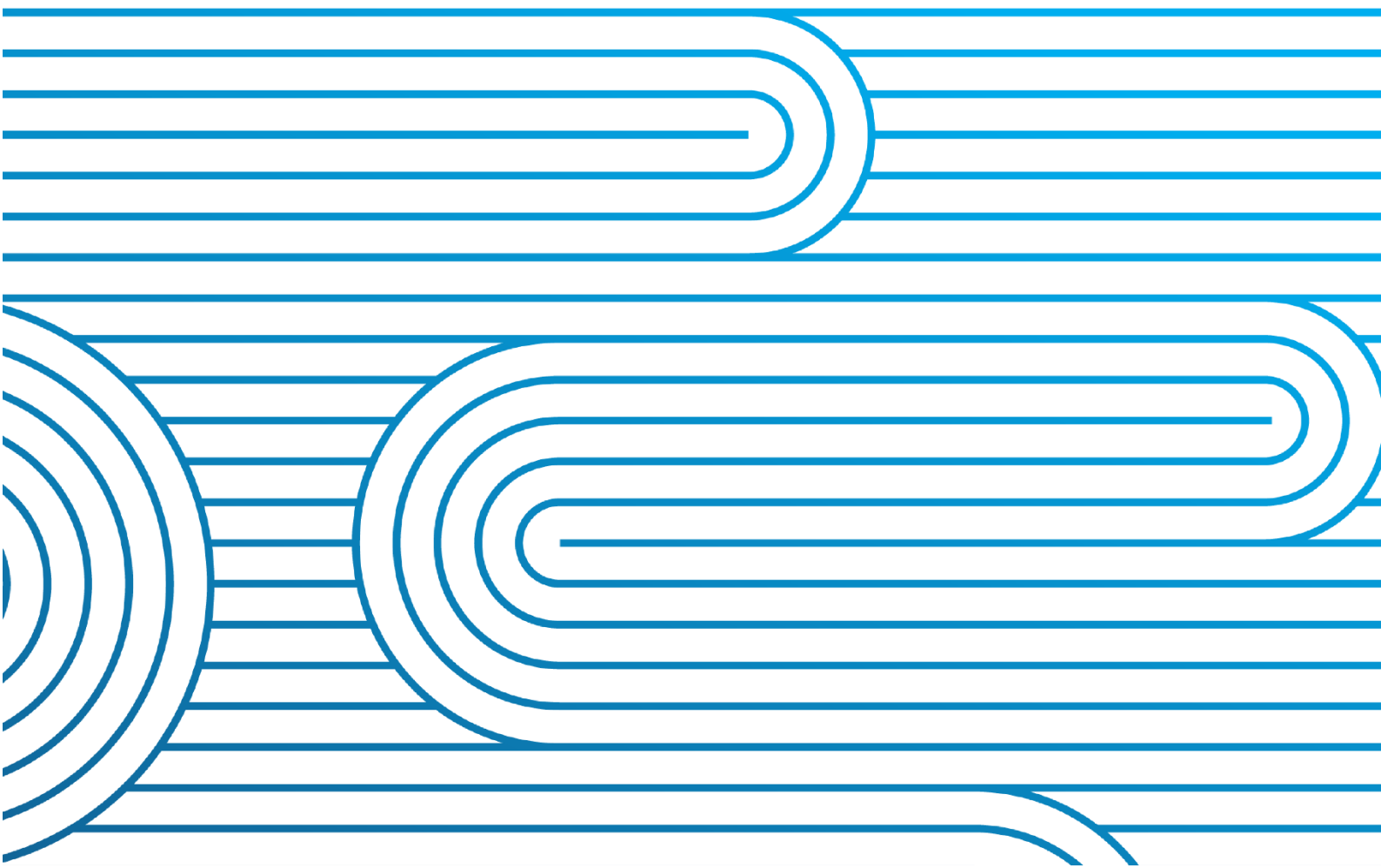


# Quarterly System Operator and system performance report

For the Electricity Authority

April to June 2023



## Report Purpose

This report is Transpower's review of its performance as system operator for Q4 2022/23 (April to June 2023), in accordance with clause 3.14 of the Electricity Industry Participation Code 2010 (the Code).

As this is the final self-review report of the quarter, additional information is included as per SOSPA clause 12.3. This includes performance against the performance metrics year to date, and actions taken in regard to the system operator business plan, statutory objective work plan, participant survey responses, and any remedial plan agreed under clause 14.1(i). A summary of technical advisory services for the quarter is also provided.

A detailed system performance report (Code obligated) is provided for the information of the Electricity Authority (Authority).

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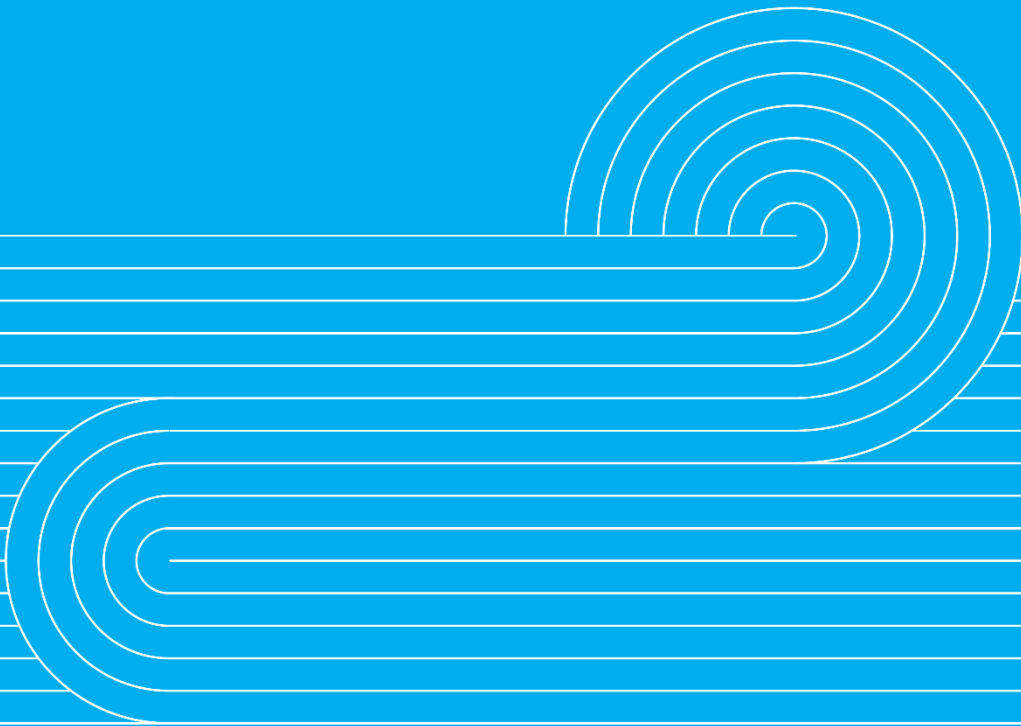
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# Commentary



From Q4 2023, the quarterly report will focus on the activity and performance of the system operator, as agreed with the Authority. System performance data which was previously included in this report will be presented through other channels where relevant, such as the system operator industry forum.

This section provides a high-level update for this quarter. The remainder of the report provides supporting detail on system operator performance.

## Update (April to June 2023)

### SOSPA deliverables

- The System Operator Strategic Plan for 2023-28 and other end of financial year documents were delivered to the Authority on schedule on 30 June.
- The final performance metrics score for 2022/23 will be provided in late July.
- The future thinking report this year, published on 27 June, focusses on preparing for an increase in inverter-based resources and work carried out to better understand the operation of different types of inverters in the New Zealand power system.

### Winter 2023

- So far this year we have sent out 11 Low Residual CANs (LRCs), this is the same amount that we sent out for the duration of winter 2022. In comparison, by this time last year we had sent out one LRC and one GEN for a low residual situation. The greatest number of LRCs last year were in September when we sent out five.
- We have put emphasis into preparation for winter 2023, notably in the area of peaking issues highlighted in previous analysis. The work has involved:
  - Two-part industry exercise
    - Part one was run by the system operator and focused on educating and working with Electricity Distribution Businesses (EDBs) to ensure we have alignment around the updated information being delivered by the Authority's winter '23 initiatives work programme.
    - Part two was led by the Authority and focussed on the communications from EDBs to retailers and end consumers. We supported the Authority with communications input and scenario examples
  - An extended SO Industry forum, entitled "Navigating the winter capacity challenge", to take all industry participants through our approach to winter, including how we will communicate any potential risk to consumers' electricity supply. 225 people attended this forum.
- New Zealand Generation Balance (NZGB) analysis indicates several shortfalls in July in our base N-1-G scenario as a result of the unplanned Huntly 5 outage for most of July and a down-rating of Contact's TCC plant (seen as 50MW outage in the customer portal). We are monitoring the generation availability carefully in both NZGB and offers in the market schedules and keeping in contact with the generators to understand any further risks to their generation availability.
- We also produced a longer market insight into preparation required by the industry for winter 2024/25, as the winter 2023 issue is not only a problem for this year. This was published on our website on 4 April.

## Projects and TAS work

- Real time pricing (RTP) project: Phase 4 of RTP was successfully released to production on 27 April 2023. This provides enhanced functionality for Dispatchable Demand (DD) and the new Dispatch Notified products.
- Future Security and Resilience (FSR) Programme: We supported the review of numerous submissions to the Authority's common quality issues paper and helped to develop an initial long list of options to resolve these issues along with option evaluation criteria. We facilitated a workshop with the Authority to develop a plan to progress the work from issues paper through to a Code change. This forms the scope of the TAS project for the 2023/24 financial year.
- Extended Reserves – AUFLS Project: We completed an assessment of AUFLS transition to a 4-block scheme based on the transition plans submitted by North Island connected asset owners. The analysis shows that provided the transition plans are followed, the system will remain secure.
- KPI Refresh Programme: The Performance Metrics and Incentives Agreement 2023/24 delivered on 30 June, which includes the refreshed KPI metrics. The new metrics and incentive mechanism are in place for 2023/24 and will be reviewed and reported on quarterly.
- The system operator ran a workshop for Authority staff on 12 June to discuss the TAS mechanism and other project delivery frameworks. Lessons learned from previous projects were shared, and the discussion also informed the scope of the 2023/24 Statutory Objective Work Plan around how best to address a previous Authority recommendation to review the IPLC

## Risk and Assurance

- We presented a deep dive risk paper to the Authority SOC meeting on 17 April, covering the threat of “not having power system assets available to manage the system” with a winter 2023 lens. The paper outlined the likelihood of the threat, controls in place to manage the threat and the effectiveness of those controls.
- We have established a system operator working group to maintain an overview across all the impacting factors anticipated this winter. While the primary focus is on national supply, a specific lens is being applied to Hawke's Bay.
- We completed our latest round of risk control self-assessment (CSA). In this round we assessed five controls; the same five controls were assessed in May 2022 and ensures an annual review of the same controls. Two of these remain in the partial effective range, whilst three were evaluated as fully effective. We have already agreed to implement improvement activities to lift effectiveness of the two partially effective controls which relate to people succession and creating new procedures.
- The three remaining business assurance audits were completed this quarter.
  - Voltage Stability Assessment Tool (VSAT) change management audit fieldwork (partially effective with two medium risk findings).
  - Ancillary Service contract management audit (effective with two low risk findings).
  - Real time management of Simultaneous Feasibility Test (SFT) constraints (highly effective with one low risk finding).
- The 2023/2024 Audit Plan has been mutually agreed between the Authority and the System Operator.

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- In addition to the external items mentioned in the Winter 2023 section, we have established a system operator working group to maintain an overview across all the impacting factors anticipated this winter.

#### Customers and other relationships

- The system operator has been asked to lead the ENA Future Networks Forum workstream on SO/DSO interfaces and has also been elected to the steering committee of the FlexForum as it prepares for its next phase of work.
- We published our annual Security of Supply Assessment in June. The assessment shows a declining Winter Capacity Margins and breaching the upper security standard (780 MW above expected demand) by 2025 if there is insufficient investment in flexible resources.

#### Compliance

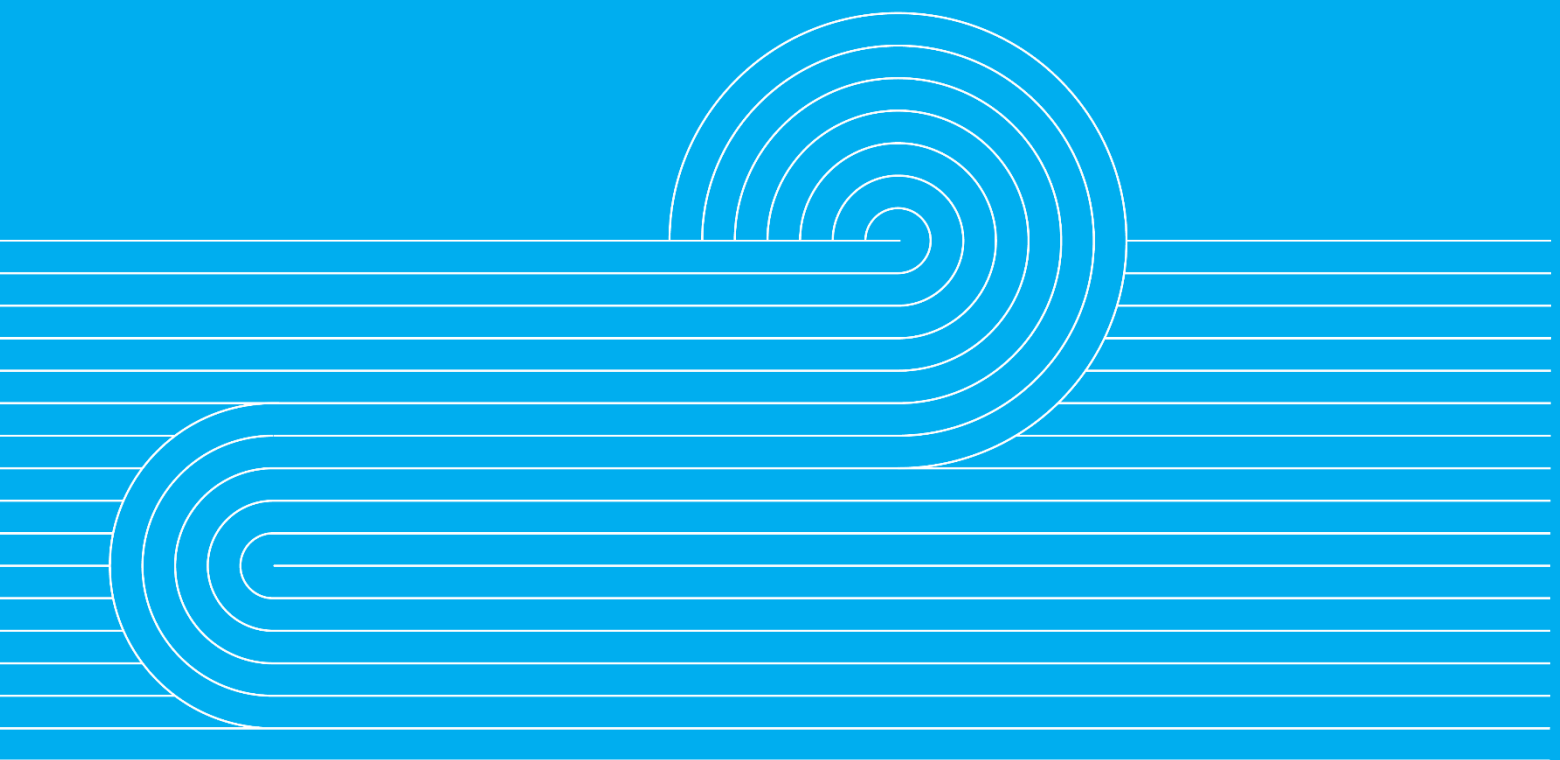
- We reported one system operator self-breach in this quarter, an issue caused by functionality in the system operator's voltage stability assessment tool (VSAT) in the Southland region. The system remained secure with this lower value adopted.

#### Generation and Demand response

- Generator commissioning activities are at the highest level in recent years.
- We have been working with an EDB to decommission a cogeneration unit.
- As a result of the new functionality within RTP, new demand response products are being introduced gradually to the wholesale market, with Solar Zero's aggregation of household batteries soon to be bidding dispatchable load.



# System Operator performance



# 1 Customers and other relationships

## Winter 2023 preparation

We are continuing to inform stakeholders on the risks and possible mitigations to securely operate the grid. This has involved speaking to multiple organisations and initiative groups about how they can help support winter peaks.

We published a longer market insight and presented at the SO Industry Forum on our insights in winter 2024-25, highlighting preparation required by the industry.

## Winter 2023 preparation: Two-part industry exercise

Day one of the industry exercise was held on Wednesday 24 May 2023. The exercise was attended by control room representatives from almost every Electricity Distribution Business (EDB) around the country. The purpose was to test industry-wide processes for managing potential electricity supply shortfalls this winter. The exercise focused on educating and working with EDBs to ensure we have alignment around the updated information being delivered by the Authority's winter '23 initiatives work programme. The exercise also ran through the procedures that provide us with visibility of, and access to controllable load when required.

Participants were engaged throughout the day, and we have received really positive feedback on the value of the exercise ahead of winter.

Day two of the exercise on Wednesday 31 May 2023 was led by the Authority and focussed on the communications from EDBs to retailers and end consumers. We supported the Authority with communications input and scenario examples.

Consumers gave "overwhelmingly positive" feedback following the event and appreciated being part of the solution.

## Winter 2023 preparation: Extended SO Industry forum

This extended forum, entitled "Navigating the winter capacity challenge", was held on 30 May. The purpose of the forum was to take all industry participants through our approach to winter, including how we will communicate any potential risk to consumers' electricity supply. The forum was attended by 225 individuals, with our regular operational attendees joined by chief executives, senior managers, communications and customer staff and other people involved in managing and communicating major power system events.

## Involvement in industry groups

The system operator has been asked to lead the ENA Future Networks Forum workstream on SO/DSO interfaces and has also been elected to the steering committee of the FlexForum as it prepares for its next phase of work.

## SOSPA and Code deliverables

Security of Supply Annual Assessment: We published our annual Security of Supply Assessment in June. The assessment shows a declining Winter Capacity Margins and breaching the upper security standard (780 MW above expected demand) by 2025 if there is insufficient investment in flexible resources. The majority of the new generation investment is intermittent generation which contributes more to the Winter Energy Margin than the Winter Capacity Margin. By 2027, the national Winter Energy Margin is expected

to fall below the upper security standard (16% above expected energy demand) when considering committed projects.

System Operator Service Strategic Plan and other SOSPA deliverables: The System Operator Strategic Plan for 2023-28 and other end of financial year documents were delivered to the Authority on schedule on 30 June. The strategic plan has received positive feedback on both the quality of content and the collaborative and engaging process used for its development. Other deliverables include the performance metrics and incentives agreement (2023/24), capex plan (2023-25), capex roadmap (2025-27), SO/ICT strategic road map, SO business plan (2023/24), statutory objective workplan (2023/24) and SO education and engagement plan (2023/24). These documents concluded our deliverables for the 2022/23 financial year and achieved the metric of 100% of SOSPA deliverables being on time.

The statutory objective workplan (2023/24) has identified the preparation for the SOSPA3 period as one of its tasks. The first activity from this is three workshops with Authority staff ahead of a presentation to the Authority MOC in November.

## 2 Risk & Assurance

### **Risk Management**

Risk paper to Authority system operator committee (SOC): On 17 April, we presented a deep dive risk paper covering the threat of “not having power system assets available to manage the system” with a winter 2023 lens. The paper outlined the likelihood of the threat, controls in place to manage the threat and the effectiveness of those controls. The SOC noted that communication around the risk this winter needed to be carefully considered given the healthy state of fuel availability and generation capacity.

Control self-assessment: We completed our latest round of risk control self-assessment (CSA). In this round we assessed five controls; the same five controls were assessed in May 2022 and ensures an annual review of the same controls. When compared with last year, the monitor and evaluate control decreased by 5% and the stakeholder management control increased by 3% meaning both remain in the partial effective range. The connected asset monitoring control moved into fully effective, and the people management and change management controls remained fully effective with slight increases to their scores. We have already agreed to implement improvement activities to lift effectiveness of the two partially effective controls which relate to people succession and creating new procedures.

Notified relay firmware problem: We have been informed by an asset owner of a firmware fault associated with a protection relay commonly used on generators which can result in the unnecessary tripping. The relay manufacturer has advised there has been only one instance of this fault over the last 20 years, however this was in New Zealand during an islanding situation. We have assessed the risk of a common mode of failure and see no justification to adjust reserves provision for this risk given the conditions required for mal operation.

### **Business assurance audits**

Over the last quarter the following assurance audits were completed:

- Voltage Stability Assessment Tool (VSAT). The audit outcome was partially effective with two medium risk (priority 2) findings for action. These relate to improving escalation pathways and collaboration/comms with involved parties, and review/improve manual processes to minimise human error.
- Ancillary Service contract management. This was a good outcome with two minor (priority 3) audit recommendations for action. These actions relate to reviewing our testing mechanisms to ensure agents comply with their testing obligations and the system operator to consider implementing a discretion framework for managing non-compliances (contract breaches).
- Audit on Simultaneous Feasibility Test (SFT) constraints. This was a good outcome, rated highly effective with one low risk (priority 3) audit recommendation for action. This action relates to improving 'subjectivity' when decisions are made within the process that are not yet documented.

The 2023/24 audit plan has been agreed with the Authority. The five agreed audits are:

- System operator gatekeeper actions (Q1)
- Discretion on demand/generation (Q1)
- Management of inputs to RMT (Q2)
- Synchronise and reconnect an island (Q3)
- Shortage of supply management (Q4)

### **Preparations for Winter 2023**

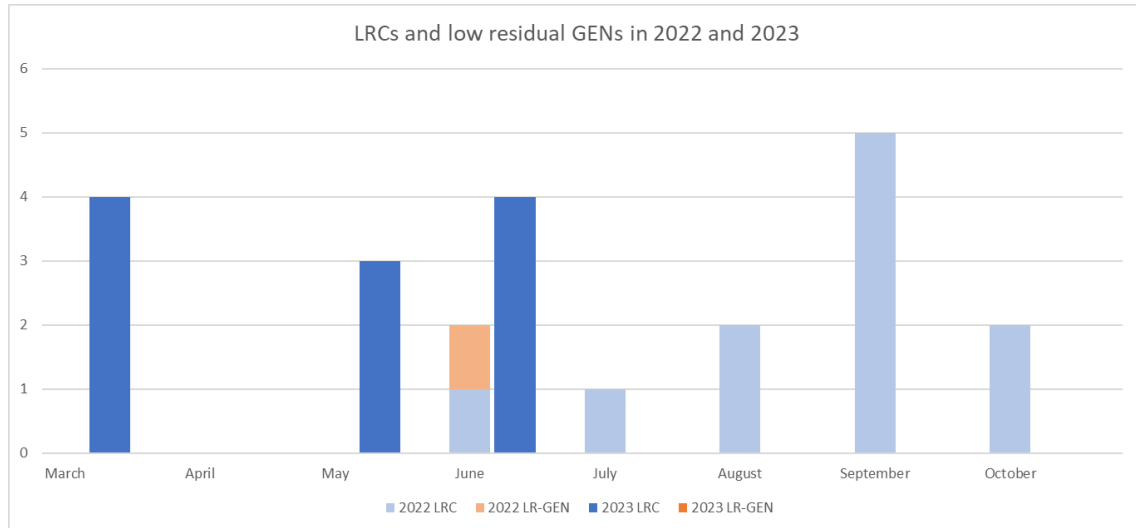
To prepare for management of winter peak loads, we have established a system operator working group to maintain an overview across all the impacting factors anticipated this winter. While the primary focus is on national supply, a specific lens is being applied to Hawkes Bay. In addition to the items mentioned in section 1 of this report, preparations include:

- Supporting the Authority to introduce new services and solutions related to management of peak load (TAS 105).
- Securing expertise to assist with close monitoring of weather risks - particularly as it relates to wind generation.

So far this year we have sent out 11 Low Residual CANS<sup>1</sup> (LRCs), this is the same amount that we sent out for the duration of winter 2022. In comparison, by this time last year we had sent out one LRC and one GEN for a low residual situation. The greatest number of LRCs last year were in September when we sent out five. This is illustrated in the graph below.

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<sup>1</sup> Four of the 11 LRCs in 2023 were sent out during the period the HVDC was on outage in March



### 3 Compliance

We reported one system operator self-breach in this quarter.

In May, we reported an issue caused by functionality in the system operator’s voltage stability assessment tool (VSAT) which meant a voltage stability constraint in the Southland region was set at a lower value than the system operator’s normal operating assumptions for the region. The constraint bound in 102 trading periods between 7 February 2022 and 13 April 2022. The system remained secure throughout the period. The system operator has corrected the defect via a tool version upgrade.

### 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	<b>General System Operator/Grid Owner dual roles:</b> 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	<b>General relationship situation:</b> 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

We closed one item in the Conflict of Interest register (ID 29). This was a long-standing item relating to the system operator undertaking net benefit tests for grid owner outages. If in the future the grid owner engages the system operator to provide modelling or calculations for a net benefit test, a new item can be opened. It is not currently a live issue.

## 4.1 System Operator independence audit

Deloitte has completed the 2023 security of supply independence audit. It was a clean audit with no recommendations.

## 5 Project updates

### 5.1 Market design and service enhancement 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.

#### **Real Time Pricing (RTP)**

Phase 4 of RTP was successfully released to production on 27 April 2023. This provides enhanced functionality for Dispatchable Demand (DD) and the new Dispatch Notified products. The project will be formally closed in July.

#### **Future Security and Resilience (FSR) Programme**

We have supported the Authority in reviewing the 23 submissions to the common quality issues paper and developing an initial long-list of options and option evaluation criteria. We also supported the Authority to commence assessing the options to deliver an initial 'medium-list' for discussion with the Common Quality Technical Group in July. The options in the medium-list will be refined further to form a short-list of options for consultation. We are preparing study cases and scenarios to assess the options. We also supported the Authority in the preparation of first common quality technical group meeting in July.

#### **Extended Reserves – AUFLS Project**

We completed an assessment of AUFLS transition to a 4-block scheme based on the transition plans submitted by North Island connected asset owners. The analysis shows that provided the transition plans are followed, the system will be able to manage system security. The technical study report has been documented, and the team are completing the AUFLS transition plan, which will be presented to the North Island connected asset owners mid-July.

#### **KPI Refresh Programme**

The Performance Metrics and Incentives Agreement 2023/24 was delivered on 30 June and included feedback from the Authority's System Operator Committee (SOC). This quarter, our joint Authority and system operator team finalised the scoring scales and weightings used to calculate the incentive payment. The refreshed metrics and incentive mechanism are in place for the 2023/24 financial year and will be reviewed and reported on quarterly.

#### **Market Insight – distributed flexibility for whole system operation**

In June, we held follow-up sessions with two EDBs to continue the discussions arising from our distribution-connected flexibility paper. We are looking to hold further interactions with EDBs to 'keep-the-conversation-going' and ensure system operations are considered by EDBs in their development initiatives. We are including the insights gained from the submissions received to our paper and in the ongoing conversations with EDBs in our involvement in both Flex Forum and ENA's Future Networks Forum. Feedback is generally supportive of the positions taken in our paper.

**Operational Excellence**

The Operational Excellence Programme has completed detailed planning of individual initiatives. Following a successful pilot, the new procedure review and assurance process is nearing completion of implementation. A prototype operational resource capacity solution will be piloted over the next quarter. This tool will assist with optimising timing for training, recruitment, change implementation, and opportunities for release of leave considering fluctuation in control room workload requirements and for subject matter expertise.

**6 Technical advisory hours and services**

TAS 104 statement of work to publish residual MW information from forecast schedules has been delivered and closed as per the plan in June. TAS 105 statement of work for Winter 2023 option investigation and implementation has delivered the Wind Forecast, Sensitivity Schedules and Residual displays in this quarter. Additionally, the Code change regarding discretionary demand was announced in May. Project close-out activities are planned for July.

The following table provides the technical advisory hours for Q4 2022/23 and a summary of technical advisory services to which those hours related (SOSPA 12.3 (d) refers).

TAS Statement of Work (SOW)	Status	Hours worked during Q4
TAS SOW 102 – Reviewing Part 8 of the Code – Common Quality	In progress	503.25
TAS SOW 103 - Extended Reserve Implementation FY22/23 - Planning for Transition	In progress	452.00
TAS SOW 104 - Publish residual MW information from forecast schedules	Complete	3.00
TAS SOW 105 - Winter 2023 option investigation and implementation	In progress	1,152.50
<b>Total hours</b>		<b>2,110.75</b>

**TAS and project delivery workshop with Authority staff**

The system operator ran a workshop for Authority staff on 12 June to discuss the TAS mechanism and other project delivery frameworks. The workshop aimed to ensure that new team members were aware of the mechanism and both organisations are aligned on roles, responsibilities, and best practice when delivering projects between the two organisations. Lessons learned from previous projects were shared, and the discussion also informed the scope of the 2023/24 Statutory Objective Work Plan around how best to address a previous Authority recommendation to review the IPLC.

**7 Outage planning and coordination**

**Outage planning – near real time**

Outage numbers are now low given the winter months, and we are seeing low levels of generation outages (excepting the Huntly 5 unplanned outage.) We worked to assess risks

to system security as a result of Cyclone Gabrielle, particularly the outages in Hawkes Bay. We have completed our assessment of the grid owner's 2023/24 annual outage plan which they published in advance of the 19 May regulatory requirement.

### **New Zealand Generation Balance (NZGB) analysis**

As the end of the quarter, we are seeing several shortfalls in NZGB throughout July in our base N-1-G scenario. The change since June is a result of the unplanned Huntly 5 outage for most of July and a down-rating of Contact's TCC plant (seen as 50MW outage in the customer portal). We are monitoring the generation availability carefully in both NZGB and offers in the market schedules and keeping in contact with the generators to understand any further risks to their generation availability. There are generally low levels of generator outages through the winter, but we are seeing some lower, although positive, margins in September. Our NZGB tool assumes that generation will be offered into the market, and if dispatched will perform as per the offer. No adjustment is made for unreliability or non-performance of generation assets.

## **8 Power systems investigations and reporting**

### **Automatic under-frequency load shedding (AUFLS) compliance**

We met with the Authority in early June to discuss the outcome of the system operator's assessment of the 2021 AUFLS data. The Authority has also indicated they will request the same analysis for the 2022 AUFLS data. This is data provided by connected asset owners in the North Island, and the grid owner in the South Island.

### **Significant incident investigations**

No new significant events were identified during the reporting period. One 'major' significant incident continues to be investigated:

- Event 4355 – The event during Cyclone Gabrielle impacting multiple sites and communications in Hawkes Bay and resulting in loss of supply to customers and consumers. The grid emergency was declared at 08:17 on 14 February and remained in place until 10 March 2023. The final report is due in early July.

The Authority have agreed to our proposal to change the significant incident criteria to ensure we are reporting on the right level of incidents considering associated consequences.

### **System Security Forecast (minor update)**

We have published our 6-monthly review with minor updates.

### **Generator Commissioning**

Work is underway reviewing how we manage short term secondary tripping risk associated with generators while they are commissioning given the increase of commissioning activity on the power system. The aim of the work is to ensure that we can manage the risk of multiple generator units commissioning on the system at any given time to an acceptable level without excessive market cost associated with procurement of reserves.

Generator commissioning activities are at highest level in recent years. During this period, we also worked with an EDB to decommission a cogeneration unit. Additionally new demand response products are being introduced gradually to the wholesale market, with Solar Zero's aggregation of household batteries soon to be bidding dispatchable load.



## 9 Performance metrics and monitoring

The following dashboard shows system operator performance against the performance metrics for the financial year to date as required by SOSPA 12.3 (a). Only those metrics with a weighting are used in the calculation of the System Operator score and incentive payment.

		Annual Target	Actual to date	Pts		
<b>Smart about money</b>						
Perception of added value by participants		80%	83%			
<b>Customers are informed and satisfied</b>						
Annual participant survey result		83%	89%	5		
Annual participant survey result response rate - First tier stakeholders		80%	75%			
Future thinking and insights	Future thinking report	≥ 1	1	5		
	Longer Market Insight reports	≥ 4	4	5		
	Bite-sized Market Insights	≥ 45	49			
Quality of written reports		100% of standard	100%			
Role impartiality		80%	90%	5		
Responding to requests for information from the Authority		100% by agreed deadline	N/A			
<b>Code compliance maintained and SOSPA obligations met</b>						
Market breaches remain below threshold		≤ 3 @ ≥ \$40k	1	10		
Breaches creating a security risk - below threshold/within acceptable range		≤2	0	10		
On-time SOSPA deliverables		100% (49)	100% (49)	10		
<b>Successful project delivery</b>						
Project delivery	Service Maintenance projects	≥ 70% on time	82% Provisional			
		≥ 70% on budget	73% Provisional			
	Market Design and Service Enhancement projects	≥ 70% on time	100%			
		≥ 70% on budget	100%			
Accurate capital planning		≥ 50%	55%	10		
<b>Commitment to optimal real time operation</b>						
Sustained infeasibility resolution		80% ≤ 10am or equiv	87%	5		
High spring washer resolution		80% ≤ 10am or equiv	0 to date			
<b>Fit-for-purpose tools</b>						
Capability functional fit assessment score		76.00%	69.10%			
Technical quality assessment score		70.00%	71.60%			
Sustained SCADA availability		99.90%	99.99%	10		
Maintained timeliness of schedule publication		99.00%	99.98%	10		
<b>We prepare for, manage &amp; review events*</b>						
Event preparedness	Procedures overdue	4 (5.3%)	7 (9.3%)	5 (6.7%)	3 (3.9%)	12
	Industry exercises	0	0	0	1	
	Control rm simulations	N/A	12/12 (100%)	12/12 (100%)	17/19 (89%)	
Event management	Sig event management	N/A	Good	Good	N/A	13
	Sig event communications	N/A	Good	Excellent	N/A	
Event review and improvements	Sig event actions due	N/A	0	N/A	N/A	12
	Deliv time-major evt rept	N/A	N/A	<10 days	N/A	

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\* Score determined on an annual basis, with system operator and Authority staff assessment on a quarterly basis.

From July 2023, a new suite of performance metrics will replace the current metrics. The new metrics will focus on the outcomes the Authority requires from the system operator and will be reported on in this report.

## 9.1 Optimal dispatch dashboard

We have streamlined the dashboard, so it focusses only on the information most suitable to this report's audience. The operational information, previously produced in the dispatch accuracy dashboards, will inform the context for the new performance metrics.

The dashboard in Appendix B focuses on the results of the optimum dispatch tool, which compares what happened in real time to what would have happened if there had been perfect foresight of wind generation and load.

Below are instances of variations we have observed this quarter.

- 11 and 16 May: These days had the largest impact on the optimal dispatch measure in June. Demand management during peak load periods appears to be the reason for deviations between the forecast demand and the actual demand (likely as a result of discretionary demand management). In one of these days (11 May) a low residual CAN was issued. Removing these periods increase the Optimal Dispatch measure to ~90%.
- 12-15 June 23: These days had the largest impact on the optimal dispatch measure in June. In three of the four days, low residual CANs were issued (12,14 and 15 June). The majority of the variation was over the peak load periods (both morning and evening peaks) when load was being controlled; the optimal dispatch tool captures this as a forecast error. The increased cost of generation during these peak load periods means that these forecast errors had a larger impact on the June optimal dispatch measure. If these 4 days were removed the June optimal dispatch measure would increase to ~91% which is similar to what was seen in previous months.

## 10 Cost of services reporting

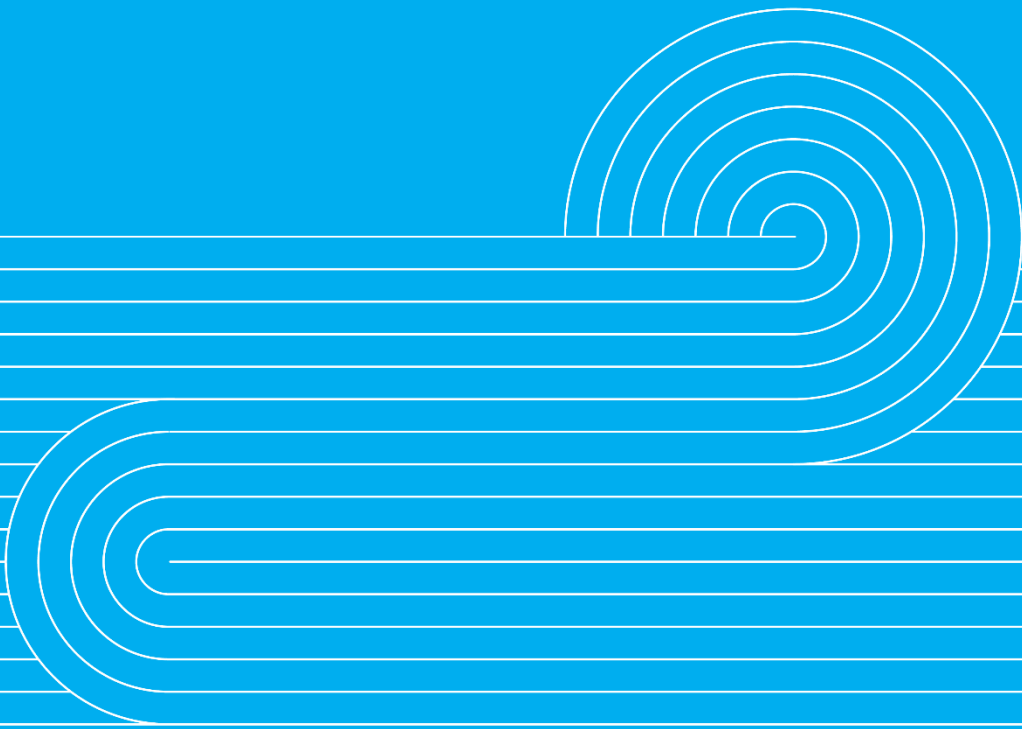
The cost of services reporting, for 2021/22 was delivered to the Authority on 3 May 2023.

## 11 Actions taken

The following table contains a full list of actions taken during Q4 2022/23 regarding the system operator business plan, statutory objective work plan, participant survey responses and any remedial plan, as required by SOSPA 12.3 (b).

Item of interest	Actions taken
<p>(i) To give effect to the <b>system operator business plan</b>:</p>	<ul style="list-style-type: none"> <li>• <b>Support new technologies into the market (Education &amp; Engagement Plan)</b> <i>We worked with Ara Ake and solarZero who are collaborating to test the potential for consumers' rooftop solar systems with battery storage to provide grid support to meet winter peaks.</i></li> <li>• <b>Present on specific areas of system operator work that will affect and/or of interest to the industry (Education &amp; Engagement Plan)</b> <i>We published a paper and presented at the SO Industry Forum on our insights in winter 2024-25, highlighting preparation required by the industry.</i></li> <li>• <b>Develop Operational Excellence outcomes to address resource planning, training and support</b> <i>The Operational Excellence programme delivery activities are now gaining momentum and the programme is entering a steady, managed state.</i></li> <li>• <b>Develop efficient delivery of customer notifications and operational information</b> <i>The updated the major power system event distribution list went live in Q4.</i></li> </ul>
<p>(ii) To comply with the <b>statutory objective work plan</b>:</p>	<ul style="list-style-type: none"> <li>• <b>Develop and agree the revised performance metrics, targets and incentive payment calculation for FY 2023/24</b> <i>The Performance Metrics and Incentives Agreement for 2023/24 was delivered to the Authority on 30 June which contains the agreed revised performance metrics, targets and incentive payment calculation for financial year 2023/24.</i></li> </ul>
<p>(iii) In response to participant responses to any <b>participant survey</b>:</p>	<p><b>Feedback from the 2021-22 survey</b></p> <ul style="list-style-type: none"> <li>• <b>“System Operator communications to keep me informed (so that I can intervene in our EDB's planning as necessary) and they provide valuable information “</b> <i>We held an industry exercise in May with EDBs from around the country to test industry-wide processes for managing potential electricity supply shortfalls this winter. We have received really positive feedback on the value of the exercise ahead of winter.</i></li> <li>• <b>“There seems to more industry participation &amp; communication across companies than in the past.”</b> <i>This was illustrated in the way that we supported the Authority led, second day of the industry exercise which focussed on the communications from EDBs to retailers and end consumers involved.</i></li> </ul>
<p>(iv) To comply with any <b>remedial plan</b> agreed by the parties under SOSPA 14.1</p>	<p>N/A – No remedial plan in place.</p>

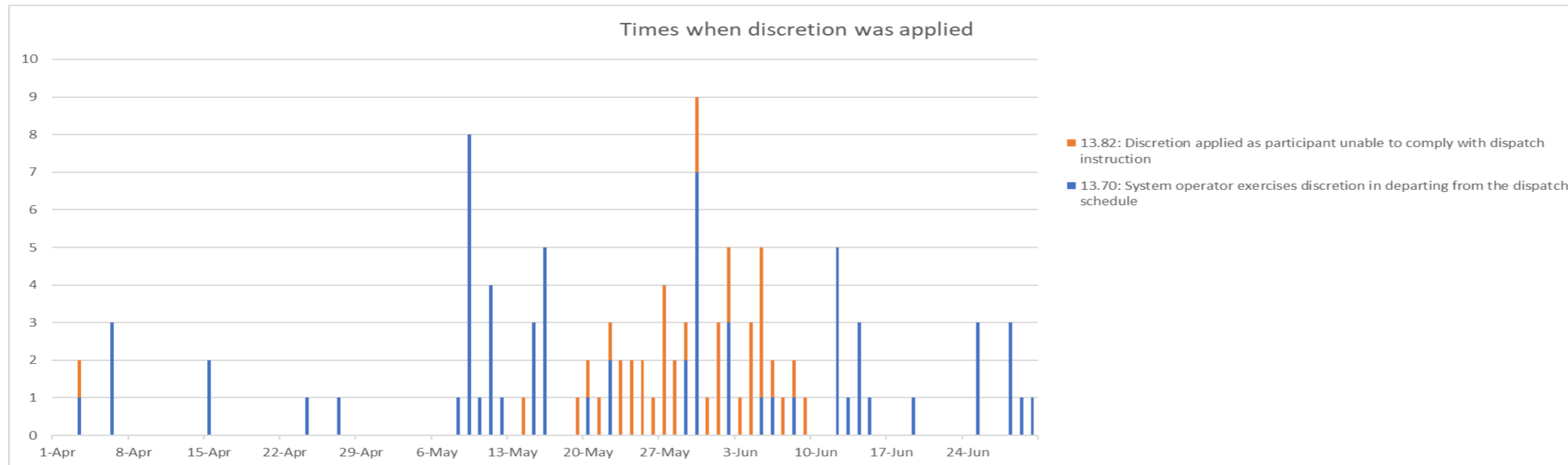
# Appendices



## Appendix A: Discretion

In recent months, discretion has been reclassified to include the process to manage generators on minimum MW values overnight. As a result, the list of discretions in this report is much larger than recorded in previous months.

The graph below shows all instances of discretion application with a summary beneath of some of the individual instances of application.



For most of the cases this quarter, discretion is applied so that generation is dispatched to minimum running MW value

### April – 9 instances

3-April: Genesis has requested that they be dispatched 59 MW to manage resource consent for recreational requirement flows from Tekapo.

15-April: MAN line 1 restoration - dispatched down to match the post-tripping load and restored from there

### May – 59 instances

9-May: WHI2201 WHI0 and MKE1101 MKE1 required for security due to low residual

11-May: WHI2201 WHI0 required for security due to low residual

30-May: HLY2201 HLY6 discretioned on for voltage support

### June – 42 instances

12-June: WHI2201 WHI0 and SFD2201 SFD21 required for security due to heading into low residual

14-June: During low residual, to stop WHI dispatch from changing due to industrial load changes

25-June: Tripping of FHL TUI

30-June: HLY2201 HLY5 Tripped causing a National IL event

## Appendix B: Optimal dispatch

		2022									2023					
		April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
<b>Optimal Dispatch (%)</b>	Compares the average impact of a perfect foresight case against dispatch solutions. Indicates impact of wind offer, load forecast and PSD accuracy.	95.730%	94.830%	91.160%	90.310%	92.020%	88.960%	91.590%	93.470%	80.920%	91.640%	90.130%	91.220%	89.680%	87.560%	88.870%
<b>Dispatch load accuracy error (%)</b>	Average absolute difference between forecast generation (load plus losses, including PSD) and actual generation relative to the average actual generation	99.610%	99.600%	99.620%	99.610%	99.620%	99.610%	99.610%	99.590%	99.600%	99.590%	99.600%	99.580%	99.580%	99.590%	99.590%
<b>Wind offer accuracy (%)</b>	Average absolute difference between persistence wind offer (based on 5mins prior) and the actual wind output relative to the average wind output	97.440%	97.420%	97.510%	97.510%	97.310%	97.090%	97.820%	97.500%	96.960%	97.380%	97.590%	97.320%	97.400%	96.860%	97.240%