



16 May, 2014

Chair, Renewable Energy Target Review Panel

By email: RETReview@pmc.gov.au

SUBMISSION: The Renewable Energy Target Review 2014

Dear Mr. Warburton,

Sustainable Energy Now Inc. is pleased to make the attached submission.

Sincerely,

Steve Gates

Technical & Economics Group Leader, SEN Inc.

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pp.

Andrew Woodroffe,

Secretary

secretary@sen.asn.au

Submission on the Renewable Energy Target Review 2014

Executive Summary and General Comments:

The Renewable Energy Target (RET) is achieving its goals, and presents significant opportunities for Australia. Strengthening and extending the RET beyond 2020 will provide business certainty and enable these goals to be further realised.

The benefits of increasing renewable electricity generation include; a downward trend in electricity generation cost; a hedge against global fuel price rises; growth in innovation and employment in a diversified global industry; reduced exposure to global carbon pricing through trade; reduced externalised costs in health, reduced water consumption and contamination, and mitigating the effects of global warming/climate change.

The displacement of conventional fossil-based generation by efficiency improvements, reduced demand and increased generation by renewables, is an inevitable consequence of a continuum of 'waves' of technological progress throughout history. Incumbent business models must adapt or become irrelevant, and there are numerous options to change their scope of products and services.

Reliability of the electricity supply can be assured by a mix of commercially-available renewable energy technologies. Variable generators such as wind and solar PV can be complemented by concentrated solar thermal with storage which offers dispatchable and load-following supply. Energy storage such as pumped-hydro, biomass, and batteries (including electric vehicles) as well as smart-grid technologies and demand-side management are becoming an integral part of the new electricity supply and allow for further long-term backup and ancillary services.

SEN is concerned that the scope of the RET modeling will not account for the very real 'externalised' social, economic and environmental costs, and therefore that the outcome will be misleading. There are numerous studies which quantify these costs, therefore to exclude them is questionable.

The transition to a renewable electricity future is in progress globally and in Australia. If Australia encourages and manages this in an integrated way with forward planning, it will smooth and expedite the path to a modernised energy economy, and a realisation of the benefits that this offers.

About Sustainable Energy Now (SEN):

SEN is a community organisation whose members and associates include professionals in engineering, science, educational, business and Information Technology. SEN conducts research, provides education, holds regular talks and seminars, lobbies government, writes media articles and produces strategies to promote renewable energy in Western Australia.

1. How has the RET performed against the objectives in the Renewable Energy (Electricity) Act 2000?

This is information which the government should provide, based on the objectives to:

- É encourage the additional generation of electricity from renewable sources;
- É reduce emissions of greenhouse gases in the electricity sector; and
- É ensure that energy sources are ecologically sustainable,

The RET Review panel should report on these measures, including the percentage of the 2020 target of 41,000 GWh reached to date. The effect on the wholesale cost of generation should also be reported, for transparency.

The RET has been very successful in terms of the growth of the renewables industry and the portion of renewable energy generation target reached to date. SEN believes that as a market-based mechanism it is likely to be cost effective. Further, the RET specifically pertains to renewables which offer other benefits to Australia, including:

- É energy security through diversification of generation technologies and geographic location, coupled with energy storage
 - improving the diversity of investment and industry and driving innovation, diversification and competitive participation in the rapidly growing global growth of renewable-energy
- É increased business, income and employment in metro and rural areas, helping to revitalise regions
- É a hedge against price rises of fossil-based sources such as gas
- É placing Australia in a good position to benefit from the decreasing cost of electricity generation by renewables (Section 3)
- É reduced exposure to global carbon pricing
- É reduced externalised costs such as health, groundwater extraction and contamination risks, and the effects of global warming/climate change

2. Are there more efficient and effective approaches to achieving these objectives?

Other options include:

É an adjustment or increase to the carbon price and some exemptions to trade-exposed export industries if applicable (as is currently the case with the ~~£~~Carbon Tax). To be effective across our economy, a carbon market price would need additional levies for various sectors including stationary energy, transport, agriculture and fugitive emissions. For example, the UK and France have added carbon levies above the EU carbon market price.

É legislation to simply make targets mandatory for every state, without the use of trading of certificates such as RECs

Regardless of the above options, it is necessary to improve access for renewables:

É to transmission infrastructure to renewable energy development zones, as has been done in Texas and California (ref: www.nrel.gov/docs/fy10osti/46877.pdf and <http://www.elp.com/topics/competitive-renewable-energy-zone.htm>)

É by reducing regulatory impediments, such as the 2km setback for wind farms

É to 'de-risking' finance for those technologies considered by the investment industry to be commercially viable but still considered to have some potential risk on return if they have not yet been widely demonstrated in Australia

3. Do the objectives of the Act remain appropriate, in light of falling electricity demand and the Government's target and policies for reducing greenhouse gas emissions?

The objectives of the Act remain appropriate given the increasing scientific evidence and therefore the imperative to reduce Australia's GHG emissions in line with climate science. This is a responsible risk-mitigation strategy, and Australia must contribute equitably in the global context, to meet these reduction requirements. As electricity generation is one of the highest emissions sectors, and where it is relatively easy to make changes using commercially available technologies, the RET is an important instrument.

Falling electricity demand due to rollout of energy efficient appliances and lighting and rising electricity tariffs is complementary to the objectives of the Act, which is to reduce greenhouse emissions. There is no guarantee that this trend will continue as the expected future take-up of electric vehicle/rail transport adds to growth in mining, industrial and other economic activities.

As the RET is only applicable to electricity generation, other mechanisms should also be used to achieve emissions reductions throughout other sectors of the economy. SEN cautions that the actions intended by the government are likely to work against renewables because:

É the Direct Action Plan is highly unlikely to provide adequate incentives to cause a switch to renewable energy, at the price proposed. (Ref: SEN submission to the Direct Action Plan Inquiry, and to the Emissions Reduction Fund)

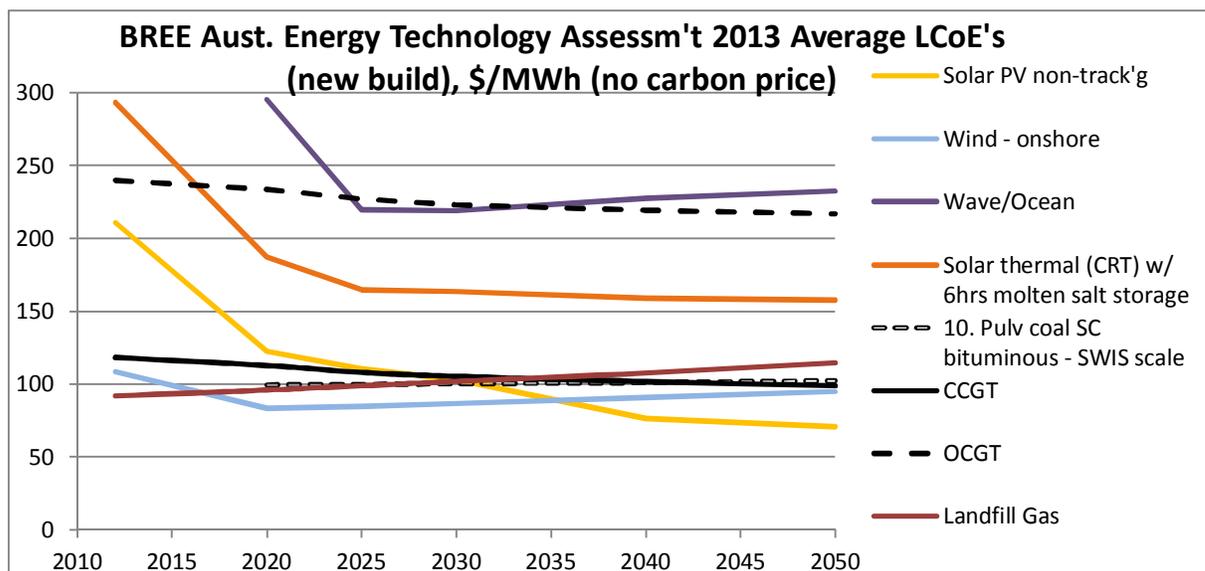
É removal of the Clean Energy Finance Corporation (CEFC) will reduce access to finance for commercially viable projects

É removal of the carbon price/tax, which is complementary to the RET, will further reduce incentive to move to lower emissions renewables. **Additionally it shifts the burden of pollution-reduction costs from the large polluting industries to the government/taxpayer, which is essentially a subsidy for polluting industries that other industries do not generally receive.**

The economic benefits of encouraging further renewable generation will be enhanced by developing dispatchable renewables such as concentrated solar thermal (CST) with molten salt storage, where costs are continuing to decline dramatically (eg: Solar Reserve) and are currently moving towards being cost competitive with the average new coal/gas wholesale price. It makes sense to implement these now because they are able to substitute for both dispatchable (coal/combined-cycle gas turbines) and load-following (typically open-cycle gas turbines), providing a complementary balancing role for both low-cost wind and solar PV.

Recent reports by ROAM Consultants and Schneider Electric indicate that extending or expanding Australia's renewable energy target would lead to lower electricity prices, lower carbon emissions and increased competition. (Ref: <http://reneweconomy.com.au/2014/ret-repeal-would-be-win-for-incumbents-pain-for-everyone-else-32803>) Schneider Electric's report states "Even after taking into account the cost of Large-scale Generation Certificates, the LRET in its current form is forecast to result in lower prices in the long run than those under decreased targets or outright removal of the Large-scale Renewable Energy Target." and that large scale renewables provide "a hedge against the potential for rising natural gas prices."

The Australian Bureau of Resource and Energy Economics' Australian Energy Technology Assessment+update of 2013, shows that the costs of renewables are not only competing with an average Levelised Cost of Electricity (LCOE) of a typical conventional coal/gas mix of generation, but projected to continue decreasing. (See figure below). As these curves are average values, they do not show that there is significant overlap of range of costs between renewables and new build fossil plant. For example, Solar Reserve's 30-year Power Purchase Agreement with NV Power has an LCoE of US\$135/MWh, significantly lower than a coal/gas average on the graph at 2014.



The future of electricity generation in Australia must be based on a reduction of coal combustion, however a move to increase gas usage is not an attractive alternative in view of expected increasing prices and serious questions about fugitive emissions. While gas can reduce emissions to about 0.4 kg/kWh, (about half of coal), if fugitive emissions are included, recent evidence indicates that gas can be worse than coal (ref: <http://www.nrel.gov/news/press/2014/8304.html> and <http://reneweconomy.com.au/2014/huge-methane-leaks-add-doubt-gas-bridge-fuel-57222>). Furthermore even if gas were assumed to produce relatively lower emissions, this is only a temporary fix as these generators would become stranded assets over their lifetime as the required emissions reduction trajectory continues to decrease in accordance with climate change science.

The Act's objectives should be revised to encourage implementation of a mix of renewables which can provide a reliable electricity supply. This can be achieved with higher incentives for renewables which provide dispatchable electricity such as CST, biomass and hydroelectricity, with further storage capability of pumped-hydro. To illustrate how this mix would work, potential scenarios for Western Australia's SWIS grid are presented in SEN's commissioned 2013 technical study: 100 percent renewable energy on the Southwest Interconnected System grid by 2029+ (http://sen.asn.au/files/SEN_RE_SWIS_2029_Presentation.pdf)

4. How has the RET influenced the development of the renewable energy industry?

It has been very successful in growing the industry, employment and reducing GHG emissions in the electricity sector. (Ref: Section 3.1 of the Renewable Energy Target Review Expert Panel Call for Submissions, Commonwealth of Australia 2014+). Increased scale of deployment globally and in Australia, has increased competition and reduced costs.

5. Should the LRET be abolished, reduced or increased?

SEN proposes that the RET should be **increased** in accordance with recommendations of the Climate Change Authority (CCA) recommended national overall emissions reduction target of 19% below 2000 by 2020 (Ref: <http://www.businessspectator.com.au/article/2014/2/27/policy-politics/steep-emissions-cuts-needed-or-well-blow-australias-carbon-budget>). Per Section 3, this will also lead to reduced electricity costs in the longer term.

Since electricity generation is one of the easier sectors in which to reduce emissions, it makes sense for this to have the most ambitious target. This should be determined as part of an integrated strategy to achieve the necessary overall emissions reduction trajectory not just to 2020, but also beyond. Germany's *Energiewende* transition plan is an example of this. (Ref: <http://energytransition.de/> and <http://www.agora-energiewende.org/topics/the-energiewende/detail-view/article/12-insights-on-the-energiewende/>)

An increase would further drive the industry and improve Australia's ability to reap the benefits that renewable energy offers.

Australia could meet an increased target comfortably because the growth rates of the renewable energy industry in the past decade (20-30% per year) is far in excess of the 7% per year needed to reach the present 41,000 GWh target by 2020.

Furthermore as the Government plans to abolish the Carbon price/tax (which shares the emissions reduction transition over a wider range of the economy), the RET should be increased to compensate.

6. If retained, what level should it be?

SEN suggests at least 30% (60,000 GWh) by 2025.

However, in accordance with the CCA's recommended national emissions reduction target, the electricity sector's contribution should be reviewed with an aim to increase and extend the RET trajectory to 2025.

7. Do small-scale renewable energy systems still require support through the SRES? If so, for what period will support be required for?

This is still required as the SRES is a very effective model to install solar PV, and build knowledge and experience with small scale renewables. To maintain stability in the industry, the legislation should not be changed.

8. Should the LRET and SRES schemes be recombined

SEN does not see any reason to change the scheme as it provides a separation of the commercial utility sector from the small scale commercial and residential. This will encourage stability of the industry.

9. What impact is the RET having on electricity markets and energy markets more broadly?

The impact on the electricity markets and energy markets is discussed in section 3.2 of the Renewable Energy Target Review Expert Panel Call for Submissions, Commonwealth of Australia 2014+. The shutting down of several coal-fired power stations has helped to decarbonise the electricity generation sector, which is a necessary outcome but also carries benefits, as per Section 3.

The added cost of the LGCs will be offset by the drop in wholesale prices of electricity from wind and solar on the grids. For example, in SA the high penetration of 30% generation by renewables is reducing the wholesale price of electricity. (Ref: <http://reneweconomy.com.au/2012/wind-solar-force-energy-price-cuts-in-south-australia-39705>). This and the reports by ROAM Consultants and Schneider Electric (Section 3) shows the cost benefit which could be realised by continuing the RET.

10. How might this change over time?

Energy and price security is likely to improve if the right balance of renewables are deployed to ensure a reliable, economic mix of dispatchable load-following renewable generation/storage and variable sources (eg wind and solar PV), because renewables are decreasing in costs while the typical mix of coal and gas is static or expected to increase due to gas global prices.

Electric vehicles, electrification of transport (such as rail and metro transport), and growth in manufacturing and process industries will provide further demand for electricity which may help to pay for network costs. Furthermore, electric vehicles on charge can provide ancillary services and help balance grid demand and supply. Encouragement and greater use of electrified transport options will reduce dependence on imported fuels and provide an additional benefit in reductions in GHG emissions as the grids become progressively decarbonised with renewable generation.

11. Are the current exemption arrangements appropriate?

SEN believes that industry exemptions should be phased out to encourage uptake of best practice to reduce emissions, because there is ample opportunity for industry to increase energy efficiency, comfortably offsetting the cost of the RET. The Australian government Energy Efficiency Opportunities (EEO) program addresses this. (Ref: <http://energyefficiencyopportunities.gov.au/>)

Some entities may have loads and sites large enough to host utility-sized wind turbines behind the meter, and as the economics of renewables in such cases are favourable, they would not need exemptions.

12. How should reforms to the RET be implemented?

Any changes must be done in a staged or phased way to help provide business certainty by avoiding boom/bust cycles. This will in turn provide flow-on benefits as mentioned in Section 3.

The term and amount of the RET must be extended beyond 2020 to provide business certainty as the Climate Change Authority has recommended. An example is Germany's Energiewende which projects their trajectory out to 2050.

13. What transitional issues could arise and how might they be addressed?

There will be transitional issues such as incumbent businesses having stranded assets as has occurred throughout history as part of the numerous technological and business 'waves' of progress. Changing business models to embrace renewable electricity generation and complementary technologies including storage, smart-grid and demand-side management, are opportunities for innovative incumbent operators.

Stability and reliability of the electricity supply through this transition can be assured by implementing a mix of renewables noted in section 3, and by taking account of the US National Renewable Energy Laboratory report 'Active Power Controls from Wind Power: Bridging the Gaps', which is summarised at:

<http://reneweconomy.com.au/2014/forget-intermittency-nrel-says-wind-energy-can-boost-grid-reliability-81123>

The uptake of small storage (behind the meter) will allow higher penetrations of PV on the system. This model is already being offered by numerous companies such as in USA and New Zealand (e.g. Sunverge (<http://www.sunverge.com/>) and Vector Limited (<http://vector.co.nz/>)).

Existing grids will require planned modernisation and potentially extensions, to accommodate more renewables. However, with the implementation of smart grids and demand-side management as part of this, the power generation and transmission infrastructure costs to supply peak loads can be reduced to help offset costs.

Energy storage such as batteries are likely to become cheaper in a similar way to PV, that is, by massive increases in production, rather than technological breakthroughs in the near term. China is currently installing battery storage facilities of 36MWh capacity by BYD Company (<http://www.byd.com/>) in their grids as this has cost benefits over upgrades to their transmission infrastructure to cater for peak periods.

Regardless of the RET, it is likely that existing rural and fringe-of-grid communities could leave the grid and new rural loads become increasingly stand-alone, due to the advance of battery and other storage technologies. (Ref: <http://reneweconomy.com.au/2014/sa-network-operator-rural-communities-quit-grid-38514>)

This provides an opportunity for grid operators to reduce electricity prices due to lower network costs.

14. How does the RET interact with other government policies that have, or will have, an impact on the operation of the RET, or that impact on renewable energy or energy markets more generally?

The RET de-carbonises electricity generation using money raised from the consumers while the Carbon Price can de-carbonise a wider portion of the economy funded by the polluters. Both address the basic issue of GHG emissions and other pollutants by preventing their production in the first place. On the other hand, the Direct Action Plan (DAP) funds activities which are not covered by the RET or Carbon Price, and is funded by the taxpayer. It will not contribute to growth of renewables, and at the proposed low DAP prices, SEN assesses that it is not likely to contribute much to the emissions reduction targets by other means. (Ref: SEN submissions to the Direct Action Plan Senate Inquiry and the Emissions Reduction Fund).

15. Can the administrative arrangements of the RET be simplified? If so, how can they be simplified and what would be the risks of doing so?

SEN is not an installer or operator and therefore has no comment.

16. Should any other energy sources be included in the LRET? Should any non-renewable (but low emissions) energy sources be included?

Non-renewable technologies such as gas and nuclear should not be included due to their inherent problems of rising costs, pollution and fugitive emissions, risks from accidents and terrorism, waste disposal and resource limits, as applicable.

It does not appear that any other primary energy sources are available or suitable.

17. Should any new small-scale generation technologies be eligible under the SRES?

SEN believes that if the SRES continues, then the technologies currently eligible are pertinent.

18. Should any new displacement technologies be eligible under the SRES?

Yes, such as geothermal and solar space heating .

19. What should be the frequency of statutory reviews of the RET?

As reviews of the RET introduce uncertainty in the industry, these should be removed for the remaining term of the RET, unless it is to be increased or made more progressive, which would further drive the industry and increase Australia's ability to reap the benefits that renewable energy offers.

20. What administrative and regulatory arrangements should be put in place to ensure that the reinstatement of native forest wood waste is consistent with the sustainable management of native forests?

SEN supports the use of plantation waste and oil mallee shared on farmland, plus crop residue.

SEN does not support the use of native forest waste for energy generation because it develops a market for industries consuming native forest. This promotes a demand to continue and grow those industries, which is unlikely to be compatible with native forest preservation, particularly in light of climate change effects.

An example of this is the WA Government's updated forest logging plan for the next decade, which increases the take of native forest by 2,000 square kilometres. This is despite scientific evidence that rainfall decrease from climate change and deforestation of WA threatens not only the forest ecosystem, but also fauna close to extinction. The logging plan claims that the take is sustainable, despite the fact that 400-600 year old trees are taken but the logging cycle is just 125 years. (Ref: <http://ccwa.org.au/campaigns/forests> , <http://www.forestlegacy.org.au/> and <http://waforestalliance.org/>)