



TRANSPOWER

# Te Kanapu

Future Grid Blueprint

**John Clarke**

Executive General Manager - Future Grid  
**Carbon and Energy Professionals NZ**  
26 May 2026



Developing a  
**future grid**  
blueprint for  
Aotearoa

# New Zealand is facing critical challenges

At a time when we need to grow the economy and GDP, our comparative advantage is waning.

New Zealand's productivity is low. The decline of gas is compounding this.

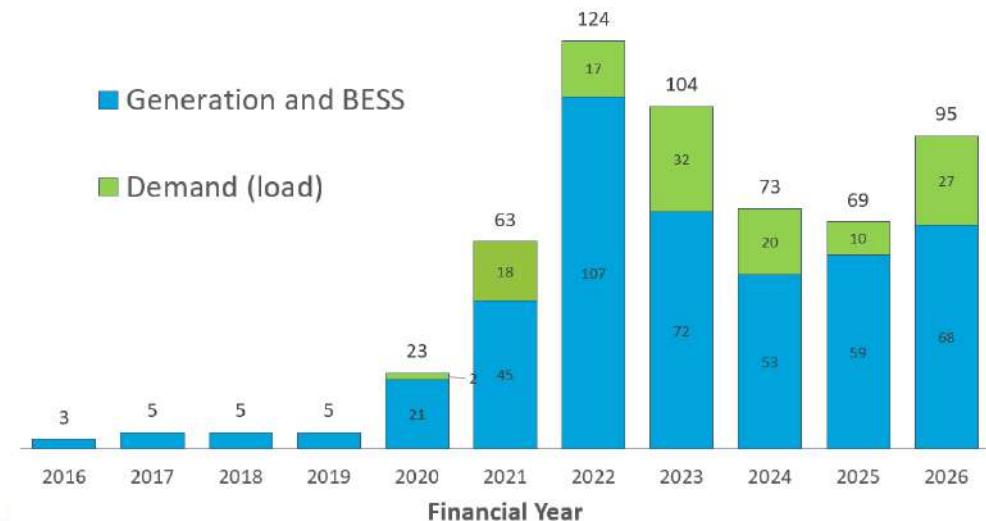
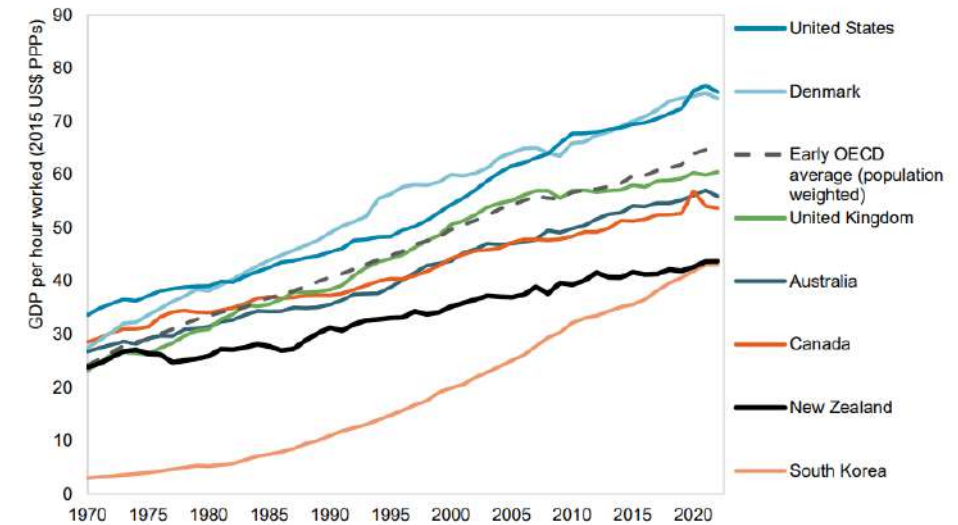
Yet, we have plentiful renewable energy options including wind, solar and geothermal

## Electricity can power a thriving future

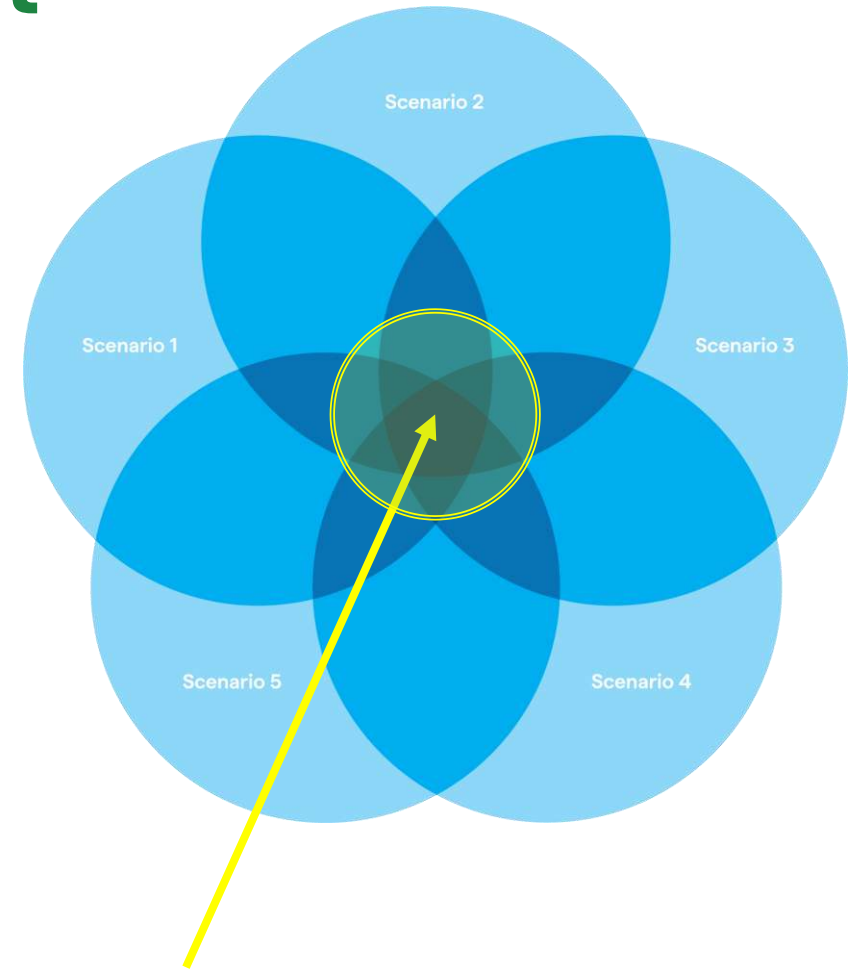
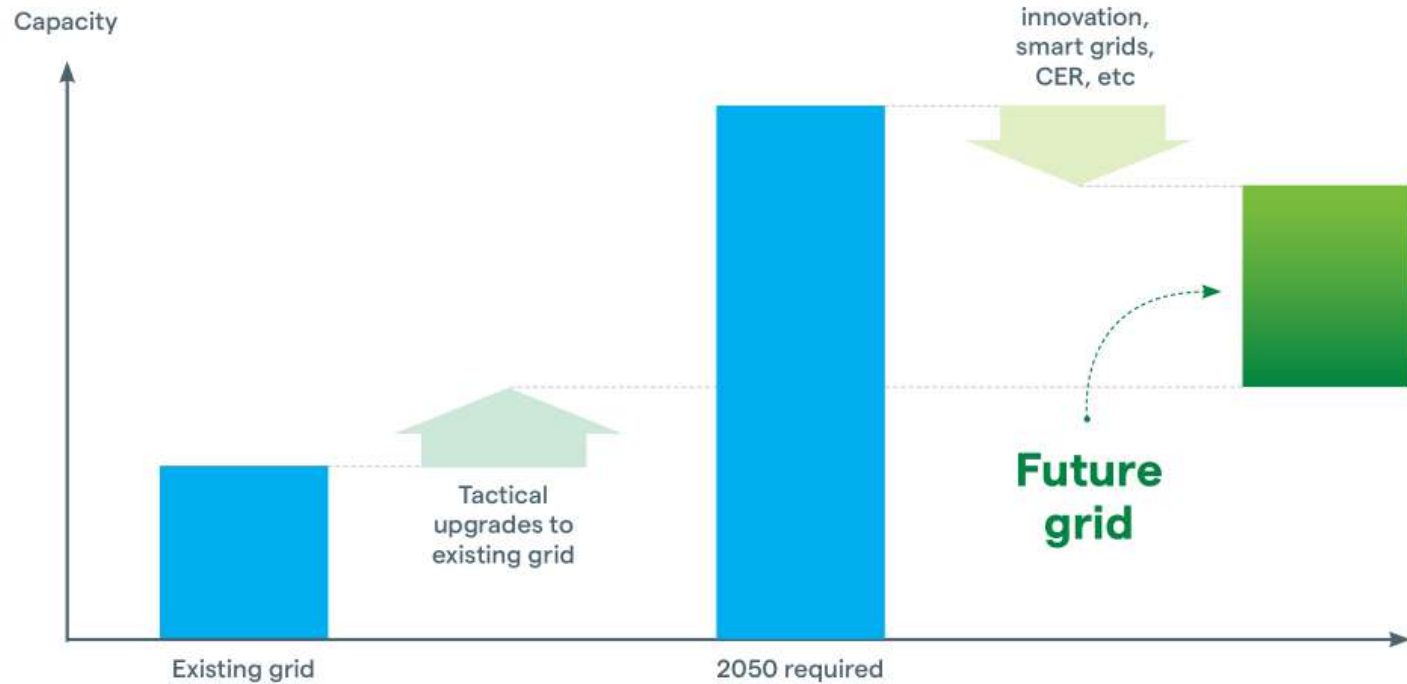
At Transpower we are seeing a huge increase in enquiries for grid connections.

More new generation commissioned in 2026 than in 2019-2023 combined!

Figure 1: New Zealand's labour productivity has lagged other developed countries  
GDP per hour worked, 2015 US Dollars Purchasing Power Parity (PPP)



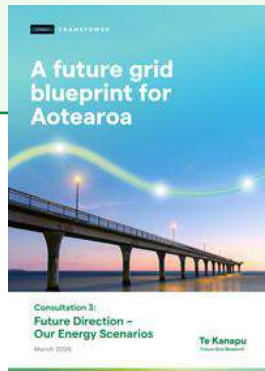
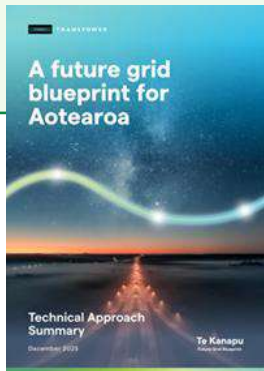
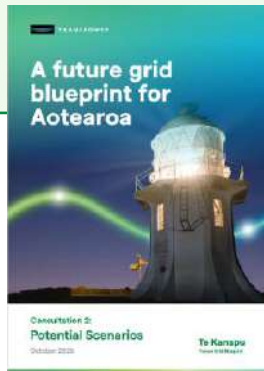
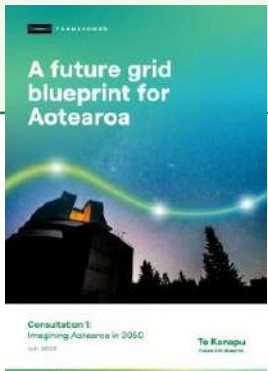
# Te Kanapu – the future grid blueprint



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

# Our process to develop the grid blueprint

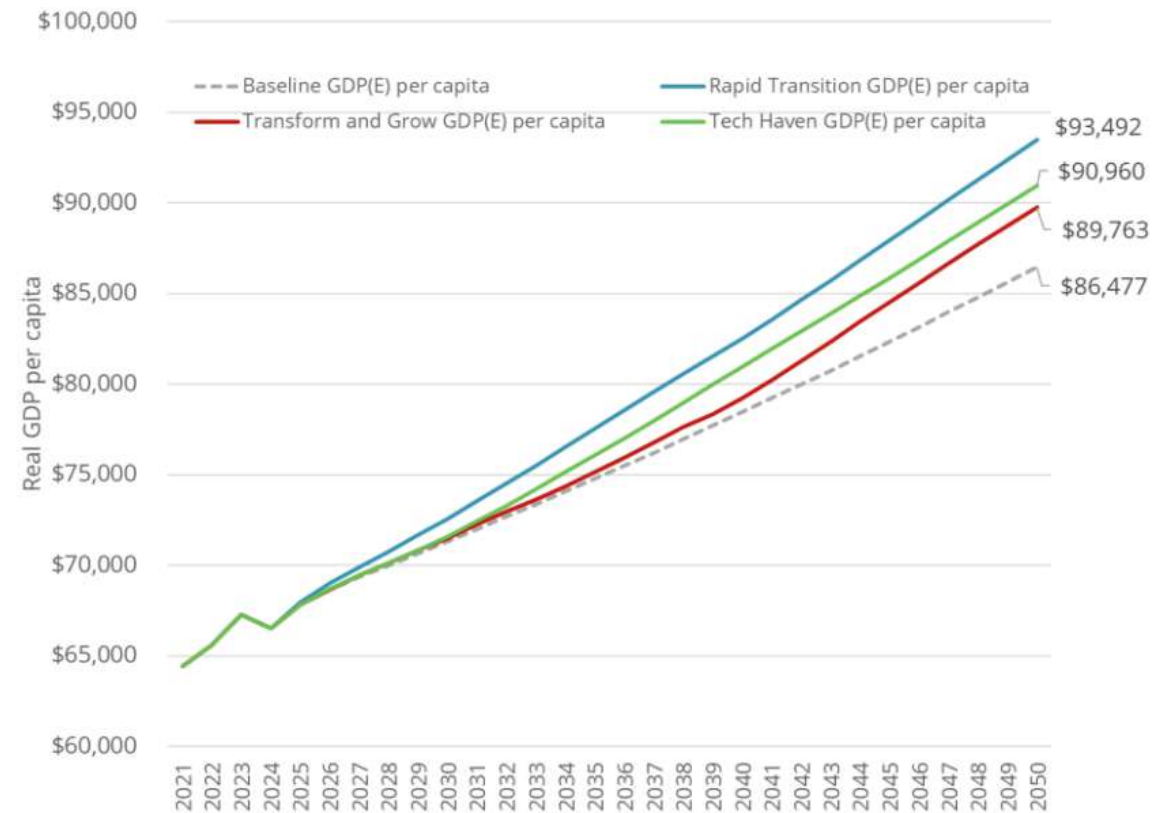
<p><b>1</b></p> <p><b>Imagining Aotearoa in 2050</b></p>	<p><b>2</b></p> <p><b>Potential scenarios</b></p>	<p><b>3</b></p> <p><b>Technical approach</b></p>	<p><b>4</b></p> <p><b>Future direction</b></p>	<p><b>5</b></p> <p><b>Draft grid blueprint</b></p>	<p><b>6</b></p> <p><b>Te Kanapu future grid blueprint</b></p>
<p>July 2025</p>	<p>October 2025</p>	<p>December 2025</p>	<p>March 2026</p>	<p>Later in 2026</p>	<p>Later in 2026</p>
<p>Gathering views on the future of Aotearoa in 2050</p>	<p>Draft scenarios, load &amp; generation</p>	<p>Draft methodology, potential investment options</p>	<p>Finalised scenarios, generation mix</p>	<p>Combining insights, research, inc. least-regrets investment</p>	<p>We'll publish our first grid blueprint</p>








# Three different ways to grow the economy

1. Focusing on **reducing emissions**.  
Shifting the economy more toward services than production of goods to achieve a lower energy intensity.
2. Doubling down on our **traditional strengths** in primary produce and goods manufacturing.
3. Pivoting towards a **new world of AI, digitalisation, and creative industries**.

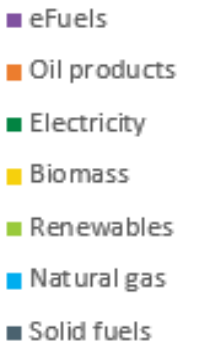
FIGURE 2 REAL GDP PER CAPITA IMPACTS ACROSS SCENARIOS, \$



# Five different scenarios

Patchwork Nation	Aotearoa Electrified	Global Green Rush	Made in Aotearoa	Aotearoa Intelligence
				
<b>No clear strategy</b>	<b>Emissions reduction</b>	<b>Emissions reduction</b>	<b>Traditional strengths</b>	<b>New economy</b>
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.

# Across our scenarios growth and the energy transition vary, but both drive electricity demand growth



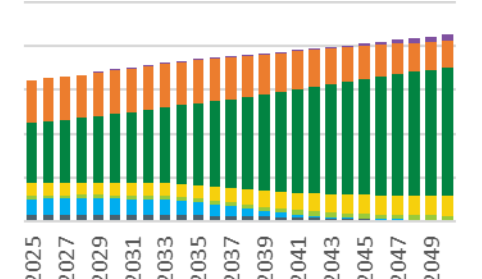
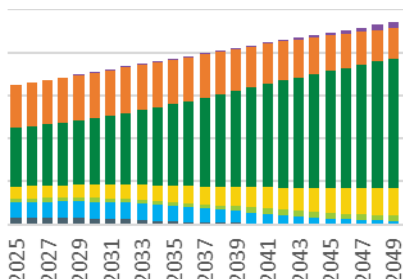
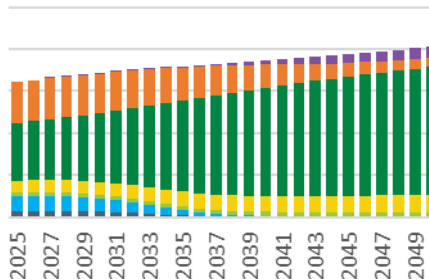
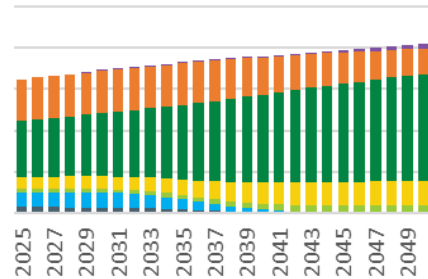
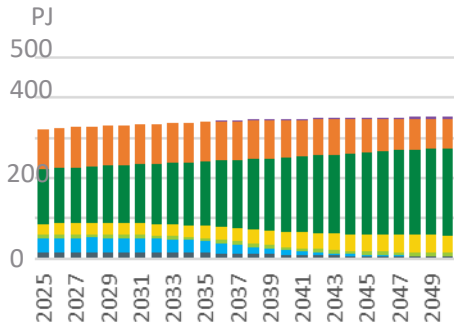
Patchwork Nation

Aotearoa Electrified

Global Green Rush

Made in Aotearoa

Aotearoa Intelligence



## Energy growth

9.8% growth by 2050  
[ 0.4% CAGR ]

27% growth by 2050  
[ 1.0% CAGR ]

26% growth by 2050  
[ 0.9% CAGR ]

46% growth by 2050  
[ 1.5% CAGR ]

32% growth by 2050  
[ 1.1% CAGR ]

## Electricity (42% of the mix in 2025), grow to:

61% of the mix by 2050

62% of the mix by 2050

75% of the mix by 2050

65% of the mix by 2050

69% of the mix by 2050

## Biofuels (9% of the mix in 2025), grow to:

12% of the mix by 2050

15% of the mix by 2050

10% of the mix by 2050

14% of the mix by 2050

11% of the mix by 2050

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



**Patchwork Nation  
(+42% by 2050)**

**Aotearoa Electrified  
(+111% by 2050)**

**Global Green Rush  
(+146% by 2050)**

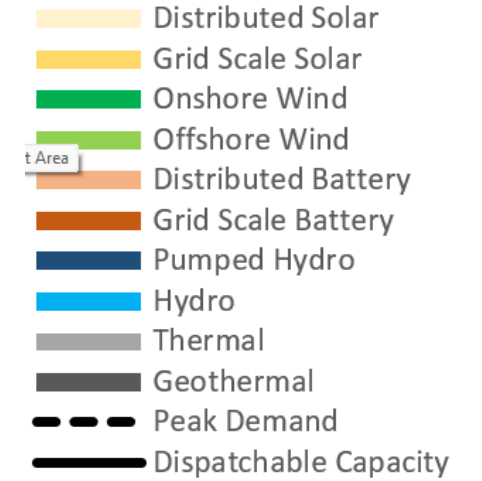
**Made in Aotearoa  
(+85% by 2050)**

**Aotearoa Intelligence  
(+69% by 2050)**

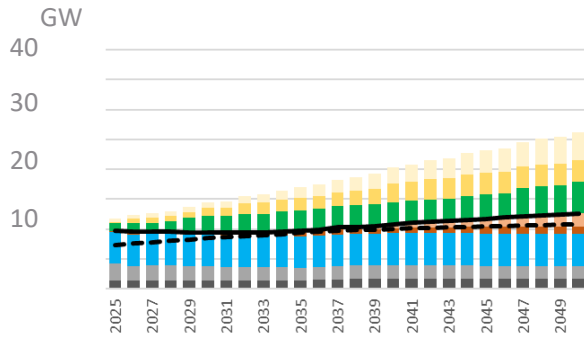
# Generation build plays a critical role

Each scenario needs its own mix of generation that is resource adequate, meaning it can reliably supply:

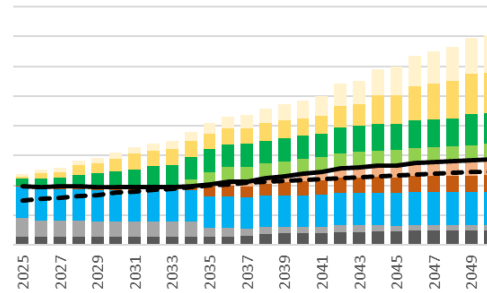
- Total annual demand (including during periods of low hydro inflows)
- Peak demand



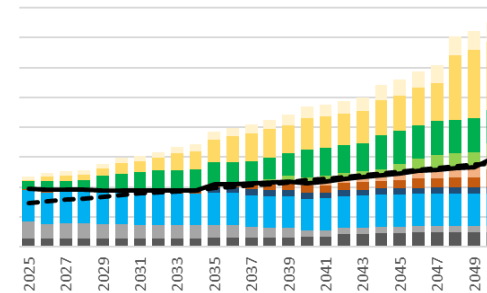
## Aotearoa Electrified



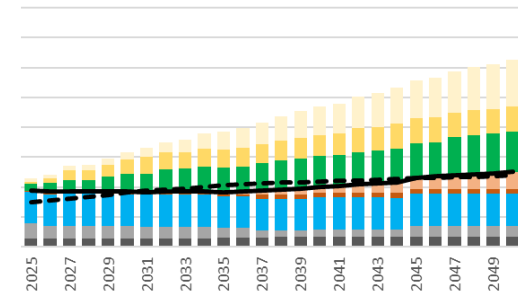
## Global Green Rush



## Made in Aotearoa



## Aotearoa Intelligence



Present value cost of new generation & storage:

\$16.3B

\$22.5B

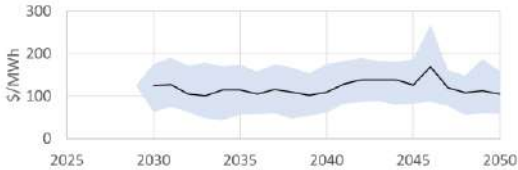
\$25.6B

\$18.8B

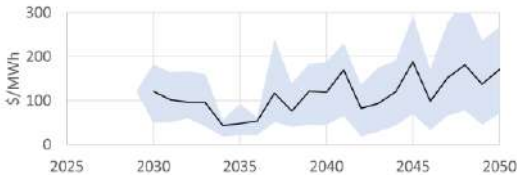
# Our wealth of renewable resources indicate that we can be highly competitive on the world stage

Transpower modelling shows the annual mean price varies between \$90/MWh and \$130/MWh across the scenarios

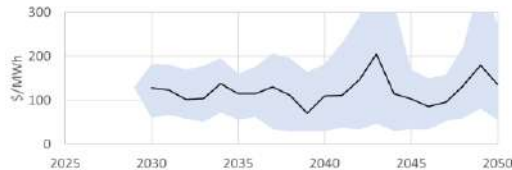
Aotearoa Electrified



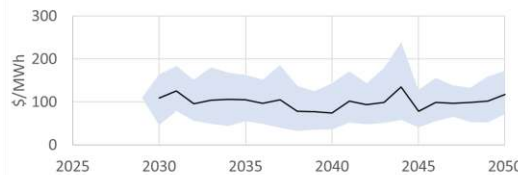
Global Green Rush



Made in Aotearoa



Aotearoa Intelligence



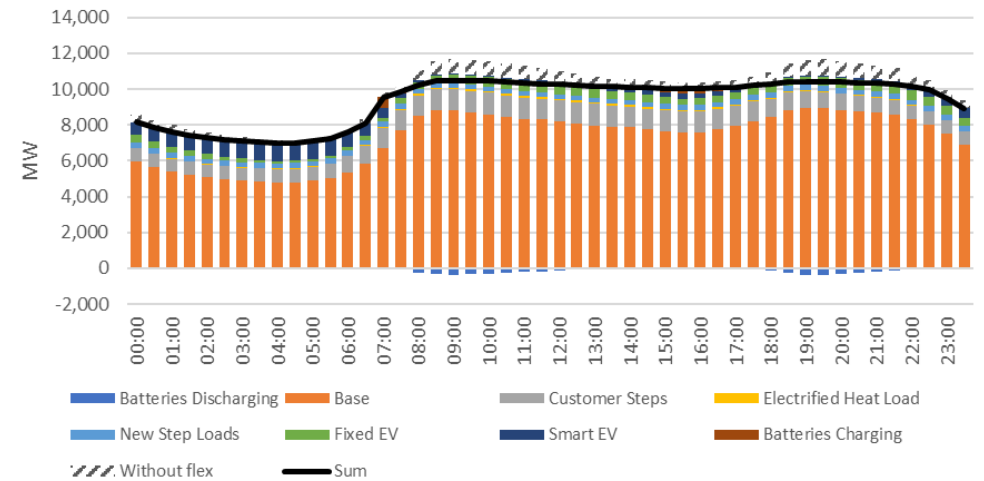
10th - 90th percentile range  
mean

Insight to be published in June – highlights the enabling role of a more diverse generation mix that provides a lower per unit cost of generation

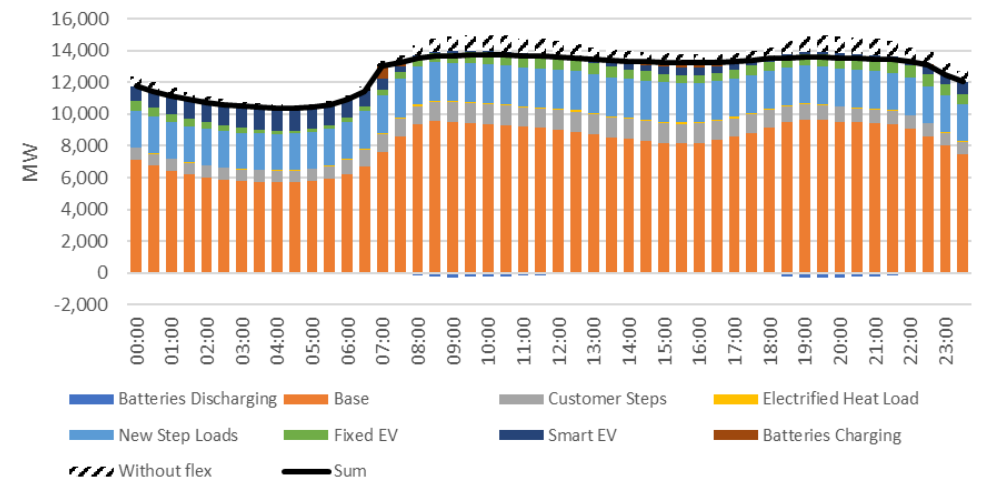
# Consumer energy resources and flex is assumed to have a key role in daily dispatch

- Flexible resources reduce half hourly peak demand by up to 8% in the four growth scenarios in winter 2050.
- Ranges from 800MW to 1100MW reduction in peak demand enabling better network utilization.
- We assume workable arrangements are in place to achieve optimal orchestration of CER and Flex.

(b) Aotearoa Electrified



(d) Made In Aotearoa



# Together, we can grow

Planning now means we can deliver a high-growth energy future at the lowest cost and with least regrets.

Te Kanapu needs your help – we look forward to working together.



# Thank you for your time

For more information, or to arrange an in-depth conversation about Te Kanapu, email: [feedback@transpower.co.nz](mailto:feedback@transpower.co.nz)

Scan to sign up for Te Kanapu updates:



## A future grid blueprint for Aotearoa



Consultation 3:  
Future Direction –  
Our Energy Scenarios

March 2026

**Te Kanapu**  
Future Grid Blueprint