

Your Comment on the Tekapo Power Scheme – Applications for Replacement Resource Consents application

Please include all the contact details listed below with your comments and indicate whether you can receive further communications from us by email to substantive@fasttrack.govt.nz

25 August 2025

1. Contact Details			
Please ensure that you have authority to comment on the application on behalf of those named on this form.			
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2. We will email you draft conditions of consent for your comment			
☒	I can receive emails and my email address is correct	☐	I cannot receive emails and my postal address is correct

Please provide your comments below, include additional pages as needed.

Transpower New Zealand Limited (**Transpower**) has been invited to comment on the substantive applications by Genesis Energy Limited (**Genesis**) to renew its resource consents for the Tekapo Power Scheme (**Tekapo Scheme**) consent.

Transpower supports the renewal of the consents for the Tekapo Scheme, subject to the conditions set out in **Appendix A**. The Tekapo Scheme is a nationally significant asset and plays a vital role in the electricity system – in terms of day-to-day generation of electricity, times of security of supply constraints and in the event of the need to restart the system after failure.

Various people at Transpower have been involved in the preparation of these comments, including Ramu Naidoo, Market Operations Manager.

We note that some of these comments reflect, to a large extent, rebuttal evidence provided by Ramu Naidoo in the context of Meridian Energy Limited's consent applications for renewals of consents for the Lake Pūkaki Hydro Storage Scheme (Pūkaki Scheme).

Scope of comments

These comments cover:

- Transpower's role as System Operator and interest in the consent applications;
- Reducing the Combined Waitaki Power Scheme's existing generation capability will increase security of supply risks;
- Amendments to existing consent conditions that Transpower seeks;
- Issues we anticipate will be raised by the Royal Forest and Bird Protection Society Incorporated (**Forest & Bird**).

Transpower's role as System Operator and interest in the consent applications

Transpower is made the system operator for the electricity industry under section 8(1) of the Electricity Industry Act 2010. References in these comments to the **System Operator** mean Transpower in its role as the system operator.

The System Operator operates the electricity market to ensure electricity transmitted through the grid is delivered whenever and wherever it is needed, 24 hours a day, seven days a week. To ensure this transmission, the System Operator is responsible for providing information and forecasting to the industry about security of electricity supply – including during times when security of supply is constrained. We discuss this role in more detail below.

Over the last ten years (2015-2024), hydro-generation made up around 58% of the electricity generated in the country. It is the dominant source of electricity generation and will continue to play an important role in the system as intermittent generation is constructed.

To ensure the security of the power system, the availability of hydro-generation and storage is important on a day-to-day basis, and also during periods where there are risks to security of supply. As a significant catchment for electricity generation, a reduction in the availability of water within the Tekapo catchment for electricity generation could have flow on consequences for security of supply, electricity prices and New Zealand meeting its climate change targets in 2050. It is important that there are no actual, or perceived barriers, to hydro generation and storage.

The System Operator's role in providing security of supply information and managing supply emergencies

The System Operator is required under section 8(2) of the Electricity Industry Act 2010 to provide information and short-to medium-term forecasting on all aspects of security of supply. This is a statutory role and the System Operator is also required to manage supply emergencies.

Part of this information provision includes calculating monthly security of supply risk information in the form of Electricity Risk Curves (**ERCs**) and Simulated Storage Trajectories (**SSTs**) which are published on our website, and provided to specified regulators, government, market participants, developers and investors. The ERCs calculate the risk of running out of hydro storage in the major controlled hydropower lakes over the next 12 months, taking into account the variability of hydro inflows (based on historical observations), forecast of electricity demand, expected generation availability, thermal fuels, and transmission. The SSTs are a market simulation of future storage scenarios assuming historical inflows were to occur. This information allows the industry to understand the risk of hydro storage reaching one of the risk curves. An example of an ERC and SST is contained in **Appendix B**.

The ERCs define three levels of risk: Watch, Alert, and Emergency. These levels represent increasing risk of running out of hydro storage in the major controlled hydropower lakes. These increasing risk levels determine the type of action taken by the System Operator and/or industry:

- If actual controlled hydro storage crosses the Watch curve, the frequency of security of supply information to the market is increased. This information includes calculating the hydro storage level and the estimated time to crossing the Alert and Emergency curves.
- If the Alert curve is crossed, then access can be made to contingent storage in Lake Tekapo (by Genesis). A similar regime exists in the consents for Lake Pūkaki (consent held by Meridian Energy Limited), and for Lake Hāwea (consent held by Contact Energy Limited) in the Clutha Power Scheme.

In respect of Lake Tekapo, as an example, the proposed conditions (**set out in Appendix A**) require Genesis to manage water in the following manner:

- It may at any time take or divert water from Lake Tekapo when the lake level exceeds the following Normal Minimum Operating Levels:
 - April to September (inclusive): 702.1m amsl;
 - October to March (inclusive): 704.1m amsl.
- Lake Tekapo must be managed between the Normal Minimum Operating Level (for the relevant timeframe) and 701.8m amsl (the Alert Minimum Control Level), at any time an available South Island or New Zealand storage falls below a Contingent Storage Release Boundary – also referred to as an Alert Release Boundary activation (when storage falls below the Alert Curve under the Security of Supply Forecasting and Information Policy (**SOSFIP**)).
- At any time when an Alert Release Boundary activation is in effect, there are various notification requirements.
- When the Alert Release Boundary activation ends, Genesis must restore the level of Lake Tekapo to the Normal Minimum Lake Level as soon as practicable.

If the Emergency curve is crossed, and controlled hydro storage is expected to remain below this curve for at least a week (or if otherwise agreed between the System Operator and the Electricity Authority) then an Official Conservation Campaign (**OCC**) will be called by the System Operator, in conjunction with the Electricity Authority. When an OCC is called, voluntary electricity reductions are requested from the public.

Meridian also has access to additional contingent storage in Lake Pūkaki under an OCC to reduce supply risk¹.

If the hydro storage situation is not expected to improve during an OCC, and there is a risk to supplying electricity, the System Operator can make a notification of a supply shortage, and start the process of initiating rolling outages. Initiating rolling outages involves the System Operator working with large industrial consumers and electricity distribution businesses to reduce their electricity demand until the risks ease and situation improves.

Reducing the Combine Waitaki Power Scheme's existing generation capability will increase security of supply risks

Our national electricity supply is hydro dominated with limited hydro storage capability (only having about six weeks of storage). In the last year, hydro generation contributed approximately 55% of New Zealand's total electricity supply. This hydro domination, coupled with no interconnections to other electricity systems (as in Europe), means New Zealand has to manage its electricity security of supply using its domestic electricity generation sources.

The Tekapo Scheme plays a crucial role in balancing supply and demand both nationally and regionally and for the power system's peak and energy requirements. The Tekapo Scheme comprises of two power stations (Tekapo A and Tekapo B) supplied from Lake Tekapo. Together these stations provide 185 MW of flexible generation capacity.

Contribution to peak requirements

The consumption of electricity varies by time of day and year. New Zealand's highest consumption is during winter morning and evenings. During our coldest mornings and evenings we need most of the country's generators producing electricity.

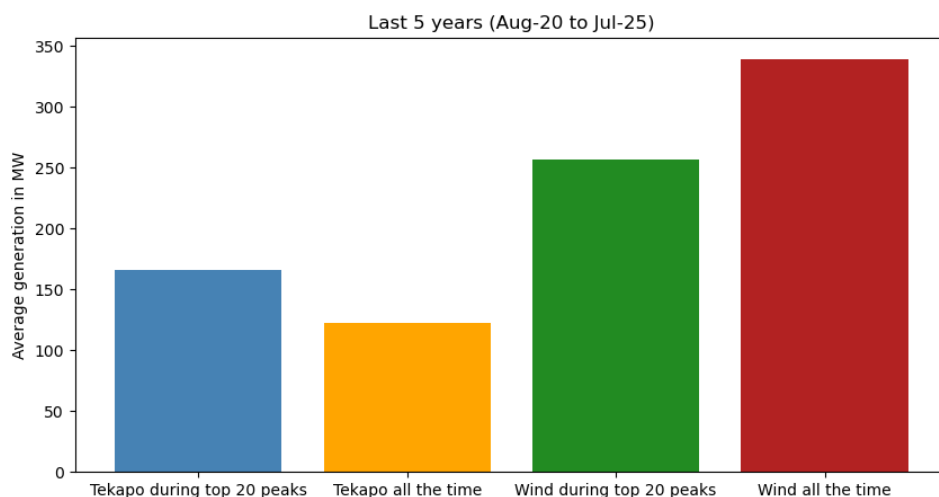
Some generators cannot guarantee an output. As an example, a wind generator's output is dependent on the amount of wind at that time and at the particular location. Similarly solar generation is dependent on the amount of sunshine and cloud cover. Solar generation is generally low on winter mornings and virtually zero during winter evenings.

The flexibility of other generation is therefore becoming increasingly important in balancing supply and demand during peak consumption periods, with increasing amounts of intermittent generation

¹ It is a permitted activity for Lake Pūkaki to be managed to 513m amsl in circumstances when the System Operator has commenced an OCC.

with variable output connecting to the system. Tekapo generation is one such flexible generator able to increase output when needed. An example of this flexibility can be seen in the figure below which compares the average output over the last five years of Tekapo power station and wind generators to periods during those five years which required the greatest amount of generation (top 20 peaks). This figure shows an increase in Tekapo generation during the peak periods (blue) compared to its average output (orange), whereas it is the opposite for wind generation with its generation reducing during the top 20 periods (green) compared to its average output (red). Therefore, having more flexible generation on the system provides the system operator with a greater ability to balance reduction in some generators output when electricity demand requirements are the highest.

Most of the new generation expected to come online is wind and solar (ie. intermittent generators) which increases the need for flexible generation to keep the system in balance. Reducing Tekapo generation capability, which impacts its ability to adjust output and respond to peak demand, will increase our risks in supplying peak demand, all else being equal.



Contribution to energy

After the water from Lake Tekapo passes through the Tekapo generators (A and B) it flows into Lake Pūkaki (owned by Meridian) via the Tekapo canal. Lake Pūkaki (together with the smaller Lake Ōhau) then supply a further six power stations (Ōhau A, Ōhau B, Ōhau C, Benmore, Aviemore and Waitaki). The Combined Waitaki Power Scheme (including both the Genesis Tekapo Scheme and Meridian Pūkaki Scheme) is the largest hydro generation scheme in the country, with Lake Tekapo contributing approximately 18% and Lake Pūkaki providing approximately 50% of the national controlled hydro storage capability (energy).

Restricted access to Tekapo hydro storage can have security implications. An example of these implications occurred in winter 2024 when Genesis was reluctant to draw down Tekapo storage (between 1 April and 30 September) due to the uncertainty of returning the lake above the increased minimum level on 1 October. The usage of Tekapo generation was reduced, as were the subsequent releases into Lake Pūkaki. The impact of this reduction, together with low inflows was increased usage of other hydro lakes, which in turn increased the risk of the other lakes reaching their

minimum, which impacts the generation capability and flexibility of power stations on those schemes. This situation presented security of supply risks. To reduce this risk, the system operator brought forward access to contingent hydro storage to enable other schemes with contingent storage to access that water if it was required to reduce electricity supply risks.

Contribution to regional needs

Tekapo A generation is uniquely located and able to ensure supply to balance the local area consumption when it is electrically disconnected from the rest of the power system. This electrical disconnection (called electrical islanding) occurs when there is an outage of transmission lines in the region². While this situation does not happen frequently, it is an important part of the service provided by Tekapo A to ensure supply to the local area. The system operator has an ancillary service contract with Genesis for Tekapo A to perform this function. Ensuring Tekapo A generation is still able to perform this service is an important part of ensuring security of supply to the local region.

Changes to conditions required

As set out in our letter to Genesis (and included in their application), we wish to ensure that Genesis has full access to its currently consented storage (as contained in consent CRC905302.3) – both during day-to-day situations and during periods of electricity shortage and/or shortfall.

We are concerned that the wording of Genesis' existing consent conditions results in a situation where the consented water is not accessed due to the lake levels changing on 1 October. Less water is accessed for generation on a day-to-day basis to ensure that the 1 October level of 704.1 metres amsl is achieved (rather than the lower level of 702.1³ metres amsl that can be accessed between 1 April-30 September). We consider that Genesis should have the ability to access 702.1 metres amsl ahead of 1 October. The lake level would subsequently return to higher levels, as weather conditions and inflows allowed.

The System Operator is concerned that the risk of electricity shortage and/or shortfall in the future will mean it is necessary to access contingent storage (as it was in winter 2024). It is important that any consent renewals obtained by Genesis also contain no actual or perceived barriers to accessing water during times of electricity shortage.

As discussed above, in order to access contingent storage, the System Operator, reports that available controlled hydro storage is at or below the Contingent Storage Release Boundary for New Zealand and/or the South Island (Contingent Storage Release Boundary). This report is determined based on electricity risk curves (which effectively replace "minzones"). Importantly, for the purpose

² These lines are the Albury-Tekapo or the Albury Timaru transmission lines. This role is discussed further in our market insight [here](#).

³ In our letter, we referred to the lower level as being 701.8m amsl during the months of April to September. We understand that 701.8m amsl may only be able to be accessed during times of Alert.

of the Genesis consents (and Waitaki Water Allocation Plan) we could reach this level before 1 October.

Once the available storage is at or below the Contingent Storage Release Boundary, we would expect Genesis to have the ability to access the full lake level range up to the minimum control level (which could be 701.8 metres amsl) to help provide additional generation not only through Genesis' power stations, but through the subsequent six power stations owned by Meridian. We would want Genesis to have this ability for such time as the Alert remained in place. The lake level would subsequently return to higher levels, as weather conditions and inflows allowed.

We are also concerned that on its face, consent CRC905302.3 does not appear to envisage a situation where an Alert is issued, requiring Genesis to make full use of its consent (to 701.8 metres amsl), but the Alert is subsequently lifted prior to 1 October. Favourable weather conditions would also be required before the lake level would rise in the event any Alert is issued and subsequently lifted prior to 1 October.

We also note that Genesis's existing consent contains outdated references, which should be updated through the consent renewal process. The pre-conditions to access contingent storage reference determinations by the (then) Electricity Commission. Due to a determination by the Electricity Authority (which replaced the Electricity Commission in 2010), these pre-conditions are now reported by Transpower.⁴ The substantive triggers for accessing contingent storage are unchanged. In this regard, the triggers for accessing the contingent storage after 1 October remain within the purpose of the existing consent (and the Waitaki Water allocation Plan). Should contingent storage be accessed, the existing consent appears to recognise, although it is not explicit, that it will take some time (and favourable weather conditions) for the lake level to raise to 704.1 metres amsl.

Since lodgement of Genesis' consent application, amendments have been proposed to conditions to address the issues raised in our letter (and set out above). The conditions in **Appendix A** address Transpower's concerns, and we support the consents being granted with these amended conditions imposed.

Issues we anticipate being raised by Forest & Bird

We note from Minute 2 of the Expert Panel (28 July 2025) that Forest & Bird has sought to be involved in the application. The Minute notes that Forest & Bird is also involved in the reconsenting application by Meridian under a different statutory regime. Transpower is a party to Meridian's application. It appears from the 15 July 2025 letter to the Panel and 30 July 2025 Memorandum of Counsel that Forest & Bird is raising similar issues in the context of Genesis's application as it has in relation to Meridian's application. In particular, Forest & Bird raises issues in relation to the existing environment, and submits that the "question of environmental flows for the Takapo River does need to be considered by the Panel under Rule 15A" (Memorandum of Counsel, paragraph 11).

⁴ The replacement of the then Electricity Commission's reserve generation scheme and minzones occurred as a result of the Electricity Authority issuing an updated standing reserve supply determination:
<https://www.ea.govt.nz/industry/wholesale/security-of-supply/>

Transpower would be concerned about implications for security of supply if the water available to Genesis, and subsequently Meridian, reduced due to increased environmental flows for the Tekapo River. As a result, we provide some high level comments below about potential implications.

While Forest & Bird raises issues in relation to environmental flows, no information is given in the correspondence with the Panel about what changes it is seeking to those flows. Accordingly, it is difficult to understand precisely how much water would be diverted from the Tekapo Scheme and how any resulting conditions would impact the Combined Waitaki Power Scheme. However, any reduction potentially has two major effects. Firstly, it would reduce the total hydro storage capability in the system if inflows bypass power stations that would otherwise convert this water to electricity (increased energy risk). Secondly, it could reduce the flexibility for the Combined Waitaki Power Scheme to ramp up to meet peak demand (increased capacity risk).

An indication of the Combined Waitaki Power Scheme power stations bypassed with increased river flow is shown in the table below:

New / increased river flow	Stations bypassed
Tekapo	Tekapo A, Tekapo B, Ōhau A, Ōhau B and Ōhau C
Pūkaki	Ōhau A, Ōhau B and Ōhau C
Upper Ōhau	Ōhau A
Lower Ōhau	Ōhau B and Ōhau C

If the outcome of Forest & Bird’s comments are for inflows to bypass power stations in the Combined Waitaki Power Scheme, there would be an increase in the exposure of our electricity system to dry year risks. A dry year occurs when hydro inflows in one or more major hydro catchments are below average for several weeks-to-months. This sustained low inflow means an increased risk of needing to trigger an OCC, and in the worst-case rolling outages. In both instances, there is increased risk of electricity users needing to manage their electricity demand in order to ration the available electricity supply. The heightened risk of rolling outages would place additional strain on both the operational management of the electricity grid, and on consumers who may face more regular, involuntary and prolonged periods of power shortages. This is the energy risk.

The Combined Waitaki Power Scheme can ramp up its power output by increasing the flow of water through the turbines of the power stations. The second effect if inflows bypass the power stations would be to reduce the flexibility of the Combined Waitaki Power Scheme to ramp up to meet peak demand periods (periods when electricity demand is at its highest, typically in the morning and evening on weekdays) or “fill in” when intermittent generation sources (wind and solar) reduce output or there are unplanned outages of other generation on the system. This is the capacity risk.

A reduction in the Tekapo Scheme’s output would also likely lead to more reliance on expensive thermal generation sources to meet electricity demand, resulting in a higher dependency on fossil

fuels (including New Zealand's constrained gas supply). This would put added pressure on thermal fuel reserves, further exacerbating the security of supply risk to New Zealand.

Appendix A: amended conditions supported

Draft 25 July 2025

6. Except as provided for in conditions 7 and 8 below, the consent holder may at any time take or divert water from Lake Takapō / Tekapo, for the purpose of hydro electricity generation, when the lake level exceeds the following minimum operating levels:

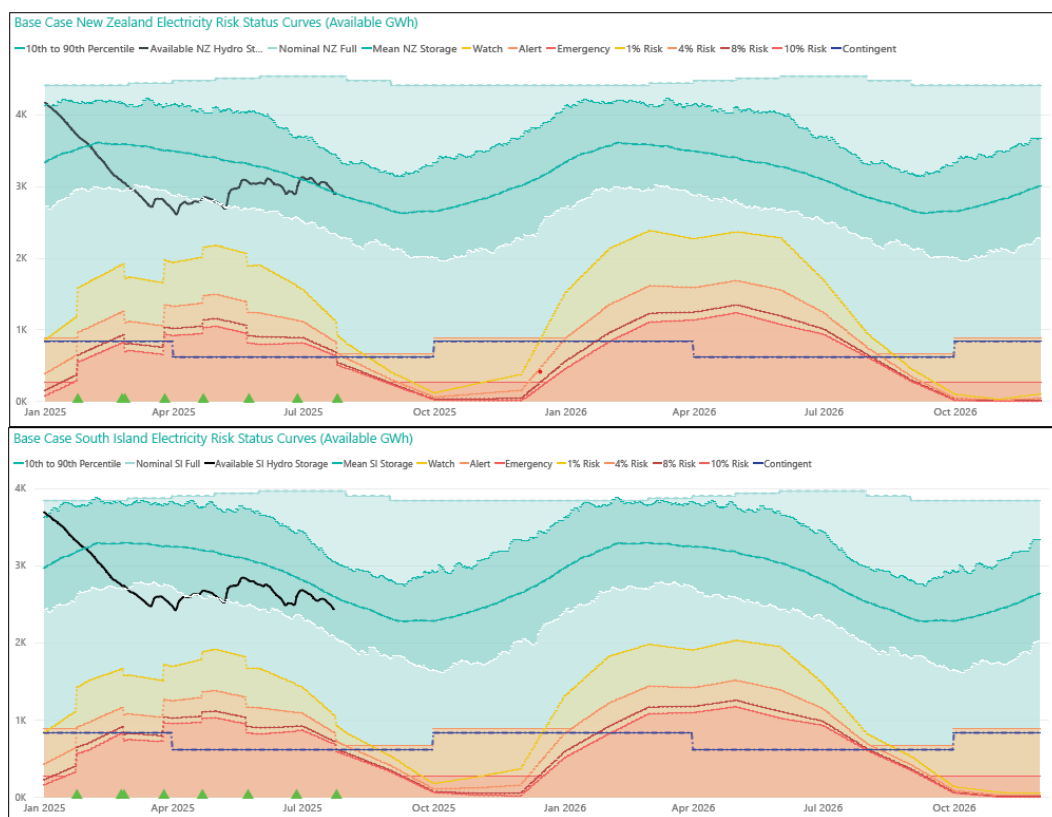
Period	Lake Level (metres above mean sea level, Lyttelton 1937 datum)
April to September (inclusive)	702.1
October to March (inclusive)	704.1

7. When the aggregate storage for New Zealand or the South Island is below the relevant System Operator Contingent Storage Release Boundary trigger level under the Security of Supply Forecasting and Information Policy (as approved under Part 7 of the Electricity Industry Participation Code 2010), or any subsequent equivalent regulatory arrangement that enables the consent holder to access contingent storage in specified circumstances, the consent holder may take or divert water from Lake Takapō / Tekapo for hydro-electricity generation purposes below the minimum operating lake levels specified in condition 6, to a minimum lake level of 701.8 metres above mean sea level (Lyttelton 1937 datum). Notice of the reduction in lake level and its expected duration must be given to Canterbury Regional Council, Te Rūnanga o Arowhenua, Te Rūnanga o Waihaio and Te Rūnanga o Moeraki as soon as practicable.
8. If the Lake Takapō / Tekapo lake level is below 704.1 metres above mean sea level (Lyttelton 1937 datum) on 30 September (other than as provided for in condition 7), the consent holder may continue to take or divert water from Lake Takapō / Tekapo for hydro-electricity generation purposes on and after 1 October provided the Lake Takapō / Tekapo 24-hour rolling average lake level does not decrease further.
9. If the lake level has been reduced in accordance with condition 7 or is below 704.1 metres above mean sea level in accordance with condition 8, the consent holder must take reasonable measures to restore Takapō / Lake Tekapo to the minimum consented lake level under condition 6 for that time of year as soon as practicable, after consideration of such matters including (but not limited to):
- Electricity generation levels required to maintain security of electricity supply in New Zealand;
 - Operational matters, such as such as maintaining flows, minimum water levels and water quality through the scheme; and
 - Present and likely lake inflows.
10. If the lake level has been reduced in accordance with condition 7 or is below 704.1 metres above mean sea level in accordance with condition 8, the consent holder must:

Draft 25 July 2025

- Advise the Canterbury Regional Council, Te Rūnanga o Arowhenua, Te Rūnanga o Waihaio and Te Rūnanga o Moeraki weekly of:
 - The progress towards, and the expected timetable for restoring Takapō / Lake Tekapo to the consented minimum lake level under condition 6; and
 - The strategies adopted to restore Takapō / Lake Tekapo to the consented minimum lake level; and
 - The lake level at the end of each reporting week.
 - No later than eight weeks following the completion of each activation of condition 7 or 8, the consent holder must, provide the Canterbury Regional Council, Te Rūnanga o Arowhenua, Te Rūnanga o Waihaio and Te Rūnanga o Moeraki with the following information:
 - The date and time at which Takapō / Lake Tekapo was lowered below the consented minimum lake level under condition 6;
 - The levels at which Takapō / Lake Tekapo was managed over the duration of the activation;
 - The duration of the activation;
 - The length of time following completion of the activation for Takapō / Lake Tekapo to be restored to the consented minimum lake level under condition 6; and
 - A written description of the circumstances leading to activation.
11. If the consent holder has managed the lake level in accordance with conditions 7 or 8 in the previous 12 months, the Canterbury Regional Council may review conditions 9 or 10 of this consent by giving notice of its intention to do so in accordance with section 128 of the Resource Management Act 1991, at any time within six months following the receipt of the information required in condition 10, for the purpose of amending or adding conditions to ensure that adverse effects of the management of the lake levels under condition 6 are appropriately managed.

Appendix B: New Zealand and South Island Electricity ERCs for July 2025



Energy Security Outlook Explanation:

[Energy Security Outlook 101](#)

Watch Curve - The one percent risk curve.

Alert Curve - The maximum of the four percent risk curve and the floor.

Emergency Curve - The maximum of the 10 percent risk curve and the floor.

Official Conservation Campaign Start - See cl. 9.23 of the code.

Official Conservation Campaign Stop - See cl. 9.23A of the code.

Triggers and actions of Watch/Alert/Emergency status are set only by the official base case curves (not scenario curves).

Note: The floor is equal to the amount of contingent hydro storage that is linked to the specific electricity risk curve, plus any contingent hydro storage linked to electricity risk curves representing higher levels of risk of future shortage, and the buffer. The default buffer is 50 GWh.

New Zealand and South Island ERCs and SSTs for July 2025

