produce the best annual average performance taking into consideration: seasonal cloud patterns, local shading and environmental factors.”¹¹

Negative impacts on the grid and voltage issues.

In Country Energy’s submission to the review, concerns have been raised regarding the impact of solar PV systems on the existing network.¹²

As the generation from solar PV systems isn’t constant and depends on a wide range of environmental factors (such as intensity of the sun and cloud cover) this will have “some potential disruptive effects on the network”. This will cause an uneven generation of energy and voltage from the PV systems back to the network/grid.

⁹ www.industry.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme/faq

¹⁰ Clean Energy Council ‘Consumer guide to buying household solar panels’, Vol4 October 2010
www.cleanenergycouncil.org.au/cec/resourcecentre/Consumer-Info/solarPV-guide.html

¹¹ Clean Energy Council, ‘Grid-Connect Install & Supervise Guidelines’ – Issue 6 Sept 2010,
<http://www.cleanenergycouncil.org.au/cec/accreditation/Solar-PV-accreditation/forms.html>,

Accessed 7 October 2010

¹² Country Energy submission

Country Energy is specifically concerned of this issue in regions where “rapid take up and installation of systems” is taking place under the Scheme. These issues are of concern “where a customer or group of customers seek PV installation at a point where the existing network is not able to facilitate the generation capacity.” In these cases “Country Energy may need to augment the network to allow the increased flow of generation back into the network.”

Country Energy understands the potential network benefits that small generation can contribute to the network and is conducting research and development to maximise these benefits. Country Energy will continue to facilitate the connection of these systems.

Integral Energy has also raised similar issues in its submission to the Review, where customers “in areas of high solar penetration, may experience excessive voltages for significant amounts of time, leading to customer equipment damage¹³.”

Integral Energy is developing communication messages and materials for customers encouraging them to select a PV system that is suitable to their place of residence and pre-existing network conditions.

These potential impacts on the grid could create constraints in certain areas of the network. Particularly for larger systems, there may be opportunities for preferred areas to be identified where the network is better able to support the changes in generation and voltage and focus government support and national energy policy initiatives to these areas.

Marketing of systems, pricing

Companies selling, renting, or installing renewable energy systems or components, or offering consumers deals including additional feed-in tariff payments, need to abide by existing requirements, such as the *Trade Practices Act 1994*.

For the average consumer looking to participate in the Scheme, renewable energy systems are a ‘new’ product type which they do not have experience in purchasing or operating. Although, as discussed above, information is available from a number of sources to assist consumers.

NSW Fair Trading and the Energy and Water Ombudsman NSW (EWON) note complaints about marketing in relation to the Scheme. NSW Fair Trading is looking into substantiation of claims made by solar array marketers and installers. EWON noted 49 complaints related to pricing or billing.

¹³ Integral Energy submission

Some of these complaints stem from a poor understanding of the Scheme conditions for net and gross metering, compounded by the Scheme design changing from net to gross metering shortly before commencement.

Delays

Higher than expected uptake by customers has resulted in demand outstripping supply of solar panels and inverters as well as the availability of accredited service providers and administration staff. This is causing delays in the installation of systems with some customers waiting from eight weeks to several months.

Since the announcement of the Review, application numbers have increased and the delays in installation of systems and connection to the grid are likely to continue. The Review may in part be contributing to the sense that installations need to be hurried, so that customers can ‘get in’ on the existing scheme rules.

Table 3: Complaints received by EWON regarding solar PV systems January to June 2010

Complaint	Number
Metering (including delays)	66
Retailers (billing, pricing)	49
Installation (cost, delays)	23
Other	22
Query	12
Total	172

Source: Derived from data in the EWON Solar Report to Industry & Investment, Energy Branch September 2010

At the commencement of the Scheme, there were some delays in the supply of gross meters. The distribution network businesses moved quickly to address the supply of meters following the change in Scheme design from net to gross shortly before commencement. In recognition that some customers prefer to remain on a net meter, both types of meters are eligible under the Scheme design.

General compliance with eligibility criteria

No major issues with compliance with the eligibility criteria were identified from the available information. However, there is some uncertainty around the definition of a customer.

One submission states that the customer has installed two large systems totalling 18kW that is receiving the feed-in tariff, despite the limit being 10kW and one system per customer. Similarly, there have been reports of customers installing more than one system, for example across multiple properties, again despite the limit of one system per customer. There have also been unconfirmed reports of installations by non-CEC accredited individuals.

Summary

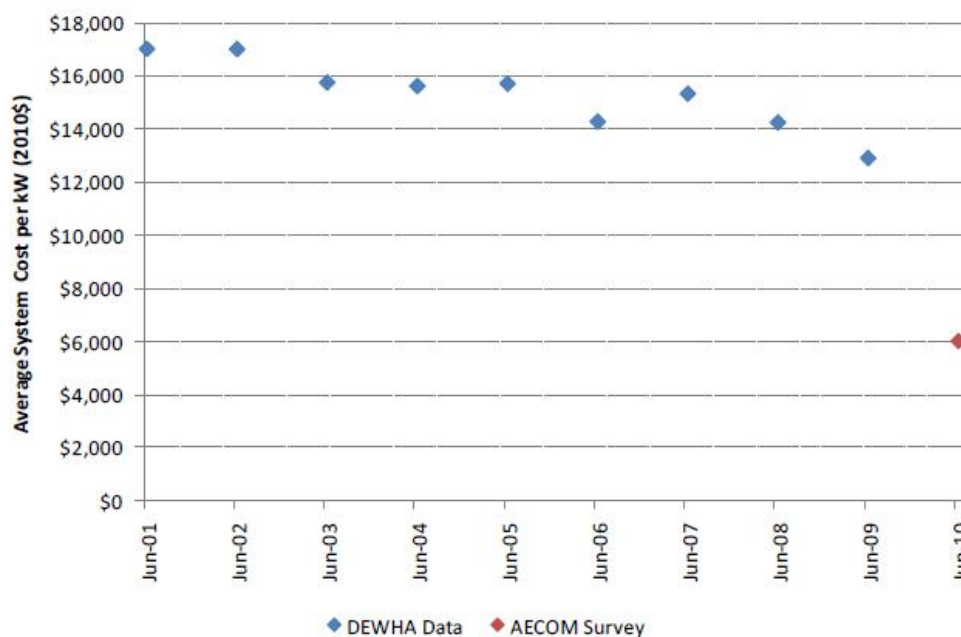
The review found that there are no major issues with regards to safety and compliance given the number and nature of complaints from both NSW Fair

Trading and EWON. Complaints remain small and minor when compared to the number of installations across NSW (which stood at around 28,000 in the corresponding time period to June). Nonetheless, there are some safety and compliance issues emerging which could be addressed, particularly in the context of high, increasing and continuing demand. It is recommended that I&I NSW, in conjunction with NSW Fair Trading and the network businesses, examine options for strengthening safety and compliance where required.

5 Background information: market drivers

As described above, demand for solar PV systems has been very high. This is due in part to factors outside the Scheme's design. A key factor in driving high demand for solar PV systems has been the dramatic fall in capital cost of systems (Figure 4).

Figure 4: NSW PV system cost per kW of installed capacity (2010\$ before RECs)



Source: AECOM analysis based on data provided by DEWHA (2009) and AECOM PV market price survey (2010)

Source: AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments October 2010

Both the Taskforce report and AECOM estimated that PV system costs in 2009 were around \$12,500 per kilowatt. The Commonwealth releases regular data on system costs for NSW, which estimates the cost at around \$12,900 per kilowatt for June 2009. No Commonwealth data is available for June 2010, therefore AECOM has estimated system costs at around \$6,000 per kilowatt based on a survey of market offerings in NSW. As the figure above illustrates, prices fell approximately one third over the eight years between June 2001 and June 2009. Prices are now (August 2010) approximately \$6,000 per kilowatt, a drop of some 54% in twelve months.

Some customers are being offered installed systems for \$0. This takes into account other financial support such as renewable energy certificates under the Mandatory Renewable Energy Target and the option of paying back the capital costs through electricity bills over a period of around three years.

There have been a number of factors driving this significant price reduction:

- Fall in global price of solar PV systems; and
- Strong exchange rate.

Chief among these, as found in AECOM research, is that the global price of solar PV panels has fallen markedly since the time of the Taskforce report in early 2009. The fall in the global price can be attributed in large part to policy changes in Spain, the world's largest PV market.

Spain's installed capacity expanded from 480 MW in 2007 to 2,755 MW in 2008 under its feed-in tariff.¹⁴ In 2009 new regulatory frameworks were implemented in order to control the impact of the feed-in-tariff on the economy. An average 30 per cent reduction in the feed-in-tariff was implemented along with an annual cap of 500 MW for new capacity from 2009-2011.

As the Spanish ministry responsible said of the changes,

"These percentages reflect the improved technologies and cost reductions that have occurred in the photovoltaic sector, which suggests the gains should be transferred to consumers while allowing attractive rates of return for investors"¹⁵

Manufacturers had been mass-producing panels for sale in Spain when the announcement was made that the program was to be suspended. This resulted in significant spare capacity in the global PV supply chain that increased inventory, and prices fell. This has resulted in the global price of panels decreasing.

The recent strength of the Australian dollar has also contributed to the reduction in cost of solar PV systems. Together with the policy changes in Spain, falling global prices and the increased competition in the Australian solar industry, the price of systems in Australia has significantly declined.

This sharp drop in system prices has occurred whilst support for PV systems under the Renewable Energy Target has remained largely unchanged in dollar terms but has increased substantially as a proportion of the total capital cost.

Solar Credits, which multiply the renewable energy certificates received for an installation, act to reduce the price per kW of a 1.5kW system to around \$2,500. This makes the upfront cost of installing a PV system substantially lower. For a system (1.5kW) price of \$19,350, Solar Credits contribute approximately 13% of the upfront costs.

¹⁴ AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments, Oct 2010

¹⁵ Photovoltaics International website http://www.pv-tech.org/news/a/spain_feed-in_tariff_cuts_new_phot35654654_plants_to_be_chopped_by_up_to_45/

This percentage increases to 28% of upfront costs when the system price falls to \$9,000. As noted above, it is the upfront (capital) cost which is the most significant driver in the rate of installation of PV systems.

Feed-in tariffs assist customers in repaying the capital (purchase) costs of their solar PV systems. However, rather than a lump sum payment upfront payments are provided as income streams for a number of years. When the cost of systems was much higher, a common timeframe regarded as reasonable in submissions to the original Feed in Tariff Taskforce was a tariff leading to a payback time of 10 years. At present, many participants will receive nominal payback for their systems in the third year of their participation in the Scheme. This is well within the seven year timeframe of the Scheme, and less than the estimated nominal payback time calculated by the Taskforce for the gross tariff of 60 cents, which was in the eighth year based available information in early 2009.

The net consumer benefit from a solar PV system is the feed-in tariff revenue stream to end 2016, less the installed cost of the system. For a typical system of between 1.5kW to 2.5kW installed in 2010, gross feed-in tariff revenue currently exceeds installation costs by around \$4,000 (NPV). For a 10kW system the net consumer benefit is around \$2,400 (NPV).¹⁶

Solar PV system¹⁷ prices are forecast to continue to fall by an average of 7% per year to 2013¹⁸. This can be attributed to increased competition amongst new and existing organisations and due to a saturation of the market. The Commonwealth's Solar Credits policy measure tapers, but the global price of solar PV systems is forecast to continue to fall with Photon Consulting expecting rapid installation growth globally over the next five years.

¹⁶ AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments Oct 2010. With a 15% consumer discount rate applied.

¹⁷ AECOM defines system as all components such as the photovoltaic cells, inverter and electrical connection.

¹⁸ Source: AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments Oct 2010

6 Assessment of the Scheme

This section assesses the Solar Bonus Scheme against the legislated objectives and discusses other implications of the Scheme's current design.

6.1 Encourage and support those who want to generate renewable energy as a response to climate change.

The first objective of the Scheme is to encourage and support those who want to generate renewable energy as a response to climate change.

The Scheme supports households and small businesses by providing a financial incentive (a 60 cent tariff) for all the electricity exported to the grid by eligible renewable energy generators. This is in addition to financial support provided by the Commonwealth Government's Mandatory Renewable Energy Target scheme, as discussed above, as well as further financial support provided by some retailers.

The very strong increase in the number of grid-connected systems in NSW since the Scheme commenced in 2010 shows that NSW households and small businesses are strongly encouraged and supported to generate renewable energy (see Section 4 for detail on the performance of the scheme to date).

Given that financial support is concurrently occurring from up to three different sources, it is not possible to clearly separate out the effects of each of the schemes.

The Energy Supply Association of Australia in its submission notes
"The SBS already appears to be exceeding anticipated levels of demand by virtue of being one of the most generous FIT arrangements among Australian jurisdictions and the fact that small scale generation is also incentivised under the small scale scheme of the National Renewable Energy Target. This upfront capital subsidy already provides adequate incentive to deliver the objective of encouraging and supporting persons who want to generate renewable energy."¹⁹

I&I NSW has not undertaken any research to investigate customer motivations in generating renewable energy. Therefore it is not possible to test the extent to which the second limb of this objective is being met, that is, whether people are generating renewable energy in increasing numbers as a response to climate change or in response to the financial support being offered. In any event, the environmental benefits of increased renewable energy are the same, whatever a customer's motivation may be.

¹⁹ Electricity Supply Association of Australia submission

It is estimated that the total feed-in tariff payment stream received by a household from typical sized systems (1.5kW - 2.5kW) installed in 2010 exceeds installation costs by around \$4,000 (NPV) and that payback for many systems is now in the second year which is significantly below that of the approximate eight years at the time the Scheme was announced in 2009.

This suggests that the income stream received by customers at a 60 cent tariff rate may be regarded as too high for a seven year Scheme, particularly where the Scheme is funded by energy consumers.

6.2 Increase public exposure to renewable energy technology to encourage the whole community to respond to climate change.

The first six months of the Scheme has seen solar PV systems become much more visible to the community. Prominent advertising by established and newer companies is occurring in a variety of mainstream media including prime time television, radio, and advertisements in local and mainstream newspapers. This has been accompanied by leaflets being delivered to letterboxes, website promotions, telephone marketing and offers that arrive through a customer's electricity retailer correspondence.

Companies are offering extra benefits and deals to attract customers and some marketing has rightly created consumer suspicion as the deals seem 'too good to be true'. There have also been issues associated with marketing in relation to the Scheme – which are discussed later in this Report. However, overall, this increased exposure to the possibility of renewable energy appears to have served to begin normalising the purchase of solar panels for consumers, for whom this is a new proposition.

Scheme participants are distributed across NSW and this demonstrates the widening community exposure to renewable energy generation. The most highly concentrated location for uptake of solar PV technology is the Sydney Olympic Park/Newington area, with 1,153 reported installations. Other areas where the Scheme is proving popular include Wyong, Erina, Toukley and Avoca Beach on the Central Coast, in Sydney's western suburbs including Blacktown, Mt Druitt and Liverpool, and rural areas including Lismore, Bega, Mullumbimby and Coffs Harbour.

This data should be approached with caution, because they are not adjusted for population, and many are on the list due to pre-existing systems. For example, Blacktown is one of the Commonwealth Government's 'solar cities' projects, and Newington was the largest solar powered suburb in the world when it was built in readiness for the 2000 Sydney Olympics.

There are a number of possible reasons for a high number of installations in the same suburb. One such reason could be that because solar panel installations

are quite often visible from street level and recognisable in residential and business settings, this increases the exposure of the technology to the wider community. This conceivably could have the flow-on effect of promoting discussion about the benefits of renewable energy amongst neighbours and friends of the residential owner.

At the end of June 2010, there was an average of 9.9 systems installed per 1,000 dwellings. This figure rises to 18.8 when the data is adjusted for the number of suitable dwellings in NSW (Table 5). The estimate of suitable dwellings does not precisely fit with Solar Bonus Scheme eligibility, given that businesses are also eligible, as are owners' corporations, but could be considered indicative. There is some variation by area, with higher uptake in Country Energy's area. Figure 5 and Figure 6 are maps of the number of PV systems per 1000 suitable dwellings for each postcode across NSW and the Sydney region respectively. This postcode data is to the end of June 2010.

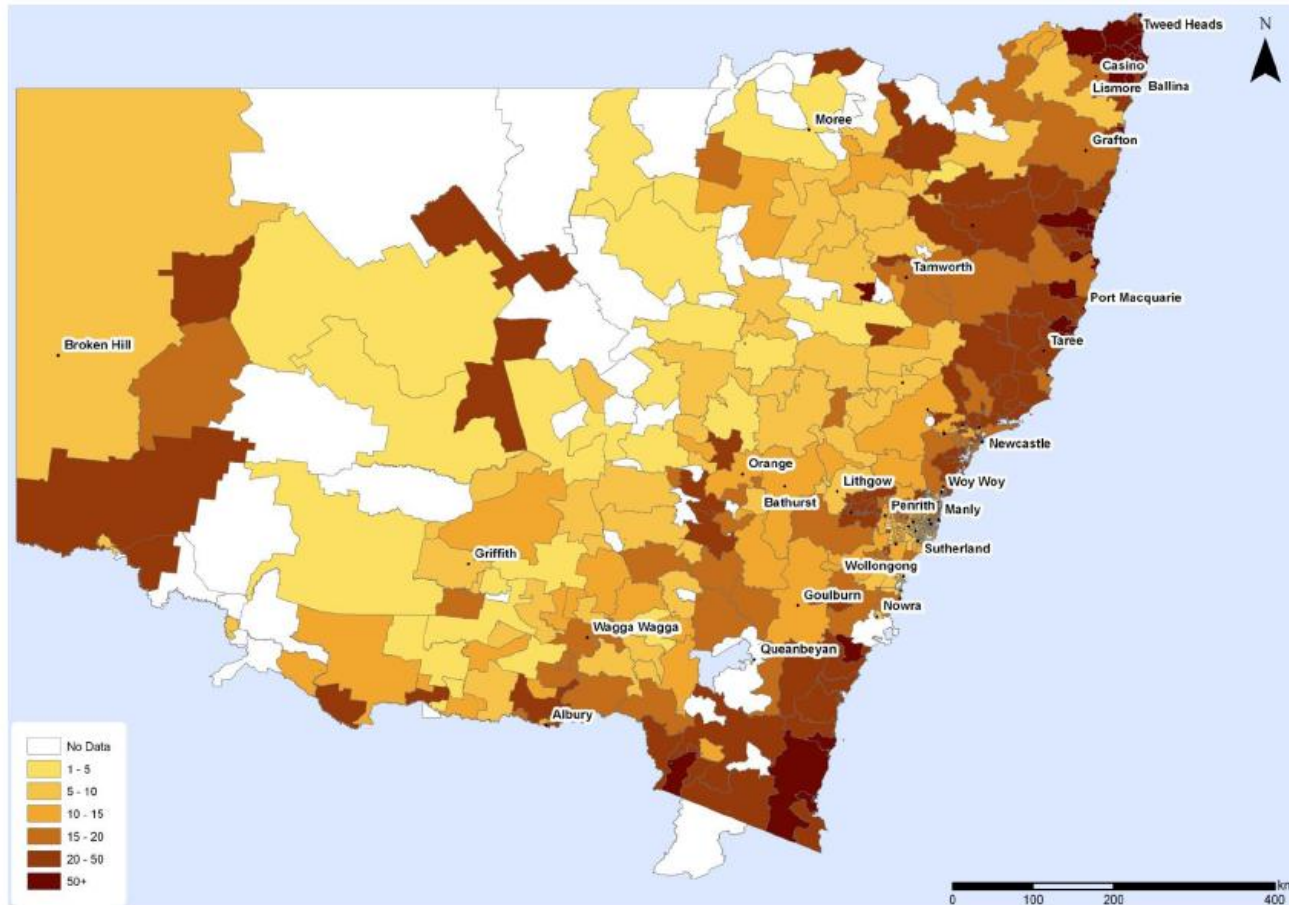
Table 4: Frequency of connections by postcode (top twenty)

Postcode	Suburbs	Connections
2127	Newington, Sydney Olympic Park	1153
2480	Lismore	702
2259	Tuggerah, Wyong	459
2550	Bega	330
2482	Mullumbimby	284
2450	Coffs Harbour	265
2250	Gosford	264
2484	Murwillimbah	262
2251	Kincumber, Avoca Beach	249
2430	Taree	238
2263	Toukley	237
2478	Ballina	229
2486	Tweed Heads South, Glengarrie	224
2444	Port Macquarie	222
2350	Armidale	218
2148	Blacktown, Prospect	209
2464	Yamba	204
2147	Seven Hills	200
2287	Wallsend	198
2650	Wagga Wagga	194

Source: Distribution Businesses Reports - June 2010

Note: This data should be interpreted with caution, as it is not per capita. Suburbs listed are indicative, surrounding areas can have the same postcode.

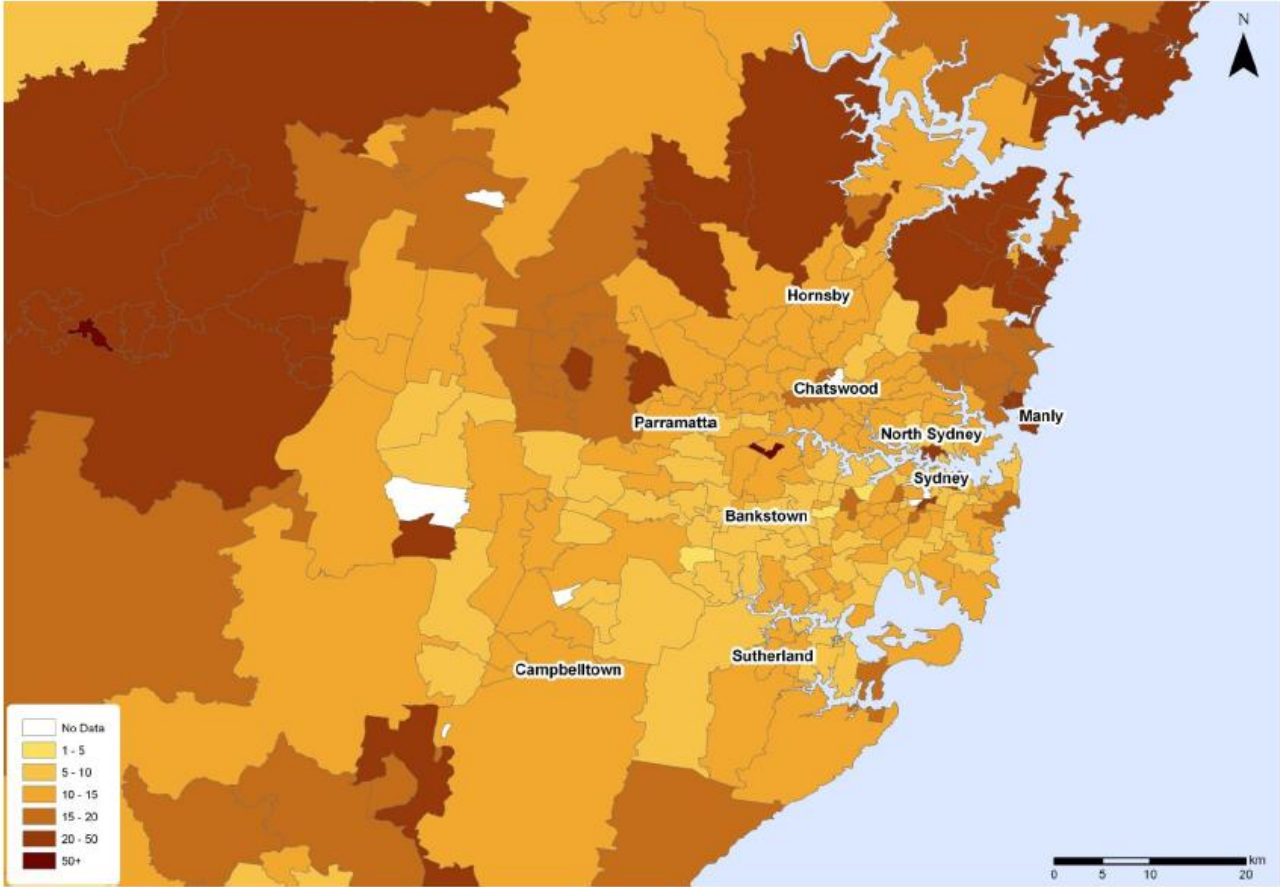
Figure 5: Systems per 1,000 “suitable” dwellings by postcode, NSW (data as at end June 2010)



Source: AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments, October 2010

Note: As at June 2010. This data excludes systems which have not currently been entered into the distribution businesses billing systems and therefore have no billing postcode data available.

Figure 6: Systems per 1,000 “suitable” dwellings by postcode, Sydney (data as at end June 2010)



Source: AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments, October 2010
Note: As at June 2010. This data excludes systems which have not currently been entered into the distribution businesses billing systems and therefore have no billing postcode data available.

Table 5: Connections by Network area as at 30 June 2010

Network	Connections	PV Systems Per 1000 People	PV Systems Per 1000 Dwellings	Systems Per 1000 Suitable Dwellings
EnergyAustralia	10,520	3.3	7.8	16.6
Integral Energy	8,557	4.1	11.1	18.9
Country Energy	9,436	5.5	12.5	22.1
Total	28,513	4.1	9.9	18.8

Source: AECOM, Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments, October 2010. AECOM analysis based on data provided by distribution businesses and ABS Census.

Note: Suitable dwellings defined as owner occupied free standing or semi-detached dwellings.

6.3 Develop jobs in the renewable energy sector by assisting renewable energy generation to compete with non-renewable energy generation.

The final objective of the Solar Bonus Scheme is to develop jobs in the renewable energy sector by assisting renewable energy generation to compete with non-renewable energy generation.

Benefits to the renewable energy industry and jobs growth are reported to be mixed. On the one hand, there is strong growth in installation jobs. On the other hand, some large generation companies, including those with renewable energy portfolios, have raised concerns that amount of new generation when combined with the Commonwealth's renewable energy multiplier for small generation has delayed investment in large-scale renewable projects.

A number of submissions state that the Scheme has had a positive impact on jobs, particularly by supporting installation and associated services. When a customer decides to buy, install, connect and maintain a renewable energy generator, a number of direct and indirect jobs are created. A typical process can be stylised with the following people/steps involved:

- Marketing material is acted on (businesses require marketing materials)
- Installer is contacted to arrange a quote (call centre / office staff required)
- Order is placed (panels must be manufactured)
- Panels are delivered (delivery to the installer, or directly to the residence)
- Installed by CEC accredited electrician (often a team of 2 people)
- Level 2 ASP connects the panels to the grid.
- Occasional maintenance / warranty calls etc (requires office staff and possibility of electrician at later date)
- Research and development jobs.

There are not direct figures for the number of jobs created by the Scheme. The Taskforce, in providing advice for the Scheme design, identified a study by the European Photovoltaic Industry Association and Greenpeace, which "estimated 49 jobs are created per MW of solar PV installed. These jobs are in the areas of: production (10 jobs per MW); installation (33 jobs per MW); wholesaling and indirect supply (3-4 jobs per MW) and research (1-2 jobs per MW)."²⁰ Given connected capacity installed in NSW at 30 June 2010 now exceeds 50 MW, using the above jobs multiplier would mean a rough estimate of as many as 2,500 jobs may have been created as a result of the Scheme.

²⁰ NSW feed-in-tariff Taskforce, *NSW Solar feed-in tariff report to Ministers*, February 2009, p.31

Submissions from solar panel installers such as Solarpro say the Scheme is a way to develop jobs in an industry in its early stages, with growth potential to be an industry that is an important part of Australia's energy future.²¹

A May 2010 report²² by the International Energy Agency (IEA) estimated the number of PV-related labour places in Australia in 2009 to be 5,300. These are across the fields of research & development, manufacturing, distribution, installation, utilities and government.

Of course, not all of these jobs would be in NSW. For example, most production of solar PV systems occurs overseas. However, feed-in tariffs are regarded internationally as providing more attractive circumstances for local manufacturing due to the improved certainty of market demand.²³

Silex Solar's PV panel production capacity at its manufacturing plant in Sydney Olympic Park is set to increase significantly. The increase in production capacity will occur in two stages with the first being implemented in late 2010 and the final stage to be completed by mid 2011. This will increase production capacity of solar panels from approximately 13 MW per annum to 20 MW and finally 35 MW.²⁴

Feed-in tariffs are also regarded as drivers of research jobs – because they can lead to better technological efficiency and competitiveness for the technology. New research and development jobs for solar panels are foreshadowed for NSW, with Silex Solar, University of NSW and Suntech Power joining together to increase solar cell efficiency from 17% to 20% by 2012.²⁵

“Many new jobs will be created in the renewable energy sector during the proposed seven year term of the Solar Bonus Scheme.”

“The NSW Government's new Solar Bonus Scheme for solar panels will help ensure this demand will grow strongly over the coming years.”²⁶

A Modern Solar media release in November 2009 said,

“It will also promote new investment in the green energy sector by Australian businesses and generate thousands more jobs in NSW. At Modern Solar, we expect to double our workforce from 200 to about 400 in NSW alone as a result of the introduction of a GFIT (Gross feed-in-tariff).”²⁷

²¹ Solarpro submission

²² International Energy Agency, 2010, National Survey Report of PV Power Applications in Australia 2009

²³ Mendonca. M, Jacobs. D & Sovacool B. 2010, *Powering the Green Economy: The feed-in tariff handbook* TJ International

²⁴ Silex Solar “*Silex Solar to Increase PV Panel Production Capacity*” Media Release 5 July 2010

²⁵ Silex Solar “*Silex Solar to Increase PV Panel Production Capacity*” Media Release 5 July 2010

²⁶ Silex Solar “*Silex Solar Commends NSW Government Decision to Implement Gross Feed-In Tariff for Solar Panels*” Media Release 11 November 2009

²⁷ Modern Solar “*Nathan Rees shines on Solar Power*” Media Release 10 November 2009

Employment has also been supported in installation companies, for example Harvey Norman Solar, has “increased our employees here from 6 to nearly 28 personnel in six months in PV alone since the introduction of the SBS.”²⁸

With around 50,200 installations of solar PV systems across NSW now connected, this has provided work opportunities for Accredited Service Providers, who conduct work on the disconnection, reconnection and metering aspects of solar PV installations. As at 30 June 2010, there were 1,117 entities with this accreditation under the NSW Government’s Accredited Service Provider Scheme.²⁹

A number of businesses have developed innovative business models to increase the uptake of PV systems. For example the Commonwealth Bank has announced an alliance with Lend Lease Solar to use the Bank’s network of over a million home loan customers as part of a project to offer premium solar electricity systems to Australian households. The Bank’s retail customers will have the option of financing the purchase of a solar energy system through their existing home loan by redrawing or topping up the balance.

However, the Solar Bonus Scheme has developed jobs only in the small scale renewable energy sector by assisting small scale renewable energy generation to compete with non-renewable energy generation. The Scheme pays 60 cents per kilowatt hour for electricity generated by small scale PV systems. This compares with around 6-7 cents per megawatt hour for wholesale electricity (coal and gas) and just under a further 2 cents for renewable energy target costs as estimated by IPART in the 2010-2013 regulated retail electricity price determination.

As discussed above, the Commonwealth’s Renewable Energy Target scheme also supports small scale renewable energy generation.

Submissions from two wind farm companies indicate that the Solar Bonus Scheme skews investment towards small scale generation at the expense of large scale investment. The ‘crowding out’ may be shifting investment and jobs between small and large scale PV systems rather than supporting an overall increase in renewable energy generation. RES Australia in its submission noted that:

“... large-scale renewable projects which would have actually impacted on the long-term generation mix of Australia have been deferred or abandoned.”

They add that,

“due to the detrimental impact of the Scheme on large-scale renewable ... the Scheme has resulted in a reduction of jobs across other renewable energy sectors.”

The changes to the Renewable Energy Target from 1 January 2011 into large scale and small scale components may alleviate some of this impact.

²⁸ Harvey Norman Commercial Solar Systems submission

²⁹ NSW Fair Trading

6.4 Impact of Scheme costs on energy consumers

AECOM has forecast that the Solar Bonus Scheme (in its current form) will deliver nearly 1,000 MW of capacity by the end of the Scheme on 31 December 2016, at a total cost of approximately \$2.7 billion (net present value) of tariff payments.

Under the National Electricity Rules, the tariff payments made under the Scheme are recovered by distributors from energy consumers through their electricity bills, unless an alternative funding source is provided.

Some submissions to the review have questioned the affordability and equity of the Solar Bonus Scheme, particularly for low-income earners who are least able to afford the up-front costs associated with purchasing a solar PV generator and least able to afford to pay higher electricity bills that result from others' participation in the Scheme. The Public Interest Advocacy Centre says:

“PIAC has continuing concerns about the equity of the NSW Solar Bonus Scheme because of the way the scheme is being funded. At present the Feed in Tariff (FiT) is funded through a levy on all electricity customers in NSW. This funding structure produces a transfer of wealth from those outside of the scheme to those participating in it. As PIAC stated in a previous submission: “This is of concern when the transfer is from low-income households excluded not through choice but through a lack of financial ability to participate in the scheme.”³⁰

Large customers also raise equity issues, of another sort. In order to contain Scheme costs, large customers are not eligible for the Scheme, however, the costs of the Scheme may be passed through on the electricity bills of all energy consumers. The Shopping Centre Council of Australia refers to this inequity:

“The current cap is discriminatory and inequitable. To suggest that 'large' customers must assist in funding the scheme, whilst denying them a right to participate in the scheme, is absurd.”³¹

The strong participation rates in the Scheme mean that the costs associated with the Scheme are higher than they would have been if up-take had been slower. The NSW Solar Feed-in Tariff Taskforce Report undertook scenario analysis using “high” and “low” uptake rates to estimate the costs of the Scheme. The high uptake rate used to estimate the costs of the current Scheme design was equal to 72,900 participants over the life of the Scheme. The fall in capital costs has been dramatic, and therefore led to much larger uptake rates under the Solar Bonus Scheme than under either the low or high uptake scenarios used in the Taskforce's analysis. The Taskforce estimated under the current scheme design the total scheme costs would be \$355 million (Net Present Value in \$2009). This compares with AECOM modelling that scheme costs being \$2.7b (Net Present Value \$2010).

The tariff payments associated with the Scheme have not yet been passed through to energy consumers. Due to the timing of regulatory processes, the tariff payments of the Solar Bonus Scheme will first be passed through to energy consumers from 1 July 2011.

³⁰ Public Interest Advocacy Centre (PIAC) submission

³¹ Shopping Centre Council of Australia submission

By May 2011, the NSW distributors are required to submit their annual pricing proposals for network charges to the Australian Energy Regulator for approval. These pricing proposals are expected to include the costs of tariff payments under the Scheme from 1 January 2010.

NSW electricity consumers are facing an average 11% rise in regulated retail electricity prices from 1 July 2011 and 8% from 1 July 2012. Costs associated with the Solar Bonus Scheme will be additional to those price rises. Some NSW households and businesses have limited capacity to absorb further electricity price rises due to the Solar Bonus Scheme, given the extent of recent and future price rises.

Higher electricity bills due to the Solar Bonus Scheme may threaten the achievement of the Scheme's objectives, that is, the perception of the benefits of the Scheme may be eroded by negativity associated with the Scheme's costs.

The Scheme needs to be urgently amended to reduce the tariff rate so as to keep costs down, without creating unfairness for customers who have already entered into binding arrangements to purchase renewable energy generators.

Consideration should also be given to finding an alternative funding source for locked-in costs of the Solar Bonus Scheme (that is, those costs associated with tariff payments to existing customers) so that NSW consumers, particularly vulnerable customers, are not disadvantaged by further electricity price rises.

7 Options for the Scheme

Given that both submissions and the above assessment of the scheme show that the scheme has generated substantial interest in the small scale PV systems and supported strong uptake, several other options for scheme design have been considered. These options have also been considered in the context of minimising the cost impacts of the Scheme on customers. Key options include:

1. Reducing the tariff or closing the Scheme
2. Changing the tariff type to net
3. Changing the Scheme's length
4. Imposing a Scheme cap
5. Expanding the Scheme to include large scale systems

In considering these options, a key concern which has been raised in a number of submissions is equity, particularly in regards to the costs of the Scheme, and the impact of the Scheme on low income households. The review has also been keen to ensure that cost effective environmental outcomes are achieved. A number of stakeholders also requested consistency with other feed-in tariff schemes as well as the Council of Australian Governments (COAG) feed-in tariff principles.

7.1 Reducing the tariff or closing the Scheme

In designing the Scheme, the NSW Government was very concerned to get the balance right so that consumers would not be burdened with excessive costs. The costs of the Scheme are recouped across all electricity customers. This is typical of feed-in tariff designs in other Australian jurisdictions and around the world.

It is prudent to consider what adjustments could be made to the Scheme in order to contain costs, particularly in light of the changes seen in the market. It is not uncommon for feed-in tariff schemes to be reviewed yearly in their early life. Among other things, there is often a need for re-calibrating the tariff as the scheme matures. Reductions in system capital costs to date, forecast future reductions, and additional retailer offerings of 6-8 cents all indicate that the current tariff rate is no longer warranted.

The NSW Solar Bonus Scheme appears to be following a similar pattern to the German feed-in tariff scheme. In Germany, the share of renewable energy grew substantially, and the scheme was amended to avoid windfall profits and control costs for the final consumer.

While ending the NSW Solar Bonus Scheme early would have some merit in containing Scheme costs, there are a variety of reasons for which the Review has not progressed with this option. Ending the Scheme (effectively capping capacity) earlier than planned could create a boom to bust scenario. However, allowing the Scheme to continue in its current format would create unsupportable Scheme costs.

To minimise change but contain Scheme costs the Review examined the cost implications of two lower tariff options (20 cents and 30 cents per kilowatt hour). In considering these options, it was also noted that retailers are offering additional payments to customers of between 6 to 8 cents per kilowatt hour on top of the Scheme payments.

Reducing the tariff level was seen as still providing incentives for the uptake of small scale PV systems while providing a more reasonable payback period and substantially reducing Scheme costs.

This Review also notes that some stakeholders have also been raising concerns about the expected increase in electricity bills associated with the Commonwealth's Small-scale Renewable Energy Scheme component of the Mandatory Renewable Energy Target.

Modelling on different tariff options was undertaken on behalf of Industry & Investment NSW by AECOM. Summary tables showing the modelling results are available in Appendix C.

The modelling shows that continuing with the gross 60 cent tariff ('business as usual') is forecast to result in an installed capacity of 986 MW at the end of 2016. The total forecast tariff payments associated with this forecast capacity are \$2.7 billion (net present value) over the life of the Scheme.

Modelling closure of the Scheme to new applicants after 31 December 2010 shows that almost 200 MW and around \$1b (NPV) in tariff payments is already 'locked in', due to existing customers who the Government has said will not be affected by this Review. In other words, around one-third of the forecast Scheme tariff payments under business as usual 60 cents to 2016 scenario are already incurred, because these will be owing to existing scheme participants, or people who are sufficiently far into their system purchase and installation that the application to connect to the grid has been submitted.

On modelling the option of reducing the gross tariff to 30 cents per kilowatt hour it was found that the 30 cent tariff is forecast to reduce payments by around \$1 billion (NPV) compared with business as usual. A tariff of 20 cents per kilowatt hour is forecast to reduce payments by around \$1.3b (NPV). Capacity deployed under these less generous tariff scenarios is forecast to be only slightly lower compared with business as usual, with both scenarios expected to still lead to the installation of around 800 MW by the Scheme end. That is, while the 30 cent tariff represents a 50% reduction, additional capacity is forecast to be only 12% lower than is forecast under the current scheme. The 20 cent tariff is a 67% reduction, with additional capacity forecast to reduce by 19% compared with business as usual.

Given the substantially lower Scheme costs that can be achieved by reducing the tariff levels, the Review recommends that the NSW Government should consider lowering the tariff rate. In deciding on an appropriate tariff level, the NSW Government should also take into account the large fall in PV system costs, the extra tariff payments offered by some retailers as well as incentives provided under the Commonwealth's Small Renewable Energy Target Scheme component of the Mandatory Renewable Energy Target.

7.2 Change to a 'net' tariff

A net feed in tariff is paid to the amount of electricity generated that is in excess of on-site usage. Net schemes require lower total payments and also encourage energy efficiency. The value of a net scheme to a system owner will rise over time as electricity prices rise, as this increases the value of the PV generation the owner consumes.

AECOM completed modelling on a number of net tariff rates for consideration as part of the Review.

There was overwhelming public support for gross metering in submissions received. However, the current Scheme design allows customers to choose the type of meter they prefer in recognition that changing to a gross meter is prohibitively expensive for some customers.

A regulatory amendment was made in mid-2010 extending the existing transition date for net metering under the Scheme. This enables customers with net meters to receive the 60 cent feed-in tariff on a net basis for a further year, until 1 July 2011. Customers who have gross meters are not affected by this regulatory change.

A legislative change is required in order to deliver on the NSW Government's policy intention for both net and gross metering to be accepted for the life of the Scheme. The NSW Government has stated previously that it proposes to make arrangements for this prior to 1 July 2011.

7.3 Change the Scheme length

Some submissions called for a longer feed-in tariff scheme. Some other Australian jurisdictions have 15 or 20 year schemes. The submission from CSR Limited calls for a 30 year Scheme, citing the need to provide a nurturing environment for emerging technologies in the renewable energy industry.³²

However, extending the scheme length would increase the overall costs of the Scheme. Such associated costs were considered too high to warrant further investigation. Furthermore, the substantial fall in the payback period following the sharp drop in system costs indicated that no further support was required to encourage system uptake. There is also substantial uncertainty in forecasting for longer periods of time.

7.4 Imposing a Scheme cap

Another option for containing Scheme costs is to set a cap on the total eligible capacity, for example the total number of systems installed or the total installed megawatt capacity. Setting a cap would also provide transparency to installers of PV systems as well as customers as they would clearly know at what point the Scheme will end.

A cap on the installed megawatt capacity provides more certainty around the Scheme's costs than using a cap of total number of systems as system size can vary. Combined with the system size limit, a capacity cap still provides opportunity for a large number of households and small business to participate in the Scheme.

The level of the cap can have a significant impact on market certainty and development. If the cap is too low, then this may discourage further uptake of PV systems as potential Scheme participants expect that they will not be eligible and therefore do not make investments in a PV system. Furthermore, it could create a 'boom-bust' scenario. However, given the significant financial support from other Government incentive schemes such a scenario should be limited.

³² CSR Limited submission

If a scheme cap is adopted, information on actual connections and applications to connect should be regularly reported so that individuals intending to participate in the Scheme can make informed decisions about the purchase of their PV system. In particular, it would be expected that individuals would like to know whether or not they would be eligible for the Scheme.

Setting a cap adds administrative complexity to the Scheme as it requires regular monitoring as well as communication to stakeholders.

7.5 Expanding the Scheme to include large scale systems

A number of submissions to the Solar Bonus Review have argued that larger systems and/or large electricity customers should be eligible for the Scheme. For example,

“Woolworths has already constructed distribution centres at Laverton and Erskine Park with reinforced roof structures and inverter rooms that can accommodate a solar PV array of 1 MW installed generation capacity. Woolworths has not yet been able to make further investment towards making these facilities operational due to limitations within current FiT regimes.” ...

“Woolworths would therefore support amendments being made to the Solar Bonus scheme so that larger business, such as Woolworths, are supported in their efforts to invest in large scale renewable energy generation facilities. More specifically, Woolworths would support the removal of the existing 160MWhpa site consumption cap and extending the duration of the scheme (beyond the current seven years) to a fixed period of at least 20 years to enable businesses to achieve an acceptable financial return on their investment. It is also imperative that the FiT rate apply to total (gross) generation and not net export to the grid. One approach would be to introduce specific FiT arrangements for larger scale installations with the FiT rate increasing with installed capacity on a sliding scale basis. Finally, and crucially, the FiT adopted must also support a reasonable return on investment.”³³

By allowing larger systems to be included in the Scheme, customers with access to large roof areas could participate and the Scheme may be able to generate better economies of scale from such installations.

However, submissions from the network businesses raised concerns about the impacts of large scale systems and the substantial increase in system numbers on the integrity of the network. Some instances were noted where customers wishing to install a PV system were required to pay network augmentation costs as the network could not support the increased flow of electricity.

Country Energy in its submission highlights that there are “...potential network benefits that small generation can confer on the network – particularly in times of contribution to peak demand reduction and the deferral of investment.”

³³ Woolworths submission

However, Country Energy notes that these are:

“... very much site and time specific” and that the development of commercial frameworks to facilitate the connection of low-carbon generation systems need to “encourage prudent and efficient levels of network investment.”³⁴

The Review noted that the Government's preference is for a scheme that stimulates a large number of customers participating and that the Government is very concerned to get the balance right so that consumers are not burdened with excessive costs.

The Review also noted that there are a range of policy measures in place for large scale and other technologies (see Appendix B for more information about these). Other jurisdictions have similar limitations on the type of eligible technologies, indeed some jurisdictions do not allow wind turbines.

In this context adjusting the eligible system size is probably not appropriate. However, the review notes that there may be opportunities at site specific locations within the networks for the development of frameworks which would support renewable generation while maintaining the integrity of the grid. Preferred locations could potentially be identified by the network businesses, in locations to ensure the systems wouldn't create network augmentation costs and voltage variations, and may be most beneficial to the system.

7.6 Eligibility criteria

Stakeholders requested the Government incorporate other measures to support greater or easier access to the Scheme, for example for customers in strata title premises, with pension arrangements and for those wanting to navigate landlord ownership of premises with tenants holding the electricity account. There were also calls to make other renewable technologies eligible under the scheme. It should be noted that some of these matters are not the domain of I&I NSW, for example pension payments are a Commonwealth Government matter. As well, some matters are not about exclusion from the Scheme, but rather individuals needing to negotiate suitable outcomes based on their individual circumstances (eg tenants and landlords).

There currently appears to be a lack of understanding about the ability of owners corporations to participate in the Scheme. As an example, where an owners corporation purchases electricity under its own separate contract and is a small customer, the corporation can install a system on the common property and participate in the scheme, with feed-in-tariff payments being used to reduce electricity costs (in common areas), or excess payments being deposited to the Administration Fund. Owners and tenants can benefit through improved common amenities and/or reduced levies. Thus residents and landlords could participate in the Scheme via their owners' corporation.

³⁴ Country Energy submission

8 Recommendations

The major finding of this Review by Industry & Investment NSW is that the Scheme has been extremely successful in driving increased small-scale renewable energy generation in NSW. AECOM modelling forecasts installed capacity under the Scheme to grow from around 25 MW at the start of the Scheme to nearly 1,000 MW by the end of the Scheme (end 2016).

Benefits to the renewable energy industry and jobs growth are reported to be mixed. On the one hand, there is strong growth in installation jobs. On the other hand, some large generation companies, including those with renewable energy portfolios, have raised concerns that amount of new generation when combined with the Commonwealth's renewable energy multiplier for small generation has delayed investment in large-scale renewable projects.

However, the Scheme is very costly and therefore the Review considers that action should be taken to reduce the Scheme's costs while continuing to support households and small businesses taking action against climate change.

In particular, the Review recommends the NSW Government:

1. considers significantly lowering the tariff rate so as to balance the Scheme costs against the objective of continuing to provide support for industry and households wishing to take action against climate change.
2. considers imposing a Scheme cap to limit Scheme costs.
3. allow customers with net metering transitional arrangements to continue to be able to participate in the Scheme beyond the existing transition date.
4. review the Scheme in a further two years.
5. establish a working group to investigate opportunities for installing mid scale PV systems in select network areas as an alternative to network expansion.
6. strengthen compliance arrangements and minimising opportunities for customers to receive more benefits under the Scheme than they are entitled
7. develop a suitable compliance and safety regime taking into account the apparent nature and level of risk.

Appendix A: Background information on feed-in tariffs

Purpose of feed in tariffs

High capital costs and very long payback times associated with purchasing and installing renewable energy generators, particularly via solar photovoltaic panels, have historically been a significant barrier to their ability to compete with non-renewables.

Well-designed feed-in tariffs are recognised for their ability to support the community in its desire to further develop renewable energy technologies and deploy them in the economy efficiently.

The purpose of a feed-in tariff is to encourage renewable energy generation by small distributed generators, assist in job creation and improve reliability of energy supply, by providing fair value to these small renewable energy generators for feeding into the grid.

A number of other jurisdictions around Australia also have feed-in tariffs.

Table 6: Features of feed-in tariff schemes around Australia

Jurisdiction	Length	Type	Rate per kWh	Cap
NSW	End 2016	Gross	60 cents	n/a
ACT	20yrs from connection	Gross	50.5 cents (09/10) 45.7 cents (10/11 2yrs minimum)	240MW (proposed 15MW micro, 15MW medium, 210MW large)
Vic	End 2024	Net	60 cents (equivalent to 39 cents gross)	100 MW or \$10/yr on bills
SA	End 2028	Net	44 cents (now) (equivalent to 28.6 cents gross) 54 cents (proposed) (equivalent to 35.1 cents gross)	60MW (proposed)
Qld	End 2028	Net	44 cents (equivalent to 28.6 cents gross)	n/a
WA	10yrs from connection	Net	40 cents (equivalent to 26 cents gross)	n/a
Tas (proposed)	TBC	Net	TBC	TBC

Note: ACT Feed in tariff options paper (2009, notes that on average net schemes are about 65% as generous as gross schemes.

The Council of Australian Governments (COAG) has agreed a set of National Principles on which to provide feed-in tariffs and a number of jurisdictions now have their own schemes. These principles set out that a feed-in tariff scheme should be consistent with other COAG agreements and that the Ministerial Council on Energy should continue to advance fair treatment of small renewables in the market. The

principles also set out specifications for what should be considered in setting the premium tariff rate. In this regard, schemes should:

- be transitional measures with clearly defined limits and review thresholds;
- undertake analysis to establish the benefits and costs against the objectives;
- give explicit consideration to compensation from public funds or specific levies; and
- not impose a disproportionate burden on other energy consumers without small renewable generation.

Further detail about the NSW Feed-in tariff

The NSW feed-in tariff commenced on 1 January 2010 and will run for seven years to December 2016. The NSW Government's Solar Bonus Scheme (the Scheme) provides support to people who produce renewable energy through eligible roof-top solar photovoltaic (PV) systems or wind turbines connected to the grid. That is, they have a right to export electricity to the grid and market participants are required to provide payment for that electricity at a rate of 60 cents per kilowatt hour. The costs of the Scheme are distributed among all electricity consumers, which is a common cost-recovery mechanism internationally.

To be eligible for the Scheme, customers must be classified as a "small retail customer" (ie have an annual electricity consumption of up to 160 megawatt hours) and install a solar PV panels or wind turbine system with an inverter up to 10 kilowatts in capacity. A one system per customer limit applies.

The Scheme offers a gross feed in tariff where the consumer is paid for all the electricity their system generates and feeds into the grid. A minority of customers have net meters, and are paid the 60 cents per kilowatt hour on the net amount of electricity exported to the grid (i.e. after their household consumption is deducted).

The Scheme's specific legislated objectives are to:

- Encourage and support those who want to generate renewable energy as a response to climate change.
- Develop jobs in the renewable energy sector by assisting renewable energy generation to compete with non-renewable energy generation.
- Increase public exposure to renewable energy technology to encourage the whole community to respond to climate change.

The NSW feed-in tariff was developed with advice from the NSW Feed-in Tariff Taskforce, and with the above principles in mind. The Taskforce comprised of four members including the Department of Water and Energy, Department of Environment and Climate Change, Department of Premier and Cabinet and NSW Treasury.

The Taskforce made the following recommendations for the design of the Scheme:

- The Scheme should run for a set period
- Costs of the Scheme should be recovered from electricity customers via an electricity distributor levy
- Payments under the Scheme should be made to solar PV system owners via electricity retailers

- Eligibility for the Scheme be limited to those customers with an annual electricity usage of less than 160 megawatt hours (MWh), whose system size is 10 kilowatts (kW) or less
- Solar PV will be included in the Scheme and micro wind be considered for inclusion over the next three months
- The Scheme should be reviewed in 2012, or when installed Scheme capacity reaches 50 megawatts (MW). (Any changes that occur as a result of a review should only impact customers joining the Scheme after the review)

The Taskforce also recommended that the tariff type (gross or net), the tariff rate, and the duration of the Scheme be considered in unison with these recommendations.

The Taskforce received approximately 200 submissions on the design of the scheme and held a stakeholder forum in early 2009. Micro-wind systems were subsequently included as an additional eligible renewable energy technology, following another consultation process.

Appendix B: Other major renewable energy initiative

GREENPOWER	<p>GreenPower is a Government accreditation that allows electricity customers to buy energy from renewable energy sources through their energy provider. The energy provider in turn purchases energy that has been generated from sources including solar, mini hydro, wind, biomass, geothermal and wave/tidal power.</p> <p>For more information about GreenPower please visit: http://www.accredited_renewable_energy.gov.au/home.aspx</p>
SOLAR FLAGSHIPS PROGRAM	<p>The Solar Flagships Fund is a commitment of \$1.5 billion, harnessing solar thermal and photovoltaic technologies and is in place to support the construction of up to four large scale, grid-connected solar power stations in Australia.</p> <p>Part of the Australian Government's \$5.1 billion expanded Clean Energy Initiative (CEI), the primary objective of the Solar Flagships program is to provide the foundation for large scale, grid-connected, solar power to play a significant role in Australia's electricity supply and to operate within a competitive electricity market. The Government's aim is to establish up to 1,000 megawatts of solar power generation capacity.</p> <p>The program will support commercially proven solar technologies, with project selection to occur over two selection rounds to allow scope for emerging technologies on the verge of being proven commercially in the near future.</p> <p>Commercially proven projects will be taken to mean those projects that have been demonstrated at an operational level of at least 30MW for twelve months or with a replicable module below 30 MW, with backing from financial and construction firms for scale-up plans.</p> <p>For more information about the Solar Flagships Program please visit: http://www.ret.gov.au/energy/energy%20programs/cei/sfp/Pages/sfp.aspx</p>
GREEN PRECINCTS FUND	<p>Announced in the 2008-2009 Federal Budget and with funding of \$15 million over 4 years, the Green Precincts Fund supports high-profile demonstration projects that deliver water and energy savings while educating the community about water and energy efficiency.</p> <p>For more information on the Green Precincts Fund please visit: http://www.environment.gov.au/water/publications/urban/green-precincts-factsheet.html</p>
RENEWABLE ENERGY CERTIFICATES (RECS)	<p>Owners of Small Generation Units (SGUs) such as solar photovoltaic generators can create and trade Renewable Energy Certificates (RECs), either by creating RECs themselves online (www.rec-registry.gov.au) or by assigning the right to create RECs to an Agent in return for financial benefit.</p> <p>RECs can only be created by eligible accredited renewable energy generators and are equivalent to one megawatt hour of renewable energy.</p> <p>For more information about RECs please visit: http://www.orer.gov.au/publications/photovoltaic.html</p>

Source: Websites for Green Power, The Department of Resources, Energy and Tourism, The Department of the Environment, Water, Heritage and the Arts, Office of the Renewable Energy Regulator (ORER).

Appendix C: Results of Modelling - Main Scenarios

Source for all below tables: AECOM Solar Bonus Scheme: Forecast NSW PV Capacity and Tariff Payments October 2010.

Note for all below tables: First and last periods shown are not full year periods and represent the initial and final six months of the Scheme.

Table D- 1: \$0.60 to December 2016

Year Ending	Installed Eligible Capacity (MW at Year End)	Eligible Generation (GWh)	Annual Scheme Payments (nominal)	Annual Scheme Payments (2010\$)	Cumulative Scheme Payments (nominal)	Cumulative Net Present Value (7% real)
Jun-10	52	15	\$9 m	\$9 m	\$9 m	\$9 m
Jun-11	241	266	\$159 m	\$156 m	\$168 m	\$157 m
Jun-12	412	588	\$353 m	\$338 m	\$521 m	\$456 m
Jun-13	565	879	\$527 m	\$493 m	\$1,048 m	\$864 m
Jun-14	700	1,137	\$682 m	\$622 m	\$1,731 m	\$1,347 m
Jun-15	818	1,362	\$817 m	\$727 m	\$2,548 m	\$1,873 m
Jun-16	918	1,559	\$936 m	\$812 m	\$3,484 m	\$2,424 m
Jun-17	960	842	\$505 m	\$430 m	\$3,989 m	\$2,701 m

Table D- 2: \$0.30 Gross scheme for new applicants after 31 Dec 2010 to December 2016

Year Ending	Installed Eligible Capacity (MW at Year End)	Eligible Generation (GWh)	Annual Scheme Payments (nominal)	Annual Scheme Payments (2010\$)	Cumulative Scheme Payments (nominal)	Cumulative Net Present Value (7% real)
Jun-10	52	15	\$9 m	\$9 m	\$9 m	\$9 m
Jun-11	237	263	\$152 m	\$149 m	\$161 m	\$150 m
Jun-12	375	549	\$270 m	\$258 m	\$431 m	\$380 m
Jun-13	502	788	\$342 m	\$319 m	\$773 m	\$645 m
Jun-14	616	1,004	\$406 m	\$371 m	\$1,180 m	\$932 m
Jun-15	717	1,196	\$464 m	\$413 m	\$1,643 m	\$1,231 m
Jun-16	806	1,368	\$516 m	\$447 m	\$2,159 m	\$1,534 m
Jun-17	843	739	\$274 m	\$234 m	\$2,433 m	\$1,685 m

Table D- 3: \$0.20 Gross Scheme for new applicants after 31 Dec 2010 to December 2016

Year Ending	Installed Eligible Capacity (MW at Year End)	Eligible Generation (GWh)	Annual Scheme Payments (nominal)	Annual Scheme Payments (2010\$)	Cumulative Scheme Payments (nominal)	Cumulative Net Present Value (7% real)
Jun-10	52	15	\$9 m	\$9 m	\$9 m	\$9 m
Jun-11	234	262	\$150 m	\$147 m	\$159 m	\$148 m
Jun-12	354	527	\$246 m	\$235 m	\$405 m	\$357 m
Jun-13	465	736	\$287 m	\$268 m	\$692 m	\$580 m
Jun-14	567	927	\$326 m	\$297 m	\$1,018 m	\$810 m
Jun-15	658	1,099	\$360 m	\$320 m	\$1,378 m	\$1,042 m
Jun-16	741	1,257	\$391 m	\$340 m	\$1,769 m	\$1,273 m
Jun-17	777	680	\$206 m	\$176 m	\$1,975 m	\$1,386 m

Table D- 4: No new applicants after 31 December 2010

Year Ending	Installed Eligible Capacity (MW at Year End)	Eligible Generation (GWh)	Annual Scheme Payments (nominal)	Annual Scheme Payments (2010\$)	Cumulative Scheme Payments (nominal)	Cumulative Net Present Value (7% real)
Jun-10	52	15	\$9 m	\$9 m	\$9 m	\$9 m
Jun-11	195	245	\$147 m	\$144 m	\$156 m	\$145 m
Jun-12	195	350	\$210 m	\$201 m	\$366 m	\$324 m
Jun-13	195	350	\$210 m	\$196 m	\$576 m	\$487 m
Jun-14	195	350	\$210 m	\$192 m	\$787 m	\$636 m
Jun-15	195	350	\$210 m	\$187 m	\$997 m	\$772 m
Jun-16	195	350	\$210 m	\$182 m	\$1,207 m	\$895 m
Jun-17	195	175	\$105 m	\$90 m	\$1,312 m	\$953 m