



TRANSPOWER

Te Kanapu

Our National Grid in 2050

NZ Geothermal Week

11 August 2026



Developing a
future grid
blueprint for
Aotearoa

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Director,
Future Grid,
Transpower**

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Stakeholder
Engagement,
Transpower**

Session Outline (345pm-515pm)

- Te Kanapu presentation
- Workshop group activity at tables
- Table report backs to room
- Summary of session and close

Te Kanapu – the Grid Blueprint to 2050

Transpower has a role to play to enable the electrification and future economic growth of Aotearoa. Te Kanapu is developing a Grid Blueprint that will enable New Zealand's energy future to 2050 and beyond.

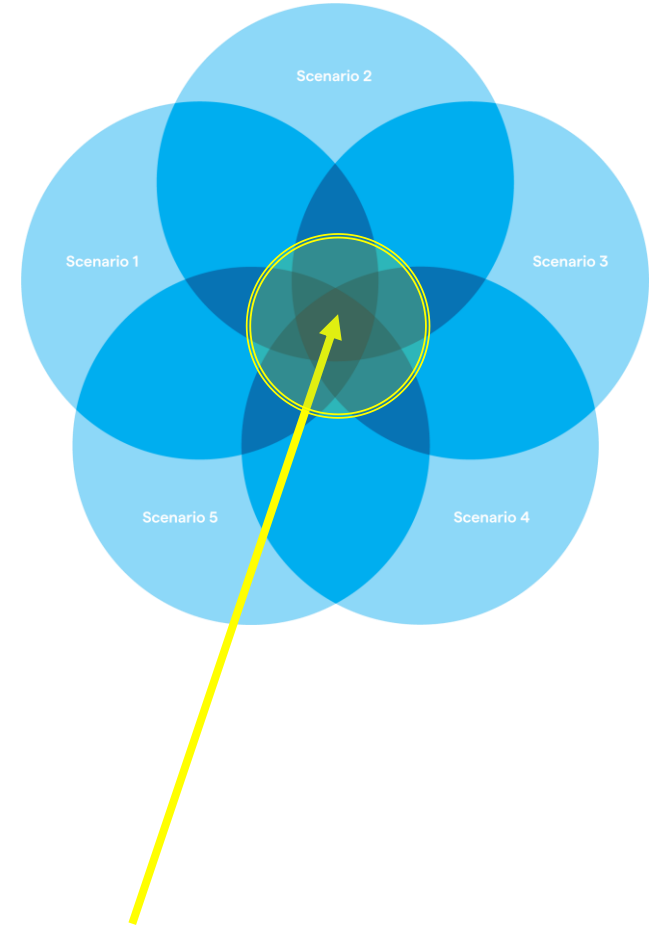
Outcome

- Evidence base that could support the case for any regulatory reform and policy changes needed to enable anticipatory investment.
- Stakeholder clarity on Transpower's long term investments, and a platform for improved coordination and collaboration.

The Grid Blueprint will:

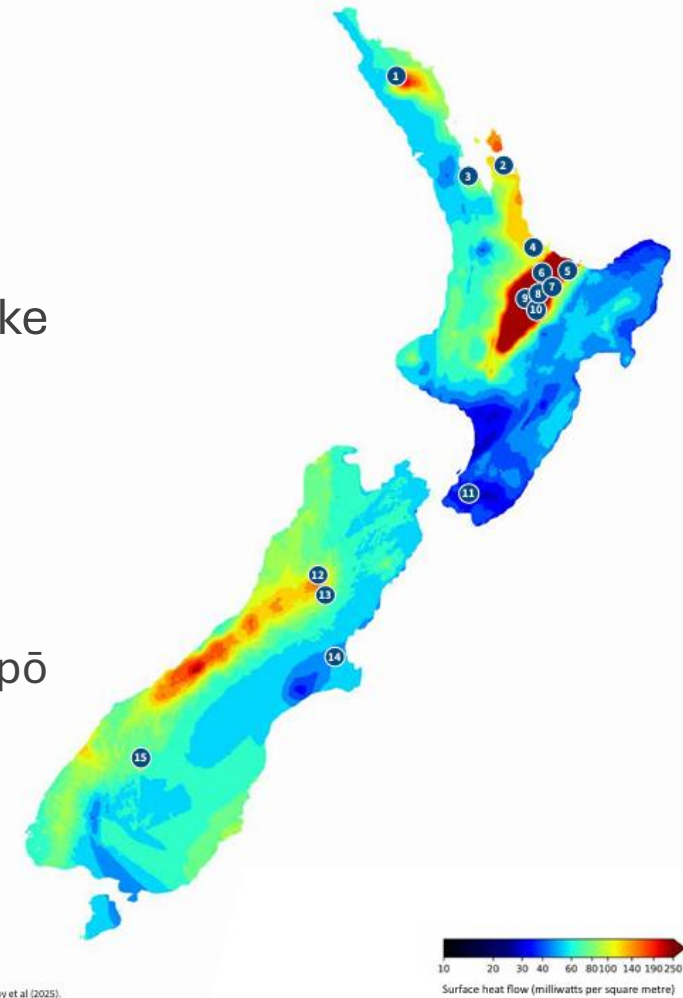
- guide Transpower's least-regrets investments, feeding into existing processes
- guide the way we manage the electricity system
- support industry and the wider energy sector with long-term planning.

The way New Zealand uses electricity is changing. We need a Goldilocks Grid – the next steps that are "just right" for a thriving economy.



Geothermal is a key and growing part of a diverse energy mix

- Geothermal will continue to play a vital role as one of the foundations of an affordable, reliable, low-carbon energy system
- It provides renewable baseload synchronous generation, and supports industrial decarbonisation through direct heat use
- New Zealand is world-leading in geothermal and continues to make advances while exploring new areas like supercritical geothermal
- Geothermal continues to grow. Since we spoke to you a year ago:
 - 49 MW TOPP2 geothermal plant commissioned at Kawerau
 - 46 MW added at Mercury's Ngā Tamariki geothermal station near Taupō
 - *From the Ground Up: a strategy to unlock New Zealand's geothermal potential* published (MBIE, March 2026)



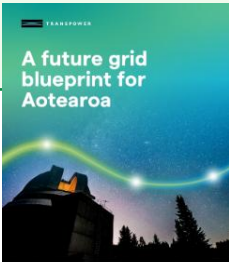
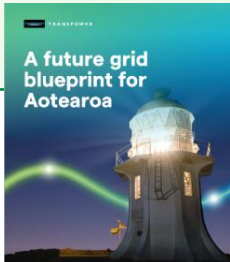
Our timeline to develop the grid blueprint

NZ Geothermal Week 2025



NZ Geothermal week 2026

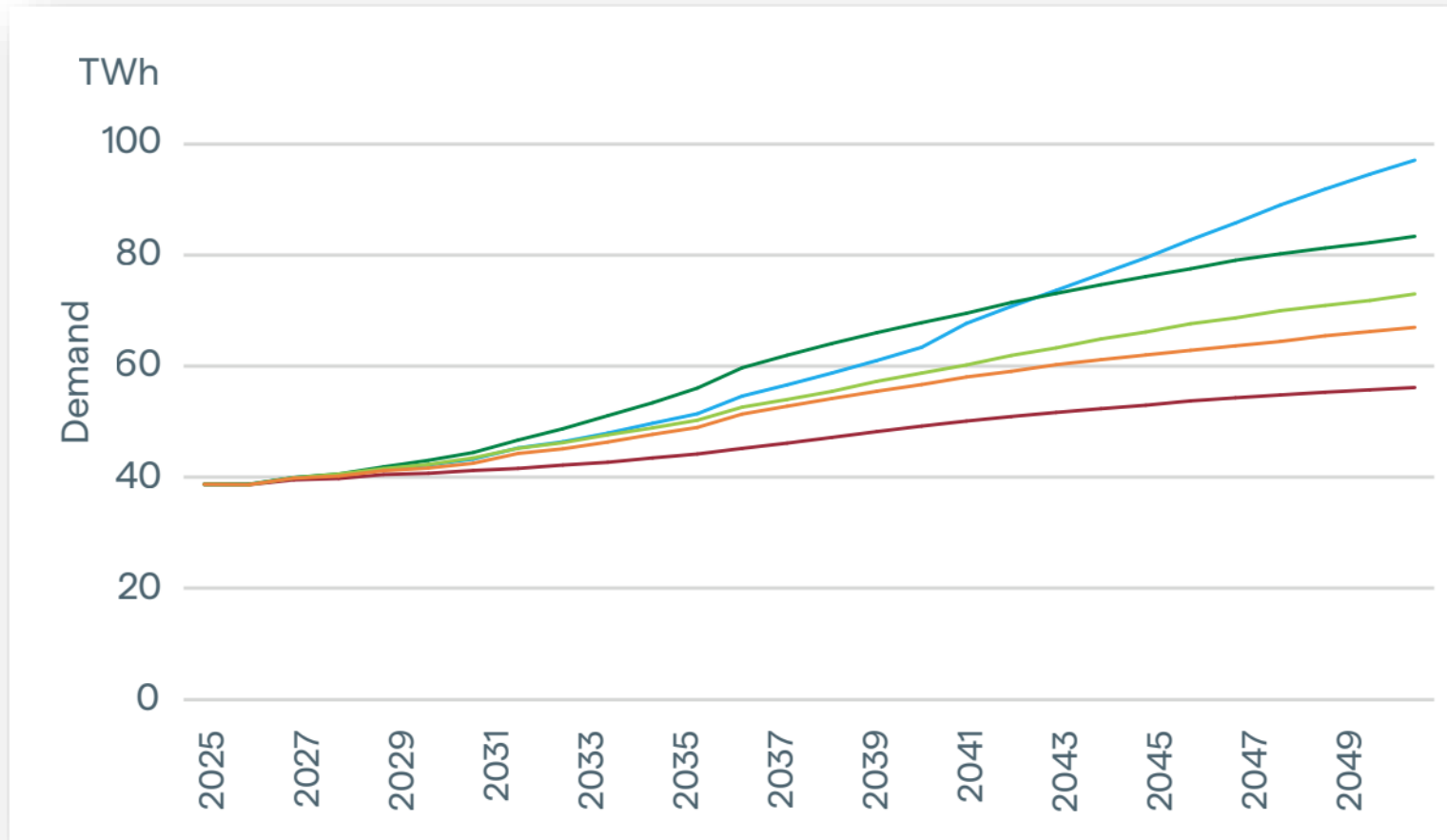


1 Imagining Aotearoa in 2050	2 Potential scenarios	3 Technical approach	4 Future direction	5 Insights and engagement	6 Draft grid blueprint
July 2025	October 2025	December 2025	March 2026	June 2026	Early 2027
Gathering views on the future of Aotearoa in 2050	Draft scenarios, load & generation	Draft methodology, potential investment options	Finalised scenarios, generation mix	Release of insights papers, ongoing engagement	We'll publish our draft grid blueprint
 Consultation 1: Imagining Aotearoa in 2050 July 2025	 Consultation 2: Potential Scenarios October 2025	 Technical Approach Summary December 2025	 Consultation 3: Future Direction - Our Energy Scenarios March 2026	 Insights Papers June 2026	

Five different scenarios

Patchwork Nation	Aotearoa Electrified	Global Green Rush	Made in Aotearoa	Aotearoa Intelligence
				
No clear strategy	Emissions reduction	Emissions reduction	Traditional strengths	New economy
In a world of sluggish growth and unclear direction, Aotearoa makes do with what it has.	In a world where global priorities shift with each electoral cycle, NZ chooses a steady, long-term path towards a low-carbon economy.	Global coordination towards reducing emissions accelerates, driving down the cost of clean technologies and improving efficiency worldwide.	A large expansion of goods production across the primary and manufacturing sectors drives growth.	A pivot toward digitalisation and artificial intelligence (AI) where NZ leverages its strong advantage for data centres, given its highly renewable electricity system and low air temperatures.

No matter which route NZ takes, demand for electricity increases....



Made in Aotearoa
(+146% by 2050)

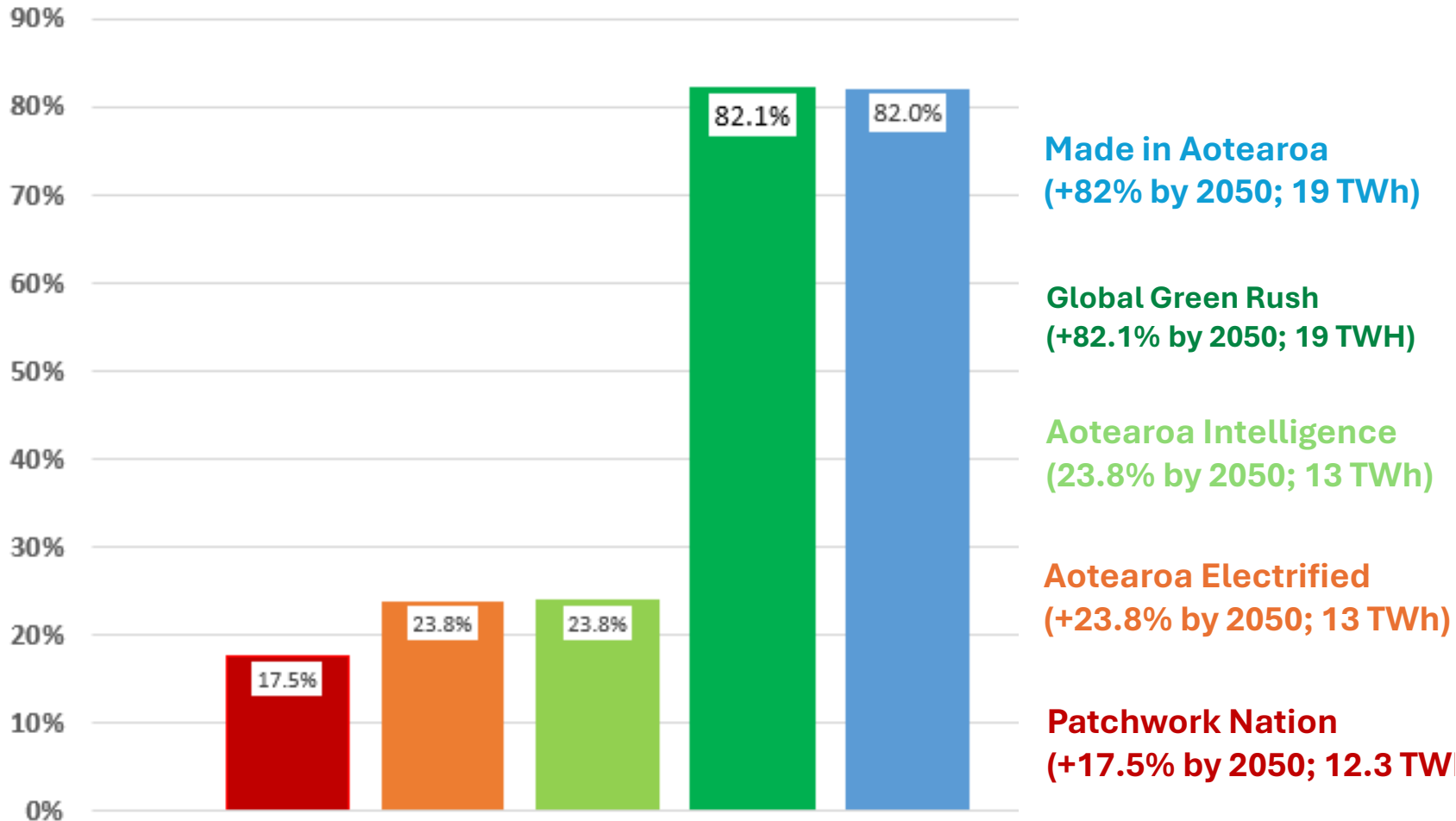
Global Green Rush
(+111% by 2050)

Aotearoa Intelligence
(+85% by 2050)

Aotearoa Electrified
(+69% by 2050)

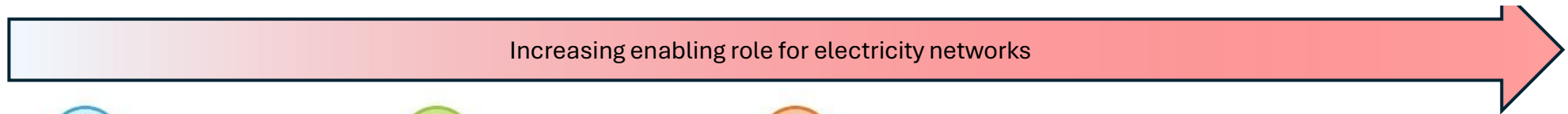
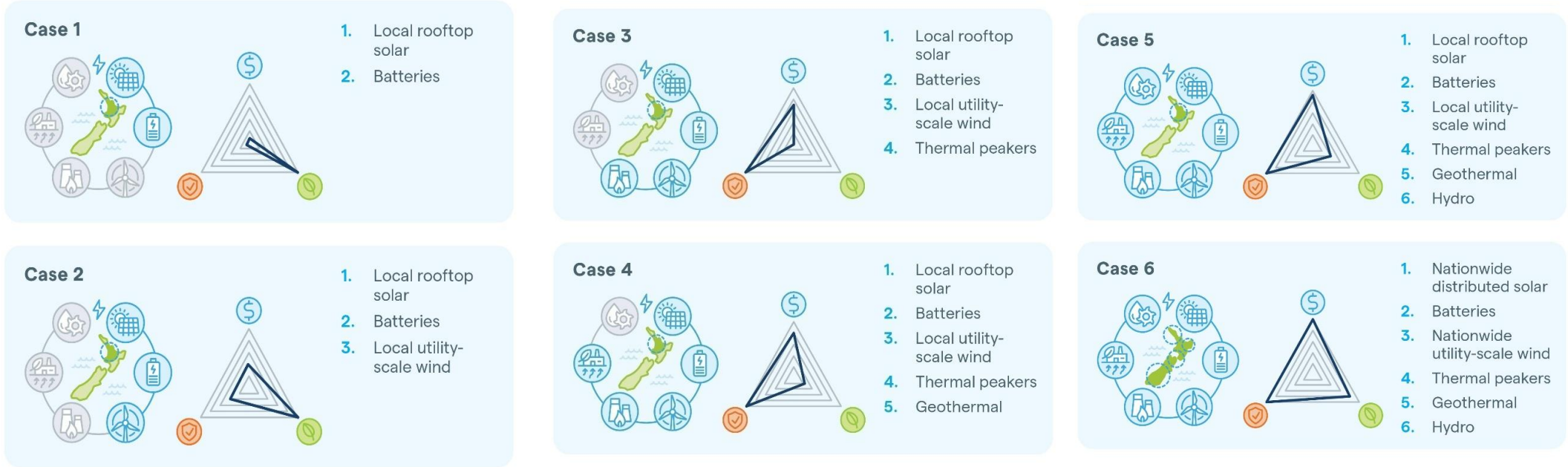
Patchwork Nation
(+42% by 2050)

Percentage increase in annual NZ electricity demand met by geothermal energy (2025-2050)



Separate from electricity generation
Growing use of geoheat:
7.38PJ / 2.05 TWh
mostly supporting industrial processes
(2024 figures)

From Case 4 onwards geothermal lowers overall per unit cost of electricity, increases availability and reduces carbon intensity, producing a strong outcome for NZ Inc



Affordability



Sustainability



Reliability

What we asked you a year ago

- What's Aotearoa going to look like in 2050?
- What role do you see geothermal playing nationally and internationally, by 2050?
- How will our economy grow and thrive? What will we be known for?
- What barriers are there to geothermal playing the role you have proposed?
- In what areas can geothermal help our economy to thrive?
- How will geothermal attract new industries and activities?



What you told us showed up in our scenarios

You discussed geothermal:

- **as a driver of economic growth**

It powers industrial and regional growth and export-led growth in Made in Aotearoa (MIA) and Global Green Rush (GGR)

- **providing baseload generation**

Continues in all five scenarios to provide baseload generation as part of a diverse mix

- **taking on a bigger role in meeting electricity demand**

Output grows in every scenario, and by about 82% by 2050 in MIA and GGR

- **leading and exporting our expertise, products and IP**

Because geothermal is a NZ strength, both MIA and GGR high-growth futures let us sell kiwi geothermal know-how and products to the world

- **anchoring regional economic zones**

MIA plans “energy precincts” that pair locally-based industry with clean supply



What else we heard in 2025



Use the whole resource, not just power

Direct heat, minerals and CO2, and cascading uses. Several tables saw geoheat meeting demand directly rather than through the grid.



The frontier, not just today's geothermal plants

Supercritical, enhanced systems and offshore, described as high potential and still to be proven.



What's in the way

Connection timeframes of five to six years and grid constraints, capital and upfront risk, consenting, keeping skills, and price signals that don't reward firm supply.

In your words

"Larger share of the base load, so hydro can be more a sort of battery."

"Establish special economic development zones where geothermal resources are present."

"A geothermal centre of excellence, for engineering education."

"Extract value from the whole geothermal resource."

The Workshop



Task

Your table will work as a group on the activity, followed by a report back to the room.



Activity – 30 minutes

Imagine geothermal's full potential is realised by 2050. Work through the three pillars on the canvas – people and demographics; economy and industry; infrastructure, services and environment. Identify the key enablers and barriers.



Report back – 25 minutes

We'll be asking some tables to share their headlines with the room.



Why this matters

Your insights inform our knowledge base and prepare us to embed the Grid Blueprint. We'll draw on our 2025 workshop and this session to summarise what we heard and the key insights – capturing wide views to support coordination across the sector, tie in with other plans and strategies, and be transparent with information.

Q: Looking ahead to 2050 and beyond, imagine geothermal's full potential has been realised. What opportunities could emerge for New Zealand's regions, industries, communities and the energy system?

Explore each of the 3 pillars below and how they will likely play out.



People and demographics

Q: What might communities, population patterns and ways of living look like in 2050 under this scenario?

Indicators can include population, socioeconomic status, income, education, age, cultural demographic.



Economy and industry

Q: What new industries, economic opportunities and regional growth could emerge in this future?

Indicators can include GDP, industry sectors, productivity, exports, new energy demand / supply, regional growth and development, affordability and competitiveness.



Infrastructure, services and environment

Q: What would New Zealand's energy and electricity system need to look like to enable this future?

Indicators include electricity demand and growth, new geothermal and renewable generation, transmission and distribution infrastructure, industrial electrification, resilience, reliability, environmental outcomes.

Q: What are the most important barriers to overcome, and what would most help make this future possible?



Enablers:



Barriers:

Instructions

Use this canvas to capture your table's thinking.

Start with the question at the top, then work across the three pillars.

For each pillar, note what 2050 looks like – the prompts underneath are there to help.

Finish with the enablers that would make this future possible and the barriers to overcome.

Nominate a scribe and spokesperson. We'll be asking some tables to share their headlines with the room.



Parking lot:

Parking lot: e.g. any other ideas or thoughts that don't fit into the previous exercise or something that the grid blueprint needs to address to be successful.

1

2

3

4



Local enablers:

What local enablers (specific to your region) could drive strategic growth?
How might their implementation unfold, and what actions are needed to ensure success?

1

2

3

4

Contact Details

Please leave your names and
email so we can stay in touch.

Instructions

Additional space has been provided on the worksheet shown for anything else you'd like to share.

Use it for any other enablers specific to your region.

Tell us what you think is important for Transpower to know and understand in our continued work to develop the grid blueprint.

It's also great to capture the organisations represented here today – please feel free to leave your names and contact details.

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Table Report Back

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Te Kanapu NZ Geothermal Week Individual Report Back



Thank you

For your time, energy and the thinking you brought to the room today.

What happens with your input

Your insights are critical to making sure we are well informed about geothermal, and they will shape the strategic narrative of the draft Grid Blueprint.

Staying connected

We'll add you to our mailing list so you can keep up with the latest news, more insights, and our 2025 and 2026 geothermal week case study.

Feel free to reach out if you'd like more information about Te Kanapu, the grid blueprint, or a more technical, in-depth discussion.

Tell us how we did

Please scan the QR code and share your feedback – we want to hear your thoughts so we can keep improving our work and to inform our case study.

Get in touch: feedback@transpower.co.nz

Te Kanapu NZ Geothermal Week Individual Report Back

