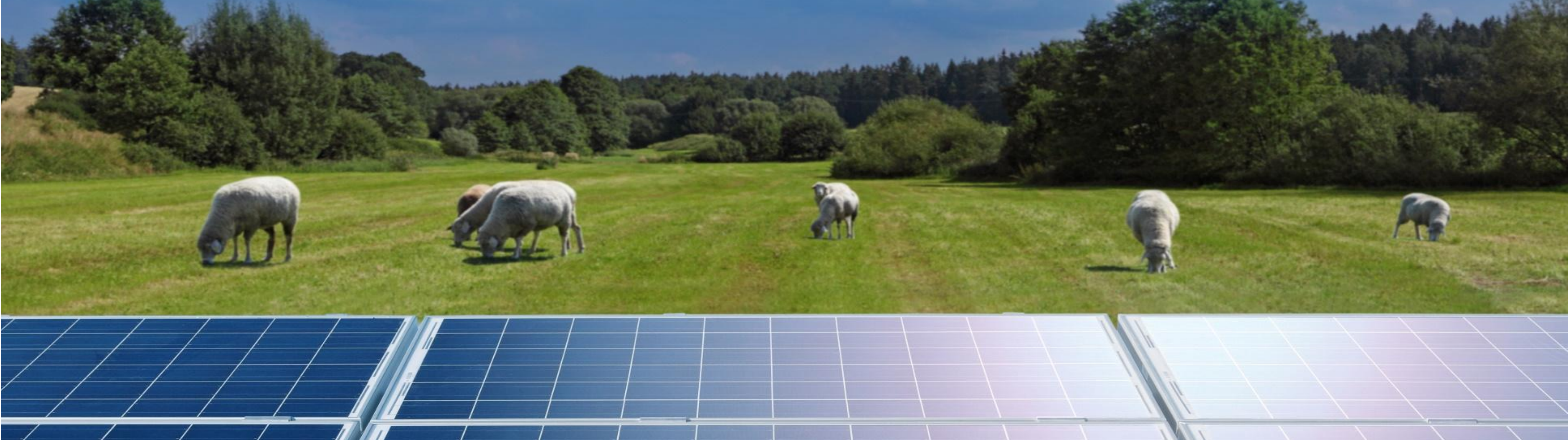
TRANSPOWER

Draft Security of Supply Assessment 2026

System Operator

Version: 1.0

Date: 23 April 2026



Version	Date	Change
1.0	23 April 2026	Draft for consultation

IMPORTANT

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Contents

1 Executive Summary 5
1.1 The SOSA methodology 5
1.2 Key assumption changes since SOSA 2025 7
1.3 Short-term findings (2026-2028) 8
1.4 Mid-term findings (2029-2031) 8
1.5 Long-term findings (2032-2035) 9
1.6 Expected Future case 10
1.7 What does it mean for industry? 11

2 Introduction 12
2.1 Purpose of this consultation 12
2.2 About the SOSA 12
2.3 Consultation process 13

3 Methodology 14
3.1 Security Margins 15
3.2 Security Standards 15
3.3 Reference case, sensitivities and Expected Future case 16
3.4 Potential supply pipeline 16
3.5 Time horizons 17

4 Reference case and sensitivities 18
4.1 Reference case 18
4.2 Sensitivities 30

5 New Zealand Winter Energy Margin (NZ-WEM) 35
5.1 Short-term (2026-2028) 36
5.2 Mid-term (2029-2031) 38
5.3 Long-term (2032-2035) 39

6 South Island Winter Energy Margin (SI-WEM) 41
6.1 Short-term (2026-2028) 42
6.2 Mid-term (2029-2031) 43
6.3 Long-term (2032-2035) 44

7 North Island Winter Capacity Margin (NI-WCM) 46
7.1 Short-term (2026-2028) 47
7.2 Mid-term (2029-2031) 48
7.3 Long-term (2032-2035) 49

8 Expected Future case 51
9 What does this mean for industry? 56

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

1. What is the SOSA?

- Assess three security margins over the next 10 years and compare against the security standards
- Standards represent an efficient range – Expected cost of shortage equals cost of reserve resources
- New Zealand Winter Energy Margin - Do we have enough national energy to get through extended dry winters? [Standards: 14% to 16%]
- South Island Winter Energy Margin - Can the South Island meet its 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 generation to meet North Island peak winter demand? [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 Draft SOSA 2026

New Zealand Winter Energy Margin (NZ-WEM)	
R E S Short-term (2026-2028)	**Adequate but fragile energy margin:** 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.
R E S Mid-term (2029-2031)	**Emerging energy gap in 2030s:** Margins fall below the standard by 2031 even with planned projects, with lower gas bringing this forward. Risks from delays, reduced thermal support, high demand and weak renewables increase exposure, requiring earlier project delivery, ensuring thermal generation availability and developing a more diverse supply pipeline.
R E S Long-term (2032-2035)	**Pipeline-dependent adequacy:** 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 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:** Margins remain above the standard under expected conditions with committed project delivery. Delays, reduced thermal support, higher demand, or low gas can drive shortfalls by 2027–2028, so timely delivery and firm backup are critical.
R E S Mid-term (2029-2031)	**Adequate but exposed to risks:** Margins remain above the standards 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:** 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:** Margins remain above the standard in the short term with committed projects. Peak risks from low wind, limited thermal support, and higher demand require timely delivery and strong winter thermal commitment.
R E S Mid-term (2029-2031)	**Emerging capacity shortfalls:** Margins sits between standards if committed and consented projects proceed but fall below by ~2029 if they don't. High demand, weaker thermal/gas, and project delays increase risks, so more flexible peak capacity is needed.
R E S Long-term (2032-2035)	**Enduring peak capacity risk:** Margins remain above the standards if committed, consented and unconsented projects are delivered. High demand, low gas, and operational constraints 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

Transpower, as System Operator, is seeking feedback on the draft 2026 Security of Supply Assessment (**SOSA**). The SOSA is an annual report that helps Aotearoa's electricity sector understand whether we'll have enough energy and capacity to keep the lights on over the next decade. Its purpose is to inform risk management and investment decisions by market participants, policy makers, and other stakeholders. SOSA 2026 looks forward from 2026 to 2035 to assess how well New Zealand's electricity system is positioned to meet winter demand.

This draft SOSA 2026 has been informed by feedback sought on the proposed Reference case and sensitivities consultation completed in November 2025.[1] A confidential survey of investors has informed assumptions about the pipeline of supply side investments across the ten-year assessment horizon. Following feedback on this draft SOSA, we will finalise the SOSA 2026 for publication by 30 June 2026.

We now invite your feedback on this draft SOSA 2026 report and the attached appendices, including any feedback you may have on the demand and supply assumptions presented in the report, our assessment or presentation of the results, and any other comments you may have on the content of this draft report.

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.

1 The consultation paper, the submissions we received and our response to them are available on our webpage.

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 been specified in the Security Standards Assumption Document (SSAD) and other requirements are set out in the Security of Supply Forecasting & Information Policy (SOSFIP).

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 national energy to get through extended dry winters?	14%	16%
South Island Winter Energy Margin (SI-WEM) Can the South Island meet its winter energy needs, given both supply and inter-island transfer limits?	25.5%	30%
North Island Winter Capacity Margin (NI-WCM): Do we have enough generation to meet North Island peak winter demand?	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 where there are key uncertainties about how the future might unfold.

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 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 propose to 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 assumption changes since SOSA 2025

Relative to SOSA 2025 additional supply side resources have been committed by investors in the short term. 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. SOSA 2026 assesses this as a sensitivity that would improve gas availability relative to the Reference case. 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[3]. In addition, some wind generation projects included in SOSA 2025 were not re-disclosed by investors through the SOSA 2026 survey.

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3 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 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 fragile when key sensitivities are considered. 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 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. Capacity risks 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. Higher demand growth and/or lower availability of thermal generation could heighten risks by 2028.

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 towards the end of the short-term horizon (by winter 2028). Declining domestic gas supply means other industrial gas consumption reduces with the residual gas being reallocated to power generation when it is needed.

1.4 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.

On this basis there is an emerging 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.

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 winter energy needs. If the consented and likely new generation investments are not committed the SI-WEM could fall below the lower margin around 2030. 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 below the upper security standard but above the lower 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. If the expected investments do not proceed the NI-WCM could fall below the lower standard by 2029. Higher peak demand growth, reduced thermal generation or reduced gas supply could drive the NI-WCM below the lower standard by around 2030. Real-time operational coordination of supply to meet demand could persist even with all the consented and likely projects built. Consistent with short-term horizon, 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.

1.5 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 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 supper 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[4] 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.

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

The findings for the Expected Future case are similar to the Reference case except that in the Expected Future case the:

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[4] This includes committed projects, consented and likely to proceed projects, and projects likely to be consented in the next two years. Solar generation projects makes 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.

- **NZ-WEM** falls below the lower security standard (rather than remaining between the upper and lower standards) in the Short-term (2026-2028)
- **SI-WEM** falls below the lower security standard (rather than remaining between the upper and lower standards) in the Mid-term (2029-2031).

1.7 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. 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 and both NZ-WEM and SI-WEM falling below the standards in the mid-term. Additional dry-year firming[5] resources need to be consented and committed to reduce this risk if rapid decline in gas supply persists.

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5 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 Purpose of this consultation

The purpose of this consultation is to seek your feedback on this year's draft Security of Supply Assessment (**SOSA 2026**) report and the attached appendices. We invite any feedback you may have on the demand and supply assumptions presented in the report, our assessment or presentation of the results, and any other comments you may have on the content of this draft report. The feedback we receive in response to this consultation will inform the final SOSA 2026 report, which will be published before 30 June 2026.

2.2 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. 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.[6] In February we communicated the changes we decided to make in response to Reference case assumptions and sensitivities on which we consulted.[7] 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 on which this second round of consultation seeks feedback.

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

7 2v026 Security of Supply Assessment - Reference Case Assumptions and Sensitivities - Response to Feedback.pdf

More detailed System Operator security of supply forecasts that highlight shorter term timeframes and operational risk include the quarterly Security of Supply Outlook,[8] monthly Energy Security Outlook,[9] New Zealand Generation Balance,[10] System Security Forecast,[11] various market insight publications,[12] and the Weekly Market Report.[13, 14]

2.3 Consultation process

The consultation period is three weeks commencing Thursday, 23 April. Submissions are due by 5pm on Thursday, 14 May 2026. This is followed by a one-week period for cross-submissions. Cross-submissions are due by 5pm on Thursday, 21 May 2026.

We have included a Word document, for the convenience of submitters, which incorporates all the questions contained in the consultation paper. You can use this for your submission if you would like to.

Please send submissions and cross-submissions to system.operator@transpower.co.nz with the subject line "SOSA 2026 Draft Report. We will acknowledge receipt of all submissions and cross-submissions. Submissions and cross-submissions will be published on our website at System Operator Consultations | Transpower

If your submission or cross-submission contains confidential material, please ensure this is clearly identified and provide a version of your submission or cross-submission that can be published. Please note that all information provided to Transpower is subject to potential disclosure under the Official Information Act 1982. Clause 7.20(4) of the Code also requires that the System Operator provide a copy of each submission received to the Authority.

If you have any questions about this consultation, please send them to system.operator@transpower.co.nz. Your questions and our responses to them will be published on our website for reference by other submitters and stakeholders.

8 Quarterly Security of Supply Outlook | Transpower
9 Energy security outlook | Transpower
10 Customer Portal - NZGB
11 System Security Forecast | Transpower
12 Market insights | Transpower
13 Market Operations Weekly Report | Transpower
14 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**).[15] The security margins and the current standards are in the Table 2 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 2: 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 extended dry winters?	14%	16%
South Island Winter Energy Margin (SI-WEM) Can the South Island meet its winter energy needs, given both supply and inter-island transfer limits?	25.5%	30%
North Island Winter Capacity Margin (NI-WCM): Do we have enough generation to meet North Island peak winter demand?	630 MW	780 MW

15 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 been specified in the Security Standards Assumption Document (SSAD) and other requirements are set out in the Security of Supply Forecasting & Information Policy (SOSFIP).

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)**[16] 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[17] as a range within which the expected cost of shortage is 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.

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16 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.

17 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.

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[18].

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).

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.

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

3.5 Time horizons

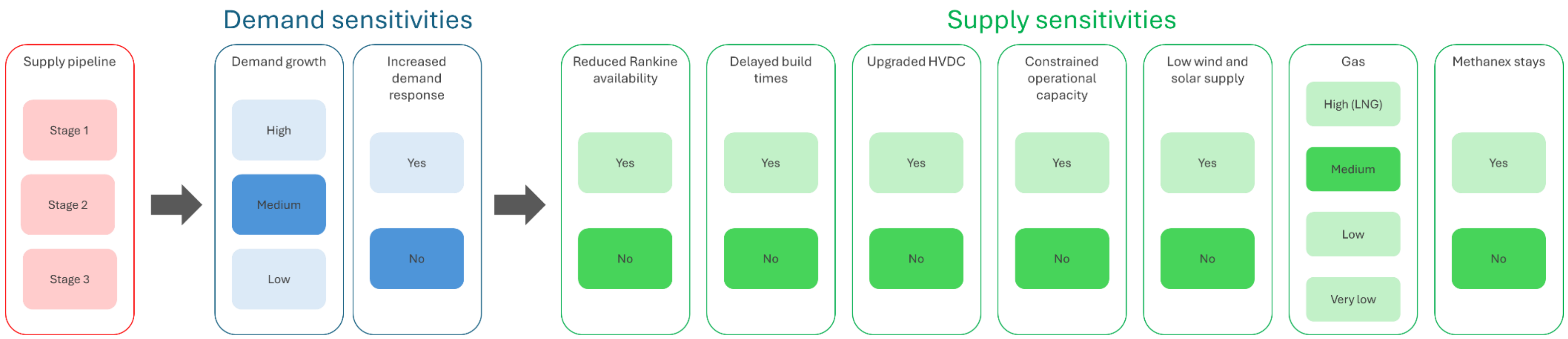
In SOSA 2026, we present the results of the analysis across three horizons:

- 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[19] used to test it. Almost all combination of sensitivities are assessed for each supply pipeline stage[20]. 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.

19 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.

20 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.[21] To achieve this, transport electrification (electric vehicles), process heat electrification,[22] solar photo voltaic (**PV**) and small-scale batteries are specifically modelled in this scenario.[23] This is consistent with the approach taken for SOSAs since 2012.[24]

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[25] 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.

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21 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.

22 This includes Fonterra electrification projects at Whareroa and Edgecumbe sites announced earlier this year. The corresponding decrease in cogeneration at these sites as a result of these projects is accounted for in our Reference case supply assumptions.

23 Appendix 2 sets out the demand forecast modelling process.

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

25 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 and DataGrid.[26] We also include other step loads signalled by EDBs as having a 50% or higher likelihood of proceeding.

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.

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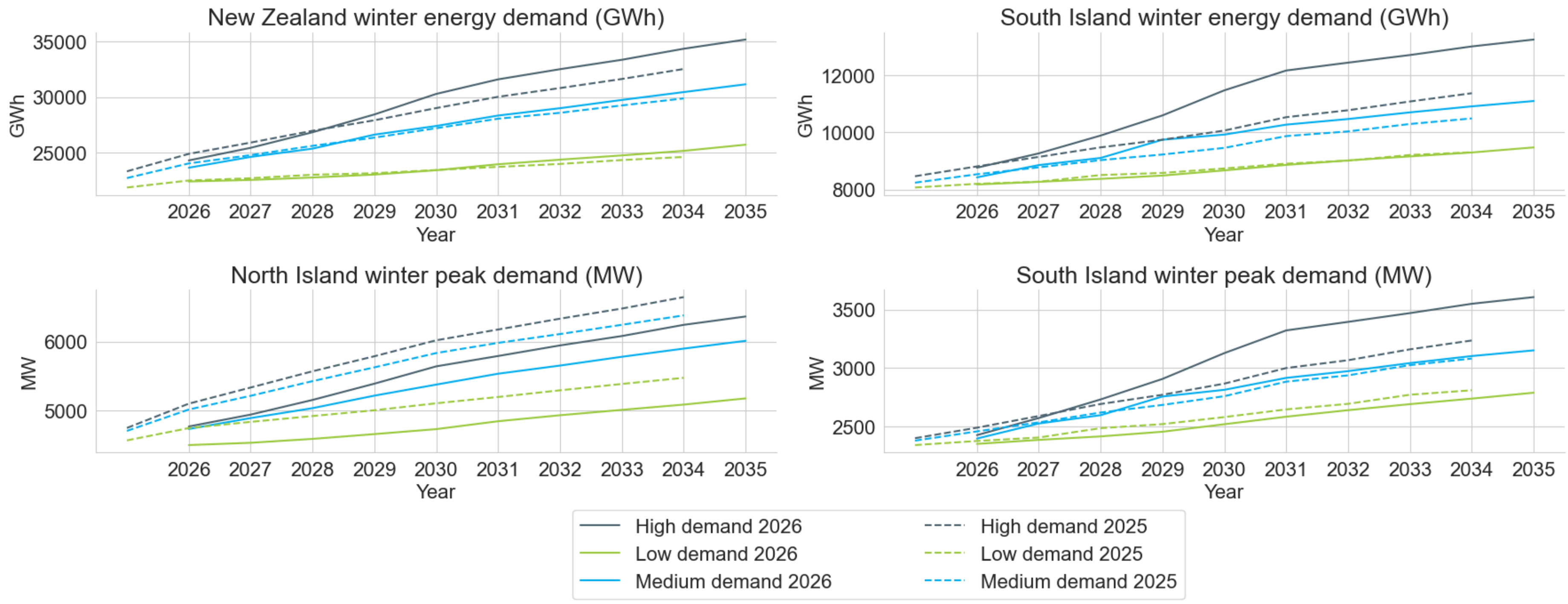
26 The recent announcement of the DataGrid consent approval in the South Island is an example of this load growth potential. DataGrid have announced a 140 MW, 15-year power purchase option agreement with Mercury. For our Medium demand scenario, we have included 120MW increase in load for DataGrid ahead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

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[27] and a likelihood assessment for uncommitted projects. The stages and proposed categorisation are shown in Table 3 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[28].

Table 3: 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 • 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

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

28 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, could get quite large particularly for Stage 4 projects that were unconsented and had a low likelihood of proceeding.

Stage	Short description	Long description
		• 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.[29] 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.

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.[30] Given these projects are not yet consented, they have a higher degree of uncertainty[31].

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29 Table 6 within Appendix 3 defines earliest build dates.

30 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.

31 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

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[32] predictable energy contributions over long periods of time (e.g. months), they are less predictable over shorter-time horizons (e.g. days/hours).[33] 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[34]. 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.

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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.

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

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

34 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.[35] We have updated the definition of the stages[36] 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.[37] 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.[38]. 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[39] 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).

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

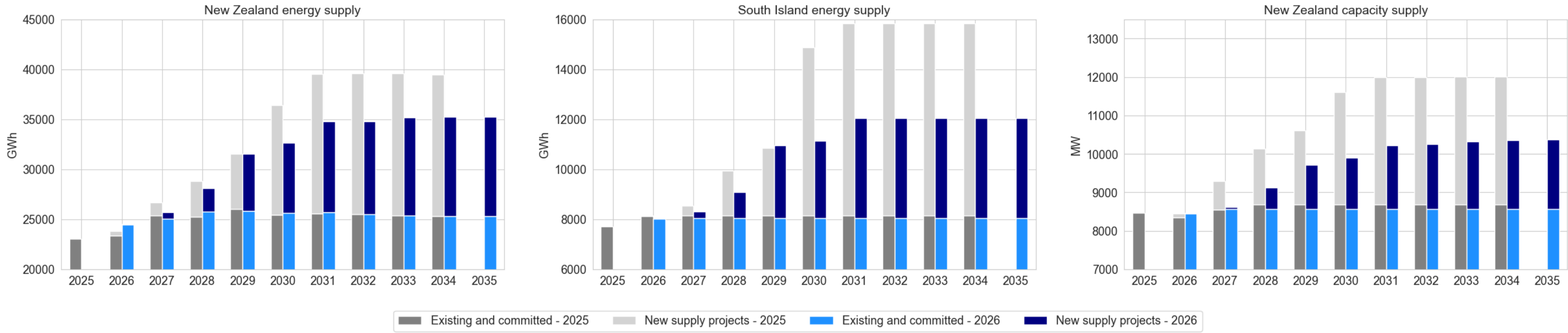
36 Stage 1 definition in SOSA 2026 includes a final investment decision criteria for committed projects and Stages 2 and 3 in SOSA 2026 include a likelihood criteria.

37 This is discussed further in the Gas Supply section.

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

39 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[40]) 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. This is the same approach we used for SOSA 2025.

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 at the same time as the Enerlytica medium gas forecast assumes the Maui gas field will exit. We've also modelled forecast reductions in other industrial, commercial and residential gas usage[41].

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40 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

41 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[42] 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[43].

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.

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

43 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[44]. 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[45].

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[46], 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

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44 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

45 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.

46 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.[47]

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).

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[48] scenarios, which we refer to in the SOSA as supply pipeline stages.

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

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47 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.

48 This also includes batteries.

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 industrial 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[49].

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 are based on confidential information provided to us by gas producers, as in the Reference case.

Following the Government's announcement on 9 February that it will establish a liquified natural gas (LNG) import facility, we have decided to also include an LNG gas supply sensitivity. We have used this to replace high gas supply sensitivity and used the assumption based on public information of potential deliverability under a potential LNG import regime (12PJ over any 3-month period[50]).

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

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

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

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 was not included in the draft 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.

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[51].

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.

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51 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.

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 Draft SOSA 2026. Other sensitivities consider the impact of reduced thermal generation availability[52].

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 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).

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

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 10th percentile of wind generation across winter and less than 5th 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)

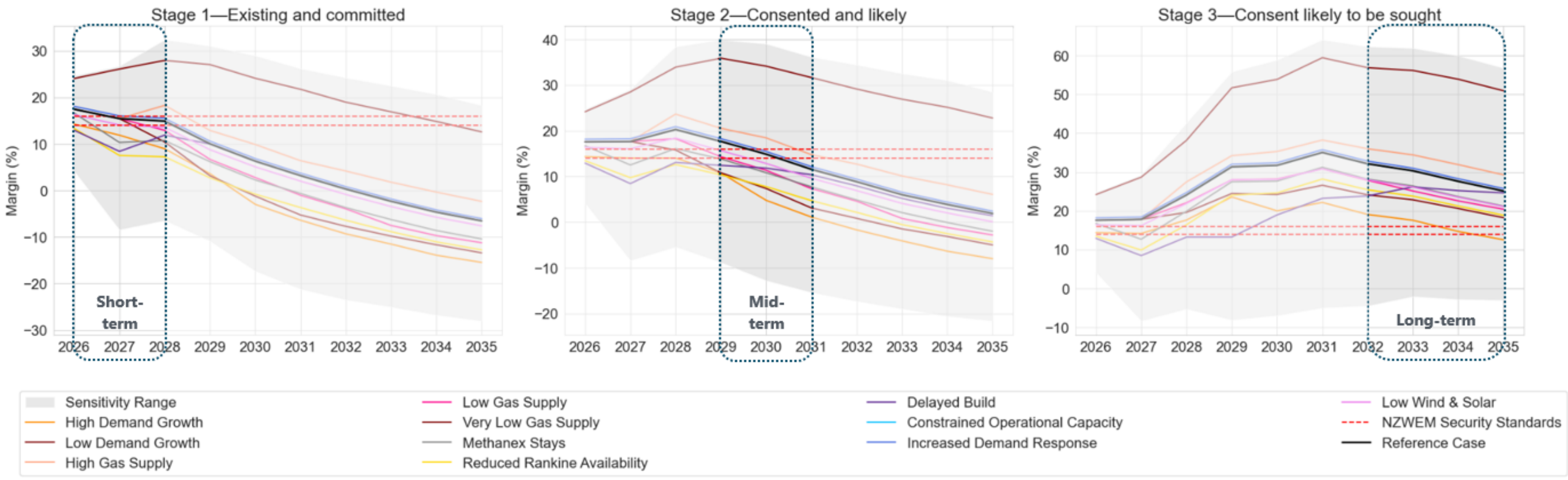
Table 4 and Figure 5 below summarise the NZ-WEM analysis results across the short, mid and long-term horizons.[53] The results are described in more detail further below.

Table 4: 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 [2026] • Reduced Rankine [2026] • 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 2026] • Delayed build [from 2026] • High demand [2029] • Very low gas [2029] • Methanex stays [2029] • Low gas [2030] • Low wind and solar supply [2030]	• **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]

53 The detailed results are provided in the Appendix.

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[54] 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 generation coming online ahead of Winter 2026, and a higher thermal generation contribution with thermal generators having access to more gas for power generation[55] and the forecast decline in gas use due to both industrial electrification[56] and some potential exits.[57]

54 Section 4.1 provides a definition of the Reference case.

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

56 See Fonterra announces electrification plans to future-proof operations

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

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,[58] NZ-WEM could fall below the standard by Winter 2026. 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[59] during dry winters could see the NZ-WEM fall below the lower standard by Winter 2026, 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[60]). 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 gas supply 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.
- 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.

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

59 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).

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

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:

- <u>Reduced Rankine:</u> Lower Rankine availability during dry winters could see NZ-WEM fall below the standard by Winter 2026. 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.
- <u>Delayed build:</u> If supply projects are delayed, NZ-WEM could fall below the standard by Winter 2026. 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.
- <u>High demand growth:</u> 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.
- <u>Gas constrained sensitivities (medium with Methanex stays, low and very low gas):</u> 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.
- <u>Low wind and solar supply:</u> 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 risks 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 + Very low gas supply: Under a medium demand growth scenario the combination of both reduced Rankine availability and 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.

Question 1

Do you have any comments/feedback on the results of the NZ-WEM?

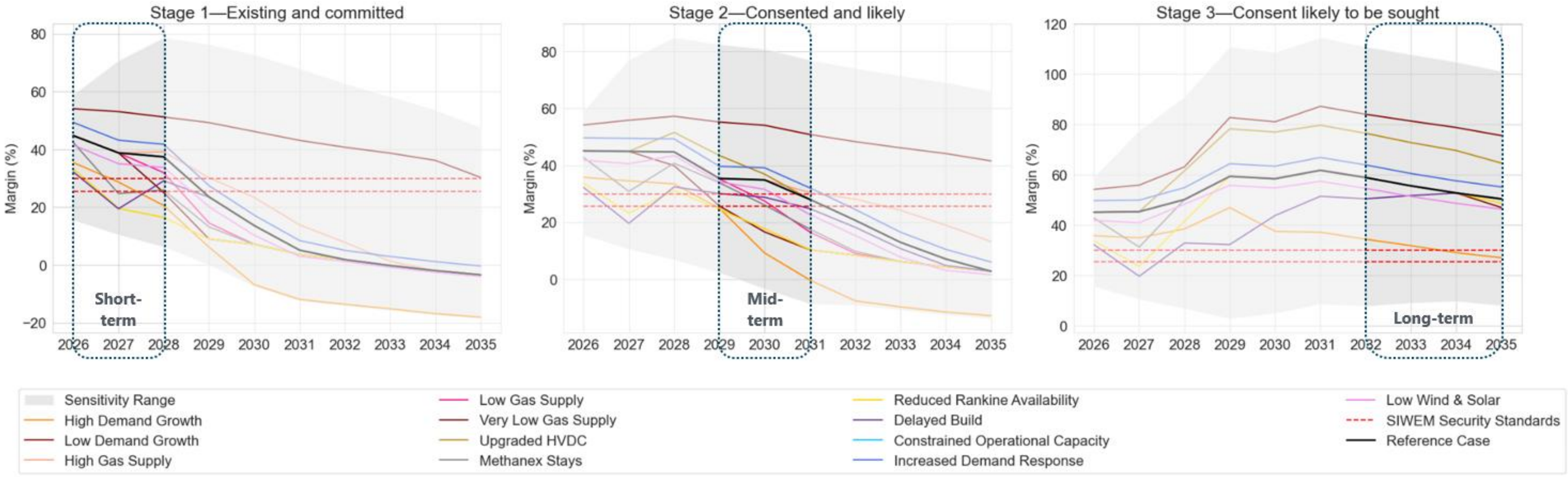
6 South Island Winter Energy Margin (SI-WEM)

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 5: 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] • Methanex stays [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 2030.** • Sensitivities resulting in lower standard breaches in the mid-term even with Stage 2 development are: • High demand [2029] • Reduced Rankine availability [2029] • Very low gas supply [2030] • Low gas supply [2031] • Methanex stays [2031] • Delayed build [2031] • Low wind and solar supply [2031]	• **Reference case remain above lower standard if Stage 3 developed, otherwise Reference case drops below lower standard by 2032.** • Margins of individual sensitivities do not drop below lower standards if all Stage 3 developed. • Combination of sensitivities can result in lower standard breaches in long-term even with Stage 3 development. Some of these are: • High demand + Very low gas supply [2033] • High demand + Low gas supply [2034] • High demand + Reduced Rankine availability [2034] • High demand + Low wind and solar supply [2035] • High demand + Methanex stays [2035]

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.
- Methanex stays and 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 2027 and Winter 2028 for the Methanex stays and very low gas supply sensitivities respectively.

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 2030.

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:

- 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 2029.
- 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 2029 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.

- Very low gas supply: This sensitivity highlights the importance of sufficient gas for thermal generation to support the SI and to maintain the SI-WEM above the lower standards. The very low gas supply in this sensitivity results in insufficient gas-fired generation to maintain the SI-WEM above the standards by Winter 2030 even with Stage 2 projects developed as indicated in the surveys.
- Methanex stays and low gas supply: While not as severe as the very low gas sensitivity, these sensitivities also highlight the importance of sufficient gas for thermal generation to support the SI and to maintain the SI-WEM above the lower standard in the mid-term. The Methanex stays and low gas supply sensitivities result in a mid-term breach of the lower security standard by Winter 2031 even with Stage 2 projects developed as indicated in the surveys.
- Low IG: As observed with the NZ-WEM, the growing reliance on IG means a risk of persistent low wind and solar generation over winter reducing the margins and, in this case, potentially breaching the lower security standard by Winter 2031. Developing a balanced pipeline of additional generation of both weather and non-weather dependent resources (supply and demand-side) can help reduce these risks.

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

If all Stage 3 projects are developed, individual sensitivities do not result in the SI-WEM dropping below lower security standards in the long-term. The high demand growth sensitivity can result in a reduction in the SI-WEM below the upper security standard but it still remains above the lower standard over the SOSA 2026 forecast horizon (out to 2035).

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 gas supply [2033]
- High demand + Low gas supply [2034]
- High demand + Reduced Rankine availability [2034]
- High demand + Low wind and solar supply [2035]
- High demand + Methanex stays [2035]

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

Question 2

Do you have any comments/feedback on the results of the SI-WEM?

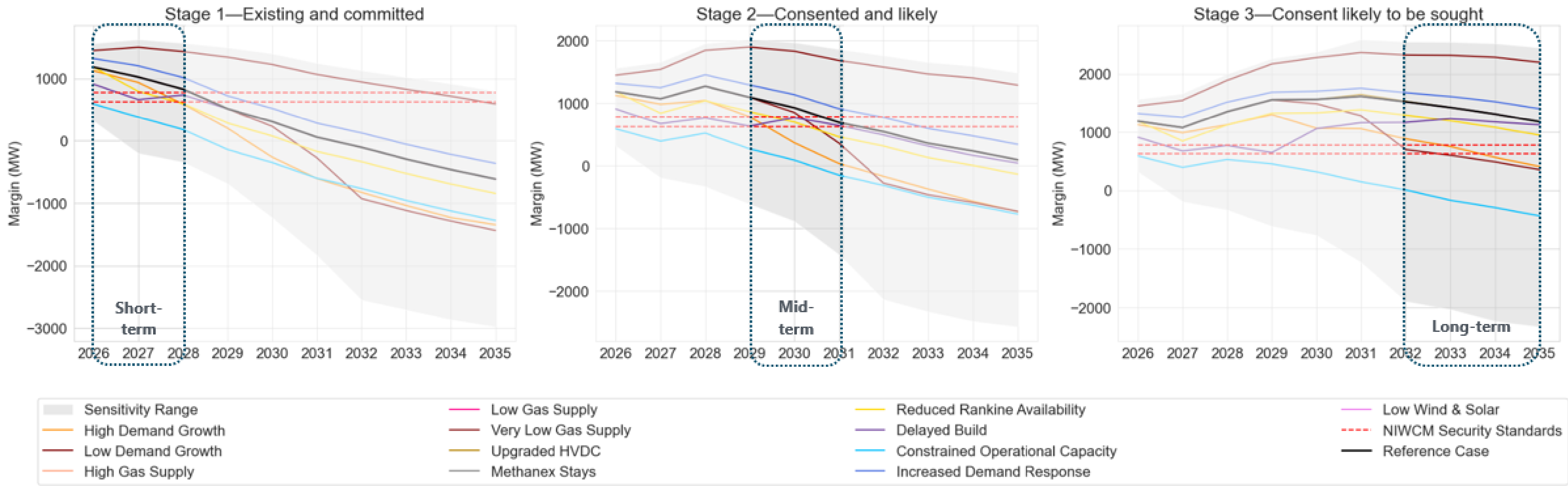
7 North Island Winter Capacity Margin (NI-WCM)

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 6: 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] • Reduced Rankine Availability [2028] • High demand growth [2028]	• **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 2029.** • **Sensitivities** resulting in standard breaches in the mid-term even with Stage 2 development are: • Constrained-operational capacity [from 2026] • High demand growth [2030] • Very low gas supply [2031] • Reduced Rankine Availability [2031]	• **Reference case remains above the standards in the long-term provided Stage 3 projects delivered as expected otherwise it drops below standards in long-term (2032).** • **Sensitivities** resulting in standard breaches in the long-term even with Stage 3 development are: • Constrained-operational capacity [from 2026] • Very low gas supply [2033] • High demand growth [2034]

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 2029). This is the same as SOSA 2025.

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:

- <u>Constrained-operational capacity:</u> 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.

- Reduced Rankine Availability[61]: In addition to their dry year firming role, the Rankines (when committed) provide a valuable source of firm generation capacity during winter peak load periods. Reduced Rankine availability during winter peak load periods can result in the NI-WCM reducing below the lower security standard in the short-term (Winter 2028). This highlights the importance of the Rankines in the power system transition in providing both energy but also peak capacity support.
- High demand growth: A high demand growth would see an increase in the amount of step loads connecting to the system such as data centres. If this occurred, forecast increases in peak demand could potentially result in the current committed pipeline (Stage 1) being insufficient to maintain the NI-WCM above the lower standards from Winter 2028.

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 (from 2033 to 2035).

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 a risk of insufficient generation at peaks in years when the NI-WCM is above the upper security standard.

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61 In this sensitivity if the number of Rankines available over winter peak load periods reduces from the two assumed in the Reference case to one in this sensitivity.

- High demand growth: A high peak demand growth future can result in the NI-WCM dropping below the standards by Winter 2030. Additional consent-ready Stage 2 projects would need to be developed for delivery in the mid-term to reduce this risk.
- 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.
- Reduced Rankine Availability: The importance of the Rankines to manage peak loads persists into the mid-term with the current portfolio of Stage 2 projects. Reduced Rankine availability during winter peak load periods can result in the NI-WCM reducing below the lower security standard in the mid-term (Winter 2031).

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, otherwise the Reference case NI-WCM could drop below the standards by 2032.

7.3.2 Sensitivities

The following sensitivities 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:

- Constrained-operational capacity [2026]: This risk persists into the long-term. There is 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.
- High demand growth [2034]: The NI-WCM cannot be maintained above the lower security standard in the long-term with the current pool of Stage 3 projects under a continued higher future growth trajectory.

- Very low gas supply [2033]: 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 2033 requiring additional Stage 3 projects (likely to consent projects) to enter pipeline to reduce exposure to this long-term fuel risk.

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 needed to increase the pool of Stage 3 projects to reduce these 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[62] demand response) will help reduce these risks and ensure the pipeline is considering both the energy and capacity requirements of the system.

Question 3

Do you have any comments/feedback on the results of the NI-WCM?

[62] 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).[63] We intend to track actuals against the Expected Future case as part of our quarterly Security of Supply Outlook.

For this first instalment of the Expected Future case, we propose to:

- Use the medium demand forecast as used for the Reference case. We believe using the medium-term load forecast, including step changes that have at least a 50% chance of proceeding, provides a more realistic view of future system risks even if these loads are not yet visible in historical data. Large new loads such as industrial electrification or data centres can connect quickly and can materially increase demand, meaning reliance on historical trends alone would underestimate future pressures on the system.[64] Ignoring these potential step changes risks underinvesting in supply and exposing the system to avoidable shortfalls. Including them ensures planning is forward-looking and better prepares the system for plausible, high-impact outcomes.
- Use the low gas supply forecast based on the trends in gas supply relative to forecasts, as shown in Figure 8.
- For all other inputs we have used the same assumptions as for the Reference case.

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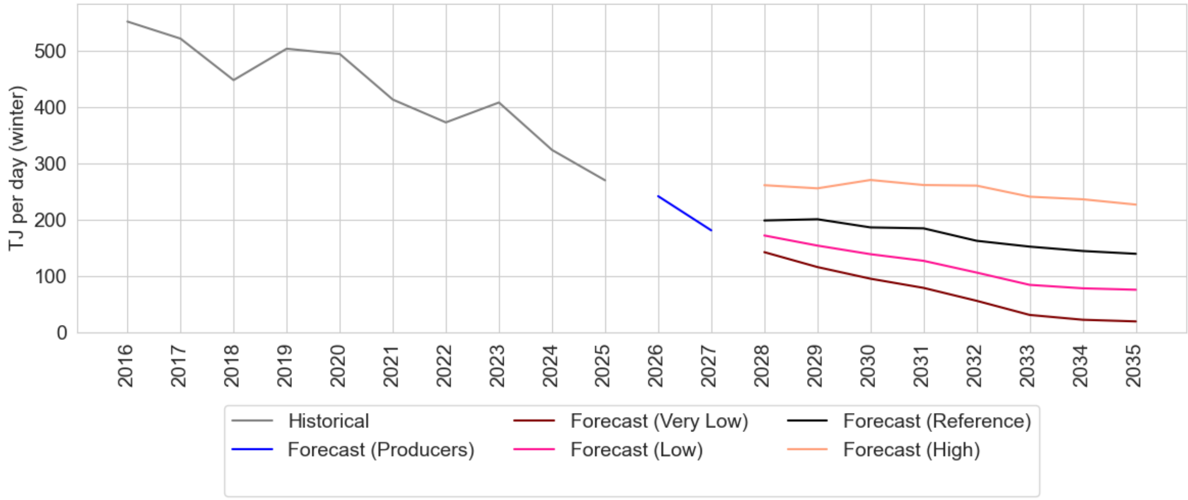
63 We could then report on how the market is actually tracking against this expected future case through our quarterly Security of Supply Outlook updates.

64 See Transpower grid connection pipeline for additional information on stages of various projects (What's the latest with grid connections? | Transpower).

Figure 8: Gas production forecasts



The results of the Expected Future case (Medium demand + low gas supply) 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 energy margins (NZ-WEM and SI-WEM) to drop below the lower security standards earlier than indicated the Reference case. The Expected Future case is identical to the Reference case for the NI-WCM.

Table 7: 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	• Reference case drops below the lower standard in the mid-term (2031) even if Stage 2 projects are delivered as expected. If not, it falls below lower standard by 2029. • Expected Future case drops below the lower standard in the mid-term (2030) even if Stage 2 projects are delivered as expected. If not, it falls below the lower standard by 2029.	• Reference case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected otherwise it drops below lower standard by 2031. • Expected Future case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected otherwise it drops below the lower standard in the long-term (2030).

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

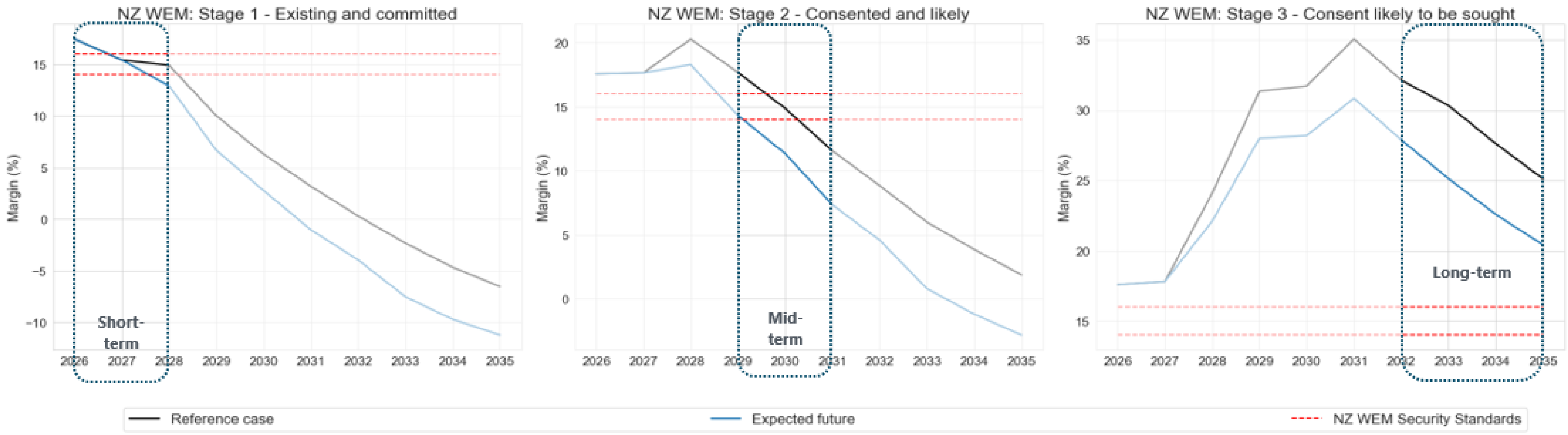


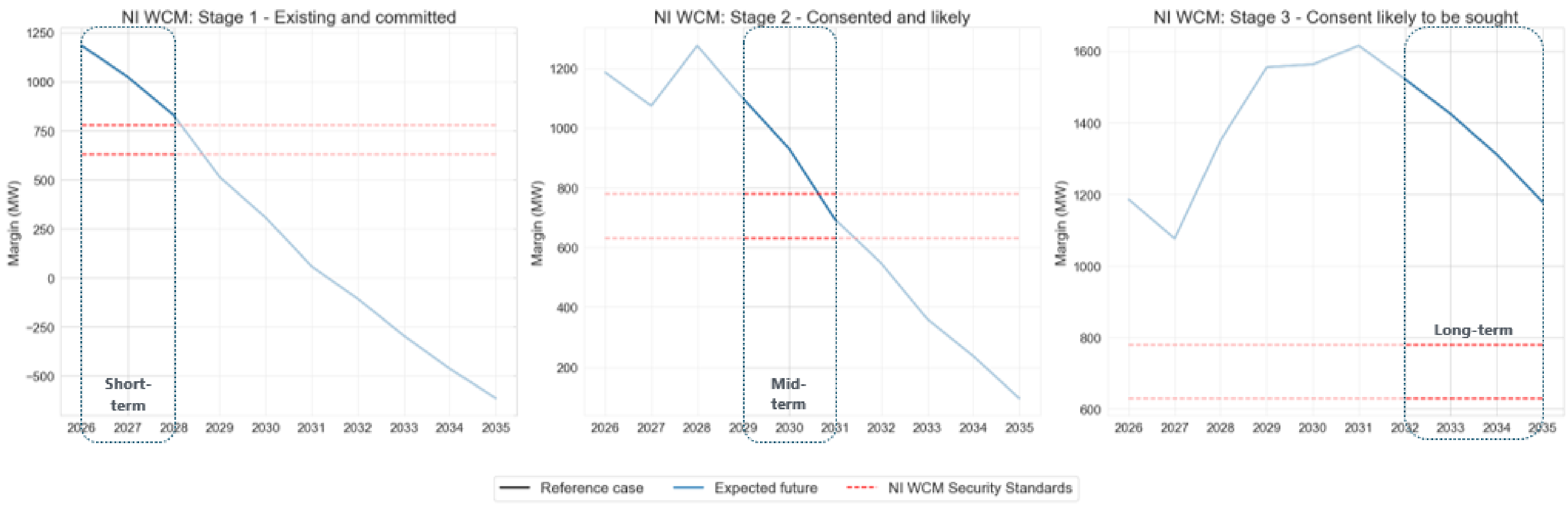
Table 8: Summary of SI-WEM results for Reference and Expected Future cases across short, mid and long-term horizons

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. If not, it falls below lower standard by 2029. • Expected future case could drop below the lower standard by 2031.	• Reference case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected otherwise it drops below lower standard in long-term (2032). • Expected future case remains above the upper standard in the long-term provided Stage 3 projects delivered as expected otherwise it drops below lower standard in long-term (2031). Similar impact as Reference case even with lower gas supply as surplus NI generation constrained by HVDC south transfer can compensate for the reduced thermal generation capability due to reduced gas supply.

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



Question 4

Do you have any comments/feedback on the Expected Future case?

9 What does this mean for industry?

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

Table 9: 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 281 GWh shortfall below the standards • **Key risks:** Delays to new generation or reduced thermal generation support could cause margins to drop below standards from 2026. Faster demand growth, low gas supply, or weak wind/solar output increases risk by 2027–2028 • **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 698 GWh shortfall below the standards. • **Expected Future case:** Falls below the standard by 2030 even with planned projects if gas supply is lower than medium forecast. This corresponds to a 734 GWh (2030) and 1903 GWh (2031) shortfall below the standards. • **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, 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 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 shortfalls 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 correlated risks less 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 low gas supply increases risk by 2028	• **Reference case:** Above the standard if Stage 2 planned projects proceed. • **Expected Future case:** Falls below the lower standard by 2031 even with planned projects if gas supply is lower than medium forecast. This corresponds to a 942 GWh shortfall below the standards. • **Key risks:** Margins fall below standards earlier if Stage 2 projects do not proceed. High demand growth and	• **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.	reduced gas or thermal availability could drive shortfalls. 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 an 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:** Peak supply shortfalls 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. A high demand growth or reduced thermal availability introduce risks by 2028. • **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 2029. • **Key risks:** High peak demand growth, reduced thermal generation or reduced gas could drive margins below standards by ~2030-2031. 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:** High demand growth, very low gas supply, and operational constraints remain ongoing risks into the long-term. Peak capacity challenges persist even with more generation • **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.

Question 5

Do you have any further comments/feedback on the SOSA 2026?

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