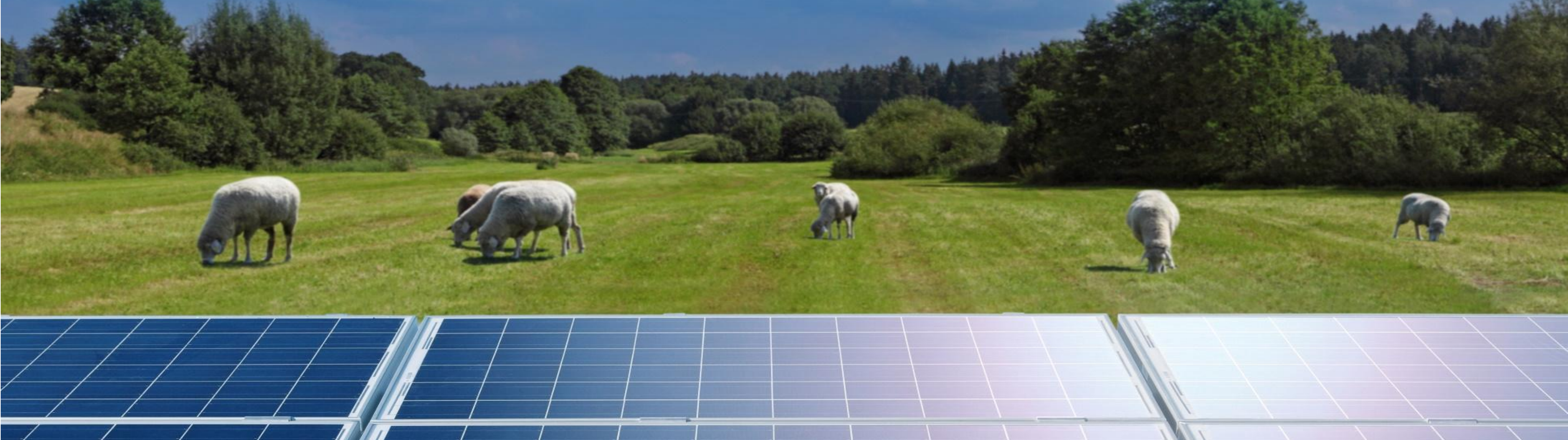
TRANSPOWER

Security of Supply Assessment 2026

System Operator

Version: 1.0

Date: 29 June 2026



Version	Date	Change
1.0	23 April 2026	Draft for consultation
2.0	29 June 2026	Final for publication

IMPORTANT

Contact Details

Address: Transpower New Zealand Ltd
22 Boulcott Street
PO Box 1021
Wellington
New Zealand

Telephone: +64 4 590 7000

Email: system.operator@transpower.co.nz

Website: http://www.transpower.co.nz

Contents

Security of Supply Assessment (SOSA) 2026 – At a glance

1. What is the SOSA?

- Assess three security margins over the next 10 years and compares against the security standards
- Standards represent an efficient range – Expected cost of shortage equals cost of reserve resources
- Increased shortage risk (cost) and stronger signal for efficient investment the further margins drop below the standard.
- New Zealand Winter Energy Margin - Do we have enough national energy to get through dry winters? [Standards: 14% to 16%]
- South Island Winter Energy Margin - Can the South Island meet its dry winter energy needs, given both supply and inter-island transfer limits? [Standards: 25.5% to 30%]
- North Island Winter Capacity Margin - Do we have enough North Island generation and South Island contribution via the HVDC to meet North Island peak winter demand including reserves? [Standards: 630 MW to 780 MW]

2. How do we assess the margins?

- Survey participants and investors on future pipeline projects
- Forecast electricity demand for next 10 years
- Consult on assumptions and sensitivities to key inputs
- Use Security Standards Assumptions Document which specifies the methodology and some key assumptions
- Develop other inputs and assumptions as required (eg. gas forecasts, coal estimates, plant availability)
- Assess margins for Reference case R, Expected Future case E and sensitivities S

3. Key findings from SOSA 2026

New Zealand Winter Energy Margin (NZ-WEM)	
R E S Short-term (2026-2028)	**Adequate but risk-sensitive:** Dry year energy margins above standards if projects are delivered on-time but fall below the lower standard if gas supply is lower than expected. Project delays, low thermal support, high demand, or weak renewable output increase risks of margins falling below standards. Deliver projects on time and add flexible supply to reduce risks. Margins for Expected Future case drops below the standards by 2028.
R E S Mid-term (2029-2031)	**Emerging energy gap in 2030s:** Dry year margins dip below the standard by 2031 with consented projects, with lower gas bringing this forward. Risks from delays, reduced thermal support, high demand and weak renewables increase exposure, requiring additional project delivery, ensuring thermal generation availability and developing a more diverse supply pipeline. Additional gas from LNG in the Expected Future case can help keep margins above standards.
R E S Long-term (2032-2035)	**Pipeline-dependent adequacy:** Dry-year margins stay above the standard only if future pipeline delivered, but strong demand growth and weaker thermal, gas, or renewables can still drive shortfalls by ~2035. Reducing dry year risk requires expanding and diversifying the future pipeline, with less reliance on weather-dependent generation.

South Island Winter Energy Margin (SI-WEM)	
R E S Short-term (2026-2028)	**Strong but adequacy sensitive to risks:** Dry year energy margins remain above the standard under expected conditions with committed project delivery. Delays, reduced thermal support, higher demand, or very low gas can drive margins to fall below the standards by 2027–2028, so timely delivery and firm backup are critical.
R E S Mid-term (2029-2031)	**Adequate but exposed to risks:** Dry year energy margins remain above the standard if committed and consented projects proceed on-time but can still fall below the lower standard if gas supply is lower than expected. If new supply projects are delayed or if demand is higher and gas, thermal, or renewables underperform then shortfalls emerge. Expanding and diversifying supply is key.
R E S Long-term (2032-2035)	**Robust but demand-sensitive adequacy:** Dry year energy margins remain above the standard if committed, consented and unconsented projects are delivered. Strong demand growth with weaker gas, thermal, or renewables can still erode margins, so expanding the future project pipeline is key to manage this risk.

North Island Winter Capacity Margin (NI-WCM)	
R E S Short-term (2026-2028)	**Adequate but capacity risks exist:** Capacity margins remain above the standard in the short term with committed projects. Peak risks from low wind and limited thermal support and delayed project delivery.
R E S Mid-term (2029-2031)	**Build-dependent capacity margins:** Capacity margins improving if committed and consented projects proceed but fall below by ~2029 if they don't. Weaker gas supplies, and operational coordination issues can increase risks. Timely delivery of flexible peak capacity is needed with additional flexibility reducing risks
R E S Long-term (2032-2035)	**Enduring peak capacity risk:** Capacity margins remain above the standards if committed, consented and unconsented projects are delivered. Operational in managing intermittent generation with inflexible generation mean peak risks persist, so expanding flexible, fast-response resources is critical.

Overall implication: Maintaining security of supply over the next decade requires strong delivery discipline, earlier commitment of additional consent ready projects in the short and mid-term to reduce downside risks, ensuring thermal generation and fuel availability and active development of a more diverse and flexible future pipeline.

1 Executive Summary

This is the final 2026 Security of Supply Assessment (**SOSA**) which helps Aotearoa's electricity sector understand whether we'll have an efficient level of energy and capacity reliability during dry winters and cold winter peaks over the next decade. Its purpose is to inform risk management and investment decisions by market participants, policy makers, and other stakeholders.

This final SOSA 2026 has been informed by feedback received on the Reference case and sensitivities consultation completed in November 2025 and the Draft SOSA 2026 completed in April 2026.[1] We thank all submitters for their contributions.

1.1 The SOSA methodology

The SOSA evaluates three security margins, over the next 10 years (2026-2035), using forecasts of supply (based on surveys of investors) and demand under different scenarios. It compares these forecast margins to lower and upper security standards set by the Electricity Authority (**Authority**).[2] The security margins and the current standards are in Table 1.

Table 1: Energy and capacity security margins

Security margin	Lower Security Standard	Upper Security Standard
New Zealand Winter Energy Margin (NZ-WEM) Do we have enough energy nationally to get through dry winters?	14%	16%
South Island Winter Energy Margin (SI-WEM) Can the South Island meet its dry winter energy needs, given both supply and inter-island transfer limits?	25.5%	30%

1 The consultation paper, the submissions we received and our response to them are available on our webpage (Reference case and assumptions) and (Draft SOSA 2026).

2 Further information on the margin assessment methodology is provided in Appendix 1. The security standards are specified in Electricity Industry Participation Code (the Code), clause 7.3(2). Some key assumptions for the SOSA are specified in the Security Standards Assumption Document (SSAD) and other requirements are set out in the Security of Supply Forecasting & Information Policy (SOSFIP).

Security margin	Lower Security Standard	Upper Security Standard
North Island Winter Capacity Margin (NI-WCM)[3]: Do we have enough North Island generation and South Island contribution via the HVDC to meet North Island peak winter demand including reserves?	630 MW	780 MW

The security margins are assessed for a Reference case that combines supply and demand side assumptions to represent the resources expected to be available to the power system over the next ten years. The Reference case provides a consistent benchmark for assessing supply adequacy shifts over time.

Outcomes different from the Reference case are explored by testing variations (sensitivities) to the assumptions. Sensitivities vary key uncertain inputs across both supply and demand, including thermal conditions, demand growth, fuel availability, project delivery risk to test the robustness of the Reference case. This provides a view of how sensitive the security margins are under a range of plausible conditions. In this way, sensitivities help reflect the uncertainty in the assessment and support interpretation of the range of potential outcomes.

The Electricity Authority (**Authority**) defines the security standards as part of its responsibility to ensure that the regulatory environment promotes an efficient level of reliability. The range between the upper and lower security standards signals an efficient balance between supply and demand resources, where the expected cost of shortage is equal to the expected cost of new generation. Being below a lower standard implies that investment in new generation will result in an efficient increase in reliability. The higher the actual margin observed, the less likely electricity shortage will be, all things being equal.

SOSA 2026 assesses the security margins against the security standards across three time horizons. **Short-term (2026–2028)** issues require immediate attention from industry, as most new generation projects are already committed or under development. Any breach of the lower security standards signals the need to commit additional projects to mitigate near-term risks. In the **Mid-term (2029–2031)** the market has more time to respond. Consented projects can be advanced to address potential shortfalls, or additional projects may be needed if the current

3 The NI-WCM being below the security standard means increased risk of reserve shortfall and if more severe, then energy shortfall. The NI-WCM standard determined that up to 22 hours per annum of energy or reserve shortfall (i.e. insufficient capacity to supply the reserve requirements and sometimes the actual load on the system) is economic before additional investment in peaking generation is warranted.

consent-ready pipeline is insufficient. Looking to the **Long-term (2032–2035)** there is time to plan and consent new projects. If the existing pipeline is inadequate, the market can assess and develop additional projects that could be consented and delivered.

Investment plans and commitments can change significantly between annual SOSA publications, and in parallel with our work to complete our analysis and report for each SOSA. For SOSA 2026 we have added an Expected Future case, combining the Reference case and sensitivities that reflects our current view of the most plausible state of the sensitivities for the 10-year modelled period (2026-2035). We will report progress against the Expected Future case between SOSA publications through our quarterly Security of Supply Outlooks alongside our ongoing reporting of build against the supply pipelines.

1.2 Key changes since SOSA 2025

Relative to SOSA 2025 additional supply side resources have been committed by investors recently. Disclosures also show additional gas has been secured for power generation, in part as a result of reductions in forecast industrial gas consumption due to demand flexing arrangements, exits and electrification investments. The Government is progressing an initiative to look at developing LNG import capability. The Draft SOSA 2026 assessed this as a sensitivity. Given the decline in gas supply, we have also tested a very low gas supply sensitivity.

We have reviewed generator peak capacity factors and updated wind, solar, geothermal and co-generation peak capacity factors to reflect recent observations.

Electricity demand forecasts are largely similar to SOSA 2025 for energy, and lower for peak demand. An increase in South Island demand and national demand later in the forecast horizon reflects the expected increase in new step loads including electrification of Fonterra sites and the DataGrid data centre investment in Southland.

Fewer potential new (uncommitted, consented and unconsented) projects are in the new supply pipeline for SOSA 2026. In part this reflects the introduction for SOSA 2026 of a likeliness assessment that excludes any project assessed as less than 75% likely to proceed.[4] In addition, some wind generation projects included in SOSA 2025 were not re-disclosed by investors through the SOSA 2026 survey.

---

[4] We included a likelihood field for projects as part of the SOSA 2026 survey. We only included projects with a likelihood of at least 75%. Previous SOSAs did not include this and would have had more uncommitted, consented and unconsented projects but these would have had a lower likelihood of proceeding.

1.3 Key changes since Draft SOSA 2026

Following the Draft SOSA 2026 several changes have been made to this final SOSA 2026 considering feedback[5] we received together with additional announcements since releasing the draft. These changes include:

- **Updated demand forecast:** To account for the increased load at the New Zealand Aluminium Smelter (NZAS) with the planned restart of the Tiwai fourth potline from 2030.[6] In the Draft SOSA 2026 this 50 MW of additional load was only considered in the high demand forecast scenario. This has now been included in the medium demand forecast scenario following its public announcement.
- **Updated supply pipeline:** Updated the supply pipeline to account for project delays and other recent project updates.
- **Updated Expected Future case gas scenario to include LNG:** The Expected Future case gas forecast retains the Enerlytica low gas forecast but now also includes LNG imports available for winter 2029. This is based on the government's recent announcement that it expects to identify a preferred provider later this year, with the import facility potentially operational by 2028.[7] The increase in gas availability is based on the requirement provided as part of the LNG RFP which requires delivery of 12 PJ of gas over a three-month period. For the Expected Future case we assumed 18 PJ is available over the six-month winter period.
- **Updated demand response contribution:** The demand response assumption in the Reference and Expected Future case were updated from the default SSAD assumption of 2% for the NZ-WEM and SI-WEM to better reflect the New Zealand Aluminium Smelter (NZAS) demand response potential.[8] This resulted in an increase to the modelled demand response for the SI-WEM from 2% to ~5% but largely left the NZ-WEM assumption unchanged at 2%. This update was in response to feedback received on the draft SOSA.
- **Reduced Huntly 5 NI-WCM contribution for 2026:** The contribution of Huntly Unit 5 to the 2026 North Island Winter Capacity Margin (NI-WCM) has been reduced following Genesis' announcement that the unit will be removed from service from 1 July to the end of 2026. As the unit requires a three-to-five day recall period, its ability to respond to peak demand events during winter 2026 is limited, reducing its effective contribution to the NI-WCM.

5 A summary of submissions and response to this feedback is included in the Appendix.

6 See here

7 See LNG imports to help secure affordable energy | Ministry of Business, Innovation & Employment

8 See Demand-Response-Agreement-dated-30May-2024.pdf

1.4 Short-term findings (2026-2028)

In the short-term (2026-2028), we have assessed the Reference case by assuming the supply side comprises existing investments and those for which final investment decisions to commit projects have been made.

The **NZ-WEM** is expected to remain below the upper security standard but above the lower standard signalling an efficient level of national energy to get through dry winters. However, this finding is sensitive to different assumptions as highlighted by testing against key sensitivities. The NZ-WEM lower security standard could be breached if new generation projects are delayed, there is reduced Huntly generation to provide support in extended dry periods, demand growth is faster, gas supply is lower, or wind and/or solar generation output is weaker than assumed.

The **SI-WEM** security margin is above the upper security standard for the Reference case in the short-term, signalling supply resources are likely to be able to meet South Island dry winter energy needs. While the SI-WEM is strong it is sensitive to a number of risks. New generation project delays, reduced thermal generation support during extended dry periods, higher demand growth or low gas supply could result in SI-WEM falling below the lower standard.

The **NI-WCM** security margin is also above the upper security standard for the Reference case in the short term, signalling there is enough supply side capacity to meet forecast North Island winter peak demand (including reserves). Capacity risks[9] can still occur due to low wind output and limited Rankine availability during periods of very high peak demand such as during cold, dark, still winter mornings and evenings. Delays in new project delivery will increase risk of the NI-WCM security margin falling below the standard.

A more subdued growth in electricity demand would hold all three margins above the upper standards well beyond the short-term horizon provided all committed projects are delivered. The high gas/LNG sensitivity has little impact in the short-term due to the fact that the analysis assumes that LNG will only be available by winter 2029. Declining domestic gas supply means other industrial gas consumption reduces with the residual gas being reallocated to power generation when it is needed.

1.5 Mid-term findings (2029-2031)

For the mid-term period we have assessed the Reference case by assuming that the supply side comprises existing and committed investments, plus those investments that are consented and assessed as at least 75% likely to proceed.

---

9 Note these include increased risks of reserve shortfall and if more severe then also energy shortfall risks.

On this basis there is an emerging dry year energy gap with the **NZ-WEM** falling below the lower security standard by 2031 even with all committed and likely investments delivered without delay. Project delays, reduced thermal generation availability, higher demand growth, lower gas supply and lower wind/solar generation can all bring forward the point at which the NZ-WEM falls below the lower standard. This risk could be reduced if some Stage 3 projects, could be brought online ahead of winter 2031, however these Stage 3 projects carry a higher delivery risk given these are not yet consented[10].

The **SI-WEM** security margin is above the upper security standard for the Reference case in the mid-term, signalling the expected supply resources are likely to be able to meet South Island dry winter energy needs. If the consented and likely new generation investments are not committed the SI-WEM could fall below the lower margin around 2033. Other sensitivities such as higher demand growth, lower gas supply, lower thermal generation availability, or lower wind and/or solar generation output would expose it to further risk.

The **NI-WCM** security margin is above the upper security standard for the Reference case in the mid-term, signalling there is expected to be enough supply side capacity to meet forecast North Island winter peak demand. Reduced gas supply could drive the NI-WCM below the lower standard by around 2030 with real-time operational coordination of supply to meet demand re-appearing from 2031 even with all the consented and likely projects built. Similar to the short-term findings for the NI-WCM, higher demand growth would increase exposure to risks arising due to new supply project delays and/or lower availability of thermal generation.

A more subdued growth in electricity demand would hold all three margins above the upper standards well beyond the mid-term horizon provided the committed and consented supply pipeline is delivered on time. The high gas sensitivity delays the NZ-WEM and SI-WEM crossing their respective standards by a year which for the NZ-WEM means delaying it crossing the lower security standard beyond the mid-term.

1.6 Long-term findings (2032-2035)

For the long-term period we have assessed the Reference case by assuming that the supply side comprises existing and committed investments, those investments that are consented and assessed as at least 75% likely to proceed, and investments for which consent is expected to be sought within two years.

On this basis the **NZ-WEM** remains above the upper security standard. However, if the modelled supply side projects do not proceed the NZ-WEM could fall below the lower security standard by 2031. Strong demand growth over the next decade could cause shortfalls by 2035. Higher

---

[10] These projects are not yet consented and potentially seeking consent within the next two years. We consider Stage 3 projects for the long-term assessment.

demand growth in combination with other sensitivities such as reduced Rankine availability, lower gas supply or lower wind and solar supply, could result in the NZ-WEM falling below the lower standard earlier.

The **SI-WEM** security margin is above the upper security standard for the Reference case in the long-term, signalling the modelled supply resources are likely to be able to meet South Island winter energy needs. Strong demand growth increases exposure to other risks such as lower gas supply, reduced thermal generation capability and lower wind and solar supply. Combined these can result in the SI-WEM dropping below the lower standard in the long-term.

The **NI-WCM** security margin is also above the upper security standard for the Reference case in the long-term, signalling there is expected to be enough supply side capacity to meet forecast North Island winter peak demand. Higher peak demand growth, very low gas supply and real-time operational coordination of supply to meet demand are ongoing downside risks. Peak capacity risks persist.

In the longer-term provided the supply pipeline[11] is delivered, margins remain above the relevant standards at the end of the assessment horizon. A more subdued growth in electricity demand, or a higher gas supply forecast, would hold all three margins above the upper standards beyond the ten-year SOSA horizon.

1.7 Expected Future case

For SOSA 2026, we've introduced an Expected Future case to represent the combination of the Reference case and sensitivities that we think (at the time of publishing) reflect the most likely outcome for the 10-year modelled period (2026-2035). We intend to track actuals against the Expected Future case as part of our quarterly Security of Supply Outlook.

The proposed Expected Future case uses the same, medium demand forecast as for the Reference case, which includes step changes in loads that have at least a 50% chance of proceeding. Large new loads that can arise due to industrial electrification or data center connections can proceed rapidly to materially increase demand. We think that a lower demand forecast, that relied more on historical demand trends, would

[11] This includes committed projects, consented and likely to proceed projects, and projects likely to be consented in the next two years. Solar generation projects make up a large proportion of the forward supply pipeline (in terms of installed capacity). There is a risk that too much solar generation during the daylight hours can collapse spot prices resulting in lower revenues for future solar projects and as a result affecting their viability. While the forward supply pipeline (particularly in the longer-term) indicates healthy margin potential there is a risk if some of these future generation projects do not get built or are delayed.

underestimate future pressures on the system and risk underinvesting in supply. Including these step loads supports better forward-looking planning to prepare the system for plausible, high-impact outcomes.

The Expected Future case varies from the Reference case by:

- using the low gas supply forecast instead of the medium gas forecast. At this stage, we think this forecast best reflects ongoing trends in gas supply relative to forecasts.[12]
- including LNG imports from winter 2029, based on the government's recent announcement that it expects to identify a preferred provider later this year, and the import facility could be operational by 2028.

For all other inputs we have used the same assumptions as for the Reference case.

The table below shows the year the energy margins cross the lower security standard in the Reference case and Expected Future case (for the draft and final SOSA). The earlier crossing of the NZ-WEM lower security standard under the Expected Future case[13] compared to the Reference case reflects the risk of lower domestic gas production in the short-term ahead of LNG imports being available. This risk is reversed in the mid-term for the final Expected Future case where the availability of LNG imports (even with lower gas supplies) delays the crossing of the standards relative to the Reference case.

In the low gas scenario without LNG (i.e. the Expected Future case used for the Draft SOSA), the NZ-WEM drops below the lower standard in both the short-term and mid-term indicating insufficient committed and consented projects currently in the pipeline to maintain the NZ-WEM above the lower security standard. In the longer-term provided sufficient Stage 3 projects are consented and built on time (as developers intend), the margins recover above the security standards under a medium demand growth future and without other downside risks (such as reduced thermal generation availability or a higher demand growth).

There is no impact on the NI-WCM between the Reference and Expected Future case.

---

12 The recent MBIE gas reserves reporting has downgraded available gas reserves which all else being equal, indicates an increasing likelihood of a lower gas production outlook. See Petroleum reserves overview – 1 January 2026

13 This is for both the draft and final Expected Future case

Table 2: Lower security standard crossing year

	NZ-WEM			SI-WEM		
Case	**Short-term (2026-2028)**	**Mid-term (2029-2031)**	**Long-term (2032-2035)**	**Short-term (2026-2028)**	**Mid-term (2029-2031)**	**Long-term (2032-2035)**
Reference case Uses a mid-gas supply forecast.	None	2031	None	None	None	None
Expected Future case (Draft) Uses a low gas supply forecast with no LNG	2028	2030	None	None	2031	None
Expected Future case (Final) Uses a low gas supply forecast with additional gas (18 PJ over 6 months) from LNG imports in a dry year	2028	None	None	None	None	None

1.8 What does it mean for industry?

In the **short-term (2026-2028)** it is important that industry maintain an ongoing focus on delivering new supply-side projects across generation and batteries on time, and maintain thermal fuel supplies and flexible generator assets including the three Rankine units. Committing to build additional projects, particularly those with firm fuel supplies and/or real-time flexible capability, will reduce exposure to downside risks such as lower gas supply and higher-demand growth associated with step-changes in demand due to electrification and/or data centre connections. Such additional projects coming forward would also better mitigate against risks to thermal generator availability. For slower-start thermal generators, sufficient unit commitment to winter peak demand periods is important.

In the **mid-term (2029-2031)** increasing the NZ-WEM above the lower security standard can be achieved by bringing forward additional consent-ready projects and maintaining a well-balanced, diverse pipeline of ready-to build generation that is less vulnerable to weather-dependent risks. Doing so will also help provide better SI-WEM resilience to extended dry periods. The availability of additional gas supplies via

LNG imports will help thermal generation provide dry-year cover and reduce exposure of falling below the standards under a lower domestic gas production outlook. A focus on developing a pipeline of additional consent-ready flexible peaking capacity can mitigate exposure to North Island capacity risks.

Industry can reduce longer-term risks **(to 2035 and beyond)** by adding and consenting additional future projects with less weather-dependent generation risks. Doing so will help to support resilience for any enduring period of high national electricity demand growth. This should include expanding the pool of future projects and prioritising flexible, fast-response resources (generation and demand-side) to mitigate peak capacity risks.

Our current Expected future case indicates a risk of the NZ-WEM falling below the standards in the short-term. The availability of additional gas supplies via LNG imports will not reduce dry-year risks in the short-term (due to implementation timelines), but will help reduce exposure from falling below the standards under a lower domestic gas production outlook in the mid-term. If LNG implementation is delayed, additional dry-year firming[14] resources need to be consented and committed to reduce this risk if rapid decline in gas supply persists.

[14] Dry year firming includes resources such as geothermal, thermal, wind, solar and long duration demand response. They assist with providing energy during dry-years but to varying degrees.

2 Introduction

2.1 About the SOSA

The purpose of the SOSA is to inform risk management and investment decisions by market participants, policy makers, and other stakeholders. Transpower, as the System Operator, publishes the SOSA annually. It provides a 10-year assessment of the balance between supply and demand in the New Zealand electricity system to manage dry winters and winter peaks. The timeframe assessed through SOSA 2026 is 2026 to 2035.

Each annual SOSA is informed by two rounds of consultation and a survey of market participants. In November 2025 we invited feedback from market participants on the proposed key Reference case assumptions and the sensitivities to apply (individually and combined) to the Reference case. We received five submissions and thank those who took the time to review and provide feedback, which has helped us to refine the SOSA 2026 analysis. [15] In February we communicated the changes we decided to make in response to Reference case assumptions and sensitivities on which we consulted.[16] In late 2025 we also completed the survey of market participants to collect (confidentially) information about expected and potential future generation investments (the potential supply pipeline). We completed the survey earlier than in previous years to allow time for any follow-up questions or data requests that may affect SOSA modelling. The feedback and information we receive through these engagements has informed our analysis and the draft SOSA 2026 report which we consulted on in April 2026. We received feedback from seven stakeholder organisations.[17] This feedback together with changes to industry and system conditions has helped inform this final SOSA 2026.

---

15 From ERA, Fonterra, Mercury, Meridian and MEUG. The consultation paper, the submissions we received and our response to them are available on our webpage.

16 2026 Security of Supply Assessment - Reference Case Assumptions and Sensitivities - Response to Feedback.pdf

17 Invitation to Comment: Draft Security of Supply Assessment 2026 (Closed) | Transpower

More detailed System Operator security of supply forecasts that highlight shorter term timeframes and operational risk include the quarterly Security of Supply Outlook,[18] monthly Energy Security Outlook,[19] New Zealand Generation Balance,[20] System Security Forecast,[21] various market insight publications,[22] and the Weekly Market Report.[23, 24]

18 Quarterly Security of Supply Outlook | Transpower
19 Energy security outlook | Transpower
20 Customer Portal - NZGB
21 System Security Forecast | Transpower
22 Market insights | Transpower
23 Market Operations Weekly Report | Transpower
24 Table 11 in Appendix 7 provides a breakdown of the purpose of each report.

3 Methodology

The SOSA evaluates three security margins and compares them to lower and upper security standards set by the Electricity Authority (**Authority**).[25] The security margins and the current standards are in the Table 3 below. Objectives for the SOSA include to help understand:

- when, and under what circumstances, the capacity and energy security margins will fall below the security standards if no new supply projects are built (other than those already committed); and
- whether the pipeline of new supply projects is adequate to meet the security standards assuming a stable investment environment and adequate market incentives.

Table 3: Energy and capacity security margins

Security margin	Lower Security Standard	Upper Security Standard
New Zealand Winter Energy Margin (NZ-WEM) Do we have enough national energy to get through dry winters?	14%	16%
South Island Winter Energy Margin (SI-WEM) Can the South Island meet its dry winter energy needs, given both supply and inter-island transfer limits?	25.5%	30%

25 Further information on the margin assessment methodology is provided in Appendix 1. The security standards are specified in Electricity Industry Participation Code (the Code), clause 7.3(2). Some key assumptions for the SOSA are specified in the Security Standards Assumption Document (SSAD) and other requirements are set out in the Security of Supply Forecasting & Information Policy (SOSFIP).

North Island Winter Capacity Margin (NI-WCM) [26]**:** Do we have enough North Island generation and contribution via the HVDC to meet North Island peak winter demand including reserves?	630 MW	780 MW

3.1 Security Margins

Three security margins are used to forecast a 10-year view of the balance between supply and demand in the New Zealand electricity system across winter. The **Winter Energy Margins for New Zealand (NZ-WEM)** and the **South Island (SI-WEM)** forecast winter energy supply, in gigawatt-hours (GWh), divided by winter energy demand, in GWh. The margins are expressed as a percentage of total demand. The **North Island Winter Capacity Margin (NI-WCM)**[27] is the sum of North Island supply capacity, less the North Island expected peak demand, plus surplus South Island supply capacity able to be sent north via the inter-island high-voltage direct current transmission link (the **HVDC**) between the North and South Islands. The margin is expressed as a megawatt (MW) value.

Winter is defined as the period from April to the end of October for the NI-WCM, and April to the end of September for the NZ-WEM and SI-WEM. In the context of this assessment the term *supply* includes grid connected generation, embedded generation, hydro storage and batteries.

The NZ-WEM and SI-WEM assess whether it is likely there will be an adequate level of supply and, in the case of the South Island, HVDC south transmission capacity, to meet expected electricity demand during the winter. The NI-WCM assesses whether it is likely there will be adequate supply and HVDC north transmission capacity to meet North Island winter peak demand.

3.2 Security Standards

The Authority defines security standards as part of its responsibility to ensure that the regulatory environment promotes an efficient level of reliability. The purpose of the standards is to represent an efficient level of reliability[28] as a range within which the expected cost of shortage is

---

26 The NI-WCM being below the security standard means increased risk of reserve shortfall and if more severe, then energy shortfall. The NI-WCM standard determined that up to 22 hours per annum of energy or reserve shortfall (i.e. insufficient capacity to supply the reserve requirements and sometimes the actual load on the system) is economic before additional investment in peaking generation is warranted.

27 Our analysis does not make allowances for spinning reserve—that is, peak demand is not increased by the quantity of reserves required. This means the subsequent margin represents excess supply prior to the provisioning of reserves.

28 The range represents the fact that this efficient level should not be considered as a single number due to uncertainties in key assumptions when determining these standards.

equal to the expected cost of new generation. As an example, the national cost benefit analysis conducted by the Authority when producing the NI-WCM security standards determined that up to 22 hours per annum of energy or reserve shortfall (i.e. insufficient capacity to supply the reserve requirements and sometimes the actual load on the system) is economic before additional investment in peaking generation is warranted.

However, being below a lower standard does not mean electricity shortage is expected. Rather it implies that investment in new generation will result in an efficient increase in reliability. It can also be interpreted as indicating the likelihood of electricity shortage. The higher the actual margin observed, the less likely electricity shortage will be, all things being equal.

Generation pipeline information provided by market participants is used together with forecasts of electricity demand across a range of sensitivities in assessing the margins against the standards. The analysis does not analyse or consider other aspects of future investment such as the availability of intra-island transmission and distribution network capacity, the deliverability of planned new-build generation, or the commercial viability or market incentives required for resources to be developed.

3.3 Reference case, sensitivities and Expected Future case

We assess the security margins against the security standards using a range of supply and demand inputs, that are combined into a Reference case. We assess the margins' dependence on key assumptions by applying sensitivities and sensitivity combinations to that Reference case.

This year we have also introduced an Expected Future case that represents the combination of Reference case sensitivities we think (at the time of publishing the draft SOSA 2026) reflects our current view of a most likely outcome for the 10-year modelled period (2026-2035). We intend to report, through our quarterly Security of Supply Outlook updates, on how the market is tracking against the Expected Future case that we publish in the final SOSA 2026 report[29].

3.4 Potential supply pipeline

The potential supply pipeline is a three-stage pipeline that is based on information received confidentially through our SOSA survey of investors and applies an assessment of each potential investment's likelihood to proceed within the 10-year modelled period. For SOSA 2026 we have classified the potential supply pipeline into three stages comprising the generation investments likely to enter the system, grouped based on different levels of investment certainty. The three stages are Stage 1 (existing assets and committed investments for which a final decision to invest has been made), Stage 2 (Stage 1 plus consented and investments likely to be committed) and Stage 3 (Stage 2 plus investments for which consent is likely to be sought within the next 2 years).

---

29 This is in addition to tracking how projects are being delivered against the SOSA potential supply pipeline.

While our analysis makes assumptions about when and how likely it is that a project *could* be developed, it does not attempt to forecast *if* or *when* new supply projects will be developed. Its purpose is to inform risk management and investment decisions by market participants, policy makers, and other stakeholders. The electricity market provides the signals for market participants to decide when, where and what new projects to invest in.

3.5 Time horizons

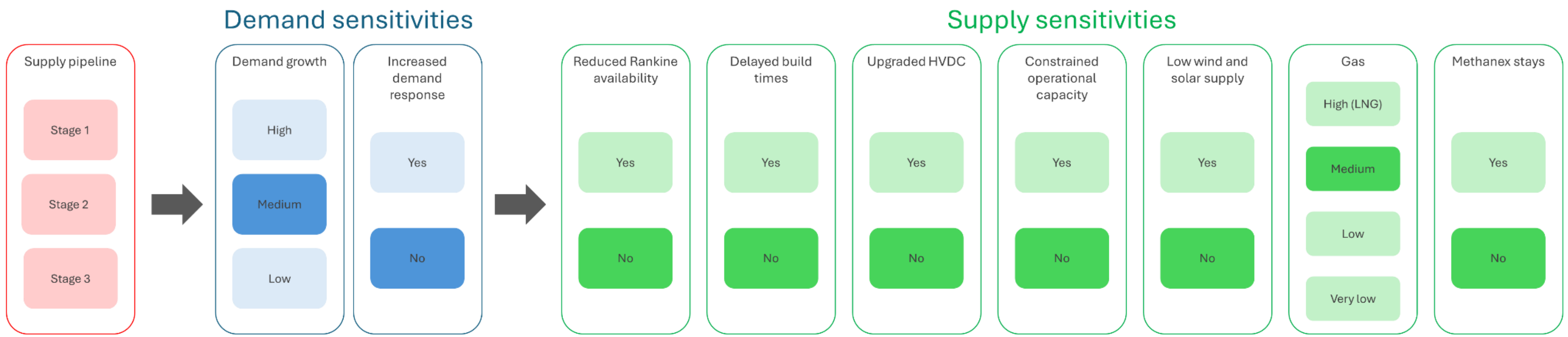
In SOSA 2026, we present the results of the analysis across three horizons:

- Short-term (2026–2028): Issues in this period require immediate attention, as most projects are already committed or under development. Breaches of the standards signal the need to commit additional projects to mitigate near-term risks. The Stage 1 pipeline which comprises of existing and committed projects, is the more relevant supply indicator for the short-term horizon assessment.
- Mid-term (2029–2031): The market has more time to respond. Consented projects can be advanced to address potential shortfalls, or additional consented projects may be needed if the current consent-ready pipeline is insufficient. The Stage 2 pipeline, which includes Stage 1 projects as well as those projects that are consented and likely to proceed, is the more relevant supply indicator for the mid-term horizon assessment.
- Long-term (2032–2035): This horizon allows time to plan and consent new projects. If the existing pipeline is inadequate, the market can assess and develop additional projects that could be consented and delivered in this horizon. The Stage 3 pipeline, which extends the Stage 2 pipeline by also including unconsented projects for which consent is likely to be sought within two years, is the more relevant supply indicator for the long-term horizon assessment.

4 Reference case and sensitivities

Figure 1 below shows combination of assumptions underpinning the Reference case, and the sensitivities[30] used to test it. Almost all combination of sensitivities is assessed for each supply pipeline stage[31]. The darker shaded boxes represent the combination of key variables that make up the Reference case.

Figure 1: Assessed supply pipeline stages and sensitivities



4.1 Reference case

The purpose of the Reference case is to represent the resources expected to be available to the power system over the next ten years. It reflects, where reasonable, a fixed set of assumptions and an outcome that could be expected based on the status quo and aligned with the Authority's SSAD.

As such, the Reference case assumes existing generation and industrial demand remain, unless decommissioning has been publicly announced and/or decommissioning activities are being actively pursued. New resources the market is likely to develop are included but may not be the resources they will develop. This section explains the key assumptions in the Reference case.

30 The Change in Thermal Mix and No New Thermal sensitivities are not included as no projects were submitted that indicated a sufficiently high likelihood of proceeding.

31 We do not assess the Methanex stays sensitivity for the Low and Very low gas sensitivity.

The Reference case provides a consistent benchmark for assessing supply adequacy shifts over time. Outcomes different from the Reference case are explored by testing variations (sensitivities) to the assumptions where there are key uncertainties about how the future might unfold. Section 4.2 below describe the sensitivities we applied for this SOSA.

Investment plans and commitments can change significantly between annual SOSA publications, and in parallel with our work to complete our analysis and report for each SOSA. In Section 8 we discuss an Expected Future case for SOSA 2026 that reflects the combination of the Reference case and sensitivities that reflects our current view of the most plausible state of the sensitivities for the 10-year modelled period (2026-2035).

4.1.1 Demand growth

Our Reference case uses a medium demand growth scenario that focuses on a *medium* rate of acceleration of electrification across the economy and growth of distributed energy resources.[32] To achieve this, transport electrification (electric vehicles), process heat electrification,[33] solar photo voltaic (**PV**) and small-scale batteries are specifically modelled in this scenario.[34] This is consistent with the approach taken for SOSAs since 2012.[35]

An underlying level of demand growth is expected within the existing sectors of the economy. It includes the impact of expected population and economic growth, ongoing electricity efficiency gains (including from urban densification), and ongoing sectoral changes in energy intensity and demand in line with recent trends. The underlying rate of demand growth covers sectoral changes in electricity efficiency and intensity, sectoral shifts in energy demand, growth of population and the economy, and is informed by electricity distribution business (EDB) supplied estimates of demand changes on their networks.

Figure 2 shows the winter energy and peak[36] demand forecasts compared against the SOSA 2025 demand forecast. The drop in the NI peak demand relative to SOSA 2025 is due to reduced peak demand observations in the NI (relative to energy) which has been incorporated into the SOSA 2026 peak demand forecast.

32 Distributed energy resources provide energy and capacity at a household level, offsetting grid demand. For this reason, the expected rate of uptake is modelled in the demand forecast rather than as a supply sensitivity.

33 This includes Fonterra electrification projects at Whareroa and Edgecumbe sites here.

34 Appendix 2 sets out the demand forecast modelling process.

35 Our previous SOSA reports and supporting information since SOSA 2017 are available on our webpage: Security of Supply Assessment | Transpower

36 While the NI-WCM is measured against the North Island winter peak demand forecast, the South Island winter peak demand forecast is used as part of this calculation as it impacts the HVDC transfer.

A key input into the demand forecast is the step loads expected as a result of industrial electrification (e.g. Fonterra and NZ Steel) and new loads expected to come online (such as data centres which have been growing rapidly globally spurred with the increase in AI-driven investment). Our current medium-term forecast includes load increases announced at Fonterra, NZ Steel, New Zealand Aluminium Smelter and DataGrid.[37] We also include other step loads signalled by EDBs as having a 50% or higher likelihood of proceeding[38].

Going forward, we expect to treat large and potential new loads in a similar way to how we determine the supply pipeline, by actively identifying and surveying them as part of the SOSA. This will help ensure emerging demand (not observable in historical trends) is considered early, so the potential risks these could impose can be identified and resolved early.

We've also updated the demand response assumptions used for the NZ-WEM and SI-WEM under the Reference case to account for the contracted demand response at the New Zealand Aluminium Smelter and observed during winter 2024. The SSAD allows for 2% of demand response during winter however this could potentially be greater (particularly for the SI-WEM).[39]

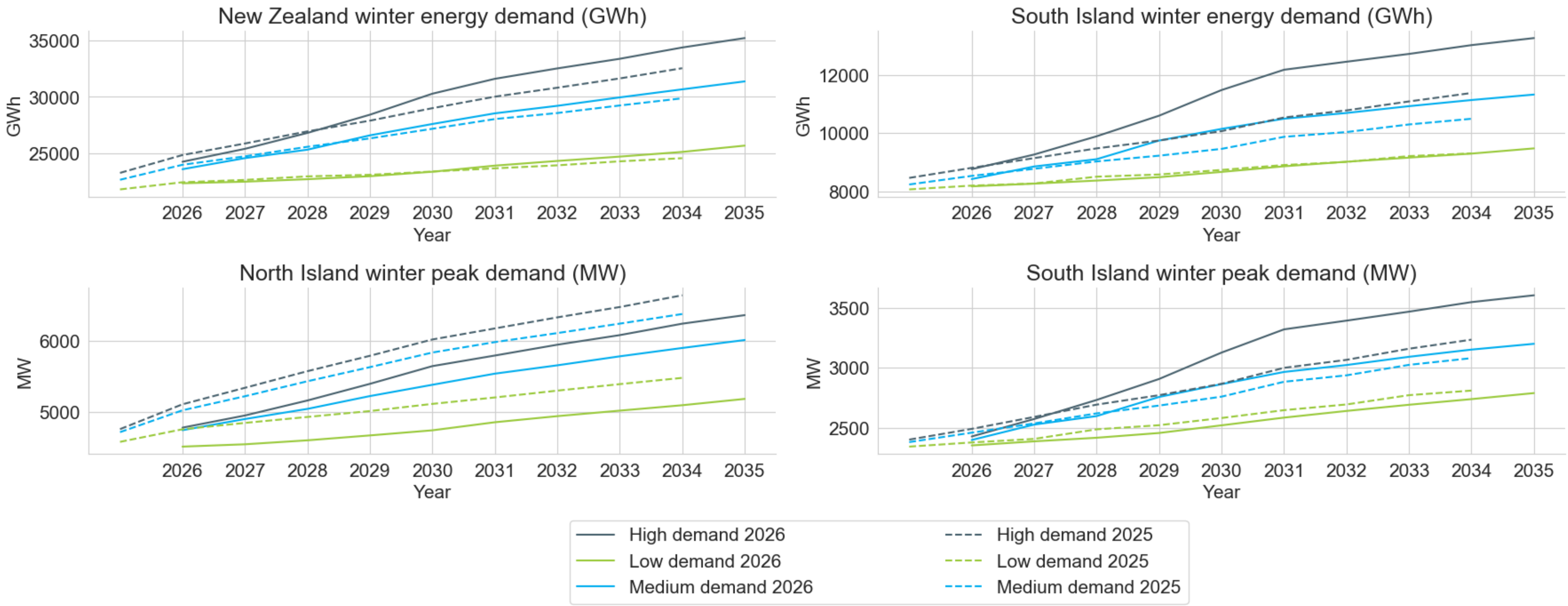
---

37 The recent announcement of the DataGrid consent approval in the South Island is an example of this load growth potential. DataGrid have announced a 140 MW, 15-year power purchase option agreement with Mercury. For our Medium demand scenario, we have included 120MW increase in load for DataGrid ahead by Winter 2029.

38 These potential new step loads would connect into existing distribution networks. A 50% likelihood was used for these step loads to reduce the risks of over or under-estimating the impact from these step loads given the limited detail available on these projects.

39 We assessed the NZAS demand response on an expected capability that we could assume could persist during April to September over the SOSA modelling horizon, taking into account the demand response options and constraints on option calls. Our assessment indicates that while ~500 GWh over winter is theoretically, ~335 GWh is a more realistic assumption taking into account practicalities like forecast uncertainty. As a check we also assessed the delivered NZAS demand response from April to September during the 2024 dry year which was ~330 GWh.

Figure 2: New Zealand winter energy, North Island winter peak and South Island winter peak demand forecasts compared to the SOSA 2025 forecasts



4.1.2 Supply

4.1.2.1 Supply pipeline stages

Consistent with previous SOSAs, the potential supply pipeline is based on information provided by market participants on a confidential basis through our annual SOSA survey. In contrast to Transpower's published grid connection pipeline information, the SOSA also accounts for generation connected to distribution networks (embedded generation) and confidential information about potential investments that may not yet be publicly available. We assume that existing generation remains available unless decommissioning is publicly announced, and/or decommissioning activities have been committed to and are being actively pursued.

For SOSA 2026 we assessed the Reference case by categorising the potential supply pipeline into three stages (rather than the four stages used for prior SOSAs including SOSA 2025). We have introduced a final investment decision criteria for committed projects[40] and a likelihood assessment for uncommitted projects. The stages and proposed categorisation are shown in Table 4 below.

Our SOSA 2026 survey required each respondent to provide us with its own assessment of the likelihood of the potential investment proceeding. We also tested that assessment against other sources of information including Transpower's published grid connection pipeline information. A potential investment is assessed as "likely" to proceed in the 10-year modelled period if it has at least a 75% chance of proceeding.[41,42]

Table 4: Supply pipeline stages

Stage	Short description	Long description
Stage 1	Existing and committed	Includes: • Existing assets • Committed investments for which a final decision to invest has been made.
Stage 2	Stage 1 + consented and likely	Includes: • Existing assets • Committed investments for which a final decision to invest has been made

40 The inclusion of final investment decision as a criteria provides more consistency in participants responses compared to previous SOSAs where "committed" was more subjective.

41 We requested from surveyed parties the likelihood of projects proceeding from consent to committed or from unconsented to consented in the next two years. Projects with a likelihood response of 75% or greater were included in the supply pipeline. All else being equal we would expect the introduction of the likelihood assessment would reduce the pool of potential new projects which, as we've seen in previous SOSA's. Previous SOSA surveys resulted in a large number of very optimistic projects being submitted resulting in an inflated supply pipeline which included projects that had a low likelihood of proceeding (particularly unconsented projects). We've used a 75% threshold to accommodate for this optimism bias.

42 While these updated criteria are intended to filter more likely investments, market and other incentives will inform investment decisions. New supply projects will most likely be progressed only when the market conditions justify investment. Delays may occur for a variety of reasons, including plant availability, logistics and transmission requirements. It is also possible that projects may be expedited to respond to market conditions.

Stage	Short description	Long description
		• Potential investments that are consented and likely to proceed but a final decision to investment is yet to be made.
Stage 3	Stage 2 + consent likely to be sought	Includes: • Existing assets • Committed investments for which a final decision to invest has been made. • Potential investments that are consented and likely to proceed but a final decision to investment is yet to be made. • Potential investments that are not consented and consent is likely to be sought within the next two years.

Different supply technologies contribute differently to energy and/or capacity. Figure 3 shows the contribution of the supply pipeline stages for both energy and capacity. New supply project timings are based on commissioning dates provided by market participants, and if a date has not been provided, we have used an estimated earliest potential build date.[43] Figure 3 should not be interpreted as a forecast of new generation build.

The 12 subplots shown in Figure 3 are split into three rows and four columns. Each row shows generation in each of the three supply pipeline stages. The associated potential winter energy and capacity capability at different regional aggregations is shown in each of the four columns. The existing and committed generation is shown in the grey bars, and the pipeline of likely new supply projects are shown in the other colours classified by technology type. Here we see investment in a range of technologies being considered. There is some geothermal, but the likely future supply pipeline is dominated by wind, solar and batteries with the majority of these expected in the North Island.

43 Table 6 within Appendix 3 defines earliest build dates.

The increase in the Stage 2 pipeline indicates some projects are consented and considered likely to proceed. The larger increase is in Stage 3 which indicates a larger pool of unconsented projects for which consent is likely to be sought within 2 years.[44] Given these projects are not yet consented, they have a higher degree of uncertainty.[45]

A clear observation is the pipeline being heavily weighted towards wind and solar projects. Both these are intermittent, inverter-based generation sources and while they provide somewhat[46] predictable energy contributions over long periods of time (e.g. months), they are less predictable over shorter-time horizons (e.g. days/hours).[47] This lack of predictability and certainty creates challenges in balancing supply and demand.

There are also some geothermal and batteries in the pipeline. Batteries provide a greater ability to manage peak load periods but do not contribute additional energy[48]. Those batteries already contributing to the power system can only operate for about two hours at full generation output, which reduces their flexibility and ability to "hit-the-peaks".

While the SOSA does not assess a South Island winter capacity margin, we have included the supply pipeline of South Island winter capacity in Figure 3. This capacity, less South Island peak demand and limited by the HVDC link capability, contributes to the calculation of the NI-WCM.

---

44 This observation is supported by Transpower in its role as Grid Owner; the Grid Owner has seen a large increase in customer enquiries from both generation and demand, as highlighted in Transpower's New Connection Enquiries Dashboard.

45 An example of this uncertainty is the risks in future profitability based on changing system conditions. As an example, wind and solar generation projects make up a large proportion of the forward supply pipeline. While there is geographic diversity, if there is increasing quantities of wind and solar projects the resulting effect (all else being equal) would be a reduction in spot prices during windy days (or in the case of solar, sunny days). This reduction in spot prices reduces the spot price received by wind and solar generation (also called the generation-weighted average price or GWAP) resulting in lower revenue expectations for future wind and solar projects and as a result increasing risks of these projects being delayed or cancelled.

46 Wind and solar generation output can also fluctuate from month-to-month depending on weather patterns.

47 See here: Market Operations - Weekly Report - 10 November 2024.pdf and Market Operations - Weekly Market Movements - 5 May 2024.pdf

48 Batteries are net load on the system due to roundtrip efficiency losses. It takes more energy to charge the battery than what it discharges back to the grid. As an example, assuming a daily charge-discharge cycle for the supply pipeline of batteries with a roundtrip efficiency of 90% would increase the annual winter energy demand by ~0.05% to ~0.15%. Given the relatively small impact on winter energy demand, the battery net energy load is excluded from the NZ-WEM and SI-WEM calculations.

Figure 3: Contributions of supply pipeline to the New Zealand Winter Energy, South Island Winter Energy and North Island Winter Capacity margins

Figure 4 compares the supply pipeline for SOSA 2026 with that for SOSA 2025 in terms of contribution to energy and capacity supply. This covers existing, committed, and new supply projects.[49] We have updated the definition of the stages[50] in the survey for SOSA 2026 so a comparison with the SOSA 2025 pipeline is not entirely like-for-like.

The data shows that there been an increase in the existing and committed winter energy capability for SOSA 2026 in the short-term (2026 and 2028 modelled winters) compared to what was expected last year. It is in part due to the increased gas available for power generation, despite the decline in forecast gas production and some additional generation being committed.[51] The reduction in energy capability for winter 2027 in SOSA 2026 relative to SOSA 2025 is due to some committed projects in the SOSA 2025 pipeline expected (for SOSA 2025) to come online in 2027, that (informed by the SOSA 2026 survey) have either been pushed back a year and/or are now classified as uncommitted.[52] This change in committed project timing and classification reduces the committed project pipeline in 2027 for SOSA 2026 relative to SOSA 2025.

There has been a decline in new supply projects[53] in SOSA 2026. This is due to some projects being committed and some large potential wind generation projects not being signalled as proceeding in this year's SOSA survey. The reduction in new supply in SOSA 2026 is also due to redefinition of the supply pipeline stages where previously uncommitted, consented and unconsented projects that were less likely to proceed were included but are now not. This reduces the quantity of the SOSA 2026 pipeline relative to the SOSA 2025 pipeline (all else being equal).

---

49 This includes projects in Stages 1 to 4 in SOSA 2025 and Stages 1 to 3 in SOSA 2026.

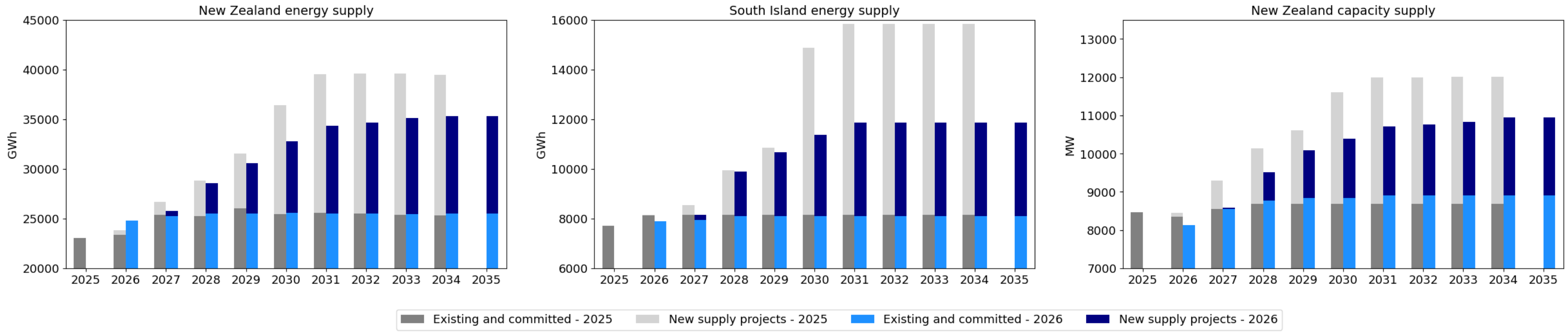
50 Stage 1 definition in SOSA 2026 includes a final investment decision criteria for committed projects and Stages 2 and 3 in SOSA 2026 include a likelihood criteria.

51 This is discussed further in the Gas Supply section.

52 The SOSA 2025 pipeline did not include final investment decision as part of the committed criteria.

53 This includes new uncommitted projects from Stages 2-4 for SOSA 2025 and Stages 2-3 for SOSA 2026. Note SOSA 2026 also has a likelihood assessment and includes high likelihood projects (at least 75% likelihood) whereas SOSA 2025 did not and therefore also included projects that had a lower likelihood of proceeding.

Figure 4: Winter energy and capacity supply in 2026 compared to 2025



4.1.2.2 Gas supply

Gas supply availability (for gas-fired generation[54]) was assessed by estimating a dry year gas supply margin for each of the next ten years. Gas supply assumptions were based on confidential information from gas producers for 2026 to 2027, and Enerlytica's mid-range forecast in later years.

For our Reference case we assume that gas supply availability for generation reflects both Methanex and Ballance Agri-Nutrients' Kapuni sites shutting production in 2027. We've also modelled forecast reductions in other industrial, commercial and residential gas usage[55].

54 The SOSA modelling applies gas-fired generator capacity de-rating factors reflective of the gas supply forecast to be available for generation. The de-rating factors reflect an energy/capacity trade-off that begins to derate the capacity contribution from peakers when they fall below a 5% capacity factor, and for combined cycle plants when they fall below a 25% capacity factor. The 5% allowance of gas supply for peakers is last to be derated. Otherwise, less efficient units are derated first

55 This is aligned with the Gas Industry Company (CIG) demand forecast as part of their recent supply-demand analysis and forecast reductions of gas distribution indicated by the Commerce Commission. See 2026-GIC and Concept Consulting-Gas-demand-projections-to-feed-into-the-default-price-quality-path-DPP-regulation-of-gas-distribution-businesses-22-August-2025-v2.pdf

The dry year gas supply margins[56] reflect that generators can potentially secure additional gas for dry year power generation compared to the SOSA 2025. The decline in forecast gas production, is offset by a decline (and expected future reduction) in gas demand due to industrial exit, flexing or switching to other fuels including electrification.[57]

The level of gas production over the assessment window is a key uncertainty affecting the security of supply margins, and particularly the energy margins. As such, we consider the impact of a "very low", "low" and a "high" gas supply sensitivity as discussed in the sensitivities section. Together these can show the effect of the range of plausible gas supply outcomes.

4.1.2.3 Methanex stays

At the time of preparing the SOSA we noticed no sensitivities considered the potential impact of Methanex remaining. While we consider this unlikely given the current declining gas situation, the sensitivity tests the impact on the margins relative to the standards if it did. In some ways this provides an additional gas supply sensitivity for the SOSA as there would be less gas available for power generation in this sensitivity. In this sensitivity we assume Methanex shuts down for two months over winter to provide dry year support under the medium gas forecast and does not shut down during winter under a high gas supply sensitivity.

4.1.2.4 HVDC capacity

The Authority's Security Standards Assumptions Document (SSAD) sets assumptions for the high-voltage direct current (HVDC) inter-island link that reflect its current capacity.

Transpower in its role as the Grid Owner is currently progressing:

- investment in a static synchronous compensator (STATCOM) and other equipment at Haywards that is committed and expected to be completed by 2027. These upgrades will result in greater contribution from the North Island to the SI-WEM. The extent to which the increased south flow capacity can be utilised will be dependent on the availability of sufficient instantaneous reserves in the South Island and limited by any AC transmission and voltage stability constraints restricting increased south flow. It also increases the proportion of time the HVDC north transfer can operate at its capacity.

---

56 The details of the gas supply margins is provided in Appendix 4.

57 This includes amongst other Methanex, Ballance and Fonterra.

- a proposal to renew the HVDC link, which was submitted to the Commerce Commission in September 2025 for its consideration[58]. This proposal includes the addition of a fourth cable that would allow a greater contribution from the South Island to the NI-WCM.

Clause 7.3 of the Code allows the System Operator to use different assumptions from those in the SSAD if there are good reasons to do so. If so, we must show how the SOSA differs as a result of using those different assumptions.

Given the HVDC STATCOM investment is committed, we have incorporated it as part of the Reference case from 2027. This STATCOM investment will increase the amount of time the HVDC can operate closer to its full capacity but will not increase the maximum transfer capacity as modelled by the South Island contribution curve given in the Security Standards Assumptions Document. Hence the capacity of the HVDC north flow capability will be as described in the Authority's "Security Standards Assumptions Document". These upgrades will increase the contribution from the North Island for the SI-WEM[59].

We explore the impact of the potential future increased HVDC capacity (with a fourth cable) as a sensitivity.

4.1.2.5 Thermal plant availability

Contact Energy's Taranaki Combined Cycle generation (TCC) is modelled as unavailable in the Reference case in line with its announced decommissioning.

In November 2025[60], the Commerce Commission published its decision to authorise agreements that support the retention of all three Rankine units at Huntly until 2035. Based on this, the Reference case models these units as available, with sufficient fuel to run them when needed, throughout the assessment horizon. The impact of reduced Rankine availability is captured as a sensitivity.

Gas-fuelled generator operation is limited by the quantity of gas available in the relevant scenarios. In the reference case there is insufficient gas to run all gas-fuelled generators to fully support dry year winter operation. Our modelling assumes the market efficiently allocates gas in dry

---

58 The Commerce Commission draft decision is to approve the Transpower Stage 1 proposal which includes replacing existing HVDC transmission assets and enhancing the HVDC capability to 1400 MW with a fourth cable. See Transpowers-HVDC-Stage-1-MCP-draft-decision-reasons-paper-1-April-2026.pdf

59 This depends on the on the availability of sufficient instantaneous reserves in the South Island and limited by any AC transmission and voltage stability constraints restricting increased south flow.

60 See Commission authorises Gentailers' application for Strategic Energy Reserve Huntly Firming Option | Commerce Commission

years to the most efficient generators first. Therefore deratings, due to lack of fuel, are applied to gas-fuelled generators in order of decreasing efficiency (less efficient plant derated before more efficient plant). The Huntly 5 CCGT is the most efficient and therefore derated last.[61]

4.1.2.6 Peak capacity factors

We've reviewed the peak capacity factors for thermal generation, batteries, wind and solar generation. This review is included in Appendix 6. We've retained the SSAD values where they still provided a reasonable estimate. The key changes have been increases to the wind and solar peak capacity factors.

As in previous SOSAs two of three Huntly Rankine units contribute to capacity, to reflect the slow-start nature of these units and their observed pattern of operation (with three Rankine units and Huntly unit 5 running simultaneously only at times of high energy risk).

Following Genesis announcement[62] on removing Huntly unit 5 from the market from 1st July till end of 2026, we have derated its contribution to the NI-WCM for 2026.

4.2 Sensitivities

The purpose of the sensitivities is to represent plausible variations from the fixed Reference case assumptions which could occur over the 10-year assessment horizon. The sensitivities and compatible combinations of them are used to create a set of potential system states diverging from the Reference case. This allows stakeholders to better assess the key variables that can impact the energy and capacity margins under different potential future states.

We have assessed the Reference case and the sensitivities (and their feasible combinations) for different potential future generation[63] scenarios, which we refer to in the SOSA as supply pipeline stages.

---

61 These deratings apply to generators not linked to industrial processes (co-generators). We have applied no deratings to gas co-generation plant in the reference case or any sensitivities.

62 See Genesis to shut down Unit 5 to support gas consumers | Genesis NZ

63 This also includes batteries.

4.2.1 Demand Side Sensitivities

4.2.1.1 Demand growth

We use the higher and lower electrification demand growth scenarios from Transpower's long-term demand forecast for this sensitivity. This is the same approach we used for SOSA 2025.

Each of these scenarios differs from the medium demand-growth scenario (the Reference case) by varying the rates of acceleration of electrification across the economy, and growth of distributed energy resources. The scenarios are each built up by specifically modelling transport electrification (electric vehicles) and process heat electrification. Different rates of solar PV and small-scale batteries uptake are also modelled as they can offset growth in demand from the grid.

A key input in this year's forecast is the potential for new step loads driven by increased industrial load[64] including electrification and other loads such as data centres. The low demand growth scenario assumes only step loads signalled as certain to proceed were included whereas the high demand scenario included steps loads signalled as having a 10% or higher likelihood to proceed.

4.2.1.2 Increased demand response

Demand response could play a larger role in managing peak loads going forward. This sensitivity explores the impact of increased uptake in demand response (100 MW in both the North and South Islands) on the NI-WCM. It also explores the impact of additional long-term demand response on the NZ-WEM and SI-WEM by decreasing the demand by 2.5% and 5% respectively[65].

4.2.2 Supply Side Sensitivities

4.2.2.1 Gas supply (Very low, low and high)

This sensitivity is intended to show a constrained case for domestic gas production over the coming decade. It reflects a future where capital investment in the upstream gas industry reduces. In this sensitivity, we propose to use Enerlytica's "low" and "baseline" scenarios to provide our low and very low forecasts of gas production from 2028 onwards. For gas production in 2026 and 2027, the forecast is based on confidential information provided to us by gas producers, as in the Reference case.

---

64 Such as the announcement by NZAS that it plans to restart its fourth potline at Tiwai.

65 Further information on this sensitivity is included in the Appendix 5.

Following the Government's announcement that it will establish a liquefied natural gas (LNG) import facility, we have also included an LNG gas supply sensitivity. We have used this to represent the high gas supply sensitivity which uses the Reference case gas supply together with assumptions of potential gas deliverability under a potential LNG import regime (12 PJ over any 3-month period[66] which over a six-month winter period could be as much as 24 PJ which is what we've assumed in the high gas supply sensitivity).

4.2.2.2 Change in thermal mix

The sensitivity previously titled "Thermal decommissioning" has been renamed "Change in thermal mix" to better reflect potential changes in thermal generation availability based on market conditions. This acknowledges that while some existing thermal capacity may be retired, there is also potential for new thermal development (including development of green thermal units that utilise a biofuel rather than a fossil fuel), and/or changes to existing units.

This proposed sensitivity models potential thermal decommissionings and any signalled increase in thermal generation capacity that may be disclosed to us confidentially. This sensitivity is not included in this SOSA as no change in thermal generation was submitted as likely to proceed or seek consent in the next two years.

4.2.2.3 Reduced Rankine availability

This sensitivity models reduced availability of the Rankine units at Huntly. This could represent:

- In the case of capacity (NI-WCM), the unavailability of these slow-start units during short-term, unexpected supply shortages, unrelated to hydrology – for example if acting in a dry year reserve only role.
- In the case of energy (NZ-WEM and SI-WEM), a significant reduction in coal available to operate these units. Coal availability during winter is influenced by the initial coal stockpile size and constraints on the rate of coal imports.
- For both capacity and energy, decommissioning of one or more of these units.

As discussed earlier (Peak capacity factors section), one of the three Rankine units does not contribute to capacity in the Reference case. In this sensitivity, this unit does not also contribute to energy. Additionally, a second unit does not contribute to energy or capacity from 2027 onwards, leaving a single Rankine unit available for both capacity and energy.

---

66 See paragraph 35 here (Government Investment in Dry Year Risk Cover: Consideration of an LNG Import Facility)

4.2.2.4 Delayed build times

This sensitivity explores the impact of delaying the commissioning dates for all new generation projects to account for a range of potential delays, for example, due to resource constraints, resource consent issues, or investment uncertainty[67].

To better reflect such risks, we've updated the 2026 generator survey to obtain a "pessimistic commissioning year" alongside the expected commissioning year for each new project. For this sensitivity, we use the pessimistic commissioning year if one is provided; otherwise, we apply a default one-year delay.

4.2.2.5 Upgraded HVDC

Limits on HVDC transfer capacity can affect both the South Island's contribution to the NI-WCM and the North Island's contribution to the SI-WEM. As noted above Transpower as the Grid Owner is currently progressing:

- investment in a static synchronous compensator (STATCOM) and other equipment at Haywards that is expected to be completed by 2027. These upgrades will result in greater HVDC transfer capability. We've included this into the Reference case.
- a proposal to renew the HVDC link, which was submitted to the Commerce Commission in September 2025 for its consideration. This proposal includes the addition of a fourth cable that would allow greater capacity for northward transfer from the South Island to support the NI-WCM from 2031.

This sensitivity tests the effect of the fourth cable on the NI-WCM from 2031.

4.2.2.6 No new thermal

No new thermal generation was submitted as likely to proceed or seek consent in the next two years. As a result, this sensitivity was not included in this SOSA 2026. Other sensitivities consider the impact of reduced thermal generation availability[68].

4.2.2.7 Constrained operational capacity

This sensitivity explores the market co-ordination challenge of integrating increased intermittent generation with slower start thermal plant, which can at times lead to lower levels of capacity available over peak demand periods. This sensitivity provides a conservative estimate to

---

67 Meridian submitted a response to our draft SOSA 2025 noting that transformers are acting as a specific bottleneck for new generation, leading to a major constraint on the timing of new projects.

68 These would include the following sensitivities: Gas supply, Reduced Rankine availability and Constrained operational capacity.

assess the impact on the NI-WCM. In line with the Firm scenario used for the New Zealand Generation Balance (NZGB) over winter months, this sensitivity assumes a 0% contribution from solar generation to the NI-WCM. This scenario is a metric for the worst-case supply availability scenario. This sensitivity uses the lowest 10th percentile of wind generation output (~8%) to reflect the Firm scenario assumptions in the NZGB, further supporting a conservative assessment.

For this sensitivity we also assume that one less Rankine unit is available to contribute to the NI-WCM (in the Reference case we assume two are available).

4.2.2.8 Low intermittent generation supply

This sensitivity previously called “Low wind supply” is renamed “Low intermittent generation (IG) supply” and models a pessimistic estimate of wind and solar generation output during the winter months. This sensitivity assesses the impact low wind and solar generation output has on the winter energy margins (NZ-WEM and SI-WEM).

Wind and solar generator capacity factors are reduced by 10% to account for lower-than expected wind and solar generation. The 10% reduction was chosen to represent a pessimistic scenario, which aligns with less than the 10^{th} percentile of wind generation across winter and less than 5^{th} percentile of solar generation across winter. This means that the adjusted capacity factors are lower than 90% to 95% of expected outcomes, providing a conservative estimate to assess the impact on the NZ-WEM and SI-WEM.

Further details are provided in the Appendix.

5 New Zealand Winter Energy Margin (NZ-WEM)

Table 5 and Figure 5 below summarise the NZ-WEM analysis results across the short, mid and long-term horizons.[69] The results are described in more detail further below.

Table 5: Summary of NZ-WEM results across short, mid and long-term horizons

Short-term (2026-2028) (Stage 1 pipeline)	Mid-term (2029-2031) (Stage 2 pipeline)	Long-term (2032-2035) (Stage 3 pipeline)

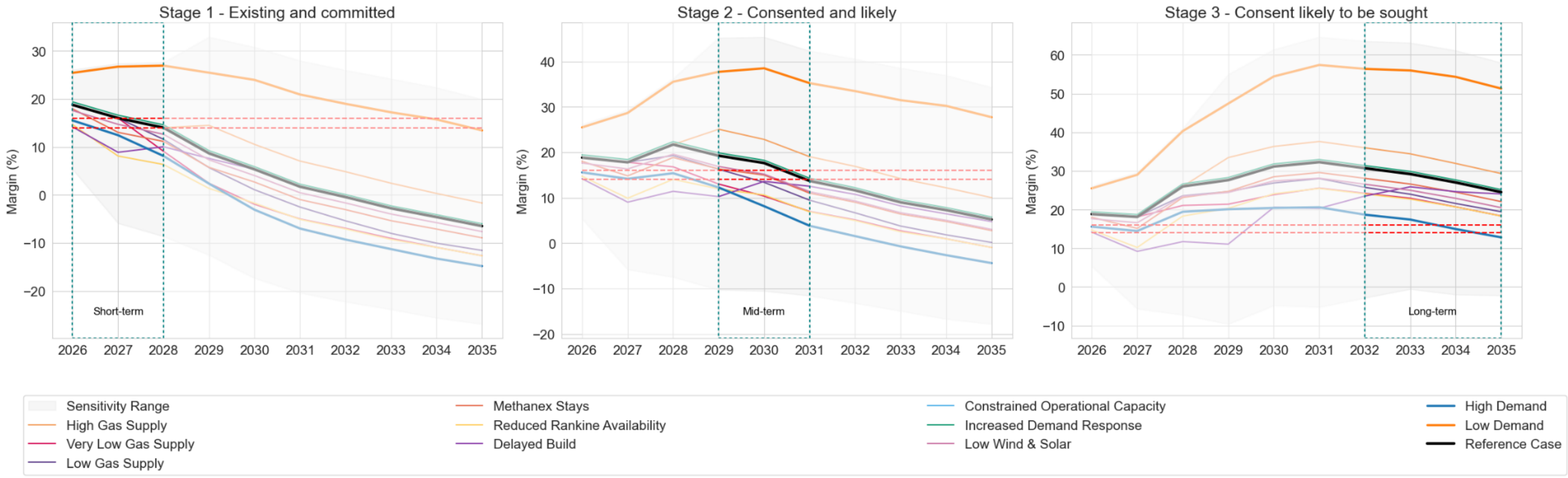
• **Reference case margin remains above lower standard under the Stage 1 development pipeline**
• **Sensitivities** that result in lower standard breaches in the short-term under the **Stage 1** pipeline are:
  • Delayed build [2027]
  • Reduced Rankine [2027]
  • Methanex stays [2027]
  • High demand [2027]
  • Low or Very low gas supply [2028]
  • Low wind and solar supply [2028]
	• **Reference drops below lower standard by 2031 even if Stage 2 developed. If Stage 2 not developed drops below margins by 2029.**
	• **Sensitivities** resulting in lower standard breaches in the mid-term even with **Stage 2** development are:
	  • Reduced Rankine [from 2027]
	  • Delayed build [from 2027]
	  • High demand [2029]
	  • Very low gas [2029]
	  • Methanex stays [2031]
	  • Low gas [2030]
	  • Low wind and solar supply [2031]
		• **Reference case remains above upper standards if Stage 3 developed, otherwise Reference case drops below lower standards by 2031.**
		• **Sensitivities** resulting in lower standard breaches in the long-term even with **Stage 3** development are:
		  • High demand [2035]
		• High demand growth future increases exposure to other sensitivities which can result in margins falling below standards like:
		  • High demand + Low gas supply [2032]
		  • High demand + Delayed build [2032]
		  • High demand + Reduced Rankine [2032]

The NZ-WEM for the low demand growth or high gas supply[70] sensitivities remain above the lower security standards across the assessment horizon provided the Stage 1, Stage 2 and Stage 3 pipelines are developed in the short, mid and long-term horizons respectively.

69 The detailed results are provided in the Appendix.

70 The high gas supply sensitivity includes a medium demand forecast with 24 PJ of additional gas available from LNG over the six-month winter period.

Figure 5: New Zealand Winter Energy margins for the Reference case and all sensitivities



5.1 Short-term (2026-2028)

5.1.1 Reference case

The Reference case[71] remains above the lower security standard through Winter 2028. This is an improvement relative to SOSA 2025, which suggested the security standard could be breached in Winter 2026 before recovering by Winter 2027. The improvement is due to additional

71 Section 4.1 provides a definition of the Reference case.

generation coming online ahead of Winter 2026, and a higher thermal generation contribution with thermal generators having access to more gas for power generation[72] and the forecast decline in gas use due to both industrial electrification[73] and some potential exits.[74]

5.1.2 Sensitivities

The following sensitivities can result in the NZ-WEM dropping below the lower security standard in the short-term under the Stage 1 supply pipeline:

- Delayed build: If supply projects are delayed,[75] NZ-WEM could fall below the standard by Winter 2027. This underscores the importance and of delivering the Stage 1 committed pipeline projects on time to maintain margins above the standards in the short-term.
- Reduced Rankine: Lower Rankine availability[76] during dry winters could see the NZ-WEM fall below the lower standard by Winter 2027, highlighting the critical role of the Rankines in providing dry-year support in the short-term and mid-term. We expect this role to become less critical in the longer-term provided more new renewable generation comes online.
- High demand growth: There is the potential for higher demand growth in the short-term, due to increased electrification (in part associated with expected decline in gas production[77]). There is also the potential for new large loads such as data centres driven in part by the AI investment boom. Under the high demand growth sensitivity, the NZ-WEM could drop below the lower standard by Winter 2027. This highlights the potential risk that demand growth outstrips the available supply from the Stage 1 supply pipeline of existing and committed new projects.
- Methanex stays: Drops below the lower standard from Winter 2027. Under a medium gas forecast, there is insufficient gas to support both Methanex operation during winter and maintain NZ-WEM above the standards.
- Low or very low gas supply: Both these sensitivities result in the NZ-WEM dropping below the standards from Winter 2028. This highlights the importance of gas availability in the short-term to maintain the NZ-WEM above the standards.

---

72 See NZX, New Zealand's Exchange - Announcements, Greymouth Gas Deal

73 See Fonterra announces electrification plans to future-proof operations

74 We have modelled a reduction in gas at Methanex and Ballance from 2027.

75 At least a year or greater if indicated by survey respondents as the project's pessimistic build time.

76 In this sensitivity two Rankines are available for dry year support in 2026 and only one available from 2027. This is described further in 4.2.2.2. While this sensitivity is modelled with reduced Rankines, the effects would be applicable to reduced availability of other large thermal generators such as Huntly 5 (CCGT).

77 As some industrial gas users like Fonterra transition some of their processes to electricity.

- Low wind and solar supply: The growing reliance on IG means a growing reliance on the weather to deliver sufficient generation from wind and solar generation over the winter. If the available wind and solar generation over winter is in the lower 5th-10th percentile range, then the NZ-WEM could drop below the standards by Winter 2028.

5.2 Mid-term (2029-2031)

5.2.1 Reference case

Under the Reference case, the NZ-WEM drops below the lower security standard by 2031 even if the Stage 2 projects are delivered. The increased DR sensitivity increases the margins but is not enough to lift these beyond the mid-term still resulting in the standards being breached by 2031. Without these Stage 2 projects, the NZ-WEM could fall below the lower standard by 2029. This indicates that additional consent-ready Stage 2 projects would be needed to maintain the NZ-WEM above the lower standard for the Reference case in the mid-term.

5.2.2 Sensitivities

The following sensitivities can result in the NZ-WEM dropping below the lower security standard in the mid-term even under the Stage 2 development pipeline:

- Reduced Rankine: Lower Rankine availability during dry winters could see NZ-WEM fall below the standard by Winter 2027. Stage 2 project development (largely wind and solar) provide more winter energy to lift the NZ-WEM however this is insufficient to compensate for the unavailability of one Rankine from 2026 and another from 2027, which is modelled in this sensitivity. This again highlights the importance of the Rankines in helping manage dry-year risk on the system in the short-to-mid-term.
- Delayed build: If supply projects are delayed, NZ-WEM could fall below the standard by Winter 2027. This underscores the importance of delivering Stage 2 pipeline projects on time to maintain the NZ-WEM above the lower standard into the mid-term.
- High demand growth: Even with the current Stage 2 development pipeline, a persistent high demand growth could push the NZ-WEM below the standard by Winter 2029. This highlights the risk if demand growth outstrips the available market supply including those that have already been committed and other likely to build consented-ready projects (Stage 2). A continuous high demand growth trajectory would necessitate getting additional projects consented and ready for investment.
- Gas constrained sensitivities (medium with Methanex stays, low and very low gas): These sensitivities result in limited gas available for electricity generation, which results in less dry-year thermal firming generation and the NZ-WEM dropping below the standards in the

mid-term even if all Stage 2 projects are brought online as indicated. This highlights the risk if gas there is insufficient gas available for electricity generation to support the system during dry years in the mid-term.

- Low wind and solar supply: The IG-heavy Stage 2 pipeline means this risk to lower IG supply over winter persists into the mid-term.

5.3 Long-term (2032-2035)

5.3.1 Reference case

The NZ-WEM for the Reference case stays above the standard if Stage 3 projects are delivered as indicated. Without them, it falls below the standard by 2031.

5.3.2 Sensitivities

There is a large potential pool of projects that are likely to be taken to consent (Stage 3 pipeline). If these are delivered in the longer-term, the system is more resilient with the NZ-WEM staying above the standard for a greater number of the risks assessed via the sensitivities. The following sensitivity can still result in the NZ-WEM falling below the standards in the long-term:

- High demand growth: A persistent high demand growth trajectory over the next decade can result in in the NZ-WEM dropping below the standards by ~Winter 2035 even with all Stage 3 generation projects developed as expected. Developing additional pool of projects that could be taken to consent relatively quickly would be important to ensure that if this risk starts to appear plausible, there is adequate time to bring these projects to market.
- High demand growth combined with other sensitivities: If other sensitivities materialise in a high demand growth future, then the NZ-WEM could fall below the standards earlier. These include:
  - High demand growth + Delayed build: NZ-WEM could fall below the lower standard by 2032. This highlights the importance of maintaining timely project delivery to support (and encourage) a high demand growth future and still efficiently manage dry years.
  - High demand + [Reduced Rankine availability or Low gas supply or Very low gas supply]: NZ-WEM could fall below the lower standard by 2033 for high demand with low gas supply or 2032 for high demand with reduced Rankine availability or very low gas supply. These combinations highlight that thermal backup generation for dry-year management would persist under a high demand growth future unless additional projects (to the current Stage 3 project list) are explored for consenting and delivery over the next decade.

  - High demand + low wind and solar supply: NZ-WEM could fall below the lower standard by 2033. This highlights risk of increased dependence on weather-based generation and if weather conditions result in lower than expected generation from wind, solar (as well as hydro during extended dry periods). These risks become more exposed during a high demand growth future. Maintaining a balanced portfolio of both weather and non-weather dependent resources (supply and demand) can help reduce these risks.

- Reduced Rankine Availability with Low or Very low gas supply: Under a medium demand growth scenario the combination of both reduced Rankine availability and low or very low gas supply can also result in the NZ-WEM falling below the lower standard by 2035. This again highlights the importance of thermal backup generation and the fuel to support it in the longer term. If a very low gas future unfolds, the Rankines would be an important part of maintaining NZ-WEM above the lower standard. Additional Stage 3 projects would be needed to reduce exposure to these risks.

6 South Island Winter Energy Margin (SI-WEM)

The table below summarises the results from the Reference case and Sensitivities across the short, mid and long-term horizons for the SI-WEM.

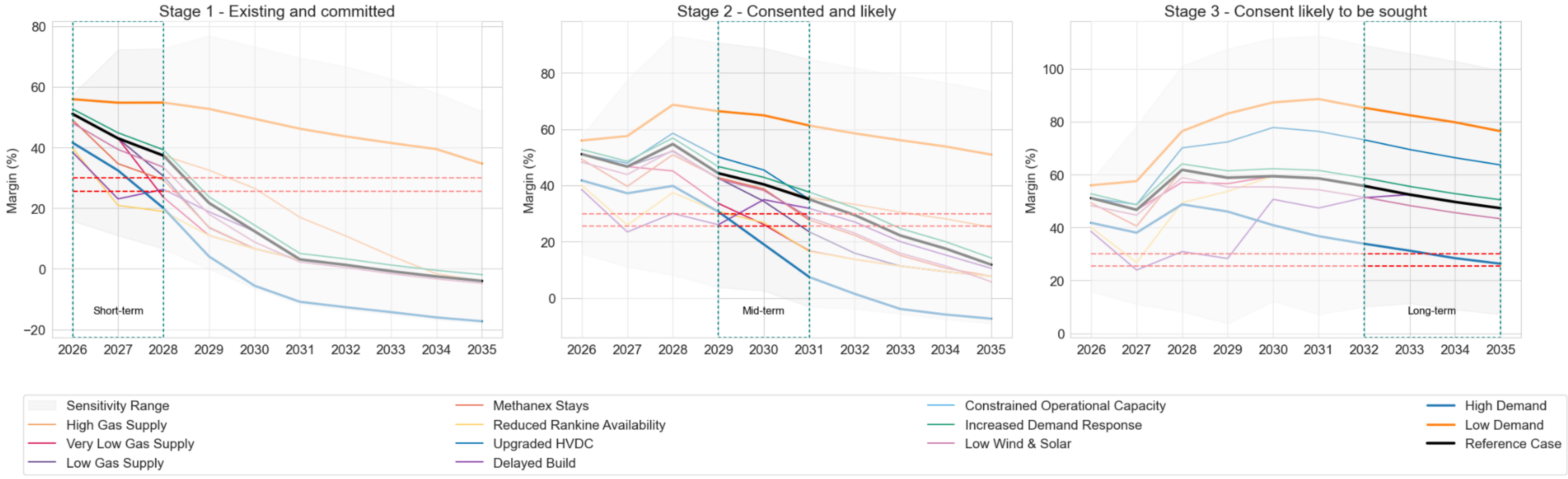
Table 6: Summary of SI-WEM results across short, mid and long-term horizons

Short-term (2026-2028) (Stage 1 pipeline)	Mid-term (2029-2031) (Stage 2 pipeline)	Long-term (2032-2035) (Stage 3 pipeline)
• **Reference case margins remains above lower standard under the Stage 1 development pipeline** • **Sensitivities** resulting in lower standard breaches in the short-term even if all Stage 1 developed are: • Delayed build [2027] • Reduced Rankine [2027] • High demand [2028] • Very low gas supply [2028]	• **Reference case remains above lower standard if Stage 2 developed, otherwise Reference case drops below lower standard by 2029.** • Sensitivities resulting in lower standard breaches in the mid-term even with Stage 2 development are: • Delayed build [from 2027] • High demand [2030] • Reduced Rankine [2031] • Very low gas supply [2031] • Low gas supply [2031]	• **Reference case remain above lower standard if Stage 3 developed, otherwise Reference case drops below lower standard by 2033.** • Combination of sensitivities can result in lower standard breaches in long-term even with Stage 3 development. Some of these are: • High demand + Low gas supply [2034] • High demand + Reduced Rankine availability [2034] • High demand + Low IG [2034]

The SI-WEM for the Reference case and the following sensitivities remain above the lower security standards across the assessment horizon provided the Stage 1, Stage 2 and Stage 3 pipelines are developed in the short, mid and long-term horizons respectively:

- Low demand
- Increased demand response
- High gas supply
- Upgraded HVDC

Figure 6: South Island Winter Energy margins for the Reference case and all sensitivities



6.1 Short-term (2026-2028)

6.1.1 Reference case

The SI-WEM for the Reference case remains above the lower security standard in the short-term, crossing in 2029. This is one year earlier than for SOSA 2025. The modelled HVDC south transfer capability has increased in the Reference case with the committed HVDC STATCOM investment. All else being equal, we expect the HVDC south transfer (and therefore SI-WEM) would be greater compared to using the HVDC south transfer capability as specified in the Security Standards Assumptions Document (SSAD) which does not include the effects of increased HVDC south potential with the HVDC STATCOM in place.

6.1.2 Sensitivities

The following sensitivities can result in the SI-WEM dropping below the lower security standard in the short-term under the Stage 1 supply pipeline:

- Delayed build: If supply projects are delayed, SI-WEM could fall below the standard by Winter 2027. Similar to the NZ-WEM, this highlights the importance and of delivering the Stage 1 committed pipeline projects on time to maintain the energy margins (both SI and NZ) above the standards in the short-term.
- Reduced Rankine: Lower Rankine availability during dry winters could see the SI-WEM fall below the lower standard by Winter 2027. This again highlights the critical role of the Rankines in providing dry-year support in the short-term for the South Island. The SOSA 2026 indicates this becomes less critical in the longer-term as more new renewable generation come online.
- High demand growth: A high demand growth future can result in the SI-WEM dropping below the standards by 2028. As with the NZ-WEM, this highlights the potential risk that demand growth outstrips the available supply from the Stage 1 supply pipeline of existing and committed new projects.
- Very low gas: The importance of gas available for electricity generation to support the SI-WEM is reflected in these sensitivities. Without sufficient gas for power generation the SI-WEM could drop below the lower standard by Winter 2028 for the very low gas supply sensitivity.

6.2 Mid-term (2029-2031)

6.2.1 Reference case

Under the Reference case, the SI-WEM remains above the lower security standard in the mid-term if Stage 2 projects are delivered otherwise it could fall below the standard by 2029.

6.2.2 Sensitivities

The following sensitivities can result in the SI-WEM dropping below the lower security standard in the mid-term under the Stage 2 supply pipeline:

- Delayed build: If supply projects are delayed, SI-WEM could fall below the standard by Winter 2027. This highlights the importance and of delivering the Stage 2 committed pipeline projects on time to maintain the SI-WEM above the standards in the mid-term.
- High demand growth: The high demand forecast for the South Island ramps up in the mid-term with additional step loads potentially coming online. If this occurs, then the current Stage 2 pipeline will not be sufficient to maintain the SI-WEM above the lower security standard from Winter 2030.

- Reduced Rankine Availability: If only a single Rankine is available in the mid-term, there would be risk of the SI-WEM dropping below the lower standard from Winter 2031 even if all Stage 2 projects are brought online as indicated. This highlights the importance of the Rankines in helping efficiently manage dry year risk.
- Low gas or very low gas supply: These sensitivities highlight the importance of sufficient gas for thermal generation to support the SI and to maintain the SI-WEM above the lower standards. The reduced gas supply in these sensitivity results in insufficient gas-fired generation to maintain the SI-WEM above the standards by Winter 2031 even with Stage 2 projects developed as indicated in the surveys.

6.3 Long-term (2032-2035)

6.3.1 Reference case

Reference case remains above lower security standard if Stage 3 developed, otherwise it drops below the standards by 2032.

6.3.2 Sensitivities

A high demand growth future increases exposure to other sensitivities resulting in the SI-WEM dropping below the lower security standard as shown below:

- High demand + Very low or low gas supply [2034]
- High demand + Reduced Rankine availability [2034]
- High demand + Low wind and solar supply [2034]
- High demand + Methanex stays [2035]

Increasing a balanced portfolio of Stage 3 projects can help reduce exposure to these downside risks.

7 North Island Winter Capacity Margin (NI-WCM)

The table below summarises the results from the Reference case and Sensitivities across the short, mid and long-term horizons for the NI-WCM.

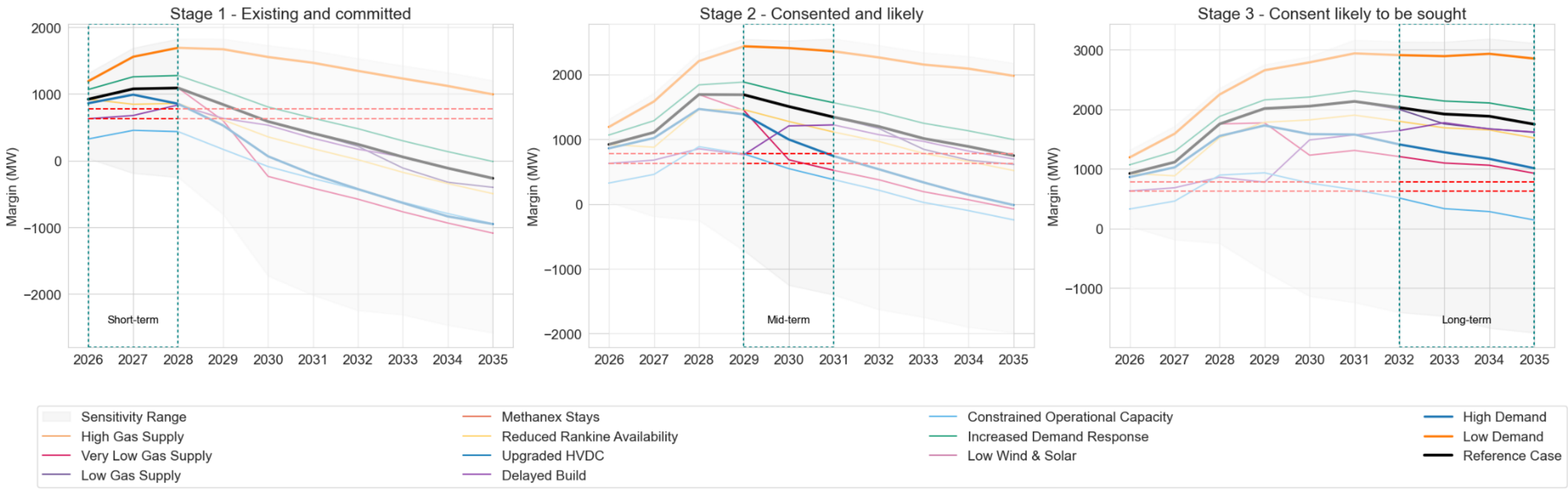
Table 7: Summary of NI-WCM results across short, mid and long-term horizons

Short-term (2026-2028) (Stage 1 pipeline)	Mid-term (2029-2031) (Stage 2 pipeline)	Long-term (2032-2035) (Stage 3 pipeline)
• **Reference case remains above lower standard under the Stage 1 development pipeline** • **Sensitivity** resulting in standard breaches in the short-term even with Stage 1 development are: • Constrained-operational capacity [2026] • Delayed build [2026]	• **Reference case stays above the standards in the mid-term if Stage 2 projects are delivered as expected. If not, it falls below standards in by 2030.** • **Sensitivities** resulting in standard breaches in the mid-term even with Stage 2 development are: • Constrained-operational capacity [2030] • Very low gas supply [2031]	• **Reference case remains above the standards in the long-term provided Stage 2.** • **Sensitivities** resulting in standard breaches in the long-term even with Stage 3 development are: • Constrained-operational capacity [2032]

The NI-WCM for the Reference case and the following sensitivities remain above the lower security standards across the assessment horizon provided the Stage 1, Stage 2 and Stage 3 pipelines are developed in the short, mid and long-term horizons respectively:

- Low and high demand
- Increased demand response
- High gas supply
- Upgraded HVDC
- Low and high gas supply
- Methanex stays

Figure 7: North Island Winter Capacity margins for the Reference case and all sensitivities



7.1 Short-term (2026-2028)

7.1.1 Reference case

Committed projects maintain the NI-WCM above the lower security standard in the short-term (dropping below in 2030). This is one year later than SOSA 2025. Increased demand response could delay this to 2032.

7.1.2 Sensitivities

The following sensitivity and combination of sensitivities can result in the NI-WCM dropping below the lower security standard in the short-term even if all Stage 1 supply projects are delivered[78]:

- Constrained-operational capacity: Low thermal unit commitment combined with materially less wind generation than forecast, can still result in a risk of insufficient generation at peaks from 2026 even when the NI-WCM is above the upper security standard. This is shown by the constrained operational capacity sensitivity, which demonstrates the operational and market co-ordination challenge of integrating increased intermittent generation with slower start thermal plant and the importance of firm, flexible resources to reduce this risk.
- Delayed build: The large number of projects committed would need to be delivered on time to ensure the margins remain above the standards. If not, the NI-WCM could drop below the standards in Winter 2026.

Combinations of sensitivities could also increase the chance of the NI-WCM falling below the lower security standard in the short-term, such as:

- High demand + Delayed build

Additional generation and/or battery projects as well as peak demand response that help manage peak supply/demand balance would need to be committed (i.e. brought into Stage 1) to reduce exposure to these risks.

7.2 Mid-term (2029-2031)

7.2.1 Reference case

The NI-WCM for the Reference case remains above the standards in the mid-term provided Stage 2 pipeline projects come online as expected, otherwise the NI-WCM could drop below the standards by 2030. Increased demand response can delay the Reference case crossing the lower security standard by two years.

---

78 Note there are less sensitivities that cross NI-WCM compared to the Draft SOSA 2026 due to the large amount of batteries that have been committed (reached FID).

7.2.2 Sensitivities

The following sensitivities can result in the NI-WCM dropping below the lower security standard in the short-term even if all Stage 2 supply projects are delivered:

- Constrained-operational capacity: The current pool of Stage 2 projects is insufficient to mitigate this challenge of low thermal unit commitment combined with materially less wind generation than forecast which can result in an increased risk of insufficient generation at peaks from 2030 when the NI-WCM is above the upper security standard.
- Very low gas supply: Under a very low gas supply, peaking generation capability can be compromised. This risk of very low gas supply and therefore reduced availability for peaking generation could reduce the NI-WCM below the standards by 2031. Additional consent-ready Stage 2 projects would be needed to reduce this risk.

Combinations of sensitivities could also pose risks to the NI-WCM falling below the lower security standard in the mid-term, such as:

- High demand + Delayed build
- Very low gas supply + Delayed build

Given the additional time available to develop projects to address potential risks further into the future ensuring sufficient consent-ready projects (that could be committed if needed) would help ensure there is a sufficiently healthy consent-ready pipeline (Stage 2) to respond to these risks as we get closer to these time horizons and future begins to unfold.

7.3 Long-term (2032-2035)

7.3.1 Reference case

If the Stage 3 project pipeline is developed, the NI-WCM for the Reference case remains above the standards in the long-term and increases its robustness to downside risks.

7.3.2 Sensitivities

The Constrained operational capacity risk persists and can result in the NI-WCM dropping below the lower security standard in the long-term even if all Stage 3 supply projects are delivered. This means there are insufficient Stage 3 projects to mitigate this challenge of low thermal unit commitment combined with materially less wind generation than forecast which can result in a risk of insufficient generation at peaks in years when the NI-WCM is above the upper security standard.

Combinations of sensitivities also pose risks to the NI-WCM falling below the lower security standard in the long-term, such as high demand growth future with very low gas available of electricity generation.

While the Stage 3 development pipeline helps reduce the risks that can result in the NI-WCM dropping below the standards additional development would be efficient to increase the pool of Stage 3 projects to reduce these capacity shortfall risks in the long-term, especially if we see a higher demand growth or lower gas supply. Ensuring sufficient firm, flexible resources in the supply pipeline (such as geothermal, batteries, flexible peaking generation and signalled[79] demand response) will help reduce these risks and ensure the pipeline is considering both the energy and capacity requirements of the system.

---

79 This is demand response that is bid into the market or used consistently and captured through the load forecast. The benefits of demand response are muted if it is unpredictable and creates additional uncertainty for the market and system operations.

8 Expected Future case

For SOSA 2026, we've introduced an Expected Future case to represent the combination of Reference case sensitivities that we think (at the time of publishing) reflect the current view of a most likely outcome for the 10-year modelled period (2026-2035).[80] We will track actuals against the Expected Future case as part of our quarterly Security of Supply Outlook.

The proposed Expected Future case uses the same, medium demand forecast as for the Reference case, which includes step changes in loads that have at least a 50% chance of proceeding. Large new loads that can arise due to industrial electrification or data center connections can proceed rapidly to materially increase demand. We think that a lower demand forecast, that relied more on historical demand trends, would underestimate future pressures on the system and risk underinvesting in supply. Including these step loads supports better forward-looking planning to prepare the system for plausible, high-impact outcomes.

The Expected Future case varies from the Reference case by:

- using the low gas supply forecast instead of the medium gas forecast. At this stage, we think this forecast best reflects ongoing trends in gas supply relative to forecasts.
- including LNG imports from winter 2029, based on the government's recent announcement that it expects to identify a preferred provider later this year, and the import facility could be operational by 2028.

The gas supply forecasts for the Reference and Expected Future cases are shown in Figure 8. Even through the Expected Future case is based on the low gas forecast, the availability of additional gas via LNG imports increases the expected winter capability.[81]

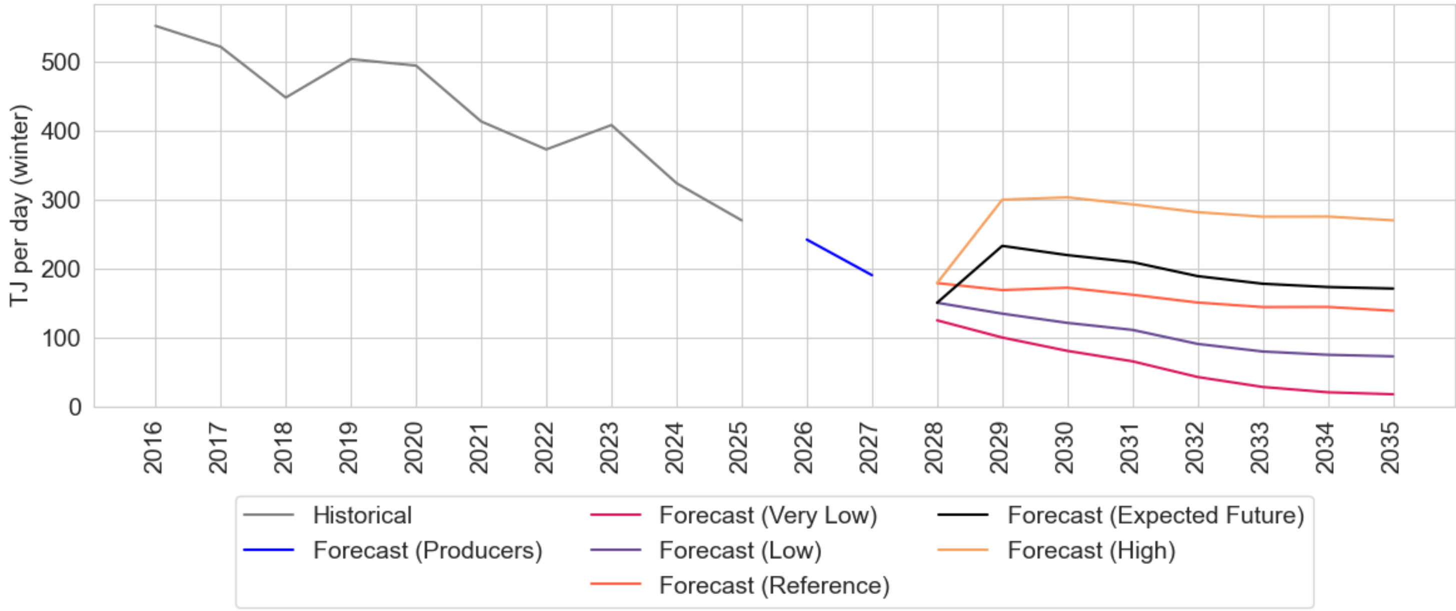
For all other inputs we have used the same assumptions as for the Reference case.

---

80 We could then report on how the market is actually tracking against this expected future case through our quarterly Security of Supply Outlook updates.

81 We have assumed an additional 18 PJ of gas in addition to the low gas supply forecast is available over the six-month winter under the Expected Future case. We understand that 12 PJ of gas should be deliverable under the LNG proposal over a three-month period.

Figure 8: Gas production forecasts

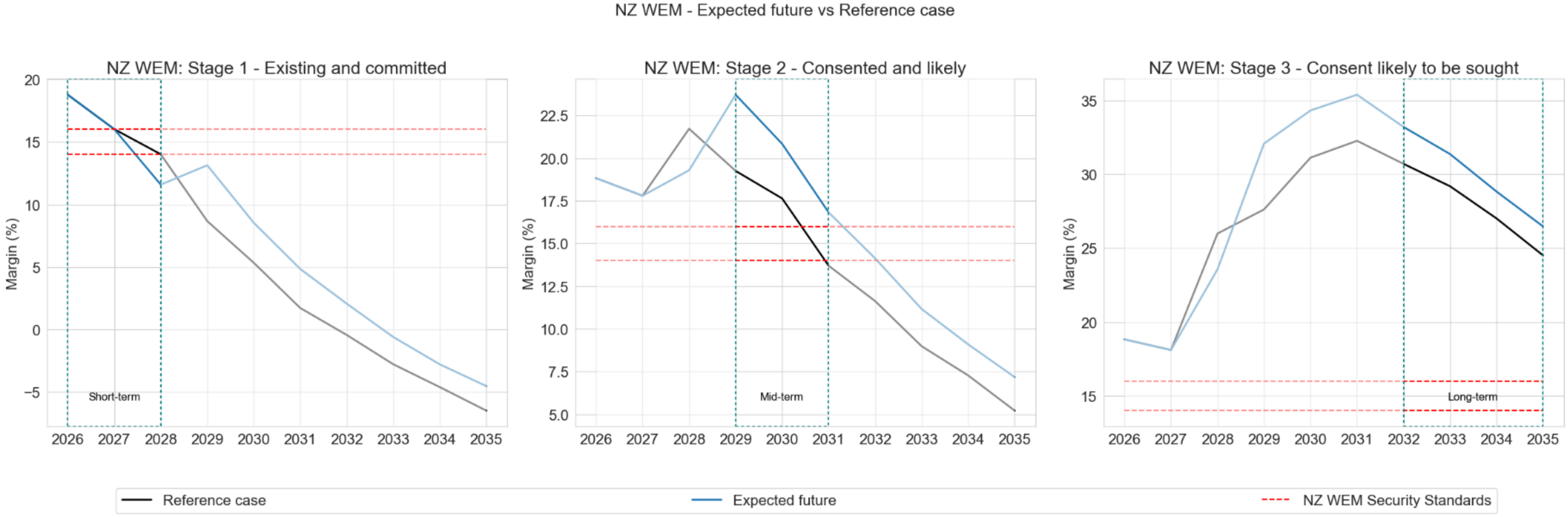


The results of the Expected Future case (Medium demand + low gas supply + LNG) compared to the Reference case are shown in the figures and tables below. The lower gas supply forecast used in the Expected Future case indicates a potential for the NZ-WEM energy margin to drop below the lower security standards earlier than indicated in the Reference case. The Expected Future case is identical to the Reference case for the NI-WCM.

Table 8: Summary of NZ-WEM results for Reference and Expected Future case across short, mid and long-term horizons

Short-term (2026-2028) (Stage 1 pipeline)	Mid-term (2029-2031) (Stage 2 pipeline)	Long-term (2032-2035) (Stage 3 pipeline)
• Reference case remains above lower standard under the Stage 1 development pipeline • Expected Future case could drop below the lower standard by 2028 as it uses a lower gas outlook. LNG is unable to supplement the lower domestic gas supply in the short-term due to it being modelled as unavailable before winter 2029.	• Reference case drops slightly below the lower standard in the mid-term (2031) even if Stage 2 projects are delivered • Expected Future case remains above the lower security standard in the mid-term	• Reference case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected. • Expected Future case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected.

Figure 9: NZ-WEM for Reference and Expected Future case



Comparing the NZ-WEM for both the Reference case and Expected Future case in Figure 9, we see the impact of the differences in assumptions for these two cases. The timeline below explains these differences in greater detail:

- **Short-term (2026-2028) assuming Stage 1 investments proceed as planned:**
  - *Winter 2026 and Winter 2027:* Both the Reference and Expected future case have the same NZ-WEM as both are based on producer gas forecasts as shown in Figure 8.
  - *Winter 2028:* The Expected Future case has a lower NZ-WEM and falls below the lower security standard, while the Reference case remains above it. This reflects lower thermal generation availability under the low gas supply forecast used in the Expected Future case, compared with the mid-range gas supply forecast in the Reference case. Although LNG is included in the Expected Future case, it is conservatively assumed to become available only towards the end of 2028, after winter.
- **Mid-term (2029-2031) assuming Stage 2 investments proceed as planned:**
  - *Expected Future case:* The availability of additional gas supply via LNG imports, together with the planned Stage 2 investments, increases the NZ-WEM above the upper security standard for winter 2029 and 2030 and above the lower security standard for winter 2031. This results in the Expected Future case being above the lower security standard during the mid-term despite being subjected to a low domestic gas supply future.
  - *Reference case:* The planned Stage 2 investments, increases the NZ-WEM above the upper security standard in the mid-term but drops slightly below the lower security standard by winter 2031 as the mid-range gas supply declines resulting in insufficient thermal generation to maintain the NZ-WEM above the lower standard as demand increases. This risk could be reduced if some Stage 3 projects, could be brought online ahead of winter 2031, however these Stage 3 projects carry a higher delivery risk given these are not yet consented[82].
- **Long-term (2032-2035) assuming Stage 3 investments proceed as planned:**
  - *Expected Future case:* If Stage 3 investments proceed as planned, the NZ-WEM under the Expected Future case increases above the upper security standard in the long-term (winters 2032 to 2035). The dependence on LNG imports to maintain the NZ-WEM above the lower security standard reduces under a medium demand growth scenario, where Rankine generation remains available with sufficient coal and signalled Stage 3 investments proceed as planned. If not, the need for LNG imports to maintain the NZ-WEM above the standards could persist into the longer-term. We have not assessed these alternative scenarios around the Expected Future case as part of the SOSA.

---

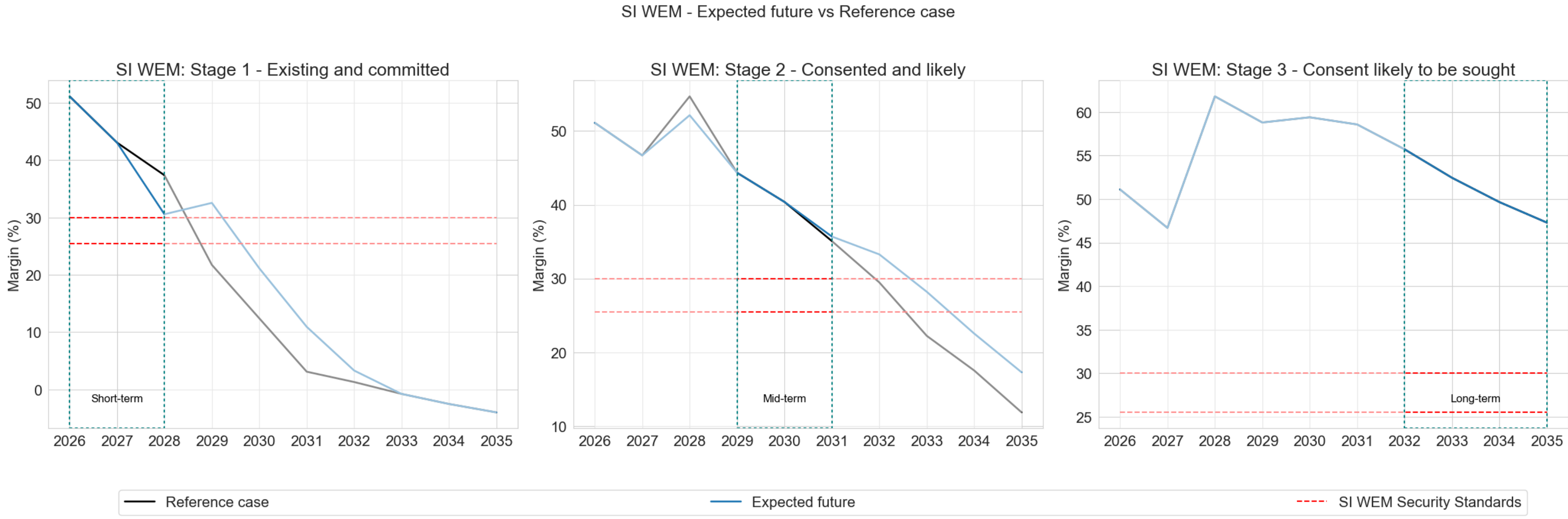
[82] These projects are not yet consented and potentially seeking consent within the next two years. We consider Stage 3 projects more for the long-term assessment.

- *Reference case:* If Stage 3 investments proceed as planned, the NZ-WEM under the Reference case also increases above the upper security standard in the long-term (winters 2032 to 2035) although following a lower trajectory compared to Expected Future case with the Reference case having less thermal generation capability without access to additional gas via LNG. The NZ-WEM for the Reference case can remain above the lower security standard under a medium demand growth scenario, where Rankine generation remains available with sufficient coal and signalled Stage 3 investments proceed as planned. As discussed in section 5.3.2 a high demand growth future can reduce the NZ-WEM below the standards in long-term so too can combinations of sensitivities such as high demand with delayed new project build or reduced Rankine availability with low or very low gas supply.

Table 9: Summary of SI-WEM results for Reference and Expected Future cases across short, mid and long-term horizons

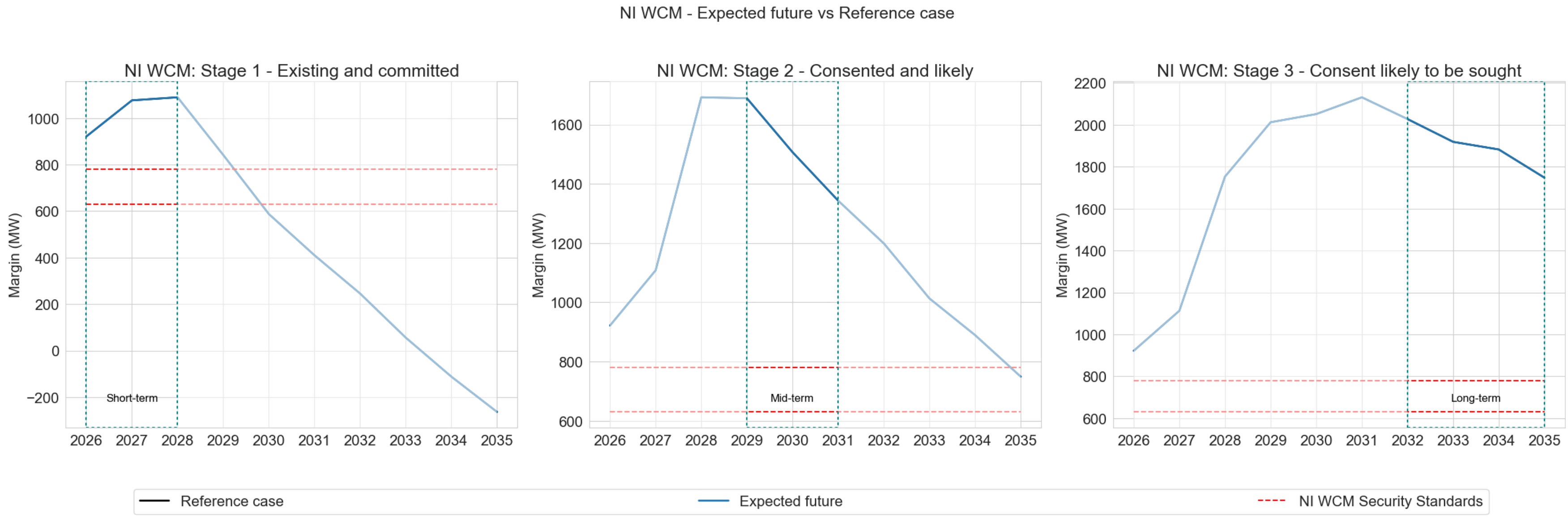
Short-term (2026-2028) (Stage 1 pipeline)	Mid-term (2029-2031) (Stage 2 pipeline)	Long-term (2032-2035) (Stage 3 pipeline)
• Reference case remains above upper standards under the Stage 1 development pipeline • Same for Expected future case	• Reference case stays above the lower standard in the mid-term if Stage 2 projects are delivered as expected. • Expected future remains above the lower standard in the mid-term if Stage 2 project are delivered as expected.	• Reference case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected. • Expected future case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected.

Figure 10: SI-WEM for Reference and Expected Future case



The Expected Future case is the same as the Reference case for the WCM.

Figure 11: NI-WCM for Reference and Expected Future case



9 What does this mean for industry?

The table below summarises the key take outcomes, risks and actions for industry.

Table 10: Summary of key take-aways for industry from SOSA 2026

Margin	Short-term (2026–2028)	Mid-term (2029–2031)	Long-term (2032–2035)
NZ-WEM	• **Reference case:** Below the upper standard but above the lower standard if current committed projects are delivered on time. • **Expected Future case:** Drops below the lower standard if gas supply drop is larger than forecast, even if all committed projects delivered on time. This corresponds to a 689 GWh shortfall below the lower standard. • **Key risks:** Delays to new generation or reduced thermal generation support could cause margins to drop below standards from 2027. Faster demand growth, low gas supply, or weak wind/solar output increases risk by 2027–2028. LNG timing means it might not be available to cover low domestic gas supply risks in this timeframe. • **Industry actions:** Deliver committed Stage 1 projects on time and maintain gas and flexible generation availability. Committing additional projects in the short-term will reduce exposure to downside risks, especially the declining gas supply.	• **Reference case:** Falls below the standard by 2031 even with planned projects. This corresponds to a 168 GWh shortfall below the lower standard. • **Expected Future case:** Does not drop below the standard in the mid-term with planned projects given the additional gas provided via LNG even if domestic gas supply is lower than medium forecast. • **Key risks:** Similar to short-term, project delays or reduced Rankine availability can bring forward the risks of margins falling below the standard. As would high demand growth, very low gas supply, and lower wind/solar generation. • **Industry actions:** Bring forward additional consent-ready Stage 2 projects and maintain a strong diverse (reduce risks including correlated risks due to weather) pipeline of ready-to-build generation will reduce risk exposure.	• **Reference case:** If Stage 3 projects delivered, stays above the standard • **Expected Future case:** If Stage 3 projects delivered, stays above the standard • **Key risks:** Margins fall below the standard earlier if these projects do not proceed. Strong demand growth over the next decade could cause falling below lower standard by ~2035 even with Stage 3 projects. High demand growth in combination with other sensitivities such as reduced Rankine availability, low gas supply or low wind and solar supply can result in margins falling below lower security standard earlier. • **Industry actions:** The industry can help reduce longer-term risks by increasing the pipeline of future projects with diversity and less exposure to weather-correlated generation that could be consented (Stage 3) to help support an enduring high national electricity demand growth.
SI-WEM	• **Reference case:** Above the standard under expected conditions and committed Stage 1 projects • **Expected Future case:** Above the standard under expected conditions and committed Stage 1 projects • **Key risks:** Project delays or reduced Rankine support could lead to shortfalls by 2027. Higher demand growth or very-low gas supply increases risk by 2028	• **Reference case:** Above the standard if Stage 2 planned projects proceed. • **Expected Future case:** Above the standard if Stage 2 planned projects proceed. Additional gas support provided by LNG if gas supply is low. • **Key risks:** Margins fall below standards earlier if Stage 2 projects do not proceed. High demand growth and reduced gas or thermal availability could drive	• **Reference case:** Above the standard if future Stage 3 projects are delivered • **Expected Future case:** Same as Reference case • **Key risks:** Strong demand growth could reduce margins (but generally stays above minimum levels). Strong demand growth increases exposure to other downside risks such as lower gas supply, reduced thermal generation capability and lower wind and

Margin	Short-term (2026–2028)	Mid-term (2029–2031)	Long-term (2032–2035)
	• **Industry actions:** Deliver committed projects on time and ensure sufficient gas and coal generation backup.	increased shortfall risks. Low wind/solar output adds further pressure on margins • **Industry actions:** Develop additional projects and maintain a balanced mix of generation types (to reduced exposure to weather-correlated risks)	solar supply. Combined these can result in the SI-WEM dropping below the lower standard in the long-term. • **Industry actions:** The industry can help reduce longer-term risks by increasing the pipeline of future projects that could be consented (Stage 3) to help support enduring high national electricity demand growth.
NI-WCM	• **Reference case and Expected Future case:** Above the standard in the short term with current committed projects. • **Key risks:** Increased peak shortfall risks can still occur due to operational challenges (low wind and limited slow-start thermal generation) on cold nights even with margins being above the standards. Project delays increase risks of margins below the standards. • **Industry actions:** Ensure projects delivered on time and sufficient thermal commitment during winter peaks. Committing additional Stage 1 projects can help maintain security under a high demand growth (additional step loads) or to cater for reduced thermal availability.	• **Reference case and Expected Future case:** Drops below the upper standard but above the lower security standard if planned Stage 2 projects proceed, otherwise falls below by 2030. • **Key risks:** Reduced gas could drive margins below standards by ~2031. Operational challenges (low wind and limited slow-start thermal availability) persist even with new Stage 2 projects. As with short-term high demand increases exposure to project delay and reduced thermal availability risks. • **Industry action:** Develop additional consent-ready flexible, peak capacity resources to strengthen the Stage 2 pipeline against downside risks.	• **Reference case and Expected Future case:** Above the standard if future Stage 3 projects are delivered. • **Key risks:** Operational constraints remain ongoing risks into the long-term. • **Industry action:** Expand the pool of future projects and prioritise flexible, fast-response resources (generation and demand-side) to mitigate downside risks.

Maintaining security of supply over the next decade will require timely project delivery, earlier commitment of additional consent ready projects in the short and mid-term to reduce downside risks, ensuring sufficient thermal generation and fuel availability and active development of a more diverse and flexible future pipeline.

TRANSPOWER