Ms Anthea Harris
Chief Executive Officer
Climate Change Authority
GPO Box 1944
MELBOURNE VIC 3001

Dear Ms Harris

Renewable Energy Target Review: Accreditation Issues

We, the undersigned solar industry associations and solar companies, are writing to welcome the recommendation of the Climate Change Authority's Review of the Renewable Energy Target Discussion Paper regarding accreditation of solar installers.

As you are aware, the Discussion Paper stated:

"The preliminary view of the Authority is that the small-scale accreditation system should be open to accreditation bodies other than the Clean Energy Council. Provision should be made for the Clean Energy Regulator to develop a regime to approve accreditation bodies."

The Climate Change Authority was right to state that *"opening the current arrangements to competition would be in the interests of economic efficiency as it could allow installers and designers to choose the provider that best meets their needs rather than imposing one particular model of quality assurance".*

We believe the legislated monopoly over the accreditation of solar installers is bad public policy and has led to less than optimal outcomes.

This is an area that desperately needs competition and rigour to ensure a best practice accreditation process. A continuation of the monopoly for solar accreditation would eat away at the integrity of the Renewable Energy Target.

We urge the Climate Change Authority to maintain this recommendation in its final report to Government.

Yours sincerely,

John Grimes, Chief Executive
Australian Solar Council

ceo@solar.org.au

Brian England, National President
Solar Energy Industries Association

admin@seia.org.au

These are a small selection of our member companies who wanted to specifically endorse this letter:

Self Sufficiency Supplies: Brian England
New England Solar Power: Rob Taber
The Solar Bloke: Stuart Jamieson
Negawatts Electrical: Gary Phillips
Todae Solar: Tirone Kahn
Excel Power: Michael Reiken
Moonbi Solar: Matt Sharpham
Schueco International: Moritz Rolf
Geoff Bragg Services: Geoff Bragg
Couts Electrical: Chris Couts
Simon Bungey
Lewis Pacific: Dilan Perera
RK Solar and Consulting Services: Kunal Kapoor
Boutique Power: Max Enfield
Positronic: John Inglis
Trentleck: Trent Mair
Hines Electrix: Matt Hines
Solar Access Group: Duncan MacMillan
Solar Panel Supplies: Rod Judge
Exel Group: Nathan Weekes
North Central Energy Services: Brian Hayes
JCS Electrical Group: John Szeligewicz
Combines Energies: Darren Blandford
Better Power Solutions: Michael Berris
Soma Power: David Bartley
Stephen Cook Solar and Electrical: Stephen Cook
Natural Technology Systems: Kim Atkinson
Agnew Electrics: Robert Murphy

Durmus Yildiz : Solarmatrix Pty Ltd
Adrian Davies : Earth Potential
David Skelton – Manager : North Coast Power Systems
Ian Lister: Solar Sharp Corporation of Australia
Simon Lodge : Future Friendly Solar
Allen Rose
Pilar de la Torre : Sustainable Planet
Tony Lievesley : A&K Lievesley Electrical
Glenn Cook : Angle Electrics
Paul Matthews : Solarphase
Ian Bray : Ian Bray Electrical & IN2SOLAR QLD
David J Flanagan : Blue Spark Enterprises
Robert Schroettner : EnergyWise Living
Florian Geier : Solar Sparx
David Bartley : Soma Power Pty. Ltd
Thomas Pluess : Sun Power Mackay
Dave Keenan
David Barbara : Rainbow Power Company
David Carpenter : ABA Electrical Services
Jeremy Devenish : Solarflo
James Goodwin : Goodcom Communications Pty Ltd
Kim Atkinson : Natural Technology Systems
Nick Lake : Sungevity Australia
Peter Boam : The LISTER Specialists Pty Ltd
Troy Ryan : Solar Depot
John Healey : Healey Engineering Pty Ltd
Esmail Attia
Warwick Hartog : Alternate Power Systems Pty Ltd
Xantor Weinberg : Energo
John Inglis : Positronic Solar
Dean Condon : Ergon Energy
Pete Gorton
Izy Mourad : Ecostar
Edvard Persic
Bryce Gaton : Sunwise Solar
Tony Atkin : Gosolar
Mark Delaney : Infinity Solar
Paul Shelley : PSE Communication and Electrical
Dieter : Solectrics
Geoff Thomas : Advanced Wind Technologies
Stuart Leetham : AES Technology
Mick Caraher
Dave Lambert : Rainbow Power Company
Geoff Maine : Maine Lighting P/L

Jason Hicks
Steve Grant : Energy Scene

Analysis of Implications for Solar Industry of Relevant Recommendations from RET Review Discussion Paper

Report to the Australian Solar Council

Client: Australian Solar Council
Prepared for: John Grimes
Prepared by: Warwick Johnston and Nigel Morris

Revision: 1
Project: RET Review

1 Contents

2 Scope

SunWiz and SolarBusinessServices were contracted by the Australian Solar Council to provide analysis of specific elements of the proposed changes to the Renewable Energy Target described by the Climate Change Authority (CCA) in their Discussion Paper released in October 2012.

3 Context

The SRES has been an effective mechanism for supporting the uptake of solar photovoltaic (PV) and Solar Hot Water (SHW) systems, and the scheme has achieved a number of objectives, most notably increasing the proportion of renewable generation and decreasing reliance on emissions-intensive generation.

The scheme includes a number of adjustment mechanisms which have been successfully used to ensure that creation rates match expectations, as much as practicable. The fact that creation rates have exceeded expectations (on occasion) *despite* these adjustments highlights a fundamental issue; that *minor* adjustments to the Small-scale Renewable Energy Scheme (SRES) are *potentially* inconsequential to demand, compared to other far more material or influential market factors. State FIT's, foreign exchange rates, PV costs, the global supply and demand balance and local competition can have far more substantial and sudden impacts on demand, both positively and negatively. There is also mounting evidence that consumers will act spontaneously and rapidly to even the perception that change or cut in the SRES is forthcoming. Hence, the relationship between SRES and demand is neither linear, nor the exclusive driver.

The primary motivation for the CCA is to ensure SRES scheme costs do not become excessive or more precisely, that they do not become a *material* contributor to rising electricity prices. The REC Agents Association notes that SRES costs have effectively already peaked in 2012 at around 2.7% of the retail price and will naturally decline without adjustments. Consider that SKM-MMA's modelling demonstrated that large modifications to the Renewable Energy Target (RET) produce immaterial changes in retail electricity prices but have the potential to delay **renewable deployment by 5-6 years and increase emissions by 54Mt.** By comparison, the CCA's preferred method of cost containment may not materially impact retail electricity prices but will certainly add complexity and have unintended consequences. This paper elucidates these, and demonstrates that they may not achieve the CCA's objectives.

It is with these two fundamental issues in mind that we propose that the potential negative implications and complexity of changing adjustment mechanisms far outweigh any potential for material reductions on retail electricity prices.

4 Discounting the value of PV & SHW installations

4.1 Context: Other PV market price and demand influences

Affecting the net system price, payback, and thus uptake and consequent impact upon retail costs are a bewildering array of factors, most of which are out of the control of the regulator. These produce a rapidly shifting set of outcomes that occur faster than regulators can react, and which can dwarf any adjustment made by a multiplier.

The Australian PV market is uniquely influenced by a variety of complex local and global factors which drive PV demand. The majority are global macro factors, which are outside Australia's sphere of influence. Whilst these factors work in Australia's favour at times, they have also worked against us. Arguably, if maintaining consistent growth in renewable deployment as a mechanism to help reduce wholesale energy costs and to meet emission reductions targets is the goal, strong consideration should be given to mechanisms that can *increase or* decrease support when it is needed.

The retail price of PV systems in Australia (excluding any discounts from the SRES or values from FIT's) is impacted by the following factors, which are detailed in the following sections:

1. Foreign exchange rates
2. PV pricing factors including
    a. Raw materials
    b. International PV Cost vs price
    c. Local industry maturity and clearances

In turn the PV value proposition is affected by other factors out of the hand of the regulator:

3. Electricity Prices
4. Consumer Sentiment

4.1.1 Foreign exchange rates

Foreign exchange rates are arguably the single most influential short term factor in the price of PV in Australia. Prices of imported PV products have shifted dramatically in recent years and are currently favourable due to strong exchange rates. Over the past decade, local prices have increased and decreased by as much as +/-30% as a result of foreign exchange rates, despite falling USD/W prices and the extraordinary volatility associated with this issue.

4.1.2 Raw material commodity prices

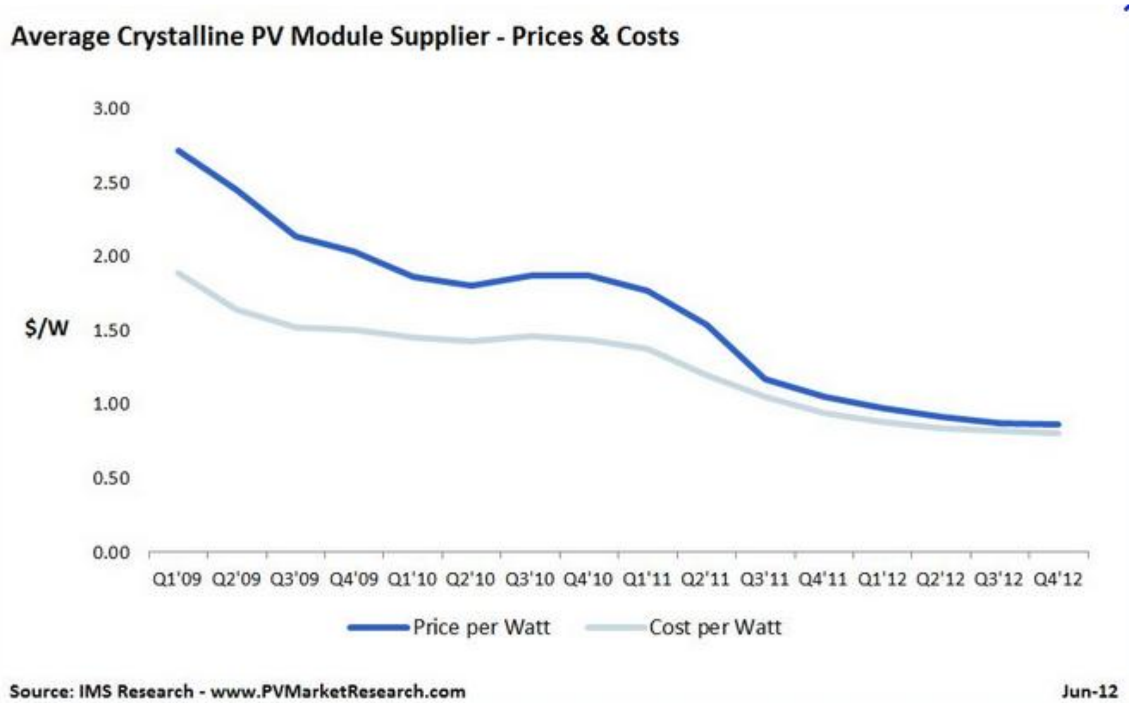
Crystalline silicon modules make up more than 95% of demand in the Australian PV market and the vast majority of global supply. Although cost reductions have been significant, their construction utilises a number of raw materials – silicon, silver, aluminium – priced on commodity market basis which are now significant contributors the overall production cost; amplifying the potential for large proportional cost impacts, should commodity prices change.

4.1.3 International PV cost vs price

PV costs have reduced dramatically in recent years with rising demand and increased competition at all levels in the value chain locally and globally. The reductions in cost have been a major factor in demand growth globally, with a flow on effect into Australia, amplified by foreign exchange and the former confluence of attractive incentives and FITs.

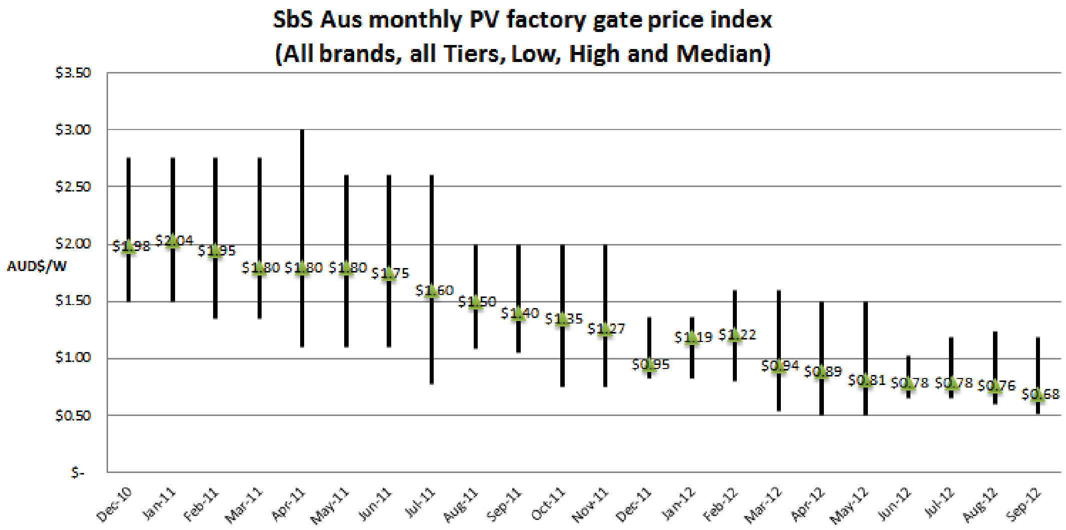
However, the relationship between cost and price is not linear and has been influenced by global oversupply and competitive issues, resulting in severe margin erosion and in a number of high profile cases the complete collapse or exit of companies from the PV industry after decades of investment.

To put this in perspective, the global industry is estimated to currently have approximately 70GW of PV supply capacity against an anticipated 2012 demand of 35GW. This is not a healthy position and it is entirely possible that PV prices could rise or at least fail to continue falling, for some time. The following graph by IMS Research demonstrates the margin erosion in a historical perspective.



4.1.4 Local industry maturity and clearances

With Australian growth rates exceeding 300% in recent years, the industry is typified by recent entrants with minimal market experience eager – and necessary – to service the growing demand. Thus, there are wide gaps in the depth and quality of offers. Combined with the frequent incentive changes and rapidly falling stock values, this has resulted in increasingly regular clearance sales and in some cases stock auctions by liquidators. This has created a wide and dynamic variance in range of panel prices available in the market, described in the following graph produced by SolarBusinessServices. It is imperative that the Regulator is mindful that survival-based short selling is not indicative of a sustainable market outcome.



4.1.5 Electricity prices and contestability

Just as the feed-in tariffs set by state governments interacted with Commonwealth solar support measures, electricity prices are heavily influenced by a myriad of state and Commonwealth legislation and regulation. As consumers' interest in PV is most heavily influenced by electricity prices, there is a wide disparity between PV investment conditions around the nation. Small-scale Technology Certificates (STCs) as a regulatory control lever over uptake will soon be less influential than electricity prices.

4.1.6 Consumer sentiment towards solar

As emotional buyers, consumers are heavily influenced by sentiment when it comes to the purchase of PV. Consumer's appetite for solar can be heavily influenced by their neighbours, by the press, and by environmental conditions including (for example) severe droughts, bushfires or floods. Consumers internationally have shown that the best way to spark a surge of demand for solar PV is by reducing the value of government incentives.

4.2 Triggers for multiplier reduction

The CCA has proposed to reduce the solar multiplier to below 1x (i.e. a solar divisor) in the event that a combination of situations arises, proposing these be a weighted consideration of:

1. payback in less than 10 years,
2. reduction in net system pricing, and
3. SRES contribution of > 1.5% of retail costs.

4.2.1 10 year payback

The notion of establishing a nominal 10 year payback period (or any other payback period for that matter) is ill founded in our opinion, for several reasons. A payback period of 10 years will be a massive set-back for the PV industry, and would result in insolvencies and thus lack of warranty support and available maintenance technicians. Secondly we show that payback is extraordinarily difficult to calculate when considering the wide variances in inputs, and its use is likely to have unintended consequences.

PV desirability is strongly linked to payback expectations of PV consumers in the following ways

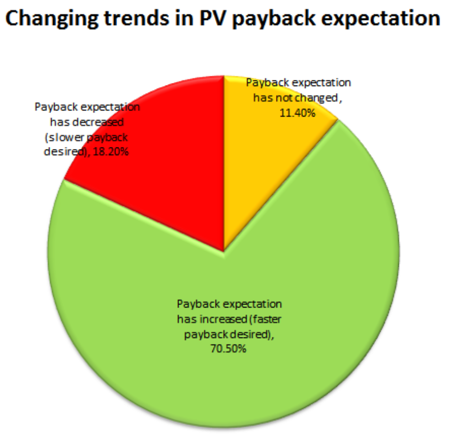
1. The typical home ownership period in Australia is currently 7-9 years according to RPDATA. We know that PV consumers are almost without exception homeowners and consequently the period would have to be substantively below the average ownership rate to appear attractive.

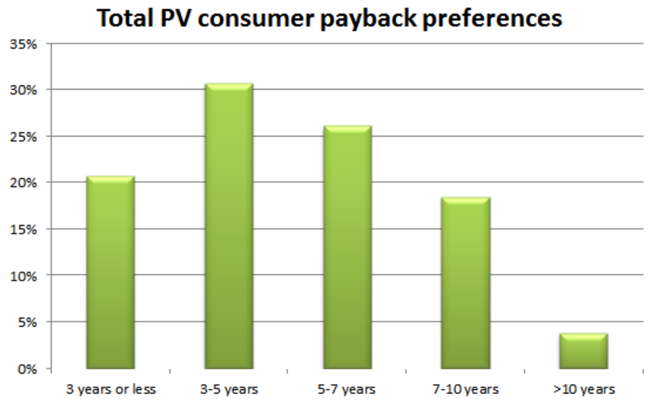
2. The Alternative Technology Association found in 2007 that 57% of system owners wanted a payback period between 6-10 years, with the majority favouring the lessor.

3. In 2008, BP Solar conducted a survey and found that 76% of *potential* grid-connect system owners wanted a payback in less than 5 years. This survey deliberately and for the first time, sought consumers who had not purchased PV to better understand the barriers to uptake.

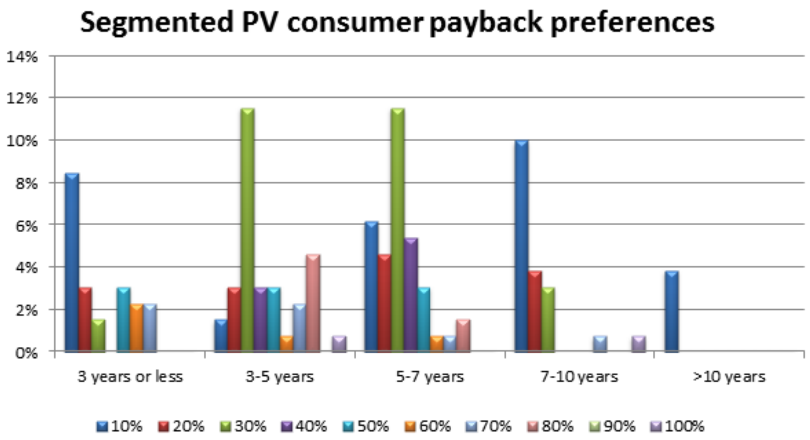
4. In late 2011, SolarBusinessServices polled solar industry players (PV retailers) for the attitudes and expectations of their consumers and found that 55% were seeking a payback less than 5 years.

5. In October 2012, SolarBusinessServices polled solar industry players (PV retailers) again, repeating the question, but also specifically looking to understand the rate of change on this crucial issue. Over 70% of respondents agreed that consumer expectations have increased over the last 3 years, i.e. they expect a faster payback than was previously the case.





In this most recent survey 52% of respondents were seeking payback periods less than 5 years and around 21% were seeking paybacks less than 3 years. In recognition of the variation in PV consumer segments and preferences, the question was asked in the context of "On average, what proportion of your residential PV customers expect the following payback periods for solar PV?" The results are described below.



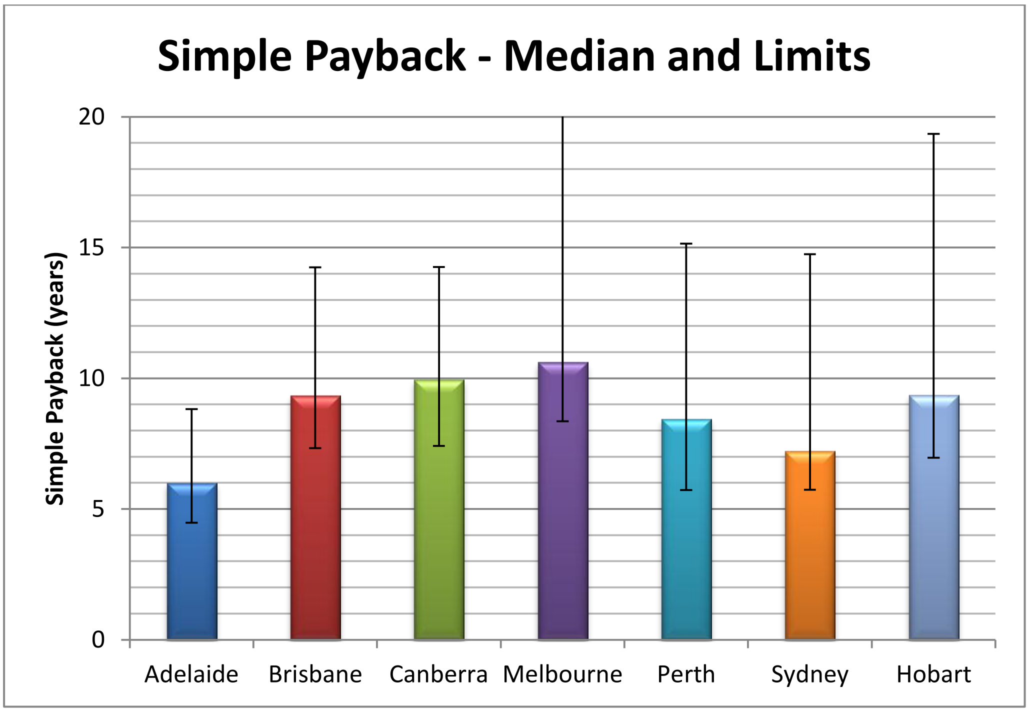
On this basis, a 10 year payback would lead to very low levels of demand. Furthermore, if the multiplier was decreased every time a 10-year payback was reached, paybacks would blow out and the industry would again return to hibernation.

The second major area for concern is the complexities of the calculation when considering the wide variances in inputs. In addition to the inherent difficulties about collecting sufficient information with which to calculate average payback, there remains the greater difficulty about handling the wide variance in paybacks. **Error! Reference source not found.** demonstrates the median payback by capital city, as well as the shortest and reasonably longest payback that might occur. It accounts for current state-incentives (which are scheduled to change in South Australia and Queensland), optimum and average generation levels, but only flat-rate electricity tariff structures; time-of-use pricing creating further variability).

The following Figure[1] clearly shows that, even before any time-variance in sample system pricing is considered, the following holds true:

1. Payback varies markedly by location, due to available solar radiation, retail electricity prices, government feed-in tariff support, REC zone and system pricing.
2. It is possible for paybacks to be well under 10 years in the most common scenarios in some locations (e.g. SA while the government's feed-in tariff remains), while being over 10 years in most scenarios in other locations (e.g. Melbourne).
3. There is a wide degree of variance in payback even within a city, owing to the range in system pricing and proportion of generated energy that is exported.

[1] This information is based upon an October 2012 pricing dataset for 1.5-2-3-4-5kW systems provided by solar power system broker Solar Choice to which 50c/W is added for a replacement inverter in seven years, current flat-rate electricity offers by major retailers in each location, current feed-in tariff offers, and (80%, 90%, and 100% of) system performance levels stated in the Clean Energy Council's Consumer Guide to Solar PV, and export levels of 0%-25%-33%-50%.



This highlights many challenges in equitable implementation:

1. Installation volumes are likely to be higher in places with quicker payback. These locations therefore represent a greater share of the national market.

2. Short payback in one location could trigger a multiplier reduction (divisor increase) because the weighted national payback dipped below 10 years. This multiplier reduction would worsen an already bad situation in less fortunate states. Thus state policy could have profound national implications.

With this in mind, an accurate reflection of payback period is impossible to achieve, and should not form the basis of the ministers decision. If a payback period must form part of a decision to reduce the multiplier (divisor), then ensure it is set at a more appropriate level (e.g. five years) that allows multiplier re-adjustment to achieve an still-attractive payback (e.g. seven years).

4.2.2 Reduction in net system costs

Notwithstanding the challenges associated with payback calculations, consideration should be given to whether in principle a price reduction on its own (all other factors being equal) should justify a reduction in multiplier. As explained previously, reduction in net system prices can occur for a myriad of reasons that may be temporary rather than sustained, or indications of shifts in the market. Prices can also oscillate significantly over a year.

Beyond the costs and challenges of obtaining a market-reflective price across the range of jurisdictions and market offers, one expects that reduction in system costs would be too simple a measure upon which to base a multiplier reduction. There is also a possiblility for feedback loops – that the announcement of multiplier reduction stimulates demand that results in increased prices. Finally, a reduction in net system costs should be reflected in payback, which would in turn be reflected in SRES contribution to retail costs.

4.2.3 SRES contribution exceeds 1.5% of retail costs

We note with concern that the updated table of SRES contribution to retail electricity prices shows that the contribution is likely to exceed 1.5% in three successive years, which (if correct) could trigger a reduction in multiplier even though the cost of SRES is decreasing markedly. However, the 2012-2013 and 2013-2014 SRES cost has been inflated by historical factors (under-estimation and solar multiplier) that will not apply beyond that period. It would be concerning if the minister decided to reduce the future multiplier on the basis of factors that no longer apply.

Year	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
SRES	2.1%	1.8%	1.6%	1.4%	1.1%	1.0%	0.9%	0.8%	0.8%

Further complicating things is the wide divergence of retail electricity tariff offerings in the market, (some of which include STC pass-through at $40), which makes it challenging to calculate the actual impact of the SRES on a mix of contestable and regulated retail prices. Suitable proxies could be created so long as accurate calculations and assumptions are used, including STC cost pass-through at market prices.

In spite of these concerns, a 1.5% contribution to retail prices allows some headroom for the solar industry. The table below shows a build-up of the maximum amount of PV allowable under a 1.5% contribution, and shows that it allows 800-1161 MW/year to be installed over the remainder of the decade.

Year (20xx)		13	14	15	16	17	18	19	20
Retail Price	SKM-MMA	215	222	230	226	234	241	247	253
1.5% of Retail Price	Calculated	3.22	3.33	3.45	3.39	3.51	3.62	3.70	3.80
TWh Consumption	Reverse engineering of SKM-MMA	178	180	184	189	194	199	202	204
Total STC Cost ($m)	Calculated	574	599	636	643	682	718	746	776
Certificate Price	Assumed	35	35	35	35	35	35	35	35
Certificates (m)	Calculated	16.4	17.1	18.2	18.4	19.5	20.5	21.3	22.2
SHW Certificates	SKM-MMA	1.2	0.8	0.4	0.3	0.2	0.2	0.1	0.1
PV Certificates	Calculated	15.2	16.3	17.7	18.1	19.3	20.4	21.2	22.1
PV MW/year[2]	**Calculated**	**800**	**860**	**934**	**953**	**1015**	**1072**	**1115**	**1161**

The installation trajectory allowed by the 1.5% threshold lies below SunWiz/SolarBusinessServices' current forecast of small-scale PV, which is for approximately 700MW in calendar 2013, falling somewhat in 2014 due to the completion of the Queensland solar backlog, and enjoying modest growth thereafter. The '1.5% trajectory' lies above this short-term forecast, and allows for industry growth over the period. However, high-growth forecasts could mean this level of installation is towards the end of the decade.

[2] (15 year deeming, 1x multiplier, 19 STCs/MW)

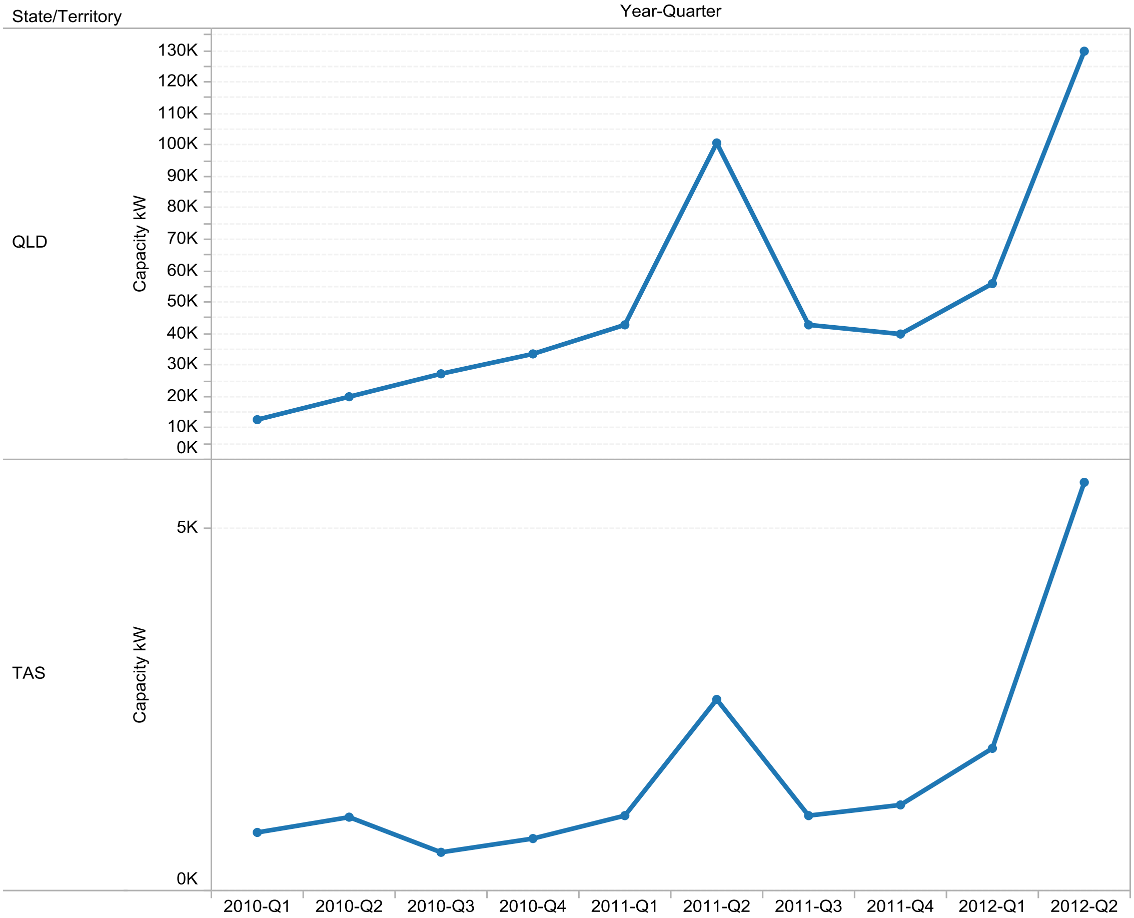
This information stands in contrast to the analysis performed by SKM-MMA, whose retail price contribution was based upon a STC trajectory gradually declining from 24M/year to 16M/year[3], which also contradicts SKM-MMA's own advice to the Clean Energy Regulator (14.5M STCs created in 2014). If this anomaly was corrected, it may result in a downwards revision of the cost of the SRES.

Notably, should STC prices fall, then presumably the impost upon retail prices would lessen, which would allow for greater volumes of installation. Thus any mechanism that led to a softening of the STC price may allow for increased volumes of PV receiving lower levels of support.

4.3 Considerations, Impacts of a solar divisor, and unintended consequences

The Australian public a) knows a great deal and will flock to it, but b) in the absence of a great deal they are also happy to delay action until there is threat of reduction in government incentives. The industry has experienced multiple waves of reductions at both federal and state level, with one more to come via scheduled reduction in multiplier from 2x to 1x. This behaviour also plays out internationally. The figure below shows quarterly installation volumes in Queensland and Tasmania, markets unaffected by feed-in tariff reductions over the displayed period. This demonstrates that a step reduction in incentives acts to increase short-term demand at the expense of medium-term demand, and creating an installation rush that impacts upon quality and customer service. For this reason alone, step reductions in incentives are undesirable, and their impact upon medium-term costs is questionable.

[3] This may have arisen from a calculation error involving each kW of SRES PV deployment creating 39 certificates, twice as high as its value of 19 STCs/kW when averaged across Australian REC zones in the absence of a solar multiplier.



4.3.1 System Size Threshold

The nominal cap on the STC multiplier is 1.5kW. This limitation, repeatedly argued against by industry, reduces the overall cost effectiveness of PV by limiting economies of scale and incentivises lower component and service quality, whilst at the same time increasing compliance and transactional costs per sale. It is not clear whether the CCA intends on adjusting the multiplier for the first 1.5kW only (which would produce non-linear outcomes and equity issues), or the entire amount.

4.3.2 Off-grid provisions and Solar Hot Water

Prior to 2006, Off-grid solar was the largest segment of the Australian PV industry and has the potential to be a significant segment in the future, driven significantly by the demands of the resource sector in remote areas. Sometime after the Remote Renewable Generation Rebate Program was pulled, off-grid support was created by extending the solar multiplier for off-grid systems up to 20kW in size. Even with a 5x multiplier this provided insufficient support for a true off-grid system, for which a significant portion of cost is the batteries. No analysis and little provision has been made to stimulate or even consider this important market segment in the CCA's review of the program, and will be further penalised by any multiplier reduction.

Subsidies for SHW systems have dwindled in recent years, a fact exacerbated by linkage of support to the STC price which is primarily influenced by the PV industry. The CCA's suggestions for a multiplier reduction would further disadvantage the SHW industry even though they are unlikely to cause a blowout in SRES costs.

4.3.3 Decreasing and increasing support

The report and analysis conducted for the CCA has focused predominantly on the potential necessity to reduce support through adjustment mechanisms to the SRES but has not considered the potential need to increase support. As described previously, a myriad of factors affect the net cost of PV (and thus demand) beyond the SRES and history tells us that support occasionally needs to be increased.

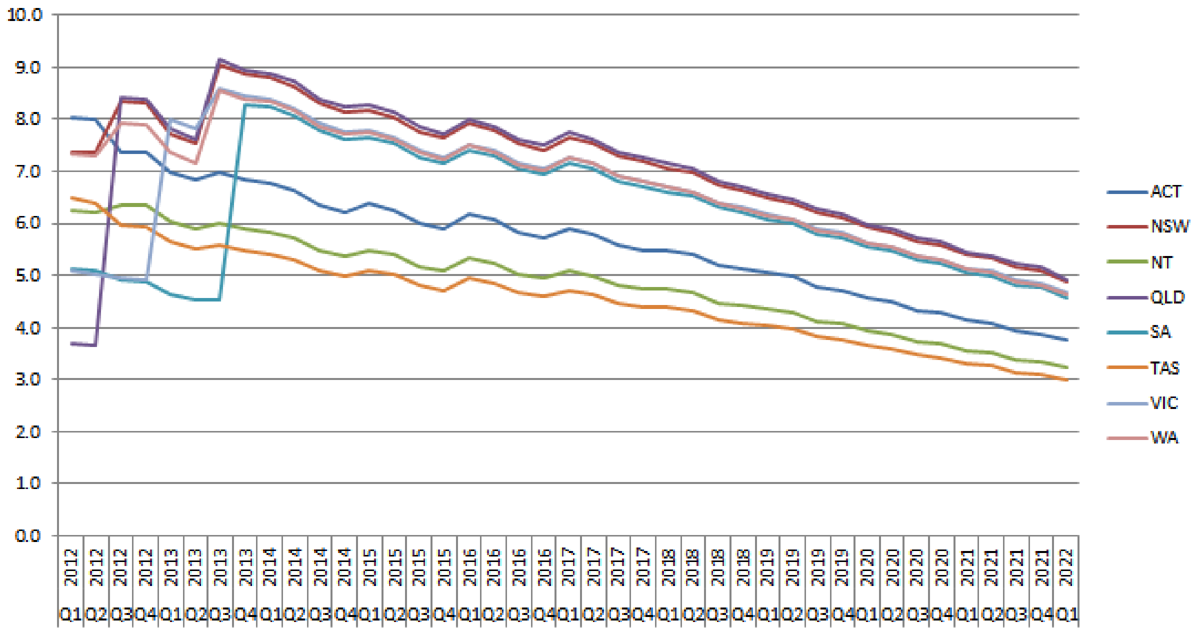
4.3.4 Modelling of various methods to adjust net system price

It is entirely plausible that for all the complexity and potential for boom-bust outcomes introduced by the 'solar divisor', it may be ineffective in containing SRES costs. SolarBusinessServices and SunWiz conducted modelling to analyse the potential net cost implications in a variety of scenarios, across a variety of systems sizes.

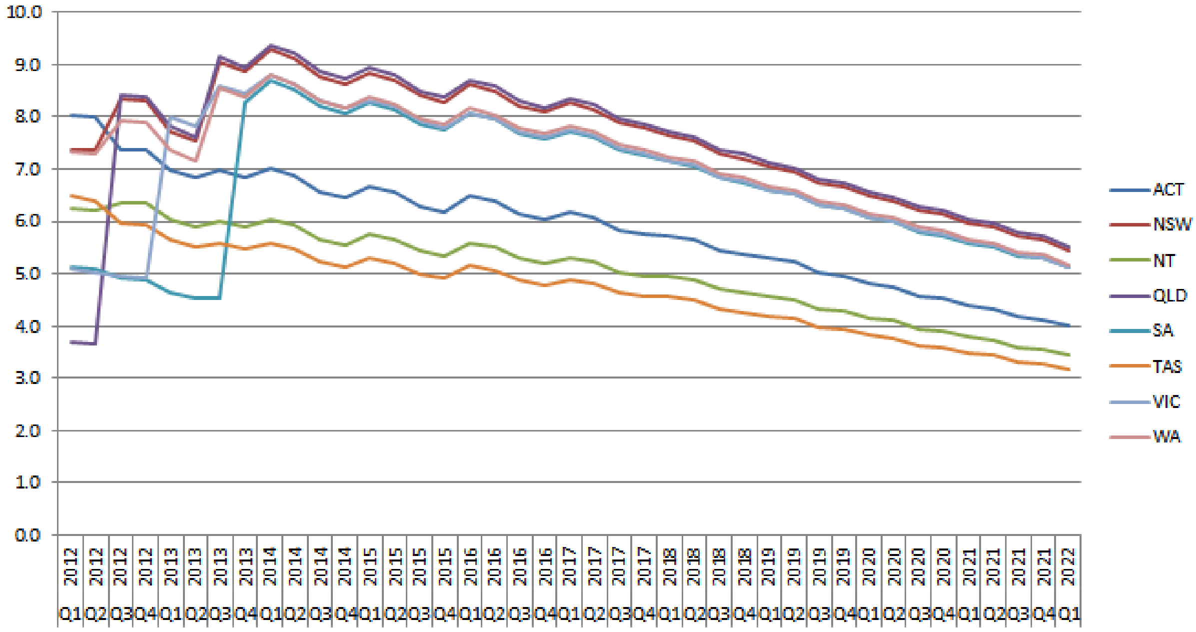
Using the median system pricing information provided by solar broker SolarChoice as the benchmark for system prices, component and system costs were conservatively reduced over time, reflecting common projections for cost decline expectations and historical learning curves. Whilst factors such as foreign exchange, electricity prices, export rates and cost declines are impossible to forecast with exact accuracy, we took a generally conservative view using averages. Our model identifies the quickest payback period using median pricing, optimal performance, typical electricity prices and export levels commensurate with median consumption levels.

In summary the outcomes from this modelling are:

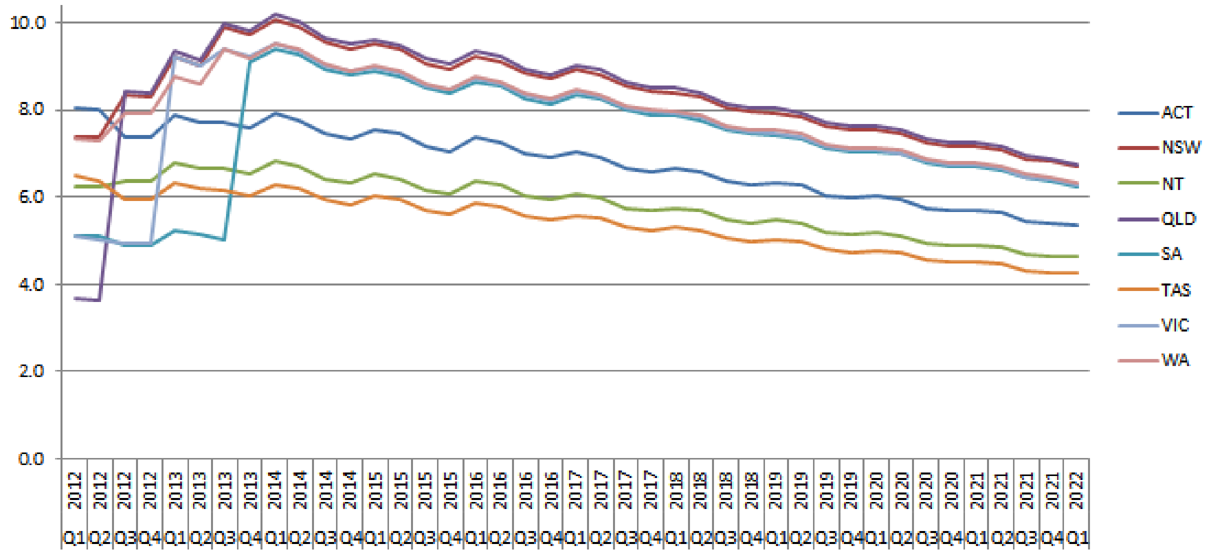
1. In a business as usual scenario, the best (quickest) simple pay backs are described below. These highlight the impacts of changing incentive mechanisms and the significant variation by State. This analysis also highlights that whilst paybacks are (logically) expected to improve over time, the need for support remains if we are to approach the payback levels expressed as desirable by consumers in recent surveys. By 2022, the range of paybacks is 3-5 years.



2. We then conducted analysis of the impact of reducing the multiplier (divisor) from 1 to 0.5 in 2014, 0.25 in 2015 and 0.1 through until 2022. As the graph demonstrates, the impact on system pay back is minimal but is expected to have a similar effect to those described by SKM, i.e. it tends to simply push out demand by 6-9 months, which will also create lesser reduction in wholesale electricity costs. Regardless of the level of the multiplier, paybacks cannot be contained beyond 2017 and by 2022, the range of paybacks is 3.2-5.6 years.



3. We then conducted analysis of the impact of changing STC prices, but assuming the multiplier stays at 1 over the period. Whilst we have modelled reductions in the STC price for the sake of comparison, this is not a recommendation as it takes away from the underlying principle of letting the market determine the price. We assumed a 20% reduction in STC prices each year, year-on-year over the period. This clearly has greater impact on payback (and thus demand and in turn cost impact) than the multiplier, pushing paybacks beyond the threshold limit of 10 years payback in some states. Some of this benefit would be offset by increased emissions and greater wholesale electricity prices. By 2020 the STC price is modelled to be $5, which produces paybacks in the range 4.2 and almost 7 years.



Clearly an adjustment of the multiplier proves less able to contain runaway conditions than a demand-responsive market mechanism to adjust the STC price. Thus for all of its complexity and unintended consequences, a solar divisor is a painful, blunt instrument that may not achieve its objectives.

4.3.5 The desirability of maintaining a registration incentive

Currently, practically every PV system installed in Australia will be registered with the Clean Energy Regulator, principally in order to monetise the STC benefit. As a result, standards are enforced and organisations such as AEMO have an accurate dataset of NEM-connected solar generation upon which they can forecast annual electricity demand. Soon this information will be integrated into the Australian Solar Energy Forecasting System, which will help the electricity market function.

Reduction in multiplier will reduce the incentive to register system capacity, and may result in sub-standard system installation practices occurring.

5 Shifting 'commercial' systems into LRET

The CCA has expressed its concern that commercial PV systems could lead to a blowout in SRES costs. It is worth noting that the commercial market for PV has yet to emerge beyond a small proportion of the market; the barriers to deployment remain significant: a combination of tariff structures, resultant economics and network connection costs.

Our analysis demonstrates that the volume is likely to remain low, but the potential impact of the CCA's proposal is large – particularly considering unintended consequences and boundary cases. Rather than pre-empting the conceivable SRES blowout that commercial PV could cause, it would be preferable to monitor the situation and apply corrective action when and if necessary.

5.1 Threshold

The CCA has not yet stated the capacity threshold at which PV systems would be forced into the LRET, but has provided an example of 10kW. Such a low threshold would have the potential for significant market distortion, for reasons explained below.

The market for commercial PV is distinctly delineated by tariffs paid by potential customers. Customers consuming less than 50, 100, or 160 MWh/year (depending on state) typically pay bundled tariffs that can exceed 35c/kWh. Once this threshold is reached, business customers can access tariffs of 16c/kWh or less, with the balance of the bill made up by demand charges. This creates a step-change in the financial viability of PV, with systems offsetting bundled tariffs quite attractive so long as they do not export sizable proportions of their generation. In SunWiz's experience, systems of 5-20kW in size are suited to bundled tariffs. Thus larger volumes of 10-20kW systems may be expected to proceed, rather than 20-100kW systems, at least for the next few years.

Another more significant boundary, that of 30kW, occurs in the network connection process. A 30kW unit is classified as a micro-embedded generator under the National Electricity Rules (Chapter 5A), which entitles a customer to a more streamlined connection process. Beyond that threshold, distribution network operators may impose additional protection requirements, and the system connection process generally becomes more onerous.

These points tend to suggest that should a change be made to current arrangements, the threshold should be at least 30kW, but a larger threshold could also be preferable.

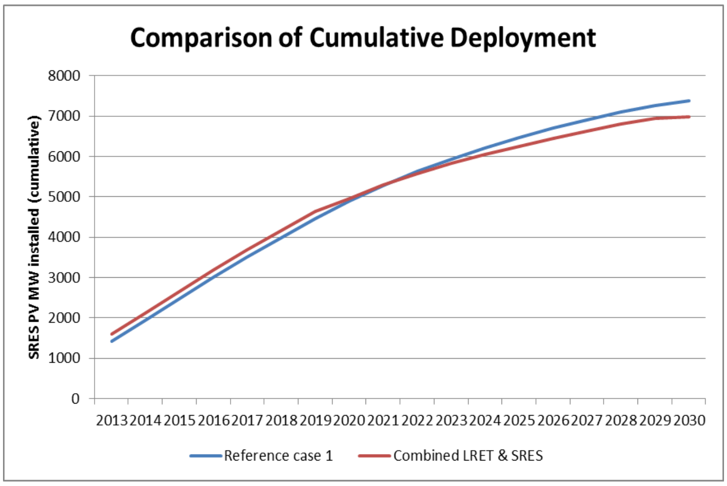
5.2 Likelihood of Blowout due to Commercial PV Volume

Historically, 4-5% by capacity of Australia's PV market has exceeded 10kW in individual system size. By September 2012, this fraction had dropped to 3% of 2012. Consequently, transfer of this volume of certificates from the SRES to the LRET will have immaterial consequences on the SRES cost – even if this volume increases five-fold.

The cost implication of a shift of 10+kW systems from SRES into LRET can be evaluated by conceptual comparison to a similar scenario – that of the merger of the SRES and LRET. However, the figure below shows the amount of sub-100kW PV deployment varies by only 12% under each scenario[4]. The difference in retail price is less than 1% as a result of this full merger of SRES and

[4] We note that SKM-MMA's forecast PV deployment in early years is roughly in line with our expectations. However it slows markedly over the reference period, which is contrary to our expectations.

LRET. A part merger, by which the LRET absorbs some of the commercial PV deployed under the SRES, would thus result in an immaterial change to retail prices.



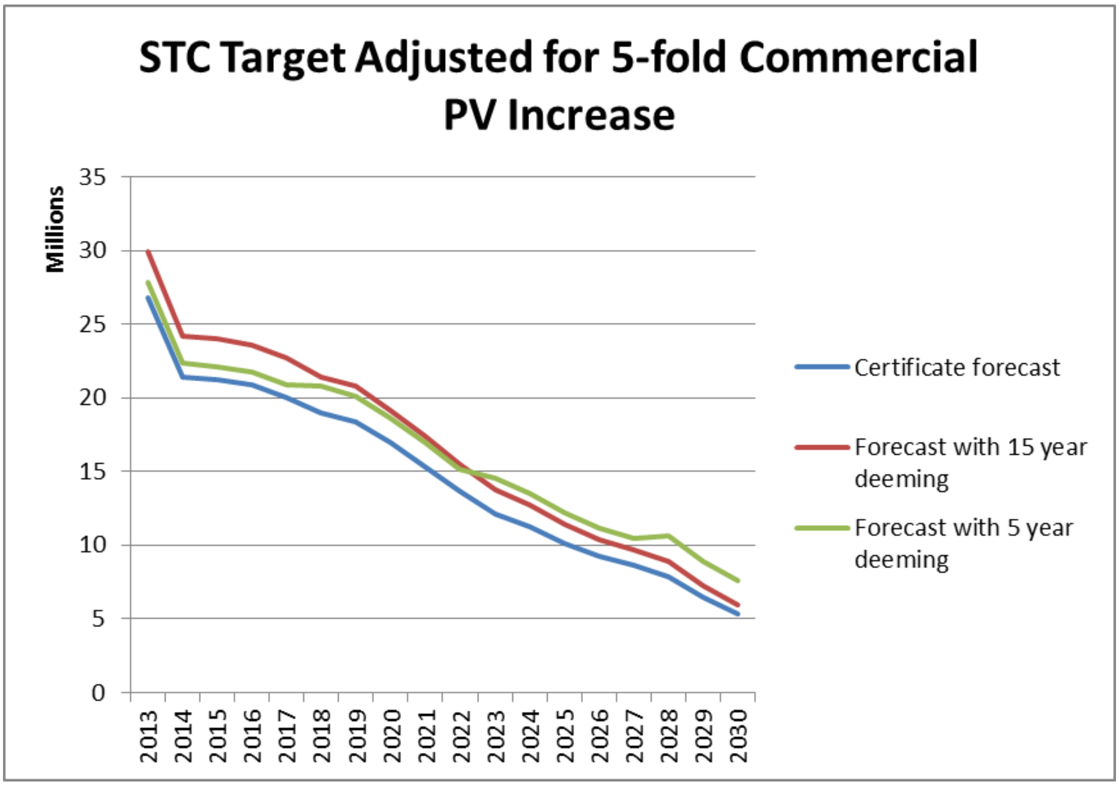
The Climate Change Authority may consider the main benefits of this proposal to be:

1. Control of risk that SKM-MMA is wrong in it PV forecasts, particularly with regard to commercial PV. In the worst case the commercial PV market could take off, causing a blow-out in costs of an uncapped SRES that might have otherwise been contained within LRET costs.

2. Deferral of some costs until later years through 5-year deeming arrangements, which has benefits in real terms.

Analysis shows that if commercial PV increases SKM-MMA's PV forecast by 25% (meaning commercial PV volumes increase five-fold from current market share, this would increase the STC target by 12% under a 15-year deeming arrangement, or 10% under a five-year deeming arrangement, as illustrated in the following figure[5]. Again, the increase in SRES costs would be partly offset by a consequent decrease in wholesale electricity prices. Further, the earlier section demonstrated that there is quite significant headroom for commercial PV deployment within the SRES without cost blow-out, which would also require extraordinary growth rates of commercial PV.

[5] which uses SKM-MMA's SRES PV MW modelling as a starting point, extracts 5% for commercial PV which it then multiplies by 5 and recalculates the SRES target



5.3 Deeming periods

Should a change be made so that sub-100kW systems are forced to create LGCs, deeming of LGCs will be made necessary by the high overhead of metering equipment and annual reporting associated with non-deemed LGC creation. A comparison of the options is presented below, showing the need for deeming of some sort.

SunWiz has performed analysis of the Net Present Value using a 10% discount rate, STC price of $30 and LGC Price as shown beneath, based upon performance of 1,386kWh/kWp/year reducing at 0.5% p.a. This shows the comparative attractiveness of the current arrangements compared to alternative proposals.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
LGC Price	$42	$44	$46	$48	$50	$50	$50	$50	$50	$50	$46

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
LGC Price	$44	$42	$40	$35	$30	$25	$20	$15	$0	$0

Certificate Calculation Method	Certificates	Net Present Value of Certificates
LGC Non Deemed (til 2030)	2752	$48,844
LGC 5-year Deemed (3 Batches)	2073	$57,027
LGC 5-year Deemed (4 Batches)	2764	$61,538
LGC 15-year Deemed, $40	2073	$87,066
STC 15-year Deemed, $30	2073	$62,190

Clearly solar systems would receive greatest subsidy from a 15-year deeming period for systems up to 100 kW under the LRET, largely by accessing the LGC price that is currently higher than the STC price. By comparison, 5-year deeming of LGCs achieves similar gain as current (non-multiplied) STC arrangements, but only if four sets of five-year deemed LGCs are provided – which is far from certain. Obviously, 5-year deeming introduces regulatory risk, so is less palatable than upfront deeming of 15 years production. In spite of these risks, 5-year deeming batches are still more attractive than non-deemed LGC creation.

There are three issues at play here that make LGCs disadvantageous:

1. Perceived regulatory risk, and greater uncertainty about 5-year deeming provisions
2. Reduced financial attractiveness
3. Larger upfront price and the overhead of semi-regular LGC creation.

With shorter deeming periods considered less favourable, deeming and its thresholds will influence behaviour, creating unintended consequences.

5.4 Unintended Consequences

The comparative benefit of 15-year deeming of STCs over any lesser deeming period will influence behaviour of solar customers, with significant potential for unforeseen impact. Already there is a disincentive for end-users to install more than 100kW, owing to the comparative complexity and reduced financial attractiveness of non-deemed LGCs. Rather than install a 120kW system, customers may choose to install a 100kW system, followed by a further 20kW some months later – and may even forgo the small number of LGCs the system addition would be eligible for. Shifting into the LRET systems larger than 10kW or 30kW may influence similar behaviour.

Depending on the size of system chosen and the relative value of STCs and LGCs, unintended consequences may include:

1. An effective upper limit of 10 kW for small-commercial projects, which may trip up the medium-commercial market before it has got to its feet.
2. 10 kW systems installed and then expanded. This could be due to gaming (i.e. pre-intentioned), but may arise legitimately. An outcome of this may be capacity installed without certificates recorded.
3. Conversely, an explosion in LGC creation from small commercial systems which frequently offset high tariffs . This may negatively affect the portions of the LGC market that offset commercial tariffs (i.e. commercial solar) or wholesale rates (i.e. wind farms and solar farms).
4. This shift may therefore create in the LRET "A constantly shifting regulatory framework (or the perception of one) [that] may reduce investors' willingness to invest in further renewable energy." The impact may not be as great as that of re-merging the schemes, but some change would be perceived and some impact observed.

While a shift of sub-100kW systems into LRET will increase complexity and have questionable impact of capping SRES costs, this solar industry is likely to prefer the SRES-eligible system capacity to be at least 30kW.

6 Conclusions

6.1 Summary

1. Reducing the value of PV & SHW installations

Applying a solar divisor will have only a moderate effect on demand, effectively delaying installations by one year. Furthermore, it is difficult to judge what a 10 year payback is when considering the temporal and geographical variance in inputs. Finally, external factors move faster than the regulator could, and 10-year paybacks are much longer than consumer expectations. The unintended consequences are that wholesale electricity prices could rise, short terms demand could spike (and then collapse) and consumers are unlikely to see any meaningful change to retail electricity rates due to price elasticity. As a consequence, we see little prospect of this method being practical or equitable.

2. Decreasing the size of solar systems covered by the SRES

Residential sales make up the vast majority of the market, and although Commercial sales are expected to grow, they are unlikely to be the major cause of a SRES blowout. Unintended consequences include LRET investor risk, risk around deeming periods, and tripping up the small-commercial sector as it is getting to its feet. Thus there is little merit in terms of reduced pressure on SRES creation or electricity prices from adjusting the size limit.

6.2 Broader issues

The SRES continues to be an important support mechanism for PV uptake, and SRES costs have peaked. The SRES offers well deserved support for the PV industry and investment in generation by the broader community, whilst remaining one of the smallest proportional impacts on retail electricity prices.

The complexities of the SRES scheme are significant and adding additional mechanisms introduces additional complexity and a strong probability of unintended consequences. Small changes in either the SRES metrics or mechanisms are unlikely to have dramatic impacts on uptake, except to cause surges and rapid falls in short term demand.

Some of the broader and overlooked issues such as the neglected Off-Grid PV market, impacts upon SHW, and the ongoing risk of ministerial adjustment to the STC price. Two overlooked ways of reducing SRES costs are

1. Ensuring that state regulators ensure the market price of STCs is passed onto customers, rather than the Clearing House price.

2. Calculating retailer liabilities on net electricity consumptions rather than gross imports, which means electricity retailers are double-charged RET fees on power exported from distributed PV systems as they are unable to obtain credit for export[6].

[6] For an explanation see figure 6.1 of IPART, "Final Report into Solar Feed-in Tariffs - March 2012"