

Genesis Stakeholder Day

Future thinking discussion

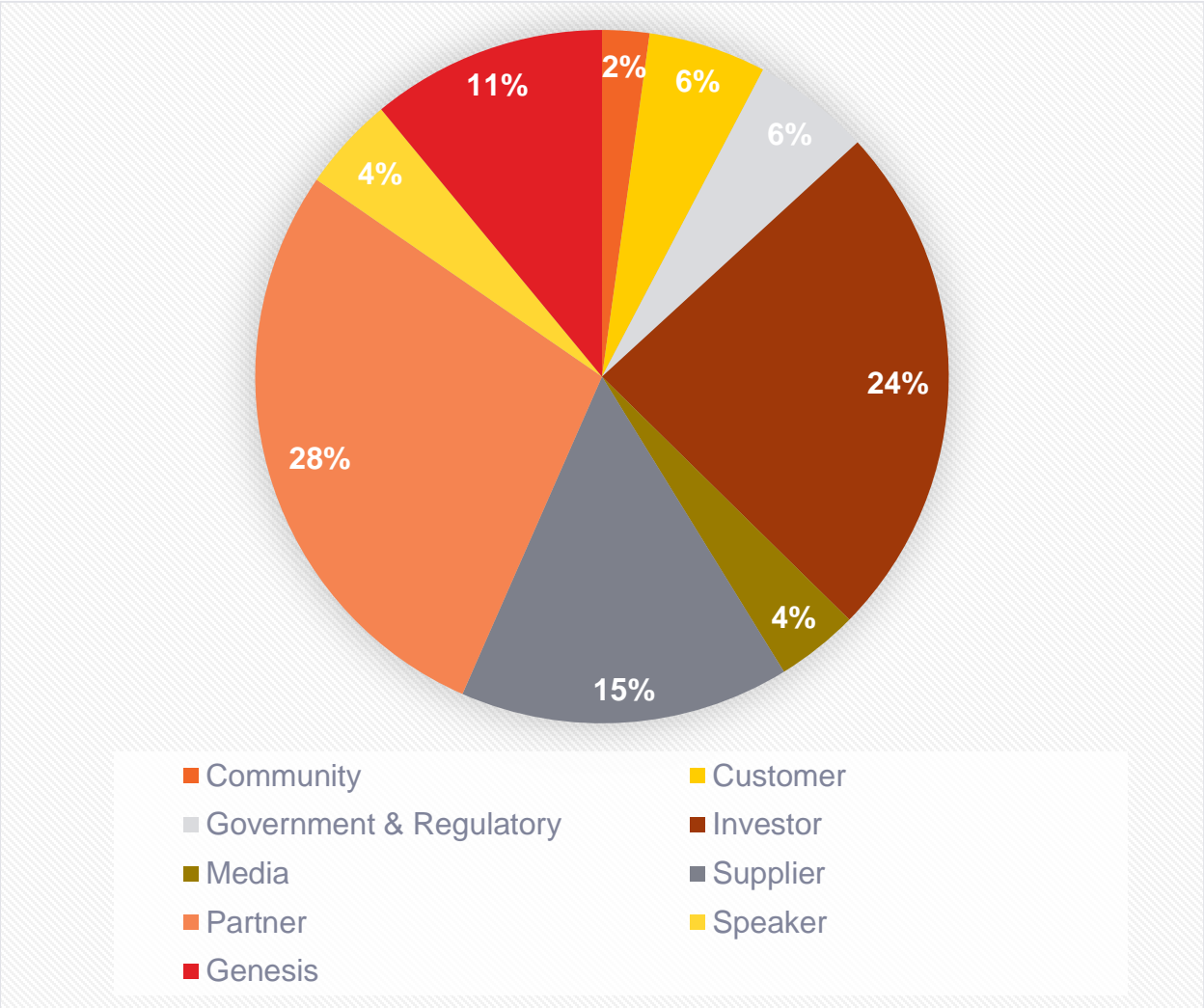
Empowering New Zealand's sustainable future



Haere mai



Who we have in the room today



182 RSVPs received for the morning

- 139 attending in person
 - 91 guests
 - 8 speakers
 - 20 Genesis
 - 7 Media
- 39 attending online
- 109 organisations represented

47 RSVPs received for the afternoon

- 39 in person, 8 online

Genesis Energy Board of Directors and Executive Team



CHAIRMAN
Barbara Chapman
CNZM, BCom, CMIInstD



Catherine Drayton
BCom, LLB, FCA



Doug McKay
ONZM, BA, AMP (Harvard)



Tim Miles
BA



James Moulder
BA, BCA



Maury Leyland Penno
BE (Hons), FEng, CMIInstD



Paul Zealand
MBA, BSc Mech. Eng (Hons)



CHIEF EXECUTIVE
Marc England
MBA, MEng



Chris Jewell
Chief Financial Officer
BE (Hons), MEM, CIMA



James Magill
Chief Digital Officer
BSc (Hons),
Dip Corp Finance,
MBA (Melbourne/Madrid)



Matthew Osborne
Chief Corporate
Affairs Officer
BCom, LLB



Nicola Richardson
Chief People Officer
BA (Hons)



Nigel Clark
Chief Operations Officer
BBus (Acc),
Dip Treasury Mgmt.,
FCPA, FAICD, CFTP (Snr)



Shaun Goldsbury
Chief Trading Officer
BSc



Tracey Hickman
Chief Customer Officer
MA (Hons)



Genesis team here today



Andre Gaylard
General Manager
Future Generation



Angus Judge
General Manager
Operational Excellence



Cameron Jardine
General Manager LPG



Courtney Simpson
Group Manager
Sustainability



Christopher Mirams
Group Manager
Communications
and Media



David Gutteridge
General Manager
Residential Join



Emma-Kate Greer
Group Manager Employee
Experience and Strategy



Fiona Turvey
Marketing Manager



Jackie Shen
Executive Team Manager



James Ryan
Group Manager
Strategy and Risk



Kiely Evans
Communications and
Engagement Manager



Michaela Latimer
Community Liaison
Manager



Peter Kennedy
General Manager,
Growth and Innovation



Tara Parata
Head of Customer Care



Tim McSweeney
Manager - Investor
Relations



Tim Rowe
Strategy Partner

An interactive discussion



Dr Rod Carr
Chair of the
Climate Change Commission



Rod Oram
Business journalist
and columnist



Mike Burrell
Executive Director of
the Sustainable Business Council



Kirsten Corson
Co-founder and Executive Director
of Zilch



Graeme Milne
Chairman of
Synlait Milk Ltd



Arizona Leger
Youth climate leader



Nicole (Niki) Harré
Professor at
The University of Auckland



Shamubeel Eaquab
Economist, financial analyst
and author

Empowering New Zealand's sustainable future

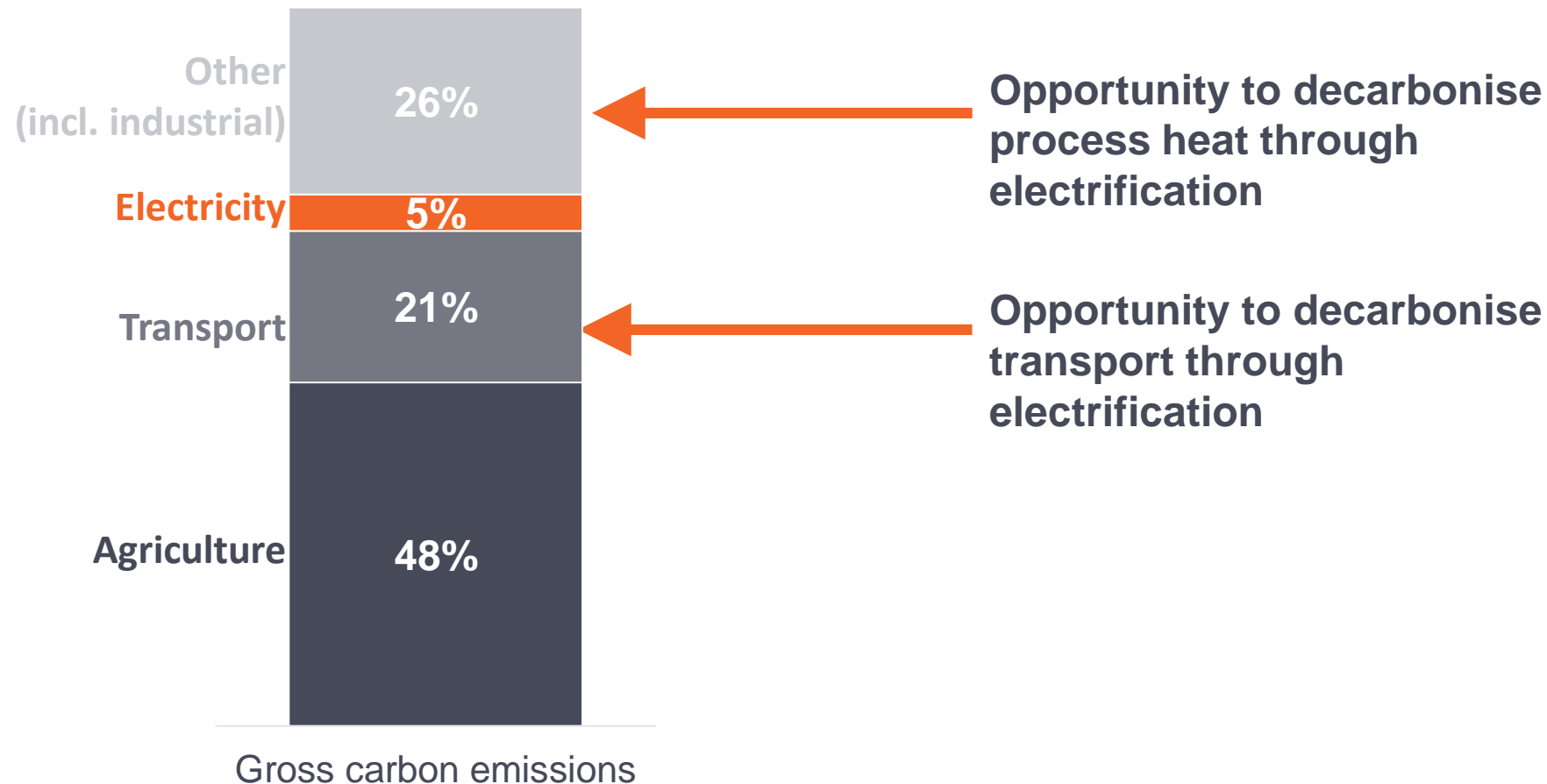


Manaaki whenua, manaaki tangata, haere whakamua

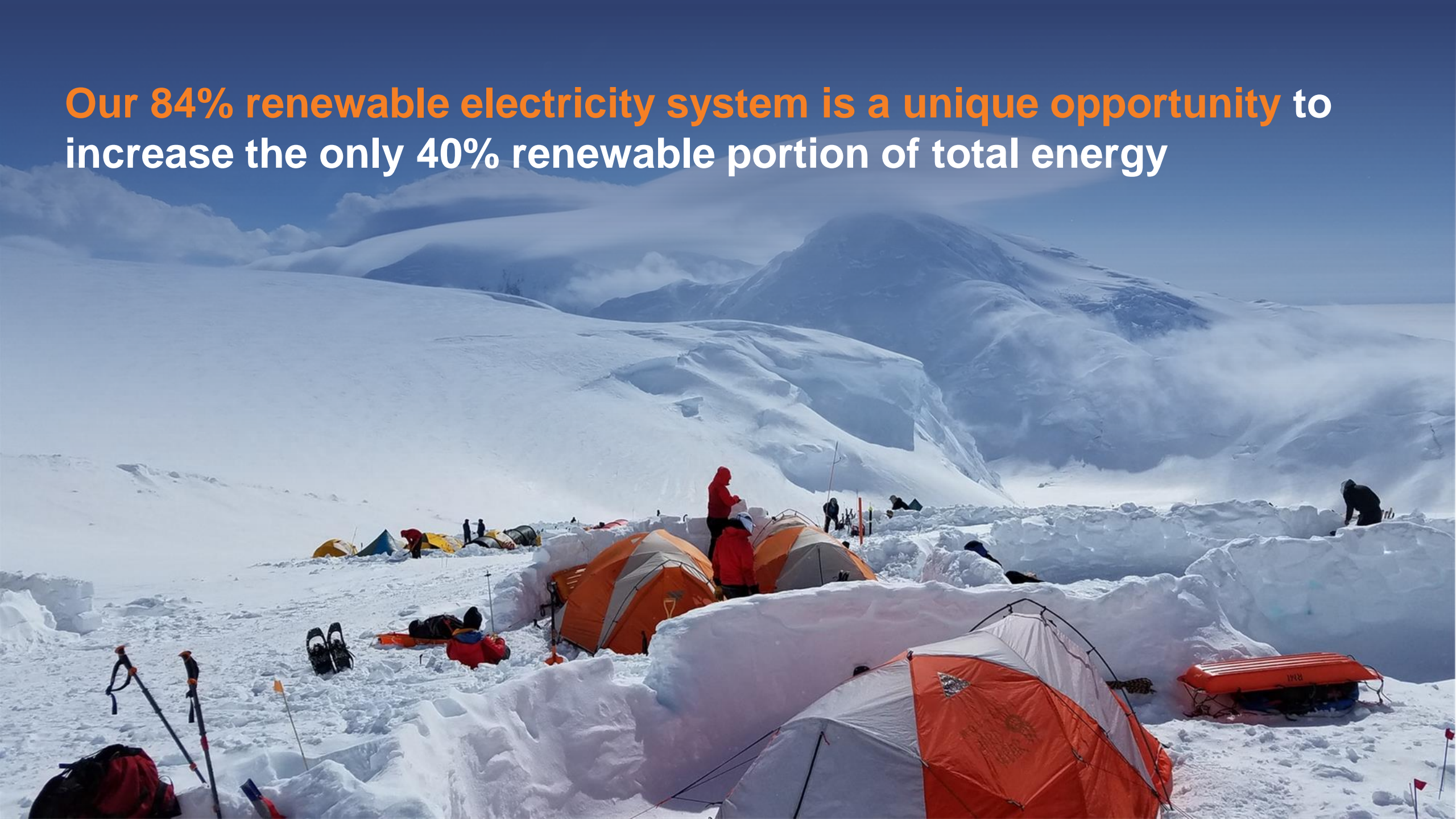


genesis

Electricity contributes a small portion of New Zealand's emissions **but is vital to the transition**



Our 84% renewable electricity system is a unique opportunity to increase the only 40% renewable portion of total energy



We're reducing our emissions

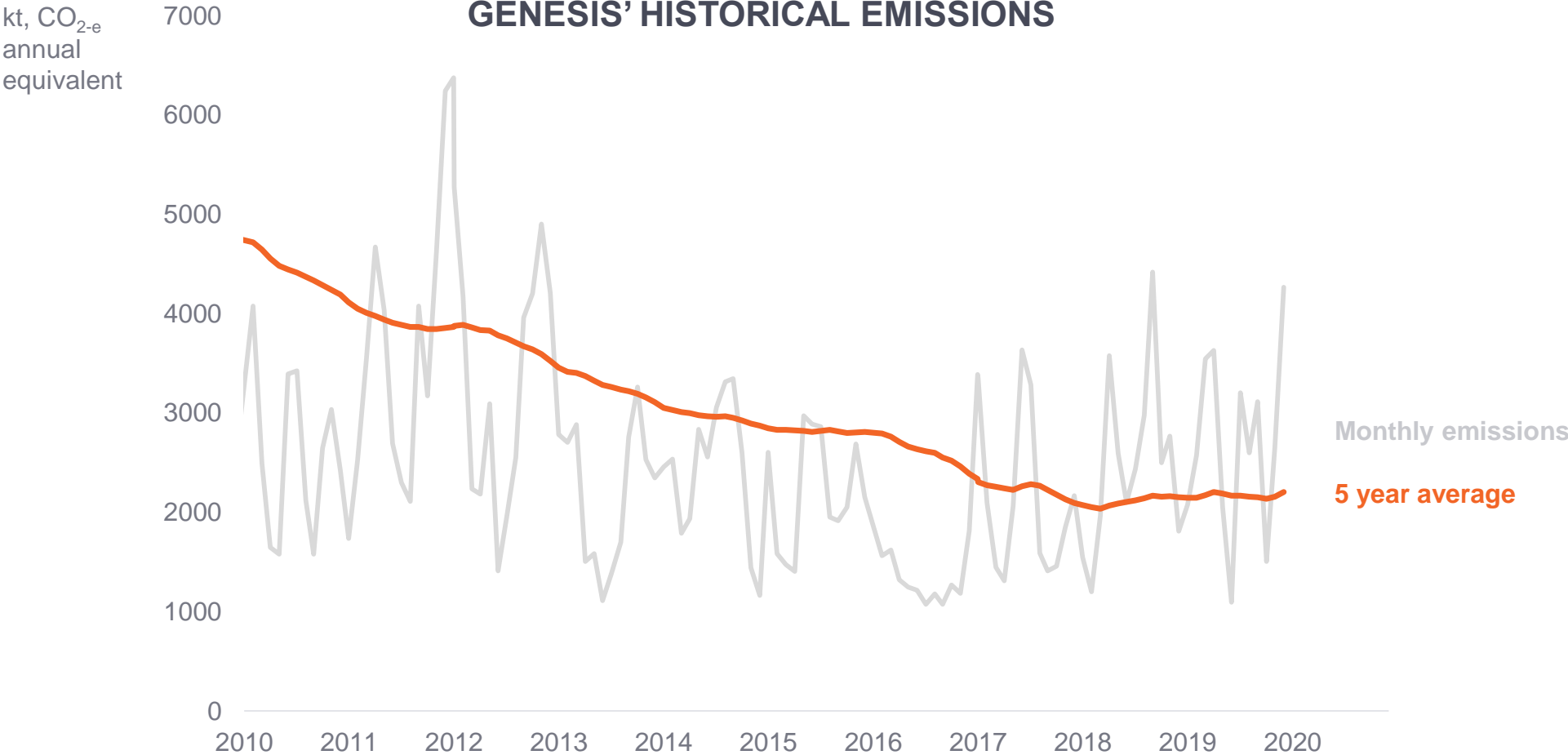


while advocating for a reliable and affordable,
highly renewable electricity system



genesis

Genesis has a track record of reducing emissions despite a volatile output



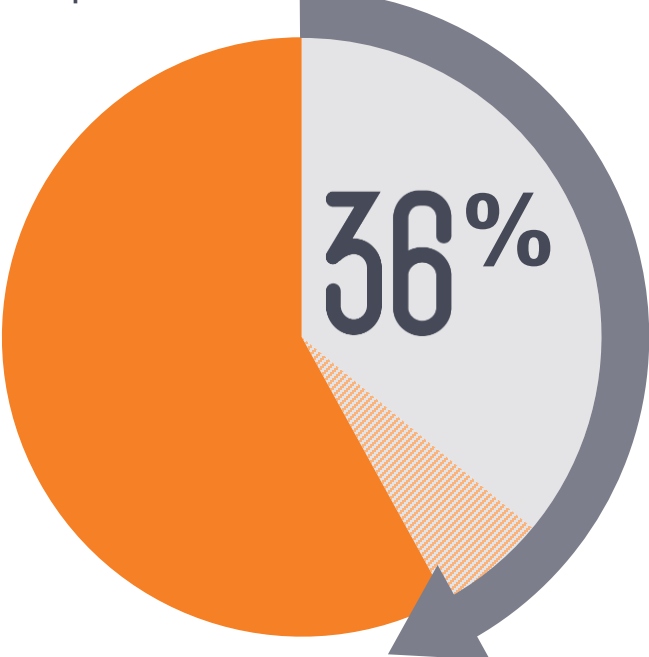
We're continuing emissions reductions by setting Science Based Targets consistent with limiting warming to 1.5°C

Target Year ¹:
2025

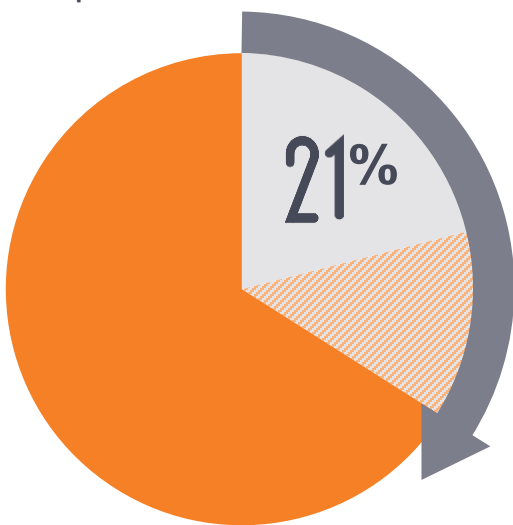
Reduce emissions²
by at least
1.2 million tonnes

1. Target is based on our FY20 as the base year.
2. Combined scope 1, 2 & 3

Reduce direct emissions
Scope 1 & 2

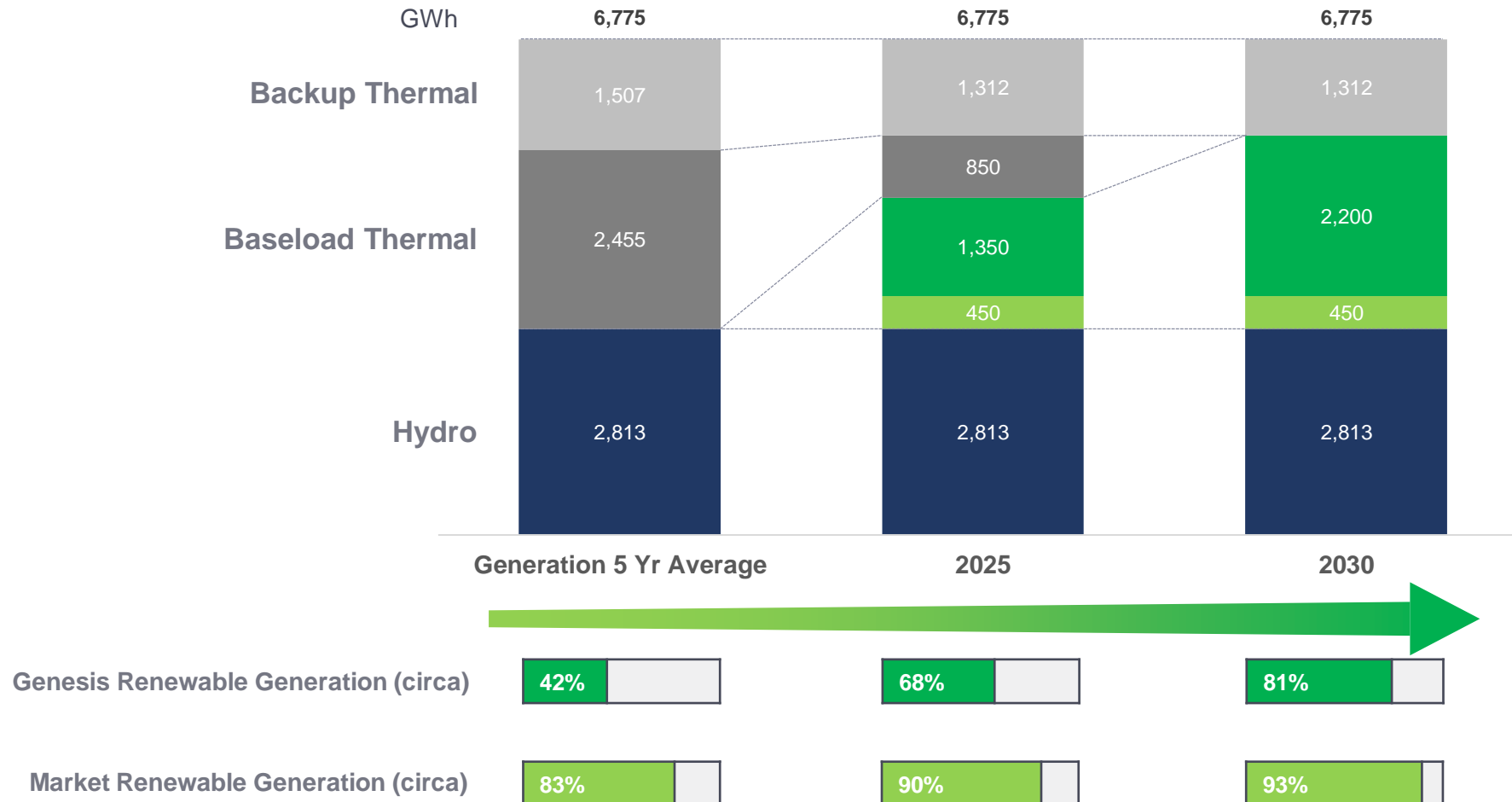


Reduce indirect emissions
Scope 3



● Reduction for 1.5°C ● Genesis ambition ● Remaining emissions

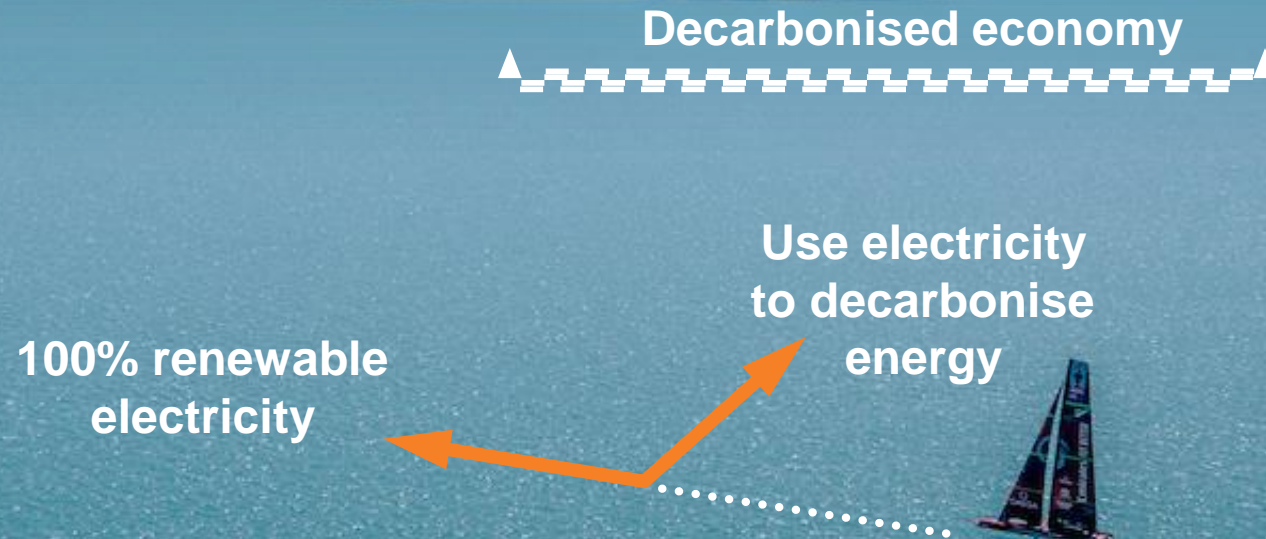
Cheaper renewable electricity will actively displace baseload thermal



Empowering a sustainable future will require strategic partnerships, alliances and collaboration through our supply chains

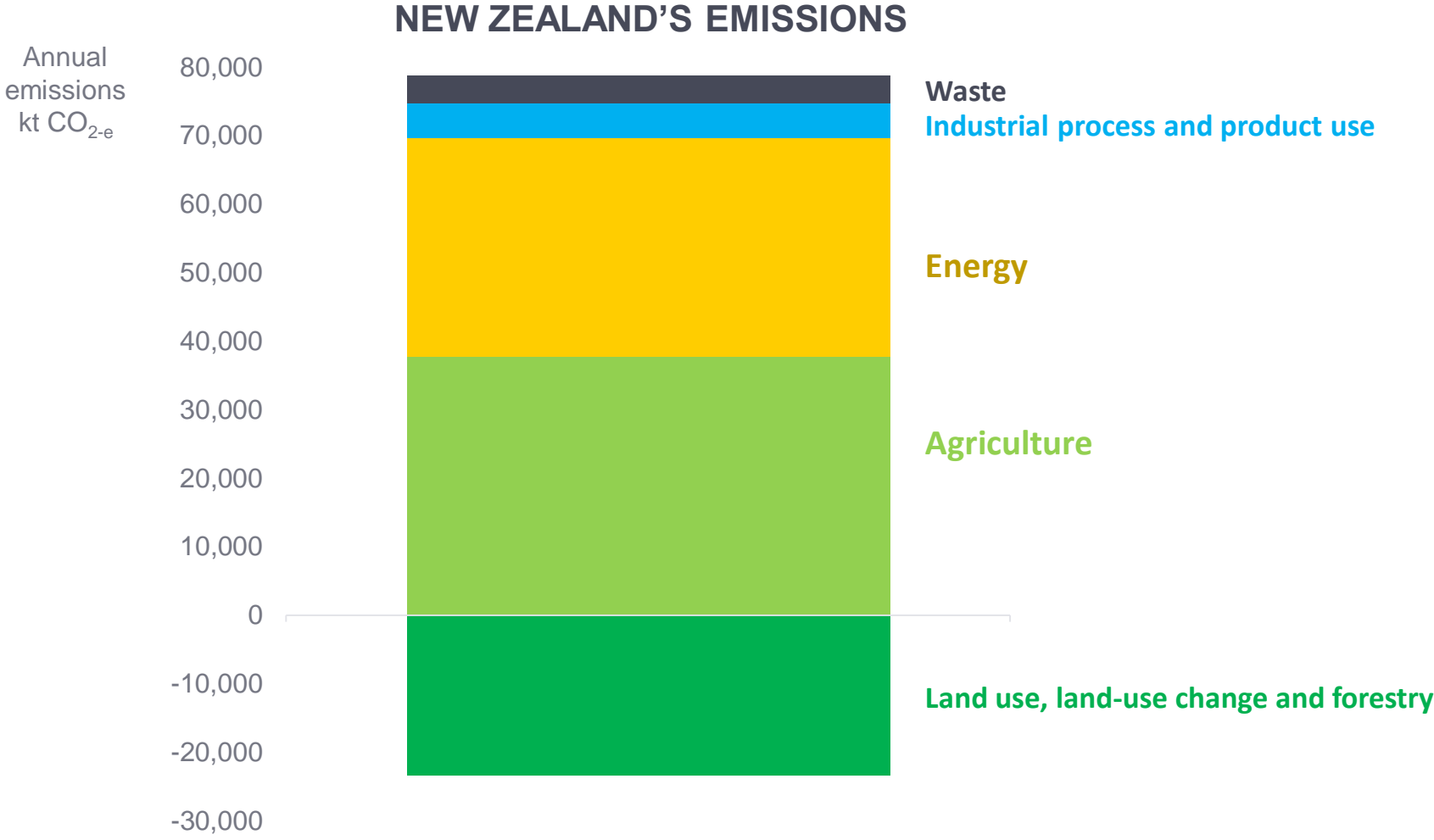


We need more systems thinking and an energy strategy to ensure we navigate the fastest route to decarbonise

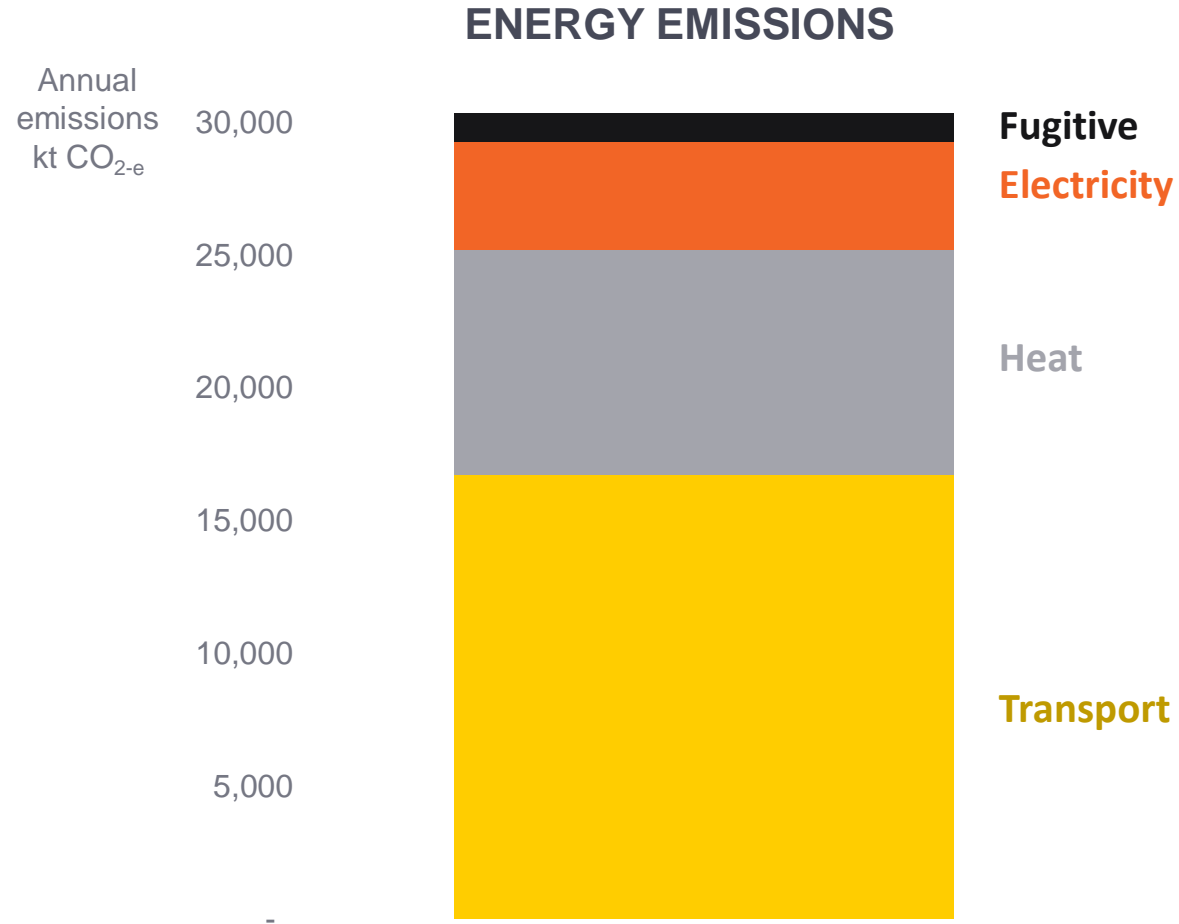


Understanding the decarbonisation landscape

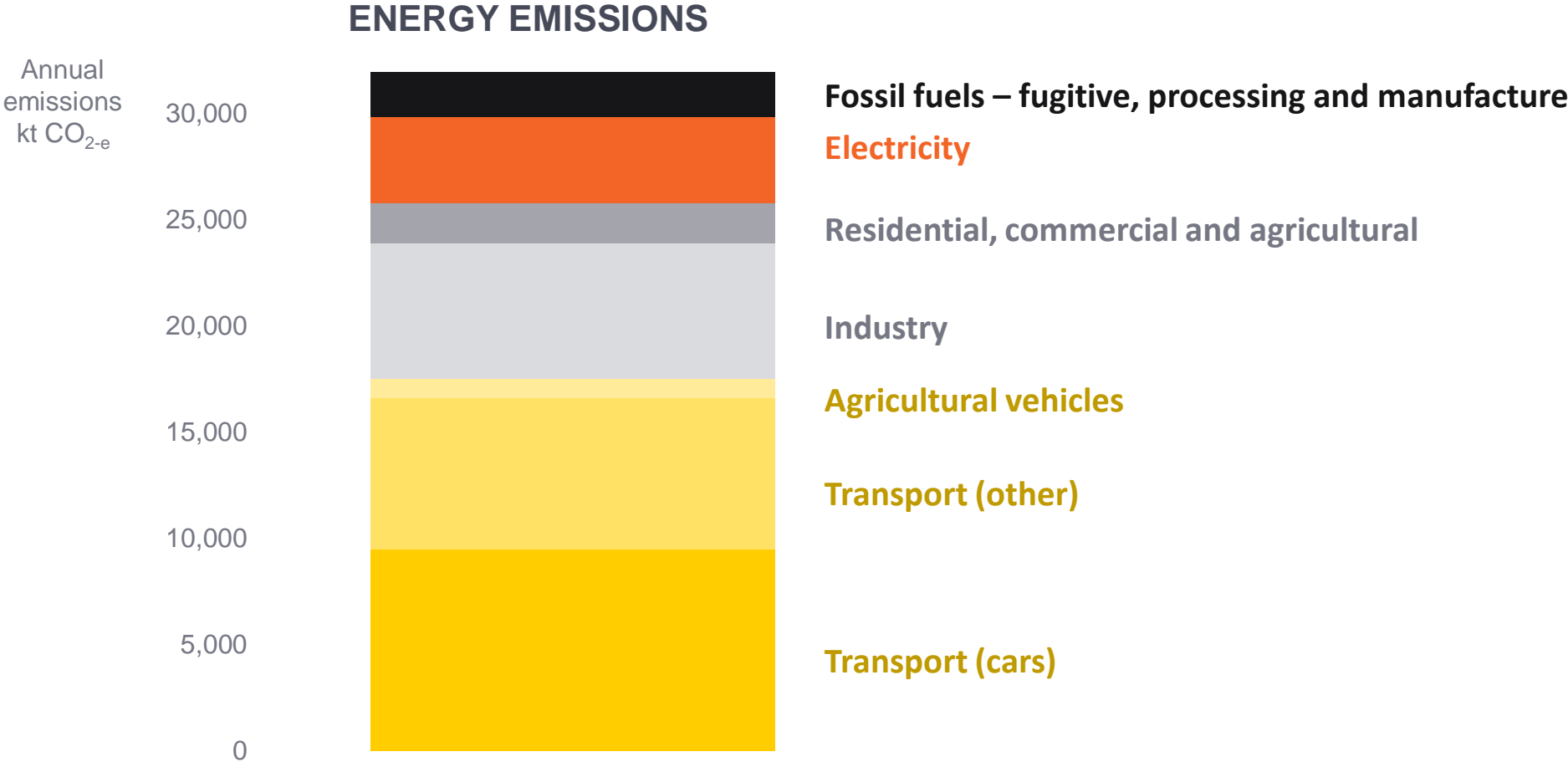
Energy is one of the two major contributors to New Zealand's emissions



Almost all energy use is either **electricity, heat or transport**



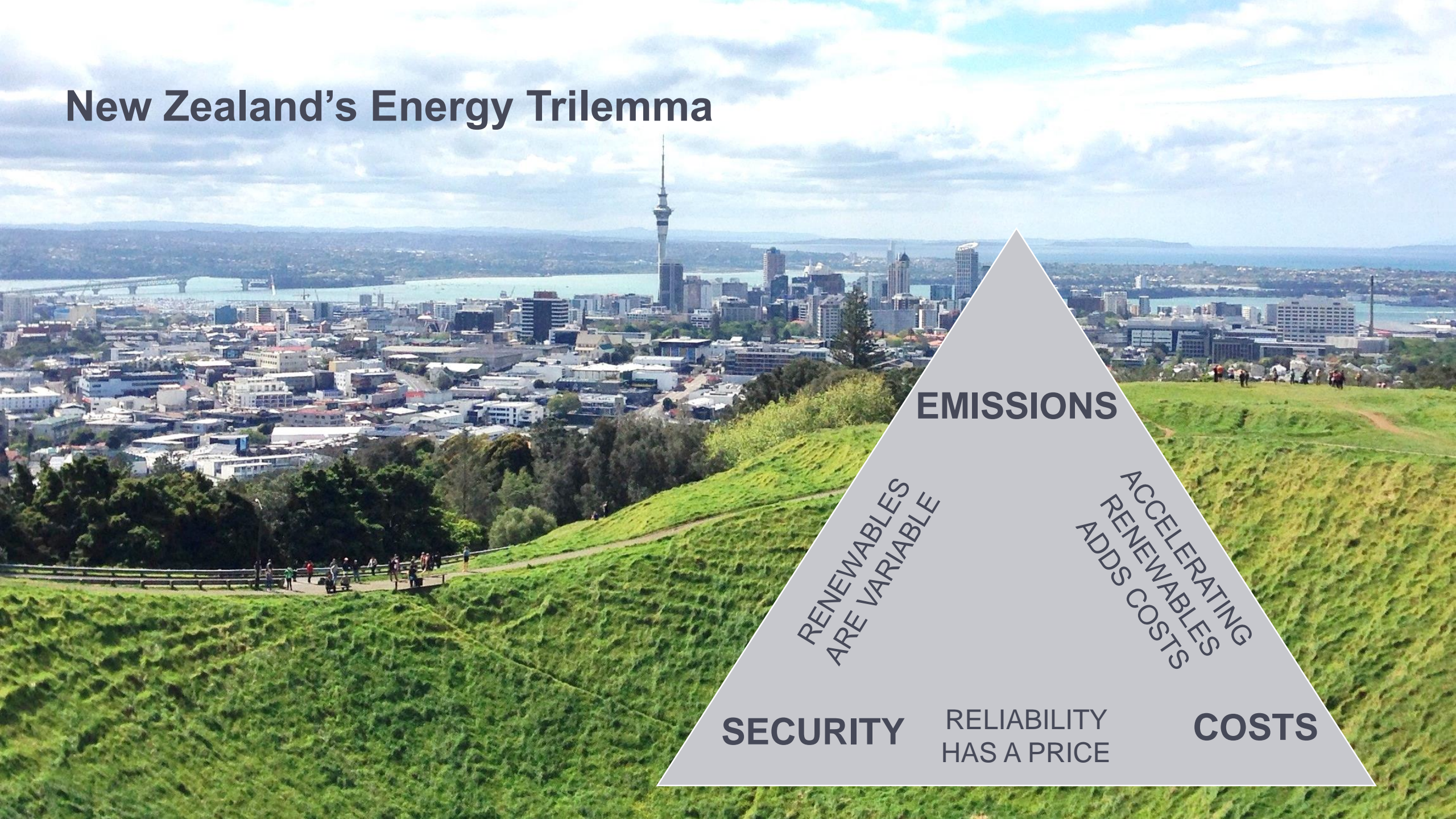
Energy emissions come from a range of activities, with **solutions only available for some** in the 2020-2030 decade



Electricity



New Zealand's Energy Trilemma



EMISSIONS

**RENEWABLES
ARE VARIABLE**

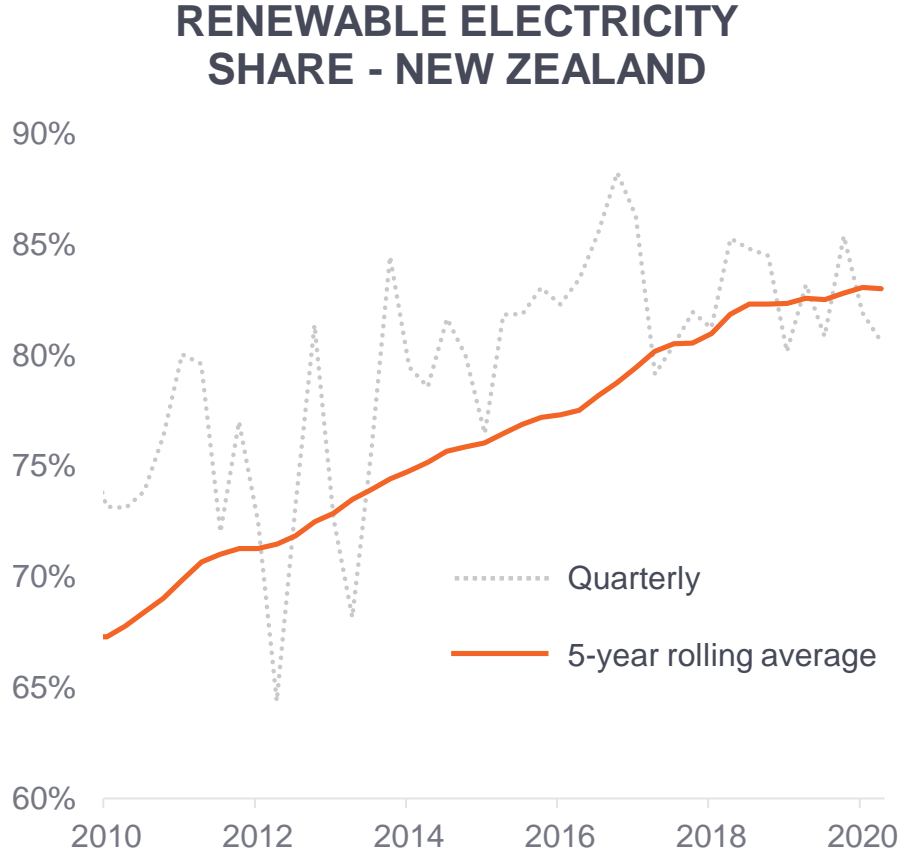
**ACCELERATING
RENEWABLES
ADDS COSTS**

SECURITY

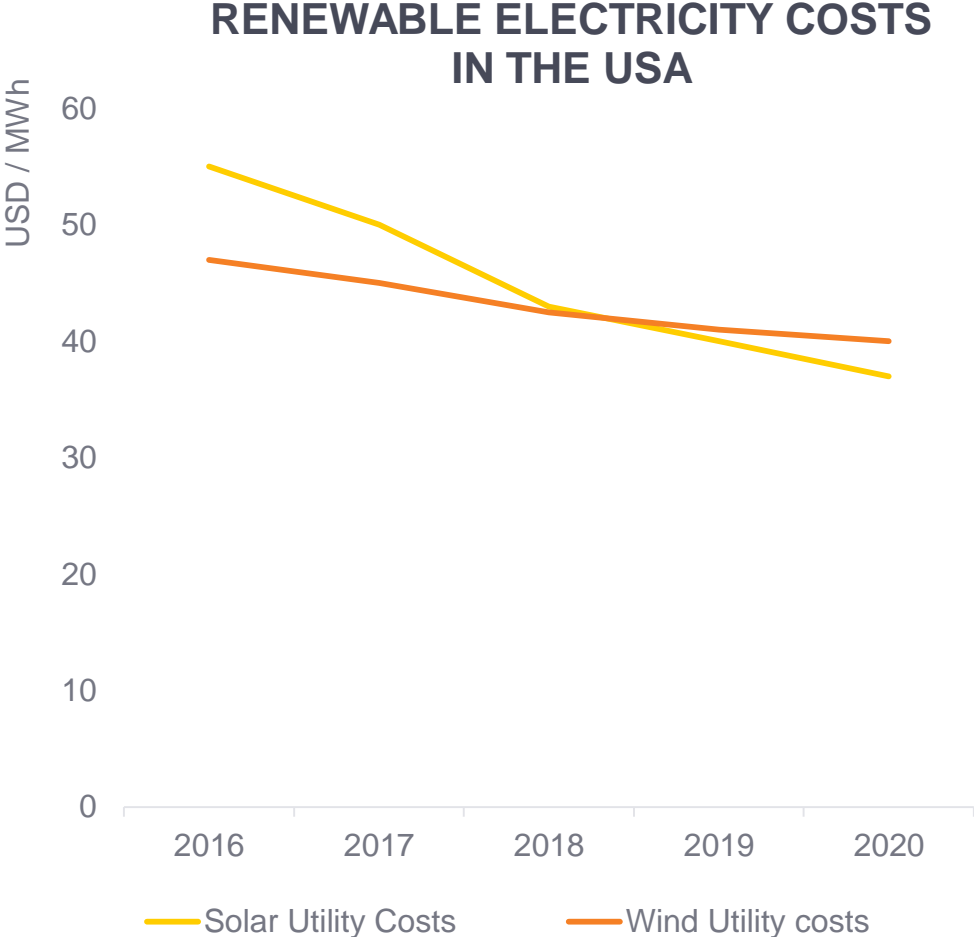
**RELIABILITY
HAS A PRICE**

COSTS

Electricity is decarbonising with falling wind and solar costs providing tail winds for further progress

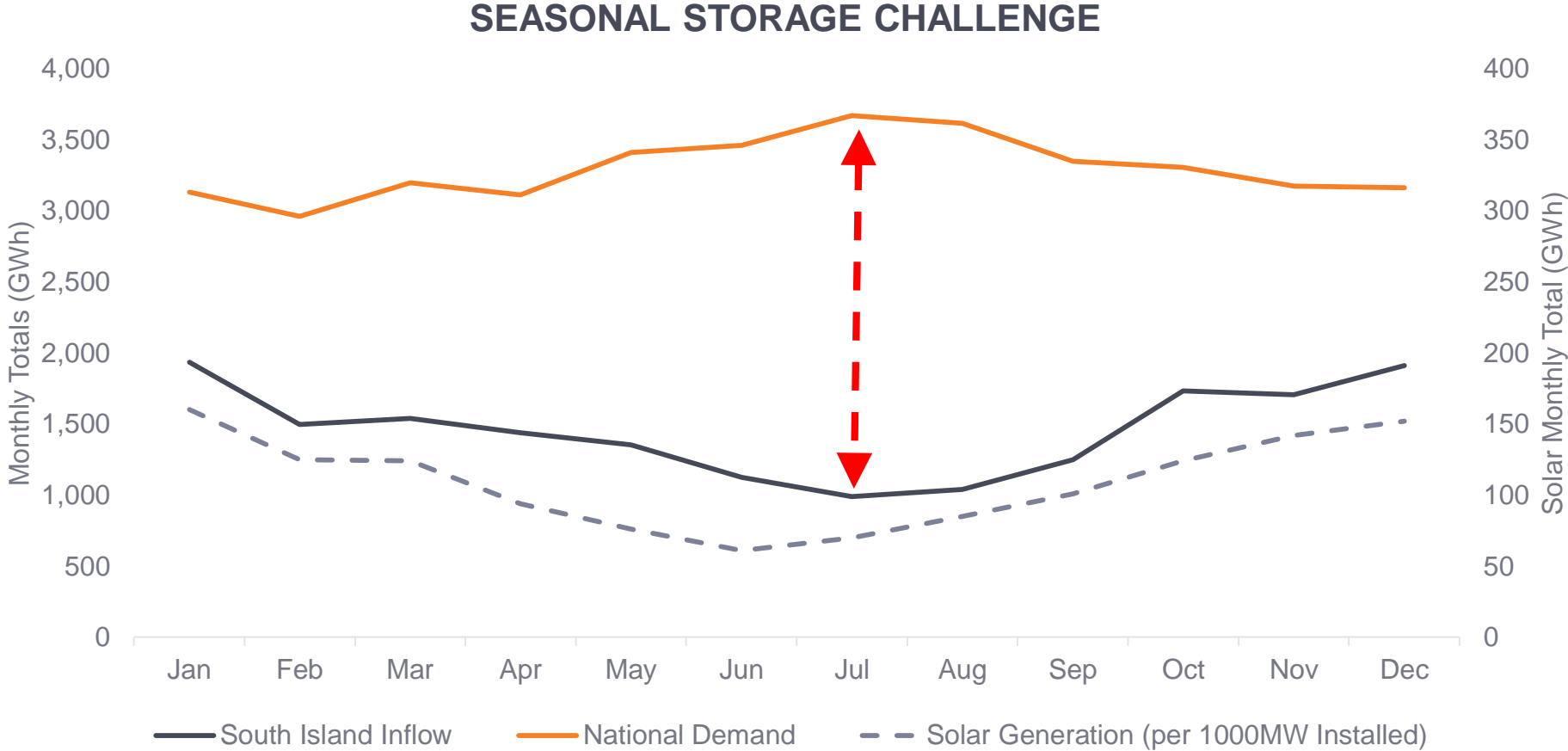


MBIE data



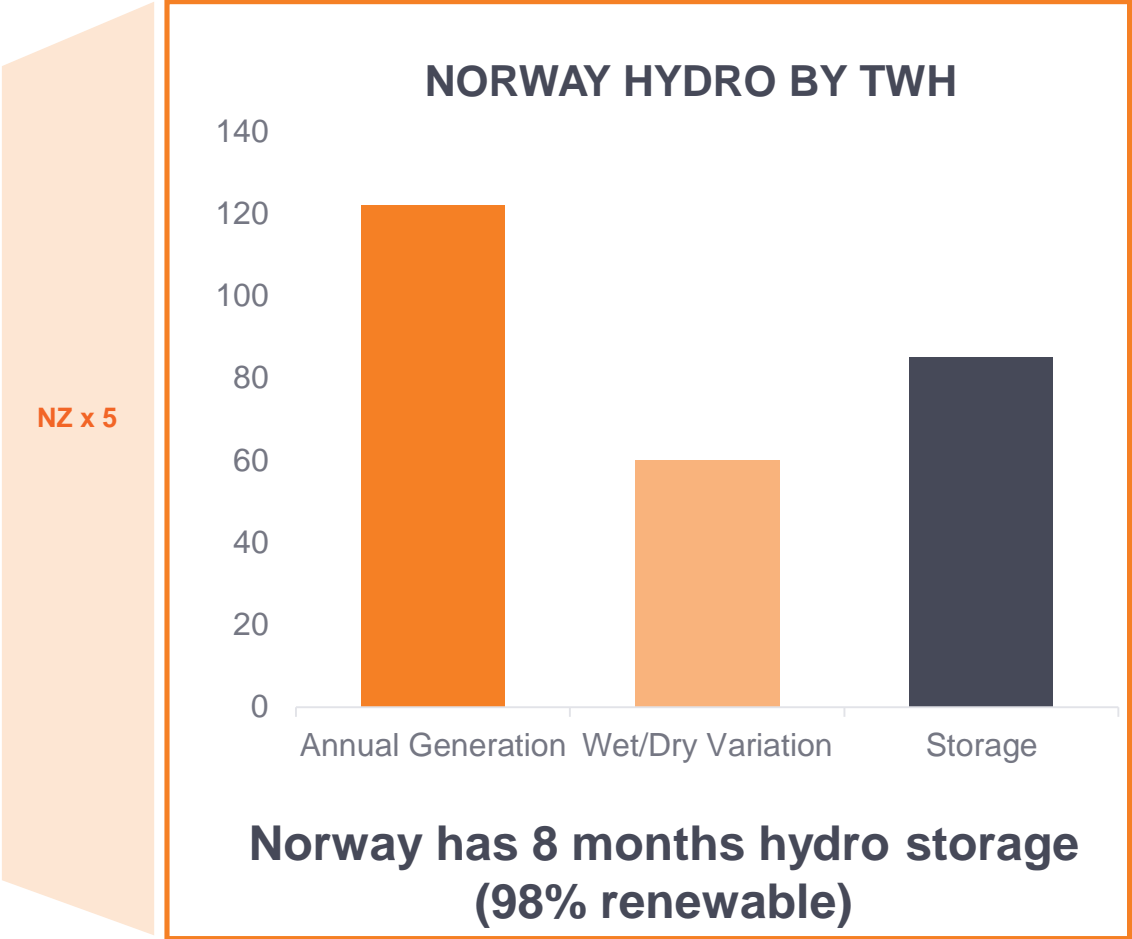
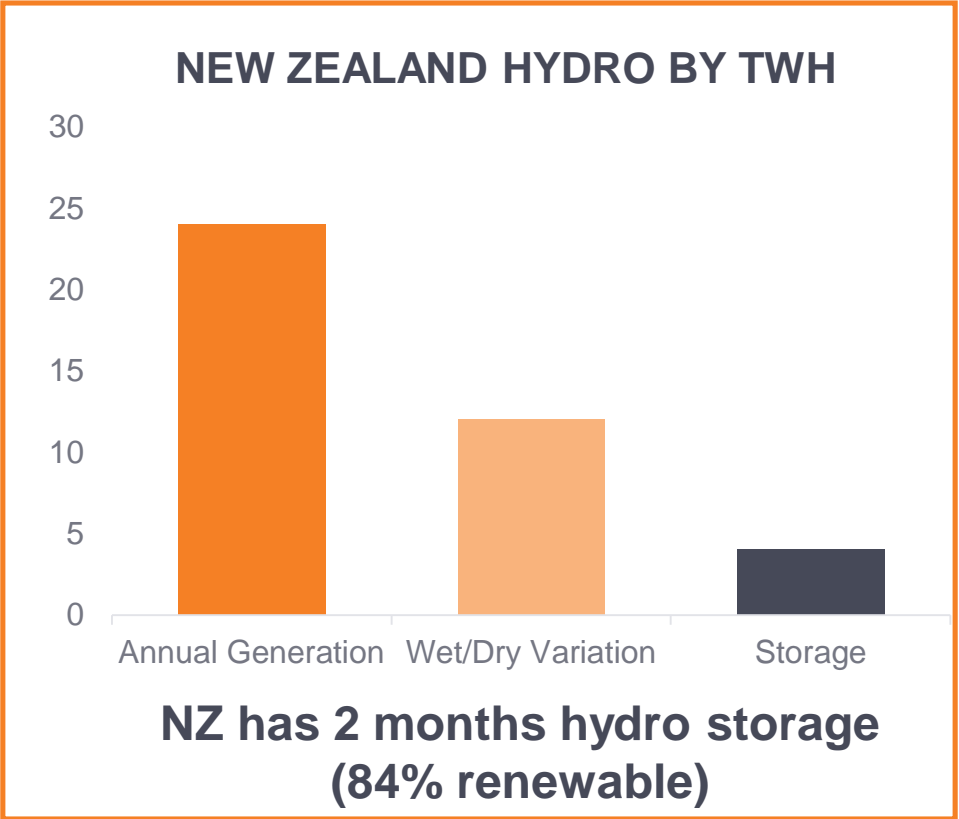
Lazard data

Seasonal demand is a challenge for our electricity system, demand is highest in winter when southern inflows are the lowest



Our hydro storage is too small to manage droughts and seasonality

Even with 4x the relative storage, Norway still only 98% renewable



Deep energy storage is a big challenge, **there are limited options available to store 3,000 GWh of energy**



5



140

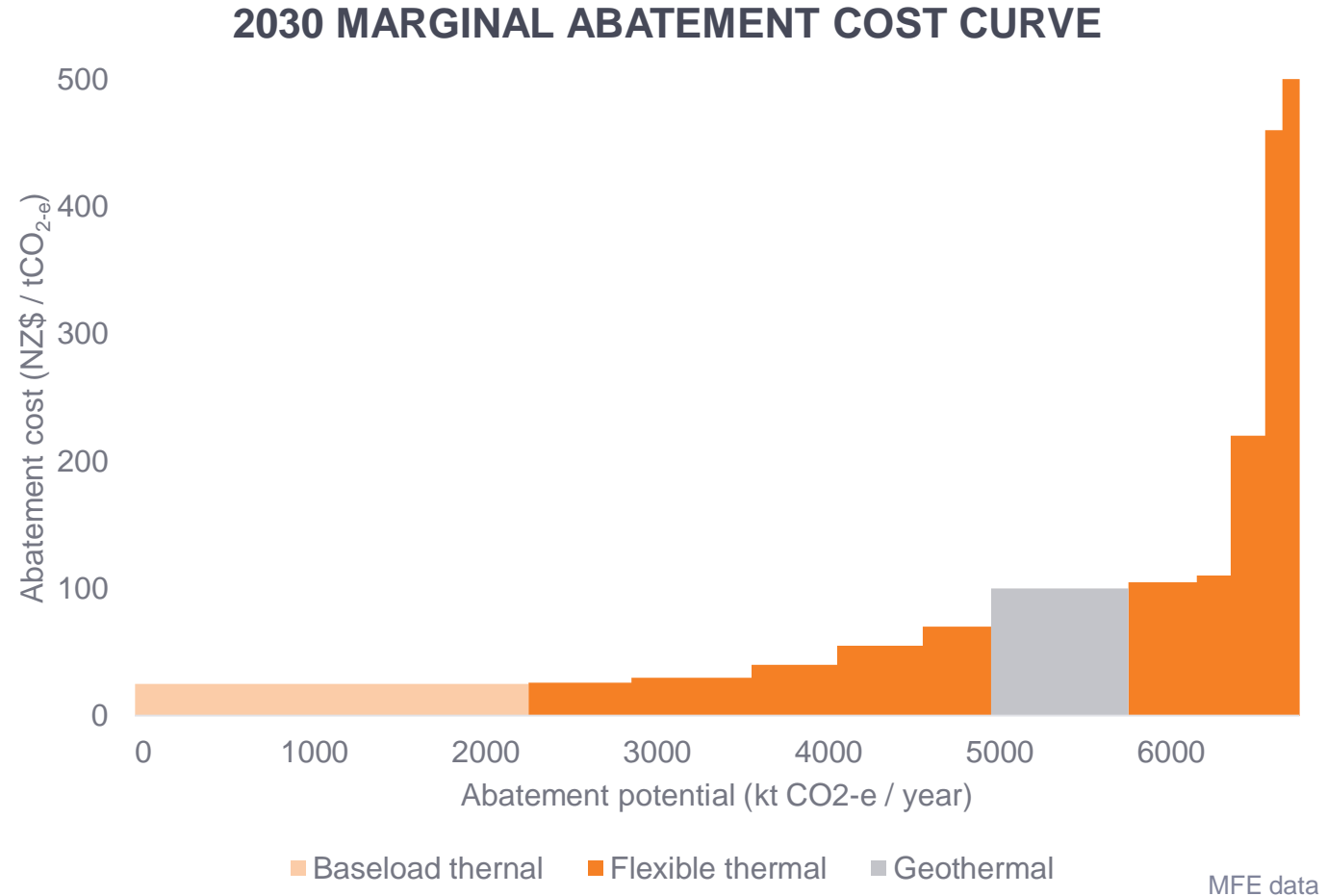


10^m

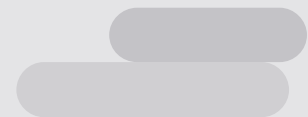


80%

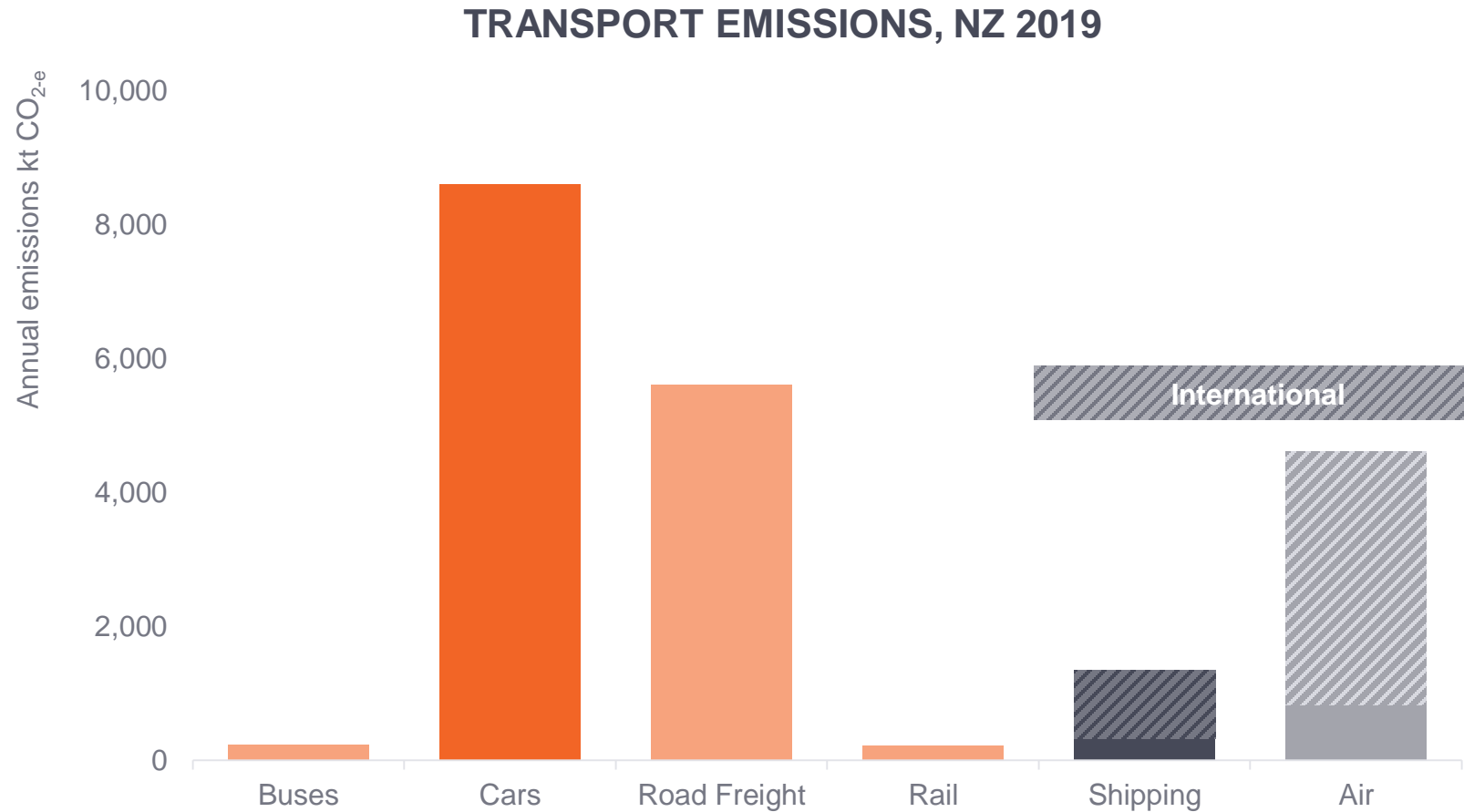
Electricity is decarbonising, but the last few percent will be challenging



Transport



Cars are the largest decarbonisation opportunity from the transport sector

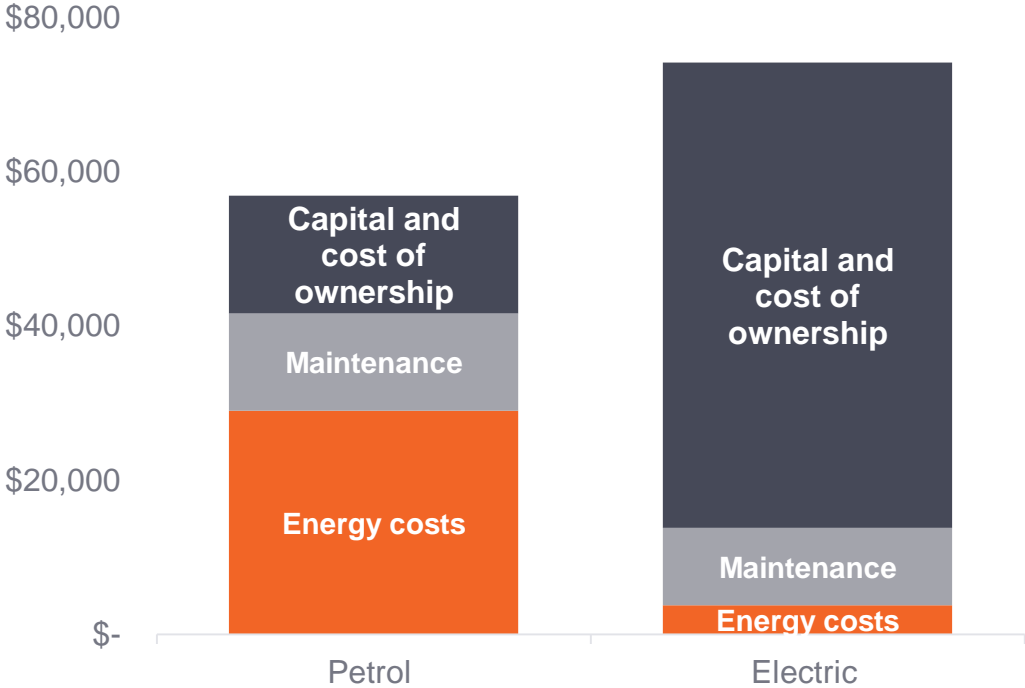


Low energy costs help, but **high upfront costs are a barrier** for electric vehicle adoption

Average weekly electricity for an EV **costs about the same as 2 coffees**



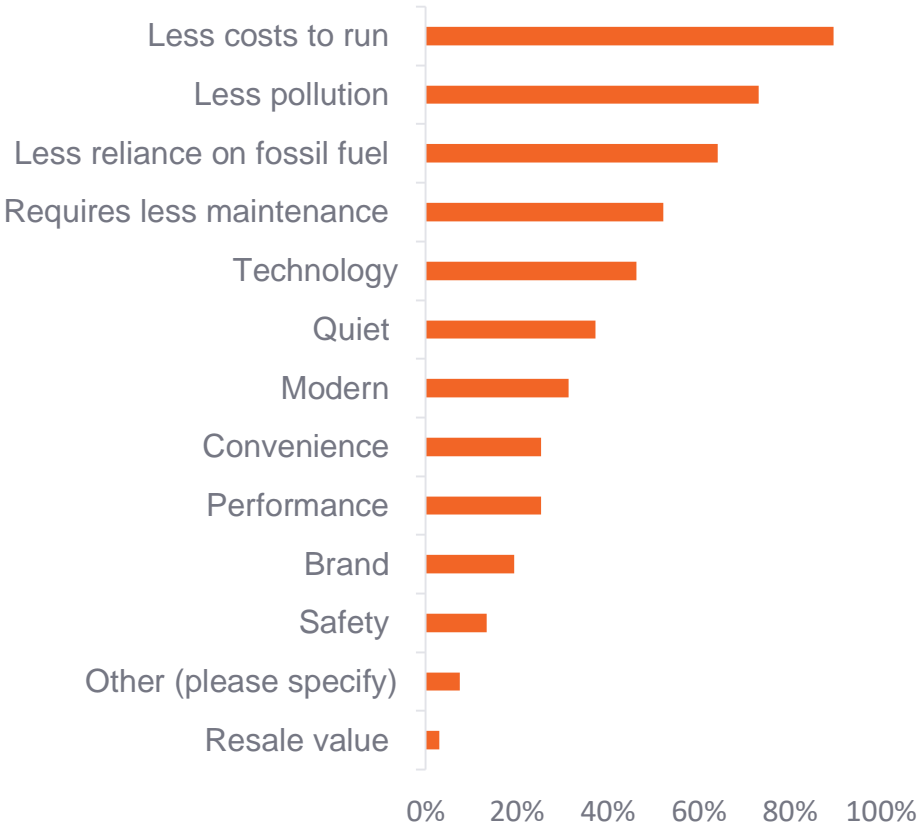
10 YEAR TOTAL COST OF OWNERSHIP*



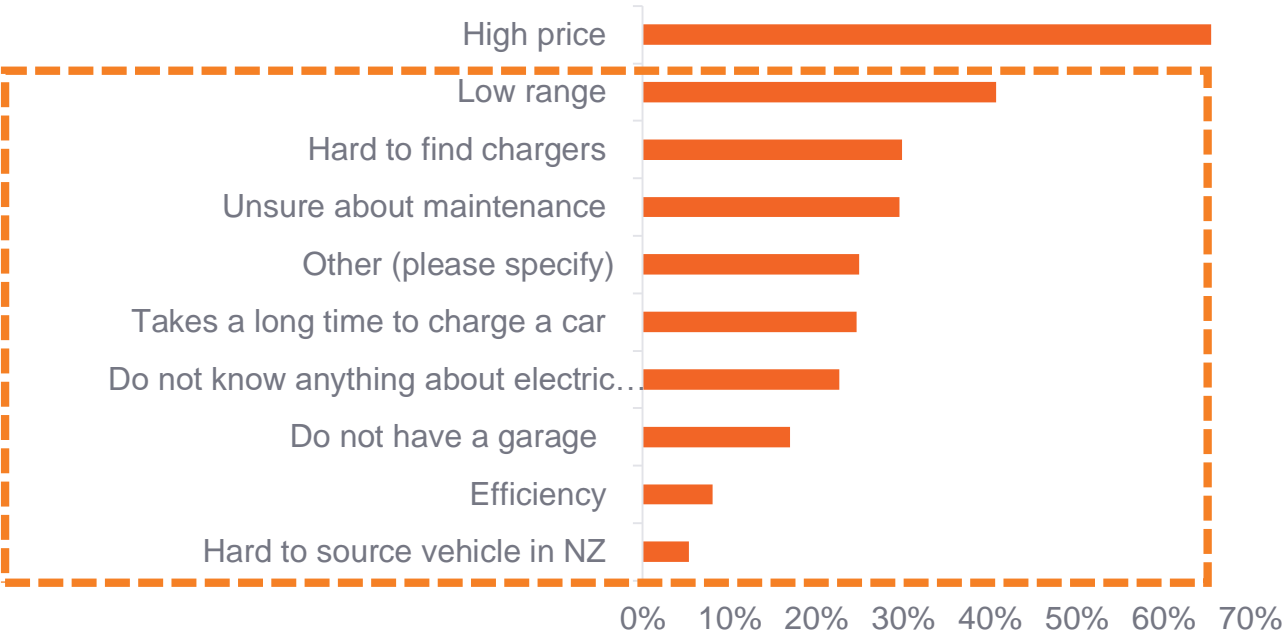
*Hyundai Kona, ~21,000 km/year over 10 year terms, as at 2020
<https://www.eecabusiness.govt.nz/tools/vehicle-total-cost-of-ownership-tool/>

Currently, price is not the only barrier to adoption

REASONS FOR PURCHASE OF EV

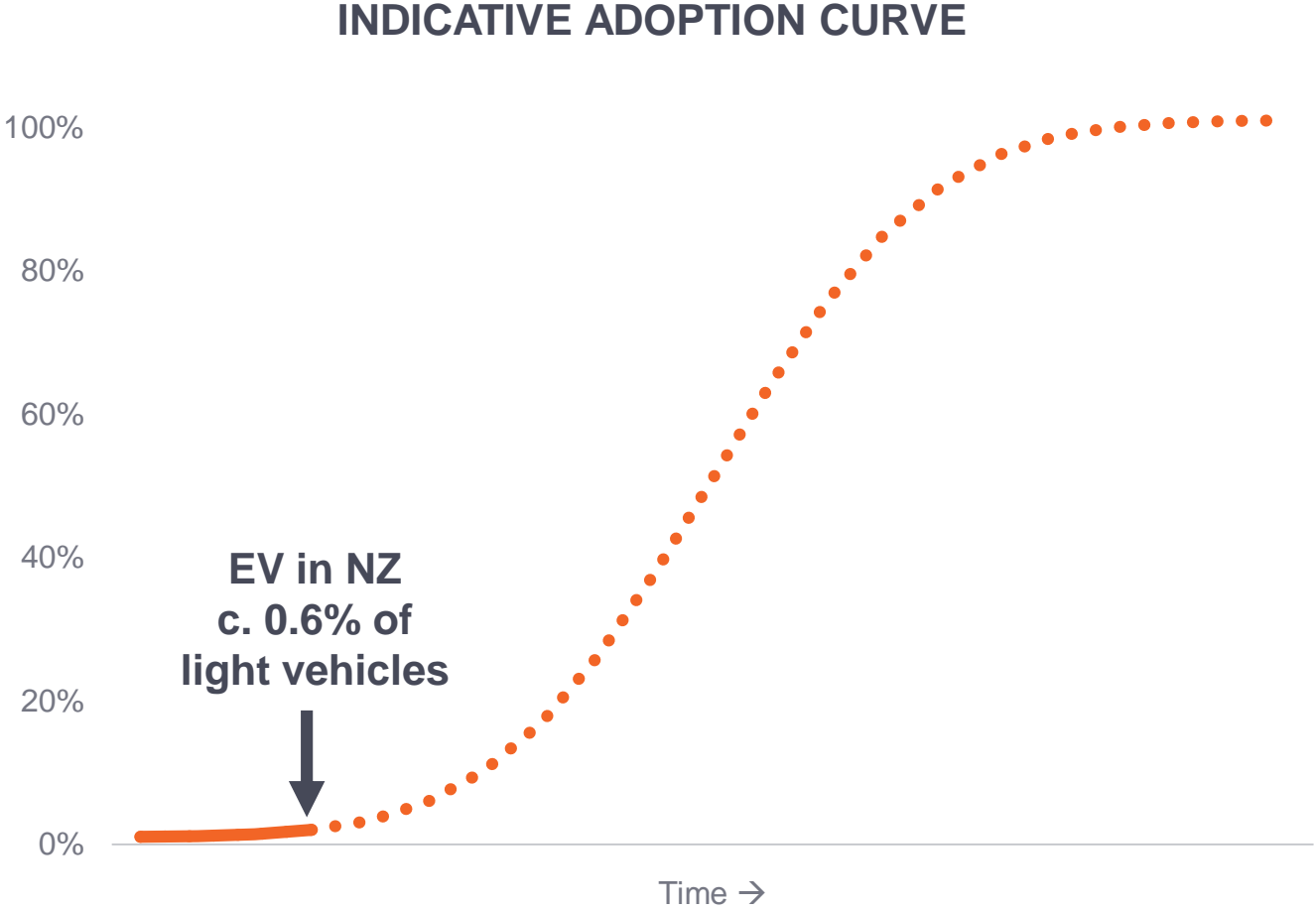


BARRIERS FOR PURCHASE OF EV



Some of the barriers to adoption could fall away as consumers learn more about Electric vehicles and how to use them

Electric vehicle adoption is growing **but still has a long way to go**



Innovation is still needed for other transport sectors – is this an opportunity for New Zealand to help find solutions?

ROAD FREIGHT



A number of truck electrification projects undertaken with funding from the Low Emissions Vehicle Contestable Fund

SHIPPING



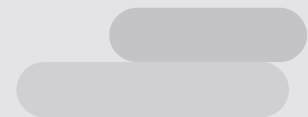
Electric tug boat developed for Ports of Auckland and electric ferries being explored for Auckland and Wellington

AIRCRAFT



Cora electric air taxi tested in Canterbury and Sounds Air has intent to buy electric plane for commercial flights

Heat



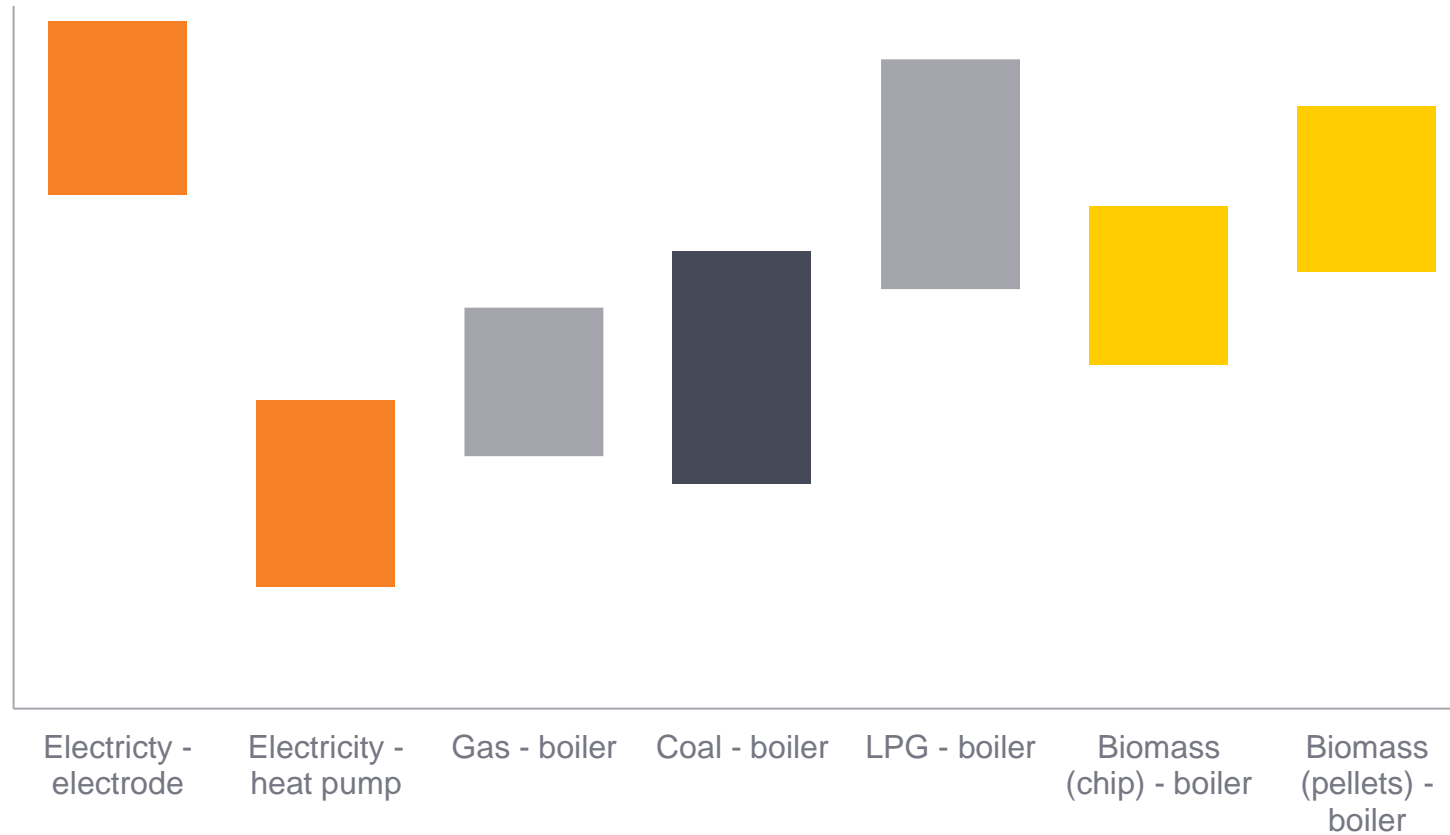
The cost of energy is critical for transitioning heat

COST OF ENERGY TO CREATE HEAT*

\$/GJ

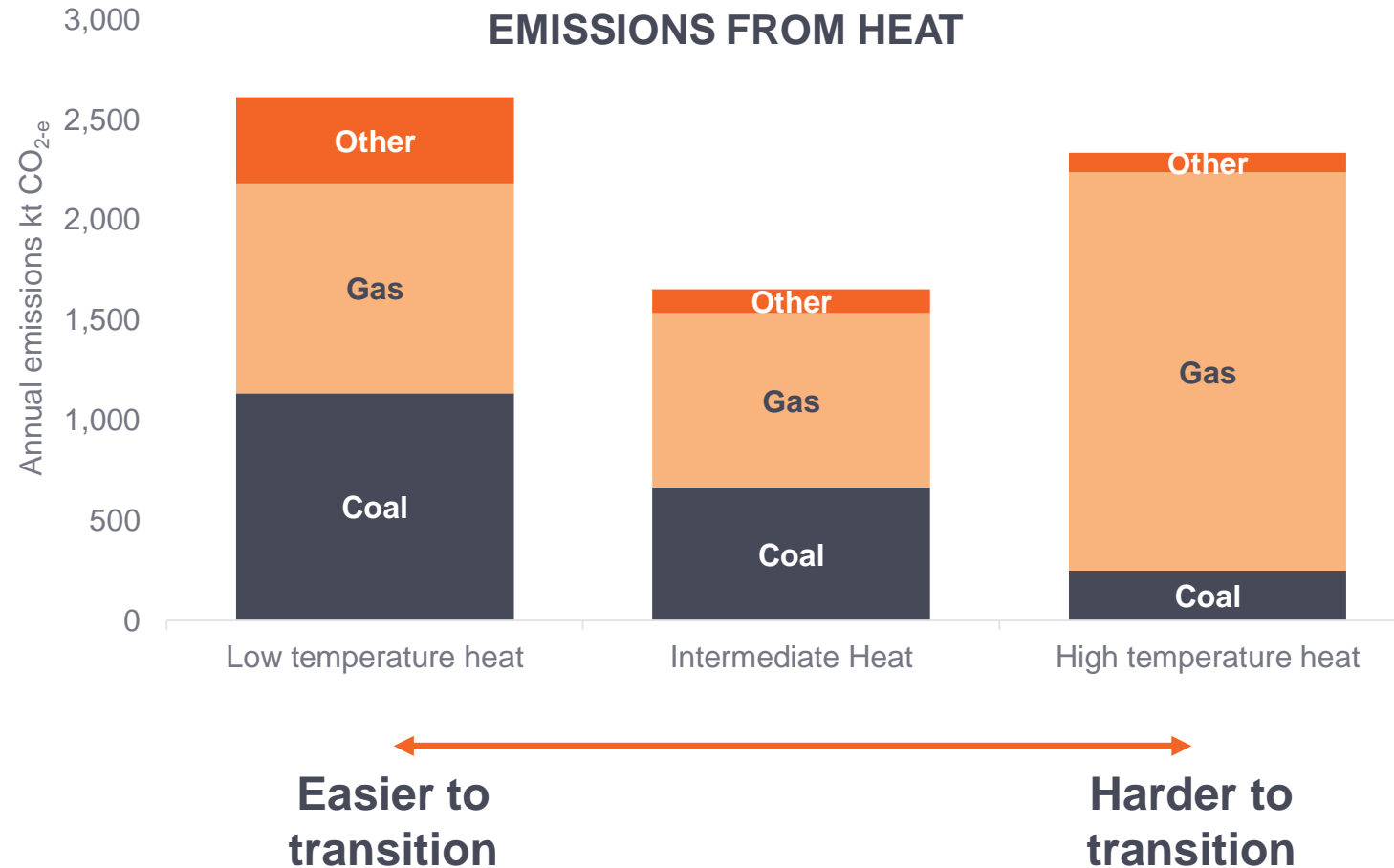
Electricity is expensive to use for heat...

unless used in a heat pump

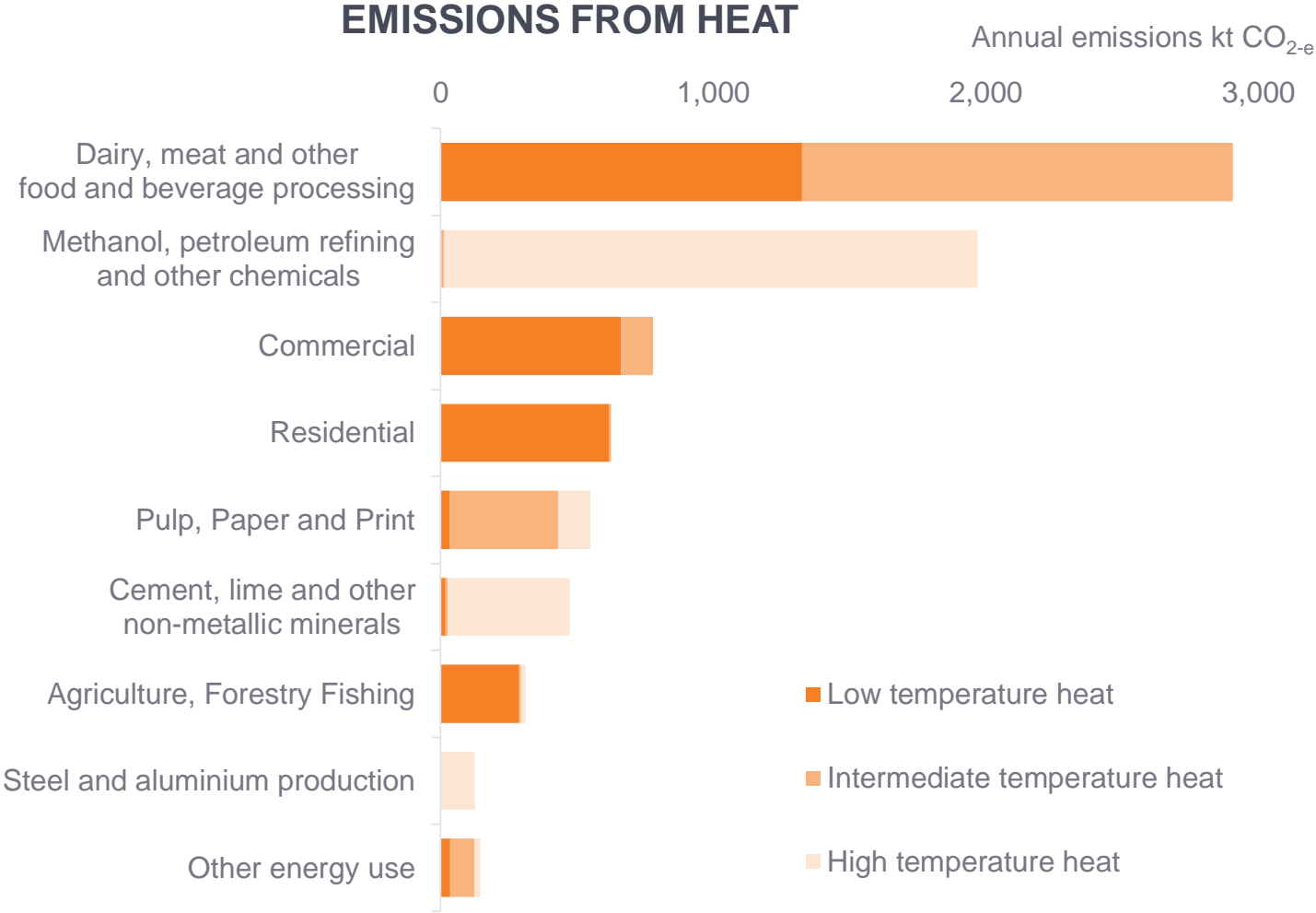


*Energy costs including fuel, delivery, carbon cost at \$50/tonne, and typical boiler efficiency

Higher temperatures are **harder to transition** than lower temperatures



Significant heat emissions are from a small number of sectors and sites

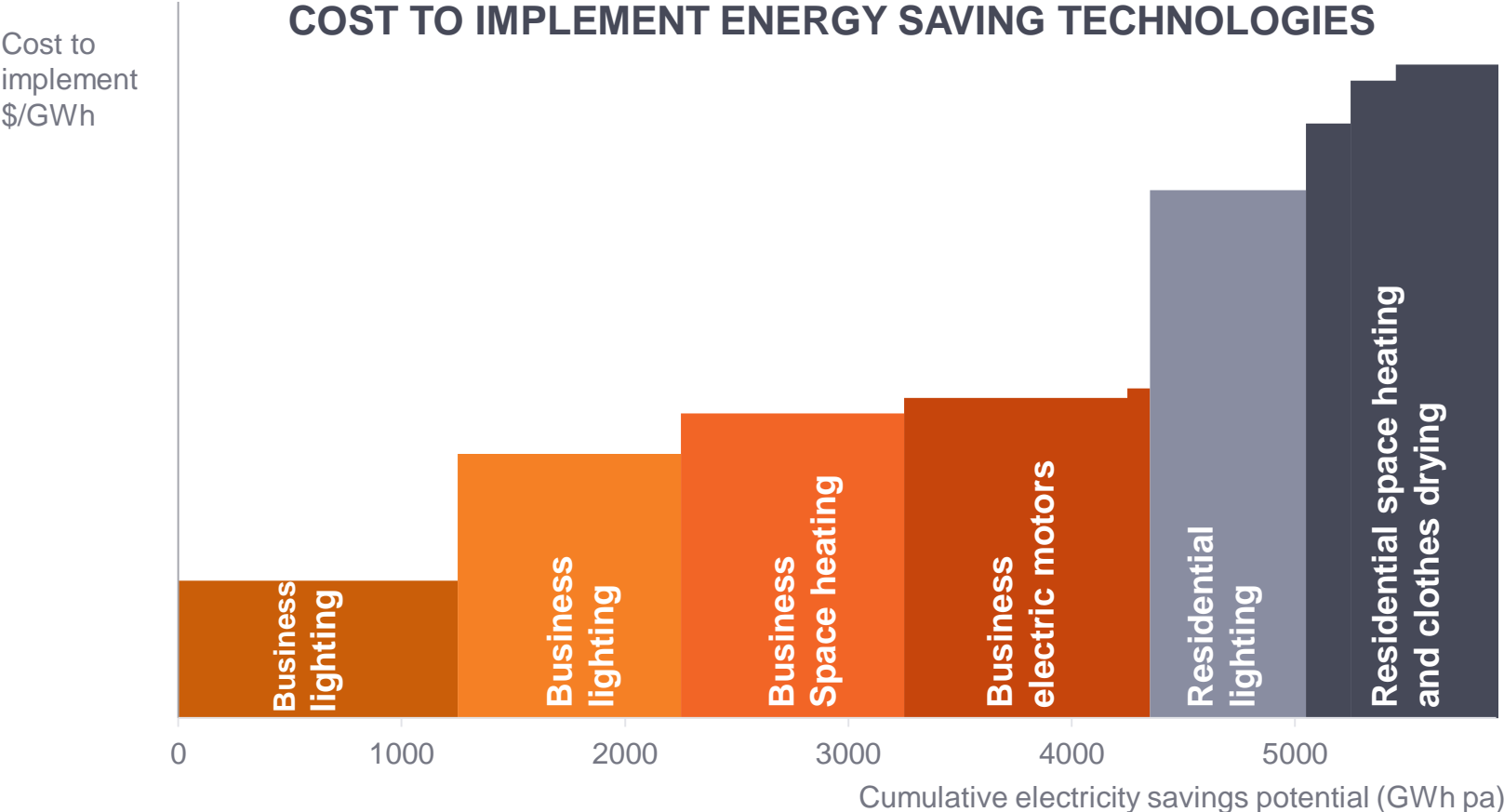


EECA and MFE data, Genesis analysis

Efficiency



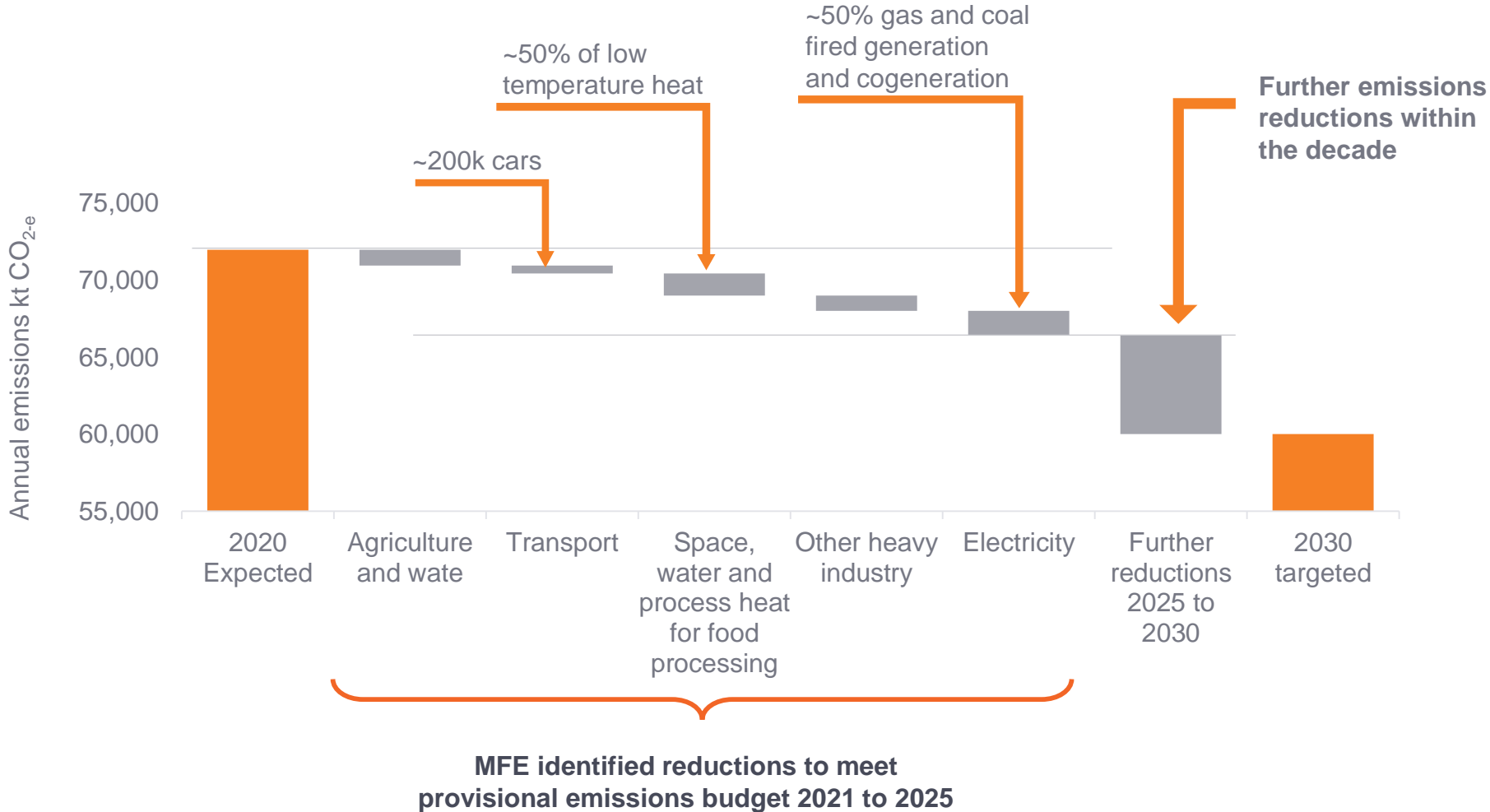
Significant opportunities for efficiency exist **in homes and businesses**



Decarbonisation pathway



Is New Zealand going to **reduce emissions fast enough?**



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