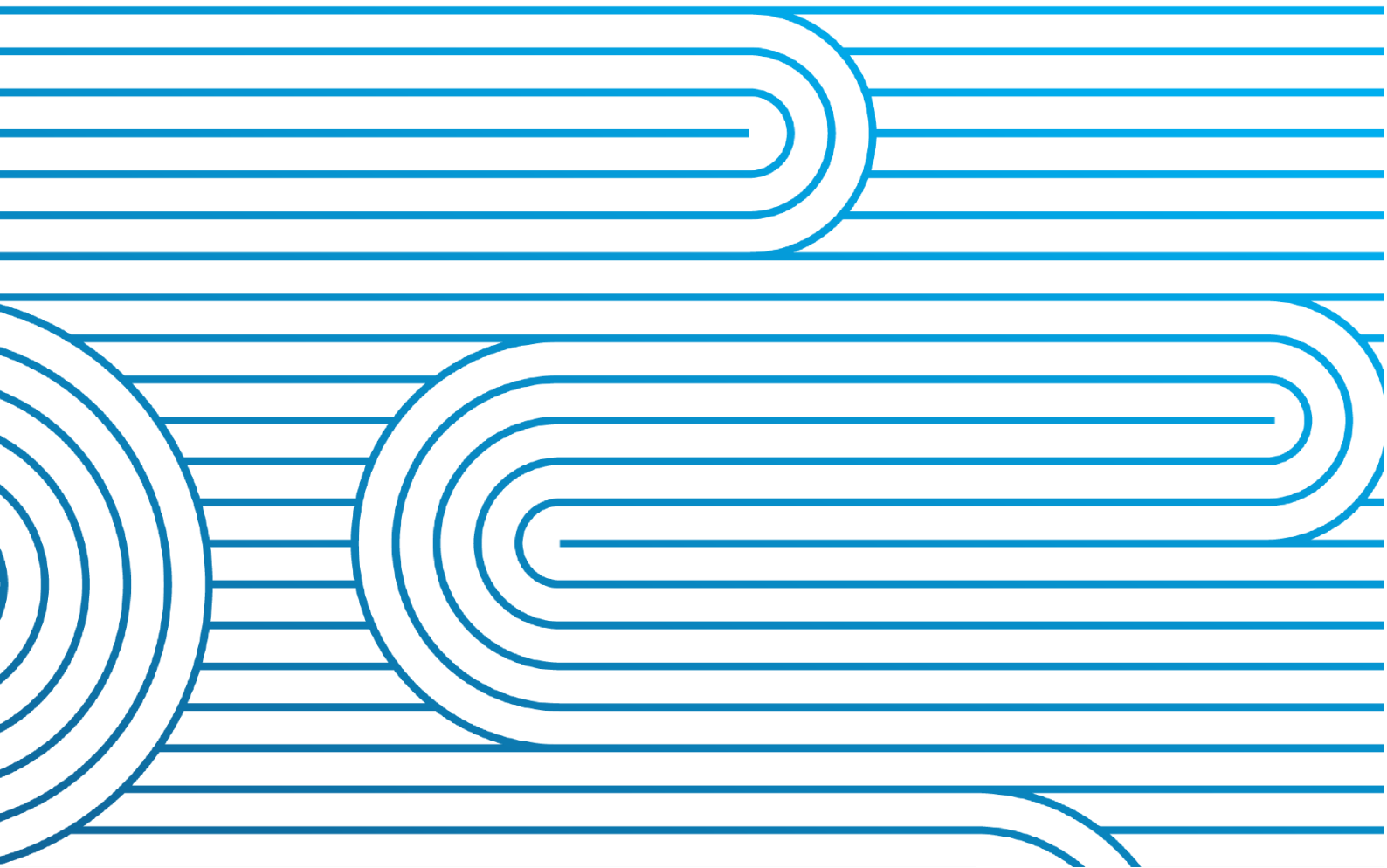


Monthly System Operator report

For the Electricity Authority

February 2024



Report Purpose

This report is Transpower's review of its performance as system operator for February 2024, in accordance with clause 3.14 of the Electricity Industry Participation Code 2010 (the Code).

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Key points this month

Winter 2024 readiness: Reviewing managing tight peak demand strategy: We have started a review to refresh the strategy and tactics used to manage periods when residual is low, which generally occur during periods of high winter peak demand. The strategy covers planning time frames, and operational time frames.

Winter 2024 readiness: System Operator Rolling Outage Plan (SOROP) review: We proactively made sure the Consumer Advocacy Council and independent retailers were aware of the consultation, groups that are less likely to be covered by our regular system operator communication channels. Submissions closed on 6 March, and cross-submissions will close on 20 March.

Winter 2024 readiness: Improving intermittent generation forecasting: We are working with the Authority and industry participants to improve both real-time market information and the quality of information provided to industry in the forward market schedules. This includes enhancing and embedding the initiatives put in place for winter 2023, working with individual generators to increase the use of wind forecast models and reduce the use of persistence forecasts to inform their market offers, engaging with Authority staff to support their project to improve the accuracy of intermittent generation forecasts.

Security of Supply: The February update of the Electricity Risk Curves (ERCs) has been published and is available [on our website](#). The reduced coal stockpile at Huntly power station and reduced gas storage have increased the ERCs across 2024 and 2025.

High court decision on 9 August 2021 scarcity pricing: Following the High Court decision, we are working with the Authority and other service providers to plan and effect settlement. As the system operator we are responsible for providing settlement information to the clearing manager for ancillary services.

New Zealand Generation Balance (NZGB) refresh: We have begun a review of how the NZGB model should be changed to reflect our more variable planning environment including testing with key users of NZGB. A proposal and cost of delivery is being developed.

Network Modelling and Commissioning database: We are progressing the development of a network modelling database prototype. It is expected this will reduce risk of modelling errors and improve efficiency.

Commissioning: We have experienced a few cases where asset owners have not understood the need to start their planning and engaging with the system operator sufficiently early on in the process; sufficient lead items are needed prior to first connection to the power system.

SO Strategic Plan and Capex Plan 2024: The draft versions of the SO Strategic Plan and Capex Plan were delivered to the Authority on 14 February. This year, our engagement with the Authority on the SO strategic plan will inform our SOSPA3 proposal in June.

HVDC Bipole and Monopole outages: We proactively communicated with the industry ahead of the bipole and monopole outages, asking them to support the market by adjusting their reserve offers.

1 Commitment to the evolving industry needs

Winter 2024 readiness

2024 Pan-industry exercise: The exercise this year will be run over two days. Day 1 (1 May 2024) will focus on the operational response to the event and will be facilitated by Transpower. Day 2 (8 May 2024) will focus on communication with end consumers in relation to the event and will be facilitated by the Authority with support from Transpower.

SOROP review: Submissions on our proposed update to the System Operator Rolling Outage Plan (SOROP) closed on 6 March, cross-submissions will close on 20 March. During February we proactively made the Consumer Advocacy Council and independent retailers aware of the consultation, groups that are less likely to be covered by our regular system operator communication channels. We also shared it with Transpower's [Consumer Advisory Panel](#).

Reviewing managing tight peak demand strategy: We have started a review to refresh the strategy and tactics used to manage periods when residual is low, which generally occur during periods of high winter peak demand. The strategy covers planning time frames (8 days ahead or more), and operational time frames (7 days ahead or less). It is intended to ensure we are consistent in how we inform the industry of risk so that participants and stakeholders are prepared should an event happen. In general, we received positive feedback on how last winter was managed and expect the winter 2024 strategy to be a refinement of that used for winter 2023.

Improving intermittent generation forecasting: We are working with the Authority and industry participants to improve both real-time market information and the quality of information provided to industry in the forward market schedules (up to 7 days ahead). Work includes:

- Working with the Authority to enhance and embed the initiatives put in place for winter 2023, which included providing residual information to the market, sensitivity schedules and greater visibility of wind forecasts.
- Working with individual generators to increase the use of wind forecast models and reduce the use of persistence forecasts to inform their market offers.
- Engaging with Authority staff to support their project to improve the accuracy of intermittent generation (IG) forecasts. Recognising that the project will not deliver a centralised wind forecast pre-winter 2024 we proposed interim solutions be considered which could be implemented by winter 2024. These could include a guidance note on what good IG offering practice looks like and the publication of IG offer accuracy metrics by the Authority. We have also suggested the Authority provide clarity of the existing Code obligations and consider whether there is a need for Code changes prior to final project delivery.

Security of Supply

Electricity Risk Curves (ERCs): The February update of the ERCs has been published and is available [on our website](#). The reduced coal stockpile at Huntly power station and reduced gas storage have increased the ERCs across 2024 and 2025.

Connecting with the industry

Weekly Market Movements: Every Tuesday we publish a Market Operations weekly report on our website (or via email to [subscribers](#)) containing the latest information about the electricity market, including security of supply, wholesale price trends and system capacity. The report also contains an insight on topical item for that week. During February we provided the following insights for the weeks ending:

- [4 February](#): The high prices and lower residual generation margin on Wed 31 January.
- [11 February](#): The impact of persistence and non-persistence wind offers and their impact on the residuals.
- [18 February](#): Intermittent generation offer accuracy and the impact of using persistence offers.
- [25 February](#): The factors contributing to the publication of the Customer Advice Notice on 20 February for potential South Island Reserve shortfalls last week.

Participant survey: We will be sending out our annual participant survey in March to provide the industry with the opportunity to provide feedback, including what we are doing well and where we need to up our game.

Brainstorming session with the Authority: During February we held a brainstorming session (consistent with a SOSPA performance metric) with the Authority's Operational Policy and Future Security and Resilience (FSR) teams. The session focussed on informing their proposals for the Authority FY25 work plan. The Authority shared the Technical Advisory Service (TAS) work they are considering for the coming financial year, and we raised other potential matters for their consideration. Items discussed include improving the frequency regulation service, improvements to the scheduling and dispatching of batteries and managing zero-priced generation on the system. The meeting was constructive and highlighted strong alignment on priority improvements to the current market arrangements and impacts on operating the power system.

Security and Reliability Council (SRC): On 22 February we attended the SRC meeting, observing the Authority presentation and discussion on its FSO research, and presenting on our work as system operator to enable the future of the industry.

High court decision on 9 August 2021 scarcity pricing

On 16 February the High Court released its decision on the claims concerning pricing for six trading periods on 9 August 2021. The Authority instructed NZX to finalise the prices on 1 March. As system operator we are responsible for providing settlement information to the clearing manager for ancillary services now these trading periods can be settled. We are working with the Authority and other service providers to plan and effect settlement.

2 Risk & Assurance

Risk management

Plans are underway for a six-monthly review of half our critical controls. We prepared a paper on risk management for the Authority's Market Operator Committee (MOC). This

focused on an overview of our risk management framework and our work on identifying future risks to system operations.

Business assurance audits

The 2023/2024 audit plan is on schedule. Two audits are completed and provided to the Authority for review.

The auditor has completed the inputs to the Reserve Management Tool audit with indications of two priority 3 recommendations which will be reviewed before sending to the Authority. The fourth audit – synchronising and reconnecting an Island – is underway. The final audit – shortage of supply management – is scheduled to start in March, with its scope reflecting that the SOROP review is in progress later than planned due to necessary prioritisation of winter 2023 initiatives.

3 Compliance

Market impact for previously reported self-breach: We reported a system operator self-breach on 5 December, which related to a modelling error in the 16:55 RTD solve on 4 May 2023. The event was caused by an error in the automatic internal processing within the market system, which had never occurred previously and could not have been detected. The error persisted for the 5-minute RTD solve and caused a market impact of \$14,000 - \$18,000. IST implemented several corrective and remedial actions, and we are confident the error will not recur.

Investigation: The Authority issued a Notice of Investigation on 10 January related to the VSAT (voltage security assessment) modelling error between 7 February – 13 April 2022. We understand the investigator will be recommending to the Authority’s Compliance Committee on 26 March that this matter be referred to the Rulings Panel.

4 Impartiality of Transpower roles

We have two open items in the Conflict of Interest Register (below). These are being actively managed in accordance with our Conflict of Interest procedure.

System Operator Open Conflict of Interest Issues		
ID	Title	Managed by
40	General system operator/grid owner dual roles: This is a general item that will remain permanently open to cover all employees with a dual system operator/grid owner role. The item documents the actions necessary to ensure impartiality in these circumstances; these items will be monitored to ensure their continue effectiveness.	SO Compliance & Impartiality Manager
41	General relationship situation: This is a general item that will remain permanently open to cover all potential conflicts of interest arising under a relationship situation. This item documents the actions necessary to prevent an actual conflict arising and will be monitored by the SO Compliance & Impartiality Manager to ensure their continued effectiveness.	SO Compliance & Impartiality Manager

5 Project updates and other initiatives

5.1 Market design and service enhancement project updates

Progress against high value, in-flight market design, service enhancement and service maintenance projects are covered below, along with details of any variances from the current capex plan.

Future Security and Resilience (FSR) programme

Our frequency and voltage studies in support of the Authority's review of Part 8 Common Quality Requirements are progressing to plan. In summary we:

- will finalise our first two reports in early March (one frequency report and one report on the first two voltage studies).
- will have the first drafts of the final two reports in early March.
- have started working with the Authority on the Options papers.
- are gathering a list of changes to Part 8 to make the Code more aligned to the technologies and current operating environment.

Extended Reserves – Automatic Under-Frequency Load Shedding (AUFLS) project

Distributors are continuing to transition to 4-block AUFLS. We are supporting this transition for the Authority which involves reviewing changes to monthly plans, assessing potential security impacts, approving any changes and notifying non-adherence to plans to the Authority. We have submitted our February transition report to the Authority. Five distributors submitted change requests for March 2024 and future months. All four of the change requests for March have been approved.

5.2 Other projects and initiatives

System Operator Service Provider Agreement (SOSPA) contract reset

Formal engagement with the Authority at the governance and working group levels started in December. Both parties have provided their list of negotiation objectives to inform the discussion in the next few weeks. The SOSPA 3 proposal is planned for submission to the Authority at the end of June 2024.

Market System data migration

This project is to migrate market system data to our new data warehouse with the purpose of supporting our data and analytics capability into the future. The solution architecture document is complete. The documentation of the detail design and data migration are in progress. We have also started business change activities and co-planning with the business on how to embed and get ready for the change.

Operational Excellence

We have completed a review and prioritisation of the backlog of defects and enhancements relating to market system and other critical tools. We are now looking to size the work required to address these with a view to including in delivery planning.

The team has been refining resource forecasting to provide a view over an 18-month horizon. The goal is to ensure that sufficient skilled resources are available to cover periods of

increased workload, enhanced training, and to support planned projects – while taking into consideration speed to competency for new starts and projected attrition rates

New Zealand Generation Balance (NZGB) refresh

We have begun a review of how the NZGB model should be changed to reflect our more variable planning environment including testing with key users of NZGB. A proposal and cost of delivery is being developed.

Network Modelling and Commissioning database

We are progressing the development of a network modelling database prototype. It is expected this will reduce risk of modelling errors and improve efficiency.

6 Technical advisory hours and services

Technical advisory hours and a summary of all technical advisory services (TAS) to which those hours related (SOSPA 12.3 (d) refers) will be provided in the next quarterly report.

7 Outage planning and coordination

Outage planning – near real time

The number of outage windows continue to be high but are being proactively being spread to reduce congestion. Even with this re-scheduling, congestion in weeks starting 18 March and 29 April is high and being managed closely.

New Zealand Generation Balance (NZGB) analysis

Forecast N-1-G margins are healthy throughout the forecast horizon to late April, including during the HVDC outages running from 21 February - 14 March. The lowest N-1-G margin during the forecast period is 356 MW on 21 March.

There are five dates of note in the N-1-G balances between 23 and 29 May. Three dates show low balances and two show negative balances. The key drivers appear to be the increasing load as we move into winter loading and the higher number of generation outages. If these shortfalls persist to within one month of real time, a CAN will be issued alongside an NZGB assessment indicating the potential shortfall and requesting outages to be shifted.

HVDC outage

The HVDC outage started on 21 February and will continue through to 14 March, this included a bi-pole outage over weekend of 24 February and 25 February. The Pole 3 and bi-pole outages have been completed successfully. The residuals and NZGB balances remain healthy during the remaining Pole 2 outages with sufficient thermal commitment.

Annual Outage Forum

In our system operator role, we will be covering the security impacts of the Transpower outage plan at the Annual Outage Forum to be held online on 21 March.

8 Operating the power system

Port Hills Fire: This fire near Christchurch resulted in a tripping of the 110 kV circuits and a loss of supply at Bromley at 15:12 on 14 February. Orion NZ was able to restore supply to impacted customers within an hour via back feeding from the Transpower Islington

substation. The 110 kV circuits remained out of service while FENZ was fighting the fire, and until Transpower's service provider was able to complete a visual inspection of the asset. Supply was restored back to Bromley substation at 16:56 the next day.

North Canterbury fire: A second fire in North Canterbury on 15 February 2024 was also closely monitored by the NCC control rooms as it posed potential risk to an area of the HVDC, and Islington-Kikiwa transmission towers. This fire was contained by FENZ prior to reaching any assets and had no operational impact.

Annual HVDC outage: Working is progressing well and is expected to be complete by 14 March. Residuals have been healthy even during periods of low wind as a result of high levels of thermal unit commitment.¹

South Island Reserves CANs: We proactively communicated with the industry ahead of the bipole and monopole outages, asking them to support the market by adjusting their reserve offers. A CAN was issued on 19 February to highlight the potential for South Island reserves shortfall during the bi-pole outage 24-25 February. The industry responded with updated offers. Another CAN was sent on 20 February to highlight a heightened risk of a temporary South Island reserves shortfall in the Real Time Dispatch schedule during periods when the HVDC is in monopole operation: again, the industry responded by updating offers.

9 Power systems investigations and reporting

Significant incident investigations

No new significant events were identified in February.

Commissioning

One of the issues that we are focusing on in our commissioning process improvements is to ensure asset owners understand why they need to start their planning and engaging with the system operator sufficiently early on in the process as sufficient lead items are needed prior to first connection to the power system. Some asset owners are not meeting our guideline lead times despite being advised well in advance.

We previously worked with NewPower on the commissioning of the 35 MW Rotohiko battery, which will inject at the Huntly market node. In the week of 26 February, they received an Ancillary Services contract under which Rotohiko can be offered and dispatched for reserves, both as injection and interruptible load.

System Security Forecast (SSF)

We are looking to redesign the System Security Forecast for the next major update in December 2024 to ensure it is fit for purpose and is being delivered efficiently. The Authority, as an interested stakeholder, has indicated it is supportive. The proposal will implement:

- A biennial review of risks to our principal performance obligations to include as scope of the SSF.
- Decoupling of the outage and market information from our Code obligations.

¹ High levels of unit commitment are common during HVDC outages as the South Island generation cannot reach the North Island

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- A change in delivery approach to spread the work more evenly over the biennial Code commitment.
 - A new reporting format and way of delivering the report.

10 Performance metrics and monitoring

Our system operator performance against the performance metrics for the financial year as required by SOSPA 12.3 (a) will be provided in the final quarterly report.

10.1 SOSPA deliverables

SO Strategic Plan and Capex Plan 2024: The draft versions of the SO Strategic Plan and Capex Plan were delivered to the Authority on 14 February. The Strategic Plan was discussed at the Authority's MOC meeting on 28 February. This year, our engagement with the Authority on the SO strategic plan will inform our SOSPA3 proposal in June.

11 Cost-of-services reporting

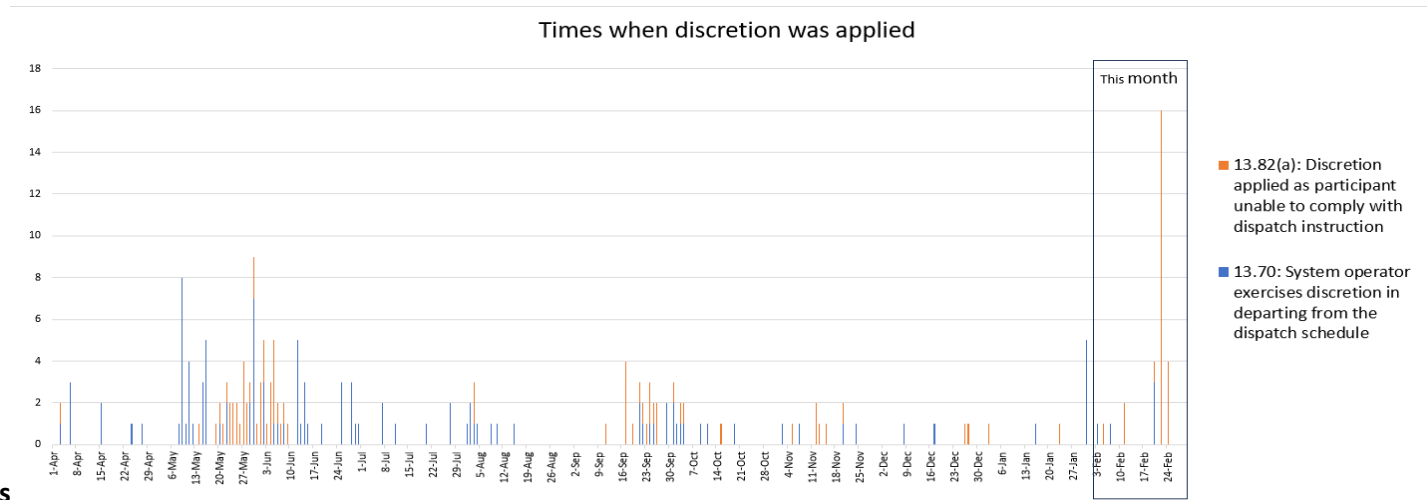
The cost of services reporting for 2022/23 will be delivered to the Authority by the end of the financial year.

12 Actions taken

A full list of actions taken regarding the system operator business plan, statutory objective work plan, participant survey responses and any remedial plan, as required by SOSPA 12.3 (b) will be provided in the next quarterly report.

Appendix A: Discretion

The graph below shows a recent trend of instances of discretion application. Some of the individual instances of discretion application this month are summarised further below.



29 instances

5 were applied in response to discretion clause 13.70

- 3 Feb – RPO_TNG tripped due to suspected lightning.
- 7 Feb – WHI2201 WHI required for reserves over the evening peak to alleviate drastic drop in wind between forecast and actual.
- 20 Feb (3 instances) – Discretion applied to MAT1101 to avoid protection tripping circuit EDG_OWH_2 and then overloading KAW T13 (due to KAW T12 outage).

24 were applied in response to discretion clause 13.82(a)

- 5 Feb – HLY5 kept on above 182MW to avoid dispatching off and not being available for the rest of the day.
- 11 Feb (2 instances) – HLY5 dispatched below their minimum but kept on due to plant safety.
- 20 Feb - HLY5 dispatched below their minimum, but least cost solution is to keep on.
- 22 Feb (16 instances) – WHI2201 dispatched below min generation but kept on due to safety.
- 24 Feb – SPL dispatched below their minimum, but least cost solution is to keep on.
- 24 Feb – NAP dispatched below their minimum, but least cost solution is to keep on.
- 24 Feb (2 instances) – HLY5 dispatched below their minimum, but least cost solution is to keep on.