

The year in review

Membership year - 2019 / 2020



1. Introduction

In last year's review, we celebrated the restart of wind energy growth after a long period of hibernation. Mercury had announced that it would commence construction of the Turitea Wind Farm in August 2019 and the expectation was that a decision on Tilt Renewable's Waverley Wind Farm was not far away.

December 2019 concluded with construction having commenced on the Turitea and Waipipi (formerly Waverley) wind farms and news that MainPower had started pre-construction site works for its \$200m, 93MW Mt Cass Wind Farm and that Meridian was seeking potential contractors for its 160MW Harapaki Wind Farm north of Napier.

The energy sector is always a dynamic space and the past twelve months is no exception. The development of government policy following the completion of the Electricity Price Review, the passing of the Zero Carbon Act and reform of the Emissions Trading Scheme (ETS) are all positive for the long-term growth of the electricity sector as decarbonisation of the energy sector beckons.

In this review we look back over the past year, update the domestic and international outlook, provide an overview of NZWEA's activities, priorities for 2020 and an overall summary.

2. The Outlook for New Wind Activity in NZ

The completion of Turitea (North and South) and Waipipi will add 355MW of wind capacity with an annual generation of 1,295 GWh's, enough on average, to power 182,000 homes or over 580,000 electric vehicles and increase wind's share of total generation to around 8%.

Spot market volatility was noted in last year's summary and in NZWEA's view the market has undergone a big adjustment and has shifted from one of oversupply to one signalling the need for new investment. In a recent review the Electricity Authority commented that spot market prices started departing from long term averages in mid-2018 and that in future prices appear indicative of a change in the fundamental drivers used to price electricity. In particular the increasing impact of a tighter gas market.¹

Wind energy, when coupled with an upward trend in the price of carbon, is widely recognised as having the lowest long run marginal cost. While the longer-term outlook for the electricity sector is extremely positive impacts of the Covid-19 pandemic and potentially the shutdown of the NZ Aluminium Smelter does create shorter term uncertainty.

¹ Electricity Authority, Electricity Spot price Increases - <https://www.ea.govt.nz/dmsdocument/26029-spot-price-changes-in-2019>

In considering the benefits of wind energy the ability of wind to support New Zealand's peak winter demand is often underestimated. In 2019 the quarterly generation profile of wind was 22% quarter 1, 23% quarter 2, 27% quarter 3 and 28% quarter 4. Longer term averages also show that wind generation is highest in peak demand quarters.

As we travel into 2020 it's easy to see changes that support longer term demand growth and the essential role wind energy will play in enabling energy sector decarbonisation:

- **Electricity Demand Growth.** Actual electricity demand increased 0.8% in 2019 after a more modest increase of 0.3% in 2018. The forward story is positive with future expectations from the impact of the electrification of the wider energy sector. The Ministry of Business Innovation and Employment in its 2019 Electricity Demand and Generation Scenarios has, depending on the scenario, forecast growth ranging from 18% to 78% by 2050 with new generation capacity ranging from 4,000 to 10,600MW including the retirement of existing generation capacity.

The Interim Climate Change Committee (ICCC) in their April 2019 Accelerated Electrification Report recommended to accelerate the electrification of transport and process heat over pursuing the 100% renewable target as this could result in greater greenhouse emissions savings while keeping electricity prices affordable.²

The ICCC noted the need to provide for the development of wind generation at scale:

New wind generation (and its associated transmission and distribution infrastructure) will play a vital role in achieving emissions reductions. The modelling indicates that around 2,600 MW would be built in an accelerated electrification future – four times more than is currently in the system.

- **Climate Change Imperative.** The passing of the Zero Carbon Act and a net zero 2050 target confirm the intent to address climate change. The Climate Change Commission has been established and will continue the thought leadership provided by the Interim Climate Change Committee and should ensure a disciplined approach to reducing emissions.
- **Carbon Price.** Over the past year the carbon price has increased from around the \$25 peaking at \$29, prior to the announcement of the Covid-19 pandemic shutdown, and looks to have an upwards trajectory. The Government has consulted on important changes to reform the ETS including setting a provisional emissions budget to reduce emission levels, increasing the fixed price option to \$35 and introduction of a price floor.
- **System Security Margins.** Margins have fallen from pre-2015 historic levels of 25-30% to less than 17% today and we are seeing increasing spot price volatility signalling the need for new investment.
- **Aging Thermal Plant.** As existing thermal plants, especially the Huntly Power Station which was commissioned in 1983, get closer to the end of their economic life key decisions will be required on alternatives to meet an increasing electricity demand. Contact Energy has signalled that, with increasing gas costs and a major reinvestment required in 2022, the Taranaki Combined Cycle Plant its future is in doubt particularly with the development of the Tauhara steam field where Contact has a consent up to 250MW.

² ICCC, Accelerated Electrification Report - https://www.iccc.mfe.govt.nz/assets/PDF_Library/daed426432/FINAL-ICCC-Electricity-report.pdf

In last year’s review we commented that the restart of the Aluminium Smelter’s fourth pot line provided a welcome level of demand certainty. This period it’s the strategic review being undertaken by Rio Tinto that dominates. What was initially thought to be low level of risk around closure due to the smelter producing high quality, zero carbon aluminium has dissipated over time and most expect the decision to be a finely balanced one. The key takeout for the wind sector is, while closure will impact short to medium term growth prospects, it does not change the fundamentals of wind’s economics or the need to decarbonise the energy sector.

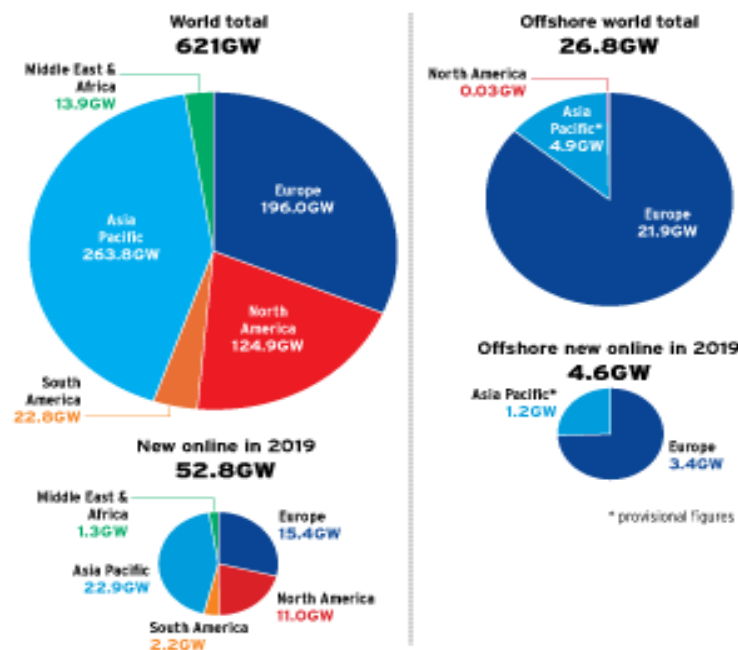
The role of renewable electricity generation and wind energy in particular in aiding the transformation is unquestioned. That New Zealand has access to a high-quality wind resource presents a significant opportunity for sector growth in support of future economic prosperity.

3. Global Trends

New wind installations worldwide increased by an estimated 52.8GW in 2019 with Europe and North America showed the biggest improvement over 2018, with the other regions largely standing still.

China and the US were the clear leaders in terms of nation-state performance: half of 2019’s new wind capacity was installed in these two countries alone.

Global wind capacity topped the 600GW mark last year, finishing at 621GW, three quarters of which has been added in the past ten years.



4. NZWEA Strategic Direction

At its February 2019 meeting the board reviewed the Association’s strategy. Factors influencing the review included:

- The increased recognition of the role of electricity and wind energy in transitioning to a low-emissions economy.
- The scale of new renewables development required to achieve net zero carbon and how to ensure this is best enabled.

- How to leverage behind the meter generation and storage to support short-term variability of wind and other renewables.
- Wholesale market arrangements to support new wind generation development.

The Association's strategy was revised to focus on three key areas:

- Leveraging New Zealand's emissions reduction imperative to enable the energy transition to renewables, particularly wind energy.
- Optimising wind energy's position and ensure the regulatory environment supports wind farm development.
- Expanding the opportunity for wind energy development to enable community and industrial projects including wind's integration with other technologies.

The Association's vision of wind energy providing 20% of NZ's electricity requirements by 2035 is unchanged and aligns with the Government's aspirational target of 100% renewable electricity generation in an average hydrology year and the Interim Climate Change Committees forecast of wind growth.

5. NZWEA Activities

Government reviews and regulatory consultations on initiatives to address climate change and future proof the electricity sector have been a key feature of the year. Association activities included:

- **Accelerating Renewable Energy and Energy Efficiency Consultation.** The Ministry of Business, Innovations and Employment (MBIE) released a discussion paper in December 2019³ seeking feedback on a number of proposals and options to encouraging energy efficiency and the uptake of renewable fuels in industry and accelerating renewable electricity generation and infrastructure. The Consultation included a number of initiatives recommended by the Productivity Commission and Interim Climate Change Committee.

NZWEA in its submission focused on the key initiatives considered necessary to support renewables growth including amending the National Policy Statement for Renewable Electricity Generation (NPS-REG) to provide stronger direction on the importance and developing a National Environmental Standard or National Planning Standards specific to renewable energy for smaller-scale developments, improving wholesale markets retail and distribution tariff reforms. The Association's submission can be viewed here:

www.windenergy.org.nz/accelerating-renewable-energy-and-energy-efficiency

- **National Policy Statement - Indigenous Biodiversity.** The Ministry for the Environment released a draft National Policy Statement for Indigenous Biodiversity (NPS-IB) in November 2019 for consultation. In preparing its submission NZWEA sought expert ecological advice. Based on the advice received the Association submitted that the draft NPS-IB represents a

³ MBIE, Accelerating renewable energy and energy efficiency - www.mbie.govt.nz/dmsdocument/10349-discussion-document-accelerating-renewable-energy-and-energy-efficiency

significant risk to new renewable electricity generation development and enabling transmission infrastructure.

The Association acknowledged the imperative to improve indigenous biodiversity but noted the latest draft would result in most indigenous features being recognised as “significant”. In addition, the list of effects of activities which must be avoided in a significant natural area would result in most if not all new wind farms needing to avoid all indigenous features without the ability to consider a mitigation / offset hierarchy.

NZWEA in its submission recommended redrafting to an improved policy balance:

www.windenergy.org.nz/draft-nps-indigenous-biodiversity

- **National Policy Statement - Freshwater Management.** The Ministry for the Environment issued a draft National Policy Statement for Freshwater Management in September 2019 for consultation. NZWEA in its submission recognised the need to improve freshwater quality and in doing so highlighted the importance of ensuring the ongoing availability of hydro generation to support the variability of wind and solar. Of particular concern was the intention to provide regional councils with the discretion to set higher national bottom lines for hydro catchments and the risk that current consents could change reducing existing hydro generation output and flexibility.

The Association’s submission can be viewed here:

www.windenergy.org.nz/consultation-on-freshwater-management-reforms

- **Zero Carbon Act.** The passing of the Zero Carbon Amendment Bill in November 2019 represents a significant milestone for climate change action and is a positive development for the electricity sector as the Act sets a target of net zero carbon emission by 2050 and establishes a Climate Change Commission to provide budgets and advice.

NZWEA submitted in support of the Bill and our submission contained a number of key themes around the importance of bipartisanship, the need to act quickly, focusing on carbon emissions as the highest priority and improvements to the ETS. The Association’s submission can be viewed here:

www.windenergy.org.nz/zero-carbon-bill

- **Emissions Trading Scheme.** The Ministry for the Environment issued a consultation document on Reforming the Emissions Trading Scheme: Proposed Settings in December 2019.

The Consultation Document is part of the Emissions Trading Reform Bill that is currently going through parliament to make legislative amendments and covers structural changes to introduce auctioning and allowing for the setting of an overall limit (cap) on emissions covered by the scheme.

The Consultation proposes setting a provisional emissions budget and covers a number of areas including the NZ ETS Cap, free allocation volumes and the current stockpile of NZU’s.

Price controls are also proposed to manage unacceptably low or high prices with a price floor of \$20 and an increase in the price ceiling from \$25 to \$35 for surrender obligations over the 2020 calendar year.

Overall the changes are a positive step in the right direction with a cap and trade scheme finally having a cap put in place. The Association’s submission highlighted several ETS architectural improvements to minimise the risk of the emissions budget being exceeded and ETS ambition in that prices should be set at a higher level:

www.windenergy.org.nz/ets-review-proposed-settings

- **Resource Management Act Amendment Bill.** The Bill marked the first stage of the Government's proposed reform of the NZ resource management system. Submissions were reviewed by the Environment Committee and the Committee has recommended amendments which would remove the statutory barriers to the consideration of the effects of activities on climate change under the RMA.

The Bill will now go to Parliament most probably in mid-2020 for its second reading. Should the amendment be accepted it will place a positive obligation on local and regional councils to consider climate change matters when preparing or changing their plans, a positive outcome for renewables development.

- **Electricity Price Review.** The Electricity Price Review (EPR) focused on efficient fair and equitable prices, market and regulatory framework and emerging technologies. The Association submitted on both the EPR's First Report and Options Paper. The Association is supportive of a number of the options favoured by the EPR including improvements to information, retail pricing, the wholesale market and regulatory system, progressing transmission and distribution pricing as a priority and ensuring the widest possible participation in the spot market for independent generators, aggregators of storage and controllable demand. In addition, the Association has also asked that the EPR address Resource Management Act reform as a priority as this is a key enabler of new lower cost wind generation which will benefit consumers.

EPR recommendations are progressively being implemented including wholesale market reforms and in February 2020 the Minister released a cabinet paper that recommended additional powers for the Electricity Authority to regulate distributors which the Association supports but unfortunately further delays to the removal of the low fixed charge regulations.

- **Hedge Market Enhancements.** The Electricity Authority (EA) issued a discussion paper on hedge market enhancements in November 2019 with a follow up consultation on options for market making arrangements planned for early 2020.

The consultation was a result of the Electricity Price Review Panel's recommendation that the Authority should impose a 'mandatory market-making obligation on vertically integrated generator-retailer companies unless a better solution can be found'.

The Association's submission focused on improvements that would support wind farm development and in particular better enable independent retailers to contract variable wind farm output.

www.windenergy.org.nz/hedge-market-enhancements

- **ICCC – Accelerated Electrification Report.** The ICCC released their Accelerated Electrification Report on achieving 100% renewable electricity generation in an average hydrology year by 2035 in April 2019. The Report prioritised reducing emission in the wider energy sector than a specific focus on electricity generation. As noted in section 2, the ICCC has recognised the essential role wind energy has in a low-emissions economy and the need for regulatory reform including the Resource Management Act. NZWEA. NZWEA issued a media statement in support of the Report.

<https://newzealandwindenergyassociation.cmail19.com/t/ViewEmail/y/A9914DF731F6D95C/7C0D6055797354CE4AB3169DA1FD82E9>

- **Transmission Pricing Methodology (TPM).** The Electricity Authority consulted on its updated TPM in July 2019. The proposed methodology is largely consistent with the previous 2016 version with benefits based and residual charges replacing the HVDC charge and the regional coincident peak demand charge.

The Association again submitted, and while agreeing with a number of key issues raised by the EA, has raised similar issues to those identified in our 2016 submission. The two key outcomes the NZWEA seeks are ensuring a form of peak pricing signal is retained and removing the HVDC charge to South Island generators to place renewables development on a level playing field with the North Island. The Association's submission can be viewed here: www.windenergy.org.nz/transmission-pricing-review

The EA has advised it expects to make a final decision on the pricing model by 30 June 2020.

- **Major Electricity Users Fast-tracking Renewable Development.** A collective of several of NZ's largest electricity users have been developing a business case to support new renewables development and reduce carbon emissions. The project, facilitated by the Major Electricity Group, aims to bring forward renewable electricity generation by entering into power purchase agreements to support new investment. NZWEA has introduced the project to members and is very supportive of the initiative.
- **Clean Car Standard and Discount Scheme.** The Ministry of Transport consulted on a proposed new clean car standard and discount scheme which picked up on the Productivity Commission's recommendation for a "feebate" to increase the uptake of electric vehicles (EV's).

NZWEA lodged a submission in support of accelerating the uptake of EV's as this was a key recommendation of the Productivity Commission's Low-emissions Inquiry and the ICC's Accelerated Electrification Report. The Association highlighted the opportunity to leverage New Zealand's advantaged position in renewable electricity generation to support the decarbonisation of the transport sector. NZWEA's submission can be viewed here: <http://www.windenergy.org.nz/low-emissions-vehicle-fleet>

- **Wind Offer Arrangements.** The Electricity Authority introduced new wind offer arrangements that enable wind generation to be offered into the spot market in up to five price bands in September 2019.

NZWEA supported the change as it recognised that there is a short run marginal cost to wind production and that remaining a price taker with a one cent offer price disadvantages wind generation. The new arrangement affords wind generation the same flexibility as other forms of generation.

- **Real Time Pricing.** The Electricity Authority's Real Time Pricing (RTP) project has a number of advantages for wind energy. The EA consulted on "dispatch-lite" which will enable smaller renewable projects such as community wind farms to cost-effectively participate in the spot market. RTP will also enable behind the meter generation and storage and controllable demand to be aggregated and traded helping to manage the variability of renewables.

The Association's submission supports the RTP project and can be viewed here: www.windenergy.org.nz/store/doc/NZWEA-Submission-on-RTP-Remaining-Elements.pdf

- **National Planning Standards.** New national planning standards have been implemented which includes a mandatory requirement that NZ Standard 6808: Acoustics - wind farm noise is adopted in all regional and district plans in relation to noise measurement methods. The new standards are a significant step forward in achieving consistency in local planning documents and approach to wind noise management and resolves a long-standing industry issue.
- **Wind Farm Consents and new builds.** Tilt Renewables confirmed in August 2019 its decision to commence construction of the 133 MW Waipipi Wind Farm (formerly referred to as the Waverley Wind Farm). The NZ\$276 million project will consist of 31 4.3 MW Siemens Gamesa turbines, each with a 130m rotor diameter, the largest ever installed in New Zealand. Once operational, the average annual generation will be 455GWh with this electricity to be sold to Genesis Energy Limited under a 20-year offtake agreement.

Mercury announced in November 2019 it has committed to build the remaining 27 consented turbines at Turitea, at a cost of \$208 million, adding to the 33-turbine project announced in March. Turitea will be New Zealand's largest wind farm at 222MW, producing 840GWh annually.

In December 2019 MainPower announced it had started pre-construction site works for its \$200m, 93MW Mt Cass Wind Farm. Meridian has also confirmed it was seeking potential contractors for its 160MW Harapaki Wind Farm north of Napier. Kaimai Wind Farm Ltd continue to engage with submitters and an application for a hearing date for the wind farm consent is expected to be lodged by the end of July 2020.

- **Community Wind.** The Association continues to support small scale wind development including community developments including participating in an EECA workshop on developing local and community energy. MBIE's Accelerating Renewable Energy Discussion Document highlights some of the opportunities and challenges for local and community renewable energy development. The Association supports the options MBIE identified of government support with planning and process advice and the need to simplify the RMA consenting process to reduce complexity and cost.
- **Offshore Wind.** Interest in offshore wind, particularly off the Taranaki coast, has increased after the government's ban of offshore gas and oil exploration as an opportunity to leverage existing skillsets. A study undertaken by CA Ishwar at the University of Canterbury confirmed there is an excellent wind resource.⁴ A study is also being undertaken by Venture Taranaki which expected to be released second quarter 2020.

Given there is so much onshore potential that is economic NZWEA's considers offshore development is some years away and will require development in Australia or Asia to lower the cost in this part of the world.

- **Wind Positioning.** The Association continues to promote renewable energy and wind as a key enabler of a low carbon economy. The focus is on providing educational content to teachers and students by way of student fact sheets and teacher lesson plans which are available on

⁴ CA Ishwar, Offshore Wind for New Zealand -

www.researchgate.net/publication/334129180_Offshore_Wind_for_New_Zealand

the Association's website:

www.windenergy.org.nz/resources/for-teachers

- **Wind Energy Conference.** The Association's 2019 conference theme was "Breaking New Ground" to reflect the need to build both new large stand-alone wind generation development and opportunity to widen the reach of wind with smaller scale developments. The Minister of Energy and Resources opened the Conference with Simon Upton, Parliamentary Commissioner for the Environment providing the keynote address.

Over 130 attended the event up from 85 the previous year highlighting the change in outlook for wind energy.

Presentations are available here: www.windenergy.org.nz/wind-energy-conference-2019

The Association's 2020 Conference planned for May 2020 has been postponed due to the Covid-19 pandemic.
- **Training.** In conjunction with several members, NZWEA has been progressing development of a new industry wide training programme for wind farm technicians. The NZ Certificate in Wind Farm Maintenance (level 4) covers electrical, mechanical and hydraulic components of wind farm maintenance and has been registered under the NZQA framework. The development of the training programme is an exciting initiative for the industry but progress has been challenging due the lack of scale of the NZ wind industry.
- **Board.** The Board met six times during 2019. Activities included reviewing the Association's strategy and submissions. The Board also continued its programme of meeting with industry participants and key stakeholders to develop relationships and share information including with the Electricity Authority, University of Canterbury, Interim Climate Change Committee Boffa Miskell and EECA. In addition the Chair and CE held a number of political/stakeholder engagement meetings.
- **AGM.** The Association's AGM was held on 30 October 2019. Andrew Renton, Senior Principal Engineer at Transpower presented on climate change, demand, and wind as part of the story. His presentation and those of the NZWEA Chair and CE here: www.windenergy.org.nz/agm-2019
- **Health and Safety.** The Health and Safety Group has met regularly throughout the year in July, November and March 2020. Agenda topics included presentations on member health and safety strategies, benchmarking industry H&S performance, working with OEM's, GWO training standards alignment and a risk workshop. A key feature of meeting was the sharing H&S near misses and incidents. It's great to see such a high-level of focus on health and safety and support from members as we collaboratively work to ensure our people get to go home safely.

6. Summary

Climate change and reducing carbon emission is now centre stage. The importance of electricity and new renewable generation to enable decarbonisation of the wider energy sector is recognised. During the course of 2019 the key role wind energy plays has become clear from reviews such as the

Productivity Commission's Low-emissions Inquiry, Transpower's Te Mauri Hiko White Paper and the Interim Climate Change Committee's Accelerated Electrification Report.

The quantum of new renewable generation required is a challenge and the imperative to strengthen the RMA to recognise the national importance of renewable electricity generation and enable transmission is now well understood but remains urgent. Other important areas to progress include providing certainty on transmission and distribution pricing and the implementation of proposed ETS changes.

Three other challenges must also be addressed:

- **Wind Positioning.** How to improve the level of support for new wind farms. In the Association's view, expanding the opportunity for wind energy development to enable community and industrial projects including wind's integration with other technologies is a key strategy to achieve this.
- **Renewable Variability.** Ensuring the electricity industry is able to most efficiently support the variability of renewables by encouraging demand response (DR) and distributed energy resources (DER). Retail and distribution pricing reform are key to valuing DR and DER and reducing peak demand to avoid inefficient investment in generation and transmission.
- **Winter and Peak Demand.** How we ensure system reliability in dry years and mid-winter remains an unsolved issue given the age and future of the Huntly power Station. By the end of 2020 more should be understood around options and the role hydrogen might be able to play.

There has been a lot of policy development work over the past year which is going to shape New Zealand's low carbon economy. Ambitious goals have been set but at present there is a lack of solid policy measures to ensure the goals are met.

In 2019 wind industry investment was over \$740 million with enough generation to power, on average, over 580,000 electric vehicles. Continued investment, particularly in the short term will depend on the impact of the Covid-19 pandemic, and its effect on electricity demand and capital markets, initiatives to electrify the wider energy sector and the NZ Aluminium Smelter's decision. 2020 is going to be a year that's hard to pick where we end up.

The Association would not exist without member support so above all thank you for your continued membership of NZWEA and sustaining our work programme. We hope you find value in all we do to promote wind energy in New Zealand.

Kind regards

Grenville Gaskell