Australian PV Association

APVA Response to the Climate Change Authority Renewable Energy Target Review Issues Paper, August 2012

September 2012

Summary of Key Points

The Renewable Energy Target and MRET before it have been world-leading market based mechanisms to stimulate the installation of renewable energy systems.

The mechanism has delivered renewable energy to the market at prices significantly lower than originally projected, and ahead of schedule.

Although the RET has undergone various changes which have disrupted industry planning, it has been the only longer term support mechanism in Australia, thus providing more market certainty than other programs, and hence more industry investment.

PV uptake has increased substantially since the RET was introduced, with over 2 GW now installed, a turnover in 2011 of $3.8B and over 10,000 people employed.

The APVA recommends:

- The 2020 target should be maintained. This is critical in ensuring market certainty, investment and employment growth.
- The SRES mechanism should be maintained to 2020 and remain uncapped.
- Targets of at least 30% for 2030 and 40% for 2040 should be set, with firm GWh targets legislated every 5 years for the period 10 years ahead.
- The period for which any renewable energy plant can create RECs should be restricted to 15 years.

Specific Questions Posed

Are the existing 41,000 GWh LRET 2020 target and the interim annual targets appropriate?

Yes, the 2020 targets and interim targets remain appropriate. Any changes would increase uncertainty in the market and hence increase finance and industry costs.

Forecasts of electricity use will always be uncertain. Usage increased significantly under the original MRET, resulting in the nominal 10% renewable energy target not being met with the fixed 9,500 GWh target. In fact, the percentage of renewable energy based electricity remains at 8%, where it was at the beginning of the MRET scheme in 2000.

The current nominal target is for ***at least 20%.*** In the event that electricity use does not increase substantially, Australia will achieve a higher renewable energy percentage, thus making future renewable energy and greenhouse targets easier to achieve, reducing the impacts of the carbon price and reducing the impacts of Australia's energy use on the Earth's climate.

What are the implications of changing the target in terms of economic efficiency, environmental effectiveness and equity?

Changing the target for 2020 will decrease investor certainty and confidence, and increase costs of renewable energy/GWh, as risk premiums are a major component of financing costs.

Investment in renewable energy is an economically efficient GHG reduction policy over the medium term. Although there may be lower cost methods of abatement available in the short term, in the longer term, an energy transformation is required to meet targets set by the Australian government and the international community. Investment in renewable energy now will help to bring the technologies down the learning curve and establish appropriate infrastructure, regulation and capacity to accommodate the technologies when required.

Renewable energy is a much more environmentally effective option to reduce GHG emissions when compared to emissions trading schemes that include or are linked to baseline and credit emission offset schemes. The latter have clear and demonstrated problems with additionality (ensuring that the emissions reductions occurred and that they would not have occurred anyway) and with permanence.

The implications of reducing the 2020 target are severe compared to the implications of establishing an increased target for 2030 and beyond. Reducing the RET would create a significant crisis of confidence amongst RE investors that may take many years to resolve. In addition, many studies have found that delaying action increases the rate at which emissions need to be reduced in order to avoid dangerous climate change, and so increases costs. Increasing the RET for 2030 and beyond would, by contrast, increase confidence amongst RE investors. Short term cost increases, if any, would be more than offset by overall cost reductions driven by GHG reduction targets being easier to achieve and by reduced renewable energy costs due to increased deployment.

Is the target trajectory driving sufficient investment in renewable energy capacity to meet the 2020 target?

The 2020 target may never be reached in actual GWh of renewable energy generation because liable entities have been able to bank large numbers of "Phantom" certificates created through the solar

multiplier. With excess certificates in the market, prices have not been sufficient to drive further investment.

There are a number of possible solutions to this:

- Increasing the REC target so that it equates with the GWh target when Phantom certificates are taken into account
- Setting a higher 2030 target to drive higher long term REC demand
- Limiting to 15 years the period over which any renewable energy plant can earn RECs.

How much capacity is needed to meet the target? How much is currently committed?

AEMO's 2012 Electricity Statement of Opportunities[1] calculated, in the absence of further deployment, an LGC deficit that could reach 31,200 GWh of renewable energy by 2020, and translated this as equivalent to a requirement for 10.8 GW of wind generation, as shown in Table 1. Equivalently, if no further wind farms were deployed, 20.8 GW of non-tracking PV would be required to meet this target, suggesting large-scale PV deployment on the order of 4.2 GW/year from 2016-2020 inclusive could satisfy this target[2]. Germany has been exceeding this volume year-on-year, proving that the target is physically deliverable. While wind may be a lower cost technology, commercial PV systems exceeding 100kW create LGCs and offset commercial rather than wholesale electricity prices, and solar farms on remote grids also offset high-priced diesel.

Table 1: Forecast LGC deficit (AEMO, 2012)

Year	2016	2017	2018	2019	2020 to 2030
Forecast LGC deficit (GWh, non-cumulative)	8,200	15,400	20,000	24,600	31,200
Equivalent wind generation capacity required to supply LGC deficit (cumulative, based on South Australian output) (MW)	2,800	5,300	6,900	8,500	10,800

Has the LRET driven investment in skills that will assist Australia in the future?

Yes, though solar skills have been driven more by the RET/SRES, with large-scale solar skills driven by grants with lesser support from LRET.

In the context of other climate and renewable policies, is there a case for the target to continue to rise after 2020?

A minimum target of 30% renewable energy based electricity should be set for 2030 and a minimum 40% for 2040. This will provide the certainty needed for companies to plan for future installations, since power purchase and REC contracts for at least 15 years are needed in order to obtain finance. Under current arrangements, projects constructed after 2015 will not have this certainty. It would also provide signals to industry that Australia is committed to renewables in the long term. This would encourage more industry supply chain components to be established in Australia, with associated employment, manufacturing and training.

Some might argue that by 2030 and beyond the carbon price will most likely be high enough to support the deployment of renewable energy in the absence of a renewable energy target. In this

[1] Australian Energy Market Operator, "2012 Electricity Statement of Opportunities for the National Electricity Market", http://www.aemo.com.au/Electricity/Planning/~/media/Files/Other/planning/2012_Electricity_Statement_of_Opportunities.pdf.ashx

[2] SunWiz and SBS, 2012

case, the price of LGCs would drop to zero because, as the carbon price increases, the required RET price will decrease. This means there is no risk of significant cost impacts by having an increased RET target. On the other hand, if the current emissions trading scheme has not been effective or has been abolished, an increased RET will serve as effective insurance to ensure significant emissions reductions from the electricity sector and continued growth of the renewables fraction.

Should other sectors of the economy be unable to reduce their emissions sufficiently for Australia to meet its overall abatement targets in 2030, 2040, 2050 and beyond, it may be necessary for the electricity sector to achieve a disproportionately large amount of the abatement task.

The APVA recommends the Climate Change Authority signal that the 2030 target should be increased and commit to conducting an in-depth review of the 2030 and later targets during 2013-2014. This would allow the 2030 RET recommendation to be informed by the CCA recommendations about long-term CO2e emission targets, which are due in February 2014. This should be the only aspect of the RET that is reviewed before 2014. Following this review, the 2025 RET in GWH should be legislated in 2015. The APVA also recommends that at that time an indicative target be set for 2040. The RET would be set again in 2020 with fixed GWh targets out till 2030, and indicative targets out to 2045 and so on, on a rolling basis. The point of long-term indicative targets is to provide market certainty and guidance for long-term industry investment and infrastructure planning, including transmission and distribution grids.

Should the target be a fixed gigawatt hour target, for the reasons outlined by the Tambling Review, with the percentage being an outcome?

The target is best set to a fixed level to facilitate investment planning, even if initially calculated from a percentage, based on estimates of electricity use for each future 10 year period. Of course, the actual proportion of renewables used in Australia will need to be higher than the proposed percentages for the electricity target alone, if Australia is to meet its 2050 greenhouse gas targets.

There are a number of corporate entities arguing that the RET should be made a percentage target rather than a fixed gigawatt hour target, on the basis that the current target may result in a renewable energy proportion higher than the nominal 20% on which the target was originally calculated. During the MRET period, when electricity growth rates were rising faster than forecast and the GWh target fell short of the nominal percentage increase, these same entities called for a fixed target on the basis of providing market certainty. Market certainty is still the most important factor, especially as financing large projects has become significantly more difficult post GFC.

Should the target be revised to reflect changes in energy forecasts? If so, how can this best be achieved – as a change in the fixed gigawatt hour target, or the creation of a moving target that automatically adjusts to annual energy forecasts?

The GWh target set for any 10 year period ahead should not be adjusted, but the targets beyond 10 years could be adjusted every 5 years to reflect changed energy forecasts as well as progress towards Australia meeting its overall GHG abatement targets for 2030, 2040, 2050 and beyond. Hence, the APVA recommends that an increased 2025 GWh target be set by 2015, based on a percentage 2030 target of at least 30%.

How should changes in pre-existing renewable generation be taken into account?

These should just be incorporated into the overall target but all projects, both pre-existing and new should have a limited time over which they can create LGCs. This should be set at a suitable time for

projects to generate an appropriate return (15 years is recommended). This time limit should be applied to all projects, meaning that some existing projects would no longer be allowed to create certificates, while deemed PV systems would not be able to claim further RECs after the first 15 years of operation.

What are the implications in terms of economic efficiency, environmental effectiveness and equity?

Setting a time limit for REC creation would allow more renewable energy projects to be built and provide REC market support for the minimal period needed to cover project costs. Continued payments to projects which were constructed 20 or 30 years ago would be avoided.

What are the costs and benefits of increasing, or not increasing, the LRET target for Clean Energy Finance Corporation-funded activities?

As for waste coal seam gas adjustments, it would seem wise to simply add to the RET target the forecast LGC creation from committed CEFC-funded projects as they are commissioned, thereby not affecting the market requirements for non-CEFC projects.

If this is not done, the CEFC will lower the costs of CEFC-funded projects and so drive otherwise more cost-effective projects out of the market, thus undermining the market-based aims of the RET being met via lowest cost options. Also, if not additional, the CEFC would not increase the amount of renewable energy generation in Australia, thereby lowering the combined economic efficiency of both the RET and the CEFC.

Is the shortfall charge set at an appropriate level to ensure the 2020 target is met?

It is very difficult to answer this question when there is so much uncertainty over the carbon price out to 2020 and beyond, or even past the next election. A high carbon price will require a low LGC and associated penalty price and vice versa. It is recommended that the shortfall charge be reviewed periodically to ensure that it is high enough to drive new renewable energy generation with the prevailing carbon price.

It is possible that existing fossil fuel generators will increasingly see that each additional MWh of renewable generation is reducing the profitability of their existing fossil fuel assets by a greater amount than the current shortfall charge, and thus opt to pay the penalty instead of purchasing LGCs. Once again, regular reviews of the shortfall charge will be necessary to monitor this.

Are there other issues relating to the liability or surrender framework the Authority should consider?

There is market uncertainty surrounding calculation of the point at which REC liabilities are incurred for exported PV electricity. It would be useful for this to be clearly defined to avoid double counting.

The self-generator exemption pre-dates the EITE partial exemptions – are both required? If so, why?

Neither are required.

The self-generator exemption was made when it was considered that smaller-scale generators were higher cost and would thus impose a significant burden on self-generators, who could not necessarily utilise large-scale technologies. With the significant drop in PV prices, it is likely that PV could very cost-effectively displace fossil fuel used by self-generators, thus driving an important new market in medium-scale PV while also making significant GHG emission reductions and also increasing the equity of the scheme.

What would be the impact of those changes on directly affected businesses and the broader community?

The RET would be more equitable if self-generators were included, and most likely would also be lower cost overall, due to economies of scale and volume.

Is a list approach to 'eligible renewable sources' appropriate?

Yes. This removes uncertainty.

Are there additional renewable sources which should be eligible under the REE Act?

There should be a mechanism whereby new technologies can apply for inclusion. The key principle of being renewable energy resource based should remain as the primary criterion to be met.

Should waste coal mine gas be included in the RET? Should new capacity of waste coal mine gas be included in the RET?

No. Coal mine gas is a fossil fuel, not a renewable energy source and should not be included under the RET.

What would be the costs and benefits of any recommended changes to eligible renewable sources?

Broadening the technology base will potentially reduce overall costs while adding much needed diversity to the Australian electricity mix.

What do you consider to be the costs and benefits of having a separate scheme for small-scale technologies?

A separate scheme recognises that rooftop solar power (which currently dominates the SRES market) creates savings at the retail tariff rate, whereas most systems in the LRET create revenue in the wholesale market. Also, the purchasers and installers of small-scale systems differ significantly from those involved with large-scale systems, so having different markets has been useful.

The lowest cost way of delivering the RET is by using technology which is closest to being commercially viable. At present this is clearly rooftop PV. Hence, if small-scale PV were included in the LRET, this may cannibalise other opportunities for wind and large-scale solar, which must compete with wholesale rather than the retail tariffs. This would reduce RET diversity and thwart the wider industry development aims.

Costs:

- Additional complexity and administration.
- Uncapped nature has the potential to create additional short-term costs.
- Allows electricity retailers to make windfall profits by paying lower market prices for STCs but being allowed to pass on the full $40 cost to consumers.

Benefits:

- Adds diversity.
- Allows for development of large-scale technologies.
- Provides some certainty for the small-scale technology systems.
- Allows LGC rate to get high enough to support other technologies.
- Annual trajectory setting notionally provides lower fluctuation in price than a trajectory predicted years in advance.

Should there continue to be a separate scheme for small-scale technologies?

Yes, now that the mechanism is established, it would create too much disruption to re-integrate the schemes. When the multiplier falls to 1X next year, the market incentive provided will be equal.

Is the uncapped nature of the SRES appropriate?

Placing a cap on the SRES market would exacerbate the boom-bust cycles already experienced due to constant policy changes, and continue them into what could otherwise be a stable period to 2020. At present, the SRES is delivering some of the lowest cost RECs, so limiting that market will inevitably increase the overall cost of achieving Australia's renewable energy targets and reducing GHG emissions.

What do you see as being the costs and benefits of an uncapped scheme in terms of economic efficiency, environmental effectiveness and equity?

In addition to the above, small-scale PV, and other SRES technologies, displace electricity at the point of end-use, thus providing benefits far greater than energy value alone. These distributed benefits will lead to a far more efficient and cost effective energy system in the long term.

Is the SRES driving investment in small scale renewable technologies? Is it driving investment in skills?

Yes. The PV industry has grown significantly over the past 5 years, with over 2 GW now installed, as shown in Figure 1 and employment over 10,000, as shown in Table 2.

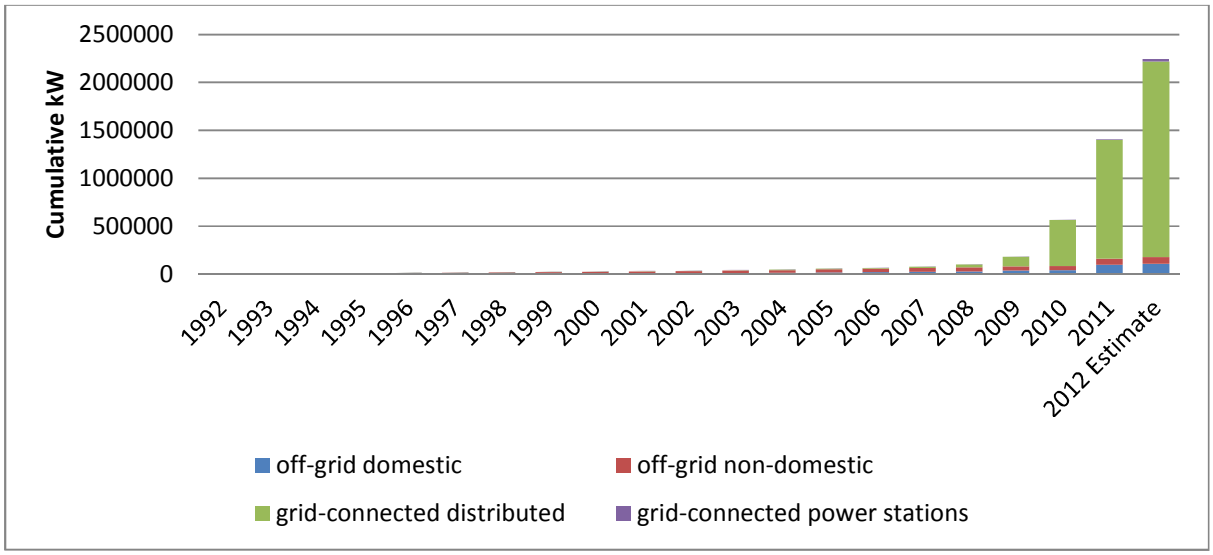

Figure 1: Cumulative PV installations in Australia[3]

Table 2: Estimated PV-related labour places in Australia, 2011[4]

Research and development (not including companies)	300
Manufacturing of products throughout the PV value chain from feedstock to systems, including company R&D	500
Distributors of PV products	600
System and installation companies	6000
Electricity utility businesses and government	200
Other (financial, legal, market analysts, consultants, REC traders, education and training etc.)	3000
Total	**10600**

Average system sizes have increased, thus improving economies of scale and exposing installers to larger installations. The strong market has created substantial efficiencies in mass-rollout of PV, which have added to module cost reductions and substantially reduced overall costs, as shown in Figure 2. These advances have been envied worldwide. Reducing the upfront cost of systems has in turn increased affordability and thus consumer attractiveness.

[3] Australian PV Association, 2012, *PV in Australia 2011, updated*
[4] Australian PV Association, 2012, *PV in Australia 2011*.

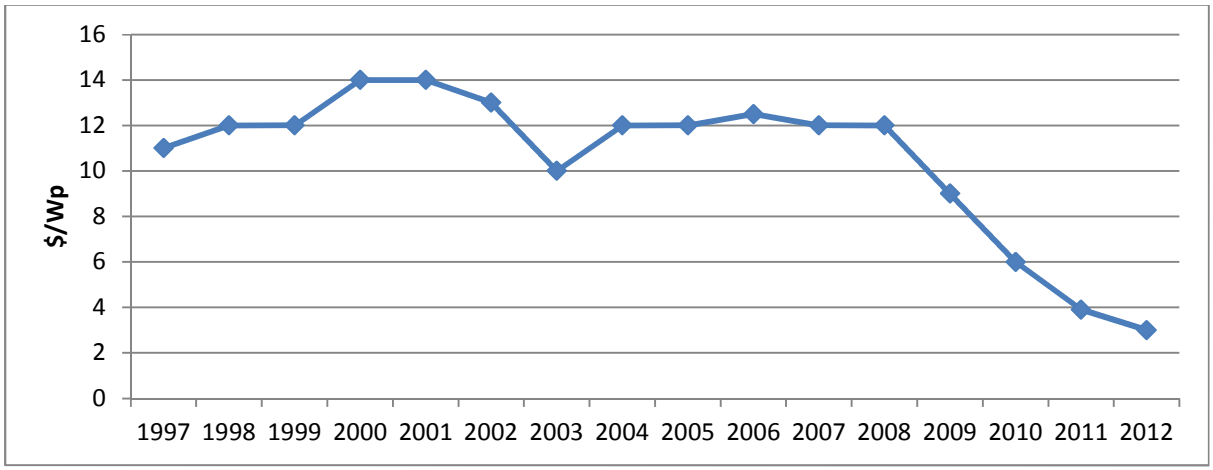

Figure 2: Typical small-scale PV system costs, Australia 1997 – 2012 (ibid)

Is it appropriate to include displacement technologies in the SRES?

No, displacement technologies should be included under energy efficiency and greenhouse gas reduction measures.

Should additional eligible technologies be limited to generation technologies?

Yes.

Is deeming an appropriate way of providing certificates to SRES participants?

Yes, deeming is an appropriate way of managing large numbers of small installations. The significant overhead cost of metering, measuring, reporting, and transacting RECs for small systems far outweighs the benefits they would bring.

It should be noted that rounding down of REC creation is highly punitive for systems creating 1.9 or 2.9 MWh per year.

Are the deeming calculations for different small-scale technology systems reasonable?

The deeming rates for small-scale PV were conservatively estimated, based on long-term weather data, and appear reasonable. With most systems installed only over the last few years, when incentives were high and system performance was not necessarily a focus, optimum output may not have been achieved in all cases. However, it would not be sensible to make changes based on recent production data. It is likely that, as feed-in tariff and REC support declines, customer focus will move clearly towards maximising output to reduce electricity bills, and so average output will improve.

The 15 year deeming period is also reasonable and does not warrant change. As previously stated, REC creation from all RET supported projects should be limited to 15 years.

What are the lessons learned from the use of multipliers in the RET? Is there a role for multipliers in the future?

This mechanism has reduced the effectiveness of the RET by creating large amounts of "Phantom" certificates, with no associated renewable energy generation. It also flooded the REC market, making it difficult for larger projects to be built.

Separate mechanisms, such as through ARENA and the CEFC should be used to assist technologies which would otherwise struggle to be built under the RET alone.

Lessons:

- "Phantom" RECs created for specific purposes need to be added to the target in order for the scheme integrity to stay intact.
- Multipliers are too coarse a method of responding to ever-changing economics of renewables. It is possible that the AUD could fall and PV prices rise rapidly, without scope to increase the multiplier to respond.
- Annual reduction in multipliers has resulted in large surges in sales, thus adding to the boom – bust cycles the market has had to cope with. It has also led to rushed installations, with potentially lower service levels and less educated customers.
- For industry, the large cycles have made prediction of STC creation very difficult.

If multipliers were to be used for other new technologies, similar issues would arise.

It should be noted that, **within an uncapped scheme, multipliers do not reduce environmental outcomes** as claimed by the issues paper.

Is the STC Clearing House an effective and efficient mechanism to support the operation of the SRES?

The Clearing House mechanism is not ideal, but at least its function is now understood by the industry (if not by consumers). It effectively sets the cap on price, although it is not efficient in passing through the $40 price into the market.

Other mechanisms may have been more effective, but implementing new mechanisms at this stage would not be efficient and is not recommended.

Should changes be made to the Clearing House arrangements? If so, what would be the costs and benefits of any suggested alternative approaches?

If any changes are made, then people with STCs in the clearing house should be considered, as they have a fair justification for believing they will get $40. If the SRES remains, it would be best not to make changes to the clearing house arrangements.

Is $40 an appropriate cap for small-scale certificates given the recent fall in cost of some small-scale technologies, particularly solar PV?

Solar hot waters and other technologies where markets have not been boosted by the RET may need a higher price. For PV, the price remains appropriate for the period of the 2x multiplier, and if prices remain at current levels or continue to fall, will remain appropriate for the first years under a 1x multiplier.

As can be seen from the ACIL Tasman modelling in Figure 3, the financial attractiveness of PV is fairly steady (reducing somewhat) with the multiplier reduction. (Note changes in QLD and ViC FiTs are not reflected). Thus $40 remains an appropriate price for the PV industry, and is necessary for other technologies.

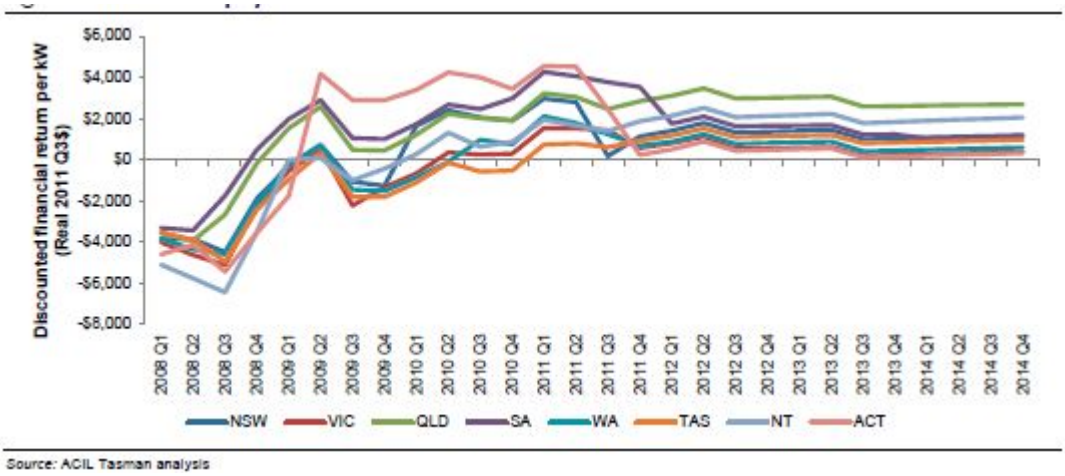

Figure 3: Past and forward projections of financial returns from PV[5]

Are the SRES administration arrangements appropriate and working efficiently?

The pass-through cost of $40 has not worked well.

The possible double-charging of green fees on solar exports previously mentioned also needs to be resolved.

What would be the costs and benefits of driving more diversity through changes to the RET design?

To date uncertainty surrounding the RET has been one of the key issues limiting uptake of less established technologies, where timelines are longer and financing is more difficult. Further changes to RET design would create more uncertainty and delay new installations further.

What is the appropriate frequency for reviews of the RET?

Reviews should be undertaken every 5 years, although the target for the immediate 10 year period ahead should remain unchanged to prevent the current major disruption to planning and project approvals which occurs around a Review.

What should future reviews focus on?

- The forward target, beyond 10 years.
- New renewable energy technologies to be included.
- The penalty rate.

[5] ACIL Tasman, 2012, Small-scale technology certificate data modelling, Report for CER.

Attachment A: Background on the APVA

The APVA is an association of companies, government agencies, individuals, universities and research institutions with an interest in solar photovoltaic electricity. In addition to Australian activities, we provide the structure through which Australia participates in an International Energy Agency (IEA) programme called PVPS (Photovoltaic Power Systems), which in turn is made up of a number of activities concerning PV performance and implementation. Further information is available from www.apva.org.au.

APVA Objective

The objective of the Australian PV Association is to encourage participation of Australian organisations in PV technology and industry development, policy analysis, standards and accreditation, advocacy and collaborative research and development projects concerning photovoltaic solar electricity.

APVA membership provides:

Information

- Up to date information on new PV developments around the world (research, product development, policy, marketing strategies) as well as issues arising
- Access to PV sites and PV data from around the world
- International experiences with strategies, standards, technologies and policies
- Australian PV data and information
- Standards impacting on PV applications

Networking

- Access to international PV networks (PV industry, government, researchers) which can be invaluable in business, research or policy development or information exchange generally
- Opportunity to participate in international projects, with associated shared knowledge and understanding
- Opportunity to meet regularly and discuss specific issues which are of international, as well as local interest. This provides opportunities for joint work, reduces duplication of effort and keeps everyone up to date on current issues.

Marketing Australian Products and Expertise

- Opportunities for Australian input (and hence influence on) PV guidelines and standards development. This ensures both that Australian products are not excluded from international markets and that Australian product developers are aware of likely international guidelines.
- Using the information and networks detailed above to promote Australian products and expertise.
- Working with international network partners to further develop products and services.
- Using the network to enter into new markets and open new business opportunities in Australia.

The International Energy Agency PV Power Systems Programme (IEA PVPS)

One principal activity of the APVA is to manage Australian participation in the PVPS Programme. This work is arranged by Tasks, each with its own commitments of time and resources. Support is provided by the Australian Solar Institute. At present Australia participates in:

Task 1: PV Information Exchange and Dissemination

Task 11: PV Hybrid Systems within Mini-grids

Task 14: High Penetration of PV in (Smart) Electricity Grids

and maintains an interest in:

Task 8: Very Large-Scale PV Systems

Task 9: PV in Developing Regions

Task 12: Environmental Health & Safety for PV Systems

Task 13: PV System Performance

For further information on the Australian PV Association visit: www.apva.org.au

For further information on the IEA PVPS Programme visit www.iea-pvps.org.