TRANSPOWER

2024 Security of Supply Assessment: Reference Case Assumptions and Sensitivities

Response to Feedback

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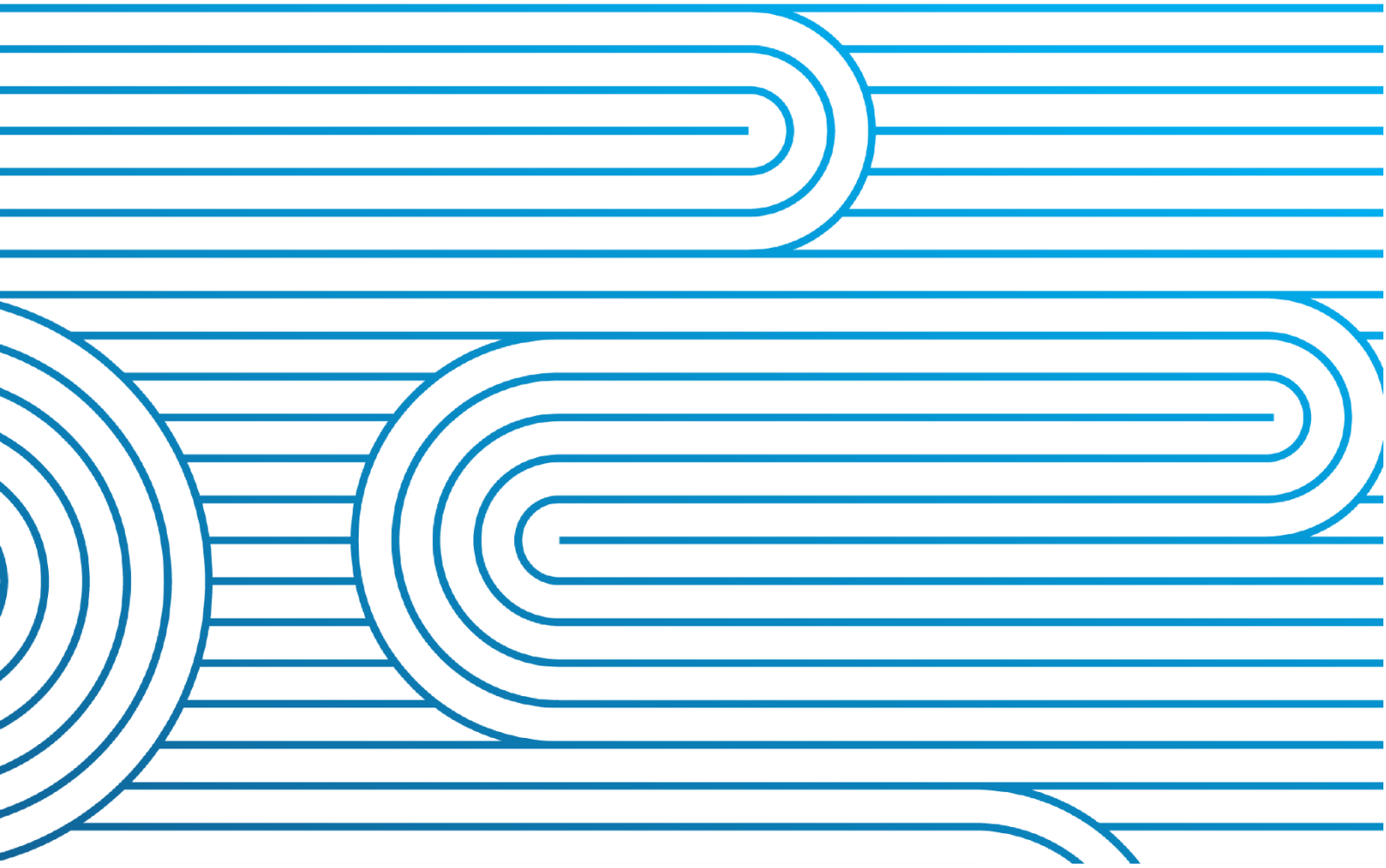

IMPORTANT

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1.0 Responses to Industry Feedback

1.1 Thank you for contributing

Transpower in our role as the system operator would like to thank those who took the time to review and provide feedback on the document *2024 Security of Supply Assessment: Reference Case Assumptions and Sensitivities – Invitation to Comment*. This input has been helpful in refining our proposed method for carrying out the 2024 Security of Supply Assessment.

The remainder of this document contains the comments provided by industry participants and our responses to them.

A draft version of the 2024 Security of Supply Assessment will be issued for consultation in the coming months. We will request feedback on its contents before a final version is issued to the industry by 30 June 2024.

1.2 Questions

Q1. Do you agree with the proposed assumptions used for the reference case? If not, please provide further details and what you consider would be reasonable alternate assumptions.

Q2. Do you agree that the proposed sensitivities represent the key security of supply uncertainties facing the New Zealand electricity sector over the assessment horizon (2024-2033)? If not, please provide further details and which of the above-described sensitivities you would replace with alternatives or remove (if not needed).

Q3. Do you have any thoughts on our proposal to include a section in the Security of Supply Assessment report looking at the implications of increasing the proportion of renewable generation on security of supply margins?

1.3 Feedback on Proposed Reference Case and Sensitivities

Do you agree with the proposed assumptions used for the reference case? If not, please provide further details and what you consider would be reasonable alternate assumptions.

Organisation	Comment	Transpower's Response
Bryan Leyland	Regarding Fig one I am comfortable with the demand assumptions but I think that some of the supply submissions are questionable. The last 4 assumptions are definitely questionable. Delayed build times are definitely likely given the fact that a surplus of wind and solar power will result in prices crashing when wind and solar is in surplus and going very high when it is not available. This means that wind and solar power will earn much less than the average wholesale price. Given that overseas it only survives on subsidies it seems to me that an organisation would need to be quite foolish to contemplate investment much beyond what is already committed.	We use the demand and supply sensitivities (shown in Figure 1) to highlight the uncertainties in key assumptions impacting the security margins. Different parties will have different views on these assumptions. Analysing these variations of assumptions in the SOSA allows the reader to understand the impact on the security of supply margins under combinations of sensitivities (assumptions) they consider are more likely to occur.
Energy Resources Aotearoa	1. In our submissions on previous assessments, we argued that under policy settings to date it is much more realistic to assume that gas supply and/or thermal capacity is constrained as the default (i.e., as part of the Reference Case).[1] However, we acknowledge Transpower's response that constrained gas supply is still considered as a sensitivity. [1] See our 2021 submission at https://www.energyresources.org.nz/dmsdocument/194 and	1. Our assessment for thermal fuel availability is described in Appendix 4 of the SOSA 2023. Based on our assessment for 2023, we concluded that in the reference case, gas generators could have access to sufficient gas to contribute to security margins at their maximum available capacity over the assessment horizon. We will repeat this evaluation with updated inputs for the 2024 SOSA, which may lead to us assuming that thermal capacity is constrained by gas supply.

	our 2023 submission at https://www.energyresources.org.nz/dmsdocument/245. 2. We note the new National-led Government has signalled a suite of pro-investment policies, including the unwinding of the 2018 ban on new oil and gas exploration; a review of the decommissioning regime for oil and gas installations; and the abandonment of the 100% renewable electricity target and the Lake Onslow project. The default assumption should be constrained supply until these measures have been implemented, if not beyond, given the investment lead times involved.	As noted, we will also consider more constrained gas alternatives as part of the sensitivities. These will include low gas supply as well as low gas demand flexibility. 2. The changes in policy settings highlights the changing impacts that can impact future supply conditions. Hence, we consider the use of reference case with sensitivities on the key assumptions (including future gas production as well as gas demand flex) allows parties to understand the impact of varying future gas conditions can have on the security of supply margins.
Major Electricity Users' Group	MEUG is comfortable with the proposed key reference case assumptions and the sensitivity that you are proposing to apply.	Noted.
Nova Energy	Nova notes that the Reference Case for the SOSA includes, in Stage 2, generation projects that are consented and on hold pending a change in market conditions. Nova's consented site in Otorohanga for gas-fired peakers fits in this definition. Nova suggests that Nova's Resource Consent to build peakers at Otorohanga should be excluded from the Reference Case. Nova acknowledges that the intent of the Reference Case is not to be a forecast of the most likely outcome, but it is inevitable that most parties reviewing the outputs will give it that interpretation. Nova is not privy to possible thermal generation developments by other generators; but despite the change in government and	The constrained thermal development sensitivity is introduced to recognise the uncertainty in future thermal development. In this sensitivity, no new fossil-fuelled generation is developed over the assessment horizons (2024-2033). This will allow stakeholders to assess the impact of constrained thermal development on the security margins. As to the second point, we will use forecasts of gas production for winter 2024 to apply appropriate deratings to energy supply and capacity supply from gas generators.

	planned dropping of the oil & gas exploration ban, the outlook for gas availability is such that achieving an economic return on new gas peakers remains highly uncertain. As such, Nova is not committed to building Peakers at Otorohanga. It is therefore Nova's view that the market will be best served by treating potential thermal developments as a scenario in the sensitivity analysis. Further; Nova's observation of the gas supply/demand balance from published data suggests there is currently quite high unmet gas demand, and thus caution needs to be taken in availability of gas for generation across the entire thermal portfolio if a dry hydro inflow sequence is experienced in 2024.	

Do you agree that the proposed sensitivities represent the key security of supply uncertainties facing the New Zealand electricity sector over the assessment horizon (2024-2033)? If not, please provide further details and which of the above-described sensitivities you would replace with alternatives or remove (if not needed).

Organisation	Comment	Transpower's Response
Bryan Leyland	Given that an increased amount of wind and solar power will markedly increase the risk of short-term shortages when the wind isn't blowing and the sun isn't shining, this should be included in the assessment. This is a new risk and should be rated alongside the traditional dry year risk.	We have introduced a new sensitivity into the SOSA from 2023 (and maintained it in 2024), which explores the market co-ordination challenge of integrating increased intermittent generation with slower start thermal plant. We've discussed this in our market insights paper (here), which highlights lower capacity available during peak load periods that increases the risk of meeting short-term peak load periods. Most of our winter peak load periods would occur during winter evenings when solar generation contribution is already low.

	Increasing wind and solar power will make it more difficult to manage system frequency and voltage. This could become a constraint on the amount of power available. It is a new risk and it should be covered in the report.	The SOSA focuses on the energy and capacity margins and how these compare to the security standards. Our ability to maintain stability of frequency and voltage is covered in other documents, principally the System Security Forecast.
Energy Resources Aotearoa	Low gas demand flex 1. We strongly support the new inclusion of low gas demand flex as an independent sensitivity following feedback on the last annual assessment. While we agree that gas demand response from large users can be an important mechanism for ensuring security of supply into the electricity system, this sensitivity ensures we recognise that it cannot be taken for granted. We agree this is a key security of supply uncertainty. 2. Our strong preference is that this flexibility is contracted well ahead of time to ensure it is available when needed, on terms acceptable to the large users (who, it should be emphasised, can bear a significant opportunity cost in releasing their gas to the market). Ideally policy settings would support a dynamic and vibrant gas sector which has sufficient gas supply, gas storage, and gas-fired generation capacity to manage the risk of demand response being required in the first place. 3. By the same token, we support the Gas Industry Company's frequent comments (in response to previous consultations) that electricity security margins should not be upheld by eroding the security of supply in the gas sector, nor imposing damaging impacts on gas-using businesses and the New Zealand economy. Other sensitivities	Response to 1: Noted. We agree this is a key uncertainty to the security margins and will retain the low gas demand flex sensitivity for the 2024 SOSA. Response to 2 and 3: We have seen this contracted flexibility occur previously however we acknowledge the uncertainty in this occurring which is reflected in the low gas demand flex sensitivity. This indicates the impact of high and low gas demand flex and the impact this can have on the security of supply margins.

	As in previous years we support the inclusion of the other supply and demand side sensitivities. We offer below some specific comments on some of these sensitivities: • constrained thermal development – per an EnergyLink report we commissioned earlier this year, the electricity system highly likely needs new gas-fired peaking capacity and it is appropriate to consider this risk that (for whatever reason) this capacity does not come to market; • dry-year risk – this is a well understood risk, though underappreciated by laypeople. The independent Energy Link report referenced in the previous 3 bullet explored this sensitivity and it (predictably) reveals significant implications for supply and demand. Given the importance of mitigating dry-year impacts, it could also be worth adding into the scenario work consideration of consistently dry hydrology. • low gas supply – see our comments in response to Question 1 above	Constrained thermal development sensitivity: Noted. Dry-year risk: We have not included a dry year sensitivity because dry year risk is accounted for when setting the security standards. Variability in inflows is used to model the relationship between NZ-WEM and expected energy shortfall. The cost of this shortfall is estimated and compared to the cost of building dry year supply (see the Security Standards Assumptions Document, table 3). Low gas supply: Noted.
Major Electricity Users' Group	MEUG is comfortable with the proposed key reference case assumptions and the sensitivity that you are proposing to apply. We note that you are seeking additional information from market participants related to demand response capability. Two of MEUG's members, NZ Steel and NZAS, have agreements with their respective retailer to reduce demand during winter periods, if required. Is this the sort of information that the team is after? Besides these two arrangements, none of our members are currently involved in demand response. We do not believe that the current market mechanisms are sufficient to incentivise large-scale participation by businesses. We consider that demand-side	Noted. As part of our survey, we have requested information on existing and future generation build and demand response. These requests have also been made to major electricity users for information on demand response.

	participants should be able to receive a form of payment that reflects the full benefits of the service provided and reflects the costs to the participant (i.e., lost production, need to invest in systems). The removal of RCPD has also reduced the incentives to shift demand from peak times. We have discussed our thoughts with the Electricity Authority, who noted that only 2 participants (we believe) are using the current dispatchable demand mechanism.	
Nova Energy	N/A	N/A

Do you have any thoughts on our proposal to include a section in the Security of Supply Assessment report looking at the implications of increasing the proportion of renewable generation on security of supply margins?

Organisation	Comment	Transpower's Response
Bryan Leyland	This is essential. It must cover the need for massive amounts of storage for days and weeks to cover wind droughts and the like. It should also include an assessment of what storage technologies could fill the gap and how much they will cost. My information is that the ones currently available such as batteries are impossibly expensive and there is no long-term low-cost storage technology available. It should also cover frequency and voltage stability.	The SOSA assesses the adequacy of capacity and energy supply to meet the security standards. Where there is a gap between the expected level of supply and the security standard, the SOSA quantifies the size of that gap (see for example figures 20 and 21 in SOSA 2023). However, the SOSA does not attempt to determine what technology or combination of technologies (e.g. generation, demand response, energy storage) could be used to close such a gap, or what those technologies would cost. Our ability to maintain stability of frequency and voltage is forecasted in other documents, principally the System Security Forecast.

Energy Resources Aotearoa	We support its ongoing inclusion.	Noted.
Major Electricity Users' Group	It would be interesting to understand the implications of increasing the proportion of renewable generation on security of supply margins (as asked through question 3). How the system copes with greater intermittent generation, and less thermal generation, is an area of interest to our members.	Noted.
Nova Energy	N/A	N/A

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