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Transpower New Zealand

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Submission on Te Kanapu Future Scenarios – Consultation 3

Introduction

1. Energy Resources Aotearoa is New Zealand's peak energy sector advocacy organisation. We represent participants from across the energy system, providing a strategic sector perspective on energy issues and their adjacent portfolios. We enable constructive collaboration to bring coherence across the energy sector through and beyond New Zealand's journey to net-zero carbon emissions by 2050.
2. We welcome the opportunity to provide feedback on the third consultation of Te Kanapu. Scenario planning is critical to ensuring that New Zealand's electricity system evolves in a way that is resilient, reliable, and supportive of economic growth. Planning the grid depends on accurate modelling of potential futures.

A note on the scenarios

3. We thank Transpower for updating the scenarios to take into consideration the feedback from submissions, including our own, which asked for more realistic modelling of electric vehicle (EV) and sustainable aviation fuel (SAF) uptake and demand for data centres.
4. We are concerned, however, that the consultation materials continue to understate the ongoing and evolving role of gas. Gas is not a temporary footnote in the energy system; it is a strategic economic input that underpins trade-exposed industry, supports electricity system reliability, and contributes strongly to regional prosperity.¹ The roles of firming and storage are particularly important

¹ The importance of natural gas was put into sharp relief in the recent report commissioned by the Gas Industry Company from PwC which highlighted the reduction in industrial output and job losses *even with the import of LNG*, see: <https://www.gasindustry.co.nz/assets/CoverDocument/2026-Gas-Supply-and-Demand-Study.pdf>.

for the reliability of renewables. Running an energy system without sufficient firming is like running a marathon without shoes.²

5. Scenarios that assume rapid tightening of gas supply are judicious but should be balanced with modelling the ongoing role for gas, including liquefied natural gas (LNG). We suggest all scenarios model LNG. One scenario needs modelled LNG plus *additional* supply of LNG for industrial purposes, and one with *new natural gas discovery*. Without fully articulating the possibilities that Government policy is working hard to enable, or the consequences for system security and economic output, risks distorting investment signals and underestimating the costs of electrification.

Key messages

6. Natural gas is a cornerstone of New Zealand's economic growth, supporting industry and electricity, and supporting regional employment. It is not a marginal fuel and it cannot simply be phased out.
7. Domestic gas provides economic and security resilience, shielding the system from global market volatility and geopolitical shocks. The best gas for New Zealand is natural gas sourced domestically.
8. High-electrification pathways that assume smooth fuel switching underestimate the practical, capital-intensive, and timing-constrained realities of industrial switching. Premature decline of gas supply risks reducing demand, resulting in industrial exit and emissions leakage.
9. Electricity system reliability depends on dispatchable capacity for firming, particularly during dry-year or peak-demand events. Gas-fired generation and peaking provides critical optionality that cannot be replaced overnight.
10. Transpower's planning of the future transmission system must account for the continued role of gas, and the prospect of having LNG imports as a backup fuel from 2028, a new domestic gas discovery, and if neither of these eventuate, more coal.
11. We **recommend**, as the draft future grid blueprint is developed:
 - a greater transparency around scenario sensitivities, particularly how outcomes shift under slower electrification or tighter gas supply conditions;
 - b explicit modelling of firming capacity requirements, including the potential for LNG (or alternative thermal fuels) for dry-year and extreme peak scenarios, but also beyond that;

² Storage includes both battery storage (BESS) and, importantly, long duration energy storage (LDES) of the type provided by [Highview Power](https://highviewpower.com/solutions/) (see <https://highviewpower.com/solutions/>).

- c integrating economic risks from global market volatility and the potential for rapid gas and fuel price shocks and their impacts downstream;
- d clear articulation of transmission investment triggers and how they align with generation and industrial investment sequencing; and
- e visibility of consumer cost implications under each pathway.

Economic consequences are being underplayed

12. Three scenarios seem to favour an electrification pathway and tend to overplay the value to New Zealanders of a rapid uptake of renewables, while underplaying the role of thermal firming. Renewables should not be seen to deliver net economic benefits without factoring in the costs they also will impose on the system.
13. Natural gas is not simply an energy input; it is an economic stabiliser. It supports major export industries, high-temperature industrial heat, electricity firming, and regional employment. These sectors are trade-exposed, capital intensive, and highly sensitive to energy price volatility.
14. The assumption embedded in many high-electrification pathways is that fuel switching will be smooth, that industrial heat will rapidly electrify, that grid upgrades will arrive on time, that capital will be available at scale, and that energy prices will remain internationally competitive during the switching. We can already observe that these assumptions are overly optimistic.
15. High-temperature industrial processes cannot be electrified without significant capital replacement cycles. Many plants would require full asset retirement and rebuild rather than incremental modification. Those investment decisions are measured in hundreds of millions of dollars and depend on long-term price certainty and infrastructure availability. If that certainty does not exist, firms defer investment, or they exit.
16. If gas supply tightens before viable alternatives are commercially deployable at scale, the likely outcomes are not seamless substitution, but demand destruction, increased coal, LNG or diesel use as emergency backfill, loss of export revenue, and permanent industrial relocation offshore. That is not decarbonisation. It is economic contraction combined with emissions leakage.

Global exposure magnifies the risk

17. New Zealand's energy system is increasingly exposed to global fuel markets. Geopolitical instability, such as conflict in the Middle East, has immediate consequences for oil and LNG prices, shipping routes, and insurance costs. Those

effects transmit directly into the Asia-Pacific markets from which New Zealand sources both liquid fuels and, potentially, LNG.

18. The risk may not be as large as it seems. Spot prices are immediate and 'of the day' while the reality in New Zealand would be that businesses are more likely to hedge those risks over a longer period. However, it is a risk that was not previously in the system and worthy of giving further consideration.
19. If domestic gas supply continues to decline, New Zealand increases its exposure to these global price shocks. Import dependence does not eliminate volatility; it imports it. New Zealand has historically benefited from stable, domestically produced natural gas, which shields industry and electricity consumers from extreme international swings. The best gas for New Zealand, economically and strategically, is domestic natural gas.

Fuel switching is not frictionless

20. Electrification at scale requires major transmission and distribution upgrades, firming capacity to manage peak demand, new industrial equipment, workforce retraining, and consenting and regulatory alignment. These processes take years, often decades. They cannot simply be deployed without escalating costs, reliability risk, and investment uncertainty.
21. For these reasons, we are very supportive of the work Transpower is doing to model future scenarios for transmission upgrades. The need for an upgrade should not come as a surprise.
22. Switching to a renewable source requires infrastructure and investment and forward planning. If gas supply contracts faster than electrification infrastructure expands, the system does not rebalance smoothly. Instead, it experiences price spikes, increased coal burn during shortages, reduced industrial output, and lower investor confidence. A credible electrification pathway must recognise sequencing.

Gas and energy security

23. New Zealand's electricity system remains hydro-dominated and therefore inherently exposed to weather and climate variability. Firming capacity from a reliable source is not optional; it is essential.
24. Gas-fired generation provides dispatchable, fast-start capacity that supports system reliability during peak demand, low renewable output, and dry-year conditions. Even if its share of annual generation declines over time, its capacity value remains high. Removing that capacity prematurely, or allowing fuel supply to erode without replacement firming technologies fully proven and deployed, increases the probability of price spikes and security events.

25. Energy security must be understood as both a physical and economic concept. Households and businesses require affordable and predictable supply of electricity. When we encourage a premature or an over-reliance on assumed future storage or demand flexibility technologies, we transfer risk to consumers.

Optionality and system resilience

26. Scenario planning exists to preserve and highlight optionality in the face of uncertainty. The pace of electrification, storage deployment, hydrogen development, and industrial transformation is inherently uncertain. Geopolitical shocks, climate variability, and global market volatility further complicate forecasts.
27. Gas infrastructure and generation assets provide optionality. They allow the system to respond flexibly to higher-than-expected demand, delayed renewable build, or adverse hydro conditions. In a small, geographically isolated energy system such as New Zealand's, that optionality has strategic value.

Implications for Transpower's transmission planning

28. Transpower's scenario work underpins decisions about future transmission infrastructure, including grid reinforcements, interconnection, and contingency planning. Recognising the firming and security role of gas is therefore critical to robust system planning.
29. Premature assumptions about the decline of gas can distort transmission investment signals. If planners assume that dispatchable thermal capacity will disappear before alternatives are fully operational, transmission infrastructure may be undersized or misaligned with real system risk. Conversely, explicitly modelling gas as a firming resource ensures that grid upgrades are appropriately sequenced, cost-effective, and resilient to both domestic and international shocks.
30. In practice, this means scenarios and planning should:
 - a account for peak and dry-year demand where gas plays a firming role;
 - b integrate economic risks from global market volatility and the potential for rapid gas price shocks;
 - c reflect the sequencing of electrification, firming alternatives, and infrastructure deployment; and
 - d support investment certainty for both generation and transmission assets.

Reflections on the latest scenarios

31. Transpower has asked for feedback on the latest modelling work. Overall, it is very pleasing to see the revisions and the reasons behind them.
32. Transpower's scenario work has significant influence over investment expectations across the energy system. It is therefore important that scenarios balance ambition with realism and explicitly recognise economic and security trade-offs.
33. Transpower posed three questions:

1. Regarding our scenarios, do you have any further observations you wish to raise?

34. We continue to think that the Global Green scenario is unrealistic. The latest outbreak of war in the petroleum-rich Middle East is a reminder that global energy demand for oil and gas remains structurally embedded. While decarbonisation efforts continue, the physical and capital constraints of replacing hydrocarbons at pace are significant.
35. The scenario appears to assume rapid global technological substitution and coordinated policy alignment. That assumption is increasingly strained in a fragmented geopolitical environment. Energy security, affordability, and domestic resilience are likely to reassert themselves as primary policy drivers globally.
36. For New Zealand, this reinforces the importance of domestic natural gas supply as a buffer against international volatility. Scenarios that assume a rapid decline of gas without fully modelling the economic and security implications risk overstating speed of electrification and decarbonisation and understating disruption risk.

2. Regarding our assumptions, do you have any observations or feedback you wish to raise?

37. Revising down the assumptions about EV and SAF uptake and demand for data centres is very sensible and makes for more plausible scenarios. This increases the credibility of Te Kanapu.
38. We encourage Transpower to apply similar realism to assumptions about industrial electrification timing, capital availability, and the pace of alternative firming technology deployment. High-temperature industrial heat conversion requires asset replacement cycles, major capital expenditure, and grid capacity upgrades. These shifts are unlikely to occur uniformly or rapidly.
39. We also recommend clearer visibility of dry-year and peak-demand stress testing under each scenario. The capacity value of dispatchable generation, including gas-

fired plant, should be explicitly modelled rather than inferred from annual energy shares.

3. What sort of information would you like to receive from us over the coming months as we develop our draft future grid blueprint, and how would you like to receive that information?

40. We are happy with the process Transpower is following to date. Please continue. The online webinar meetings are particularly helpful. We also appreciate the one-to-one meetings that have been facilitated after Consultation 2. These help to build relationships and we encourage their continuation.
41. As the draft future grid blueprint is developed, we would value:
- a greater transparency around scenario sensitivities, particularly how outcomes shift under slower electrification or tighter gas supply conditions;
 - b explicit modelling of firming capacity requirements, including dry-year and extreme peak scenarios;
 - c clear articulation of transmission investment triggers and how they align with generation and industrial investment sequencing; and
 - d visibility of consumer cost implications under each pathway.
42. Understanding these dimensions will strengthen confidence that grid planning remains resilient under uncertainty rather than optimised for a single high-electrification outcome.

Our questions

43. To what extent does Transpower envisage LNG being used in the energy system? Is it just for dry-year risk, or would it include industrial use? We think economics will determine this, but it would be good all the same to model the possibilities. Once it's in the system it will be used to most impact and effect.
44. Shouldn't there be a 'more than dry-year' risk modelling for LNG?
45. Natural gas is modelled to decline in all scenarios. We don't disagree with that, but we think there should at least be one scenario where it is modelled with the possibility of a gas discovery.³ We need an assumption of increased natural gas which could mirror the potential scenario and volumes of a substitute such as LNG.

³ This would, if nothing else, align with Government policy priorities and the efforts Government is making to revitalise petroleum exploration. To not include such an option could be perceived as a commentary on the likelihood of success of Government policy settings.

46. How will Transpower use the scenarios to land on an optimal level of investment? We do not want the system to be blind to possibilities but also do not want to use scenarios that result in the risk of over- or under-investment. The scenarios should point to commonalities and least regrets investments. We understand that is the purpose of Te Kanapu but would like some surety that Transpower is managing the risks associated with one of the scenarios subsequently becoming more likely (resulting *ex post* in Transpower having either over- or under invested). Greater clarity about how the scenarios are going to be used to inform investment would be helpful.

Concluding comments

47. Transpower's scenario work has significant influence over investment expectations across the energy system. It is therefore important that scenarios balance ambition with realism and explicitly recognise economic and security trade-offs.
48. Te Kanapu is a valuable exercise in strategic foresight. For it to be credible and actionable, scenarios must fully integrate the economic, security, and reliability contribution of natural gas and the true economic costs of its alternatives.
49. Gas underpins trade-exposed industry, regional employment, and electricity system resilience. Its role may evolve over time, but it remains important across multiple plausible futures. Premature assumptions about the smooth decline of gas risk underestimating economic consequences, increasing exposure to global market volatility, and creating system reliability gaps.
50. Energy planning that undermines economic resilience will not be politically durable. Scenarios must reflect not only technical possibility but economic plausibility.
51. A credible, resilient, and growth-supportive energy system depends on recognising the ongoing strategic importance of gas. Scenarios that fail to do so risk economic disruption, higher prices, and reduced energy security for all New Zealanders.