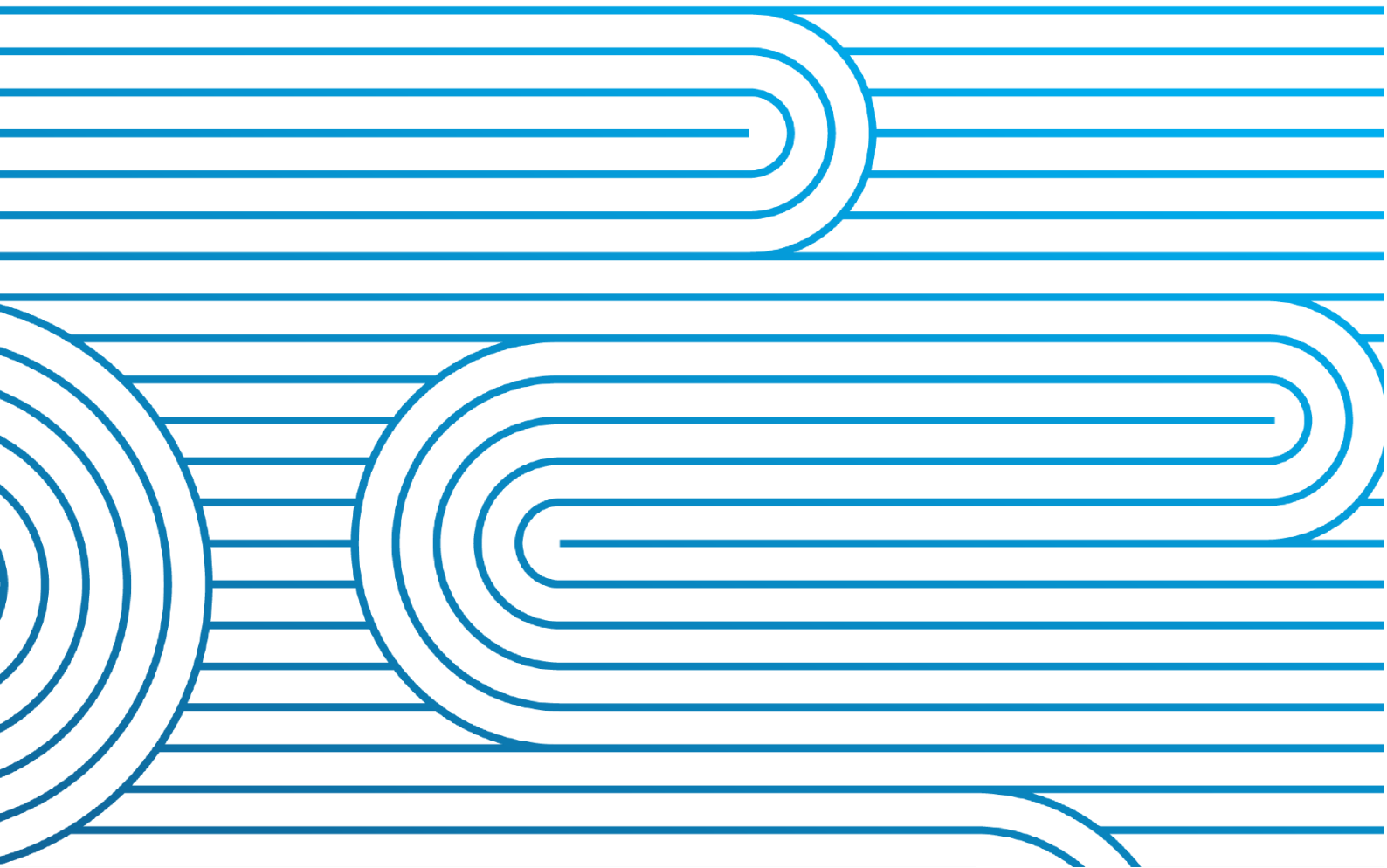


Monthly System Operator report

For the Electricity Authority

May 2024



Report Purpose

This report is Transpower's review of its performance as system operator for May 2024, 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.

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Key points this month

9 May/10 May - Warning notice (WRN) issued for 10 May morning peak.

A low residual CAN was issued on 9 May due to an unseasonably cold weather forecast for 10 May. Transpower published a [media release](#) and Facebook post, asking for New Zealanders to be mindful of their electricity use between 7am and 9am on 10 May. Messaging was shared with retailers and lines companies to expand coverage to their customers, as practiced in the pan-industry exercise the previous day. A shortfall was avoided in real time thanks to a good response from industry and the public. We estimate consumers reduced demand across the morning peak by around 235MW, made up of roughly 175MW conforming load and 60MW industrial load.

11-13 May - Grid emergency notice (GEN) for a G5 geomagnetic storm

On 11 May a GEN was issued due to a 'G5' extreme geomagnetic storm over the weekend of 11-13 May. We held a System Operator Industry Briefing to notify stakeholders of the situation. This was the first 'G5' extreme storm to hit earth in decades and is at the lower level of events that the Electrical Industry Space Weather Working Group is preparing for. There was no market impact and supply to consumers was not affected.

2024 Pan-industry exercise

On 1 and 8 May 2024 the Electricity Authority and System Operator held two industry exercises covering a major power system event. Day 1, led by the System Operator, was for control room operators to test grid emergency processes and interactions between the system operator and generators, lines companies and direct connect industrial customers. Day 2 was for communications and customer teams and was led by the Electricity Authority alongside Transpower's communication team. We are in the process of documenting the lessons learned from Day 1 for sharing with participants.

Security of Supply Assessment (SOSA) 2024

The [Draft Security of Supply Assessment 2024](#) was published for consultation from early May until 4 June, and the final report will be published by 30 June.

NZGB Demand forecast update

Development work is underway to change the demand forecast used in NZGB from a forecast reflecting historical demand plus a static demand growth assumption, to a probabilistic based demand forecast provided by Yes Energy (formerly Tesla) forecasting services.

1 Operating the power system

3 May - Market System Schedules failed to publish: All schedules (RTD, NRSS/PRSS and NRSL/PRSL) did not publish to WITS between 11:05am and 12:55pm. Dispatch instructions were not affected, and prices were set from PRS schedules. Investigations are continuing, the issue is associated with a branch naming misalignment from a recent model update.

9 May/10 May - Warning notice (WRN) issued for 10 May morning peak: With unseasonably cold (and still) weather forecast for 10 May, a low residual CAN was issued on 9 May (07:28), based on the 06:00 schedules, for the 10 May morning peak. Forecast energy and reserves shortfall in the 10:00 schedules triggered a WRN to be issued at 10:51. A System Operator industry briefing was held at 11:00.

Following assessment of the risks to the forecast residual based on the response from industry in the 12:00 schedules, known plant risks and informed by a Metservice briefing that indicated demand was likely to be higher and wind lower than then forecast, Transpower published a [media release](#) and Facebook post. The messaging asked New Zealanders to stay warm but be mindful of their electricity use between 7am and 9am the next morning by (for example) turning down heaters, turning off lights in rooms not in use, delaying using appliances such as washing machines, dryers and dishwashers, and not charging electric vehicles. Messaging was shared with retailers and lines companies to amplify to their customers, as practiced in the pan-industry exercise the previous day. Another System Operator industry briefing at 15:30 provided an opportunity for participants to seek clarifications.

On the evening of 9 May weed issues were reported at Tokaanu, requiring generation output to be significantly reduced throughout the night (as low as 20 MW). Work to address the issue through the night restored output to 150 MW by 23:00 and over the morning peak (90 MW less than originally offered). As the morning approached there were delays in getting Stratford generation to start, along with more energy/reserve shortfalls being seen in the 06:00 schedule. As a result, Whirinaki units 1, 2 and 3 were discretioned on at 18 MW each from 07:00 to cover the risk of further thermal startup or weed issues and to mitigate the Whirinaki units' ramp time.

A shortfall was avoided in real time thanks to a good response from industry and the public. We estimate consumers reduced demand across the morning peak by around 235MW, made up of roughly 175MW conforming load and 60MW industrial load. Later on 10 May we acknowledged the industry and consumer response through another [media release](#). The events were covered extensively by media and we appeared multiple times on live radio and television interviews to explain the situation.

10 May evening peak - National reserve scarcity pricing: On Friday 10 May, during the evening peak three 5-minute periods were dispatched with reserve shortfall, resulting in reserve scarcity pricing. This reflected what the SPD algorithm determined to be the most economic outcome: energy and reserve offers were both used as energy, resulting in reserve scarcity (up to 34 MW) priced at \$3,000/MWh. The alternative option was to use the generation offers as reserve and procure more expensive energy (>\$5,000/MWh).

11-13 May - Grid emergency notice (GEN) for a G5 geomagnetic storm: A GEN was issued on 11 May because of a 'G5' extreme geomagnetic storm over the weekend of 11-13 May. To maintain operational security, in accordance with contingency plans to mitigate impacts of geomagnetic induced currents on the grid, the System Operator instructed transmission circuits to be removed from service. A System Operator Industry Briefing was held to inform stakeholders of the situation. Contingency plans, created in conjunction with advice from Prof Craig Rodger from Otago University, were applied to maintain security on the system; these plans had been tested as part of group training. This was the first 'G5' extreme storm to hit earth in decades and is at the lower end of the scale (10x less) of events which the Electrical Industry Space Weather Working Group is preparing for. There was no market impact and supply to consumers was not affected.

26 May - Dispatching from backup tools: Stand-alone dispatch (SAD) was used for 35 minutes (from 06:10) until an issue with the market dispatch system could be resolved. We informed the industry via a Customer Advice Notice (CAN). IST have investigated and identified the cause of the issue to be associated with a database query used for Frequency Keeping Selection, which impacted CPU usage. A similar issue occurred on 31 January 2024, resulting in a slowdown of the Market System that did not necessitate a switchover to SAD. Changes were made at that time to make the query more efficient. Monitoring was also added to alert should the issue reoccur. The query is currently being rewritten with planned production deployment in September 2024.

National reserve scarcity pricing: On Friday 10 May, during the evening peak three 5-minute periods were dispatched with reserve shortfall which resulted in reserve scarcity pricing. This was calculated as the most economic outcome by the SPD algorithm. In this outcome, the energy and reserve offers were both used as energy, which resulted in go into reserve scarcity (\$3,000/MWh). The alternative option was to use the generation offers as reserve and procure more expensive energy (>\$5,000/MWh)).

2 Power systems investigations and reporting

Significant incident investigations

No new significant events were identified in May.

System Security Forecast (SSF)

We have completed our N-1 analysis to model security in the case of a single contingent event and are drafting the reports to capture the outcomes of the analysis.

3 Outage planning and coordination

New Zealand Generation Balance (NZGB) potential shortfalls and outage planning

NZGB margins improve throughout June, with only one day where N-1-G is sitting below 200 MW. This is mainly due to the return to service of a number of generators from outage as we approach winter.

NZGB had signalled tight margins through much of May was due to high levels of generation being on outage ahead of winter. This indicated an exposure to shoulder season cold snaps like the one seen on the 10 May.

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4 Commitment to the evolving industry needs

Winter 2024 readiness

2024 Pan-industry exercise: On 1 and 8 May 2024 the Electricity Authority and System Operator held two industry exercises covering a major power system event. Day 1, led by the System Operator, was for control room operators to test grid emergency processes and interactions between the system operator and generators, lines companies and direct connect industrial customers. Day 2 was for communications and customer teams and was led by the Electricity Authority alongside Transpower's communication team. It tested communications and interactions from Transpower out through lines companies and retailers to end consumers.

With winter approaching rapidly, it was good timing to have key people from most of the country's generators and local lines companies registered to take part, alongside some of the major industrial customers that connect directly to the national transmission grid. Day 1 provided an important opportunity to remind industry of improved information resources and processes for identifying and managing potential electricity supply shortfalls, put them to the test, and look for opportunities for further improvement. Meanwhile, Day 2 helped socialise a pan-industry approach to communicating with consumers (and the media) about any risk to their electricity supply and what the industry is doing to minimise the impact and keep the power flowing.

The exercise meant the industry was well-prepared to successfully manage the potential electricity shortfall on the morning of 10 May when industry and consumers were asked to conserve electricity on what was the coldest morning of

the year to support the operational response. We are in the process of documenting the lessons learnt from Day 1 for sharing with participants.

Security and Reliability Council: Following the solar storm activity over 11-13 May, we responded to a last-minute request to present a brief summary of our preparations and real-time activity to their meeting on 23 May.

Metservice daily briefings: Metservice informed us it expected May to be colder than the past five years with potential for more intense sharp cold snaps - due in part to colder ocean temperatures. Consequently, we began daily Metservice briefings from 1 May this year (a month ahead of plan). The briefings occur each weekday with an in depth 48-hour look ahead, and an overview of further ahead. They help us better understand the weather risk to peak load and wind generation forecasts to help manage tight situations.

WDS offers: Generators have improved the quality of offers into the week-ahead schedules but there remains room for improvement. We prepared, and shared with the Authority for feedback, a system operator view of what good looks like to provide to participants and inform higher quality offers into the week-ahead schedules. We will be sharing our expectations of what good looks like with market participants early in June.

System Operator Rolling Outage Plan (SOROP) review: Following consideration of the submissions and cross submissions from industry we have made some revisions to our proposed SOROP. Having shared an updated draft with the Authority for comment, our final proposal for a new SOROP was submitted to the Authority at the end of May for its consideration. Our proposal has been published for stakeholders [on our website](#).

Unlocking Grid Edge Flexibility: While the System Operator is not directly involved, Transpower, through its Innovation team signed a [memorandum of understanding with Counties Energy](#) for a 6-month pilot to share more information about available resources between the Flexpoint platform and Counties' operational systems. Integrating data on consumer energy resources like electric vehicles and solar panels will paint a single picture of what's available from the low-voltage network up to the grid level. This project aims to unlock 'grid edge flexibility' and demonstrate how smarter coordination can improve load forecasting. It builds on Transpower's involvement in the EEA's recent FlexTalk project that also leveraged the Flexpoint platform.

Security of Supply

Electricity Risk Curves (ERCs): The May ERCs have been published and are available [on our website](#). There was a significant decrease to the ERCs across 2024 and 2025. This was largely due to a decrease in modelled industrial gas consumption to reflect what has been observed in the industry recently as a result of tight gas supply. A

scenario was also run to assess the impacts on the ERCs if the industrial sector reverted to operate at levels more consistent with their historic gas consumption.

Security of Supply Assessment (SOSA) 2024: The [Draft Security of Supply Assessment 2024](#) was published for consultation from early May until 4 June, and the final report will be published by 30 June. South Island Winter Energy Margin (SIWEM) has worsened relative to last year's SOSA due to an increased South Island energy demand forecast. Both the New Zealand Winter Energy Margin (NZWEM) and the North Island Winter Capacity Margin (NIWCM) have improved due to a reduced demand forecast and an increase in the existing and committed generation pipeline.

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 a topical item for that week. During May we provided the following insights for the weeks ending:

- [5 May](#): The generation variability of wind and solar farms.
- [12 May](#): A cold snap during the week resulted in some very tight capacity margins with a warning notice (WRN) issued for a potential electricity shortage on Friday morning.
- [19 May](#): Transpower's response to the geomagnetic storms earlier this month.
- [26 May](#): The average household electricity consumption, and the corresponding impacts of power black outs.

System Operator Industry Forum: The fortnightly System Operator Industry Forum was held on 7 May and 21 May. In addition to the standing agenda, special topics included a market update on the low residual CAN for 8 May and the system operators response to the G5 Solar storm that took place 11-13 May. Slide decks and videos of recent forums are on our website. [System operator industry forum | Transpower](#)

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)

The Common Quality options consultation paper and technical reports were discussed at the Authority Board meeting on 21 May. With no further comments from the Authority Board, we are working with the Authority to finalise the papers ahead of the Common Quality Options Consultation, which is expected to commence on 25 June 2025.

5.2 Other projects and initiatives

System Operator Service Provider Agreement (SOSPA) contract reset

We have had ongoing meetings between the SOSPA working group and Authority representatives to agree several elements of the SOSPA contract ahead of formal negotiations in July. We are finalising adjustment of the proposed capex and opex cost elements following the decision to contract the SOSPA term to three years. We are preparing the documentation supporting the proposal that will be presented to the Authority in July.

NZGB Demand forecast update

Development work is underway to change the demand forecast used in NZGB: from a forecast reflecting historical demand plus a static demand growth assumption, to a probabilistic based demand forecast provided by Yes Energy (formerly Tesla) forecasting services. While the demand forecast is being implemented, we will also simplify the supply side scenarios and review the messaging in NZGB reports to the market. This initiative is on track to take effect in NZGB reporting from 1 July, with the new forecast reflected in calculations for 1 August onwards. An industry engagement session is planned for 12 June.

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 Risk & Assurance

Risk management

Our six-monthly review of half our critical controls is complete.

Business assurance audits

The 2023/2024 Audit Plan is progressing to plan:

- Three audits are complete, having been provided to the Authority for review (System Operator gatekeeper actions, Discretion on demand/generation, Management of inputs to the Reserve Management Tool).
- A fourth audit is pending final approval before submission to the Authority (Synchronising and reconnecting an Island)
- The final audit covering our main security of supply process is in final draft.

Our proposed 2024/2025 Audit Plan will be discussed with the Authority in the first week of June.

8 Compliance

We reported no system operator self-breaches in this reporting period.

9 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.	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 SO Compliance & Impartiality Manager to ensure their continued effectiveness.	Corporate Counsel, Compliance and Impartiality

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.

11 Cost-of-services reporting

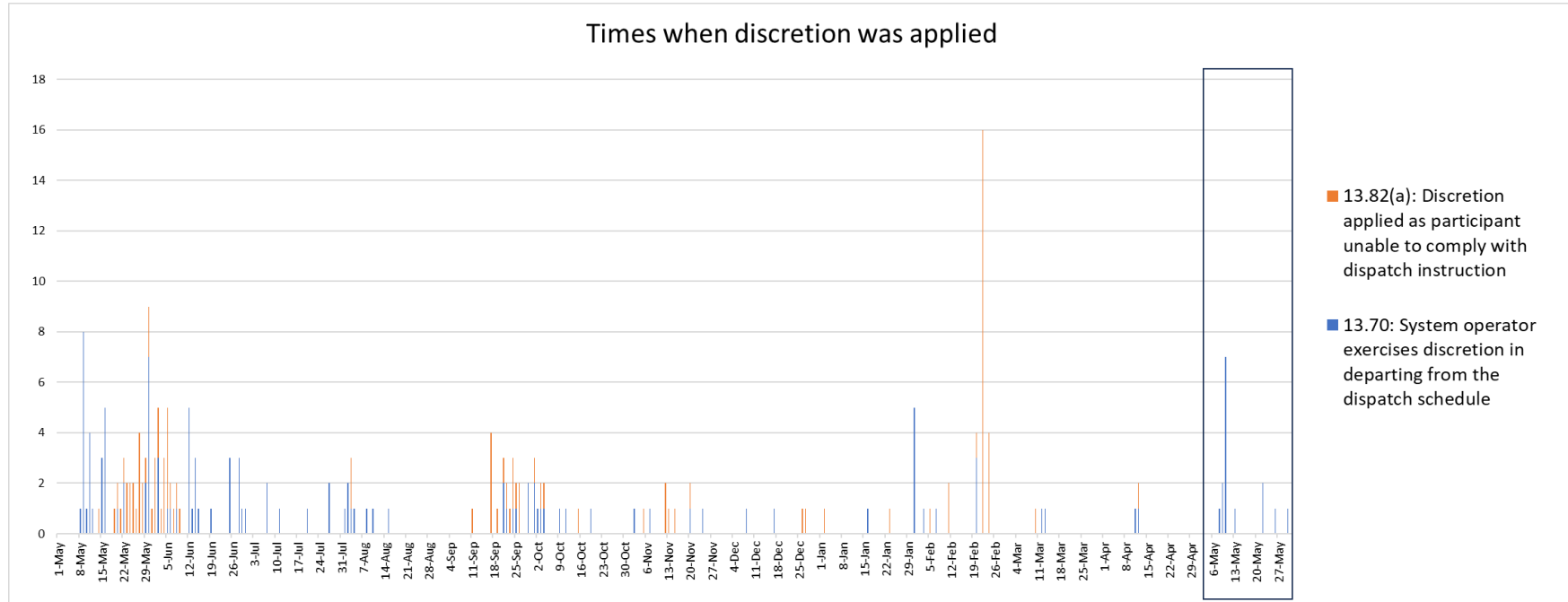
The cost of services reporting for 2022/23 will be delivered to the Authority by the end of the financial year.

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. The individual instances of discretion application this month are summarised further below.



15 instances

15 were applied in response to discretion clause 13.70

9 & 10 May – At Whirinaki there were 9 instances where discretion was applied, when the units were dispatched above their minimum MW generation requirement. This ensures the units remained on and generated over in the evening peak when their generation was required for security of supply purposes due to low residual generation.

10 May – Huntly unit 6 was dispatched above its minimum MW generation requirement to ensure it remained on and generated over in the evening peak when its generation was required for security of supply purposes.

13 May – Argyle generation was discretioned down to 0 MW to enable the start of an outage that required the Argyle to Blenheim outage.

22, 26 & 30 May – Manapouri was discretioned down to allow for an extended potline outage due to low residual generation.