

23 May 2025

Stephen Jones
Transpower New Zealand Ltd
Waikoukou
22 Boulcott Street
Wellington
New Zealand

Submitted via email to usi@transpower.co.nz

Dear Stephen

Orion submission – Upper South Island Upgrade: short-list updated consultation

1. Orion welcomes the opportunity to submit on the updated ‘*Upper South Island Upgrade: short-list consultation*’.¹ This submission builds on our earlier feedback provided to Transpower on 14 February 2025 and 6 October 2023.²
2. Orion acknowledges and thanks Transpower for their decision to reopen consultation following material changes in project cost estimates and benefit allocations presented since the initial short-list consultation.
3. While we support necessary grid reinforcement to enable New Zealand’s energy transition, our analysis of the updated consultation has identified several deficiencies in the investment case that warrant further investigation before this project progresses further:
 - a. **The forecasting methodology contains inconsistencies and potentially overstates the investment need.** We have identified a significant reduction in South Island winter peak demand that is not reflected in the USI investment case, questionable assumptions regarding electrification projects, potential double-counting of specific load growth, and asymmetrical treatment that models uncommitted generation as occurring outside the USI while including uncommitted load within it.
 - b. **Substantial cost increases (+\$86.8m) lack sufficient justification and transparency.** The significant escalation in project costs, particularly regarding line clearance remediation and thermal rating upgrades, requires more robust justification and clarity on the allocation of costs between pre-existing NZECP 34 compliance issues (likely to be coverable by existing revenue allowances) and new requirements resulting from the proposed additional thermal rating increase.

¹ [Further consultation on our short list Upper South Island.](#)

² [Orion submission: Upper South Island short-list consultation](#) and [Orion submission: Upper South Island long-list consultation](#).

- c. **Non-transmission solutions process appears procedurally inadequate.** The compressed timeframe for non-transmission solution proposals, lack of defined deferral value, and absence of iterative engagement have potentially precluded viable alternatives from adequate consideration.
- d. **Timing constraints limit exploration of cost-effective alternatives.** While we recognise the eventual need for grid reinforcement, the timing of the project cost and indicative allocation revisions has substantially impaired stakeholders' ability to develop an appropriate response. This timing limits USI stakeholders' capacity to explore non-transmission solutions or other approaches that could ensure the right grid reinforcement solution is implemented at the right time, maximising benefits while minimising costs to consumers.

Forecasting methodology and assumptions

Load growth forecast inconsistencies

- 4. Orion submits that Transpower's recent Security of Supply Assessment 2025 identifies a significant reduction in winter peak demand forecasts compared to the 2024 assessment.³ This reduction of approximately 200MW in South Island winter peak demand has not been reflected in the USI investment case. Orion recommends that Transpower incorporate the updated demand forecast to reassess projected constraint dates and confirm the investment need and timing.
- 5. Orion notes that part of this reduction in winter peak demand forecasts may be driven primarily from changes to timing and certainty of customer projects, or may be caused by forecast inaccuracies in potential step loads in the USI:
 - a. **Electrification of Fonterra dairy factory:** While electrification of Fonterra's Clandeboye plant was included in Transpower's initial modelling, recent news from Fonterra has indicated that this facility is planning to convert two coal boilers to wood pellets.⁴ We note that Fonterra's Studholme dairy factory, physically located outside of the USI region, has been included in the USI summer demand forecast due to grid configuration and an existing LSI transmission constraint. This creates a situation where it appears USI customers are effectively relieving a constraint that exists in the LSI.⁵

³ [Security of Supply Assessment 2025](#), System Operator, page 17. Orion has assessed the potential impact that a 100MW drop in USI load forecasts may have on the forecasts found in the [USI investment, demand and generation scenarios](#). We identified that breaches of the Static PV limit and Dynamic Stability limit (currently 2028 and 2029 respectively) shift to occurring in 2036 and 2037. Breaches of the Thermal PV limit shift from 2033 to potentially not occurring before 2050. This highlights that the investment need may need to be reassessed.

⁴ [Fonterra Clandeboye announcement](#), 12 December 2024. Orion acknowledges that some uncertainty persists over the remaining three boilers, and when they will transition to renewable energy (including fuel type). We also note that Transpower's demand forecast shows significant load growth at Clandeboye in 2030 (approximately 50MW).

⁵ Has Transpower assessed whether resolving this constraint in the LSI directly would be more cost effective than the proposed USI solution? Does the current summer switching approach, which appears to worsen the USI constraint to improve the Waitaki constraint, represent optimal transmission system operation?

- b. **Cook Strait Ferry electrification:** Following the Government’s cancellation of the iReX project, future ferry electrification is highly uncertain. Commentary from CentrePort⁶ suggests that the new vessels will receive shore power when docked, as is increasingly common with maritime infrastructure; however, we have found no publicly available information that suggests that hybrid vessels are being sought and would require higher capacity, charging infrastructure, as was the case under the cancelled iReX contract. The Minister for Rail has stated only that the new ferries would have “modern system redundancies and future proofing solutions to reduce carbon emissions”.⁷
- c. **Electrification caused by Mid-South Canterbury and West Coast RETA reports:** It is important that Transpower recognises that these reports are strategy documents that seek to connect demand and supply sides and provide the information needed to build a robust business case analysis to boost, and potentially accelerate, business decarbonisation within a specific region.⁸ They are not a plan in execution, and should not be treated as such when developing a transmission investment need.
- d. **Christchurch International Airport (CIAL):** The demand forecasts identified by CIAL include ambitious projections for industrial growth, data centres, vertical farming, and aviation electrification.⁹ While we acknowledge CIAL’s growth aspirations, these demand forecasts come with uncertainty and should be conservatively included for infrastructure planning purposes.¹⁰ Specifically:
 - i. While these technologies are undoubtedly on the long-term horizon, the inclusion of aviation powered by electrification or hydrogen as step-loads may be overly optimistic, when considering the technological readiness and commercial viability of these technologies. The independent expert reviewers of Orion’s demand forecast have advised that electric and hydrogen aviation applications remain too speculative to warrant inclusion in network planning forecasts.
 - ii. The Kowhai Park development (150MW solar farm under construction, with commissioning expected in 2027) will likely support CIAL’s near and medium-term load growth. The developer is also assessing a 150MW battery installation and its timing could be explored.

⁶ The Post (2025). Winston Peters’ Cook Strait ferry decision comes into port. 31 March 2025. Retrieved 16 May 2025 from <https://www.thepost.co.nz/>.

⁷ Radio New Zealand. (2025). New Cook Strait ferries to be rail-enabled. 31 March 2025. Retrieved 16 May 2025 from <https://www.rnz.co.nz/>.

⁸ <https://www.eeca.govt.nz/co-funding-and-support/products/about-reta/>. Orion notes that both the Mid-South Canterbury and West Coast RETAs are considered a “phase one” of the RETA programme, and identifies that both biomass and electricity are considered as potential fuel sources. A second phase report, the “implementation stage” aims to identify the regionally supported barriers or opportunities, and supporting regional energy users and suppliers with committing to decarbonisation projects. This work has not yet been completed.

⁹ [CIAL - Upper South Island Capacity and Stability Consultation](#).

¹⁰ [Original short-list USI investment, demand and generation scenarios](#), page 20 and [Transpower - summary of and response to long-list consultation submissions](#), page 2.

- iii. Orion's forecasts provided to Transpower already incorporate CIAL's projected demand increases that have a reasonable certainty of materialising. We regularly engage with our large customers to ensure that growth projections with reasonable likelihood are accurately reflected in our forecasts provided to Transpower.
- e. **Tiwai demand response contract:** Orion notes that Transpower appears to have adjusted its model to reflect the increased certainty about Tiwai's future. Orion queries whether Transpower has also factored the demand response contract with Meridian into the need for investment scenarios.¹¹

Inconsistent treatment of Generation and Load

- 6. Orion submits that Transpower's modelling approach appears to skew benefit allocations. Specifically, uncommitted new generation based in the USI is modelled as occurring outside of the USI, while uncommitted new load and load step changes are included in USI modelling. This asymmetrical treatment is problematic given the nature of the Waitaki constraint, and potentially results in an overestimation of benefits allocated to load customers.
- 7. Orion notes that it appears Transpower applies a different level of scrutiny to uncommitted load increases than it does for generation forecasts. In addition, to align with how uncommitted generation is modelled, all uncommitted load increases should also be modelled as occurring outside of the USI. It appears that the generation scenarios may represent a more pessimistic view, when compared against the more optimistic view for load scenarios.

Updated generation information

- 8. Orion submits that following our previous consultation response, we can provide additional embedded generation data that may impact the investment case. [REDACTED]

Project cost increases

Line clearance and thermal rating upgrade

- 10. Orion notes that a significant portion of the cost increase (\$43.1m) relates to pivot irrigator clearance violations, and a proposed thermal rating upgrade of both the Orari – Rangitata and Norwood – Rangitata circuits to 100°C.¹²
- 11. Orion requests that Transpower provide a transparent analysis of:

¹¹ [Meridian Energy Investor presentation](#), 31 May 2024.

¹² Orion notes that Tables 2, 3, 4 and 6 from [Attachment 2](#) suggests that both the Orari – Rangitata and Norwood – Rangitata circuits will be increased to 90°C. The updated [Attachment 4](#) from the re-consultation suggests that only the Orari – Rangitata circuit will be increased to 100°C. A meeting with Transpower staff on 9 May 2025 indicated that the Norwood – Rangitata circuit would also be increased to 100°C. This inconsistency across consultation documentation makes it unclear what is actually occurring, and the investment need for the higher thermal ratings is not clear from the materials provided to stakeholders.

- a. The number of clearance violations that are currently in breach of NZECP 34, prior to any investment.
 - b. The number of clearance violations that will be caused by an upgrade of both the Norwood – Rangitata and Orari – Rangitata circuits to 90°C.
 - c. The number of clearance violations that will be caused by the planned upgrade to the Orari – Rangitata circuit to 100°C.
12. Orion requests confirmation that the upgrade costs for the investment will only address the net increase in clearance issues resulting from the thermal rating changes, rather than remediating pre-existing compliance issues.
 13. Orion submits that the economic and operational justification for increasing both circuits to 100°C requires a clearer explanation. The need for this additional thermal capacity is not adequately demonstrated in the consultation documents, and was only raised in a meeting with Transpower staff on 9 May 2025. We also question whether non-transmission solutions could potentially enable a more modest thermal upgrade (to 90°C rather than 100°C), potentially resulting in significant cost savings while still addressing the identified constraint.

Line turn-in costs

14. Orion notes that the additional \$30.2m project cost for the Orari and Rangitata line turn-ins represents a concerning oversight that should have been identified by Transpower staff in previous consultations.
15. Orion questions whether, if these substantial costs had been properly identified earlier in the process, they may have materially altered the evaluation of alternative non-transmission solutions and optimisation approaches. We question whether the same preferred option would have emerged had the full costs been transparent from the outset.

Non-transmission solution process

Request for proposal (RFP) procedural limitations

16. Orion notes that the RFP for non-transmission solutions was available for only one month, providing inadequate time for potential providers to develop comprehensive responses. Feedback we have heard from respondents to this RFP process is:
 1. That a defined value for deferred investment was not included in the consultation.
 2. That there were insufficient timeframes for response development.
 3. That there is perception that the process lacked genuine engagement, or support, by Transpower.
 4. That the process was structured as a discrete, time-limited activity rather than the continuous engagement mechanism warranted by a constraint of this nature.
 5. That the post RFP justification for not progressing a non-transmission solution was based purely on what existed today, rather than the potential to develop, of which there were a number of submissions.

17. Orion questions why Transpower closed the non-transmission solution process rather than maintaining an open call throughout the Major Capex Proposal (MCP) development period. Given that the identified constraint is projected over a multi-year horizon, maintaining an ongoing solicitation for non-transmission solutions would better align with principle of least-cost grid development, given the rapid pace of sector-wide transformation.
18. Orion contrasts Transpower's approach with the approach that other Participants have developed when procuring flex solutions. Powerco recently completed an expression of interest (EOI) to provide flex solutions during peak demand times for any or all of their substations supplied by the Mt Maunganui GXP. As part of this process, Powerco is working iteratively, as they recognise that this is an emerging market, and they are consciously engaging in a way that attempts to develop the depth of flexible solutions available, rather than limiting themselves to what exists today.¹³

Inadequate evaluation of alternative solutions

19. Orion submits that Transpower's evaluation of non-transmission solutions appears to be unnecessarily constrained to conventional transmission asset solutions. Orion's analysis of Attachment 2 "*Short-list of investment options*"¹⁴ reveals limitations in the scope and depth of alternatives considered.
20. [REDACTED] beyond what the USI Load Manager already provides. Given the multi-year timeline in which the need materialises and the lengthy asset construction process, substantial industrial and commercial demand response capabilities could be developed if properly incentivised and evaluated.
21. Orion submits that the implementation of the USI Load Manager controlling residential hot water demand has used non-traditional solutions to defer asset upgrades in the USI for decades. There is no reason why a similar approach should not be thoroughly considered as an alternative.
22. Orion notes that as the Grid Owner, Transpower appears not to be precluded from considering alternative technical solutions, including but not limited to, BESS deployment, either owned directly by Transpower or procured as a service.
23. Orion submits that BESS, as an alternative, can offer significant advantages to Transpower over conventional transmission upgrades, including modular deployment capability,¹⁵ substantially shorter lead times, lower upfront capital commitment, and potentially reduced stranded asset risk. At a minimum, Transpower should consider evaluating BESS solutions (generation or other non-traditional solutions) as a provider of last resort to defer or minimise the scale of transmission upgrades required.

¹³ Please refer to PowerCo's Flex solutions website for further details: <https://www.powerco.co.nz/our-partners/flex-solutions>.

¹⁴ [Attachment 2: Short-list of investment options](#), specifically Table 2 (pages 8-15) and Section 2.1 (pages 17-18).

¹⁵ That is, the ability for Transpower to build just in advance of the need, should the need materialise. This capability may be especially beneficial in an era with rapid sector transformation, and potentially significant increases in both load and generation across the USI and New Zealand.

24. Orion recommends that Transpower further evaluate whether a hybrid approach, combining modest thermal rating upgrades with the implementation of non-traditional solutions (BESS) or otherwise might offer a more cost-effective approach – especially in scenarios where opportunities for value-stacking exist.¹⁶ The modular nature and significantly shorter lead times of BESS solutions would permit a staged approach to addressing constraints as they emerge, providing flexibility that traditional transmission assets cannot match. This approach would be particularly valuable if more balanced forecasting reveals later constraint dates than currently projected.

Transmission Pricing Methodology and timeline concerns

25. Orion understands that the TPM framework is designed to provide customers with adequate time to respond with non-transmission solutions to mitigate potential cost impacts. Whilst we appreciate Transpower reopening the consultation process, the significant changes to both costs and allocations introduced immediately prior to the Commerce Commission MCP submission, severely limits stakeholders' practical ability to develop meaningful alternatives in response. The timing constraints effectively undermine the collaborative intent of the consultation framework. Had these impacts been known earlier, Orion could have worked more proactively with generation customers, demand aggregators, and other stakeholders across the USI to develop a non-transmission solution alternative.
26. Orion observes a potential missed opportunity for Transpower to have engaged more proactively with EDBs to identify and source potential non-transmission solutions. Given recent regulatory changes potentially enabling EDBs to own generation assets,¹⁷ Transpower should have initiated discussions with USI EDBs well before the formal consultation process began. Such early engagement could have facilitated coordinated planning for non-transmission solutions to address the transmission constraint while providing additional localised benefits.
27. For the USI MCP, Orion recommends that Transpower extend the consultation period (for a minimum of 8 weeks) and facilitate dedicated workshops with USI EDBs, embedded generation customers, demand aggregators, and non-transmission providers, to properly explore alternative options.
28. Looking forward, we recommend that Transpower implement earlier and deeper stakeholder engagement prior to consultation release, ensuring that the necessary transmission upgrade is informed by comprehensive input from directly affected parties.

Customer cost implications

29. While Orion recognises the eventual need for grid reinforcement in the USI, we note that the recalculated cost allocations represent a material financial impact on our consumers. Based on our preliminary analysis, we estimate the project will result in approximately a 3% increase in total line charges for customers across our network. This represents a significant step change that will occur on top of inflation and other regulatory pricing impacts.

¹⁶ Where BESS provides both transmission constraint relief and market services.

¹⁷ Ministry of Business, Innovation and Employment (MBIE). 2025. [Investigating Options to Amend or Remove the Amount of Generation that Electricity Distribution Businesses May Own](#).

30. Orion notes that this cost allocation is exacerbated by what appears to be a “perfect storm” of methodological asymmetries in Transpower’s modelling approach. As outlined previously, the combination of more pessimistic generation growth scenarios in the USI alongside more optimistic load growth projections in the USI creates a distorted view of constraint economics. This asymmetrical treatment artificially inflates the calculated benefits allocated to load customers, while minimising generator contributions – despite both being components of the electricity market’s supply-demand dynamics.
31. Orion submits that with a more balanced approach to forecasting, Transpower may find that constraints emerge later than currently projected. This would naturally defer major capital expenditure, providing significant societal benefit while allowing time for the investment need and allocation methodology to be refined as actual load growth and additional generation investment materialises.

Concluding remarks

32. Orion thanks Transpower for the opportunity to provide further feedback on the proposed Upper South Island Upgrade short-list consultation.
33. Orion acknowledges that grid reinforcement in the USI will eventually be required. However, given the rapid pace of sector transformation and the pipeline of committed generation, we firmly believe that a more balanced approach to forecasting, one that treats generation and demand forecasts with consistent levels of scrutiny, may potentially reveal that constraints emerge later than currently projected. Any resulting deferral would not only reduce immediate financial impacts on consumers but would allow time for more cost-effective non-transmission solutions to be properly evaluated and potentially implemented.
34. We have identified important concerns that warrant further engagement and exploration prior to the submission of any MCP investment case to the Commerce Commission. Orion therefore submits that progression of this proposal to the Commerce Commission without addressing these concerns would be premature and potentially result in sub-optimal solution that may not represent the right investment at the right time, ultimately impacting consumers within the USI. We therefore recommend that Transpower:
- a. Conduct a comprehensive review of both load and generation forecasts and assumptions, and apply consistent evaluation criteria to both, to identify if constraints emerge later than currently projected,
 - b. Reopen the non-transmission solutions process,
 - c. Provide a transparent analysis of the number of existing and new clearance violations, and
 - d. Extend the consultation period and facilitate dedicated workshops with affected stakeholders, as we believe viable alternatives to the current upgrade proposal may exist and warrant thorough exploration before proceeding with the proposed investment.
35. Parts of this submission contain confidential, or commercially sensitive information, and a redacted version has been provided for public disclosure.
36. Orion remains committed to constructive engagement with Transpower throughout this process and would welcome the opportunity to discuss these matters in further detail. If you have any questions or queries on aspects of this submission which you would like to discuss, please contact us on 03 363 9898.

Yours sincerely,

A handwritten signature in blue ink, appearing to be 'DP' followed by a long, wavy horizontal line.

Dayle Parris

Head of Revenue and Regulation

cc: Commerce Commission