

**Submission
No 253**

SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

Organisation: Clean Energy Council

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26 June 2020

Mr Alex Greenwich MP
The Chair
Committee on Environment and Planning
Parliament House Macquarie Street
SYDNEY NSW 2000
By email: environmentplanning@parliament.nsw.gov.au

Dear Mr Greenwich

Submission to Inquiry on the Sustainability of the Energy Supply and Resources in NSW

The Clean Energy Council (**CEC**) is pleased to have the opportunity to make a submission to the Legislative Assembly Committee on Environment and Planning's inquiry into the sustainability of energy supply and resources in New South Wales.

The CEC is the peak body for the renewable energy industry in Australia, representing over 800 businesses working in rooftop and large-scale solar, wind and hydro energy, and energy storage. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

Your inquiry comes at an important time in New South Wales' energy transition which has been gathering pace with the recognition by the State Government of the necessity and urgency of change, as well as the tremendous economic and social benefits that can flow from a clean energy future.

Our submission will address:

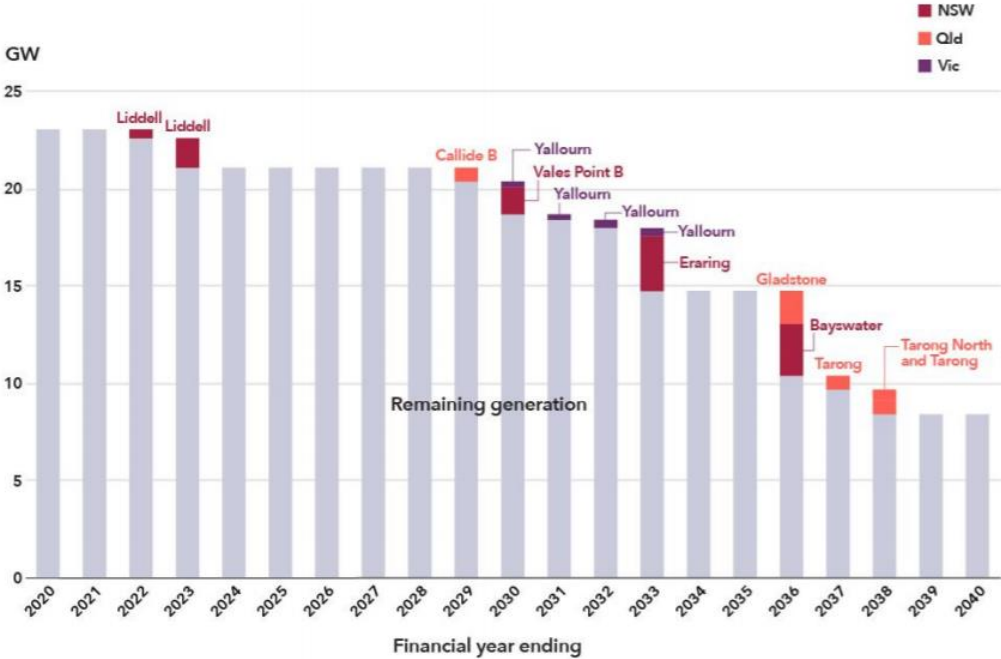
- The status of the clean energy transition in New South Wales
- The economics of investment in new electricity generation assets
- Opportunities from the clean energy transition for jobs and communities, particularly within regional areas
- Barriers to unlocking the full potential of the clean energy sector in NSW.

1. The energy transition in NSW

With the largest amount of retiring coal-fired generation capacity over the next 15 years and the second lowest penetration of renewables of any Australian state, New South Wales has a large and essential transition ahead of it.

Figure 1 below, taken from the Australian Energy Market Operator's *Draft 2020 Integrated System Plan* shows the anticipated retirements of coal fired power generation over the next 20 years. Seventy per cent of the scheduled retirements (by capacity) between now and 2036 are New South Wales based generators.

Figure 1: Coal-fired power station retirements to 2040 (AEMO)¹



* Based on expected closure years provided by participants as of November 2019. Modelled outcomes vary slightly from these timings and are based on expected closure years reported in August 2019.

Notwithstanding the fact that New South Wales operates within the National Electricity Market and can benefit from new electricity generation build in other east-coast states, it would be both risky and a missed economic opportunity for the state to rely on other jurisdictions to do the heavy lifting in the clean energy transition over the coming decade.

From 2017 to 2019, the share of renewable energy in New South Wales climbed from 11 per cent to 17 per cent respectively – in part due to the clear signal about the impending retirement of the Liddell coal fired power station – with \$8.2 billion of new large-scale clean energy investment being poured into (mostly) regional communities across the state, representing 4.77 gigawatts (GW) of new, clean generating capacity.

Figure 2: Renewable energy penetration by state, as at 31 December 2019²

STATE	TOTAL GENERATION (GWh)	FOSSIL FUEL GENERATION (GWh)	TOTAL RENEWABLE GENERATION (GWh)	PENETRATION OF RENEWABLES
TAS	10,786	473	10,313	95.6%
SA	15,062	7213	7849	52.1%
VIC	47,780	36,352	11,428	23.9%
WA	19,264	15,242	4022	20.9%
NSW	71,011	58,851	12,160	17.1%
QLD	66,068	56,747	9321	14.1%
NATIONAL	229,971	174,879	55,093	24.0%

¹ Draft 2020 Integrated System Plan, Australian Energy Market Operator

² Clean Energy Australia Report 2020, Clean Energy Council

Despite this huge level of investment, the investment conditions have become more challenging due to the expiry of the Renewable Energy Target (RET), lower electricity prices, the inadequacy of Australia’s transmission network and significant barriers to grid connection which have deterred private investors and developers.

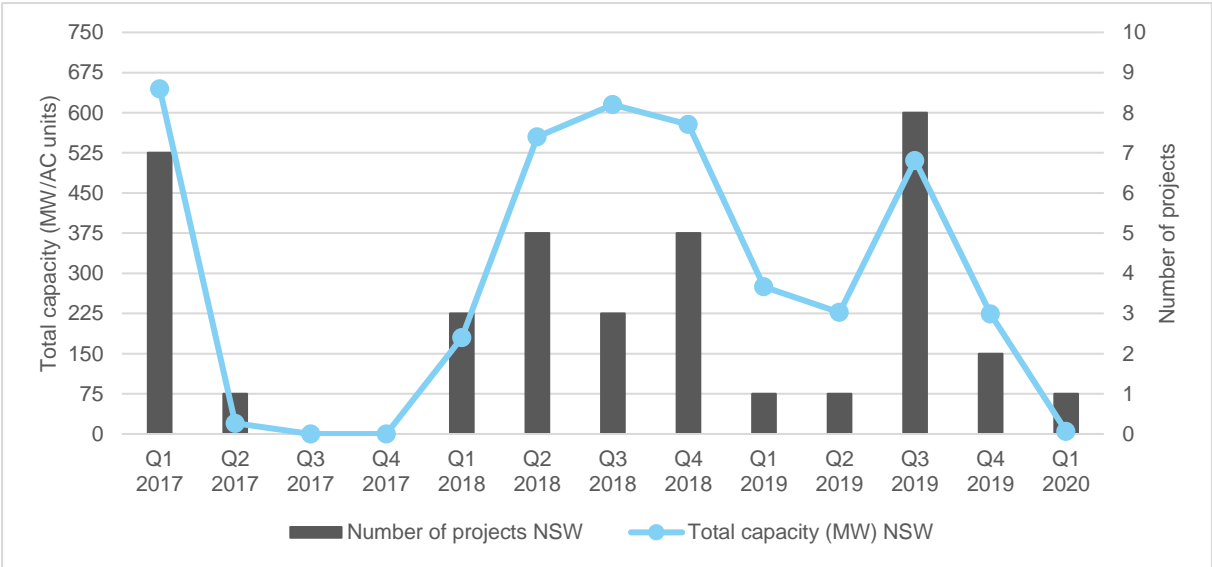
These challenges are reflected in the results of the CEC’s latest survey of clean energy CEOs about the barriers to developing large-scale projects in Australia, which was carried out in late 2019. See Figure 3 below.

Figure 3: Top business challenges for developing clean energy projects in Australia: Survey of clean energy CEOs, December 2019

- 1
 Concerns and challenges related to grid connection process and technical requirements
- 2
 Lack of strong federal energy and climate policy
- 3
 Under-investment in network capacity to address congestion and constraints
- 4
 Concerns and uncertainty about marginal loss factors (MLFs)
- 5
 Unjustified government intervention in the energy market
- 6
 Lack of certainty about timing of exit of coal-fired power stations

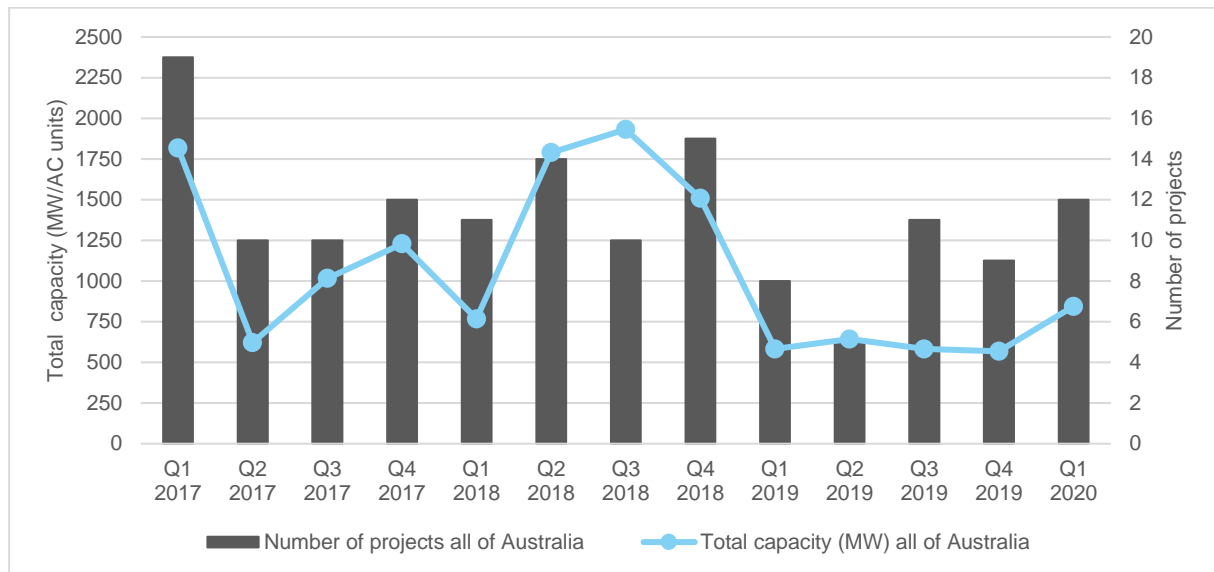
As such, there has been a sharp decline in financial commitments to new renewable energy projects since the beginning of 2019 as can be seen from Figures 4 and 5 below.

Figure 4: Financial commitments to clean energy projects in NSW, by quarter³



³ Source: CEC project tracking

Figure 5: Financial commitments to clean energy projects nationally, by quarter⁴



Despite the state’s slower start out of the blocks relative to other NEM jurisdictions, the CEC has been impressed over the past year by the strategic, targeted and practical response to the challenges by the State Government.

The state is now making rapid headway to catch up to its peers through the development and implementation of its Transmission Infrastructure and Electricity strategies. The clear direction and practical support by the State Government has gone some way to bolstering declining confidence among clean energy investors. The CEC looks forward to this vigour being maintained to revitalise local clean energy investment.

2. Solar and wind provide a low-cost clean energy advantage that should be harnessed

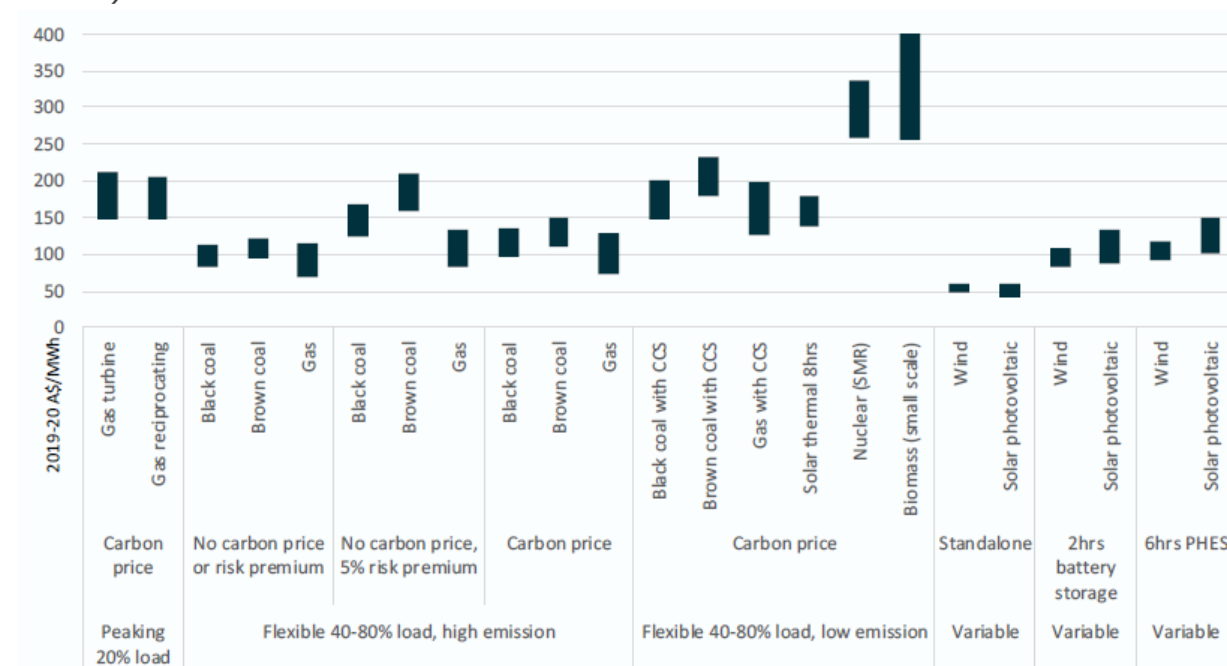
As outlined within the CEC’s recent submission in response to the Commonwealth Government’s *Technology Investment Roadmap Discussion Paper*⁵, Australia’s renewable energy resource is exceptional by international standards, and combined with the declining cost of technologies, wind and solar now provide the lowest levelised cost of energy.

Figure 6 (overleaf) taken from the latest GenCost report, published in May 2020 by CSIRO also demonstrates that solar and wind-powered energy generation is now competitive with coal and gas plants when short-duration storage is added.

⁴ Source: CEC project tracking

⁵ <https://assets.cleanenergycouncil.org.au/documents/advocacy-initiatives/submissions/submission-technology-investment-roadmap-discussion-paper.pdf>

Figure 6: Calculated levelised cost of energy by technology and category in 2020 (GenCost 2019-20)



This economic advantage of clean energy technologies is only expected to increase, and it should be harnessed to deliver low-cost clean energy to households and businesses, and to support the increased competitiveness and expansion of energy intensive manufacturing and processing.

3. Renewable energy job opportunities

The \$8.2 billion of investment in new large-scale clean energy generation that has been commissioned, committed or that is under construction is estimated to have created over 6,200 peak construction jobs⁶. The overwhelming majority of these projects have been built in rural and regional Australia, providing a major boost in employment and local supply opportunities for regional communities.

Building on the picture of the direct jobs created during the ‘big build’ of clean energy projects since 2017, the CEC recently released a report detailing the findings of the first comprehensive survey of employment across the renewable energy industry.

The report, *Clean Energy at Work*, covered small-scale rooftop solar, large-scale solar and wind, hydro and pumped hydro, battery storage and the associated supply chains. It found that in 2019 the renewable energy industry nationally employed over 25,000 workers and that that figure could rise to 44,000 by 2025 were Australia to follow a ‘step change’ scenario, as per AEMO’s *Draft Integrated System Plan* modelling.

The report also highlights the opportunities that renewable energy presents for rural and regional Australia. More than two-thirds of employment could be sourced outside capital cities across

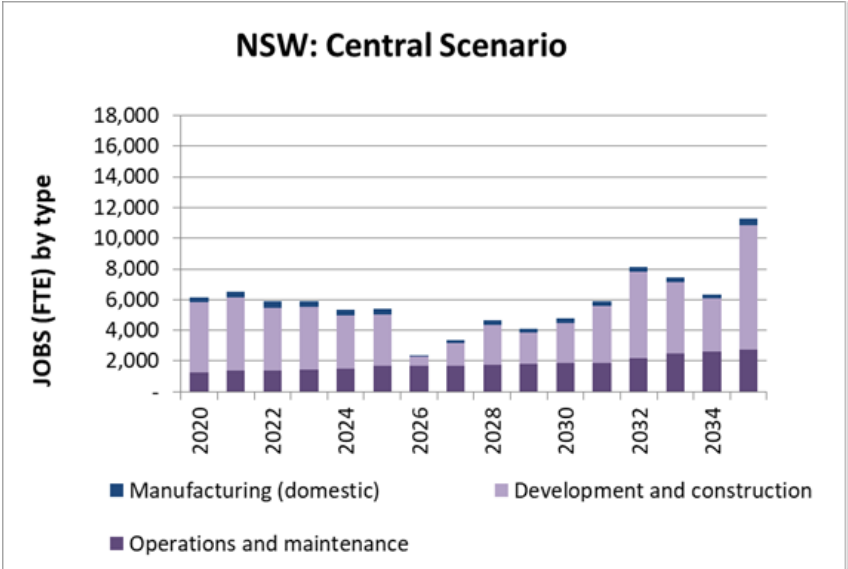
⁶ Source: CEC project tracking

Australia. This figure depends on the technology mix but also requirements for local content imposed through state policies. Under a scenario of aggressive decarbonisation, as many as half of all Australian renewable energy jobs could be ongoing in operation and maintenance roles by 2035.

In New South Wales, it found that around 6,000 people are currently employed in the renewable energy sector in manufacturing, development and construction, and operations and maintenance. Over 74 per cent of these jobs are project based, in connection with development and construction of projects. Twenty per cent of these jobs are in the operations and maintenance of the projects, which are ongoing, permanent positions (see figure 7), growing slowly over time.

If current NSW policies were to continue without significant change (Central Scenario),¹ the average number of NSW jobs in clean energy are estimated to average at 5,900 over the next 15 years.

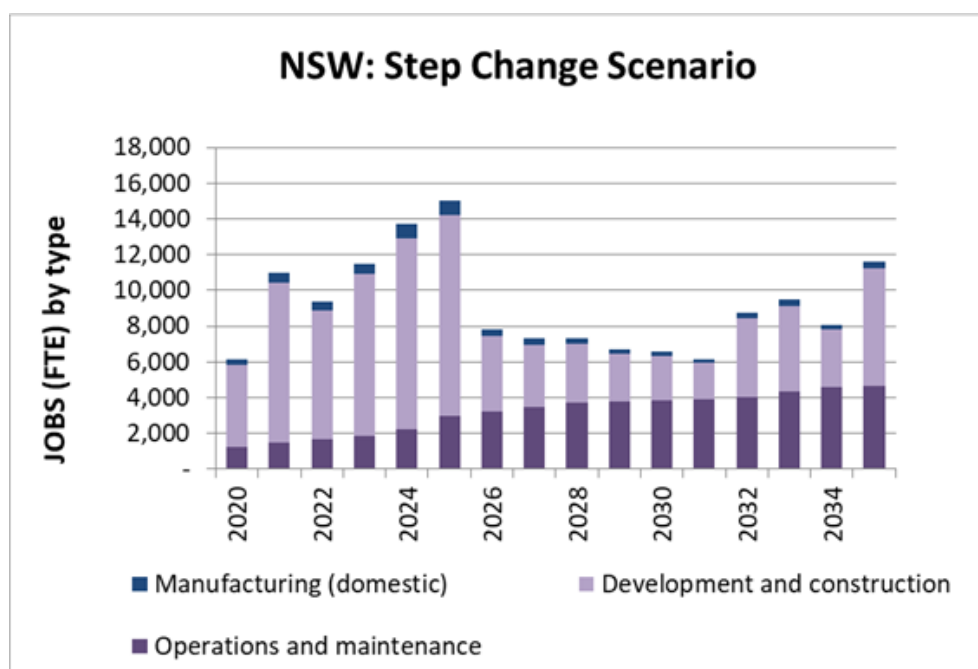
Figure 7: NSW Clean energy jobs breakdown based on current state policies⁷



By contrast, under AEMO’s Step Change Scenario that sees ambitious decarbonisation globally and in Australia,¹ **15,000 people could be employed in renewable energy by 2025** in NSW (see Figure 8) and job numbers could average over 9,000 over the next 15 years. Under this scenario, operation and maintenance jobs could **represent 40 per cent of the renewable energy workforce by 2035** (compared to 25 per cent in the Central Scenario). Most of these permanent jobs are in the wind sector.

⁷ Based off research by ISF for the CEC’s Job Report,

Figure 8: Clean energy jobs breakdown based on Step Change Scenario⁸



Importantly, the *Clean Energy at Work* report considers direct jobs only in renewable energy generation and associated supply chains. These figures do not reflect induced jobs that are a result of the increased activity in these regional areas, such as hospitality and retail. These can be significant. Indeed, a recent economic impact assessment carried out for a Victorian wind farm found that the indirect employment could be seven-times greater than the direct employment⁹.

4. Low-cost, clean energy will drive new job opportunities in other sectors too

The job opportunities resulting from a clean energy transition could be far greater than the direct and indirect jobs created by the construction and operation of clean energy plant alone.

As outlined by Dr Ross Garnaut in his book *Superpower*¹⁰ clean, low-cost electricity sector would provide the opportunity for Australia to undertake a larger share of value-added processing and manufacturing of the mineral ores that we currently mine and, to a large-degree, export as unprocessed ores.

For example, Australia currently produces 38 per cent of the world’s iron ore and 18 per cent of the world’s metallurgical coal, but produces only 0.3 per cent of its steel¹¹.

Access to low-cost, clean energy will enable the production of renewable hydrogen, that could enable the development of a domestic ‘green steel’ sector, using the hydrogen as a reductant to process the iron ore mined in Western Australia.

⁸ Based off research by ISF for the CEC’s Job Report,

⁹ Unpublished economic impact assessment on a Victorian wind farm

¹⁰ *Superpower: Australia’s low-carbon opportunity*, Garnaut, R. (2019), Latrobe University Press

¹¹ Start with Steel, The Grattan Institute, May 2020. <https://grattan.edu.au/wp-content/uploads/2020/05/2020-06-Start-with-steel.pdf>

A recent study by the Grattan Institute¹² on the economics of an Australian green steel industry found that it would be more economical to process WA's iron ore on the east coast of Australia, given the excellent access in locations such as the Hunter Valley to skilled workforces, the electricity grid and ports.

The report found that capturing about 6.5 per cent of the global steel market would generate about \$65 billion in annual export revenue and could create 25,000 manufacturing jobs – 10,000 of which it expects could be efficiently located in the Hunter Valley.

The development of a domestic green steel industry would in turn require much larger amounts of renewable energy generation capacity (60 GW), generating a further 1,500 jobs based on the Grattan Institute's estimates. Based on the CEC's *Clean Energy at Work* study, we expect that the renewable energy workforce needs would be much higher still.

Table 2: Employment, investment and economic potential of a green steel industry¹³

	Central Queensland	Hunter Valley	Combined
Ongoing plant jobs in region	15,000	10,000	25,000
Direct reduced iron (DRI) output (Mt per year)	60	35	95
DRI exported (Mt per year)	30	17.5	47.5
Steel exported (Mt per year)	25	15	40
Output as share of 2050 global steel market (including steel produced from exported DRI)	4%	2.5%	6.5%
Output as share of today's integrated steel production by prospective trading partners	30%	20%	50%
Annual value (\$b)	40	25	65
Capital investment (\$b)	115	80	195
Renewable generation capacity required (GW)	75	60	135
Renewable ongoing jobs (mostly outside region)	2,000	1,500	3,500
Water input (GL per year)	200	150	350
Land required (share of state area)	0.45%	0.65%	0.5%

Green steel is but one example of the many economic expansion opportunities available to Australia by leveraging its low-cost, clean energy advantage over time. Other prospective sectors include the production of renewable ammonia, green alumina, and indeed the very significant opportunities provided by renewable hydrogen in its own right. The sooner that New South Wales can make the transition to low-cost clean energy, the sooner that it can position itself to capture these opportunities.

¹² ibid

¹³ ibid

5. Unlocking the full potential of the clean energy sector in NSW

The NSW Government has communicated a clear objective for NSW to be “*the best place in the OECD to build a renewable plant and get it connected to the grid*”¹⁴. Key hurdles to achieving this commendable vision are a congested and inadequate transmission network, high levels of complexity and risk in the grid connection process, and a lengthy and costly planning assessment and compliance regime.

Building a renewables-ready grid

Critical to unlocking the full potential of the clean energy sector in New South Wales is alleviating grid congestion and improving the grid connection process. As at June 2019, Transgrid, the state’s transmission network service provider had in the order of 48,00 MW of connection enquiries, with only 2000 MW¹⁵ of spare transmission capacity, demonstrating the scale of the challenge for the state in attracting new clean energy investment.

AEMO’s Integrated System Plan has identified a number of transmission network augmentations and upgrades which are needed to enable a more reliable, secure and flexible system. These upgrades, such as Project EnergyConnect (Robertstown, SA to Wagga Wagga), and the Victoria-NSW and Queensland-NSW interconnectors, will also enable New South Wales, which sits at the heart of the NEM to maximise its potential as a renewable energy producer and exporter. As part of its response to the COVID-19 pandemic, Transgrid has recently outlined the employment benefits of bringing these and other major transmission projects forward.

The State Government’s Transmission Infrastructure Strategy and recent NSW Electricity Strategy also recognise access to transmission capacity as the most significant barrier to investment and these strategies have laid the framework for the state to play an active role to speed up transmission build. A key feature of the plan which has attracted strong interest from industry, is the 3,000 MW pilot Central-West Orana Renewable Energy Zone, which will be co-ordinated by the state’s new Energy Corporation.

The CEC welcomes this approach to the co-ordination of transmission and generation, which should facilitate:

- more efficient planning and design outcomes
- enhanced confidence and lower risk associated with grid access for renewable energy project proponents, and
- strategic workforce planning that can maximise the employment benefits for local communities.

If successful, this approach provides a model that can and should be replicated in other regions of New South Wales.

Improving the grid connection process

Grid connection was identified as the number one business challenge for CEC members in a survey of chief executives at the end of 2019. The process to connect to the network is leading to increased complexity, cost and time for new developments. For example, in a recent study of CEC members, we found that around one-third of projects take more than a year to receive an offer to connect after submitting a connection application, which is well in excess of the two to ten month indicative

¹⁴ Speech by Minister for Energy and Environment, Matthew Kean, Australian Clean Energy Summit, July 2020

¹⁵ Transgrid Transmission Annual Planning Report, June 2019

timeframe provided in AEMO's connections process diagram. Furthermore, projects are increasingly being required to remediate system strength, often through the purchase of a synchronous condenser. This generally costs between \$20 million to \$25 million, which represents approximately 15 per cent of the overall project cost.

Given these arrangements are set by the National Electricity Rules, there are a number of potential reforms to the grid connections process that could be pursued more broadly across National Electricity Market states.

For NSW specifically, we recommend the government in partnership with network businesses undertake a review of the grid connection process. Based on practical feedback from developers in the state, the government could look to whether there are potential improvements to the way in which TransGrid and the distribution networks businesses (noting large-scale developments can also connect directly to the distribution network) undertake the connection process. In addition, generators connecting in a NSW energy zone could be afforded a streamlined and prioritised connection process.

Planning and environmental assessments

The efficiency of the planning and environmental assessment process influences the ability of project proponents to deploy new clean energy capacity.

The CEC considers it critical that the state has a robust assessment process in order to ensure new developments are appropriate for their context, and that environmental, visual and construction impacts are appropriately mitigated, minimised and/or managed.

New South Wales has a robust process for the assessment of large-scale renewable energy projects, which are usually classified as State Significant Developments (capital cost exceeding \$30 million). However, the assessment process is also considered by the clean energy industry to be much more lengthy and costly than other jurisdictions in Australia.

Some of the specific issues that our members regularly report to the CEC include:

- An under-resourced planning assessments team, resulting in slow processing of enquiries and applications (though we note that this has improved to some degree in recent times, particularly in the efficiency of issuing of the Secretary's Environmental Assessment Requirements (SEARs), which is the first step in commencing the assessment process).
- Duplication of work and cost through the Scoping Report process, which proponents must undertake to request SEARS. This can add between 9 to 12 months to the planning process. Where there are no residences within a specific distance from the planned development, this process could be simplified.
- Burden of evidence placed on proponents to refute claims made by objectors, rather than the objector to substantiate claims.
- High planning applications fees (eg. application fees, which are calculated on the basis of capital cost, can reach almost \$1 million in some cases; In Victoria, fees are currently capped at \$57,670). These very high planning fees are paid upfront, often years before a project is operating and earning revenue, elevating the commercial risks for any development application in NSW.
- Volatile and potentially huge additional costs for biodiversity credits/offsets through the Biodiversity Offsets Scheme, apparently due to a lack of sufficient supply of biodiversity credits within the market, and credits being required for a broader range of land classifications (eg. biodiversity credits may need to be sourced to offset degraded farmland). Some members have reported that the price of some credits are increasing by over 300 per cent each year.

- An onerous environmental compliance regime that is significantly more intensive than other states and necessitates frequent duplication of effort, time and cost.

Notwithstanding these challenges, which the industry will continue to discuss with the Government, the CEC recognises the considerable efforts that the State Government, led by the Department of Planning, Infrastructure and Environment, has gone to over the past three months to fast-track planning assessments for eligible projects in order to stimulate economic activity in response to COVID-19.

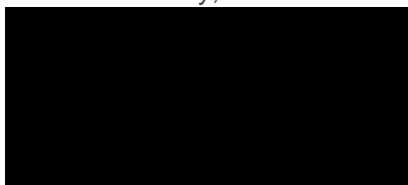
There is an opportunity to carry this forward through the Government's recent commitment to establish a case management service for 'reliability critical infrastructure', in order to co-ordinate processes across departments and agencies, and ensure timely decision-making. We note that this approach is being proposed for transmission and 'firm generation' projects only. We would like to see this extended to all new electricity projects.

6. Conclusion

New South Wales has a tremendous opportunity before it to seize and leverage the economic and social benefits of the transition to a clean energy future.

Significant progress has been made in a relatively short period of time, and we encourage the Government to maintain its current focus on lowering barriers to investment in the state in order to stem the decline and realise its vision to become the most attractive destination for clean energy investment.

Yours sincerely,



Anna Freeman
Director Energy Generation