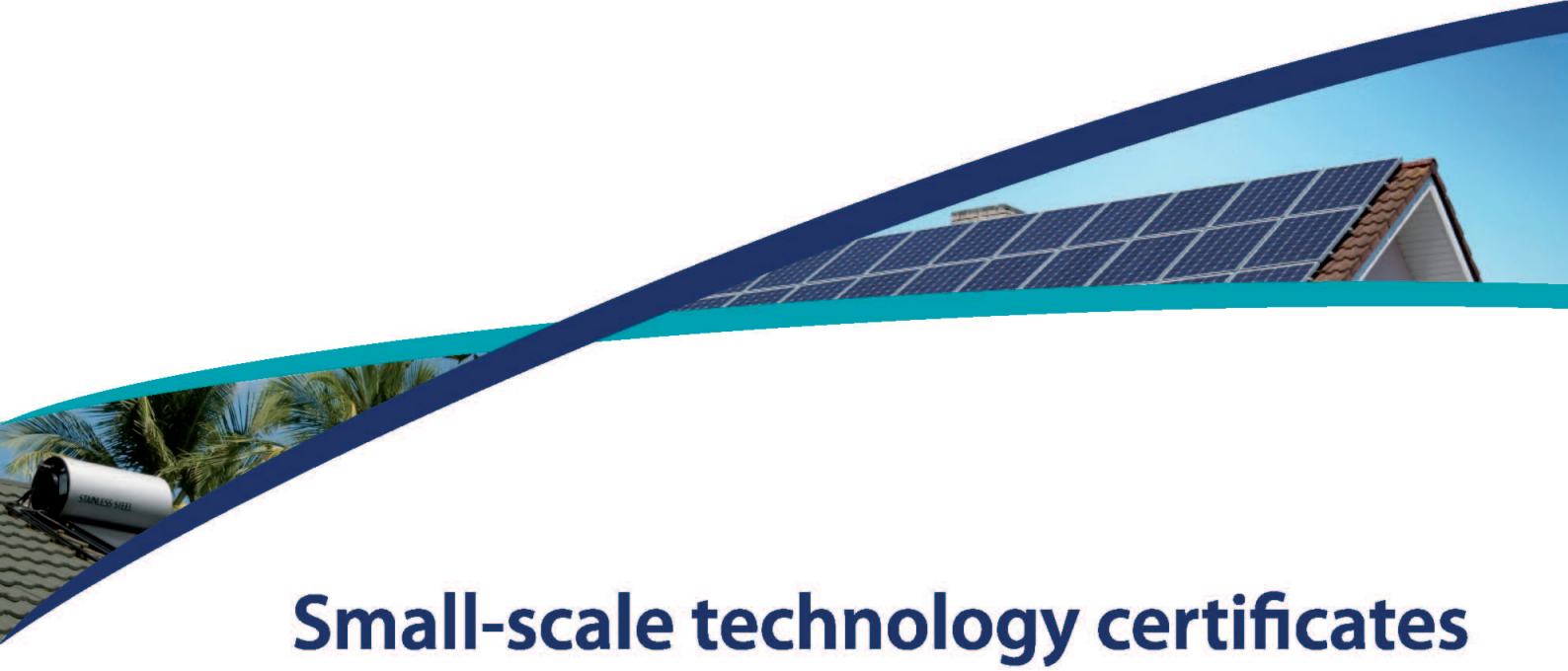

Small-scale technology certificates data modelling for 2012 to 2014

Report to the Office of the Renewable Energy Regulator

December 2011

Green Energy Markets

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Attachments

Executive Summary

Green Energy Markets Pty Ltd (GEM) has been engaged by the Office of the Renewable Energy Regulator (ORER) to provide a forward estimate of the Small-scale technology certificates (STCs) likely to be created during the 2012 calendar year, and for the 2013 and 2014 calendar years.

Forward estimates have been developed on the basis that the solar credits multiplier for eligible SGUs is reduce from 3 times to 2 times on 1 July 2012, with no multiplier from 1 July 2013. We have also assumed that state based feed-in tariff arrangements that are currently in place are maintained through the forecast period.

In developing our projections, GEM and its sub-contractor SunWiz has utilised its existing models and databases, analysed registry data provided by the ORER and interviewed a range of industry participants.

Our forward estimates have been developed with regard to considering the different sub-sectors for the solar PV and SWH markets. These sub-sectors comprise:

- SGU PV – Grid connect residential market
- SGU PV – Grid connect non-residential (commercial market)
- SGU PV – Off-grid market
- SWH – New dwelling market
- SWH – Replacement or existing dwelling market

The drivers for each of these markets is different and while the ORER data provides useful detailed information for us to be able to separately identify and analyse the level of installations on a historical basis it is of limited use in developing projections as the future market and commercial drivers are so different over the 2012 to 2014 period compared to the recent past.

The biggest single sector and perhaps the most problematical one is the residential grid-connect PV market. This has been the sector that has been historically the most difficult to assess and it is this sector that has led to the blow-out in the level of STCs created in 2011.

We expect that a total of 314,000 residential grid-connect systems will be installed in 2011 and that this market will then reduce dramatically to 185,000 systems in 2012, a reduction of 41%. We expect the non-residential (commercial) grid-connect PV market to grow from 45.6 MW in 2011 to 60 MW in 2012. Overall we expect that 770 MW of PV will be installed in 2011 and then contract to 457 MW in 2012.

We expect that the SWH market will recover over the next few years primarily driven by the regulatory phase out of electric water heaters. We expect that around 114,000 SWH systems installed in 2011 will create STCs and that this will then grow by 21% to reach nearly 138,000 systems by 2012.

We expect that a total of 22.7 million STCs will be created for SGU and SWH system installations in 2011.

There is quite a bit of uncertainty around the estimates in particular around the following factors:

- Variability in international system prices and exchange rates
- Extent of the contraction or reduction in the residential PV market
- Extent of the growth in the commercial PV market
- Progress of the implementation of regulatory electric water heater phase out

We believe that the lower bound estimate for STCs created for 2012 is in the order of 20.7 million STCs and the upper bound estimate is 26.1 million STCs.

STCs created by installation year are set out in the table below:

Installation year	2010	2011	2012	2013	2014
SGU - PV	26,073	52,213	18,554	12,856	9,344
SGU - Wind	14	6	1	1	1
SWH	4,262	3,439	4,175	4,916	5,337
	30,349	**55,657**	**22,730**	**17,772**	**14,683**
Upper Bound			**26,139**	**20,438**	**16,885**
Lower Bound			**20,663**	**16,157**	**13,348**

1. Project Scope

Green Energy Markets Pty Ltd (GEM) has been engaged by the Office of the Renewable Energy Regulator (ORER) to provide a forward estimate of the Small-scale technology certificates (STCs) likely to be created during the 2012 calendar year, and for the 2013 and 2014 calendar years.

Certificates for eligible SWH and small-scale solar PV, wind and hydro systems installed on or after 1 January 2011 will be classified as small-scale technology certificates (STCs) unless they meet the transitional arrangements set out in the amended legislation and regulations. Estimates of the amount of certificates that would otherwise create STCs and will be subject to these transitional arrangements are outside the scope of this report.

Based on its in-depth knowledge of the renewable energy industry and using all the factors that impact the uptake of SWH, HPWH, and small scale PVs, wind and hydro-electricity systems, GEM is to provide a range of qualified estimation/projections to reflect the likely creation of STCs from eligible installations for the calendar year 1 January 2012 to 31 December 2012, and the following two calendar years 2013 and 2014.

GEM may be asked to review their 2012, 2013 and 2014 estimates in January 2012. The details and outputs of the reports will influence and inform the Regulator in advising the Minister in setting the 2012 binding STP estimates. This will assist the Regulator in publishing the 2013 and 2014 non-binding estimates by 31 March 2012.

Data input into the model to estimate the number of STCs should include (but not be limited to):

- Eligible system REC/STC creation for the last two years. Showing the historical trend in small-scale technology uptake. *Data to be provided by the ORER.*
- Impact of any potential changes to the solar credits multiplier and/or the 1.5kw PV threshold to which the multiplier is applied.
- State and Commonwealth incentive schemes and any potential changes to these schemes over the timeframe, i.e. impact of State elections.
- June 2010 RET legislative changes to eligibility.
- Building codes and regulations including energy efficiency measures which impact the uptake of various technologies (particularly solar water heaters and heat pumps);
- Change in cost of STC eligible systems due to new technological and manufacturing improvements.
- Impact of price of STCs on creation rates to the extent to which they are applicable to the modelling.
- Global financial conditions and changes to cost of raw materials
- Any other relevant factor

Out of Scope of this consultancy:

- Certificates remaining in the Registry from the previous compliance period (stock of certificates).
- Large Generation Certificates as defined by the amended legislation.

2. Methodology and Assumptions

GEM has developed forward estimates separately for each of the small-scale technologies that are able to produce STCs over the 2012 to 2014 period. Modelling approaches have been tailored to the specific market attributes of each technology.

Modelling solar PV certificates

The demand for and installation of solar photovoltaic (PV) systems in Australia continues to be driven by up-front cost, industry marketing, rising electricity prices, environmental awareness and government incentives through feed-in tariffs, and STCs. System payback periods continue to be a useful proxy for determining the attractiveness of PV and these incorporate the impact of up-front cost, electricity prices and feed-in tariffs and will form the basis of our modelling.

The modelling of solar PV STCs will be split into three categories, with each treated differently due to inherent different drivers in each market:

- Residential grid-connected systems
- Commercial (or non-residential) grid-connected systems
- Off-grid systems

Grid-connected residential systems

This category will represent the overwhelming majority of both capacity installed and certificates created. The installation of these systems is largely influenced by customers' perceptions of the financial attractiveness or payback of the system. This in turn depends upon multiple drivers, differing from state to state, and is very much dependent on the solar credits multiplier. For the above reasons, Green Energy Markets (GEM) will model the installation of these systems using a payback model feeding into a system demand curve.

These demand curves will then forecast the proportion of eligible households which will install systems. Then based on this figure, the solar credits multiplier and threshold and the average system sizes, STC creation will be forecast. Due to major differences in state policies and resulting installation levels, this will be done at a state/territory level.

Payback period will be modelled using SunWiz's payback model. Explicit assumptions input into the model will include:

- The solar credits multiplier rate and threshold
- The STC price
- State feed-in tariff rates, eligibility and other factors
- System prices
- Electricity prices

System prices will be forecast based on: industry forecasts of module prices; forecast inverter prices, and exchange rates. Changes in the cost of raw materials will be implied in the above. Based on these

factors an average payback period for systems will be generated for each state/territory for each of the three years.

Modelling grid-connected non-residential system installations (commercial)

The number of commercial systems being installed is increasing and is becoming a more important part of the market as penetration levels for residential PV in some states increases dramatically.

We aim to develop a historical picture of these systems based on ORER data where possible and as a fall-back we will develop proxies for this market through use of a typical commercial system size approach.

We aim to make extensive use of SunWiz's experience and knowledge of this market sector to develop a market profile and demand curve based on system payback. The output of the modelling will be total system installation and certificate creation figures for each state by year.

Modelling solar water heating certificates

Water heater systems are essential appliances and subject to state regulations increasingly limiting choice in some applications. As such, water heater system choices are based on different factors which include: the existing system type (if being replaced); the relevant state regulations; the type of premises; access to reticulated gas, and also net system up-front costs (after taking incentives into account). Operational costs, such as future electricity and gas prices (particularly in the case of LPG) are also factors that need to be considered.

The solar water heater (SWH) market (for the purposes of this exercise includes heat pump water heaters) has three sub-markets which are each subject to different incentives and regulations – these are the new building market (residential), the replacement market (for existing water heaters in residences) and the commercial market.

Utilising GEM's knowledge of current and recent SWH sales rates and current installed SWH systems in each state, SWH systems in each state and each sub-market will be separately modelled, with major inputs including building forecasts (new and total), system replacement rates and market shares for each water heater technology by year.

These forecast technology market share rates inputted to the model have been developed based on data provided by the ORER and the following factors (with implied assumptions in the share rate but not explicitly inputted) including:

- Historical and current market share rates
- State regulations for new/replacement systems
- Access to reticulated gas
- STC price
- System prices (prior to incentives)
- Other state and federal government incentives
- Economic factors including GDP

SWH system installations forecasts will be combined with average system certificate creation forecasts (based on current and historical data) to estimate total certificate creation in each state and each submarket.

Modelling other small generation unit certificates

Certificate creation for small wind and hydro power systems are presently not material with less than 6,000 certificates created for the year to 06 October 2011 (nearly all small wind). We have developed estimates for small wind after discussions with the key players in this part of the industry.

3. Review of Historical data

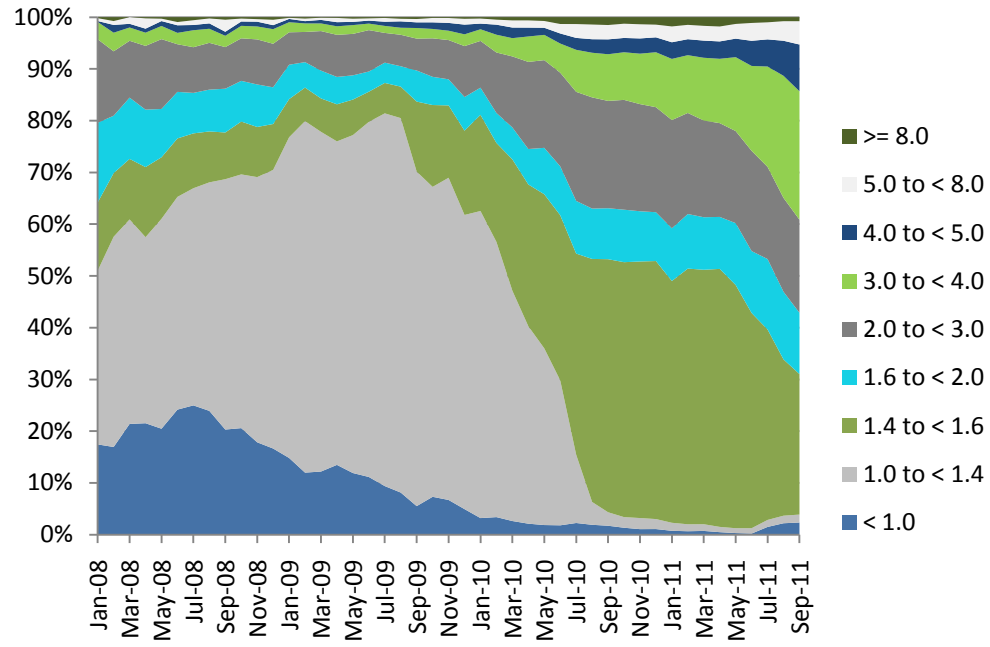
PV market

The PV market has gone through a transformational change over the 2010 to 2011 period which has resulted in a dramatic increase in the level of certificates created. With Solar Water Heater certificate creation falling toward the end of 2009, as state and federal stimulus payments were wound back and restrictions were imposed on commercial heat pumps, PV installations on the other hand started to grow significantly (refer to Figure 3.5). In late 2009 the Solar Homes and Community Program had been replaced by the solar credits multiplier and state based feed-in tariff were also influencing installations.

PV System Capacity

Since the beginning of 2008 we have seen a substantial shift in the size of systems installed in direct response to government incentives. In February 2009, 80% of systems installed were under 1.4 kW. At this time, panel prices were still relatively high, only Queensland and South Australia had a feed-in tariff and the federal Solar Homes and Community Program (SHCP) was a fixed $8,000 for a 1 kW system.

Figure 3.1 Growth of the PV market from 2008-2011



By October 2010, systems installed under 1.4kW had fallen to 3.3% of installations, while systems from 1.4kW to 1.6kW took up 49.3% of the market. Following the removal of the SHCP, the government introduced the Solar Credits Scheme, which multiplied the number of STCs claimable by SGU owners by five for the first 1.5 kW of an installed system, making this sized system the best value. Also by this time, systems between 2kW and 4kW comprised over 30% of the market. Larger systems (which partially benefited from the Solar Credits Scheme) became more affordable as panel prices continued to fall but the greater contribution factor to their increased market share was the increasing number of feed-in tariff schemes around the country and of the public's understanding of the benefits which could

be derived from installing larger PV systems subject to a feed-in tariff. With most feed-in tariffs around the country being phased out or wound back, we are already seeing evidence of the average system size reducing. This should be expected to continue during 2012 as further feed-in tariff reductions take effect (refer to Figure 3.1).

Certificate Creation Time-lag

It is common practice within the PV industry for installers to charge their customers the net value of the installed systems cost and the certificate value in return for the customer signing over the certificate value to the installer. The introduction of the Solar Multiplier has significantly increased the proportion that certificates make of a systems total value and hence increased the amount of working capital held in certificates by installers.

Consequently, the proportion of certificates created within 90 days of the system being installed increased from 83% in 2008 to approximately 88% in mid 2011. The separation of the SGUs from the main LRET and STC prices in the high $30's during the first quarter of 2011 saw higher levels of creation within 90 days, peaking at 94%. The increase in certificates created within 180 days also increased less, going from approximately 92% in 2008 95% in 2011. During 2010 and 2011 most 98-99% of certificates were created within 270 days compared to approximately 97% in 2008 and earlier.

With the reduction in the Solar Credits Multiplier, we would expect that the proportion of certificates created earlier will decrease again. While we have observed an increase in the time-lag for certificate creation since June 2011, we believe that this is a short-term effect of very low STC prices in June 2011. Results from recent months would be skewed toward the earlier time periods.

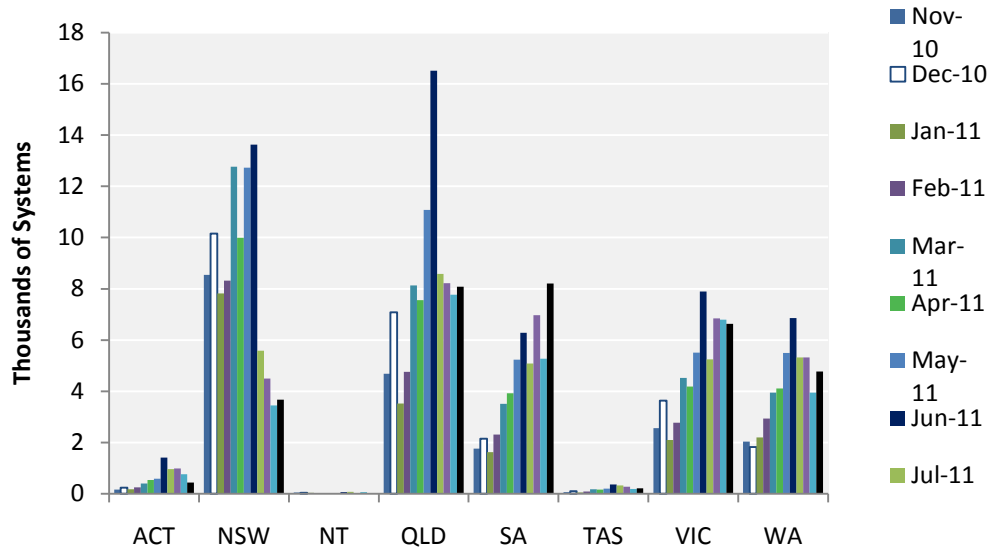
PV Installation Rates

There have been considerable fluctuations in PV installation rates over the past twelve months. The primary driver for this variability was the reduction of the solar credits multiplier which led to a huge number of systems being installed before 1 July 2012.

The installation rates are reflected in Figure 3.2, which depicts the number of systems creating certificates. While the time lag between installation and the creation of certificates is not the perfect reflection of installation levels, it provides more consistent data than using installation date. A high proportion of systems installed since June 2011 would not have created certificates and hence using installation month would be significantly under-estimating the level of installations.

Victoria, Queensland and Western Australia, which have had stable feed-in tariff schemes for the majority of the year have seen a modest fall since June. New South Wales, by contrast has had a precipitous fall in certificate creation with the compounding effects of the reduction in the solar multiplier and the winding back, then removal of the feed-in tariff. South Australia, which required systems to be installed before the end of September 2011 in order to receive the premium feed-in tariff has seen increasing number of systems creating certificates from June into October.

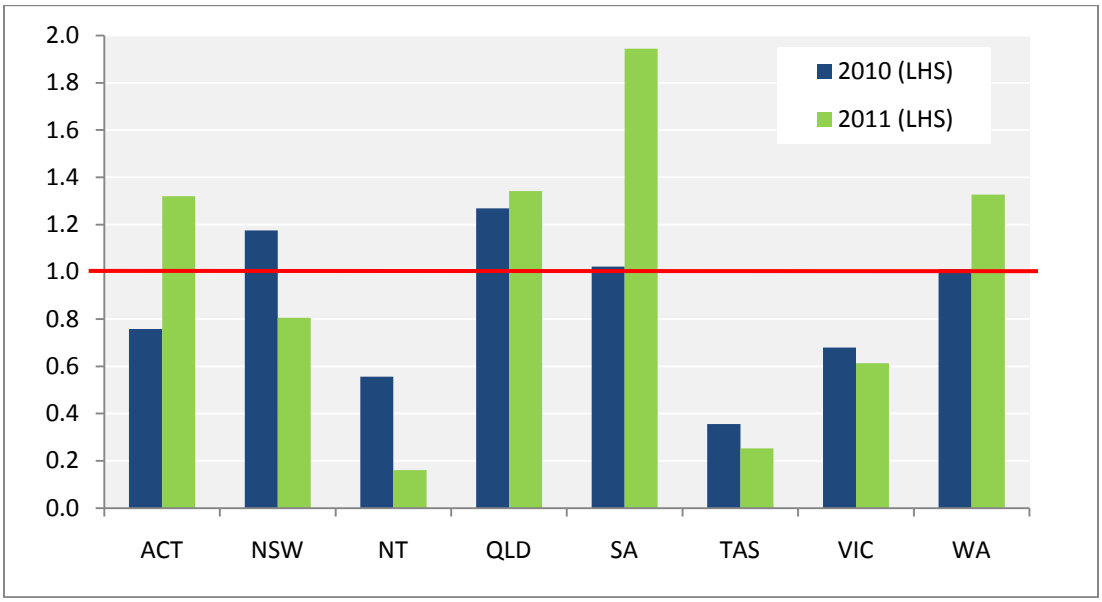
Figure 3.2 Systems Installed in the previous 12 months



A more instructive method of analysing a state's level of PV installations is to analyse the portion of each states installation compared to the national total, compared to that state's relative size. In Figure 3.3 we have made this comparison to produce an *installation factor*. The measure used to determine a state's relative size in a national context, is the number of free standing and semi-detached owner occupied houses.

For example, the ACT has 1.6% of the countries free standing and semi-detached owner occupied houses. During 2011 (year to date at 30 October), 1% of the approximately 72,000 PV systems which created certificates were derived from the ACT. Dividing this 1% by 1.6%, gives us an installation factor of 0.64 i.e. as it is below 1 there is a lower proportion of PV systems creating certificates in the ACT than free standing and semi detached owner occupied houses.

Figure 3.3 Installation Factors

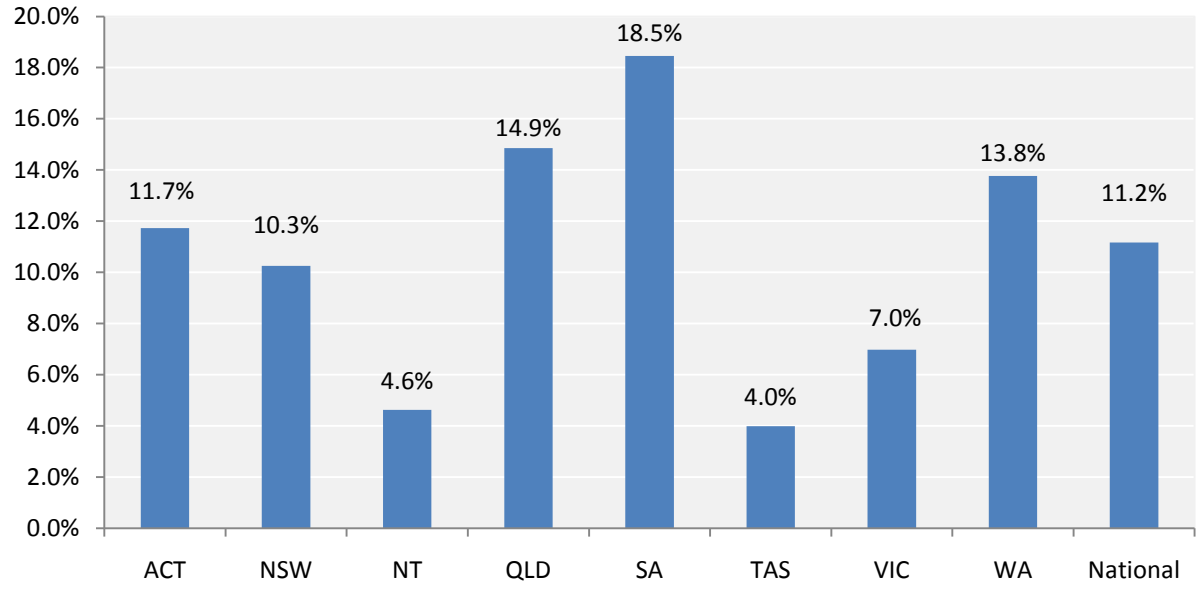


It needs to be noted, that the installation factor being based on percentages, a change in installation factor in one state will impact the factor in other states. Hence the decrease in NSW installation factor from 2010 to 2011 has exacerbated the increase in the less populous states of WA and SA. Installations of commercial system and system upgrades are not accounted for in this figure 3.3, however it does provide a general indication of activity levels in each jurisdiction.

Queensland's stable feed-in tariff policy is reflected in the consistently high installation factor and a good example of how, in an environment of falling panel prices, in a region with good solar radiation, a relatively modest net feed-in tariff can produce a strong stable industry. By contrast, NSW's very generous feed-in tariff (which was reduced in October 2010 and removed entirely in April 2011) produces a significant swing in activity from year to year.

The popularity of South Australia's feed-in tariff during the year is the most striking feature of this graph, with an installation factor for YTD 2011 of 1.8. The success of SA's feed-in tariff is further reflected in Figure 3.4 which indicates that SA has the highest PV penetration rate in the country.

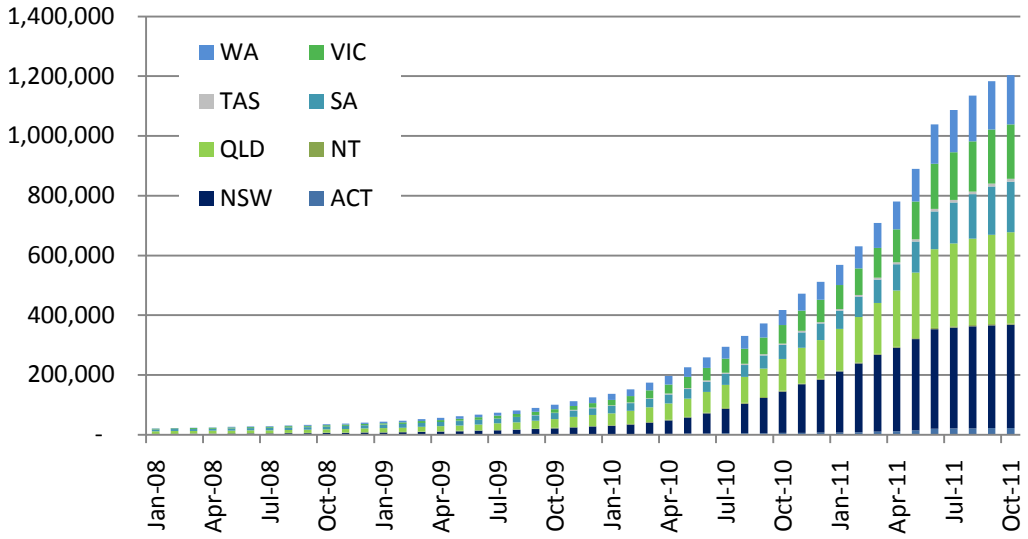
Figure 3.4 PV penetration rates



In contrast to the installation factor, the penetration rate provides an indication of each states level of activity over a longer time frame, using data going back to the beginning of the RET. As with installation factor, we have used freestanding and semi-detached owner occupied housing as the population base for PV installations. The business model for most of the solar industry during the boom over recent years has focused very heavily on the residential sector, and hence this is a reasonable population base to use when analysing historic data. Current trends indicate a move in the industry toward the commercial sector and amongst residential sales, an increase in system upgrades. These factors indicate that in future years and alternative population base will need to be used.

Installed PV Capacity

Figure 3.5 Total Installed Capacity of PV



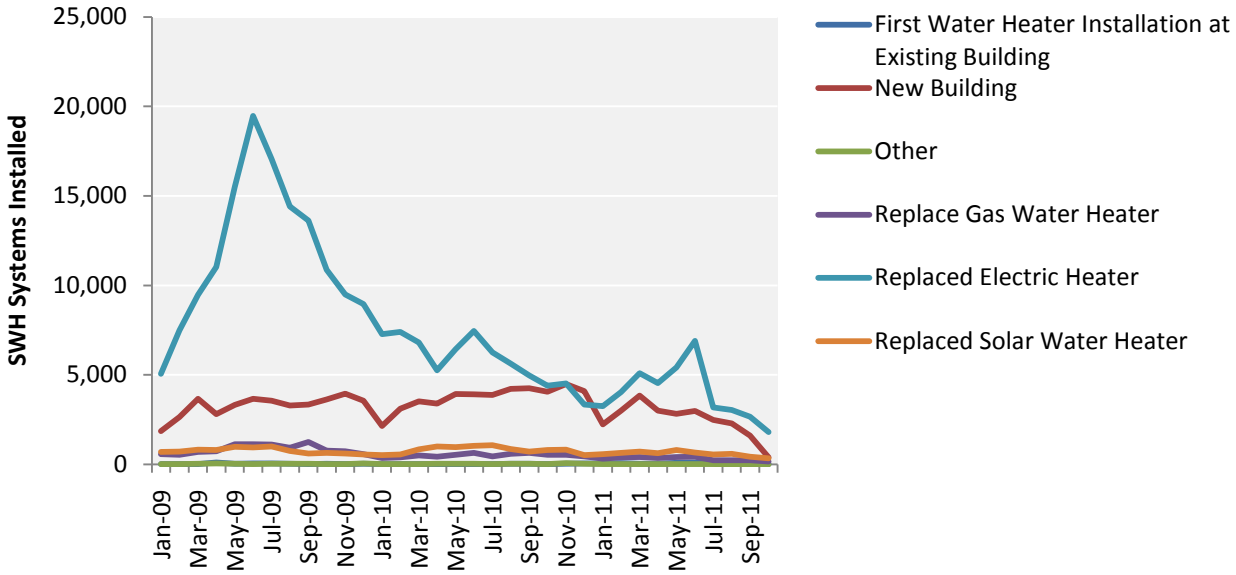
By the end of October 2011 the total installed capacity for PV had reached 1.2 GW. Of total, 692 MW had been installed during 2011. NSW has the highest total installed capacity with 346 MW (169 MW installed in 2011). Queensland has the next highest level of installations with 306 MW, but has had a larger year with 177 MW being installed during 2011.

SWH Installation Rates

Figures 3.6 breaks the systems data down by the reason for replacing the SWH system and demonstrates how heavily the SWH market is dominated by installations in new buildings and replacement of electric storage water heaters. It further demonstrates the impact that state and federal the stimulus package rebates had on SWH creation, most of which were aimed toward replacement of electric water heaters.

Note that Figure 3.6 uses installation date to determine numbers of systems installed and hence recent months will be lower than actual figures as certificates for many installations during that time are yet to be created.

Figure 3.6 SWH Systems Installations by Installation Type



Viewing just the past twelve months of systems installations by state (Figure 3.7) is further demonstration of the impact rebates has on SWH installations. During a period of stability in relation to SWH rebates, most states maintained relatively constant level of installations. NSW was the only state over this period to have any policy changes (rebate was removed at the end of June). While the removal of the rebate was relatively recent and the time lag between installation and certificate creation will delay any definitive trend (Figure 3.7 is based on certificate creation date), NSW shows a sharp drop in the number of installations in recent months. By recasting Figure 3.6 for NSW only shows that the peak in replacement electric heaters in June 2011 was largely due to NSW installations.

Figure 3.7 SWH Systems Installations by State

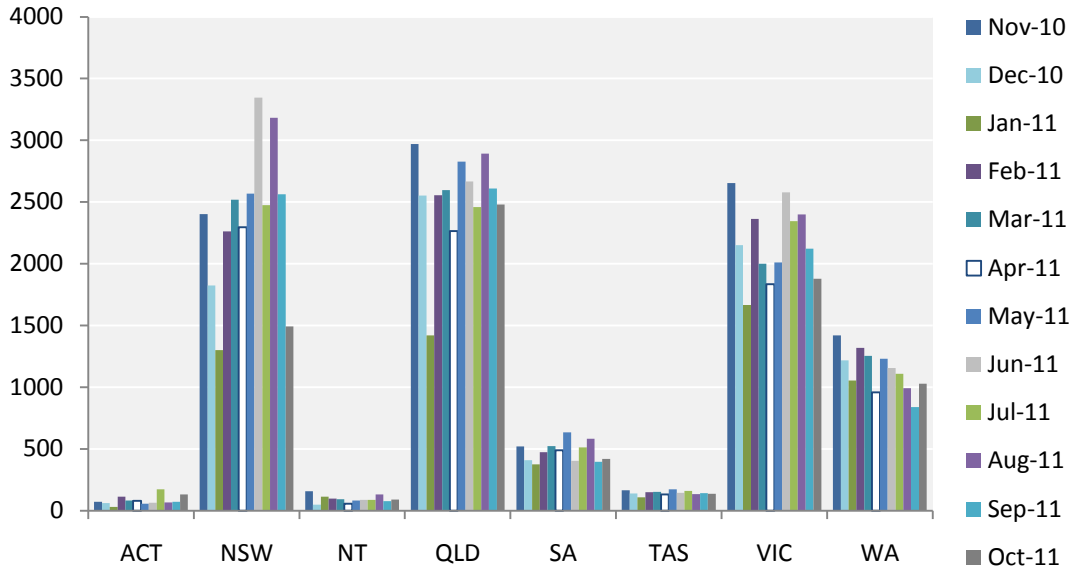


Figure 3.8 shows installations levels as a relative measure via the installation factor. The Northern Territory, Queensland and Western Australia were the only states to have an installation factor above 1 for both 2010 and 2011 with the Northern Territory showing a very high rate of installations at over 1.6 for 2011.

Figure 3.8 Installation Factors

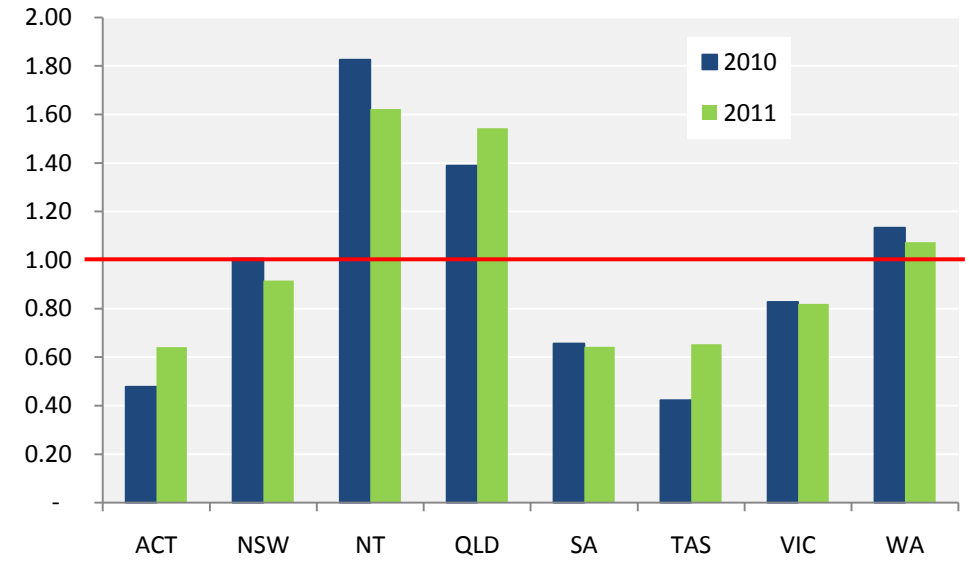
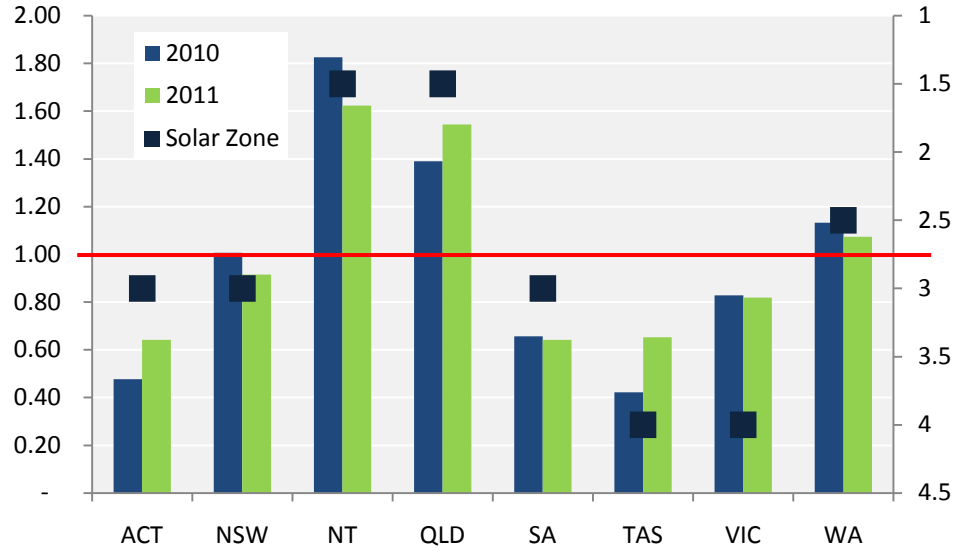


Figure 3.9 imposes the Solar Zone over figure 3.8 and shows a very strong correlation between the solar zone and rate of installations in the state.

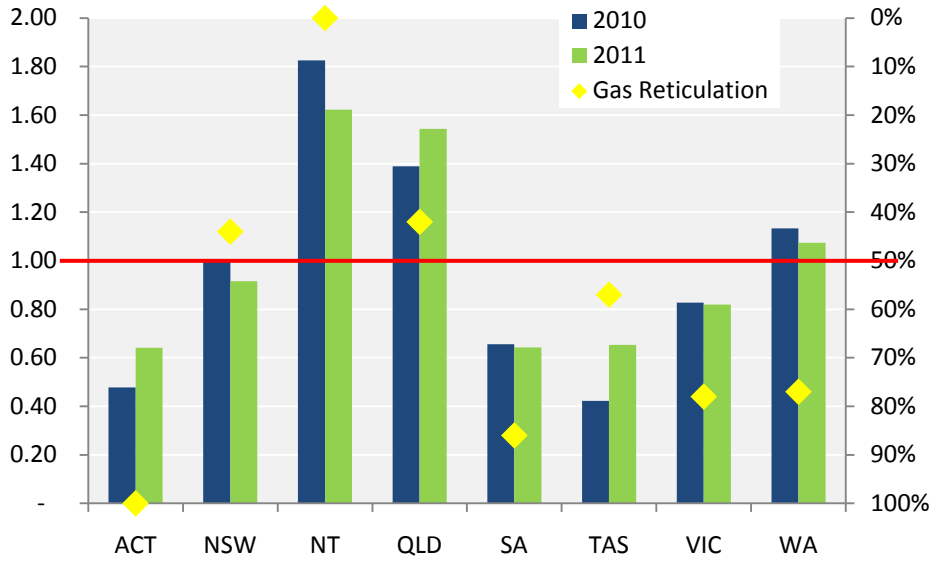
Figure 3.9 Installation Factors and the Solar Zone



Note that a single solar zone has been assumed for each state. Where a substantial portion of a state falls between two zones the mid-point has been used. Hence WA rated as 2.5.

An alternative analysis in Figure 3.10, maps the level of gas reticulation in each jurisdiction against the installation factor. Here there is a moderate correlation between rates of SWH installations and gas reticulation, where the lower the level of availability of gas, the higher the rate of installation.

Figure 3.10 Installation Factors and the gas reticulation level

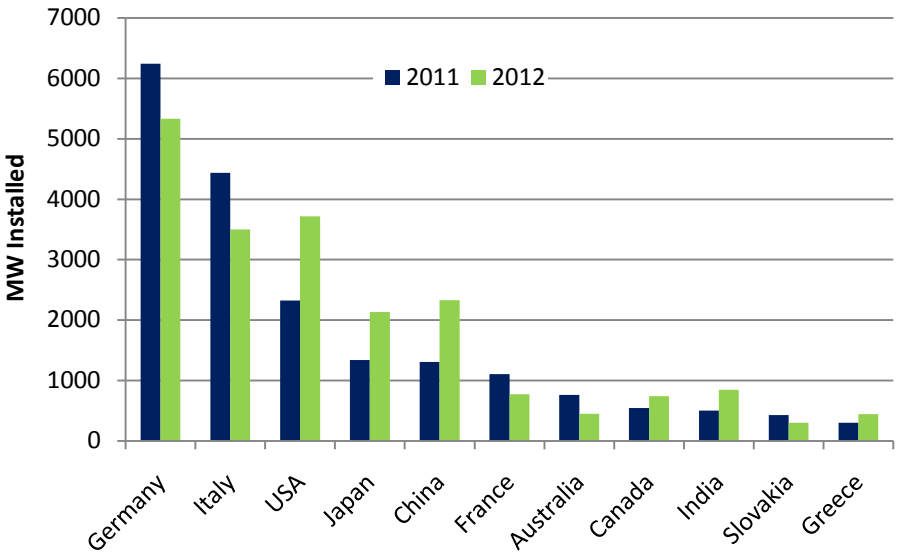


4. Installed PV system cost projections

Forecasting STCs from the sale and installation of PV systems has been problematic due to the rapid reduction in the installed cost of PV systems and changes to state and commonwealth policy settings. Australia now ranks as one of the largest PV markets globally, ranked sixth based on expected installed capacity of 760 MW in 2011. PV is now making a material contribution to Australia's energy mix, and its significance has attracted strong international attention from global PV suppliers which are providing very attractive offerings to the local market.

According to a Photon Magazine survey[1] total global demand for PV is expected to reach 20,600 MW in 2011 and expected to increase by 13% in 2012 to 23,300 MW. Demand growth is expected to slow due to the global economic downturn and the removal of policy support measures in some countries. Importantly however global PV production capacity is expected to continue to increase from 37,000 MW at end of 2010 to more than 50,000 by end 2011. As a result global PV module prices are expected to remain soft.

Figure 4.1 Largest markets for PV (Source Photon Magazine, September 2011)



Installed PV system costs probably have the most significant impact on the expected level of STCs to be created. The dramatic reduction in system prices over the last year or so has meant that previous forecasts have consistently underestimated the level of PV sales and installations. Our projections for installed system costs draws heavily on the work and analysis by Nigel Morris of SolarBusinessServices Pty Ltd. Assumptions on PV price trends in Australia over the coming years are based on the analysis which drive the "Australian PV Market Forecast 2011-2015", by SolarBusinessServices and SunWiz Consulting.

[1] Photon Magazine survey, September 2011

Global and local factors impacting on installed costs

Installed system costs over the last few years have been predominantly driven by global market forces and it is important to differentiate between these and local factors in developing robust estimates of future installed system costs.

The primary global factors which effect cost are:

- Raw material costs, particularly silicon and silver
- The purchasing trends of those raw materials by different suppliers (i.e. long term contracts or spot pricing)
- Capacity utilisation at PV factories
- Scale at PV factories including the underlying assumption of Moore's Law
- The lag of these impacts in accounting terms, which varies from company to company
- Exchange rate movements

Secondarily, the global supply and demand balance has an effect on price which:

- Creates a resulting inventory level around the world
- Tends to drive price down if inventories significantly exceed demand for sustained periods, irrespective of costs trends
- Can be measured through the "book to bill ratio"
- The lag of these impacts in accounting terms, which varies from company to company

With many hundreds of PV facilities around the world, each at various stages of maturity, utilisation and profit expectation cycles, it is impossible to provide a definitive assessment of how these factors are impacting the market, however a number of International analysts monitor primary trends across a sample group and regularly publish data describing them.

It is these trends and those expected in coming years that forms the basis of the underlying assumptions we have made around price.

The primary local factors which effect price[2] are:

- The flow on effects of the global cost and price scenarios, which happen almost entirely outside Australia's control or sphere of influence
- Local program start or end dates which can drive price (up and down)
- The local supply and demand balance, (i.e. how much stock is available, which matches program dates) and if low (for example) tends to push prices up
- Local competitive forces which can push price up or down depending on the above
- International market entry strategies which tends to push prices down for new market entrants
- Foreign exchange rates which have a marked effect on price but also have a lag depending on supply and demand balances

There are around 2000 companies operating in the PV market in Australia. These are at various stages of growth, maturity and with varying profit expectations. As a result it is difficult to provide definitive

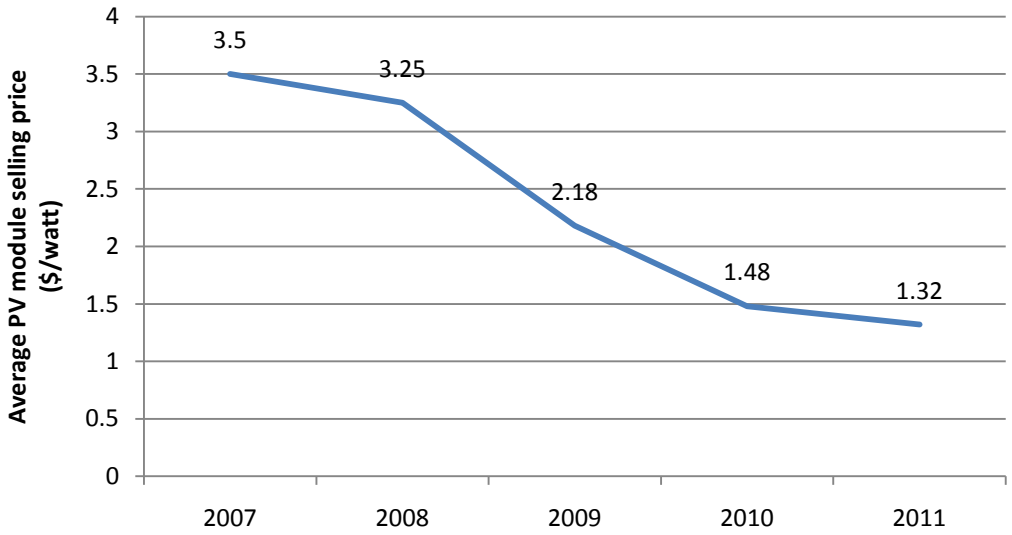
[2] Under the assumption that local PV manufacturers in Australia are insignificant in overall market terms as a result of their scale and volume and as a result of recent announcements about SilexSolar closing.

analysis; however SolarBusinessServices' monitors primary trends across a sample group to track such trends.

The state of play

In the last 12-18 months a staggering amount of new PV capacity has come online internationally, to the point that through much of 2011, inventories have exceeded demand by a significant amount. Latest global demand forecasts by IMS Research now put 2011 at an expected 24GW, with an estimated 40GW of manufacturing capacity. Estimates vary but at some stages of the year world inventory excess was estimated to be more than 10GW. This has driven international prices and margins to an all-time low and is expected to continue, due to a continued soft outlook into 2012. Average PV module prices have fallen by 62% since 2007 which amounts to a 21% compound annual reduction (refer to Figure 4.2).

Figure 4.2 Average selling price history, Paula Mints, Navigant Consulting, November 2011



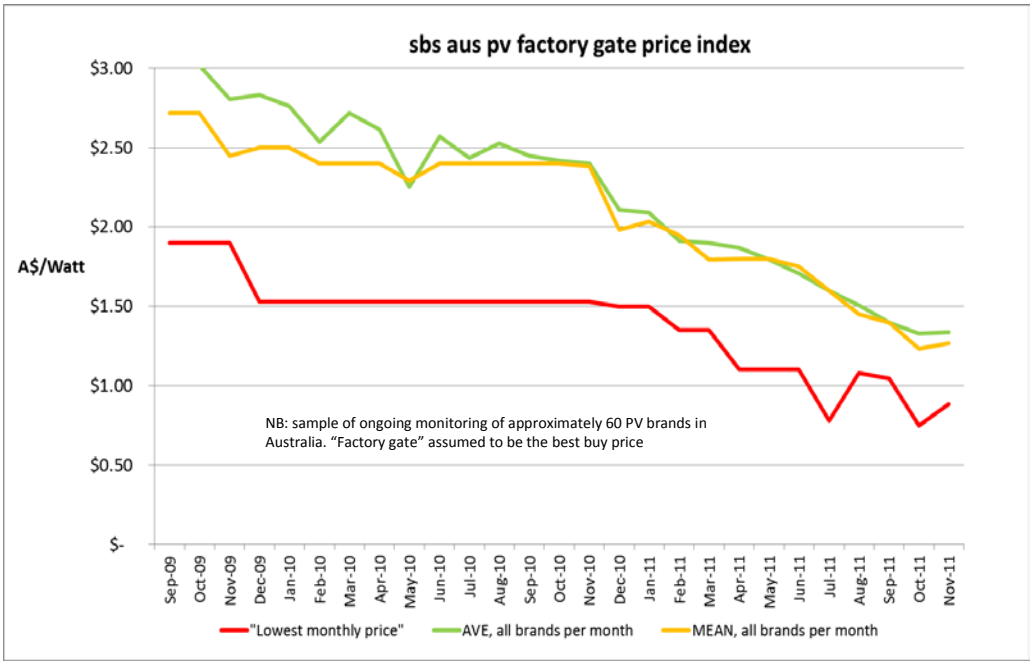
The upshot for Australia

In a local context we have considered the implications of the inventory situation globally and locally and have reached the following primary conclusions:

- The excess inventory situation, due to softening PV markets and tougher financial markets is likely to sustain well into 2012, depressing prices.
- However, there is a chance that due to extreme margin pressure, many International PV companies will exit, collapse or consolidate in the manufacturing space. This could provide margin (and price) increase opportunities as they try to regain lost ground.
- Local supply remains in excess of demand in Australia, depressing prices. Further, the collapse of many markets is forcing margin reductions as companies struggle to compete. This has held price low through Q3 and may sustain into 2012.
- Foreign exchange rate remains at long term average highs, benchmarked against Treasury data, further placing downwards pressure on price.

Although Balance of Systems equipment is a small proportion of overall costs, we are also seeing reductions across the board, particularly in electronics and mounting systems, further reducing installed cost.

Figure 4.3 Local PV Module Price monitoring in AUD$, SolarBusinessServices, November 2011



All of the above leads us to conclude that:

- In the short term price pressure will be extreme and will hold prices artificially low in Australia
- In the medium term, we expect prices to rise or stabilise at current levels.
- Margins may continue to fall.
- We do not expect to see manufacturing scale cost reductions until at least 2013 due to excess inventories. Thus supply and demand will be the primary price driver.
- Beyond 2013, we expect the supply and demand balance to correct after a period of consolidation, driving cost reductions.

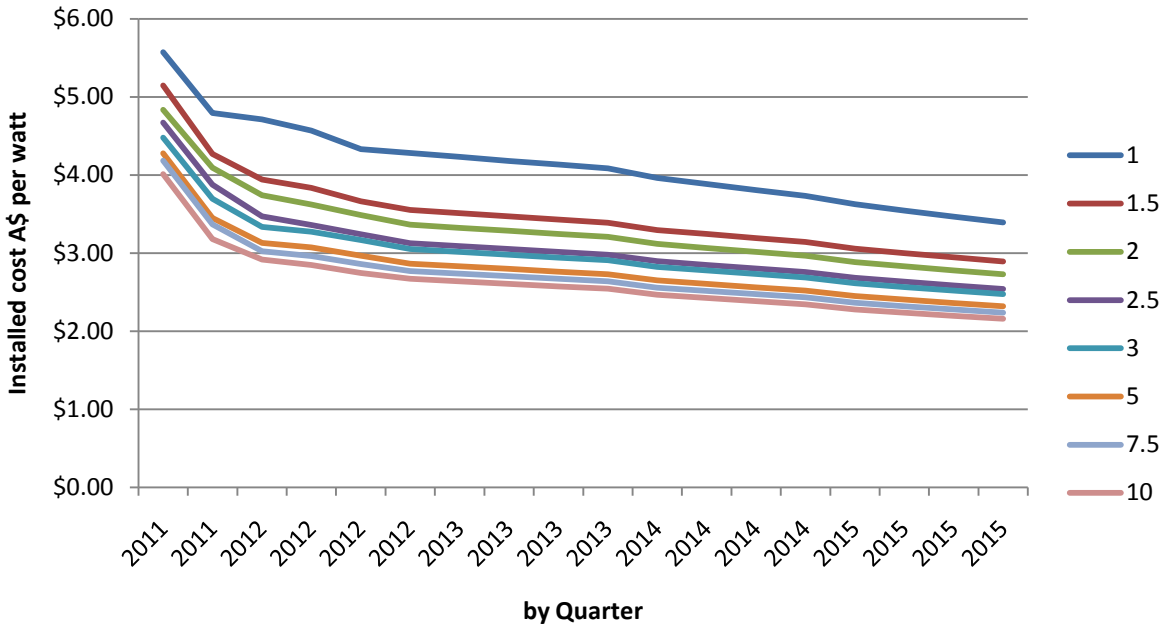
PV input prices

PV system pricing has been obtained from two reputable industry representatives. The APVA provided pricing projections used within its recent analysis for the Australian Solar Institute (Modelling of PV & Electricity Prices in the Australian Residential Sector, 2011). The price projection model is fairly straight forward, with an assumed starting price of A$4.78/W for a 1.5kW system, then assuming price declines starting at 3.7% year-on-year and steadily decreasing to 2.7%. The APVA separately performs sensitivity analysis on other input variables, and confirms lower per-unit prices are available for larger systems. We consider that the APVA's starting point is quite high, and the annual price decreases are conservative in light of recent price declines.

Industry expert Nigel Morris of Solar Business Services provided a more detailed price forecast, showing supporting evidence of international consultants' opinions in addition to detailed histories of price declines. Morris notes that there is a global excess of panel inventory and manufacturing capacity which has driven international prices and margins to all-time lows and which is expected to continue due to a continued soft outlook for 2012. Morris also notes excess supply and resources in Australia is depressing prices as many companies reduce margins in an effort to compete. This situation is expected to continue into 2012.

A model calculating system prices based upon forecast component prices, exchange rates, margins, and installation costs was created by SunWiz and SolarBusinessServices, using the latter's unit price forecasts. The installed cost for a typical 2.5kW system falls from about $4.00/W in 2011 down to $3.15/W over the projection period. We have used these input prices in our modelling of financial attractiveness of installation.

Figure 4.4 **Forecast installed cost per system – size range from 1 kW to 10 kW (excludes value of STCs)**



5. Solar PV Projections – Residential

We have analysed the creation of solar PV STCs on the basis of the following sub-markets:

- Grid connect – residential
- Grid connect – non residential (commercial); and
- Off-grid market

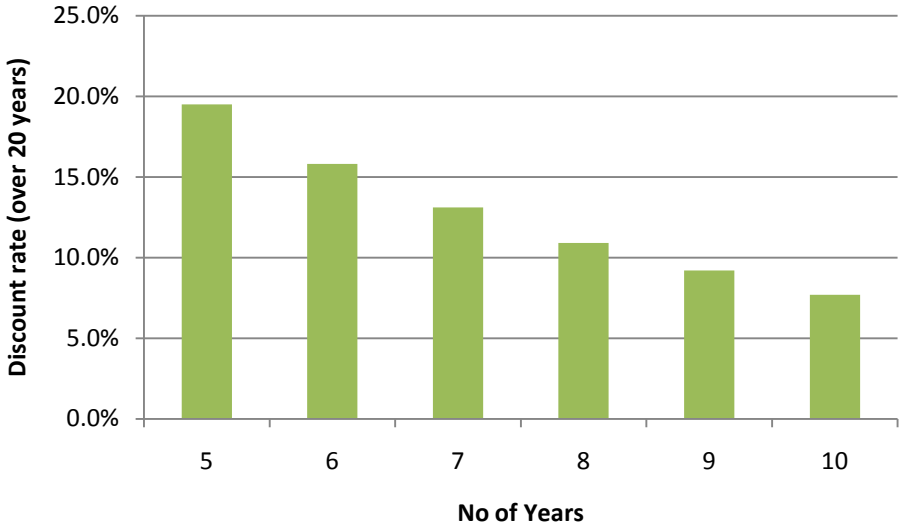
Data provided by the ORER does specifically separate the residential and non-residential sectors and for our analysis we have assumed that systems with an installed capacity of up to 7.99 kW are residential and that systems with a capacity exceeding 7.99 kW are commercial. In some ways this is an arbitrary split, but it does generally confirm to Green Energy Market's and SunWiz's experience and from discussions with industry participants.

The largest sub-market for PV is the residential sector which historically has accounted for the lion's share of capacity installed and due to the solar credits multiplier (5 times for the first 1.5 kW) has dominated STC production in 2011 and is expected to account for 83% of STCs created in 2011.

We estimate that more than 606,000 PV systems will have had been installed by the end of 2011 for this market which amounted to around 11.7% of owner occupied detached or semi-detached dwellings. Having achieved such penetration rates systems are essentially being sold into this market on the basis of financial attractiveness. Our projections for the residential sector have been made on a state basis and are derived from our payback model, with the resultant payback period feeding into a state demand curve. From the state based demand curves the proportion of eligible owner occupied households expected to purchase a solar PV system is determined. Then based on this figure, the solar credits multiplier and threshold and the average system sizes, expected certificate creation is determined. The modelling has been undertaken on a state/territory level due to major differences in state policies and resulting installation levels.

Forecasting payback periods

Figure 5.1 Relationship between simple payback and discount rates



A simple payback approach has been used to represent the relative financial attractiveness of PV to consumers in each state. The approach to payback that we have taken is to divide the installed cost of the system (less the value of STCs) by the value of electricity produced in the year of installation. This generally overstates payback as electricity prices are expected to rise considerably over the forecast period.

Payback period has been modelled using SunWiz's payback model. Explicit assumptions input into the model include:

- The solar credits multiplier rate (threshold maintained at 1.5kW)
- The STC price based on a $35 average for 2012 and $37 thereafter
- State feed-in tariff rates maintained at current levels over the forecast period
- Electricity prices rising at 6 to 20% per annum in 2012 and 5% thereafter
- Average system size of 1.5kW
- An export rate of 15% for a 1.5kW system

Continued reductions in installed system prices and rising electricity prices in all states generally tends to counteract the impact of the progressive reduction in the solar credits multiplier. Average simple payback rates over the forecast period tend to range between 6 to 8 years.

Refer to Attachment 2 for a summary of payback periods by state over the 2012 to 2014 period.

Demand for solar PV

As solar PV is a discretionary purchase, financial attractiveness will be a key determinant of the underlying demand. Like other discretionary purchases uptake will also be significantly impacted by the level of sales, marketing and promotion. In addition concerns regarding the global financial crisis and the prospects for a recession has led to a slowdown in retail sales and increased levels of consumer savings. Counteracting this has been media driven concerns regarding the forthcoming carbon price and prospects of rising energy prices. In addition the compensation arrangements for the carbon price will mean that 80% of families will be compensated and that some sectors such as self-funded retirees will be over compensated. As a result a large number of families will have access to additional cash at a time when power prices are about to rise. This makes solar PV (and solar hot water for that matter) an even more attractive proposition. As a result we expect that system sales during 2012 are likely to be maintained at levels slightly lower than in 2010, but significantly lower than 2011 levels.

Demand curves have been developed on a state basis based on historical monthly REC creation for systems with installed capacity less than 7.99kW (representing demand). Demand curves are represented as a proportion of owner occupied relevant dwellings (separate and semi-detached houses) for that state (expressed as the average number of systems per month) for a given simple payback level. Demand curves have been further refined to take account of the level of marketing and promotion activity, and the relative attractiveness of the state (that is not picked up through the factors incorporated in the payback model) and covers factors such as state economic conditions, relevant level of retirees, income levels etc.

The demand curves are then further scaled based on the level of penetration in each state. Over the next three years the number of cumulative PV systems installed in each state grows considerably with quite high penetration rates achieved in a number of states. Projected system installations and

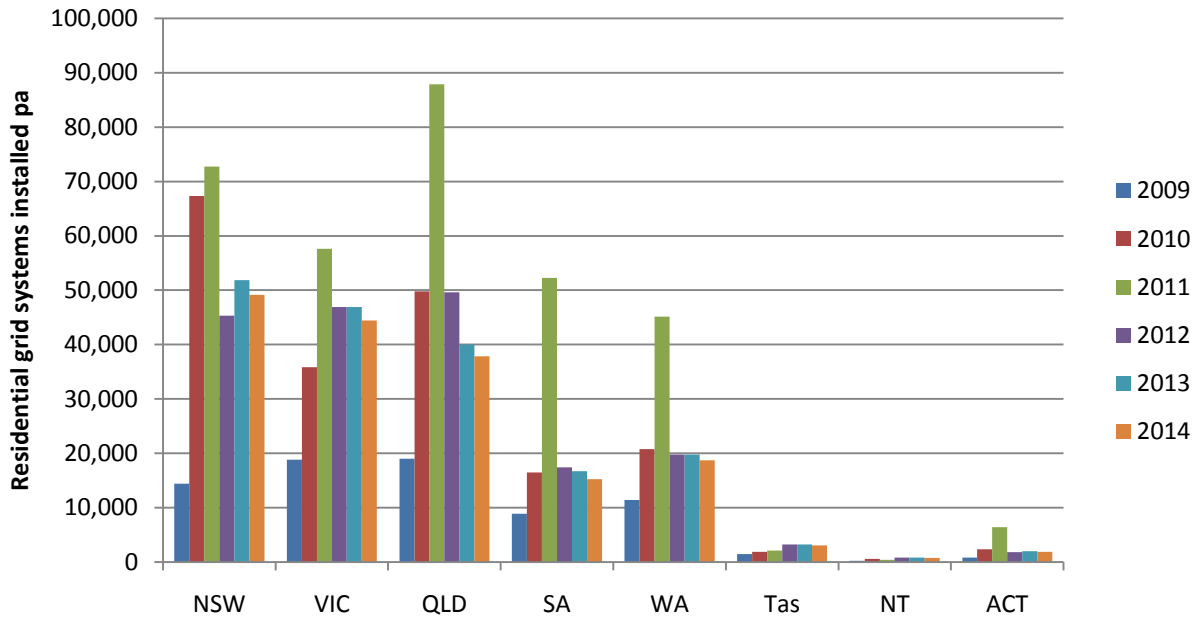
penetration levels for each state is included in Attachments 3. An extract of the data is summarised in Table 5.1 and shown diagrammatically as Figure 5.2.

Table 5.1 Penetration rates and systems installed by state

Summary by State	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
Penetration rates									
2010	5.6%	4.3%	7.2%	6.3%	6.0%	2.7%	3.0%	4.2%	5.6%
2011	10.2%	8.5%	15.9%	18.5%	13.7%	4.2%	4.3%	11.9%	11.7%
2012	13.1%	11.9%	20.8%	22.7%	17.1%	6.6%	7.1%	14.1%	15.3%
2013	16.1%	15.1%	24.2%	26.2%	20.0%	8.8%	9.8%	16.3%	18.4%
2014	18.8%	17.9%	27.2%	29.3%	22.6%	10.8%	12.1%	18.1%	21.2%
Systems installed									
2009	14,424	18,821	18,984	8,892	11,427	1,492	205	833	75,078
2010	67,312	35,845	49,763	16,464	20,793	1,898	573	2,352	195,000
2011	72,767	57,600	87,846	52,248	45,119	2,119	390	6,405	324,494
2012	45,318	46,928	49,630	17,404	19,772	3,258	813	1,821	184,943
2013	51,857	46,880	40,037	16,716	19,751	3,239	808	2,021	181,310
2014	49,127	44,413	37,867	15,216	18,699	3,053	739	1,857	170,971

Note: Penetration rate represents the cumulative proportion of systems installed as a proportion of owner occupied houses (separate and semi-detached dwellings).

Figure 5.2 Residential PV systems installed by state



Determining the level of certificate creation

In determining the level of certificate creation the average system size installed in each state needs to be determined. In 2011 there has been considerable variability in system sizes between states. Based on data provided by the ORER, NSW and Tasmania have systems installed with less than 2.0 kW per system compared to all other states where the average system size exceeds 2.0 kW per system.

For the 2012 to 2014 period we have assumed that the states that have very low exported power buy-back rates (NSW and WA) have an average system size of 1.75 kW and that most other states have capacity of between 2.1 and 2.2 kW per system. The capacity assumptions for each state over the 2011 to 2014 period are included in Attachment 3.

In determining the average certificates per system we have also applied a scaling factor to account for the fact that system capacities greater than the average earn less certificates than systems less than the average due to the 1.5kW threshold of the solar credits multiplier. The scaling factor for 2011 onwards is 0.98 and has been calibrated using actual data received from ORER.
The total number of systems installed and associated certificates created for grid-connected residential systems is summarised in Table 5.2.

Table 5.2 Grid Connect System installations and certificates (all states)

Year of installation	Estimate 2010	Estimate 2011	Forecast 2012	Forecast 2013	Forecast 2014
Grid Connect - Residential					
Number of Systems Installed	195,000	324,494	184,943	181,310	170,971
Average systems per month	16,250	27,041	15,412	15,109	14,248
Average kW/system	1.77	2.09	2.03	2.01	2.01
Average Certificates/System	121.8	141.5	86.5	56.8	39.2
MW Installed	346.1	678.3	375.7	364.7	343.7
Eligible Certificates ('000)	**23,749**	**45,931**	**16,003**	**10,292**	**6,695**

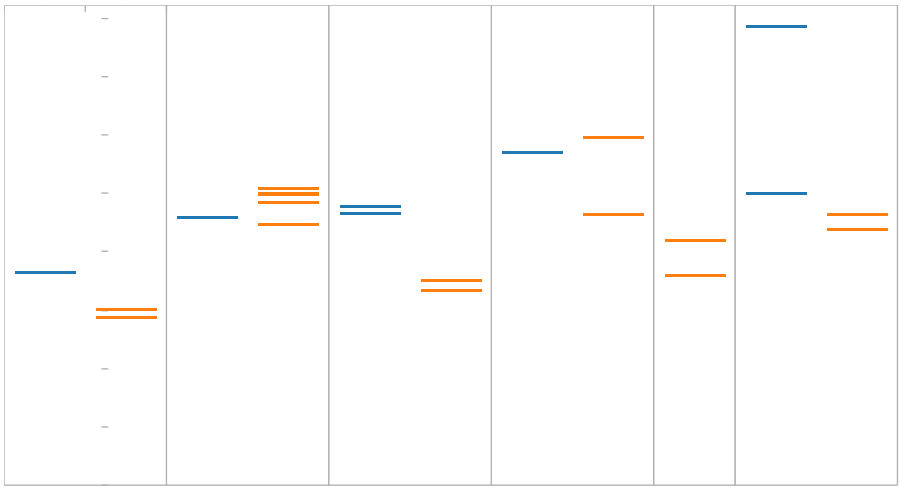
6. Solar PV Projections – Non Residential

As installed system costs continue to fall and power prices rise many industry participants now see the non-residential or commercial sector as an important and growing market for PV.

Declining state and federal government support for the residential sector combined with increased market penetration have meant that many companies have begun to focus upon commercial sales. As a consequence, we believe that this growing sector needs to be separately analysed. We define the non-residential or commercial sector as those systems where more than 8kW has been installed.

While many businesses have access to electricity prices far lower than residential tariffs, businesses that do not access contestable tariffs typically face higher prices than residential consumers, as illustrated in the following table. In some most cases the price paid by businesses on non-contestable tariffs currently exceeds 23c/kWh, a value that exceeds or approximately equivalent to currently-remaining residential feed-in tariffs in all states other than Queensland.

Figure 6.1 Non contestable Business Electricity Tariffs



Levelised Cost of Electricity calculations performed by the Australian PV Association demonstrate that the cost of an investment in solar energy is fast approaching current business tariffs, and if electricity price rises are factored in solar is an attractive offer. Therefore a reasonable solar proposition can be already be made for businesses, so long as all production can be consumed on site. The immediately available commercial market opportunity for the solar energy industry thus consists of businesses with non-contestable electricity tariffs that own the building(s) they occupy and that have money to spend on PV. The PV industry will be able to expand this niche market by provision of finance and through engagement with commercial landlords. The following chart has been extracted from the APVA report

and clearly illustrates that even without the benefit of STCs commercial sized systems are becoming increasingly attractive

Figure 6.2 Extract of Economics of Commercial Scale (APVA[3])

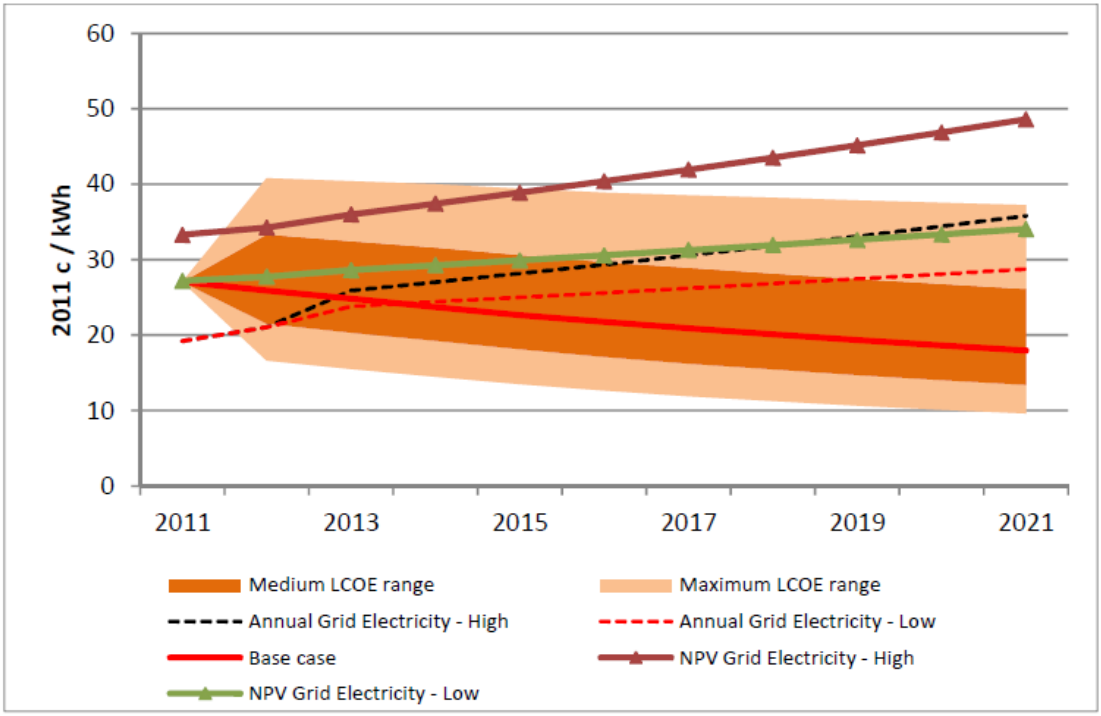


Figure 5: Effect of altering assumptions on projected base case PV LCOE – excludes Solar Credits

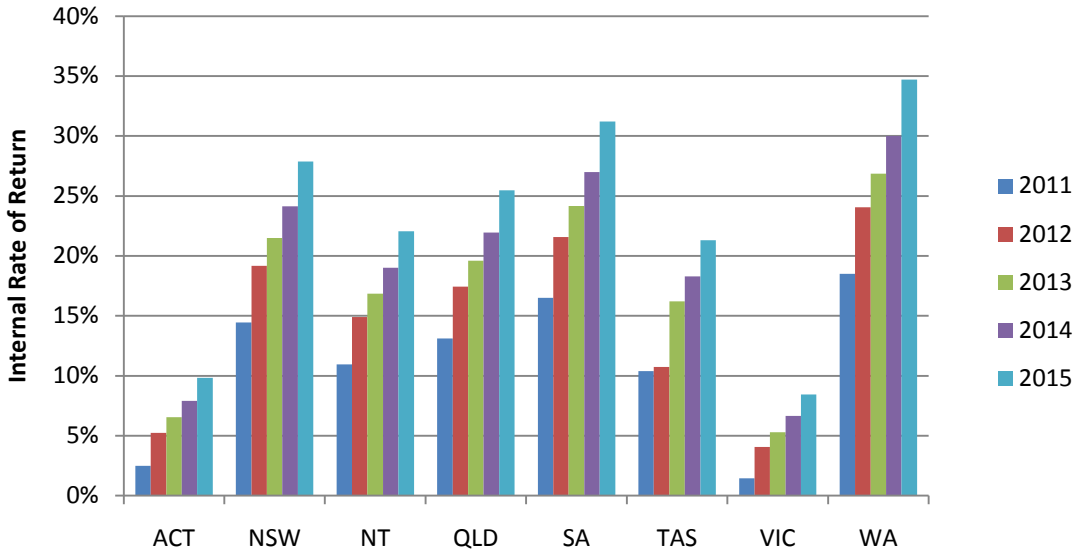
The APVA analysis did not incorporate the most recent system cost reductions. Once we allow for this the internal rate of return reaches 15 to 20% in some states over the next year or so. A summary of expected rates of return for a 10kW system by state is incorporated as Figure 6.3. On the basis of these returns a small-commercial solar boom is not an unreasonable expectation if the barriers of finance and the landlord-lessee split incentive can be overcome.

To this small-commercial sector should be added other sub-sectors including Green Star-rated buildings, which awards multiple points for PV systems, and the mining sector, which has recently expressed significant interest in PV. These will be another potentially significant source of sub 100-kW installations, though some installations will be large enough to create LGCs.

The methodology used to forecast uptake of small-commercial systems (8-100kW) is to first quantify the potential scale of this market segment, and then to forecast uptake.

[3] The Australian PV Association, "Modelling of PV and Electricity Prices in the Australian Commercial Sector", 2011

Figure 6.3 Internal Rates of Return for a 10 kW Non-residential system (assuming no export)



In 2010 a total of 2,008 grid-connected non-residential systems were installed in Australia with a combined capacity of 20.8 MW (average of 10.3 kW per system). A further 3,433 systems (capacity of 34.8 MW) installed in 2011 were submitted for STC creation to 6 October 2011 (refer to Attachment 6). We estimate that the number of systems that might eventually create STCs that were installed in 2011 might amount to a total of 4500 systems with a total capacity of 45.6 MW.

To forecast commercial installations for the next three years, it is important to establish some baselines for purposes of relative comparison. Some systems have also been supported by one-off grants by federal, state, or local government grants for non-commercially viable installations; grants that could decrease in coming years but be compensated for by governments that proceed with installations on the basis of now-viable economics. Schools receive specific grant funding and need to be allowed for in our analysis. Perhaps most importantly, historical drivers include the feed-in tariffs in NSW (capped at 10kW), QLD (30kW), and SA (30kW) and very few of these support mechanisms remain.

Another benchmark is the capacity of the industry to deliver. At the time of writing, there were 4173 accredited installers. If an average installer installed one 10kW system in 2011, this would result in 40 MW worth of installations. Alternatively, SunWiz analysis of the public interface of the REC registry reveals that 330 parties had registered more than 50 PV systems in 2011, though a small number of these would be REC agents and PV wholesalers. If each of these parties installed an average of twenty 10kW systems, this would result in 66 MW worth of installations 2012.

An indication of the potential size of the sector can be estimated based upon Australian Bureau of Statistics data[4]. Analysis reveals that of the 2 million businesses operating at the end of June 2009 most were non-employing but there were 730,000 businesses that employed 1-19 people. It is assumed that businesses larger than this would have access to cheap electricity and thus be less likely to install a PV system, just as it is acknowledged that not every business would be able to install PV, and that some businesses have multiple locations. If just 1% of businesses installed a 10 kW system in any given year,

[4] 8165.0 - Counts of Australian Businesses, including Entries and Exits, Jun 2007 to Jun 2009

this would result in 73MW of installations annually, associated with 1.9 Million STCs in 2012. This is not out of the question as by comparison 3.6% of private dwellings installed a system in 2011[5].

We have projected that non-residential installations will increase from 4500 in 2011 to 5000 in 2012. This may not seem like a large increase given the significant improvement in system economics however a significant proportion of the 4500 systems in 2011 will have been able to access additional support through either grants (in the case of schools) or attractive feed-in tariffs in NSW, Qld and ACT.
Given the uncertainty and lack of more robust data we have provided an upper and lower bound to these figures as follows in Table 6.1.

Table 6.1 Non-residential System Installations - Sensitivity

Year of installation	Estimate 2011	Forecast 2012	Forecast 2013	Forecast 2014
Number of Systems				
Medium	4,500	5,000	6,700	8,400
High Case		6,000	8,400	10,800
Low Case		3,750	5,000	6,700

We have assumed an average system size of 12 kW over the forecast period which is marginally higher than the 10.1 kW in 2011. We expect that 60 MW of commercial sized systems will be installed in 2012 and then progressively increasing to more than 100 MW by 2014 (refer to Table 6.2).

Table 6.2 Non-residential System Installations

Year of installation	Estimate 2010	Estimate 2011	Forecast 2012	Forecast 2013	Forecast 2014
Grid Connect - Non Residential					
Number of Systems Installed	2,008	4,500	5,000	6,700	8,400
Average kW/system	10.35	10.13	12.00	12.00	12.00
Average Certificates/System	317.5	308.5	283.8	263.8	248.8
MW Installed	20.8	45.6	60.0	80.4	100.8
Eligible Certificates ('000)	638	1,388	1,419	1,767	2,090

5 290,000 residential-scale installations across approximately 8.3million occupied private dwellings (source cat. no. 4102.0, Australian Social Trends, Data Cube – Housing)

7. Solar PV Projections – Off-grid

We have considered the combined off-grid market and for our projections have not separately considered residential and non-residential systems as we have with grid connect PV. A summary of the data provided by ORER, analysed on the basis of Grid and Off grid is included as Attachment 5 for residential systems and Attachment 6 for non-residential systems.

We have a number of reservations with the composition of the data as relates to Off-grid systems due to:

- The number of systems identified as Off-grid amounts to more than 31,000 systems, which seems extremely high and we have observed that a number of the postcode locations are in city areas with easy access to the grid.
- The manner in which the "Off grid" multiplier was applied has created distortions with some of the data as Agents were required to submit assignments twice to create the extended number of STCs and submitted much higher system capacity figures so that the correct number of STCs would be created.

As a result we have not relied on the data provided by the ORER in developing our projections.

Off-grid SGUs are defined as an SGU installed at least 1 kilometre from the nearest main-grid line or an SGU less than 1 kilometre from a main-grid line where the owner has provided written evidence from the local network service provider that the total cost of connecting the SGU to the main-grid is more than $30,000.

REC creation for the extended multiplier is subject to annual caps for eligible off-grid SGUs as follows:

Item	Period of small generation unit installation	Number
1	1 July 2010 to 30 June 2011	250,000
2	1 July 2011 to 30 June 2012	250,000
3	1 July 2012 to 30 June 2013	250,000
4	1 July 2013 to 30 June 2014	150,000
5	1 July 2014 to 30 June 2015	100,000

If the annual cap is reached or exceeded the solar credits multiplier immediately applies only to the first 1.5kW of capacity installed. Generation from capacity above 1.5 kW will still be eligible for the 1:1 rate of REC creation.

For our forward projections we assume that:

- A total of 7,000 Off-grid systems will be installed in 2012 increasing to 8,000 in 2013 and 9,000 in 2014
- Average 3 kW per system installed

The number of systems installed and associated certificates created for off-grid solar credit systems is summarised in Table 7.1.

Table 7.1 System details – Off-grid

Year of installation	Estimate 2010	Estimate 2011	Forecast 2012	Forecast 2013	Forecast 2014
Number of Systems Installed	6,000	15,500	7,000	8,000	9,000
Average kW/system	1.50	3.00	3.00	3.00	3.00
Average Certificates/System	281.0	315.7	161.7	99.5	62.2
MW Installed	9.0	46.5	21.0	24.0	27.0
Eligible Certificates ('000)	1,686	4,893	1,132	796	560

8. SWH and Air Sourced Heat Pump Projections

Water heaters are essential appliances and are subject to regulations which will increasingly limit consumer choices. As such, solar water heaters are subject to very different drivers than solar PV systems.

Within the water heater market, we have identified three discrete sub-markets:

- installations in new dwellings
- replacement water heater systems in existing dwellings
- commercial sized water heaters (new and replacement)

In our analysis we have combined solar water heaters with air sourced heat pumps and refer to them together as solar water heaters.

Air sourced heat pumps over 425 litres have been ineligible to create certificates since June 2010 and as a result the number of commercial sized SWH system has reduced considerably. In the data provided by ORER only 9 commercial sized systems (non heat pump) have created STCs to 6 October 2011 compared to 5600 and 974 systems in 2009 and 2010 respectively. There is no indication that this downward trend is likely to change in the near future and thus it is expected that the commercial water heater market will remain insignificant in comparison to all other SWH markets. As a result we now no longer separately identify this market segment.

The most important factors implicated in the choice of water heaters – electric, gas (storage or instantaneous) or solar (including heat pumps), include:

- regulations – i.e. electric water heater (EWH) phase-out
- comparative capital costs of the technologies
- access to reticulated gas
- financial incentives – rebates and REC/STCs
- consumer perceptions of energy prices i.e. electricity and LPG

In the replacement water heater market, the factor with the greatest influence in the choice of water heater technology is the type of the incumbent system. Most systems are replaced at time of failure and the replacement decision may be subject to time and financial constraints. Thus, historically, the majority of water heater replacements which have occurred are ‘like-for-like’. However, with the second stage of the electric resistance water heaters phase out due to commence in 2012, this should begin to change.

Overview of drivers for the solar water heater market

Market shares by system type were forecast on a state-by-state basis. These were informed by recent market share information and assumptions regarding the implementation of Phase 1 and Phase 2 of the EWH phase out. We expect that the current state and federal rebates will be progressively wound down as funding expires; in particular we expect that the federal rebate funding will be exhausted by 30 June 2012. The NSW rebate was terminated on 30 June 2011 and the Hobart City rebate will conclude at the end of 2011.

In Victoria the Energy Saver Scheme includes SWH as an eligible activity and where an electric hot water system is replaced by a SWH, 30 to 50 Victorian Energy Efficiency Certificates (VEECs) can be created. With the significant increase in the VEEC price over the last three months to around $35 to $40, this now becomes a significant financial incentive that will see more SWH systems sold and installed in Victoria.

Industry feedback is suggesting that the installed cost for SWH is likely to remain fairly stable over the next few years, which represents a real term cost reduction of 2 to 3% per annum.

New building water heater market

The primary drivers in this market are the number of new dwellings, building regulations in force in that state and the availability of gas in the new development. Other factors such as influence of the builder, environmental performance and industry marketing, as well as capital and operating cost will also be important.

Industry sourced data suggests that the number of SWH that eventually are submitted to create certificates is 10 to 15% lower than the number of systems actually sold by the industry. This has been a well-documented phenomenon for a number of years and is believed to be the result of restrictions and difficulties for home builders/renovators to create certificates. This arises out of confusion and uncertainty as to who has the right to create certificates where the owner of the home or building may not necessarily own the system at the time it was installed.

We have relied on ORER data to separate SWH systems installed in new buildings and have used this as a basis for forecasting SWH installations for this sector. From the ORER data a total of 23,951 SWH systems installed in new buildings in 2011 created certificates to 6 October 2011. Once we allow for the lag in creation we estimate that eventually 37,962 systems installed in 2011 will have created certificates.

Our estimates for 2012 to 2014 are based on the 2011 installation levels and then increasing this in line with new 0dwelling completion data from the Housing Industry Association (HIA) Economics group forecasts. Growth rates for new home completions are set out in Table 8.1 below.

Table 8.1 Growth in New Dwelling Completions

	2012	2013	2014
NSW	13.0%	12.0%	3.0%
VIC	-14.0%	1.0%	3.0%
QLD	6.0%	15.0%	5.0%
SA	7.0%	8.0%	3.0%
WA	4.0%	13.0%	5.0%
TAS	4.0%	4.0%	5.0%
NT	11.0%	2.0%	5.0%
ACT	-23.0%	8.0%	5.0%
Australia (average)	-3.0%	7.9%	3.8%

Data based dwelling completion data from the Housing Industry Association Oct 2011 report.

We expect that the number of SWH systems installed in new homes to reduce slightly in 2012 to 36,816 in line with lower new home completions and then to increase by 8% in 2013 and then a further 4% in 2014. Refer to Attachment 7 for a detailed assessment by state.

Replacement WH market

Historically, the replacement market has been dominated by the replacement of electric resistance water heaters. With the commencement of the second stage of the EWH phase out in 2012, it is expected that this market will grow significant in the next few years. Table 8.2 below shows the share of houses with EWH with no access to reticulated gas. NSW and Queensland are particularly limited in their access to reticulated gas and hence there will be larger growth of SWH installations in these states. Tasmania is exempt from the EWH phase out regulations so it is likely that SWH replacement market there will grow at a slower rate.

Table 8.2 Share of houses with electric water heaters with no access to reticulated gas

State	% of EWH
NSW	56.0%
VIC	22.0%
QLD	58.0%
WA	23.0%
TAS	43.0%
SA	14.0%
ACT	0.0%
NT	100.0%

Data based on Table 17 in Regulation Impact Statement for the EWH Phase-out (Wilkenfeld 2009), includes only houses which are 'not connectable'.

We have relied on ORER data to separate SWH systems installed in existing buildings and have used this as a basis for forecasting SWH installations for the replacement sector. From the ORER data a total of 47,846 SWH systems installed in existing buildings in 2011 created certificates to 6 October 2011. Once we allow for the lag in creation we estimate that eventually 75,835 systems installed in 2011 will have created certificates.

Overall we expect to see a 33% increase in the number of SWH systems installed in 2012 driven by a combination of factors including:

- EWH phase out regulations
- slowdown in PV sales reducing competition to SWH for discretionary household expenditure
- rising electricity prices caused predominantly by rising network charges
- implementation of the carbon price and the resultant compensation payments to around 80% of households which provides cash to energy consumers at a time of rising energy bills

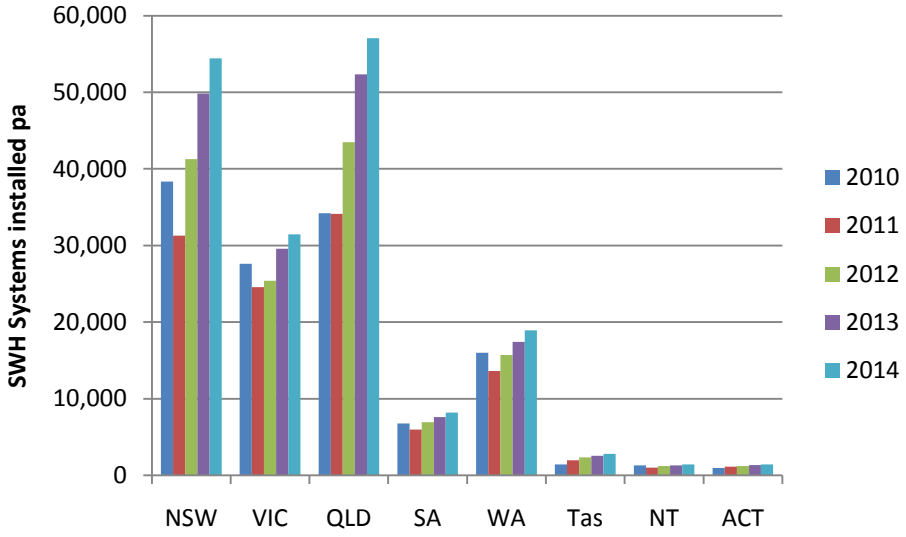
We expect that the states with high proportions of electric water heater systems will experience much higher growth rates due to the progressive implementation of the EWH phase out regulations. As a result we have assumed growth rates of 35% for NSW and Queensland, and 20% for the other states. We have assumed 50% growth rate in Victoria for 2012 due to the impact of the higher VEEC price.

We expect that the number of SWH systems installed in existing homes to increase significantly in 2012 to 100,787 units. We expect to see SWH system installations continued to increase by 21% in 2013 and then a further 10% in 2014. Refer to Attachment 7 for a detailed assessment by state.

Certificates created from the installation of water heater systems

In total we expect that SWH systems installed in 2012 to be 137,603 which represents a 21% increase on the expected level of systems installed in 2011. NSW, Queensland and Victoria will dominate SWH installations (refer to Figure 8.1) as they will be most impacted by regulatory and support measures to replace electric water heaters.

Figure 8.1 SWH Systems creating Certificates – New and Replacement



In determining the number of STCs to be created we have assumed that the level of STCs per system (on a state by state basis) achieved in 2011 will be maintained through the 2012 to 2014 projection period.

In total, 4.2 million certificates are expected to be created for water heaters installed in 2012. This is expected to grow to 4.9 million in 2013 and 5.3 million in 2014 (refer to Table 8.3).

Table 8.3 Certificate creation from SWH – Total

Year of installation	Estimate 2010	Estimate 2011	Forecast 2012	Forecast 2013	Forecast 2014
SWH Systems					
Number of Systems Installed	126,641	113,797	137,603	162,013	175,745
Average Certificates/System	33.65	30.22	30.34	30.34	30.37
Eligible Certificates ('000)	**4,262**	**3,439**	**4,175**	**4,916**	**5,337**

9. Other small generating units

Wind Small Generation Units - Historic Creation

Due to the upfront cost of wind generators and that only five years worth of certificates can be claimed upfront, Certificates have not been a strong motivation for installing wind SGUs. It is rather the introduction of feed-in tariff's which has led to the surge in wind installations around the country.

Figure 9.1 Number of wind Installations (2009-2011)

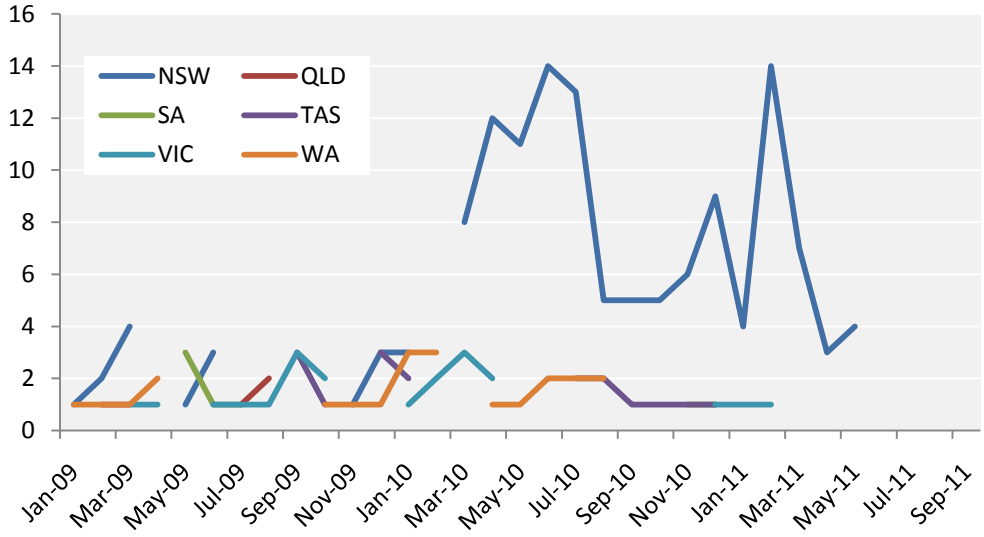
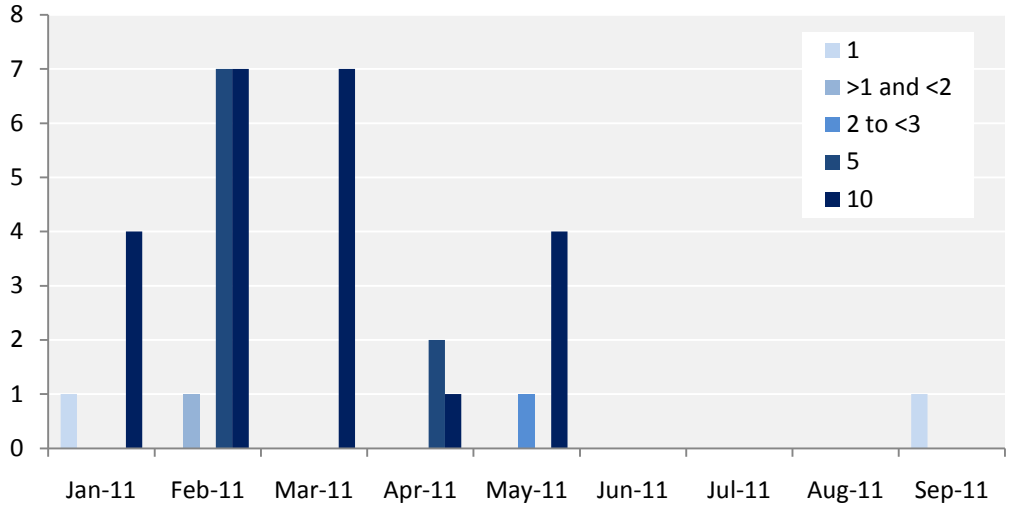


Figure 9.1 shows that NSW dominated the wind installations over the past two years and how this period closely aligns with the NSW feed-in tariff which commenced in November 2009 and finished in April 2011. Wind installations during this period were dominated by a single installation business which is now no longer operating.

Figure 9.2 Wind Installations by system size



The removal of feed-in tariffs in most states means that we expect the number of systems installed to decrease significantly as well as the average size of the systems. Figure 9.2 shows that systems during 2011 have been heavily dominated by 5kW and 10 kW systems. We can also see a significant fall in installations over the second half of the year. Note that Figure 9.2 uses installation date, so some systems may have been installed but are yet to create certificates.

Projections

In the year to date, 36 systems have created STCs, of which only 4 were less than 5 kW. We believe the average systems installed during 2012 will be between 1 and 3 kW. Of these only half are likely to attract solar credits.

Table 9.1 Certificate creation from Wind - total

	2,010	2011 #	2011 *	2012 *	2013 *	2014 *
Number of Systems	134	36	42	10	10	10
Average Certificates per System	93.4	124.5	115.0	30.0	23.0	19.0
Certificate Creation	12,510	4,483	4,830	300	230	190

YTD
* Projections

10. Other Matters

Green Energy Markets has not considered the amount of STCs that will be carried forward under the Large-scale Target as a result of forward agreements.

Our projections of systems and certificates have been made on the basis of generation or installation year. There is a delay in the time that systems are installed to the time that the certificates are approved and registered by the ORER.

11. Resources

Resources to be utilised in the solar PV and SWH modelling will include, but will not be limited to, the following sources, along with other relevant industry reports:

- ORER data
- ABS publications including: 8750.0 Dwelling Unit Commencements; 1301 Year Book Australia (for current dwelling types); 3236 Household and Family Projections; 4602.0 Environmental Issues (for water heater system and gas usage data)
- Australian Government Department of the Treasury GDP forecasts
- Latest information of electric resistance water heater phase-out and state regulations
- GEM and SunWiz solar water heater and solar PV installation models
- GEM and SunWiz solar PV payback model
- Australian PV Association reports including solar PV installed capacity figures
- Relevant legislation
- State and territory building and plumbing regulations
- Department of Climate Change and Energy Efficiency information on the electric water heater phase-out
- State and territory government information on feed-in tariffs, SWH rebates and other programs such as the Victorian Energy Efficiency Target
- PV industry analyst module and inverter price forecasts
- Documents from state regulators (where applicable) on regulated retail tariff increases

Attachment 1

Summary of Results

Year of installation	Estimate 2010	Estimate 2011	Forecast 2012	Forecast 2013	Forecast 2014
1. SGUs (PV)					
1.1 Grid Connect - Residential					
Number of Systems Installed	195,000	324,494	184,943	181,310	170,971
Avge systems per mth	16,250	27,041	15,412	15,109	14,248
Avge kW/system	1.77	2.09	2.03	2.01	2.01
Avge RECs/System	121.8	141.5	86.5	56.8	39.2
MW Installed	346.1	678.3	375.7	364.7	343.7
Eligible Certificates ('000)	23,749	45,931	16,003	10,292	6,695
1.2 Grid Connect - Non Residential					
Number of Systems Installed	2,008	4,500	5,000	6,700	8,400
Avge kW/system	10.35	10.13	12.00	12.00	12.00
Avge RECs/System	317.5	308.5	283.8	263.8	248.8
MW Installed	20.8	45.6	60.0	80.4	100.8
Eligible Certificates ('000)	638	1,388	1,419	1,767	2,090
1.3 Off-Grid					
Number of Systems Installed	6,000	15,500	7,000	8,000	9,000
Avge kW/system	1.50	3.00	3.00	3.00	3.00
Avge RECs/System	281.0	315.7	161.7	99.5	62.2
MW Installed	9.0	46.5	21.0	24.0	27.0
Eligible Certificates ('000)	1,686	4,893	1,132	796	560
Total PV Systems					
Number of Systems Installed	203,008	344,494	196,943	196,010	188,371
Avge Systems/Mth	16,917	28,708	16,412	16,334	15,698
Avge kW/system	1.85	2.24	2.32	2.39	2.50
Avge RECs/System	128.4	151.6	94.2	65.6	49.6
MW Installed	375.9	770.4	456.7	469.1	471.5
Eligible Certificates ('000)	26,073	52,213	18,554	12,856	9,344
2. SWH Systems					
Number of Systems Installed	126,641	113,797	137,603	162,013	175,745
Avge RECs/System	33.65	30.22	30.34	30.34	30.37
Eligible Certificates ('000)	4,262	3,439	4,175	4,916	5,337
3. Small Wind Systems					
Number of Systems Installed	140	65	20	20	20
Avge RECs/System	99.7	90.0	60.0	55.0	45.0
Eligible Certificates ('000)	14	6	1	1	1
TOTAL RECs/STCs ('000)	**30,349**	**55,657**	**22,730**	**17,772**	**14,683**

Attachment 2

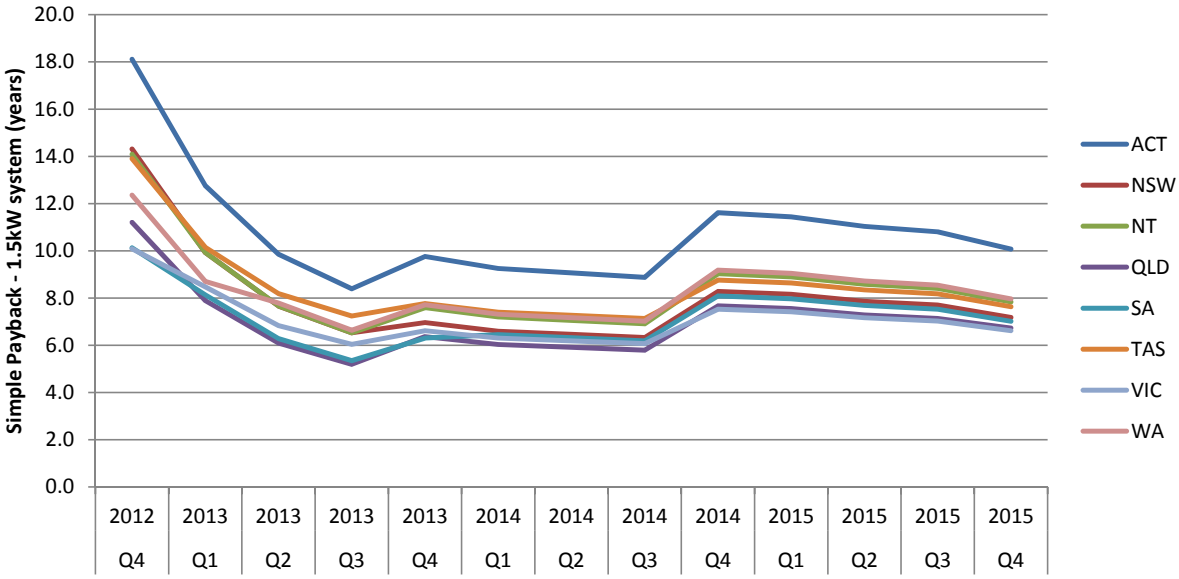
Financial Attractiveness

For Grid Connect Residential PV systems

Extract of Results from SunWiz's Payback Model

Expressed in simple payback terms (no discounting) ie. Net cost to customer divided by annual benefit

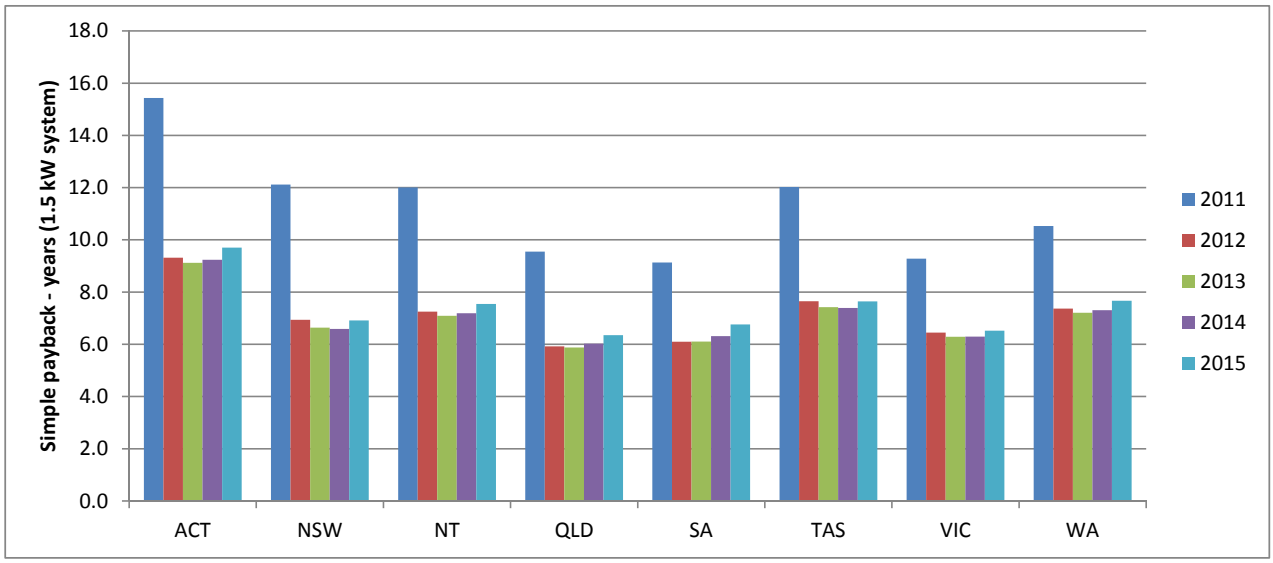
Simple payback on quarterly basis



Average Simple Paybacks (annual)

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
2011	15.4	12.1	12.0	9.5	9.1	12.0	9.3	10.5
2012	9.3	6.9	7.2	5.9	6.1	7.7	6.4	7.4
2013	9.1	6.6	7.1	5.9	6.1	7.4	6.3	7.2
2014	9.2	6.6	7.2	6.0	6.3	7.4	6.3	7.3
2015	9.7	6.9	7.5	6.3	6.8	7.6	6.5	7.7

Average Simple Paybacks on annual basis



Attachment 3

Residential Grid systems by State

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
Estimates for 2011									
2011 systems - to 6 Oct 2011 (ORER)	62,867	47,250	74,346	46,848	40,034	1,939	255	5,955	279,494
Share of balance	22.0%	23.0%	30.0%	12.0%	11.3%	0.4%	0.3%	1.0%	100.0%
Estimate for balance of year	9,900	10,350	13,500	5,400	5,085	180	135	450	45,000
Total 2011 systems	**72,767**	**57,600**	**87,846**	**52,248**	**45,119**	**2,119**	**390**	**6,405**	**324,494**
Market share	*22.4%*	*17.8%*	*27.1%*	*16.1%*	*13.9%*	*0.7%*	*0.1%*	*2.0%*	*100.0%*
Cumulative grid systems installed to end 2011	**158,039**	**115,291**	**158,834**	**78,552**	**78,599**	**5,820**	**1,233**	**9,773**	**606,141**
Market share	*26.1%*	*19.0%*	*26.2%*	*13.0%*	*13.0%*	*1.0%*	*0.2%*	*1.6%*	*100.0%*
Owner Occupied Dwellings end 2011 ('000)	**1,553**	**1,362**	**999**	**424**	**573**	**138**	**29**	**82**	**5,159**
Proportion of Owner Occupied Dwellings	10.2%	8.5%	15.9%	18.5%	13.7%	4.2%	4.3%	11.9%	11.7%
Projections for 2012									
Average number of systems installed/mth (derived)	3,776	3,911	4,136	1,450	1,648	272	68	152	15,412
Annulised installations	45,318	46,928	49,630	17,404	19,772	3,258	813	1,821	184,943
Cumulative installations	203,357	162,219	208,464	95,955	98,371	9,078	2,046	11,594	791,084
Owner occupied dwelling at year end ('000)	1,553	1,362	1,004	422	576	138	29	82	5,165
Proportion of Owner Occupied Dwellings	13.1%	11.9%	20.8%	22.7%	17.1%	6.6%	7.1%	14.1%	15.3%
Projections for 2013									
Average number of systems installed/mth (derived)	4,321	3,907	3,336	1,393	1,646	270	67	168	15,109
Annulised installations	51,857	46,880	40,037	16,716	19,751	3,239	808	2,021	181,310
Cumulative installations	255,213	209,099	248,501	112,671	118,122	12,317	2,854	13,616	972,394
Owner occupied dwelling at year end ('000)	1,584	1,389	1,029	430	591	140	29	84	5,275
Proportion of Owner Occupied Dwellings	16.1%	15.1%	24.2%	26.2%	20.0%	8.8%	9.8%	16.3%	18.4%
Projections for 2014									
Average number of systems installed/mth (derived)	4,094	3,701	3,156	1,268	1,558	254	62	155	14,248
Annulised installations	49,127	44,413	37,867	15,216	18,699	3,053	739	1,857	170,971
Cumulative installations	304,341	253,512	286,367	127,888	136,821	15,370	3,593	15,473	1,143,365
Owner occupied dwelling at year end ('000)	1,616	1,417	1,055	437	606	142	30	85	5,387
Proportion of Owner Occupied Dwellings	18.8%	17.9%	27.2%	29.3%	22.6%	10.8%	12.1%	18.1%	21.2%

Summary by State

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
Penetration rates									
	NSW	**VIC**	**QLD**	**SA**	**WA**	**Tas**	**NT**	**ACT**	**Total**
2010	5.6%	4.3%	7.2%	6.3%	6.0%	2.7%	3.0%	4.2%	5.6%
2011	10.2%	8.5%	15.9%	18.5%	13.7%	4.2%	4.3%	11.9%	11.7%
2012	13.1%	11.9%	20.8%	22.7%	17.1%	6.6%	7.1%	14.1%	15.3%
2013	16.1%	15.1%	24.2%	26.2%	20.0%	8.8%	9.8%	16.3%	18.4%
2014	18.8%	17.9%	27.2%	29.3%	22.6%	10.8%	12.1%	18.1%	21.2%
Systems installed									
	NSW	**VIC**	**QLD**	**SA**	**WA**	**Tas**	**NT**	**ACT**	**Total**
2009	14,424	18,821	18,984	8,892	11,427	1,492	205	833	75,078
2010	67,312	35,845	49,763	16,464	20,793	1,898	573	2,352	195,000
2011	72,767	57,600	87,846	52,248	45,119	2,119	390	6,405	324,494
2012	45,318	46,928	49,630	17,404	19,772	3,258	813	1,821	184,943
2013	51,857	46,880	40,037	16,716	19,751	3,239	808	2,021	181,310
2014	49,127	44,413	37,867	15,216	18,699	3,053	739	1,857	170,971

Attachment 4

Certificate Creation - Grid Connect Residential

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
Grid Connected Systems installed (No.)									
2010	67,312	35,845	49,763	16,464	20,793	1,898	573	2,352	195,000
2011	72,767	57,600	87,846	52,248	45,119	2,119	390	6,405	324,494
2012	45,318	46,928	49,630	17,404	19,772	3,258	813	1,821	184,943
2013	51,857	46,880	40,037	16,716	19,751	3,239	808	2,021	181,310
2014	49,127	44,413	37,867	15,216	18,699	3,053	739	1,857	170,971
Average system size (kW/system)									
2010	1.91	1.56	1.73	1.85	1.77	1.44	1.80	1.90	1.77
2011	1.99	2.13	2.07	2.22	2.09	1.88	2.11	2.17	2.09
2012	1.75	2.13	2.20	2.35	1.75	1.88	2.11	2.17	2.03
2013	1.75	2.13	2.20	2.35	1.75	1.88	2.11	2.17	2.01
2014	1.75	2.13	2.20	2.35	1.75	1.88	2.11	2.17	2.01
Installed Capacity (MW)									
2010	128.6	55.9	86.1	30.5	36.8	2.7	1.0	4.5	346.1
2011	144.8	122.7	181.8	116.0	94.3	4.0	0.8	13.9	678.3
2012	79.3	100.0	109.2	40.9	34.6	6.1	1.7	4.0	375.7
2013	90.7	99.9	88.1	39.3	34.6	6.1	1.7	4.4	364.7
2014	86.0	94.6	83.3	35.8	32.7	5.7	1.6	4.0	343.7
Zone Rating	1.382	1.185	1.382	1.382	1.382	1.185	1.536	1.382	
Scaling Factor for system size #									
2010 +	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Multiplier Threshhold (kW)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Proportion first 6 mths	60%	60%	60%	60%	60%	60%	60%	60%	
Multiplier (average)									
2010	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
2011	4.70	4.35	4.40	4.10	4.15	4.10	4.50	4.50	
2012	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	
2013	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	
2014	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Average Certificates/System									
2010	139.9	87.3	129.0	122.6	110.3	55.1	129.6	124.6	121.8
2011	153.2	124.6	145.7	139.6	138.4	113.7	166.2	150.7	141.5
2012	84.3	78.9	93.5	96.5	84.3	74.6	101.8	92.8	86.5
2013	53.8	52.8	63.0	66.0	53.8	48.4	68.0	62.4	56.8
2014	35.6	37.1	44.7	47.7	35.6	32.7	47.6	44.1	39.2
Calculated Certificates ('000) ##									
2010	9,417	3,129	6,419	2,018	2,293	105	74	293	23,749
2011	11,146	7,179	12,796	7,292	6,247	241	65	965	45,931
2012	3,821	3,703	4,638	1,679	1,667	243	83	169	16,003
2013	2,792	2,474	2,521	1,104	1,063	157	55	126	10,292
2014	1,747	1,648	1,692	726	665	100	35	82	6,695

Notes

A scaling factor is applied to the average RECs per System to account for the fact that systems greater than the average earn less RECs than systems less than the average due to the Multiplier

These are certificates that are eligble to be created on a generation year basis and do not allow for the a delay from system installation to certificate approval

Attachment 5

Summary of REC-Registry Data — Residential PV Systems only (capacity less than 8 kW)

Submitted for registration as at 6 October 2011 (ORER)

	No. of Systems			No. of Certificates			Certificates per System		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Offgrid									
ACT		122	553		20,118	81,291		164.9	147.0
NSW		4,537	10,665		670,184	1,546,611		147.7	145.0
NT		59	21		10,592	3,988		179.5	189.9
QLD		1,289	7,115		197,183	1,004,784		153.0	141.2
SA		795	2,816		117,646	374,020		148.0	132.8
TAS		58	161		7,226	22,237		124.6	138.1
VIC		1,407	3,616		178,838	423,759		127.1	117.2
WA		2,554	6,096		386,915	848,671		151.5	139.2
Total Offgrid		**10,821**	**31,043**	**-**	**1,588,702**	**4,305,361**		**146.8**	**138.7**
Grid connect									
ACT	833	2,329	5,955	42,751	290,080	915,455	51.3	124.6	153.7
NSW	14,424	66,646	62,867	548,759	9,323,742	9,713,914	38.0	139.9	154.5
NT	205	567	255	17,982	73,487	42,699	87.7	129.6	167.4
QLD	18,984	49,270	74,346	765,885	6,357,654	10,877,731	40.3	129.0	146.3
SA	8,892	16,301	46,848	336,470	1,999,130	6,554,634	37.8	122.6	139.9
TAS	1,492	1,879	1,939	38,030	103,496	223,540	25.5	55.1	115.3
VIC	9,119	35,490	47,250	336,956	3,097,107	5,912,602	37.0	87.3	125.1
WA	11,427	20,587	40,034	371,904	2,270,482	5,603,013	32.5	110.3	140.0
Total Grid	**65,376**	**193,069**	**279,494**	**2,458,737**	**23,515,178**	**39,843,588**	**37.6**	**121.8**	**142.6**
Overall Total	**65,376**	**203,890**	**310,537**	**2,458,737**	**25,103,880**	**44,148,949**	**37.6**	**123.1**	**142.2**

	kW Installed			kW per System		
	2009	2010	2011	2009	2010	2011
Offgrid						
ACT	-	285	1,133		2.34	2.05
NSW	-	9,113	20,204		2.01	1.89
NT	-	112	51		1.90	2.41
QLD	-	2,872	15,212		2.23	2.14
SA	-	1,500	6,230		1.89	2.21
TAS	-	154	478		2.65	2.97
VIC	-	2,930	7,405		2.08	2.05
WA	-	5,440	12,601		2.13	2.07
Total Offgrid		**22,407**	**63,314**	**0**	**2.07**	**2.04**
Grid connect						
ACT	1,243	4,421	12,926	1.49	1.90	2.17
NSW	18,517	127,413	125,122	1.28	1.91	1.99
NT	339	1,022	539	1.65	1.80	2.11
QLD	24,018	85,250	154,134	1.27	1.73	2.07
SA	12,155	30,100	104,225	1.37	1.85	2.22
TAS	1,712	2,710	3,644	1.15	1.44	1.88
VIC	10,470	55,335	100,519	1.15	1.56	2.13
WA	14,003	34,550	83,189	1.23	1.68	2.08
Total Grid	**82,457**	**340,802**	**584,298**	**1.26**	**1.77**	**2.09**
Overall Total	**82,457**	**363,209**	**647,612**	**1.26**	**1.78**	**2.09**

Attachment 6

Summary of REC-Registry Data — Non residential PV Systems (capacity more than 7.99 kW)

Submitted for registration as at 6 October 2011 (ORER)

	No. of Systems			No. of Certificates			Certificates per System		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Offgrid									
ACT		2	12		880	3,763		440.0	313.6
NSW		94	234		26,593	71,177		282.9	304.2
NT		4	4		3,225	3,259		806.3	814.8
QLD		74	98		29,987	36,519		405.2	372.6
SA		9	29		2,608	9,925		289.8	342.2
TAS		6	12		1,728	3,228		288.0	269.0
VIC		**8**	**16**		**1,637**	**3,566**		**204.6**	**222.9**
WA		56	276		30,583	156,529		546.1	567.1
Total Offgrid		**253**	**681**	**-**	**97,241**	**287,966**		**384.4**	**422.9**
Grid connect									
ACT	2	29	77	945	10,134	29,046	472.5	349.4	377.2
NSW	38	1,542	2,347	16,144	473,805	696,489	424.8	307.3	296.8
NT	19	15	5	4,596	6,261	1,933	241.9	417.4	386.6
QLD	39	208	500	11,822	76,423	172,311	303.1	367.4	344.6
SA	18	114	292	6,121	38,580	83,857	340.1	338.4	287.2
TAS	1	3	13	174	1,006	3,676	174.0	335.3	282.8
VIC	**6**	**36**	**42**	**527**	**9,248**	**12,705**	**87.8**	**256.9**	**302.5**
WA	21	61	157	6,765	22,126	59,091	322.1	362.7	376.4
Total Grid	**144**	**2,008**	**3,433**	**47,094**	**637,583**	**1,059,108**	**327.0**	**317.5**	**308.5**
Overall Total	**144**	**2,261**	**4,114**	**47,094**	**734,824**	**1,347,074**	**327.0**	**325.0**	**327.4**

	kW Installed			kW per System		
	2009	2010	2011	2009	2010	2011
Offgrid						
ACT	-	31	128		15.26	10.64
NSW	-	816	2,400		8.68	10.25
NT	-	128	126		32.01	31.59
QLD	-	1,299	1,467		17.55	14.97
SA	**-**	**102**	**381**		**11.33**	**13.15**
TAS	-	87	182		14.44	15.17
VIC	-	78	183		9.80	11.46
WA	-	1,201	6,202		21.45	22.47
Total Offgrid		**3,741**	**11,069**	**0**	**14.79**	**16.25**
Grid connect						
ACT	40	357	1,041	19.80	12.33	13.52
NSW	682	14,759	21,501	17.95	9.57	9.16
NT	171	229	59	9.02	15.26	11.82
QLD	492	2,718	6,217	12.63	13.07	12.43
SA	**280**	**1,328**	**2,821**	**15.56**	**11.65**	**9.66**
TAS	10	45	141	9.84	14.90	10.85
VIC	**44**	**446**	**548**	**7.30**	**12.40**	**13.05**
WA	298	907	2,444	14.20	14.87	15.56
Total Grid	**2,018**	**20,789**	**34,770**	**14.01**	**10.35**	**10.13**
Overall Total	**2,018**	**24,530**	**45,840**	**14.01**	**10.85**	**11.14**

Attachment 7

SWH Systems by State

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
Systems Installed 2010									
New building	4968	20034	10451	1657	5666	263	433	236	43708
Replacement systems	33372	7598	23748	5130	10331	1165	865	724	82933
Total	**38340**	**27632**	**34199**	**6787**	**15997**	**1428**	**1298**	**960**	**126,641**
Average number of certificate per system	34.80	33.63	33.07	33.07	31.10	48.98	34.70	31.66	33.65
Systems installed 2011 (YTD 6 Oct 2011)									
New building	2,856	11,289	5,716	1,085	2,462	112	186	245	23,951
Replacement systems	16,897	4,218	15,825	2,681	6,131	1,140	468	486	47,846
Total	**19753**	**15507**	**21541**	**3766**	**8593**	**1252**	**654**	**731**	**71,797**
Average number of certificate per system	31.84	27.86	30.79	29.69	30.19	26.22	27.93	31.64	30.22
Certificates still to be created (2011)									
New building	1,671	6,604	3,344	635	1,440	66	109	143	14,011
Replacement systems	9,884	2,467	9,257	1,568	3,587	667	274	284	27,989
Total	**11,555**	**9,071**	**12,601**	**2,203**	**5,027**	**732**	**383**	**428**	**42,000**
Projected Systems installed 2011									
New building	4,527	17,893	9,060	1,720	3,902	178	295	388	37,962
Replacement systems	26,781	6,685	25,082	4,249	9,718	1,807	742	770	75,835
2011 Total systems	**31,308**	**24,578**	**34,142**	**5,969**	**13,620**	**1,984**	**1,037**	**1,159**	**113,797**
Expected Growth Rates (2012-2014)									
2012									
New building	13.0%	-14.0%	6.0%	7.0%	4.0%	4.0%	11.0%	-23.0%	-3.0%
Replacement systems	35.0%	50.0%	35.0%	20.0%	20.0%	20.0%	20.0%	20.0%	32.9%
2013									
New building	12.0%	1.0%	15.0%	8.0%	13.0%	4.0%	2.0%	8.0%	7.9%
Replacement systems	22.0%	40.0%	22.0%	10.0%	10.0%	10.0%	10.0%	10.0%	21.3%
2014									
New building	3.0%	3.0%	5.0%	3.0%	5.0%	3.0%	3.0%	3.0%	3.8%
Replacement systems	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Expected System Installations									
2012									
New building	5,115	15,388	9,603	1,840	4,058	185	327	299	36,816
Replacement systems	36,155	10,028	33,861	5,099	11,661	2,168	890	924	100,787
Total	**41,270**	**25,416**	**43,465**	**6,939**	**15,719**	**2,353**	**1,217**	**1,223**	**137,603**
2013									
New building	5,729	15,542	11,044	1,987	4,586	192	334	323	39,737
Replacement systems	44,109	14,039	41,311	5,609	12,827	2,385	979	1,017	122,276
Total	**49,838**	**29,581**	**52,354**	**7,596**	**17,413**	**2,577**	**1,313**	**1,340**	**162,013**
2014									
New building	5,901	16,008	11,596	2,047	4,815	198	344	333	41,241
Replacement systems	48,520	15,443	45,442	6,170	14,110	2,624	1,077	1,118	134,504
Total	**54,421**	**31,451**	**57,038**	**8,217**	**18,925**	**2,821**	**1,421**	**1,451**	**175,745**

Summary of System Installations

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
2010	38,340	27,632	34,199	6,787	15,997	1,428	1,298	960	126,641
2011	31,308	24,578	34,142	5,969	13,620	1,984	1,037	1,159	113,797
2012	41,270	25,416	43,465	6,939	15,719	2,353	1,217	1,223	137,603
2013	49,838	29,581	52,354	7,596	17,413	2,577	1,313	1,340	162,013
2014	54,421	31,451	57,038	8,217	18,925	2,821	1,421	1,451	175,745

Cerificates per system

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
2010	34.80	33.63	33.07	33.07	31.10	48.98	34.70	31.66	33.65
2011	31.84	27.86	30.79	29.69	30.19	26.22	27.93	31.64	30.22
2012	31.84	27.86	30.79	29.69	30.19	26.22	27.93	31.64	30.34
2013	31.84	27.86	30.79	29.69	30.19	26.22	27.93	31.64	30.37
2014	31.84	27.86	30.79	29.69	30.19	26.22	27.93	31.64	30.38

Certificate Creation ('000)

	NSW	VIC	QLD	SA	WA	Tas	NT	ACT	Total
2010	1,334	929	1,131	224	498	70	45	30	4,262
2011	997	685	1,051	177	411	52	29	37	3,439
2012	1,314	708	1,338	206	475	62	34	39	4,175
2013	1,587	824	1,612	226	526	68	37	42	4,920
2014	1,732	876	1,756	244	571	74	40	46	5,339