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A future grid blueprint for Aotearoa – Consultation 2 Potential Scenarios

1. Thank you for this opportunity to make a submission on Transpower's Consultation 2 – Te Kanapu.

2. We have considered the questions raised in the online feedback form and provide some comment and local context on some of those questions/subject areas below (noting that we have not answered all questions asked or addressed all subject areas.)

Transpower Questions:

Question	Orion Response
1. Which scenario(s) best reflect(s) your ambition for Aotearoa?	By way of background, Orion has developed four scenarios for how the energy environment might evolve in our region. Our future energy scenarios describe plausible futures in 2050, and the pathways for reaching those futures. We developed our scenarios by identifying key drivers of uncertainty, technology change and customer participation in the energy system. Other factors beyond these two key drivers such as economic and population growth are also considered in the development of

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the scenarios. Our scenarios are:

- **Business as usual** – an extrapolation of existing electrification trends, in a low growth world. Low change in technological uptake results in low economic growth and high climate change impact.
- **Progress** – where electrification and change in consumer behaviour accelerates but does not result in full transition of the energy sector by 2050. There is some increased uptake of new technology and optimisation, with medium economic and population growth.
- **System transition** – a centrally led transition of the energy sector, achieved through high uptake of new technology, but minimal shift in consumer engagement. Economic growth and population growth are medium. Climate change impacts are towards best case scenarios.
- **Consumer and place-based transition** – where consumer and place-based optimisation combined with technology change achieves energy sector transition. Place-based optimisation leads to more efficient building and urban transport. Climate change impacts are towards best case scenarios.

The insights gained from developing and modelling these scenarios help to inform our Central Demand Forecast. The Central Demand Forecast is Orion's baseline scenario used for long-term network planning and investment decisions. It represents the most likely outlook for electricity demand in Orion's region, balancing national trends with local factors. This forecast underpins strategic planning, including zone substation upgrades, 11 kV and LV reinforcement, and flexibility investments.

You can find more information about our scenarios in our 2024 Asset Management Plan at https://www.oriongroup.co.nz/assets/Our-story/Publications/Orion-AMP-2024.pdf, see part 2.4.

Orion's Central Demand Forecast is constructed using its Future Energy Scenarios (FES) framework, which applies a driver-based modelling approach to capture both national and regional influences on electricity demand. The forecast begins with external references such as MBIE's Electricity Demand and Generation Scenarios (EDGS) to ensure alignment with national trends. These are then adjusted to reflect local conditions, including faster population growth in the Canterbury region and specific electrification patterns that differ from the national average.

The modelling process incorporates Orion's strategic intent, such as assumptions around time-of-use pricing, hot water management, and flexibility options that could influence peak demand.

Orion's Future Energy Scenario and Forecasting modelling is for maximum demand. These scenarios show growth between 2025 and 2050 of 31%-90% increases in maximum demand. Our Central Demand Forecast shows growth of 73% by 2050.

2. Are the scenarios plausible and useful for developing the future grid blueprint?

The Transpower potential scenarios may be plausible but do not necessarily represent a representative range of likely futures. Most of the scenarios describe some transformational change in electrification of energy or significant economic and structural transition.

The Patchwork Nation scenario appears to have similar total

electricity demand growth to the MBIE Reference Scenario, while Aotearoa Electrified has similar demand growth to the BCG The Future is Electric preferred pathway, and the Orion scenarios that have an implied net zero transition. While the Orion Future Energy Scenarios growth is not directly comparable, as it measures maximum demand growth rather than total annual demand growth, these two scenarios fit within the range of growth modelled in our scenarios.

The other three scenarios appear to depict more speculative structural economic changes. These scenarios show demand growth far greater than the other two, and while plausible, and useful for insights on potential futures for our grid, our view is that they should not be considered a genuine representative range of future outcomes used for planning or investment.

The future of Aotearoa's regions and implications for the power system – Region 14 – Canterbury.

We refer you to the Canterbury Energy Inventory 2025 which can be found at COR12169-Canterbury-Energy-Inventory-Report-A4-Sept25-web.pdf. This Energy Inventory is intended to form an evidence-base and provide a current state assessment of the energy system for the Canterbury region.

For completeness, below we provide some more information about developments in mid Canterbury which you may have already taken into account in formulating the five potential scenarios.

Aviation

We note that you have referred to Christchurch International Airport's (CIAL) involvement with the Kōwhai Park solar Farm development. We refer you to our submission to Transpower on

the Upper South Island Upgrade: short-list updated consultation[1] which we provided some more commentary about CIAL's plans and demand forecasts.

We also refer you to the Waitaha Canterbury Aerospace Strategy, see waitaha-canterbury-aerospace-strategy-june-2025.pdf which details the vision to position Canterbury as a global leader in aerospace innovation by 2035. (We note that this does not include commercial airline services and military defence and armaments.) One of the goals is to achieve by 2035 a thriving, high-value aerospace economy that contributes over $1billion annually to the regional economy through exports, innovation, and investment. We note that this does not include energy demand forecasts at this point.

Shipping

In terms of context for mid Canterbury, we note that Lyttelton Port is Aotearoa New Zealand's third-largest deep-water port and the South Island's biggest port. It handles 55% of the South Island's import and export volume and facilitates the movement of $7.58 billion in exports and $6.38 billion in imports annually.[2]

The Lyttelton Port Company is currently developing a 30-year Master Plan to guide the future of the port, freight networks, and inland terminals. The LPC website notes that the plan will set priorities for infrastructure, sustainability, and community access while supporting regional and national prosperity. It will address environmental challenges, climate resilience, and opportunities for innovation and growth.[3] We envisage that this

[1] https://www.oriongroup.co.nz/assets/Our-story/Submissions/Transpower/Orion-submission-USI-re-consult-redacted-May-2025.pdf
[2] See https://www.lpc.co.nz/wp-content/uploads/2025/11/LPC0705-CRD-2025-Final.pdf
[3] See Port Master Plan for Lyttelton Community Feedback Survey - Lyttelton Port Company

will provide more details about LPC's plans and we recommend that you engage directly with LPC as to their energy forecasts.

Data centres

We refer you to https://cdc.com/media/q0zh1opo/nztech-data-centres-report.pdf, which details data centre developments in New Zealand – current and predicted, including information about Canterbury.

Land Transport

We refer you to the Canterbury Regional Land Transport Plan which guides land transport planning and investment within Canterbury with a 10 year focus. [4] Specifically we also refer you to the Mass Rapid Transit proposal for Greater Christchurch. This infrastructure proposal has been included as an endorsed proposal in the National Infrastructure Priorities Programme.[5] We provided some comments on the energy implications of the initial Mass Rapid Transit proposal in July 2023 to the Greater Christchurch Partnership. You can find our submission here https://www.oriongroup.co.nz/assets/Our-story/Submissions/Other/Orion-submission-greater-Christchurch-spatial-plan-Jul-2023.pdf .

Concluding comments

3. Thank you again for the opportunity to provide this submission. We are happy to speak with you at any time about the development of our scenarios and forecasting.

[4] See https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-transport-plans
[5] See https://insights.tewaihanga.govt.nz/insights/all/181b3e19?ipp-id=IPP0002453

4. If you have any questions please contact Vivienne Wilson, Policy Lead, Vivienne.wilson@oriongroup.co.nz, (03) 363 9898.

Yours sincerely

Vivienne Wilson

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