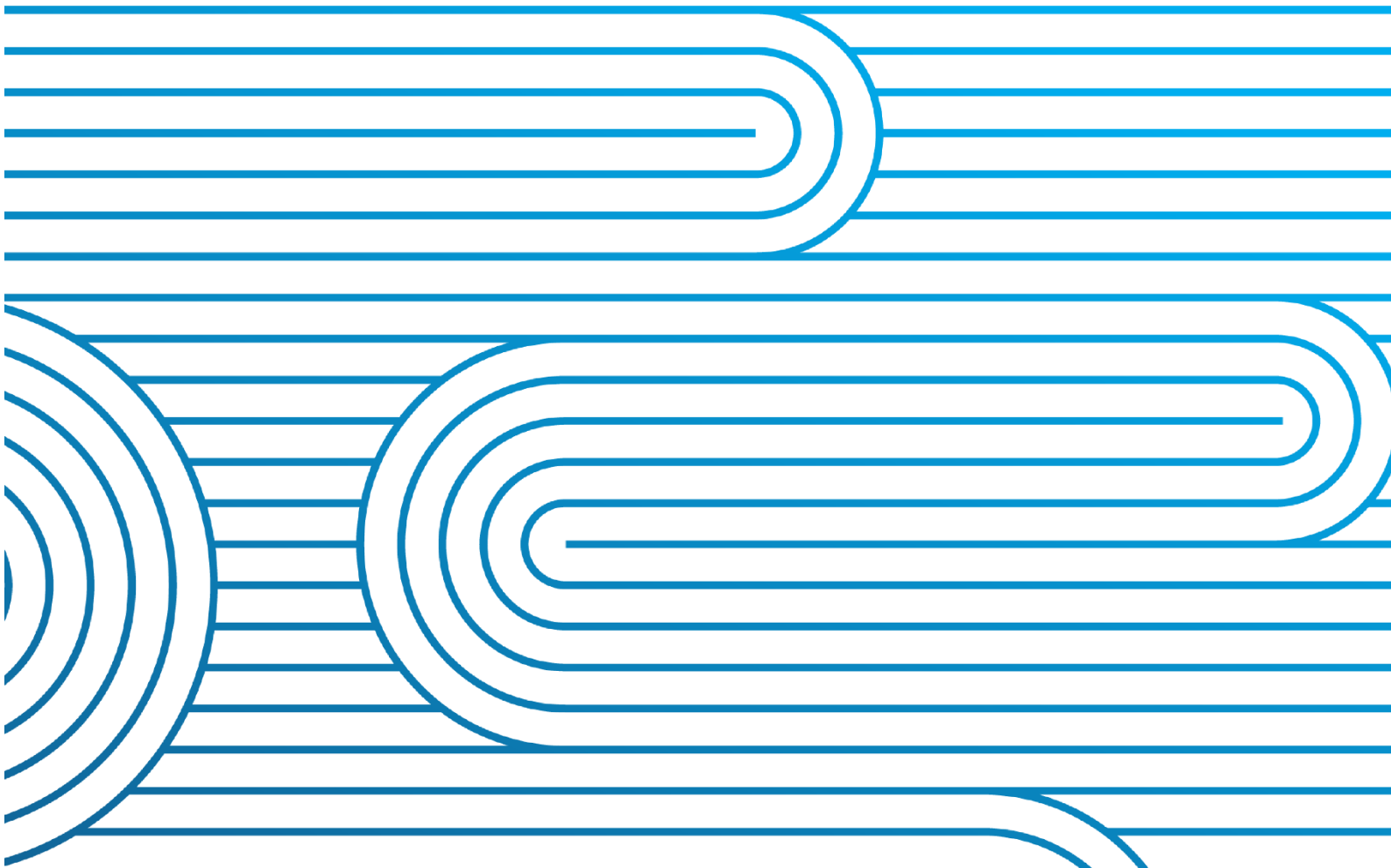


Monthly System Operator report

For The Electricity Authority

January 2024



Report Purpose

This report is Transpower's review of its performance as system operator for January 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: Our market insight and outlook for Winter 2024 was published on 31 January. It highlights the capacity and energy risks on the system for this year and the need for increased investment in flexible resources (such as peaking generation, batteries and demand response).
- Pan-industry exercise: We have agreed a date of 1 May 2024 for the joint exercise hosted with the Authority. The exercise aims to prepare all industry participants to respond to potential electricity supply shortfalls.
- Low Residual Margins: We have had lower residual margins towards the end of January, over the mid-afternoon to evening peak. This resulted from a combination of wind generation dropping off quickly, high South Island generation as hydro generation captured uncontrolled inflows after recent rain events which resulted in high HVDC transfer and no offered thermal generation to provide cover.
- Electricity Risk Curves (ERCs): The ERCs have increased in the most recent update (29 January). This is largely due to reduced gas production forecast and plant outages.
- 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.
- System Operator Rolling Outage Plan (SOROP): We are now seeking views from the electricity industry on proposed changes to the SOROP; submissions are due on 6 March. An up-to-date plan will assist if 2024 is a dry year.
- Credible Event Review (CER): The 2024 CER scope has been published on our website which sets the work programme to be completed before December 2024.
- Extended reserves project: The first of the North Island distributors have begun transitioning to 4-block AUFLS.
- Control room visits: We hosted the new Minister for Energy, Simeon Brown, and two of his staff for a tour of our Wellington control room this month. We also hosted Tracey Kai and her team from the Electricity Networks Aotearoa (ENA) for a control room visit in Wellington and an Operations 101 session with the senior leadership team.
- Compliance: The Authority issued a Notice of Investigation on 10 January related to the VSAT modelling error between 7 February – 13 April 2022 which we are currently responding to.

1 Commitment to the evolving industry needs

Winter 2024 readiness

Information paper: Our [market insight and outlook for Winter 2024](#) was published on 31 January. It highlights the capacity and energy risks on the system for this year and the need for increased investment in flexible resources (such as peaking generation, batteries and demand response) to manage these risks. It builds on our Winter 2023 Review paper, published in October 2023, which reviewed the performance of the electricity system and market response over last winter.

Pan-industry exercise: We have agreed a date of 1 May 2024 for the joint exercise hosted with the Authority. The exercise aims to prepare all industry participants to respond to potential electricity supply shortfalls. It will be an opportunity to practice and build familiarity with processes and communications internally and with other organisations, demonstrate industry collaboration, and identify areas for improvement. As of 31 January 2024, we have received 86 expressions of interest from industry.

Supporting the Authority consultations/proposals:

- The Authority has released its consultation paper on *Potential solutions for peak electricity capacity issues* which we will respond to.
- We are responding to the Authority's *Code Amendment Omnibus Consultation* paper released in mid-December, which includes a proposal to amend the Code to permanently implement Option E (Clarify availability and use of 'discretionary demand' control) from their Winter 2023 work programme. This requires distributors to signal their controllable load (discretionary demand) to the system operator via difference bids.
- We are considering the Market Development Advisory Group (MDAG) final report on *Price discovery in a renewables-based electricity system*. In particular those recommendations of importance to our ability to deliver as system operator.

Security of Supply

Electricity Risk Curves (ERCs): The ERCs have increased in the most recent update (29 January). This is largely due to reduced gas production forecast and plant outages. The forecasted gas production has decreased on average by 8% across 2024 so there is lower gas availability for electricity generation. The increased hydro storage has helped offset this increased risk. Five simulated storage trajectories cross into watch status (1% risk curve).

System Operator Rolling Outage Plan (SOROP): The SOROP is used to determine when an electricity supply shortage would be declared and how this would be managed.. We prepared a consultation package on a proposed update to the SOROP and sent it to

the Authority at the end of 2023. Having responded to some useful feedback from the Authority, we received consent to consult on 25 January. We are now seeking views from the electricity industry on proposed changes to the SOROP; submissions are due on 6 March. An up-to-date and workable plan will assist if 2024 is a dry year.

Connecting with the industry

Energy Minister visit: We hosted the new Minister for Energy, Simeon Brown, and two of his staff for a tour of our Wellington control room (NCC). The Minister was very engaged and interested in the work we and the wider industry do and how we do it. He was particularly interested in the resiliency of our service and the amount of generation available compared to load. The Minister had a keen interest in the detail and asked lots of questions. His staff were provided with the requested links to information such as our live data and market operations reports.

Electricity Networks Aotearoa (ENA) visit: Operations hosted Tracey Kai and her team from the ENA for an NCC control room visit in Wellington and an Operations 101 session with the senior leadership team. The ENA represents our lines company partners, so it was a great opportunity to give them insight into how we operate the system and the challenges we face to keep electricity flowing to their members every second of the day.

2 Risk & Assurance

Risk management

We have prepared a paper on risk management for the Authority's Market Operations Committee (MOC) in February which is focused on an overview of our risk management framework and our work on identifying future risks to system operations.

We have developed a draft risk register. This contains the wider system operation risks that we will present and discuss with the Authority and also seek wider feedback on. The register includes both external and internal risks or threats. It serves as an input to our Operations risk bowtie and will help identify threats/risk controls which have not yet been captured.

Business assurance audits

The 2023/2024 audit plan is on schedule.

The third audit regarding Inputs to the Reserve Management Tool is close to completion. The remaining audit scopes relating to Synchronising/Reconnect an Island and Shortage of Supply Management have both been drafted and will be progressed as planned.

3 Compliance

The Authority issued a Notice of Investigation on 10 January related to the VSAT modelling error between 7 February – 13 April 2022. The issue was caused by functionality in the VSAT node breaker file that meant VSAT scaled up the Tiwai load, causing a voltage stability constraint to bind earlier than it should have. We responded to the Authority’s Regulation 16 Notice on 24 January 2024.

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

Two studies are being progressed to inform future obligations under part 8 of the Code. The first is frequency studies to determine the thresholds for generators to be excluded from obligations. Lowering the exclusion threshold will allow more certainty to manage generator tripping risk during an under-frequency event. This will increase system security and reducing future frequency reserve requirements. The second study

is focussed on voltage. Our initial conclusions are that generating units installed in distribution networks need to have voltage obligations to manage distribution network voltage. We are providing draft study reports to the Authority in advance of our end March deadline for final reports to support the Authority's work to draft consultation papers.

The next Common Quality Technical Group (CQTG) meeting is scheduled for March.

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

The first of the North Island distributors have begun transitioning 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.

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 commenced in December. System operator negotiation items were shared with the Authority for review in December. The Authority has shared high level objectives for the reset negotiations. The SOSPA 3 proposal is planned for submission to the Authority at the end of June 2024.

Market System data migration

A project to migrate market system data to our new data warehouse commenced in December with the purpose of supporting our data and analytics capability into the future. The project kick-off stage is complete, resources have been engaged and the project environments set-up.

Credible Event Review (CER)

The [2024 CER scope](#) has been published, which sets the work programme to be completed before December 2024.

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

For the first three months of 2024, the number of outage windows will likely be between 100 and 150 per week. We then expect outage windows to peak in the two weeks before Easter. While numbers are high, they are not approaching 200 as observed during November – December 2023.

New Zealand Generation Balance (NZGB) analysis

As is typical in summer, NZGB margins continued to be above 200 MW through January for N-1-G. They are expected to remain above 200 MW until the end of April including through the HVDC outage in late Feb/early March.

HVDC outage

The HVDC outage is scheduled to start at 05:00 on 21 February until 22:00 on 14 March, this includes a bi-pole outage over weekend, beginning at 05:00 on 24 February until 22:00 on 25 February.

We used a scenario approach to stress test our assessment of the HVDC outage in NZGB. This considered the availability of the Taranaki Combined Cycle power station and reduced Huntly generation due to Waikato River heating constraints. The outcome of this assessment was provided to the industry via the fortnightly SO industry forum on 30 January. This resulted in the grid owner moving the Te Mihi_Whakamaru transmission outage from 1 March to 2 March. The grid owner outage would have constrained up to ~430 MW of geothermal generation until after the HVDC outage is complete. Shifting this outage reduced the scenarios that could lead to shortfalls while the HVDC outage was taking place.

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

We have had lower residual margins towards the end of January, over the mid-afternoon to evening peak. This resulted from a combination of wind generation dropping off quickly, high South Island generation as hydro generation captured uncontrolled inflows after recent rain events which resulted in high HVDC transfer and no offered thermal generation to provide cover. There has been little base load thermal generation offered as a consequence of recent strong inflows to southern hydro catchments resulting in conditions less suitable for slow start thermal generation to run. With the hotter days, there is higher variability of demand and a longer sustained

evening peak from mid-afternoon. A 1°C increase in temperature above forecast equates to approximately 100 MW of extra North Island demand (thought to be due to additional air conditioning load).

9 Power systems investigations and reporting

Significant incident investigations

No new significant events were identified in January.

Commissioning

The two Arapuni governor upgrades (units 1 and 4) are scheduled to commission in late January.

We are trialling using additional coordination support for the commissioning process whilst we implement the first setup of commissioning improvements identified through a process improvement initiative.

Meridian is reapplying for a dispensation associated with an increased rating to 131.5 MW for the Manapouri units. We are working with Meridian and their consultants to finalise the voltage fault ride through assumptions and reactive power margin control system requirements.

System Security Forecast (SSF)

We continue to work on the SSF refresh for the next major update in December 2024 to ensure it is fit for purpose and is being delivered efficiently. We have engaged customers for feedback on our planned changes as part of this refresh.

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 2024: A workshop with the Authority on 26 January elicited helpful feedback towards refining the draft, which will be provided on 14 February to the Authority. It will also be discussed at the Authority's MOC 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

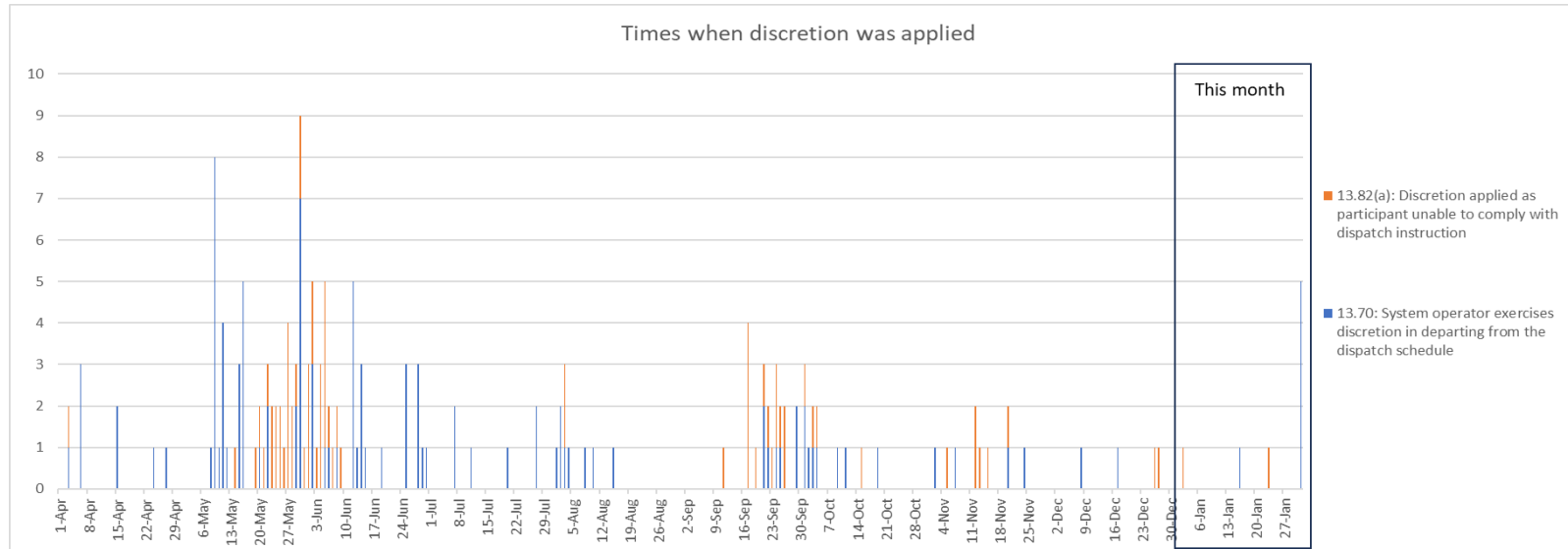
The cost of services reporting for 2022/23 will be delivered to the Authority by the end of the financial year.

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 all instances of discretion application with a summary beneath of some of the individual instances of application this month.



8 instances

6 were applied in response to discretion clause 13.70

- 16 Jan – WHI2201 WHI1 unit tripped
- 31 Jan (5 instances) - WHI2201 WHI Low residual, required on for reserves and energy with reducing wind and increasing load.

2 was applied in response to discretion clause 13.82(a)

- 2 Jan - SPL dispatched below min of 141MW to 137MW. Trader claimed rule 13.82(a) due to plant safety.
- 23 Jan - RTD solving with HLY5<182MW. Cheapest solution to keep at 182MW rather than dispatching off and not being available for remainder of day.