

ACTION LIST

The following are actions to be completed after meeting number 31 on Tuesday, 12 May 2020.

Action #	Meeting created	Action	Date for completion	Status
1	17	Secretariat to keep the SRC updated with the progress of Transpower's major capital project for voltage stability issues in the upper North Island. Updates of milestones should be provided until the investment decision is made.	As needed until investment decision made	Ongoing. The Commerce Commission has given preliminary approval of stage one the project. See updates section below.
2	28	Secretariat to provide an update on the outcomes of 2 March 2017 compliance processes.	Once outcomes are known	Complete. Rulings Panel published decision. See updates section below.
3	30	Secretariat to include an agenda item for the next meeting to present the scope of the 'G2' review and process (including the viability of an SRC sub-committee)	12 May 2020	Complete. The scope and engagement framework is part of the strategy and risk session, item #13.
4	30	Review and monitor the effectiveness of the system operator's processes for communicating risks to the industry, changes the Authority has made regarding risk, and assess the system operator on outcomes in the next Annual Review.	22 October 2020	On hold.
5		Report on the effectiveness of the system operator's improvements to its outage planning and real time management process in the next Annual Review	22 October 2020	On hold.
6	30	Secretariat to investigate an incident that occurred under Transpower's new External Communications Plan and develop a list of questions to pose to Transpower.	12 May 2020	Complete. Agenda item #10 provides answers to the questions posed to Transpower.

Action #	Meeting created	Action	Date for completion	Status
7	30	Secretariat to organise a cyber-security survey to be sent to participants for review in meeting 31	22 Oct 2020	In Progress. Item delayed until October meeting. Survey questions have been prepared and letters to respondents are being created. Results to be presented at October meeting.

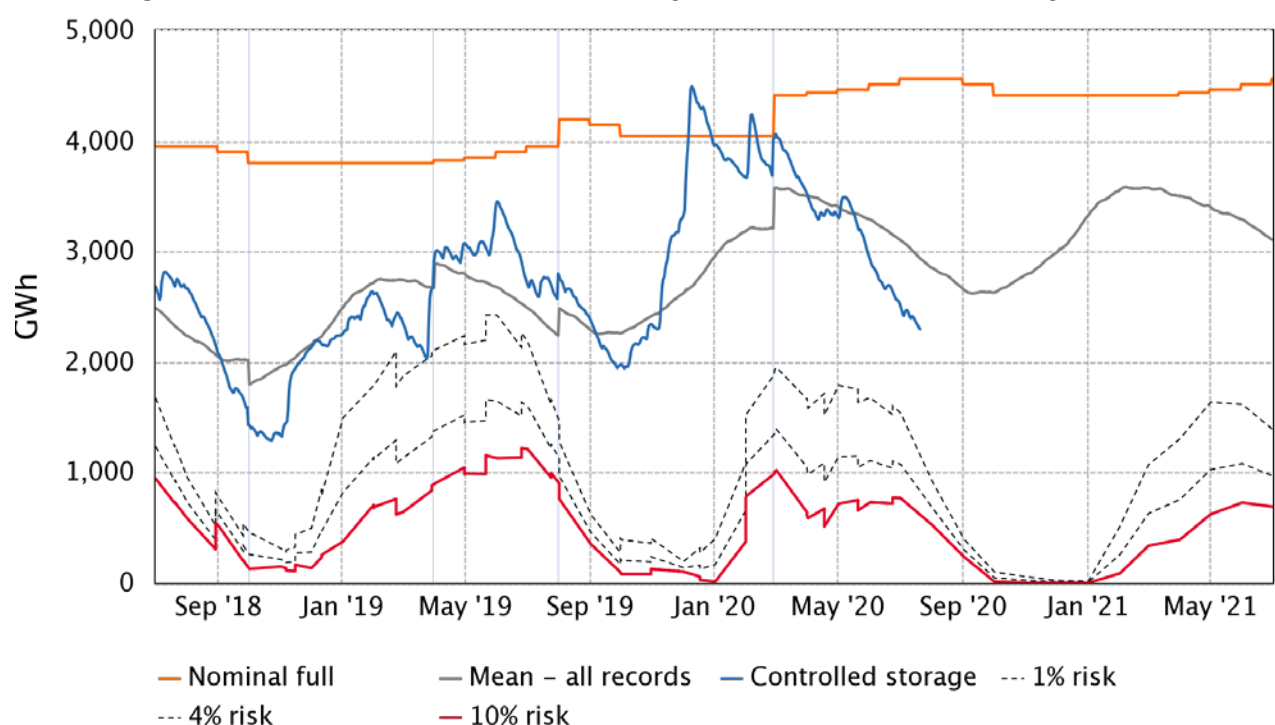
1. Updates

- 1.1. This section provides information on matters that don't warrant a dedicated agenda item, such as updates on matters that have previously been discussed by the SRC.

The current security of supply situation

- 1.2. As at 20 July 2020, national hydro storage was 50% of nominal full, which is 78% of mean storage for this time of year. On 16 July 2020, the system operator reported that “At a national level, hydro storage remains below the tenth percentile for this time of year. However, risk to security of supply remains low due to thermal generation availability and declining risk curves from now until summer.”
- 1.3. The system operator's electricity risk curves are presented in Figure 1 below, which is sourced from an Authority dataset.

Figure 1: New Zealand-wide electricity risk curves as at 20 July 2020



emi.ea.govt.nz/r/pvdni

Compliance outcomes of the 2 March 2017 event

- 1.4. Action #2 above requires the secretariat “to provide an update on the outcomes of 2 March 2017 compliance processes.”
- 1.5. The 2 March 2017 event was triggered by the accidental tripping of two transmission circuits during testing of transmission assets. This electrically islanded the lower South Island from the rest of the country and caused the automatic under-frequency load shedding system to activate. When restoring the power system, Transpower made errors that created significant risk to power system assets and consequential risk to security of supply.
- 1.6. The SRC considered reports from the Authority and Transpower at a special 13 December 2017 meeting and provided advice. Following that meeting, Transpower augmented its reporting of the event¹ and the Authority alleged breaches against Transpower in its roles as system operator and grid owner. The Authority referred the alleged breaches to the Rulings Panel.
- 1.7. In its quarterly system operator report covering January-March 2020, Transpower confirmed it had completed all 13 actions arising from the findings of its investigation into the event.²
- 1.8. On 6 June 2020, the Rulings Panel released its decision on the alleged breaches. In summary:
 - a) Relative to a maximum possible fine of \$200,000, the Rulings Panel considered that an appropriate starting point in this case was \$175,000, noting: “A fine at this level places the culpability of both the System Operator and the Grid Owner at the mid-point of high to very high culpability. The decision to adopt a high starting point is based on the high level of negligence displayed by the System Operator and the severity of the breaches, in particular the potential for damage to grid connected generation assets... Secondly, the Rulings Panel has considered two aggravating factors: the failure to self-report and the length of time it took for both the System Operator and the Grid Owner to investigate the breaches once they were notified of them.”
 - b) However, the Rulings Panel also identified some mitigating factors, noting the need to take into account that “the breaches occurred in highly complex and stressful real-time circumstances, that the System Operator and the Grid Owner have both accepted culpability at an early opportunity, and that they have been cooperative throughout the investigation and complaint process.”
 - c) Accordingly, the Rulings Panel fined the system operator and grid owner \$150,000 each.
- 1.9. There are no further compliance matters pending. The secretariat has marked action item #2 as completed.

¹ Available from <https://www.transpower.co.nz/resources/report-2-march-2017-south-island-aufis-event>

² Available from <https://www.ea.govt.nz/operations/market-operation-service-providers/system-operator/monthly-reports/2020/>

Transpower's major capital project for voltage stability issues in the upper North Island

- 1.10. The SRC has received various briefings and updates on Transpower's major capital project for voltage stability issues in the upper North Island. Action item #1 remains open to ensure further updates are provided as requested by the SRC.
- 1.11. On 16 June 2020, the Commerce Commission published its draft decision to approve stage one of Transpower's project. The following excerpt summarises the key matters from the draft decision.

Figure 2: Excerpt from the Commerce Commission's draft decision to approve Transpower's project

The MCP relates to maintaining voltage stability in the WUNI region

- X5 The MCP seeks our approval to invest \$154.1 million in two dynamic reactive devices (**DRDs**) and a post-fault demand management scheme (**post-fault DMS**) as Stage 1 to maintain voltage stability in the WUNI region. For the same reason, the MCP also seeks our approval at Stage 1 to incur the costs of preparatory works to enable the procurement and installation of series capacitors in stage 2 of the Project (**Stage 2**). Transpower intends to submit a further major capex proposal for Stage 2 when this investment is needed.
 - X6 Transpower considers, and we agree, Stage 1 is needed because Transpower's studies show that during periods of high demand there are risks of widespread interruptions to supply due to large fluctuations in voltages in the transmission network. Such fluctuation in voltages can occur after an unplanned disconnection of a major component from the transmission network when the two 250MW-Rankine generation units at Huntly Power Station (**Rankines**) are not in service during periods of high demand.
 - X7 The other aspect of the investment need for Stage 1 is the effects on voltage stability in the WUNI region that could occur if Genesis Energy Limited (**Genesis**) removes the Rankines from normal service. While Genesis has not announced its position on the Rankines' future, Transpower has prepared and submitted the MCP on the basis of Genesis retiring the Rankines, without replacement, by the end of 2022.⁵
 - X8 The main benefit of approving Stage 1 is that it will ensure the transmission network has enough capacity to supply consumers in the WUNI region and to manage voltage stability effectively as demand grows and if the Rankines are removed from normal service. Without the Stage 1 investment, there would either be a need for rolling power cuts during times of high electricity usage or a heightened risk of the North Island power system collapsing.
- 1.12. The key assumption noted in paragraph X7 above appears even more sound given the announced closure of New Zealand's Aluminium Smelters' operations at Tiwai Point.

- 1.13. The Commerce Commission is considering submissions and expects to make a final decision by 3 September 2020.

Closure of New Zealand's Aluminium Smelters by August 2021

- 1.14. On 9 July 2020, Rio Tinto (the majority owner of New Zealand's Aluminium Smelters (NZAS)) announced that it will:

“start planning for the wind-down of operations and the eventual closure of NZAS following the conclusion of its strategic review which has shown the business is no longer viable given high energy costs and a challenging outlook for the Alumin[i]um industry. As a result, NZAS has given Meridian Energy notice to terminate the power contract, which will end in August 2021, when the wind-down of operations is expected to complete.”

- 1.15. This high-profile decision has significant ramifications for the electricity industry as the smelter typically uses 572 MW of power (12.6% of New Zealand's 2019 annual electricity consumption).³ The secretariat is not yet aware of any analysis about the reliability implications of the smelter's closure. In principle, possible impacts include:

- a) subsequent closure of thermal generation and deferral of new generation investments adversely affects system inertia, or generation capacity and energy security
- b) medium-term loss of potential hydro generation from the lower South Island until grid investments are completed that enable full export of energy from the region
- c) South Island load falls and the power system becomes more susceptible to disturbances of system frequency.

- 1.16. The system operator's annual assessment of security of supply had a scenario that considered NZAS phasing down from 2023-2027 and the closure of 360 MW of thermal generation. As set out in Figure 3, the results of that analysis increased the modelled outcomes relative to the winter energy margin.

Figure 3: Results relative to the Winter Energy Margin (assuming medium demand), with and without NZAS closure sensitivity

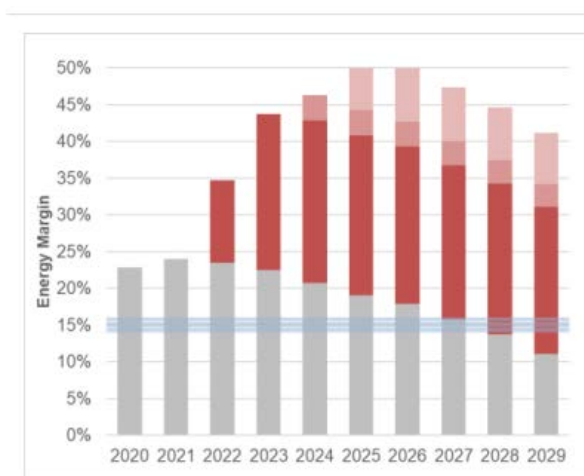


Figure 7: NZ WEM – Medium Demand

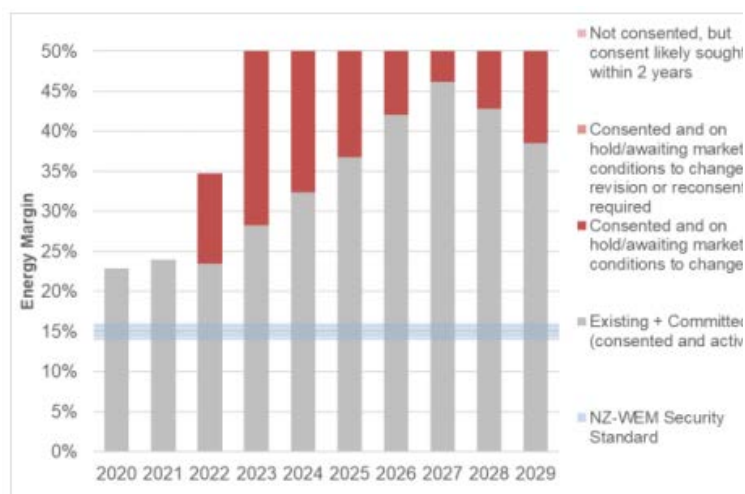


Figure 22: NZ WEM – NZAS closure and Medium Demand

BlueScope Steel has initiated a strategic review of its New Zealand operations

1.17. On 17 July, BlueScope Steel announced:

“The company is reviewing the carrying value of the New Zealand and Pacific Steel segment based on updated expectations of lower sustainable earnings in the longer-term,” BlueScope tells the ASX.”

“The objective of the review is to re-evaluate the footprint of the business to ensure its financial viability in a challenging operating environment, made more uncertain by public policy settings in carbon, trade and energy.”

1.18. Low metal prices, ongoing cost pressures (including transmission pricing changes), and the mandatory operational shutdown due to COVID-19 have been cited as factors in the review decision.⁴

1.19. The company will provide an update on its strategic review as part of its full-year results in August.

Government will investigate pumped storage options

1.20. On 26 July 2020, the Minister of Energy and Resources announced:

“The Government will fund a close examination of a key recommendation by the Interim Climate Change Committee; hydro schemes which pump water to manage peak demand, dry hydrological years, and the intermittency of renewable energy sources such as wind.”

“The \$30 million allocated will pay for the detailed development of a business case for a solution to address New Zealand’s dry year storage problem. This analysis will mostly focus on a pumped hydro storage project at Lake Onslow

in Central Otago, but will also include the assessment of smaller potential pumped storage options in the North Island, as well as other alternative technologies.”⁵

- 1.21. Pumped storage pumps water to a higher altitude so the potential energy of the stored water can be used for electricity generation. Pumped storage uses more energy than it produces, but creates positive economic value by consuming when prices are low and generating (and/or providing ancillary services) when prices are high.
- 1.22. The Lake Onslow project has been investigated most recently by Associate Professor Earl Bardsley. In a March 2020 submission, Bardsley wrote:

“To give an indicative picture of the appearance and operation of pumped storage at Onslow, a hypothetical scheme is described here. Storage capacity is 5 TWh, with 1,200 MW of installed pump /generating capacity — say 10 machines of 120 MW each. This extent of energy storage would more than double the national hydro storage capacity. Water would be moved to and from an expanded Lake Onslow through a 24 kilometre rock tunnel connecting to Lake Roxburgh, with a maximum tunnel flow of 200 cubic metres per second.”

“...the most efficient use of Onslow storage would be buffering wind generation on an intra-day basis and also, importantly, active seasonal operation coupled with seasonal operation the main South Island hydro lakes, particularly Tekapo, Pukaki, and Hawea.”

“As the operator of the Clutha hydro scheme, it would seem a requirement that Contact Energy should be a partner in constructing pumped storage at Onslow ...In the 4.5 years prior to this submission, Onslow in operation would have saved Contact Energy at least 0.7 TWh of lost generation opportunity on the Clutha.”⁶
- 1.23. The Government announcement is silent on what the next steps would be after the completion of the business case. Security of supply is provided by a competitive and regulated market. How a Government initiative is integrated into the set of market arrangements will be important for longer-term dynamic efficiency and market confidence.
- 1.24. The now-defunct Reserve Energy Scheme saw the Crown commission, own and operate the 155 MW Whirinaki diesel-fired generation. The Electricity Technical Advisory Group reported in 2009 that:

“...the Reserve Energy Scheme has the unintended and perverse effect of reducing the incentive for market participants to manage supply risks because:

 - Participants expect the Electricity Commission to manage those risks as a last resort.
 - The price at which Whirinaki is offered into the spot market does not recover its full opportunity costs (which reduces the incentive on

5 From: <https://www.beehive.govt.nz/release/100-renewable-electricity-grid-explored-pumped-storage-%E2%80%98battery%E2%80%99>

⁶ From <https://medium.com/land-buildings-identity-and-values/pumped-hydro-update-ec4538cbdb87>

generators to build peaker plants because they cannot compete with a subsidised price).

- The fixed costs of Whirinaki are spread over all consumers (regardless of whether they have managed their own risks, for example, through hedging).⁷

1.25. If a large pumped storage project proceeded, security of supply monitoring agencies (such as the Electricity Authority and the system operator) would likely need to redesign many of their monitoring tools and analysis models.

Review of the governance of technical standards

1.26. At the 12 May 2020 SRC meeting, the secretariat noted a review commissioned by Australia's Energy Security Board on the governance of Australia's distributed energy resource technical standards.

1.27. The secretariat undertook to consider what advice the SRC needs about this topic (in the New Zealand context) for future meetings.

1.28. Upon consideration, the secretariat considers that item #25 on the SRC work programme provides a vehicle for addressing the types of standards-related questions the Energy Security Board's review raised and previous SRC discussions on this topic. Item #25 is due to be discussed at the first SRC meeting of 2021.

1.29. The secretariat is not aware of any evidence to warrant expediting this topic to an earlier meeting (October 2020 is the only such meeting).

Parliamentary Commissioner for the Environment note on the ban on new petroleum permits outside onshore Taranaki

1.30. On 30 March 2020, the Parliamentary Commissioner for the Environment released a note on the ban on new petroleum permits outside onshore Taranaki.⁸

1.31. Their key findings are set out in Figure 4 below.

Figure 4: Main findings from the Parliamentary Commissioner's note

What are the main findings?

Those who support the ban can claim that:

- It reduces the risk of New Zealand appearing hypocritical by calling for ambitious action to reduce domestic emissions while seeking to profit for as long as possible from exporting fossil fuels overseas.
- It strengthens the credibility of New Zealand's negotiating position in international climate change negotiations. If other countries do likewise it will put pressure on large fossil fuel producing countries to follow suit.
- It can help New Zealand to break its dependency on fossil fuels and reduce the risk of the transition to a low-emissions economy being further delayed.

Those who support the ban must however acknowledge that:

- The ban will have a tiny impact on global emissions and could even slightly increase them if production of oil and methanol in New Zealand is replaced by more emissions-intensive production overseas.

Those who oppose the ban can claim that:

- It will impose costs on the New Zealand economy in the billions of dollars, mostly in the Taranaki region.
- It will probably only slightly reduce New Zealand's domestic emissions.
- The New Zealand Emissions Trading Scheme (NZ ETS), if made more effective, has the potential to achieve greater domestic emissions reductions at lower cost than the ban.

Those who oppose the ban must however acknowledge that:

- The NZ ETS does not account for emissions overseas as a result of New Zealand's fossil fuel exports and as such, the ban addresses sources of emissions that the NZ ETS cannot.

⁸

Available from <https://www.pce.parliament.nz/publications/restricting-the-production-of-fossil-fuels-in-aotearoa>