

PROGRESS AND STATUS OF THE RENEWABLE ENERGY TARGET



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EXECUTIVE SUMMARY

Investment confidence in Australia's renewable energy sector has significantly improved following the legislation of the revised Large-scale Renewable Energy Target (LRET) in mid-2015, a new Prime Minister that is more supportive of renewable energy and a strong outcome at the Paris climate change conference.

The level and pace of investment will need to increase substantially in 2016 and 2017 in order for liable parties to deliver on the 2020 legislated target and obligation. The Clean Energy Regulator estimates that for this to happen, around 3000 MW of new renewable capacity should be committed in 2016.

This paper outlines the status of progress towards delivering on the 2020 target of 33,000 GWh of new large-scale renewable energy generation. While there will be challenges, this paper finds that there is reason to be optimistic that the required new investment will be delivered within the required timeframe.

The current situation is as follows:

- In 2015 approximately 15,200 GWh of renewable energy was generated above the pre-1997 baseline levels established under the Renewable Energy Target (RET) legislation.
- To achieve the 33,000 GWh target, approximately 18,000 GWh of additional annual renewable energy generation needs to be produced by 2020. This will require around 6000 MW of new generation capacity and will create around \$10 billion in new investment and thousands of jobs in rural and regional Australia.
- Most analysts predict that the current surplus of Large-scale Generation Certificates (LGCs) will meet liabilities under the RET scheme for approximately two years. Noting it takes approximately two years from commercial close to construct and commission a new wind project – less for large scale solar – clearly there needs to be substantial progress throughout 2016 and 2017 in order for these liable parties to deliver on their future legislated obligation.
- Approximately 11,000 MW of projects with planning approval, and projects adding up to a further 6000 MW of capacity are currently going through the planning approval process. More than enough projects are in the pipeline, ready to deliver the 33,000 GWh target by 2020.
- While liable parties will seek to minimise their cost and commercial exposure in securing future LGC supply, they also have an obligation to ensure that they secure the necessary LGCs to meet their annual liability in compliance with the intent of the legislation.
- While overall progress toward the target has not been as rapid as many would like, a range of developments have continued to improve confidence since mid-2015. Approximately 700

MW has been committed towards the RET since the legislative change last year, with approximately 450 MW of new capacity committed in the past three months alone. Momentum is clearly building.

- Investment in renewable energy is challenged by a number of factors outside of the control of the industry. A surplus of highly emission-intensive and aged power plants remain in the system due to the absence of a clear long-term policy for the electricity generation sector. The current RET policy has a target that peaks in 2020 (just four years away) and the scheme ends in 2030, which creates uncertainty with regard to long term merchant LGC prices. While these factors may create challenges, they do not change the fact that there is an obligation on liable parties under the legislation to secure LGCs to meet their liabilities through to 2030.

OVERVIEW OF THE LARGE-SCALE RENEWABLE ENERGY TARGET

The Commonwealth Renewable Energy Target (RET) is critical to the deployment of renewable energy in Australia.

It is split in two parts:

- The Large Scale Renewable Energy Target (LRET) that requires 33,000 GWh of new generation annually from large scale renewable energy by 2020.
- The Small-Scale Renewable Energy Scheme (SRES) that supports residential and small commercial renewable energy installations.

After a protracted review, the LRET was amended and the target reduced in mid-2015 with the support of both major parties. While this restored policy certainty, negative comments related to renewable energy from then-Prime Minister Tony Abbott prolonged investment uncertainty for the sector. A change of Prime Minister in late 2015 and a strong outcome at the climate change conference in Paris in December 2015 finally provided the sector with greater long-term certainty. Minister for the Environment Greg Hunt's strong assurances that the Federal Government will not make any further reductions to the target legislation and that liable parties are expected to comply with the policy have further improved investor confidence.

It has taken some time for this confidence to flow to commercial transactions and ultimately the construction of new large-scale renewable energy projects. However there have been a number of Power Purchase Agreements (PPAs) signed this year, and capacity is also being built on a 'merchant' basis, selling into the electricity market without a PPA in place.

CURRENT STATUS

Australian renewable energy generation and capacity as at 31 December 2015 is summarised as follows.

TABLE 1 SUMMARY OF RENEWABLE ENERGY CAPACITY AND GENERATION IN 2015

Technology	Installed capacity (MW)	Generation (GWh)
Hydro	7800	14,046 (mostly pre-baseline)
Wind	4187	11,802
Large-scale solar	224	303
Bioenergy	990	3200
Solar Thermal	9.3	27

Marine	0.24	0.5
Geothermal	0.12	0.50

Most of Australia’s hydro generation existed prior to the establishment of the RET. Under the legislation, generation from pre-existing hydro stations does not count towards the 33,000 GWh target, with the exception of generation that exceeds predetermined baselines.

The 2015 target for the LRET was 18,850,000 LGCs, which is 18,850 GWh or 11.11 percent of electricity consumption¹. Generation from above-baseline large-scale sources totals around 15,200 GWh. The actual number of LGCs surrendered to the Clean Energy Regulator was higher than this, noting that liable parties were able to use banked certificates (from prior years where supply was greater than demand) to meet 2015 legislated obligations. Analysis indicates that this banked surplus (combined with the existing annual generation) is sufficient to support liable parties in meeting obligations out to around 2017-2018.

In March 2016 the Clean Energy Regulator announced that the combined compliance rate for the LRET and SRES for 2015 was 99.7 per cent. The regulator said: “Liable entities have complied with their obligations in recent years and it is pleasing to see this continue.”

NEW GENERATION REQUIRED TO MEET THE RET

To achieve the 33,000 GWh target, approximately 18,000 GWh of additional renewable energy generation needs to be produced annually by 2020.

Based on current renewable energy technologies this will likely equate to around 6000 MW of new capacity, depending on the exact mix of technologies that will be deployed. This is likely to be predominantly from large-scale wind and large-scale solar along with commercial-scale solar (100 kW to 1 MW behind the meter installations). There is also likely to be some level of new generation from mini hydro power stations, upgrades and refurbishment of existing hydro power, bioenergy and a limited amount of ocean energy generation by 2020. Above-baseline hydro power generation is also expected to increase after the difficult, low-inflow conditions of 2015.

THE CURRENT PROJECT PIPELINE

As at May 2016 there is approximately 500 MW of wind capacity under construction, which will come online in 2016 and 2017, and 30 MW of large-scale solar under construction and expected to become operational in 2016. There is also a construction pipeline of commercial-scale solar projects between 100 kW and 1 MW that will contribute to the LRET target.

¹ Clean Energy Regulator, Annual targets and the Renewable Power Percentage, 2016, Available online <http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/The-certificate-market/annual-targets-and-the-renewable-power-percentage>

The following tables summarise the total development pipeline, showing 8000 MW of wind projects and 2585 MW of solar PV projects with development approval. It should be noted that there is likely to be substantial additional large-scale solar capacity in development, given these projects often do not need to go through statutory planning schemes (and therefore may not be captured in the below analysis).

WIND

State or Territory	Under construction (MW)	Approved (MW)	In the approvals system (MW)	Total (MW)
VIC	239	1729	850	2818
NSW	175	2195	4835	7205
QLD		1045	345	1390
WA		1184	170	1354
SA	118	1565	453	2136
TAS		339		339
ACT				
NT				
TOTAL	532	8057	6653	15,242

SOLAR

State or Territory	Under construction (MW)	Approved (MW)	In the approvals system (MW)	Total (MW)
VIC		180		180
NSW		110		110
QLD	20	2280		2480
WA	10			10
SA				
TAS				
ACT		15	10	25
NT	1			1
TOTAL	31	2585	10	2626

It is clear from this summary that more than enough renewable energy projects are approved than are required to meet the LRET. Of course, not all approved projects will go ahead. Because the LRET is a market mechanism, only projects that can deliver the lowest cost renewable energy are likely to be constructed.

Competitiveness is influenced by a combination of factors including resource quality, technology costs, electricity market conditions, network access and connection and the planning regime in particular jurisdictions.

PROGRESS TOWARDS 2020

While progress toward the target has not been as rapid as the industry would like since mid-2015, a range of developments in the first half of 2016 has included:

- Commencement of construction at the 175 MW White Rock wind farm in New South Wales in late April 2016.
- Construction underway on the Ararat wind farm in western Victoria, with 80 MW of capacity sponsored by the ACT reverse auction and a further 160 MW being built under the RET scheme, with debt financing from the Clean Energy Financing Corporation.
- The 56 MW Moree Solar Farm was opened in northern New South Wales, the second largest in Australia. Origin Energy issued a Power Purchase Agreement (PPA), to buy the electricity produced by the farm for a 15-year period.
- The 100 MW Clare Solar Farm in Queensland has struck a Power Purchase Agreement with Origin Energy. Fotowatio Renewable Ventures (FRV) will commence construction in 2016, with operations expected to commence in 2017. The PPA will run for 13 years from the commencement of operations until December 2030.
- The 175 MW Mt Emerald Wind Farm project in Queensland struck a 15-year PPA with Ergon Energy and is expected to commence construction in 2017.
- AGL announced its Powering Australian Renewables Fund - a new entity tasked with funding a portfolio of new renewable energy projects, which AGL believes will add up to \$2-3 billion worth of investment that it expects will deliver about 1000 megawatts of new renewables. The company will contribute \$200 million in equity and is seeking investment partners for the new fund.
- A range of commercial-scale solar projects between 100kW and 1 MW that contribute towards the LRET scheme.

Since the resolution of the RET in June 2015, approximately 1000 MW of renewable energy capacity has been committed or commenced construction, approximately 700 MW of which will contribute toward the RET scheme. The other 300 MW is supported by, and contributing to, the ACT reverse auction. Momentum is building and in the last three months alone, the White Rock Wind Farm, Clare Solar Farm and Mt Emerald Wind Farm announcements equate to approximately 450 MW of new capacity under the RET. While this progress has been positive for the renewable energy industry, the rate of new build is currently insufficient to meet the future liability.

However, there are signs of substantial additional commitments throughout the year which will help to provide additional momentum. These potential projects include:

- The City of Melbourne together with other local governments, cultural and educational institutions, and private-sector corporations has launched a competitive tender to purchase

110 GWh worth of energy from new large scale renewable energy facilities. The tender closes in June 2016.

- The New South Wales Government tender for 137 GWh of renewable energy for its Sydney Metro Northwest rail project, which opened in January and closed in March 2016.
- The Australian Renewable Energy Agency (ARENA) is running a large-scale solar funding round which has short-listed 22 projects and is expected to award a total of \$100 million towards around 200 MW of large- scale solar capacity later in 2016.
- Tenders or expression of interest processes are currently underway from a number of liable parties including Alinta Energy, Synergy and Ergon Energy.
- A number of state governments have committed to increase the procurement of renewable energy. This includes Victoria's tender for around 100 megawatts of new renewable energy projects, which closed in March 2016.

STATUS OF LIABLE PARTIES

The retail electricity market is dominated by a small number of market participants, which carry the majority of the overall retail load and therefore liability for the RET. Each of these participants have a current surplus of LGCs to meet some level of their future liability. Most analysts predict that the current surplus of LGCs will meet liabilities for approximately two years. Noting it takes approximately two years from commercial close to construct and commission a new wind project, and less for large-scale solar, clearly there needs to be substantial progress throughout 2016 in order for these liable parties to deliver on their future legislated obligation.

The graph below shows the legislated certificate liability², and expected generation from existing assets, assets currently under construction, and approved assets. It also shows the expected surrender of banked certificates, with data from Green Energy Markets³.

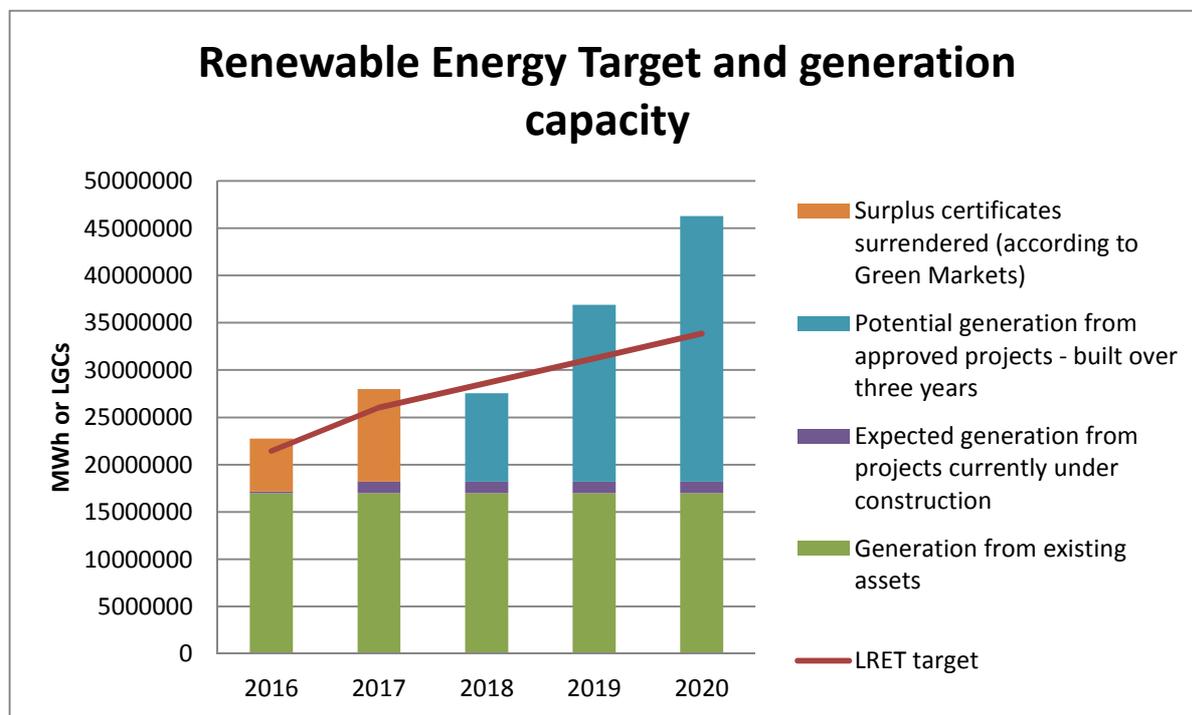
The potential generation from approved wind and solar projects has been smoothed over three years, with a consistent build rate for 2018, 2019 and 2020. The graph illustrates that there is more approved capacity than required under the legislation. The smooth build rate is for illustrative purposes. In practical terms there is likely to be some level of variation in annual build rates over this period.

There is clearly a large pipeline of approved projects, and the sector has strong capability and capacity to deliver materially higher levels of annual deployment. Substantial delays in committing new projects resulting in larger annual build rates in 2019 and 2020 could however

² Clean Energy Regulator, 2015, Annual targets. Available online:
<http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/The-certificate-market/The-renewable-power-percentage/Annual-targets>

³ Green Energy Markets, 2015, Quarterly Renewables Report Q3 2015. Available online:
<http://greenmarkets.com.au/news-events/report-quarterly-renewables-report-q3-2015>

result in some resource constraints that could impact the time and cost to deliver new projects. This risk can be minimised by liable parties ensuring that early progress is made in commitment and construction.



Approximately 3000 MW of new large-scale projects are required to reach commercial close so that they can then commence construction by 2017 and begin generating LGCs by 2018. The LGC price has increased from around \$30 during the RET review to over \$80, reflecting the likely impending shortfall of LGCs. Based on prices achieved by the ACT’s reverse auctions, the LGC price is above the level required over the life of a contracted project to make it commercially viable.

As outlined above, approximately 1000 MW of large scale renewable energy projects with planning approval are now awaiting commercial close in order to progress on construction. Most project proponents will require some form of off-take or PPA that can provide certainty of revenue sufficient to warrant the substantial capital investment.

Liable parties recognise the role of PPA’s in underpinning investment, with a long history of PPAs in various forms and tenor since the RET was first established in 2001. Understandably, liable parties will seek PPA forms and tenor that minimise their cost and commercial exposure. This is the nature of complex commercial negotiations between liable parties and project proponents. Fundamentally however, liable parties have an obligation to comply with the RET legislation and ensure that they secure the necessary annual LGC supply to meet their annual liability.

If liable parties do not comply with their annual obligation they are required to pay a shortfall

charge of \$65 for each LGC they have failed to surrender. This is a tax exclusive amount, meaning that for a commercial business paying income tax, the tax effective penalty may be as high as \$93. As such, a liable party might be better off from an economic perspective buying LGCs on the market for up to \$93 each. The RET legislation also includes a make-good provision, whereby if a liable party has not complied in a given year, and rather paid the penalty, they can provide a valid LGC in the future (up to three years) and surrender this in return for the \$65 penalty.

RENEWABLE ENERGY INVESTMENT CHALLENGES

Investment in renewable energy is challenged by a number of factors outside of the control of the industry. A surplus of highly emissions-intensive and aged power plants remain in operation due to the absence of a clear long-term policy for the electricity generation sector and the barriers to exit facing some of this plant. This creates a challenge for the commercial case for new renewable energy generation.

The current RET policy has a target that peaks in 2020 (just four years away) and the scheme ends in 2030, which creates uncertainty with regard to long-term merchant LGC prices. Investors need confidence that the necessary revenue will be provided over that period to recover the capital cost of their investment. The sector has long advocated this challenge be addressed by:

- *An increase to the target beyond 2020.* The current RET target peaks in 2020, and remains at that level until 2030. Forecasting the price of LGCs during this period is challenging, and therefore certainty of project revenue during this period is lower. This obviously makes the business case for projects more difficult as time goes on. The CEC has always advocated that the RET target should continue to increase at some level beyond 2020 to provide a stable growth pipeline and to allow the sector to mature and develop. An increasing role for renewable energy is consistent with emissions commitments from all major parties. For the sector to decarbonise, existing and additional zero-emissions generation will be increasingly important. A challenge for investors is how to quantify/access this value when faced with questions over the longer-term policy mix for the sector.
- *An extension of the RET beyond 2030 to provide long-term certainty.* The RET scheme should continue to remain in place for 15 years after the peak of the target. For the current target, which peaks in 2020, the scheme should continue until 2035 in order to provide revenue support for projects committed towards the end of the growth trajectory. The longer-term revenue support will generally result in lower LGC prices – because the costs are recovered over a longer period – and therefore lower overall costs to consumers.

One final challenge is the changing nature of the electricity market, and contracting arrangements with commercial and industrial electricity customers. These contracts are tending toward shorter tenures and with higher customer churn, creating some challenges for electricity retailers to anticipate their future LRET liability for this customer segment. These retail businesses are understandably cautious therefore in committing to long-term renewable energy projects and LGCs to meet this variable future liability. However, with increasing retail competition and LGC spot prices now materially above long-term contract prices, there is a

clear financial incentive for these retail businesses to enter into some form of longer-term LGC arrangement for all aspects of their customer liability.

While these factors may currently create challenges, renewable energy is widely expected to have a strong and growing role in the Australian energy mix. The 33,000 GWh LRET has bipartisan support and places a legal obligation on liable parties to meet their share of the 2020 liability.