

# **Review of system operator performance 2023/24**

**For the year 1 July 2023 to 30 June 2024**

18 February 2025

## Executive summary

Transpower, in its appointed role as the system operator under the Electricity Industry Act 2010 (Act), is a market operation service provider and must provide information, and short to medium term forecasting on all aspects of security of supply, and manage supply emergencies. Transpower's role as system operator is separate and distinct from any other role Transpower has under the Electricity Industry Participation Code 2010 (Code).

In our role as industry regulator, the Electricity Authority Te Mana Hiko (Authority) is responsible for the settings under the Code. We specify the functions of the system operator and how those functions are to be performed, and set requirements for transparency and performance. We also monitor the system operator's compliance with the Code and the Act and review the system operator's performance. We recognise the system operator's role is broad, complex and critically important to Aotearoa.

The Authority has completed a review of the system operator's performance from 1 July 2023 to 30 June 2024 and this report presents our findings and recommendations.

Overall, we are satisfied with the system operator's day-to-day business during this period. The system operator operated and responded well to power system events throughout the year, the most notable being the Northland tower collapse.

The Authority is satisfied with the system operator's performance from 1 July 2023 to 30 June 2024:

- ✓ Day 1 of the industry exercise (led by the system operator) was successful, professional and collaborative.
- ✓ Day 2 of the industry exercise (led by the Authority) had good collaboration, expertise and engagement from the system operator.
- ✓ The system operator communicated regularly (fortnightly) to stakeholders on its operations.
- ✓ The system operator communicated effectively with the Authority and other stakeholders on the Authority's 'Future security and resilience' work programme.
- ✓ The system operator provided high quality technical advice to the Authority on its delivery of joint work.
- ✓ The system operator acted on the recommendations the Authority made in 2023/24.

We have eight recommendations for the system operator for the next financial year. We recommend:

- (a) The system operator clearly demonstrates and communicates line of sight between its strategic plan and other planning and delivery artefacts such as the ICT roadmap, capex roadmap, capex plan, and business plan. The system operator should explicitly show how investment and prioritisation decisions are driven by the system operator focus areas (and any other parameters).
- (b) The system operator tests its strategy, and particularly its strategic risks, opportunities, and focus areas with market participants. Feedback from engagement with smaller, less traditional participants and recent entrants to the market would be of particular value.
- (c) The system operator and Authority continue to work together to refine communications issues and responsibilities for security of supply and power system

events to maintain public confidence in the electricity system. This relates to communications to the industry and communications between the system operator and Authority.

- (d) The system operator communicates lessons learned and improvements implemented after power system events, as well as improvements to tools (eg, dispatch from back up tools, failure to publish schedules).
- (e) The system operator formally reports all issues in its tools and cybersecurity through the correct channels and includes (where appropriate and not confidential) those issues in the published monthly reports. The system operator could provide confidential issues to the Authority, as needed, through a separate appendix which would not be published.
- (f) The system operator continues to improve information used in the Security of Supply Assessment where this is available (noting the system operator has the flexibility under clause 7.3(2C) of the Code to deviate from the assumptions in the Security Standards Assumptions Document).
- (g) The system operator shares the results and actions of its regular critical control risk reviews with the Authority going forwards. The system operator regularly conducts reviews, but the Authority currently has no visibility of the completed reviews or resulting actions.
- (h) The system operator proactively analyses, identifies, and alerts the Authority to information it needs, and from which participants, to effectively manage the electricity system.

The system operator addressed our recommendations from the 2022/23 year. In particular, the system operator:

- (a) Engaged with the Authority and provided strategic thinking across short, medium, and long-term planning activities. The system operator demonstrated its strategic thinking through its four market insight reports, quarterly brainstorming sessions with the Authority, and through the 'Future security and resilience' work programme.
- (b) Delivered a successful industry exercise, with interactive activities, that engaged a wide range of participants. The system operator collaborated better with the Authority than in the previous year's industry exercise.
- (c) Introduced a more robust business assurance audit approach, with process inputs and outputs, and a wrap-up of the previous year's audits and improvements made.
- (d) Included a section in its [System operator annual self-review and assessment 2023-24](#) which acknowledges power system events. However, the Authority would like to see more examples of lessons learned and areas for improvement from each event by the system operator.

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# 1. The system operator provides a critical service to New Zealand

- 1.1. Transpower, as the system operator, is responsible for the secure and efficient operation of New Zealand's electricity system in real time, provision of information and short to medium term forecasting on all aspects of security of supply, and management of supply emergencies. The system operator's role is broad, complex and critically important to Aotearoa.
- 1.2. New Zealand electricity consumers rely on the system operator to ensure that electricity will be available when they need it.
- 1.3. The Electricity Authority Te Mana Hiko (Authority) is responsible for specifying the functions of the system operator and how those functions are to be performed, and reviewing the system operator's performance.
- 1.4. The Authority requires Transpower to carry out its obligations as the system operator with skill, diligence, prudence, foresight, good economic management, and in accordance with recognised international good practice, that considers the:
  - (a) circumstances in New Zealand
  - (b) fact that real-time coordination of the power system involves complex judgements and inter-related events.<sup>1</sup>

## 2. We review the system operator's performance

- 2.1. There are three entities with formal obligations to review the system operator's performance: Transpower itself, the Authority, and the Security and Reliability Council.<sup>2</sup>
- 2.2. This report is the Authority's review of the system operator's performance, for the year 1 July 2023 to 30 June 2024. It has been informed by the system operator's review for the same period,<sup>3</sup> the Authority's own observations, and the Security and Reliability Council's advice.
- 2.3. This report assesses the system operator's performance in the following sections:
  - (a) long-term planning
  - (b) medium-to-short-term planning
  - (c) real-time management
  - (d) security of supply forecasting and management
  - (e) system operator self-review and performance metrics.

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<sup>1</sup> See Part 7 of the Electricity Industry Participation Code 2010.

<sup>2</sup> An independent advisory group to the Electricity Authority, see <https://www.ea.govt.nz/about-us/our-people/our-advisory-and-technical-groups/src/>

<sup>3</sup> [System operator annual self-review and assessment 2023-24](#)

### 3. Long-term planning

#### Strategic planning underpins the system operator service

- 3.1. The system operator's main strategic planning instrument is its strategy for the system operator service, delivered as part of the system operator service provider agreement (SOSPA).
- 3.2. Each year the system operator refreshes the strategy and principles for its services, which must assist the Authority to give effect to its statutory objectives and strategic direction and give effect to Transpower's strategic direction.
- 3.3. The system operator proactively engaged with us and shared early drafts of its strategic plan. It sought feedback from our staff, Market Operations Committee<sup>4</sup> and Board. The system operator worked collaboratively with us throughout the process, and we look forward to the next iteration of its strategic plan. We consider there would be value in the system operator testing its strategy, particularly the strategic risks, opportunities, and focus areas with market participants. Feedback from engagement with smaller, less traditional participants and recent entrants to the market would be of value.
- 3.4. The system operator also delivered a series of documents which contributed to its long-term planning, including its business plan and statutory objective work plan. The Authority appreciates the system operator included its strategic focus areas in two of its SOSPA deliverables (ICT strategic roadmap and Business plan). We would like the system operator to include strategic alignment and relevant focus areas in all relevant documents, such as its capital expenditure plan. In addition, these important planning documents should articulate how the strategic plan is driving organisational decisions, informing trade-offs, and directing more detailed planning and the delivery of the service.
- 3.5. The statutory objective work plan contained objectives to assist with information required for the Authority's third negotiation of SOSPA (SOSPA3 reset). The system operator delivered its first objective *Review the scope and timing of SOSPA deliverables* on time to the Authority. It was provided to the relevant project teams as an input to the SOSPA3 reset.
- 3.6. The system operator held two initial workshops on its second objective, *Identify the activities and themes to support the SOSPA3 reset*. Timing changes to the SOSPA3 reset project meant that both parties recognised the need for the objective was superseded. It was agreed the workshops in their current form would not be continued and these were replaced by formal workshops later in 2024. However, the Authority considers the system operator could have been more proactive in its collaboration with us in preparation for the SOSPA3 reset period to ensure its proposal aligned with the expectations of the Authority. (The SOSPA3 reset review period was 1 July 2024 to 30 September 2024).

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<sup>4</sup> The Market Operations Committee is a sub-Committee of the Authority's Board and oversees major contracts, including the SOSPA.

## Support on the ‘Future security and resilience’ work programme

- 3.7. The ‘Future security and resilience’ work programme began in 2022 and forms part of the Authority’s response to the Government’s Electricity Price Review, in particular recommendation [G2 to examine the security and resilience of electricity supply](#).
- 3.8. The Authority worked with the system operator to produce a roadmap to guide and prioritise review activities required for the power system to respond to and support the transition to a low-emissions energy system.
- 3.9. The system operator continues to support the Authority in delivery of our ‘Future security and resilience’ work programme – it’s the Authority’s largest programme of work with the system operator.
- 3.10. The system operator worked with the Authority to review submissions on our April 2023 [issues paper – Part 8 common quality requirements](#) and scoped system studies to inform the options to address the issues on frequency and voltage. The scope of these studies was reviewed by the Authority’s Common Quality Technical Group<sup>5</sup> and their feedback was incorporated into the studies.
- 3.11. The system operator delivered reports into the system studies. These reports were used in the Authority’s June 2024 [consultation on the review of common quality requirements](#) in the Code on the issues on frequency and voltage.
- 3.12. The system operator provided information to a high standard and supported the Authority and Common Quality Technical Group well.

## International engagement

- 3.13. The system operator recognises its operating environment is changing at scale and pace and seeks to learn how others are managing the challenges facing the electricity industry. It engaged in international conferences, such as the Association of Power Exchanges, and hosted a range of events with a diverse range of participants.
- 3.14. The Authority supports the system operator’s efforts to increase its knowledge sharing and to build its international relationships. We encourage the system operator to gain valuable insights from international projects and operations that can be applied to the New Zealand market.

## 4. Medium to short-term planning

### Delivery of joint work

- 4.1. The system operator worked collaboratively with the Authority to prioritise project decisions across a programme of projects. We have a Joint Work Planning Team that oversees a Joint Development Plan, which sets out what the system operator works on.

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<sup>5</sup> The [Common Quality Technical Group](#) provides the Authority with independent advice on common quality requirements in Part 8 of the Electricity Industry Participation Code 2010.

- 4.2. During the review period, the system operator successfully provided technical advisory services (TAS<sup>6</sup>) to the Authority on the following four projects:
- (a) TAS106 Future security and resilience work programme – Part 8 Common quality requirements
  - (b) TAS107 Extended reserve implementation
  - (c) TAS109 Instantaneous reserves cost allocation for contingent events investigation
  - (d) TAS110 Permanent implementation of winter 2023 options.
- 4.3. The system operator provided (and continues to provide) high quality technical advice to the Authority on its work programme. We recognise there are opportunities for the system operator and Authority to improve governance and collaboration with project work and look forward to future engagement with the system operator.

### **Extended reserve implementation**

- 4.4. In January 2024, the system operator, in conjunction with North Island connected asset owners, prepared a transition to a four block extended reserves (AUFLS) system. The Authority acknowledges the progress made on AUFLS by the system operator.
- 4.5. The system operator responded to our request to implement the transition to a four-block AUFLS scheme in a secure manner, which resulted in significant improvements. We look forward to the continuing conversation with the system operator and appreciate its engagement in this area.
- 4.6. The system operator must provide the Authority with an annual AUFLS security assessment report each calendar year. For 2022 the report was delivered on time, as agreed, in December 2023. The report included analysis of both worst case under- and over-provision of AUFLS in the North and South islands. The system operator's analysis showed the system remained secure during 2022. At the time of writing, the system operator had provided its 2023 AUFLS security assessment report.
- 4.7. The system operator wrote to all participants with AUFLS responsibilities to inform them of its view of their compliance and reminded participants about testing and providing information.

### **Winter 2023 options – permanent implementation**

- 4.8. In 2022 the Authority commenced a work programme to investigate what options could be put in place to help the system operator and electricity system manage periods of high electricity demand. After a consultation process, we implemented four options to better manage risks to electricity supply during peak demand periods for winter 2023. We then sought to make three of the options permanent.

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<sup>6</sup> The Authority can request technical advisory services from the system operator under the SOSPA. These services are at the senior expertise level and can comprise power systems engineering, modelling and analysis, and project management and report writing.



- 4.9. We appreciated the system operator's flexibility to accommodate changes in our work priorities which meant we had to delay implementing one of the winter 2023 options.

## Service maintenance

### Maintaining tools

- 4.10. The system operator maintains a work programme aimed at maintaining its standard of service. This includes a variety of projects, such as deploying new versions of third-party software and updating in-house software. The system operator has autonomy to determine its service maintenance projects. The Authority has some visibility of this through the Joint Work Planning Team.
- 4.11. In the Authority's *Review of system operator performance 2022/23*, we recommended the system operator consider regularly reviewing:
- (a) its manual data update / input processes for market system tools and their fitness for purpose
  - (b) the functional specifications of integral software tools (critical to a process), particularly for tools that are used infrequently.
- 4.12. The system operator has begun including this where practical, such as in business assurance audits, but we consider more work can be done in this area. We look forward to the completion of the quality assurance framework for the system operator's modelling work which will incorporate this recommendation.
- 4.13. We note the *System operator annual self-review and assessment 2023-24* did not include any issues about its tools, but issues were raised via monthly reporting, informal discussion, and through monthly meetings. We recommend the system operator formally report all issues in its tools and cybersecurity through the correct channels and include (where appropriate and not confidential) them in the published monthly reports. In future annual self-reviews, we recommend the system operator includes lessons learned and improvements made to tools (such as resolutions for instances of dispatch from back up tools, failure to publish schedules).
- 4.14. During the review period, the system operator agreed four new business assurance audits with the Authority. We appreciated the system operator's well-developed plan for audits and the system operator's increased level of engagement with us during the process. We look forward to receiving and discussing the outputs from the agreed audits for 2024/25.

### Maintaining risk assessments

- 4.15. As part of its overall risk assessment, the system operator regularly reviews and assesses its risk register, with two reviews carried out in 2023/24. The system operator also measures the effectiveness of the controls it uses to manage identified threats. However, the Authority currently has no visibility of the reviews or resulting actions. We recommend the system operator shares the results of critical control reviews with the Authority going forwards.
- 4.16. During the review period, we requested the system operator develop its own risk framework, which is system operator focused rather than part of Transpower's corporate / grid owner framework. We are satisfied with the level of engagement

from the system operator and willingness to address our request and look forward to receiving the final iteration of the risk framework.

- 4.17. We encourage the system operator to provide 'deep dives' into its risks, such as the deep dive presented to our Market Operations Committee in February 2024. (This work was on hold while the risk framework was being put in place.) The Authority considers presentations into risks are valuable and encourages the system operator to continue to present its risks to us and our Market Operations Committee.

### **Maintaining procedures**

- 4.18. The *System operator policy statement* sets out the requirements for the system operator on topics such as power system security and conflicts of interest. The system operator proposed changes to the policy statement in late 2024 and these will be considered in the next review period.
- 4.19. The *Ancillary services procurement plan* sets out how the system operator will procure ancillary services from the market. The system operator will propose changes to the procurement plan in June 2025 and these will be considered in the next review period.
- 4.20. The system operator is required to test the effectiveness of its business continuity plan each year. During the review period, the system operator tested its business continuity plan by joining the GridEx exercise and the 2024 industry exercise:
- (a) The Authority was an online observer of Transpower's GridEx exercise, however the exercise was not set up in a manner amenable to observation. The Authority recommends that future events are set up and hosted in a manner that allows for meaningful observation so that the Authority can better understand the effectiveness of the system operator's business continuity plans.
  - (b) Authority staff observed the system operator's incident management team and control room operators for the 2024 industry exercise. The system operator demonstrated excellent performance. It was well organised and responded well to the simulated low residual shortfall event, ensuring all parties involved had the information required to manage the event. This is further discussed in the industry exercise section.
- 4.21. The system operator is working with us toward proposing a targeted technical amendment to the security of supply forecasting and information policy before winter 2025.

### **Assisting prospective market participants**

- 4.22. During the review period, the system operator saw a high level of commissioning activity and expects it to grow in the coming years. The system operator continues to engage with new generators and energy resources. It provides high quality guidance on a range of activities, from planning through to how to comply with electricity industry regulations to participate in the electricity system.
- 4.23. We appreciate the system operator's time and effort providing regulatory and technical expertise to prospective market participants (and current participants). The Authority welcomes engagement with the system operator on how it can

support delivery of this increasing volume of activity and reiterates its expectation for the system operator to act efficiently in respect of new connections.

## Stakeholder engagement

- 4.24. A large component of the system operator's role involves engaging with a range of stakeholders, from market participants to regulatory bodies. The system operator achieves this through a variety of mediums (not all listed here), such as forums, industry exercises, committee and board meetings, one-on-one meetings, information on its website and social media posts.
- 4.25. The system operator met the education and engagement requirements agreed with the Authority for the review period. Overall, we consider the system operator provided a number of high-quality engagements that were well received by stakeholders. We encourage the system operator to improve its collaboration with us, particularly in advance of CE forums, industry meetings, and workshops, by sharing its material and providing the Authority with reasonable notice to provide feedback and ensure a single and clear approach for the industry.

## Involvement in industry exercises

### Pan-industry exercise

- 4.26. During the review period, the system operator and Authority jointly planned the 2024 pan-industry exercise. We consider the system operator met our recommendation (in our *Review of system operator performance 2022/23*) to include more interactive elements and engage a wider range of participants (eg, including direct grid-connected consumers).
- 4.27. The second annual industry exercise ran over two days in 2024 (1 and 8 May) to test industry preparedness for managing potential electricity shortfalls in winter.
- 4.28. Similar to the previous year, Day 1 was led by the system operator and was well attended by distributors and generators, and some direct connect consumers. For further information and lessons learned, read the [System Operator Report: Industry Exercise 2024](#).
- 4.29. Overall, we consider the system operator delivered a successful, professional, and collaborative event. It worked well with the Authority to ensure all attendees received the same communications and the day was well-planned and executed. The Authority also appreciated the system operator's collaboration on Day 2 of the exercise.
- 4.30. The Authority looks forward to working with the system operator on the 2025 industry exercise. We are keen to ensure objectives for both organisations are met, and the exercise continues to be a useful test for industry participants to understand and manage their roles when the electricity system comes under pressure.

### South Island black start simulation

- 4.31. The system operator hosted an industry simulation exercise for a South Island black start. The Authority did not attend this exercise, however we are pleased the system operator ran a regional exercise and rehearsed an event which tested participant preparedness.

## Industry forums

- 4.32. The system operator's fortnightly forums continued to be a key source of engagement for participants and provided an opportunity for attendees to request topics to be covered.
- 4.33. The Authority is pleased with the system operator's engagement with participants and welcomes the opportunity to further engage with the system operator on areas related to the Authority's policy work.
- 4.34. The system operator presented at the Energy Trader Forum in March 2024 on its winter 2024 outlook. The Authority considered the system operator was well organised, informed and professional during its presentation.
- 4.35. We continue to encourage the system operator to engage with the Authority early on any issues, and in advance of publications or media releases which may raise any concerns with the public or Minister for Energy.

## Engagement with Authority Board and Committees

- 4.36. During the review period, the system operator met with our Market Operations Committee three times and our Compliance Committee twice.<sup>7</sup> While the system operator made a positive contribution to discussion, there were delays with some Market Operation Committee papers due to changes to the system operator's internal review and sign-out process, meaning the Authority's consideration of these papers had to be moved to a later meeting, creating subsequent impacts on the Authority work programme.
- 4.37. The system operator attended one of the Authority's Board meetings to present the system operator's strategic plan for its service for the next financial year. The system operator was well prepared and, when it finalised its strategy, included our feedback.

# 5. Real-time management

## Power system events

- 5.1. The system operator managed three power system events:
  - (a) G5 geomagnetic storm (11-13 May)
  - (b) Northland tower collapse (20 June)
  - (c) Insufficient generation offers to meet demand on a national level (10 May).
- 5.2. During these events, the system operator responded well to media queries and briefings.
- 5.3. Overall, the system operator successfully resolved six potential shortfalls without issuing a formal notice. This continues the downward trend of formal notices being issued without extenuating circumstances.

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<sup>7</sup> The objective of the Committee is to promote high levels of compliance with the Electricity Industry Act 2010 (Act), the regulations made under the Act (regulations), and the Electricity Industry Participation Code 2010 (Code) by industry participants and specified persons.

- 5.4. We consider the system operator can improve the quality of its communications, not just with us, but with industry for power system events and encourage the system operator make its communications clearer through its formal notification channels.

### **G5 geomagnetic storm**

- 5.5. The system operator performed well during the geomagnetic storm and maintained operational security. The system operator was well prepared. It put contingency plans in place and kept stakeholders up to date with industry briefings and a series of notifications.
- 5.6. Overall, we consider the system operator is required and incentivised to plan appropriately for these events and minimise their impact on both the electricity system and consumers. It was pleasing no consumer supply was required to be disconnected as a result of the event or how it was managed.
- 5.7. However, there are always lessons to be learned and we are aware the system operator will apply these in future planning and preparation.

### **Northland tower collapse**

- 5.8. The collapse of a transmission tower near Glorit on 20 June 2024 left 88,000 customers in Northland without electricity and cost the region tens of millions of dollars.
- 5.9. The system operator conducted an investigation into its operational performance as per its system operator procedures for reporting significant incidents, see [Northland Loss of Supply](#). The system operator identified seven recommendations it intends to consider (see Northland Loss of Supply). The system operator will provide the Authority with an action plan for implementation.
- 5.10. The Minister for Energy requested the Authority carry out a review under Section 18 of the Electricity Industry Act 2010 into the Northland power outages. Transpower accepts the recommendations in the [report](#), has work underway on the actions and is [publishing progress against these actions on its website](#).
- 5.11. The system operator received one recommendation from our report, the progress of which will be monitored as part of the overall recommendations. The recommendation is that:
- The system operator should lead the establishment of plans to stand up a regional (or wider if appropriate) operating forum to improve operational coordination and communication amongst relevant operations managers, including the system operator, grid owner, distribution and generation operators (including distributed generation operators) and any affected direct grid-connected industrial consumers.
- 5.12. The Authority is monitoring Transpower's progress against these actions through regular monthly meetings and reviewing documents to verify the recommendations as complete.

### **Insufficient generation offers to meet demand on a national level**

- 5.13. On 9 May 2024, the system operator forecasted there was insufficient generation to meet national demand and issued a low residual Customer Advice Notice (CAN) for

the 10 May morning peak. Later in the day the system operator issued a Warning Notice (WRN) and held a stakeholder briefing.

- 5.14. The system operator released communications to the public via its social media platforms asking consumers to be mindful of their electricity use during the morning peak. A second industry briefing was conducted to help explain the situation and the system operator's assessment of the risk to participants.
- 5.15. The system operator also communicated with stakeholders during the shortfall event, ensuring they were kept informed. However, concerns were raised by industry participants about the transparency of the operational processes, the system operator's use of communications with all consumers, and the maintenance of appropriate pricing signals for long term investment. We published an [open letter](#) to the industry on the 10 May event concerns. In this letter we acknowledged the concerns raised by participants, provided our view of the actions of 9 and 10 May and opportunities to enhance operational tools and communications.
- 5.16. We are working with the system operator to develop appropriate communications for the industry and consumers on use of demand response, the impact on price signals, scarcity pricing, and system security assumptions.
- 5.17. Following the end of the review period, the Authority welcomed the release of the Minister for Energy's [Government Policy Statement](#) on electricity in October 2024. Although it is our role to define alignment with the Government Policy Statement, the system operator will have a valuable perspective. We look forward to proactive collaboration with the system operator.
- 5.18. We are also consulting on proposed amendments to the Code to update scarcity pricing settings and working with the system operator on its low residual situations consultation. We have signalled our intent to look at demand response and the market settings for security of supply.

## 6. Security of supply forecasting and management

### Security of supply assessment

- 6.1. The system operator is required to produce a forecast of electricity supply and demand, to assess the ability of the electricity system to meet New Zealand's needs over the next decade against energy and capacity standards specified in the Code. The analysis looks at existing generation, as well as planned generation, at different stages of the development process. This is to determine whether there is enough electricity generation in the electricity system to meet total demand across the country under a range of supply and demand scenarios.
- 6.2. During the review period, the system operator engaged with the Authority on a draft security of supply assessment (SOSA) and considered our feedback. The system operator prepared the SOSA in accordance with the assumptions specified in the Security Standards Assumptions Document (SSAD) as required by clause 7.3(2B) of the Code. However, the system operator has the flexibility under clause 7.3(2C) to deviate from the assumptions in the SSAD. The system operator does this by engaging with stakeholders and using sensitivities that vary the assumptions against the reference case. The Authority encourages the system operator to incorporate improved information into the SOSA, where this is available.

- 6.3. The system operator consulted on the SOSA and the [final SOSA](#) was published on 26 June.

### **System operator rolling outage plan**

- 6.4. The [system operator rolling outage plan](#) (SOROP) is a key system operator security of supply planning document that is used to determine whether a supply shortage should be declared and how it would be managed.
- 6.5. The system operator engaged the Authority early on proposed updates to the SOROP in May 2024. It also included consumer representation from the Consumer Advocacy Council and Transpower's Consumer Advisory Panel.
- 6.6. We consider the system operator has been prudent in conducting a thorough review of the SOROP over the last 18 months, with strong engagement with industry participants. A clear and well understood plan is essential for ensuring that any rolling outages are conducted for as short a duration as possible and minimise the impact on individual consumers.

### **Power system operations**

- 6.7. The system operator's key function is to manage the power system to ensure a safe and stable supply through its principal performance obligations. This involves dispatching generation and demand, maintaining frequency, procuring reserves, and producing various power system analysis and forecasting to assist its real time operations. The system operator's functions are an integral part of the wholesale electricity market. It ensures the supply-demand balance is maintained in real time and provides scheduling and dispatch data for price discovery, market analytics and part of the clearing and settlement process.

### **Review of the system security forecast**

- 6.8. The system operator has completed its most recent review of its [system security forecast](#). The Authority appreciated early engagement on the system security forecast.

### **Assessing outage coordination**

- 6.9. Effective outage coordination is critical for both security of supply and system security. The coordination of outages provides the market with information about the outage-related power system risks. This helps support asset owners to ensure that there are enough generation and transmission assets in service, at all times, to provide the resources to maintain a secure and reliable supply to consumers.
- 6.10. The system operator must work with asset owners to effectively coordinate outages. For example, the system operator can request an asset owner move an outage in response to risks highlighted in the system operator's assessment to the impact of those outages.
- 6.11. During the review period, the system operator made improvements in the information it provides to asset owners for outage coordination. This included engaging more with participants and implementing a new demand forecasting tool through Tesla/Yes Energy. We are aware of the increased effort by the system operator to engage with industry in a meaningful way and encourage this continuing engagement.

- 6.12. The system operator has made improvements to its assessment and coordination of outages and our outage coordination consultation provided an opportunity for collaboration between the Authority and the system operator. The system operator has close ties with the grid owner, which increases the need for the system operator to act in an impartial manner when assessing outage coordination. We recommend the system operator demonstrate how it makes its recommendations when assessing outage coordination.

### Electricity risk curves

- 6.13. The system operator publishes assessments of the electricity risk curves, which are used to indicate the risk of running out of hydro storage over a rolling 12-month period. The Authority welcomed the system operator's release of its [Introduction to Electricity Risk Curves](#) in April 2024, which provides important information for the industry.

## 7. System operator self-review and performance metrics

### System operator required to self-review

- 7.1. The system operator is required to self-review its performance each year, see [System operator annual self-review and assessment 2023/24](#).
- 7.2. The system operator continues to increase its collaboration with the Authority and actively engages with us. In June 2023 we started quarterly brainstorming sessions, and these have been beneficial to both organisations.
- 7.3. For 2024/25, we have eight recommendations:
- (a) The system operator clearly demonstrates and communicates line of sight between its strategic plan and other planning and delivery artefacts such as the ICT roadmap, capex roadmap, capex plan, and business plan. The system operator should explicitly show how investment and prioritisation decisions are driven by the system operator focus areas (and any other parameters).
  - (b) The system operator tests its strategy, and particularly its strategic risks, opportunities, and focus areas with market participants. Feedback from engagement with smaller, less traditional participants and recent entrants to the market would be of particular value.
  - (c) The system operator and Authority continue to work together to refine communications issues and responsibilities for security of supply and power system events to maintain public confidence in the electricity system. This relates to communications to the industry and communications between the system operator and Authority.
  - (d) The system operator communicates lessons learned and improvements implemented after power system events, as well as improvements to tools (eg, dispatch from back up tools, failure to publish schedules).
  - (e) The system operator formally reports all issues in its tools and cybersecurity through the correct channels and includes (where appropriate and not confidential) those issues in the published monthly reports. The system



operator could provide confidential issues to the Authority through a separate appendix which would not be published.

- (f) The system operator continues to improve information used in the security of supply assessment where this is available (noting the system operator has the flexibility under clause 7.3(2C) of the Code to deviate from the assumptions in the Security Standards Assumptions Document).
- (g) The system operator shares the results and actions of its regular critical control risk reviews with the Authority going forwards. The system operator regularly conducts reviews, but the Authority currently has no visibility of the completed reviews or resulting actions.
- (h) The system operator proactively analyses, identifies, and alerts the Authority to information it needs, and from which participants, to effectively manage the electricity system.

7.4. The system operator acted on the recommendations the Authority made in 2023/24. In particular, the system operator:

- (a) Engaged with the Authority and provided strategic thinking across short, medium, and long-term planning activities. The system operator demonstrated its strategic thinking through its four market insight reports, quarterly brainstorming sessions with the Authority, and through the 'Future security and resilience' work programme.
- (b) Delivered a successful pan-industry exercise, with interactive activities, that engaged a wide range of participants. The system operator collaborated better with the Authority than in the previous year's industry exercise.
- (c) Introduced a more robust business assurance audit approach, with process inputs and outputs, and a wrap-up of the previous year's audits and improvements made.
- (d) Although the system operator included a section in its *System operator annual self-review and assessment 2023-24* which acknowledges power system events, the Authority would like to see more examples of lessons learned and areas for improvement from each event by the system operator.

### **The system operator's performance of its metrics was satisfactory**

7.5. Each year, the Authority agrees a set of performance metrics with the system operator. For 2023/24, we agreed 18 metrics with quantitative and qualitative components and seven high-level outcomes (see Figure 1 and Table 2 for a list of metrics and outcomes).

7.6. The qualitative component allows the system operator and Authority to adjust the quantitative scores based on evidence provided. This year, the initial overall outcome score was 4.16 (80%) but we reduced the scores for outcomes 1, 3, and 6 which resulted in an overall outcome score of 78%:

- (a) *Outcome 1: new security and reliability risks are identified and appropriately managed:* the system operator did not have a risk matrix specific to the system operator service.
- (b) *Outcome 3: the Authority is supported to evolve and develop the electricity market and power systems:* We expect a high level of collaboration and

information sharing from the system operator and will continue to work with the system operator to ensure the level of support we require is provided.

- (c) *Outcome 6: stakeholders are satisfied with our service*: The system operator achieved a high score in its annual survey for stakeholder satisfaction (25% strongly agreed and 75% agreed). However as a result of the *Insufficient generation offers to meet demand on a national level* (10 May) (see paragraph 5.15), we reduced the outcome score.
- 7.7. This was below the percentage required (80%) for the system operator to receive its full incentive payment of \$200,000. This year, \$165,700 excluding GST was paid to the system operator.
- 7.8. Going forward the Authority is looking for more transparency and sharing of information with the system operator as one of our key service providers. This is particularly important for demonstrating actions taken which impact on the agreed performance metrics and score, which otherwise would not be meaningful.
- 7.9. The Authority would like the system operator to improve its impartiality. Acting impartially in its dealing with participants is one of the system operator's legal obligations, which is reflected in the participant survey about impartiality under performance measure 13.
- 7.10. The Authority acknowledges the good score in that survey, but we continue to consider that proactively ensuring impartiality, and perceived impartiality, is necessary. Impartiality is one of the areas we will seek to improve under the Relationship Charter between the Authority and Transpower.

**Table 1 System operator high-level outcomes scores 2023/24**

	<b>Outcome 1 New security and reliability risks are identified and appropriately managed</b>	<b>Outcome 2 Significant events are appropriately scoped, understood, prepared for and managed</b>	<b>Outcome 3 The Authority is supported to evolve and develop the electricity market and power systems</b>	<b>Outcome 4 Relevant market information is made accessible to stakeholders</b>	<b>Outcome 5 Stakeholders are effectively informed on and included in decisions where relevant</b>	<b>Outcome 6 Stakeholders are satisfied with our service</b>	<b>Outcome 7 SOSPA delivery provides value</b>	<b>Overall outcome score</b>	<b>Performance %</b>
Weighting	20%	25%	20%	10%	10%	10%	5%	3.83	78% <sup>8</sup>
Score out of 5	2.85	3.70	3.85	4.75	4.64	4.00	4.49		

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<sup>8</sup> The overall outcome score is scaled to produce the final performance percentage under the *Performance Metrics and Incentives Agreement 2023-24* (between the Authority and Transpower in its role as the system operator) as the performance scale is non-linear.

**Figure 1 System operator performance metrics 2023/24**

Risk register has been updated and tested externally with the Authority and widely among industry participants	PM1 Score <b>3</b>	On time delivery of significant event reports	N/A	Average score from stakeholders on their perception of SO impartiality	PM13 Score <b>5</b>
% of SMART actions from the control self-assessment with maturity ratings of 1 or 2 will be addressed by the planned due date	PM2 Score <b>2</b>	Average satisfaction score from stakeholders, as per responses received to transactional surveys taken at forums an...	PM8 Score <b>5</b>	Number of thought leadership publications on specific areas of system operator work that affect and/or are of interest to the industry	PM14 Score <b>4</b>
At least one pan-industry event exercise held to test existing controls	PM3 Score <b>5</b>	All categories of stakeholders are actively engaged by the system operator throughout the year	PM9 Score <b>5</b>	Active contribution by the SO to Authority led-forums and consultations; and industry-led consultations	PM15 Score <b>5</b>
% of actions from industry exercises which were completed on time	N/A	% of industry submissions, made in response to system operator consultations, which are responded to	PM10 Score <b>5</b>	# of SO Industry Forums held	PM16 Score <b>5</b>
Average score of internal process assessments arising from significant events	N/A	Stakeholder engagement in project delivery	PM11 Score <b>5</b>	% of key SOSPA documents delivered on time to the Authority	PM17 Score <b>3</b>
Percentage of actions from significant events which are closed on time	PM6 Score <b>3</b>	Average satisfaction score from stakeholders from Annual Survey	PM12 Score <b>5</b>	Quarterly update/challenge/brainstorm sessions	PM18 Score <b>4</b>

The 18 performance metrics are scored on a scale of 1-5 using a calibrated scale. Three metrics (7, 17, and 18) do not have a score of 5 available, and metric 17 does not have a score of 4 available. The score of each metric provides a weighted input into the score of one or more of the seven outcomes listed in Table 1.

## The system operator reported one self-breach during the review period

- 7.11. All participants, including the system operator, are required to report any breaches under Parts 7, 8, 9, or 13 of the Code to the Authority. In addition, participants must report breaches if they believe, on reasonable grounds, that another participant has breached the Electricity Industry Participation Code 2010.<sup>9</sup> The Authority encourages the system operator to share its process and timing on reporting alleged breaches of other participants.
- 7.12. During the review period, the system operator reported a modelling error in two real time dispatch schedules in May 2023. In the past, modelling errors were common with the system operator and the Authority is pleased with the improvements made to ensure modelling errors remain low.
- 7.13. The system operator presented its modelling quality assurance framework to the Compliance Committee. The framework is designed to improve the system operator's modelling. We look forward to the completion of this work and further improvements in the modelling space.
- 7.14. On 5 June 2024, the Authority lodged a formal complaint with the Rulings Panel for an alleged breach of clause 30.1B of the Policy Statement (incorporated by reference into the Code) by the system operator. The alleged breach occurred in 2021/22 and was self-notified by the system operator in 2022/23, as required under Part 8 of the Electricity Industry (Enforcement) Regulations 2010.
- 7.15. The alleged breach relates to a requirement of the system operator to correctly apply security constraints, regardless of whether the information on the Transpower website about the power system stability limits or security constraints is complete or up to date. The Rulings Panel made its [decision](#), with the system operator receiving a pecuniary penalty of \$65,000 plus costs of \$3,820.

## 8. Financial results

- 8.1. Transpower, as a regulated entity, is required to publicly disclose financial information under the Transpower Information Disclosure Determination [2014] NZCC 5.
- 8.2. The system operator provided financial information, audited by Ernst & Young, as an addendum to its annual self-review of performance. The following tables and numbers were subject to an annual audit / review of results.

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<sup>9</sup> Sections 7 and 8 of the Electricity Industry (Enforcement) Regulations 2010.

Financial measures	Changed by (\$M)	Changed to (\$M)	Percent change	Reason for changes
Revenue	\$2.91 ↑	\$49.36	6.26% ↑	Increase primarily due to the annual CPI uplift
Operating expenditure	\$2.29 ↑	\$27.98	8.91% ↑	Uplift due to SaaS project delivery and CPI uplift on costs.
Depreciation	\$0.50 ↑	\$14.56	3.56% ↑	Depreciation is driven by the Fixed Asset Register.
Fixed assets (RAB)	\$8.65 ↓	\$43.91	-16.46% ↓	Less assets commissioned in FY23/24 following prior year commissioning of several large projects including Real Time Pricing, MS Simplification, Critical Corporate Fileshare and Situational Intelligence.
Regulatory profit (after tax)	\$0.38 ↓	\$4.65	-7.55% ↓	Regulatory profit is a function of an increase in revenue offset by and higher operating costs and depreciation (above).

- 8.3. The system operator's 'vanilla' return on investment is 9.4%. The vanilla return on investment is the interest rate calculated such that the present value of the system operator's closing fixed assets and cashflows for the year (assuming mid-year timing) are net present value equivalent to its opening fixed assets.
- 8.4. The system operator's opex revenue is adjusted annually by the consumer price index, minus an adjustment factor (a CPI minus X approach). This means that within each contract period, the system operator's regulatory profit will tend to reduce if its operating costs rise faster than the consumer price index minus the adjustment factor.
- 8.5. If the system operator implements efficiency measures beyond that needed to maintain its regulatory profit, the system operator retains the benefit of those reductions in operating expenditure during the then-current period. Every reset period, revenue is negotiated with consideration of actual performance (such as enduring reductions or increases in operating expenditure).

**SCHEDULE SO1: SYSTEM OPERATOR**

ref

	CY		CY		
	(\$000)		(\$000)		
<b>SO1(i): Return on Investment</b>					
<b>Operating surplus/(deficit)</b>	21,380.2				
less Assets purchased or commissioned	5,916.6				
less Tax payable	2,165.3				
<b>Notional cash flows for the year</b>			13,298.3		
<b>Opening fixed assets</b>			(52,561.6)		
<b>Closing fixed assets</b>	43,913.4				
plus Lost assets	-				
less Found assets	-				
<b>Adjusted closing fixed assets</b>			43,913.4		
	<b>CY-4</b>	<b>CY-3</b>	<b>CY-2</b>	<b>CY-1</b>	<b>CY</b>
<b>Vanilla ROI</b>	31.48%	23.52%	10.96%	10.30%	10.09%
Leverage (%)	42.00%	42.00%	42.00%	42.00%	42.00%
Cost of debt (%)	3.29%	2.23%	2.79%	5.31%	5.94%
Corporate tax rate (%)	28.00%	28.00%	28.00%	28.00%	28.00%
<b>Post-tax ROI</b>	31.10%	23.26%	10.63%	9.67%	9.39%
<b>SO1(ii): Regulatory Profit</b>					
	<b>CY-4</b>	<b>CY-3</b>	<b>CY-2</b>	<b>CY-1</b>	<b>CY</b>
	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>
Total revenue	41,891.7	42,528.9	41,591.0	46,454.1	49,355.6
less Operating expenditure	21,377.5	20,710.5	23,122.4	25,690.1	27,975.5
<b>Operating surplus/(deficit)</b>	20,514.2	21,818.5	18,468.6	20,764.0	21,380.2
less Total depreciation	9,105.5	10,590.8	12,253.9	14,060.8	14,564.8
<b>Regulatory profit/(loss) before tax</b>	11,408.7	11,227.7	6,214.7	6,703.2	6,815.3
less Tax payable	3,382.7	2,812.0	1,182.8	1,671.6	2,165.3
<b>Regulatory profit/(loss) after tax</b>	8,026.1	8,415.7	5,031.8	5,031.6	4,650.1
<b>SO1(iii): Revenue</b>					
	<b>CY-4</b>	<b>CY-3</b>	<b>CY-2</b>	<b>CY-1</b>	<b>CY</b>
	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>
<b>Revenue</b>					
System operator service provider agreement revenue - operating	26,224.6	26,641.7	27,162.6	28,884.6	30,691.1
System operator service provider agreement revenue - capital	15,250.6	15,561.1	13,735.2	16,797.1	17,857.0
Technical services advisory revenue	416.5	326.1	693.1	772.4	807.5
Other gains /(losses) (provide details)	-	-	-	-	-
<b>Total revenue</b>	41,891.7	42,528.9	41,591.0	46,454.1	49,355.6
	<b>CY+1</b>	<b>CY+2</b>	<b>CY+3</b>	<b>CY+4</b>	<b>CY+5</b>
	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>
<b>Revenue forecast</b>					
System operator service provider agreement revenue - operating	31,070.0	45,032.5	45,703.5	46,384.4	47,080.2
System operator service provider agreement revenue - capital	18,140.0	20,020.8	19,955.4	17,027.3	22,000.0
Technical services advisory revenue	690.0	797.8	809.7	821.9	834.2
Other gains /(losses) (provide details)					
<b>Total forecast revenue</b>	49,900.0	65,851.0	66,468.6	64,233.6	69,914.4
	<b>CY-4</b>	<b>CY-3</b>	<b>CY-2</b>	<b>CY-1</b>	<b>CY</b>
	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>	<b>(\$000)</b>
<b>Actual vs. forecast</b>					
Historical forecast revenue	41,732.8	41,966.5	41,605.3	45,725.7	49,007.4
Actual revenue	41,891.7	42,528.9	41,591.0	46,454.1	49,355.6
Variance (\$)	(158.9)	(562.5)	14.4	(728.4)	(348.2)
Variance (%)	(0%)	(1%)	0%	(2%)	(1%)