

ALSTOM SUBMISSION

Climate Change Authority
Review of the Renewable Energy Target
December 2014



PREAMBLE - ABOUT ALSTOM

Alstom is a global leader in the world of power generation, power transmission and rail infrastructure and sets the benchmark for innovative and environmentally friendly technologies. Alstom builds the fastest train and the highest capacity automated metro in the world, provides turnkey integrated power plant solutions and associated services for a wide variety of energy sources, including hydro, nuclear, gas, coal and wind, and it offers a wide range of solutions for power transmission, with a focus on smart grids. The Group employs 93,000 people in around 100 countries. It had sales of approx. \$AUD28 billion and booked more than \$AUD30 billion in orders in 2013/14.

In power generation, Alstom has provided over 20% of installed global capacity. Alstom operates across both thermal and renewable power technologies, covering all fuel types including coal, oil, gas, through nuclear to renewables such as hydro, wind, solar and biomass. Alstom also enjoys a strong global position in power transmission and is at the forefront of developments in the field such as HVDC and Smart Grids. Additionally, Alstom undertakes significant annual expenditure on R&D to improve the performance of our existing technologies; and develop the next evolution of power generation and transmission equipment.

In Australia, Alstom employs approximately 800 people, located across 18 sites and has been providing sustainable infrastructure solutions for more than 100 years. Alstom has supplied close to 30% of the utility Gas power plants in Australia including Tallawarra, Australia's most efficient thermal power station and over the last decade has delivered more than 3500MW of generation capacity.

Our technology can be found in many of the thermal and renewable power plants throughout Australia and we continue to service the installed base with a comprehensive Power Service offering.

In Transmission and Distribution, Alstom's Grid Sector technology is responsible for dispatching more than 90% of the electricity generated throughout the country.

With extensive experience in both renewable and thermal technologies, and significant operations of long standing in Australia, Alstom is well placed to comment on issues related to Climate Change Authority's 2014 RET Review. In particular, we bring a strong appreciation of what is required to attract private sector investment to the industry. As Alstom offers product across the complete range of thermal and renewable technologies, our comments can be considered as more objective, given we are not weighted towards any particular technology or fuel type. In addition, as we operate globally, we can deliver a global perspective to the comments we offer.

We trust that the comments and information provided herein prove useful to the Climate Change Authority and the Government as it studies its various options for future RET requirements.

Questions

*How has the RET performed against the objectives in the Renewable Energy (Electricity) Act 2000?
 Are there more efficient and effective approaches to achieving these objectives?
 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?*

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

The RET has been very successful to date in cost effectively achieving the Act’s objectives of stimulating investment in renewables and to ensure a proportional contribution from the Energy Sector towards reducing greenhouse gas emissions. The RET has already stimulated more than \$20 billion of investment in renewable energy¹ to raise renewables to 13% of electricity generation in 2012², with consequent reduction in greenhouse emissions.

It is also worth noting the spinoff economic benefits from this \$20 billion of RET induced renewables investment including the creation of approximately 24,000 jobs¹ across the nation. Alstom has been part of this industrial investment and in company with others in the industry, look to further expand our renewables footprint as the industry grows.

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

Internationally, the RET, and in particular the LRET, has proven itself to be a cost effective means of achieving the Act’s objectives relative to policies that have tried later. In 2012/13, the LRET added only 2% to retail power prices³ to achieve these objectives relative to other subsequent additional policies that have added significantly more to retail electricity prices for significantly less renewables investment and greenhouse gas abatement, eg the SRES has added around 3% to retail electricity prices³ whilst delivering less renewable energy (7 TWh from SRES vs 12 TWh from LRET in 2013⁴).

Internationally, the RET remains the most cost effective and effective way to reduce carbon emissions. Its aim of 20% renewables by 2020 is internationally comparable and therefore not putting Australia at a competitive disadvantage.

Country	Current Renewables Share of Electricity Production	Target of Renewables Share of Electricity Production by 2020
Germany	25%	35%
France	12%*	27%
UK	15%	15% (energy)
EU	21%*	20% (energy)
USA	13%	No % federal target, but various targets on states’ level – e.g. 33% (energy) in California
China	18%*	9.5% (energy by 2015) + capacity targets for selected renewable technologies
India	11%*	9% of renewable generation capacity (excluding hydropower)
Brazil	84%**	No % target, but capacity targets for selected renewable technologies

*in 2011

**in 2012

The RET has therefore proven to be the most cost effective Government. program to date in meeting the Act's objectives of both stimulating renewable investment and reducing carbon emissions relative to other current policies (such as the carbon tax and solar subsidies).

In Australia, the RET has a proven record of success and should therefore be supported as a concept.

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?

Alstom supports a broad portfolio mix as the most cost effective and practical solution of meeting the Act's objectives, as opposed to a single policy that picks technology winners. In view of the proven success of the RET in delivering on its twin policy objectives of promoting renewables development and reducing greenhouse gas emissions, the RET's objectives remain relevant as part of a mix of policies required to achieve the Government's overall stated target for Greenhouse Gas reduction. Encouraging renewable development as part of an energy mix that also ensures maximum thermal plant efficiencies ensures Australia has a diverse range of clean indigenous energy sources to draw on in a world where energy delivery arrangements can be very quickly impacted on, either in price or supply terms, by events beyond our borders and outside our control.

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

The RET has been the major driver in the development of renewable energy within Australia's overall energy mix and also in supporting Renewable Energy's ever reducing capital cost curve so that it can cost effectively take its place as an indigenous energy source in the country's energy mix.

Should the LRET be abolished, reduced or increased? If retained, what level should it be? What would the impact of such changes be?

Investments in the power industry are large and long term, typically in the hundreds of millions to billions of dollars over a 25 year ++ asset life. A coherent, stable and predictable policy framework for 2020 and beyond is the foundation to support the needed investment in all forms of power generation. The LRET should be kept at current its current level. In fact, in light of recent policy uncertainty delaying investment decisions, consideration should be given to defining targets beyond 2020 to give all players in the industry longer term certainty.

Additionally, the RET review needs to take into account usual investor requirements including sufficient payback periods and to take into account policy uncertainty-induced delays, and therefore have the scheme pushed back from 2030 to 2035 or 2040.

Should the LRET and SRES schemes be recombined?

Given the great uncertainty and consequent investment drought that resulted in 2010, the SRES should not be considered for recombination with the LRET unless all subsidies, both direct and indirect, state and federal, be removed from the small scale renewables. Otherwise, the cost and efficiency of the RET scheme as a whole, will again become excessive and investment certainty will again be destroyed. Solar rooftop, in particular, currently receives large direct subsidies via capital grants and feed-in tariffs, though many State jurisdictions have started reducing them. However, the indirect subsidy distortions induced by not contributing to the cost of the transmission and distribution system (which accounts for around 50% of overall retail power pricing) remain. These would also need to be fully and transparently eliminated in all jurisdictions before any consideration could be given to joining the SRES and LRET, an unrealistic proposition in the time frame of the review. The LRET, by comparison, is technology agnostic and operates on an economically competitive basis with developers required to absorb all grid connections costs. It therefore should not be recombined with the SRES.

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

Given the technology specific nature of the SRES, the excessive subsidies it requires and distortions it creates, the lack of contribution to grid costs and its relative inefficiency in delivering renewables and greenhouse gas abatement relative to the LRET, serious consideration should be given to abolishing the SRES altogether.

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

The LRET has proved both cost effective and successful at simultaneously meeting the Government’s legislated dual objectives of stimulating renewable energy investment and reducing greenhouse gas emissions. To maintain the cost effectiveness of the LRET, any technology permitted to be included under it should compete on a level playing field ie free from other direct and indirect subsidies. If the Government wants to maintain encouragement of renewables development as a policy objective (as well as for policy continuity and certainty), the LRET should be kept as a separate program, reserved for renewables.

Hybrid Renewable – Thermal Plants: One area that should be permitted under the LRET is the renewable portion of Solar / Thermal hybrids eg solar boost on gas and coal fired units. This would encourage the production of the lowest cost solar renewable energy whilst simultaneously meeting the carbon reduction targets by reducing carbon intensity of existing thermal units.

Non-Renewable Low Emissions Technology:

With over 85% of power currently coming from fossil sources, if the Government’s wants to maintain an objective of reducing greenhouse gas emissions, it must address support for boosting efficiency of thermal plant through either improvements to existing plant or replacement of old plant with state of the art generating facilities. Such polices should be done in conjunction with the LRET to ensure Australia adopts a wide portfolio mix solution to this problem. Whilst details of the Government’s announced Direct Action program have not yet been fully revealed, our initial estimates appear to indicate that an average abatement level of funding at around \$11/ t CO₂-e. If this proves to be correct, then it would of itself, not provide sufficient incentive to facilitate efficiency improvement projects, lending support to such a proposal.

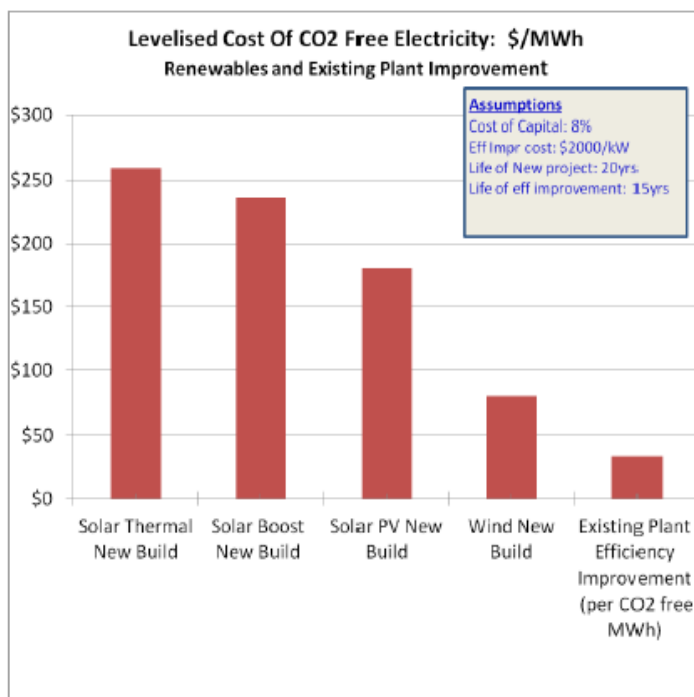


Figure 7 - Levelised Cost of CO₂-Free Electricity Generation
 Comparison of renewable technologies with existing plant improvement (excluding O&M)

Efficiency Improvements to Existing Thermal Units: Serious consideration should be given to establishing complimentary but separate program similar to the RET to meet the greenhouse gas reduction objective alone, namely, encourage upgrades to the existing fleet of fossil units via efficiency improvements. Alternatively, a scheme of direct emissions intensity limits as a licence condition, similar to the current licence limits on particulates, SO_x and NO_x, could be implemented. Either way, there is currently negligible incentive for efficiency improvements in the existing coal fired fleet. In support of this, we have included below a graph showing typical relative power costs for reducing carbon emissions, highlighting the cost effective nature of existing plant efficiency improvements relative to other options. Additionally, such efficiency improvement programs usually require

smaller capital investments and can be completed to yield results in relatively short time frames.

Direct Replacement of Old Plant Capacity for New Plant Capacity: Consideration should also be given under such a non-renewable program to credit direct replacement of old plant capacity for new under its terms. Reductions in emissions from Australia's rapidly aging fleet of coal fired units would represent a major contribution to emissions reduction whilst ensuring that modern reliable plant continues to support the country's base load requirements well into the future. As an example, a Victorian brown coal steam unit incorporating both coal drying and Ultrasupercritical steam technology would have a carbon intensity of 0.7 t CO₂-e / MWh vs > 1.5 t CO₂-e / MWh for some existing units, resulting in a direct CO₂ reduction of over half in any direct MW substitution program.

A non-renewable scheme would clearly have only the single objective of reducing carbon emissions rather than also simultaneously supporting renewables development as under the LRET. At present, there is little inducement for thermal generators to improve or replace their existing plant with more efficient, lower greenhouse intensive plants, despite it being a most cost effective way to substantially reduce greenhouse emissions relatively quickly.

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

Reiterating, typical power generation industry investments, whether renewable or thermal, are large in nature (hundreds of millions to billions of dollars) for long life assets (25 years ++) and commensurate investment horizons. They likewise require a supply and support industry with similar long term commitment to invest in R&D, capital and people to be able to build, operate and support these assets over their working lives. Undertaking such large, long life investments requires as an absolute, **policy certainty**. Where such investments come from overseas, sovereign risk issues arise with frequent major changes in policy.

Whilst the democratic process will always dictate that Governments can change and all Governments will maintain the right to alter policy as and when they see they see fit, they tend to balance this against sovereign risk and business certainty issues. However, a legislated requirement to undertake a review every two years permanently enshrines policy flux and so induces unnecessary uncertainty into the system. It is therefore far too short. By the time one review is finished and Government has reviewed and finally issued its final requirements to be met, there is only a short window before the subsequent review starts to become an uncertainty factor for investors again.

As an example, changes to the RET in 2010, firstly to allow incorporation of highly subsidised rooftop solar, and then a reversal that created the SRES after an unforeseen consequential collapse in large scale investment, highlight what sudden policy changes with unintended consequences can do to investment certainty. Any resultant creation of sovereign risk can impact on Australia's international reputation as an investment destination way beyond the area of Renewable Energy investment.

We would therefore recommend a minimum review period of **four (4) years**.

Is Bipartisan Support needed to give renewable energy investors the long term required to re-start investment in the Renewable Energy Industry?

Given the long term nature of the large investments typical of the power generation industry, as highlighted above, long term policy certainty is absolutely fundamental to sustaining and growing such investments. As such, regardless of whatever level the RET is finally set, a bipartisan agreement around such level is critical to delivering the degree of certainty needed to encourage the level of investment needed to restart the currently stalled state of the renewables industry. We would therefore urge both **Government and Opposition to reach a compromise agreement** as soon as practicable.

End of submission

Notes

¹ Clean Energy Council, Renewable Energy Target policy analysis, <https://www.cleanenergycouncil.org.au/policy-advocacy/renewable-energy-target/ret-policy-analysis.html>

² Clean Energy Council, Clean Energy Australia Report 2012

³ Australian Energy Market Commission, 2013 Residential Electricity Price Trends

⁴ Clean Energy Regulator, Renewable Energy Target 2013 Administrative Rep

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