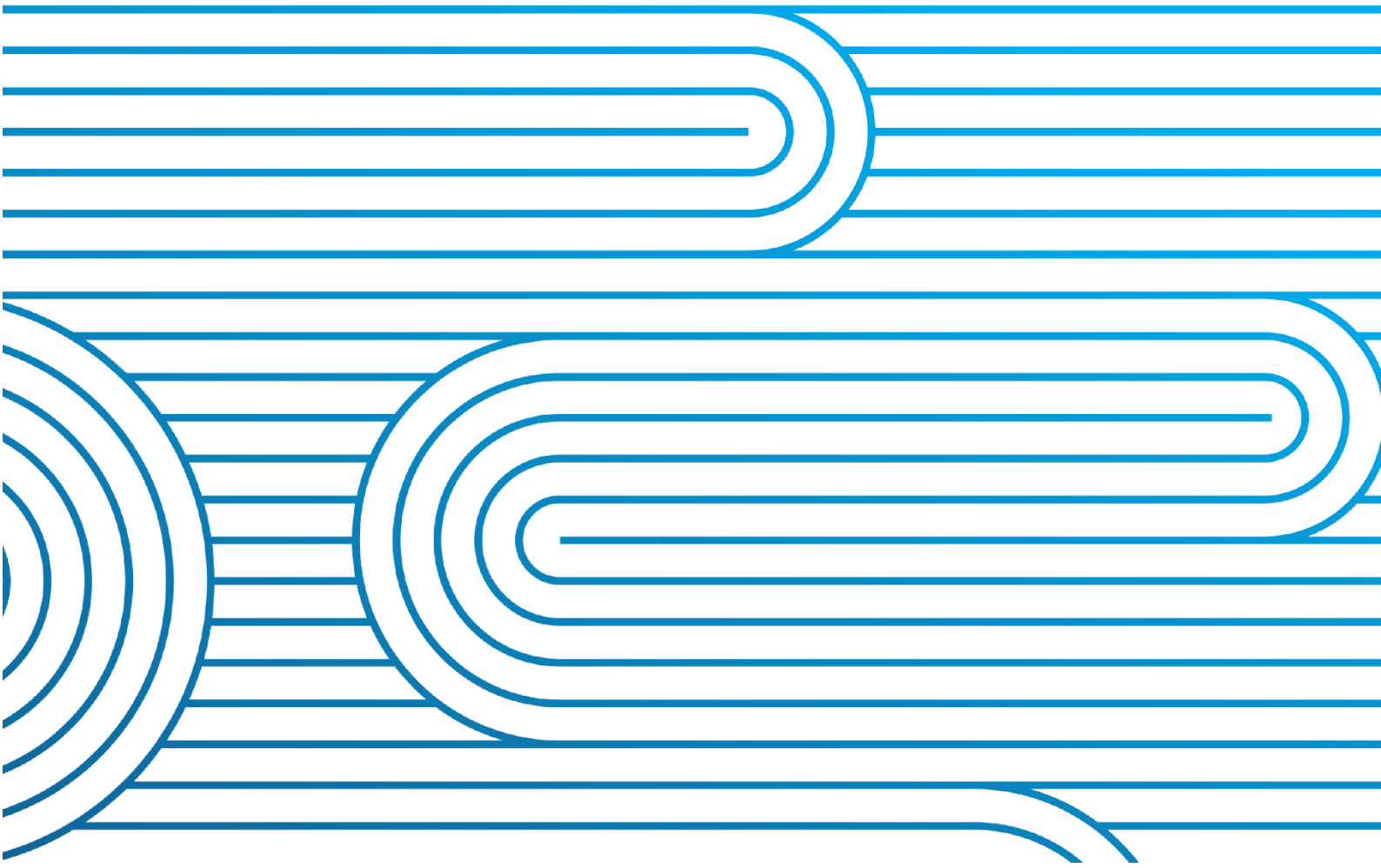
TRANSPOWER

Monthly System Operator performance report

For the Electricity Authority

Date: November 2025



This report is Transpower's review of its performance as System Operator in accordance with clauses 3.13 and 3.14 of the Electricity Industry Participation Code 2010 (the Code):

3.13 Self-review must be carried out by market operation service providers

*(1) Each **market operation service provider** must conduct, on a monthly basis, a self-review of its performance.*

*(2) The review must concentrate on the **market operation service provider's** compliance with—*

*(a) its obligations under this Code and Part 2 and Subpart 1 of Part 4 of the **Act**; and*

*(b) the operation of this Code and Part 2 and Subpart 1 of Part 4 of the **Act**; and*

*(c) any performance standards agreed between the **market operation service provider** and the **Authority**; and*

*(d) the provisions of the **market operation service provider agreement**.*

3.14 Market operation service providers must report to Authority

*(1) Each **market operation service provider** must prepare a written report for the **Authority** on the results of the review carried out under clause 3.13.*

*(1A) A **market operation service provider** must provide the report prepared under subclause (1) to the **Authority**—*

*(a) within 10 **business days** after the end of each calendar month except after the month of December:*

*(b) within 20 **business days** after the end of the month of December.*

(2) The report must contain details of—

*(a) any circumstances identified by the **market operation service provider** in which it has failed, or may have failed, to comply with its obligations under this Code and Part 2 and Subpart 1 of Part 4 of the **Act**; and*

*(b) any event or series of events that, in the **market operation service provider's** view, highlight an area where a change to this Code may need to be considered; and*

*(c) any other matters that the **Authority**, in its reasonable discretion, considers appropriate and asks the **market operation service provider**, in writing within a reasonable time before the report is provided, to report on.*

By agreement with the Authority, this report also provides monthly (rather than quarterly) reporting in accordance with clause 12.3 of the 2025 System Operator Service Provider Agreement (SOSPA):

*12.2 **Monthly reports**: The **Provider** must provide to the **Authority**, with each self-review report under clause 3.14 of the **Code**:*

*(a) a report on the progress of any **service enhancement capex project** or **market design capex project** that has commenced and has either not been completed or was completed during the month to which the report relates, including:*

*(i) to any actual or expected variance from the **capex roadmap** in relation to that **capex project**; and*

(ii) the reasons for the variance;

*(b) a report on **the technical advisory** services in accordance with the **TAS guideline;***

(c) *the actions taken by the **Provider** during the previous month:*

(i) *to give effect to the **system operator business plan**, including to comply with the **statutory objective work plan**;*

(ii) *in response to participant responses to any participant survey; and*

(iii) *to comply with any remedial plan agreed by the parties under clause 14.1(i);*

(d) *the **technical advisory hours** for the previous quarter and a summary of **technical advisory services** to which those **technical advisory hours** related; and*

(e) *in the report relating to the last month of each quarter, the **Provider's** performance against the **performance metrics** for the **financial year** during the previous quarter.*

System Operator performance reports are published on the Electricity Authority website in accordance with clause 7.12 of the Electricity Industry Participation Code 2010 (the Code):

7.12 Authority must publish system operator reports

*(1) The **Authority** must publish all self-review reports that are received from the **system operator** and that are required to be provided by the system operator to the **Authority** under this Code.*

*(2) The **Authority** must **publish** each report within 5 **business days** after receiving the report.*

Following the end of each Quarter, a system performance report is published on the Transpower website

Contents

Key points this month

Operating the power system

- *System Events:* It was another relatively busy month on the power system. A severe (G4) solar storm triggered a grid emergency on 12 November. On 13 November a warning was issued for the Waikato after falling trees broke conductors on the Arapuni – Hangatiki – Ongarue circuit removing it from service, and constraining transmission capacity into the region due to coinciding with other planned outages. Both these events were handled with no impact to consumers.
- *Very low pricing challenges*: We continue work on a solution for deployment in December. that will improve consistent management of link risks between SPD and RMT to help manage challenges from very low prices.

Security of supply

- *Energy Security Outlook (ESO):* The November ESO continues to indicate that energy risk for winter 2026 is low given the currently very high level of hydro storage, the coal stockpile and the retention of the third Rankine unit at Huntly with the Commerce Commission publishing their determination to authorise the Huntly Strategic Energy Reserve agreements. National Hydro storage increased to 148% of seasonal mean over November, the highest storage level on record for this time of year.
- *New Zealand Generation Balance (NZGB):* The latest NZGB indicated healthy capacity margins through the end of spring. However, due to the limited availability of Huntly 5 through November to the end of December there is an approximately 250 MW drop in firm capacity. The planned Wairakei Ring grid outages from 24 November to 14 December constrain up to 800MW of geothermal generation in the central North Island.
- *Security of Supply Forecasting and Information Policy (SOSFIP) review:* We received 6 submissions and 2 cross submissions to our draft SOSFIP consultation. We are now finalising our amendment proposal for submission to the Authority in December.
- *Security of Supply Assessment (SOSA) 2026:* We received 5 submissions to our SOSA 2026 reference case assumptions and sensitivities consultation in November and began work on our response to these submissions. We have also now conducted our generator survey to inform the supply pipeline.

Investigations

- *23 October 2025 – Upper South Island loss of supply:* We have progressed our investigation to support the completion of the Moderate Event report
- *28 October 2025 – Hawke's Bay loss of supply:* We have progressed our investigation to support the completion of the Moderate Event report

Supporting Asset-owner activity

- *Outage co-ordination:* Average weekly outages remained at 60-80 per week for November which is usual for this time of year. We continue to monitor the Grid Owner's outage optimisation performance, which shows improved packaging of project and maintenance work by up 8% or approximately 200 less outages per year, short notice outage requests (SNORs) remain down at 15 – 20%, and outage congestion managed 100% within the System Operator's preferences.
- *Generator commissioning and testing:* Through November we continued our work to support new generation commissioning in the coming months including Twin Rivers Solar Farm near Kaitaia (25 MW), 'Golden Stairs' Solar Farm at Maungaturoto (17.6 MW), Taiohi Solar Farm at

Rangiriri (22 MW), Lodestone's Whitianga Solar Farm (24 MW), Mercury Energy's Ngatamariki geothermal expansion near Taupo (54 MW), Eastland Generation's 'TOPP2' geothermal station at Kawarau (52 MW), and Contact Energy's Glenbrook BESS (100 MW).

- *Ancillary services activity:* Two tender committee meetings were held to determine successful tender applicants. Ancillary Services Procurement Contracts (ASPCs) are being finalised and tender responses will go out in mid-December We continue work with providers to disaggregate Hawke's Bay Instantaneous Reserves, and progress engagements with LastMyle and Simply Energy.

Commitment to evolving industry needs

- *SO Strategy*: We commenced direct stakeholder engagement in November and have developed a key trends and issues paper to support initial engagement with industry including consultation in December. Authority staff have been involved in this process and will continue to be closely engaged going forward.
- *Policy Statement Review:* We have continued to progress our draft Policy Statement amendment proposal, including proposed updates to the Security (Risk and Emergency Management), Dispatch, and Compliance policies. Consultation will now be in early 2026.
- *Evolving markets resource co-ordination - Tie-breaker provisions*: In November we published our summary and response to submissions, which included our decision to implement the preferred tiebreaker solution on which we consulted. We also submitted a Code change request to the Authority.
- *NEMA Space Weather exercise:* We provided input into the exercise, which ran well. Once lessons learned have been gathered by NEMA we will review and determine any resulting actions.
- *GridEx:* This successful two-day exercise stressed the sector, with a range of scenarios affecting IT systems and targeting physical locations. An initial debrief identified valuable learnings around coordinating multiple incident management teams, and communicating impacts from IT system outages.

Risk & Assurance

- *Risk management:* We completed our latest round of control self-assessments and have work planned or in progress for the five areas of improvement that were identified.
- *Business assurance audits:* The black start test planning audit has been completed and three continuous improvement recommendations were made by the auditors which we will address. We have completed interviews for the next audit focussed on preparedness for space weather events.

1 Operating the power system

1.1 System events

Event Date	Event Name	Event Activity
12 November 2025	Grid Emergency – Severe (G4) solar storm	On 12 November at approximately 14:45 a grid emergency was declared to the Grid Owner to remove several assets from service to help mitigate geomagnetic induced currents being caused by a Severe (G4) solar storm. A formal Grid Emergency Notice (GEN) was issued to industry at 14:55 informing them of the situation. The Grid Emergency was eventually ended at 04:00 the following day after the solar storm and subsided. There was no impact to consumers.
13 November 2025	Warning – Insufficient transmission capacity (Waikato)	On 13 November at 13:20 a warning notice (WRN) was issued by the System Operator to inform North Island participants of the risk of insufficient transmission capacity from 16:00 – 20:00 to meet demand at Hangatiki and Te Awamutu and still maintain N-1 security levels for a contingent event. This WRN was due to the impact of the Arapuni – Hangatiki – Ongarue circuit 1 unplanned outage given forecast demand at these GXPs. The System Operator worked with the Grid Owner to return to service other planned outages in the region. However, given the recall times being close to the at risk period, System Operator also worked with WEL Networks, Waipa and the Lines Company to determine how much controllable load could be managed (noting it had been off over the morning peak), and a plan for managing real demand if required. Grid Owner managed to return to service sufficient assets by 16:13 to avoid and controllable load or real demand management.
13 November 2025	Arapuni – Hangatiki – Ongarue circuit 1 conductor break	On 13 November at 03:31 the Arapuni – Hangatiki – Ongarue circuit 1 tripped and failed to auto reclose. Due to the nature of the fault, a line patrol was dispatched to determine the fault cause. Fallen trees were found to have broken the circuit conductor. Given access conditions it was several days before the circuit was able to be restored. In the meantime, the System Operator worked with local lines companies to manage the resulting risk of demand management. There was no impact to consumers.

Event Date	Event Name	Event Activity
14 November 2025	Transmission circuit risk reclassification – Manapouri	On 14 November at 12:37 a customer advice notice (CAN) was issued informing participants that the loss of Manapouri – North Makarewa circuit 1 and 2 were being managed as a single contingent event from 12:35 – 15:00 due to lightning activity in the region.
17 November 2025	HVDC reduced capability	On 17 November at 18:04 a CAN was issued informing participants of a reduction in the capability of the HVDC bipole to 700MW until further notice, pending further investigation by the Grid Owner. Full capability was restored at 20:15, with the CAN revised accordingly.

1.2 Market operations

Forecast v real-time residual variability: We monitor the variations between forecast and real-time dispatch conditions to determine if the 200 MW residual continues to provide sufficient coverage to cater for within trading period variations in demand and supply. The graph in Appendix B presents, for the last 24 months, the proportion of time within each month that a 200 MW residual was sufficient to cover the variation in load and intermittent generation between forecast (30 minutes ahead of real-time) and real-time.

In November more than 98% of the variability is covered by the 200 MW residual. This indicates that entering a trading period with at least 200 MW of residual provided a high chance of having sufficient market resources to meet the variability within the period.

Very low pricing challenges: As noted in the October report, we are continuing work to address a new challenge that has emerged during periods of very low prices: mixed risk-setting groups or link risk, comprising IGs and geothermal plants offered or managed by different participants, have complicated coordinated dispatch and risk management. We are working on a solution and aim to deliver a quick fix in December. This enhancement will improve consistent management of link risks between SPD and RMT.

Recent low-demand periods highlight the growing operational complexity as intermittent generation and inflexible capacity increase. These conditions reinforce the need for ongoing evolution of market rules, operational tools, and dispatch processes to maintain reliability and security.

2 Security of supply

Security of supply forecasting and information policy (SOSFIP) review: Our consultation on the draft SOSFIP amendment proposal closed on 11 November. We received 6 submissions and 2 cross submissions, which generally supported our proposals. We are now working on to finalise our amendment proposal for submission to the to the Authority, and publishing, in December.

Energy Security Outlook (ESO): The latest Energy Security Outlook, published on 27 November, continues to show that energy risk for winter 2026 is low given the currently very high level of hydro

storage, the coal stockpile and the retention of the third Rankine unit at Huntly. The Commerce Commission's final determination authorising the Huntly Strategic Energy Reserve agreements was announced on 6 November.

Hydro inflows continued to be well above average in November, and national hydro storage increased, from 141% of the seasonal mean on 1 November to 148% on 1 December. This is the highest 1 December storage value on record and exceeds the nominal full level for controlled hydro storage. Capacity margins were high for most peaks, but residual fell to 347 MW on Wednesday 5 November with low wind generation (52 MW) at the morning peak. Our weekly market updates for November (and previous months) are available here: Market Operations Weekly Report.

New Zealand Generation Balance (NZGB) potential shortfalls: The latest NZGB update is available through our Customer Portal. The base case reflects the total installed capacity not on outage and currently indicates healthy capacity margins through the rest of spring. However, Genesis has indicated that Huntly 5 has had limited availability from October and will continue to through to the end of December and will require 3-5 days to return to service. This has been captured in NZGB by removing it from the firm capacity scenario and replacing it with a single Rankine unit. This equates to an approximately 250 MW drop in firm capacity. This firm scenario indicates that right up to the end of December we are relying on the market to coordinate its slow start thermal to meet periods of high demand, supported by the occurrence of high wind generation when available.

During the Wairakei ring outages, from 24 November and through the first two weeks of December, we are reliant on slow start thermal should a 99th percentile load eventuate. If unit commitment is low and a major asset fails we may see tight residuals in real-time. This is similar to what occurred on the morning of the 28 October.

Security of Supply Assessment (SOSA) 2026: Our 2026 SOSA reference case assumptions and sensitivities consultation closed on 24 November. We received 5 submissions. We are working on a response to these submissions which we will then publish. We have also now conducted our generator survey to inform the supply pipeline. This had a good response rate and we are following up with the few remaining participants who have not yet responded.

3 Investigations

Under-frequency event investigations

23 October 2025 Under Frequency Events: We have requested information for both of the UFE events. We received information on the one related to the HVDC tripping event and expect to complete our causer report for it in December. We are awaiting asset owner information on the other event.

Significant incident investigations

23 October 2025 – Upper South Island loss of supply: We are completing our investigation into the loss of supply event to the Upper South Island which meets the threshold for a Moderate Event report.

28 October 2025 – Hawke's Bay loss of supply: We are completing our investigation into the loss of supply event to Hawke's Bay which also meets the threshold for a Moderate Event report.

4 Supporting Asset-owner activity

4.1 Outage Coordination

November outage numbers were between 60 - 80 a week, a typical profile during spring, summer and autumn.

In November there were significant outages impacting the Wairakei ring. These restricted generation (including inflexible geothermal) in the central North Island by up to 700MW. To help asset owners prepare for this outage we held engagement sessions with affected generators to provide information about how we will manage constraining off generation if needed in real-time. These outages will continue into the first 2 weeks of December.

Grid Owner outage optimisation: The System Operator has supported the Grid Owner to implement its identified target state. This is to increase the amount of work taking place per outage, reducing the overall number of outages taken on the grid limiting market impact and power system risks. We expect the Grid Owner to have completed its implementation by February.

We are tracking the Grid Owner's performance in three ways:

1. Increasing its packaging of work together - reducing the number of outages and their impacts, for the same amount of work. Tracking and monitoring indicates project work and maintenance work are being planned together 8% more in 2025 than in 2024. This would have reduced the outages on the system by approximately 200.

2. Reducing the number of short notice outage requests (SNORs)– allowing the System Operator and the market to better co-ordinate and manage risks associated with Grid outages. Tracking and monitoring in this space indicated a 15-20% drop in SNORs in 2025 compared to 2024.

3. Manage outage congestion by smoothing the outage numbers in any given week and starting on any given trading period – smoothing the workload in the System Operator controls room and reducing risk. Tracking and monitoring indicates this is being managed within all the preferred limits set by the System Operator's coordination team.

The Grid Owner's Annual Outage planning process has started. This process involves planning approximately 30% of the forward work over the next 12-month period with Grid Delivery, System Operator, and Grid Owner service providers. This year, to improve the process, we are holding fortnightly coordination meeting and focusing on holding all parties including service providers to meeting their deadlines. All deadlines have currently been met with first round of service provider meetings all due to be complete by the end of November.

We continue to engage industry via our System Operator Industry Forums to highlight the top 10 market impacting outages over the coming 4 weeks.

4.2 Generator commissioning and testing

The Power Systems and Markets teams are working with the following generators who are commissioning or expecting to connect in the next 6 months:

- Rānui's Twin Rivers Solar Farm near Kaitaia (25 MW connected to Top Energy) began a staged commissioning in September 2025, due to fully commission in December 2025.
- Eastland Generation's Te Ahi O Maui geothermal generation station at Kawerau (24 MW connected to Horizon) completed commissioning following the move from their existing 11kV connection to a 220kV connection in September, with their nearby 'TOPP2' geothermal station (52 MW) due to start and complete commissioning in December 2025.
- Solar Bay and Maungaturoto Solar Farm Project's 'Golden Stairs' Solar Farm at Maungaturoto (17.6 MW connected to Northpower) began commissioning in November, due to complete in December 2025.
- New Power's Taiohi Solar Farm at Rangiriri (22 MW connected to WEL Networks) began commissioning in October, due to complete in December 2025.
- Lodestone's Whitianga Solar Farm (24 MW connected to Powerco) began commissioning in November, due to commission in February 2026.
- Mercury Energy's Nga Tamariki expansion near Taupo (addition of a new 54 MW geothermal unit) is due to begin commissioning in January 2026.
- Contact's Glenbrook BESS (100 MW at GLN) next to the NZ Steel mill is due to begin commissioning January 2026.
- Mercury Energy's Kaiwera Downs 2 wind farm (connecting at a new Kaiwera Downs substation) is due to begin commissioning in March 2026.
- BrightFern Energy's Dannevirke solar farm (directly connecting to the Transpower grid at DVK) is due to begin commissioning in April 2026.
- Harmony Energy's Tauhei solar farm (connecting at Waihou) is due to begin commissioning in April 2026

We are also working with existing generators to commission maintenance and upgrade projects.

In addition, we are working with NZ Steel on the commissioning of their STATCOM and Arc Furnace at Glenbrook and with Fonterra Whareroa load. We are currently working with NZ Steel and the customer team on their operational communications and encouraging NZ Steel to progress their planning of compliance-related commissioning and testing.

Fonterra Whareroa Load – HWA1102 as non-conforming: In mid-2026, Fonterra will become a direct connect transmission customer at Hāwera with their Whareroa dairy factory. We expect the majority of embedded generation at this site to cease (10MW may remain). Processing electricity demand of up to 80 MW will come online with the electric boilers. As the variability of these large industrial process loads is not forecastable by the System Operator, we have written to the Authority to propose that this node be classified as non-conforming without waiting for up to a year's worth of data. The Authority are supportive of our proposal to proceed with a redetermination request, and we continue to work with them and Fonterra's retailer (Simply Energy) to progress this.

4.3 Ancillary Services activity

Ancillary Services Tender: This year we are tendering for instantaneous reserve, multiple frequency keeping, back-up single frequency keeping, and North Island black start. The tender period was open from 9 October to 5 November during which we received 22 independent offers from 12 different participants. The tender committee held meetings on 20 and 26 November to review the tender responses. Decisions are expected to be issued in early December. The contracts issued will reflect recent updates, both as part of our routine review and to accommodate changes made to the Ancillary Services Procurement Plan earlier this year.

Commissioning support: We have completed the transfer of dispatch of reserves (contracted through Contact Energy) from Contact to Simply Energy.

Disaggregation of Interruptible Load (IL) at Kawerau and in Hawke's Bay: The disaggregation of IL in the Kawerau and Hawke's Bay regions progressed in October. We deployed changes in late October to disaggregate Simply Energy's IL in the Hawke's Bay region. Deployment of changes to EnelX's IL will be made on 4th December.

Interruptible Load (IL): The following table provides an overview of IL testing activity by the number of sites tested and associated additional quantities for those sites. The reductions in available quantities of FIR and SIR this month were due to a provider notifying us that IL will no longer be offered from some of its sites.

	Number of sites	Additional quantities in MW	
Testing	0 sites	N/A	
Additional resource	0 sites	0 MW FIR	0 MW SIR
Removal of resources	8 sites	-26.2 MW FIR	-41.3 MW SIR

Generation Reserve (GR): The following table provides an overview of GR testing activity.

	Number of sites overdue
Testing	1

Over-Frequency Reserve (OFR): The following table provides an overview of OFR testing activity.

	Number of sites overdue
Four yearly end-to-end relay testing	4
Two yearly control and indication testing	21
Circuit breaker testing	26

We are actively working with service providers to address overdue testing requirements.

Frequency Keeping: One station in the South Island remains unavailable to provide frequency keeping because of failed testing. We are working with the provider to ensure that the format of the test data is adequate. Once confirmed, the provider will carry out re-testing.

5 Commitment to evolving industry needs

SO Strategy development: We have developed a key trend and issues paper for our initial engagement with industry and consultation in December. Executive engagements with key stakeholders have commenced in November and are planned to continue throughout December. We engaged with the Authority on 28 November to introduce our initial thinking and validate our approach.

Policy Statement review: We are finalising the draft for the upcoming Policy Statement review, including proposed updates to the Security (Risk and Emergency Management), Dispatch, and Compliance policies. We now expect to consult on the draft amendment proposal in around February – due to reprioritisation around other work.

NEMA space weather exercise: We provided input to the exercise, which ran well. Once the lessons learned have been gathered by NEMA we will review and determine anything we may want or need to do differently to ensure a successful response.

GridEx VIII: This two-day exercise stressed the sector, with international tensions spilling into New Zealand, compromising a number of IT systems within Transpower, along with supply disruptions in Auckland and Northland, and bomb threats to several substation and office locations. Our incident response went well, with recent investments in IT recovery systems showing their worth. The exercise included a number of external participants, including MBIE, Police, etc. An initial hot-debrief identified learnings around coordinating multiple incident management teams, and communicating impacts to end users resulting from IT system outages.

Pan-Industry Exercise: Work continues on addressing the recommendations from the 2025 exercise. We are on track to complete these as per the timeline communicated to the Authority. We have also scheduled the kick off meeting with the Authority on 26 November for next year's exercise. We confirmed that the scenario would be an extreme geomagnetic storm, and planning as commenced on that basis.

Evolving markets resource co-ordination - Tie-breaker provisions: on 18 November we published our summary and response to submissions we received in response to our July consultation. We have decided to:

- Implement a tie-breaker energy constraint within the Scheduling, Pricing and Dispatch (SPD) model by 30 June 2026, following SPD audit and formal processes. This constraint allocates dispatch proportionally among offers at the same price, improving certainty and consistency without changing the likelihood of any generation type being dispatched off compared to the status quo.
- Include the solution in the next Policy Statement review, with consultation starting Q1 2026 and completion by June 2026.
- Maintain System Operator discretion where required for power system security.
- Address broader challenges raised by stakeholders, including operational issues for inflexible and must-run plants. To support this, we have submitted a Code change request to the Authority to enable the use of offer prices to distinguish between generation types. This would automate current manual processes and complement the tie-breaker solution, supporting more efficient and transparent MW allocation.

We have been working closely with the Authority team to further refine the Code change request. The Authority is progressing this for inclusion in its Omnibus Code Change consultation, which is expected to commence in early 2026.

Electricity Networks Aotearoa (ENA) Future Networks Forum (FNF): During November the FNF working group (in which the System Operator is represented) and the Authority corresponded on the topic of DSO:TSO models. We shared with the group details of a webinar covering the CSIRO research papers on DSO:TSO models and also met with Authority staff to discuss the Counties Energy DSO:TSO information exchange pilot/trial with Transpower. Elements of the Counties Energy project are included in the Authority's Power Innovation Pathway (PIP).

Connecting with the industry

System Operator Industry Forums: Our fortnightly discussions on current operational and market issues were held on 11 and 25 November. Recent slide packs and recordings for forums within the last month are available on our System Operator Industry Forum webpage.

Market Operations Weekly Reports: Our Market Operations Weekly Reports provide information to assist interested parties' understanding of the current security of supply situation[1] and other market events. These reports also include a Market Insight each week covering a topic of interest to the industry. The reports we published this month, and the Market Insight in each are as follows[2]:

- 30 November – The increasing share of renewable generation in Aotearoa's electricity supply mix
- 23 November – Historic trends in evolving branch flows in Northland with the uptake in grid-scale solar farms
- 16 November – Space weather and grid emergency notice (GEN)
- 09 November – The historic trends in slow-start thermal generation
- 02 November – The relationship between prices, intermittent generation and hydro storage

5.1 Supporting the Authority

Emergency Reserve Scheme (ERS): In November we submitted on the Authority's ERS consultation paper. In our submission we noted the Code changes to introduce an ERS as an ancillary service would activate a significant volume of deliverables for the System Operator including Procurement Plan updates and Procurement activities with potential ERS providers. We noted both work areas would be time pressured should the Authority press-ahead with their stated goal of the ERS being in place by Winter 2026. To assist the Authority with making their decision whether to implement an ERS we included details of how an ERS could be implemented using a sandbox or proof-of-concept approach and commentary on the prospective use of an ERS.

Improving the visibility of significant distributed generation and load projects: clause 2.16 information notice: We submitted to the Authority as the System Operator supporting the Authorities proposal to include permission to share the information collected with the System Operator. We also noted how a Code change could simplify the process for the Authority sharing information with the System Operator for applicable future clause 2.16 data gathering activities.

EECA consultation unlocking the potential of demand flexibility – a residential perspective: We contributed to Transpower's submission on this EECA green paper. A specific point we raised was the lack of clarity around value streams being a barrier to entry/uptake; for example, to directly benefit from responding to spot price signals requires being exposed to spot prices or finding a 3rd party willing to compensate you for your response.

Intermittent generation central forecasting project: We continue to attend monthly meetings with the Authority and DNV to provide operational feedback and insights to support ongoing forecast improvements. We understand the Authority is considering extending its central solar and wind forecast contract with DNV to include the 10th and 90th percentile forecasts. The System Operator needs these to inform its risk assessments ahead of real-time, particularly ahead of low residual situations. While our own Meteologica contract provides these for wind, with solar generation now building rapidly we are considering our own procurement options for solar (which are constrained by funding levels for the duration of the SOSPA3 period), and longer term business continuity planning needs.

SOSPA transition update: Due to resource constraints at the Authority the parties have rescheduled engagement to finalise JWPT Terms of reference and agree these documents into December.

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[1] As required by the Security of Supply Forecasting and Information Policy section 11, incorporated by reference into the Electricity Industry Participation Code 2010

[2] Past Market Operations Weekly Reports including our weekly insights can be viewed on our website.

5.2 International Engagement

EPRI/EirGrid/CEN/TenneT: Engagements this month have included completing a survey for EPRI on preparedness and response strategies for significant system events, the output of which they will share when available. We have corresponded with EirGrid on fault ride through challenges they have been experiencing with data centres, with the aim of being able to learn from their experience to avoid any issues before they occur. We set up a call with the Chilean Coordinador to discuss their learnings from their Chilean blackout, and have invited Authority representatives to attend. We also caught up with TenneT as part of our ongoing Control Room of the Future (CRoF) engagement.

GE Vernova: We have also conducted a series of workshops with GE Vernova focused on the EMS product roadmap and market systems, to better inform our future investment decisions. These sessions gave us valuable insight into what solutions are currently available in the market."

5.3 Media interactions

Media interactions through November largely centred around space weather - the NEMA space weather exercise taking place and then the real life G4 geomagnetic storm impacting Earth on 12 November. There were additional one-off queries about whether the likes of Christmas lights or the hotter weather was showing as extra demand on the system.

During NEMA's space weather exercise, we were approached for comment by Stuff, who held an interview with Head of Grid and System Operations Matt Copland that was used in this story.

Several media enquiries were received on 12 November following the Grid Emergency notice and our subsequent media release announcing that select transmission lines had been removed from service. Media were directed to our media release for information.

Later in November, More FM had Operations Manager Engineering and Systems Dion Ahern on its morning show to discuss whether there had been any noticeable demand increase on the power system due to Christmas lights. There was also a similar query during Auckland's hottest November day on record, to which we provided numbers produced by our Markets team in response that showed electricity usage was higher than normal.

6 Project updates

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

6.1 Market design and service enhancement project updates

There are no market design or service enhancement projects in-flight.

6.2 Other projects and initiatives

Ancillary Services Cost Allocation System (ASCAS): This project will deliver new software (ASCAS) to replace previous end-of-life technology which is vital to accurate information sharing with the Authority and NZX. The project remains on schedule. Milestone 2 deployment has been delayed until the new year to allow for an update to our workflow orchestration platform. User acceptance testing has been completed ahead of the release. A planning exercise is being undertaken for the remaining 3 major releases.

IR Cost Allocation solution will be delivered as part of this project with a go-live date of 1 October 2026. A separate Market Design funding for this solution is with the Authority to progress and it is essential that contractual agreement is finalised before March 2026.

SCADA Habitat and EMP Refresh: This project is to upgrade critical components of the SCADA system and Market Solvers, to ensure operational integrity of the System Operator's market system tools into the future. System Acceptance Testing is complete. Resolution and retesting of two high-severity defects are underway for User and Non-Functional Testing. Simulation and Security Testing are progressing, with completion expected next reporting cycle. Preparations for Parallel Operations starting 01 December remain on track, supported by ongoing cutover runsheet reviews and dress rehearsal planning. Operations engagement continues through team forums, while training plans advance and business process documentation updates have begun.

Demand Allocation Tool: This solution will provide an automated mechanism for the control room to calculate demand limits accurately and equitably for all participants whenever a grid emergency is forecast in the forward schedules. Functional testing is progressing well, with faster defect resolution and only two defects remaining. Training environments are booked, and change management is ahead of schedule, with external training sessions, webinars, and internal process updates underway. Project is on track to commission in May 2026.

Operations Comms System Enhancements (OCSE): This project will replace the operational notices system used by the control room to communicate with connected parties and the broader community. Delivery project has started in November 2025. First development sprint is underway and team is currently focused on developing the test cases, and the training team is preparing a detailed training plan ahead of the training sessions scheduled for March. Project is on track for June 2026 commissioning.

Control room of the future (CRoF): We have commenced working with the OPTI Business Architect and Capability & Capital Planning Manager to plan of how we successfully continue to develop CRoF and integrate into our forward capability and capital planning. Engagement with a number of vendors on AI developments/opportunities has been ongoing.

7 Technical advisory hours and services

TAS Statement of Work (SOW)	Status	Hours worked during month
TAS 108 – Extended Reserves implementation	Closed	1.0 (SME) 8 (PM)
TAS 120 – Multiple Frequency Keeping (MFK) Review	In progress	157.5 (SME) 22.0 (PM)
TAS 121 – Future Security and Resilience	In progress	172.0 (SME)

TAS Statement of Work (SOW)	Status	Hours worked during month
		23.25 (PM)
TAS 122 – Investigation into implementation options for an MVP Emergency Reserve Scheme	In progress	93.0 (SME)
		10.5 (PM)

Project Progress:

TAS 108 Extended Reserve Implementation 23/24 – Extended Implementation: Project Close-out report was sent to the Authority on 14 November 2025.

TAS 120 - Multiple Frequency Keeping (MFK) Review: We started work on TAS 120, looking at adapting the MFK tool to manage aggregate intra-dispatch variability, which is expected to increase with increasing intermittent generation. The investigation will identify the magnitude of the variability requiring management and consider whether the current MFK tool provides a suitable basis for control. The Problem Definition and Study Approach document (Milestone 1) is on track for delivering to the EA for review the week of 9 December. The data set collection and cleansing for undertaking the studies is progressing to plan and will be completed by 19 December ready for undertaking the studies early January.

TAS 121 FSR Workstream - Part 8 of the Code - Common Quality Requirements: In November, the System Operator finalised the revised CACTIS and continued drafting the BESS/ Hybrid AOPOs investigation report.

TAS 122 – Investigation into implementation options for an MVP Emergency Reserve Scheme: The Authority has approved the System Operator's request to extend the Project timeline through the end of December. This extension will enable preparatory work on the preferred Minimum Viable Product (MVP) solution for ERS, supporting potential adoption of an ERS MVP in 2026. Key activities during this period will focus on the following workstreams: 1) Ancillary Services Procurement, Tendering, and Modelling, 2) FlexPoint implementation, and 3) other low-regret initiatives to mitigate risks and safeguard delivery timelines. We continue to work with the Authority to assess priority for this work against the Authority's work programme and develop a plan for implementation.

8 Risk and assurance

8.1 Risk Management

CSA Round 16 has concluded, and all five controls assessed for this round remain fully effective. We have identified five areas for improvement where actions are planned or already in progress. Updates on our progress with these activities will be shared with the Authority.

The Market Operations Committee (MOC) of the Authority Board provided positive feedback on the draft System Operator risk dashboard. The points raised during their discussion will be included in the updated document, which will be presented at the next MOC meeting in February.

8.2 Business assurance audits

The Black Start Test Planning Audit is complete. The auditors made three continuous improvement (priority 3) recommendations. These were to include specific generator unit information in our Sharepoint documentation, provide the asset owner with our final internal report and ensure experience from previous testing is communicated to the asset owner next time the generator is tested.

Interviews related to the second audit, which addresses preparedness for space weather events, have been completed. The terms of reference for the remaining two audits are scheduled for completion by the end of December.

9 Compliance

Participant breaches:

On 19 November we notified the Authority of a breach by [redacted] relating to a lack of voltage support at [redacted] on 9 July 2025.

On 26 November we met with an Authority investigator to assist with his questions and investigation into the [redacted].

We have been following up on a reactive power output issue that [redacted]. It was our assessment that the voltage support AOPOs set out in the Code had been breached. [redacted] confirmed that on 28 November it had self-notified a breach with the Authority.

10 Conflicts of Interest

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.

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. This item documents the actions necessary to ensure impartiality in these circumstances; these items will be monitored to ensure their continue effectiveness.	Corporate Counsel, Compliance and Impartiality
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 System Operator Compliance & Impartiality Manager to ensure their continued effectiveness.	Corporate Counsel, Compliance and Impartiality

11 Impartiality of System Operator

This section covers specific activity this month that involved internal information barriers in place, the separation of key roles and functions, and oversight by Corporate Counsel, Compliance and Impartiality.

- Internal Audit Plan FY26 Q2: The System Operator Impartiality Review is a review of the framework used for managing the impartiality of the System Operator function. Deloitte have been interviewing key internal stakeholders, and they will also interview Authority staff.

- 11 July 2025 UFE: Our independent review of procedural areas around NCC and NGOC communications and decision-making processes has been completed, and the draft report is being reviewed by Transpower management.

12 Performance and monitoring

Our System Operator performance against the performance metrics for the financial year as required by SOSPA 12.2 (e) will be provided in the final monthly report each quarter

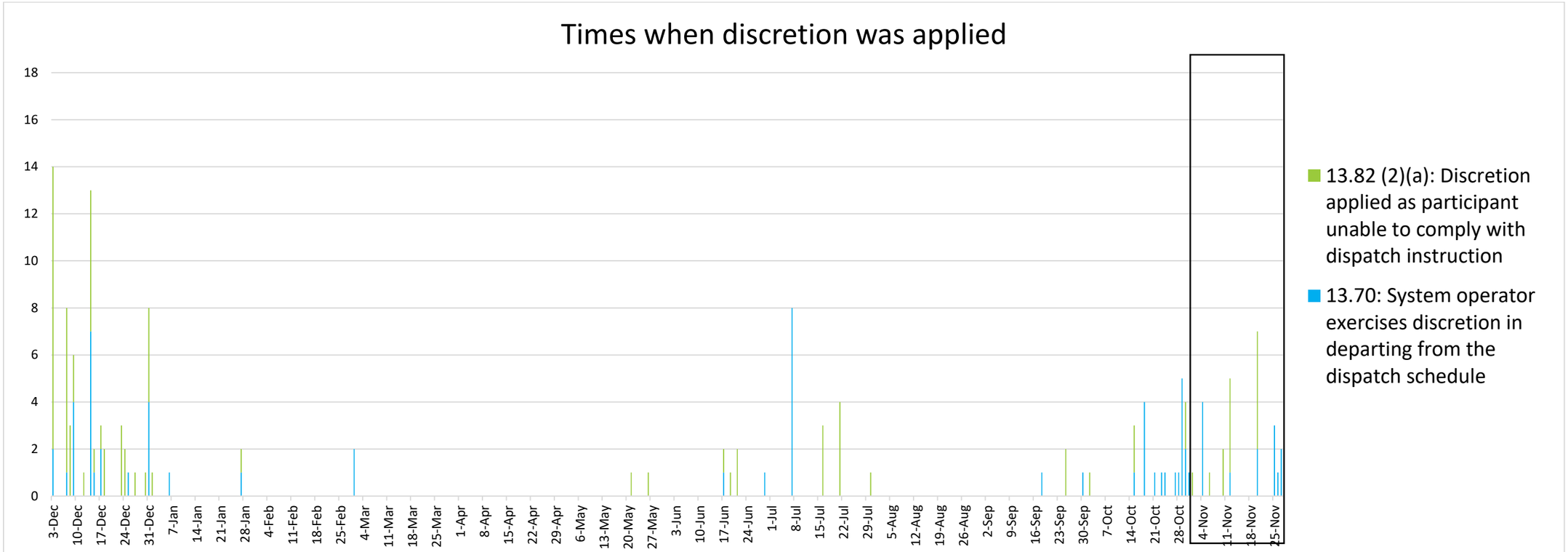
13 Actions taken

The following table contains a full list of actions taken this month regarding the System Operator business plan, statutory objective work plan, participant survey responses and any remedial plan, as required by SOSPA 12.2 (c).

Items of interest	Actions taken
(i) **To give effect to the System Operator business plan strategic initiative**	**Undertake a full review of the System Operator strategy informed by stakeholder consultation.** We have continued our work on a refreshed System Operator Strategy. We have completed our key trends and issue engagement document and have commenced our first round of targeted industry engagement, and preparation to seek feedback on the paper to help inform the new SO Strategy. **Support security of supply for the future power system by delivering the SOSFIP review.** We are in the process of finalising our draft SOSFIP amendment proposal for submission to the Authority in December. We received 6 submissions and 2 cross submissions to the consultation process and will include our summary and decisions when we publish our proposal. **Support future-focused market developments through white papers, consultation processes and cross-industry forums** In November we published our Review of Winter 2025 Review paper, completed our 2026 SOSA reference case assumptions and sensitivities consultation, we also publish our Summary and response to our Tiebreakers consultation and decision paper on feedback to the CACTIS consultation. We participated in the NEMA Space Weather Exercise and the GridEx exercise. **Develop and begin implementation of system health, tool and modelling roadmap.** We continued our investigation of our power system health monitoring requirements. **Continue to deliver modelling process improvements and build maturity of modelling assurance and monitoring.** As an extension of the quality assurance initiative, an end-to-end asset modelling process optimisation is now underway. The goal is to embed the foundational quality assurance tools, including the new framework, peer-review checklists, and a reporting dashboard to help monitor the health of the process. **Ensure our service keeps pace in an ever increasingly complex world by implementing Control Room of the Future (CRoF) roadmap.**

Items of interest	Actions taken
	We continue to support the development of System Operator strategy and as a part of this preparation to engage with external stakeholders, the GSO leadership visited Airways Air Traffic Control Centre and KiwiRail Control Centre to learn from other adjacent sectors and consider implications for CRoF.
(ii) **To comply with the statutory objective work plan:**	***System Operator Forecasting and Information Policy (SOSFIP)*** *Refer to update in business plan section above.* ***Policy Statement review*** We are finalising the draft for the upcoming Policy Statement review, including proposed updates to the Security (Risk and Emergency Management), Dispatch, and Compliance policies. ***Ancillary Service Procurement Plan review*** The Authority approved the updated version submitted and the new procurement plan came into effect on 7 August. We have incorporated changes into our contract documents. ***Reset System Operator Strategy*** *Refer to update in business plan section above.*
(iii) **In response to participant responses to any participant survey**	In response to feedback from the 2024-25 survey "***SO is responsive to changing requirements, but change seems a little slow and hamstrung by red tape e.g. consultation requirements, EA code changes, software development.***" We are committed to improving efficiency and regularly review opportunities to streamline our processes. We have made an effort to increase coordination particularly with the Authority by using our regular operational meetings with them to discuss our plans towards proposing Code amendments, aligning with industry initiatives to reduce duplication, and optimising planning and approval cycles. Our goal is to balance speed with robust governance and quality outcomes.
(iv) **To comply with any remedial plan agreed by the parties under SOSPA 14.1**	*N/A – No remedial plan in place.*

Appendix A: Discretion



System Operator applied discretion under cl 13.70 in 24 instances:

- 1 November, 3 instances applied due to Kawerau (KAW) – Ohakuri (OHK) outage
- 1 November, 1 instance at Tauhara B (TAB) by traders in response to a 13.82(a) for plant safety
- 4 November, 1 instance at Argyle (ARG) for switching for ARG - Blenheim (BLN) outage
- 4 instances at Benmore (BEN) relating to managing the Tiwai potline:
    - 4 November, 1 instance
    - 20 November, 2 instances
    - 27 November, 1 instance
- 6 November, 2 instances at Kaikohe (KOE) due to tripping
- 6 November, 1 instance at Waitaki River (WTR) to enable them to restore Tiwai (TWI) extended reduction line offload
- 10 November, 1 instance at WTR to manage the extended reduction line 2 onload
- 12 November, 1 instance at Roxburgh (ROX) due to neutral earthing resistors at Halfway Bush (HWB) exceeding 70A
- 12 November, 1 instance at ROX; discretioned down to maintain security during a solar flare
- 25 November, 3 instances at Maungaturoto (MTO) for testing request
- 26 November, 1 instance added Harapaki (HRP) REV MW to 40 MW on HRP T1 to manage output of HRP for Te Mihi (THI) – Whakamaru (WKM) outage
- 26 November, 4 instances at HRP for outage preparation
- 27 November, 1 instance Te Mihi (THI) and Poihipi (PPI) being dispatched up and down due to being risk setter and plant has become unstable; if disabled down again will need to claim 13.82(2)(a); optional island risk for the NI applied

Appendix B: Forecast v real-time residual variability

The below figure highlights the variability of the differences between 30-minute forecast values from the Non-response Schedule Short (NRSS) and 5-minute dispatch values from Real Time Dispatch (RTD). This variability is measured as the difference between the forecast requirements on non-intermittent generation (30 minutes ahead of time) versus the requirements on non-intermittent generation during real-time dispatch. Therefore, in addition to load and intermittent generation forecast errors, the variations also capture the intra-trading period variability i.e. the difference between half-hour average quantities (as used in the forecast schedules) vs 5-minute quantities (as used in RTD).

We monitor the percentage of the time where the error between what has been dispatched and what is forecasted to dispatched is less than 200 MW. Last month, this error was less than 200 MW 98.99% of the time. This indicates that entering a trading period with ~200 MW of residual provides a high chance of having sufficient dispatchable market resources to meet variability between the 30-minute ahead forecast and the requirements within the trading period. We monitor this variability and how it compares to the residual threshold to understand trends and inform any future updates of this threshold.