

# Welcome to 2021 NZGA Winter Seminar

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Vision

**“Creating a sustainable future for Aotearoa  
New Zealand through geothermal”**



# Today's seminar: *Geothermal in a low carbon future*



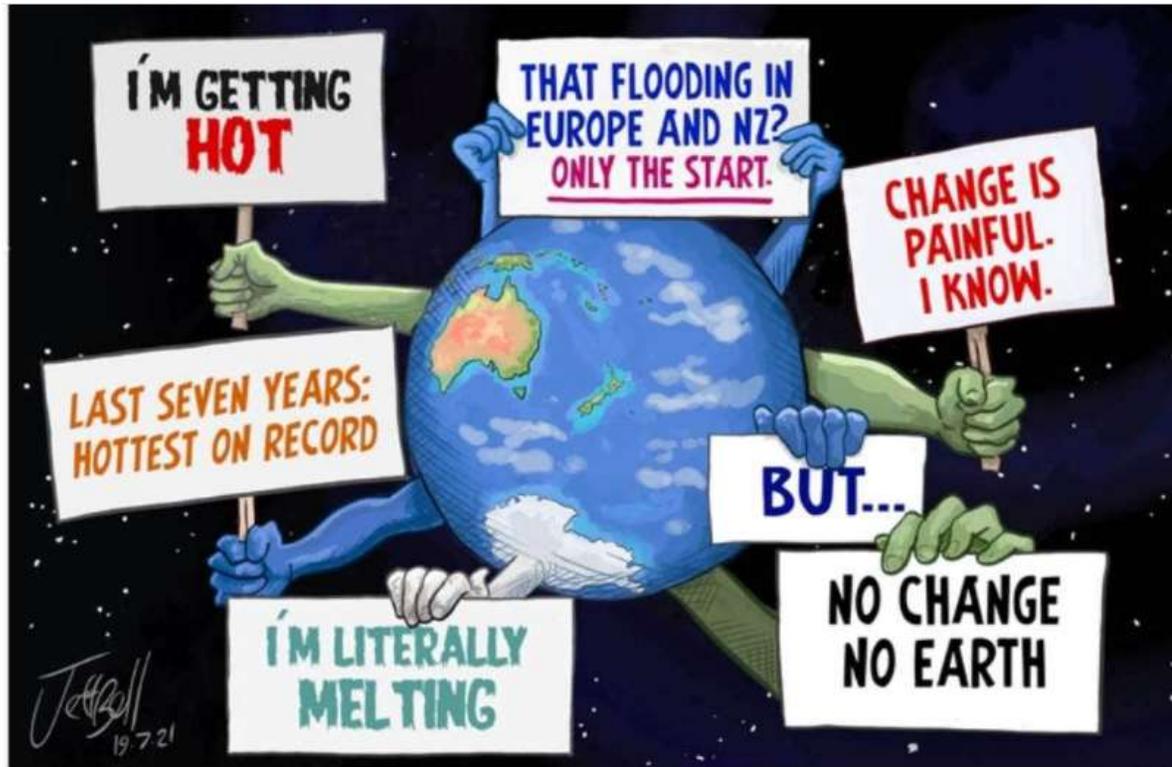
# NZGA Activities

- Continuing the direct use conversation through support and dialogue
- Aiding operators to have conversations to address challenges
- Replying to advice on climate change and law reform
- Bringing members together

# Geothermal week begins here.....



# Should I worry about climate change?



# Court orders Royal Dutch Shell to cut carbon emissions by 45% by 2030

**Oil giant told plans should be brought into line with Paris climate agreement**

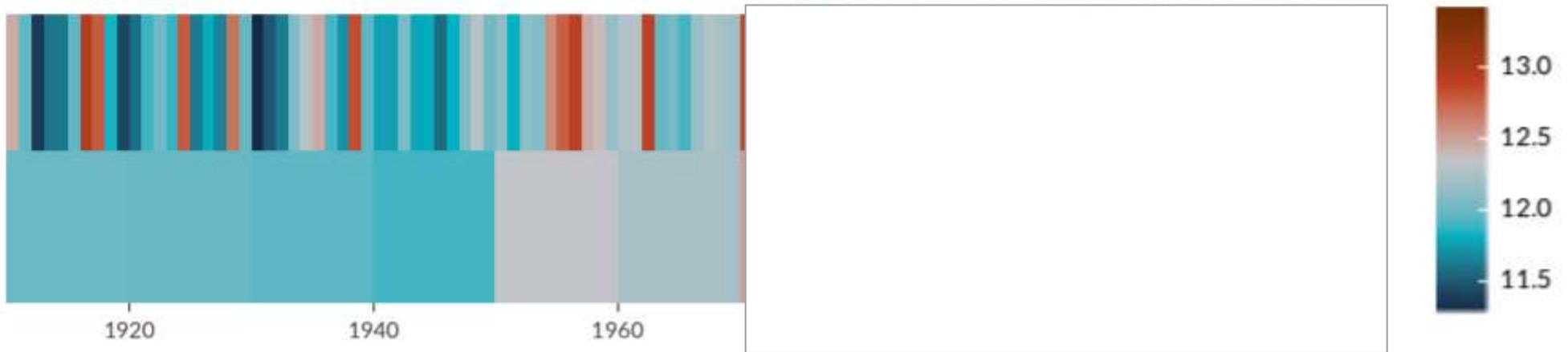




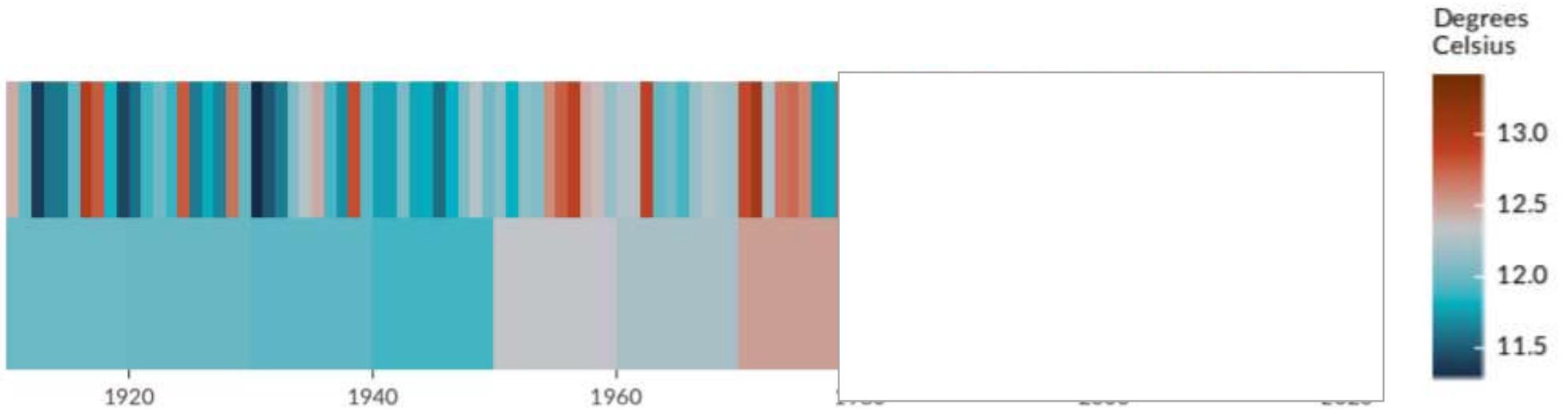
***Aotearoa is getting hotter and hotter....***



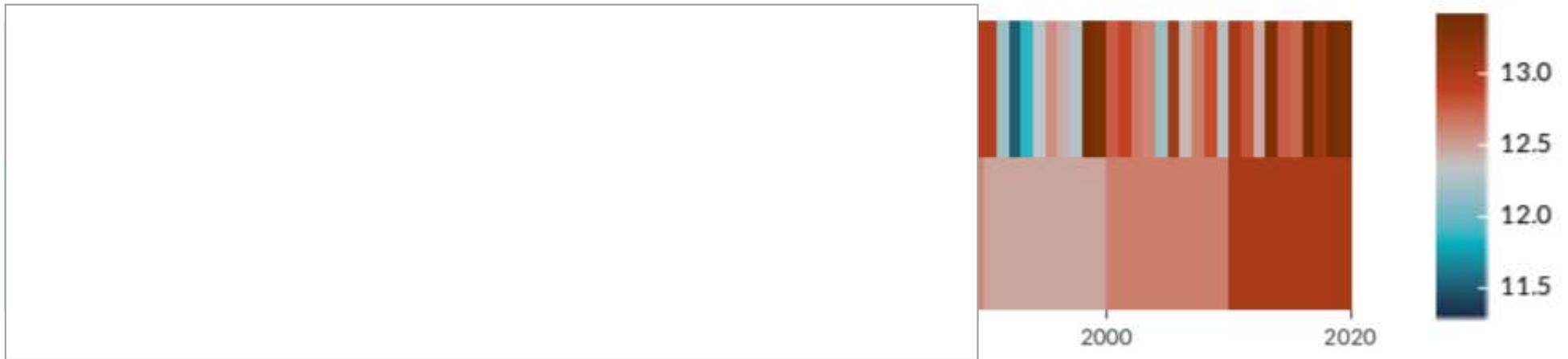
# Annual and decadal average temperature in Aotearoa between 1909 and 1970's



between 1909 and 1990's



between 1990's and 2020

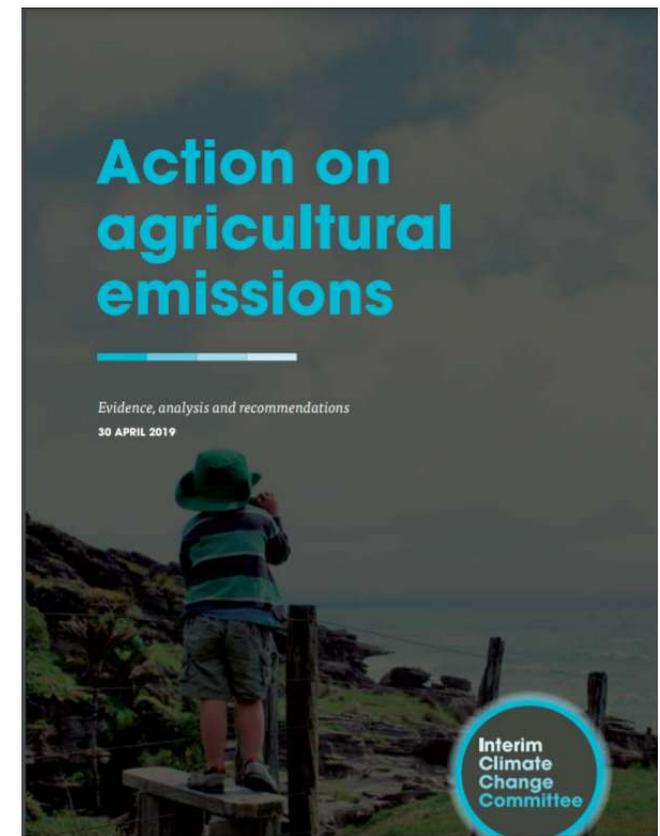
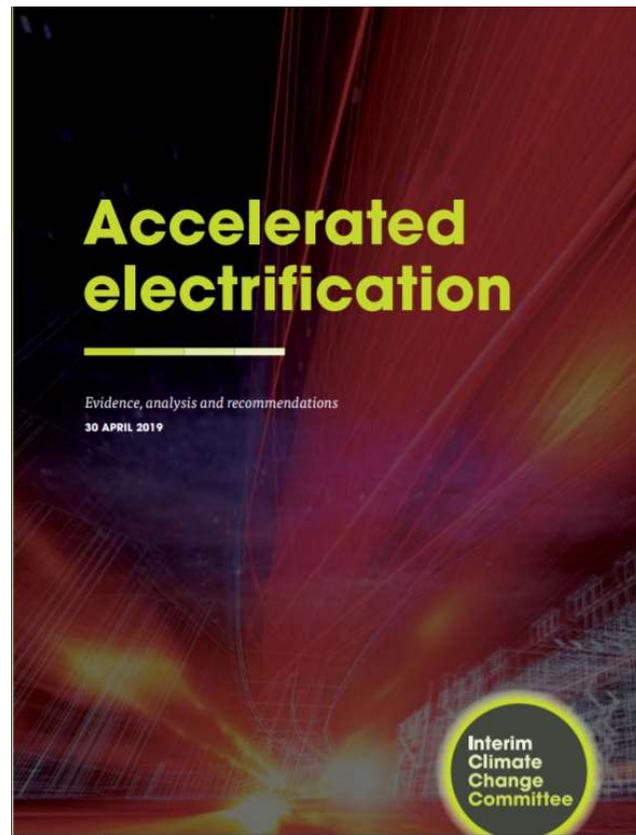


# The momentum is growing...

*‘Not because we want to, because we have to.’* Prime Minister addressed Student Strike 4 Climate Change, 2019



# The tasks undertaken by the Interim Climate Change Committee



Final Advice: *Ināia tonu nei: a low emissions future for Aotearoa*  
consultation period: 1 Feb – 28 March 2021



***You asked, Consultation, We said, Submissions, You listened 2021 Final Advice***



*You asked....*



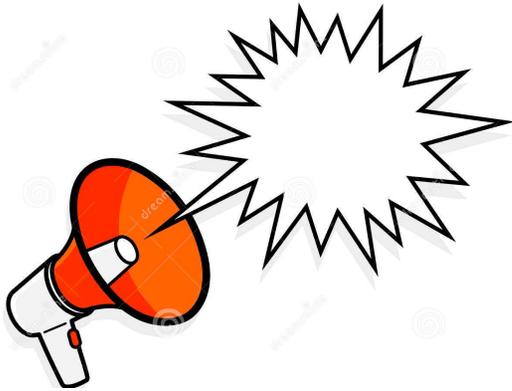
## Consultation questions

*Please note – this is **NOT** the consultation form. This is a list of all the questions you will be asked to answer if you choose to make a submission.*

Are you here to tell us your one big thing?

If you're here because you have one big thing to tell us, you can do that here. If this is all you want to provide by way of your submission, that's fine by us. We will consider all the submissions we receive.

# We said....



27 March 2021

Attn: Submissions Analysis Team  
Climate Change Commission  
PO Box 24448  
Wellington 6142

### **Submission on He Pou a Rangi Climate Change Commission 2021 Draft Advice for Consultation**

This document is submitted on behalf of the New Zealand Geothermal Association (NZGA) by Dr Paul Siratovich (President, NZGA). This document forms one part of the NZGA submission to this process. The second part of the NZGA submission - the online response to the consultation questions provided by the Climate Change Commission - has been submitted by Dr Katie McLean (Vice President, NZGA).

### **Key Messages:**

- Geothermal is an abundant, low-carbon and cost-effective energy resource that gives Aotearoa New Zealand a competitive advantage in transitioning its energy sector and economy.
- Geothermal energy has been decarbonising New Zealand's electricity and process heat sectors for over sixty years and is capable of innovating to decarbonise further so as to be a key part of Aotearoa's future energy solution.
- Geothermal energy is a critical enabler: of other renewables, of low-emission fuel production (biomass and green hydrogen), of investment in New Zealand's strong and competitive business sectors (food and beverage, horticulture, renewable energy, tech and innovation, tourism, and ...)



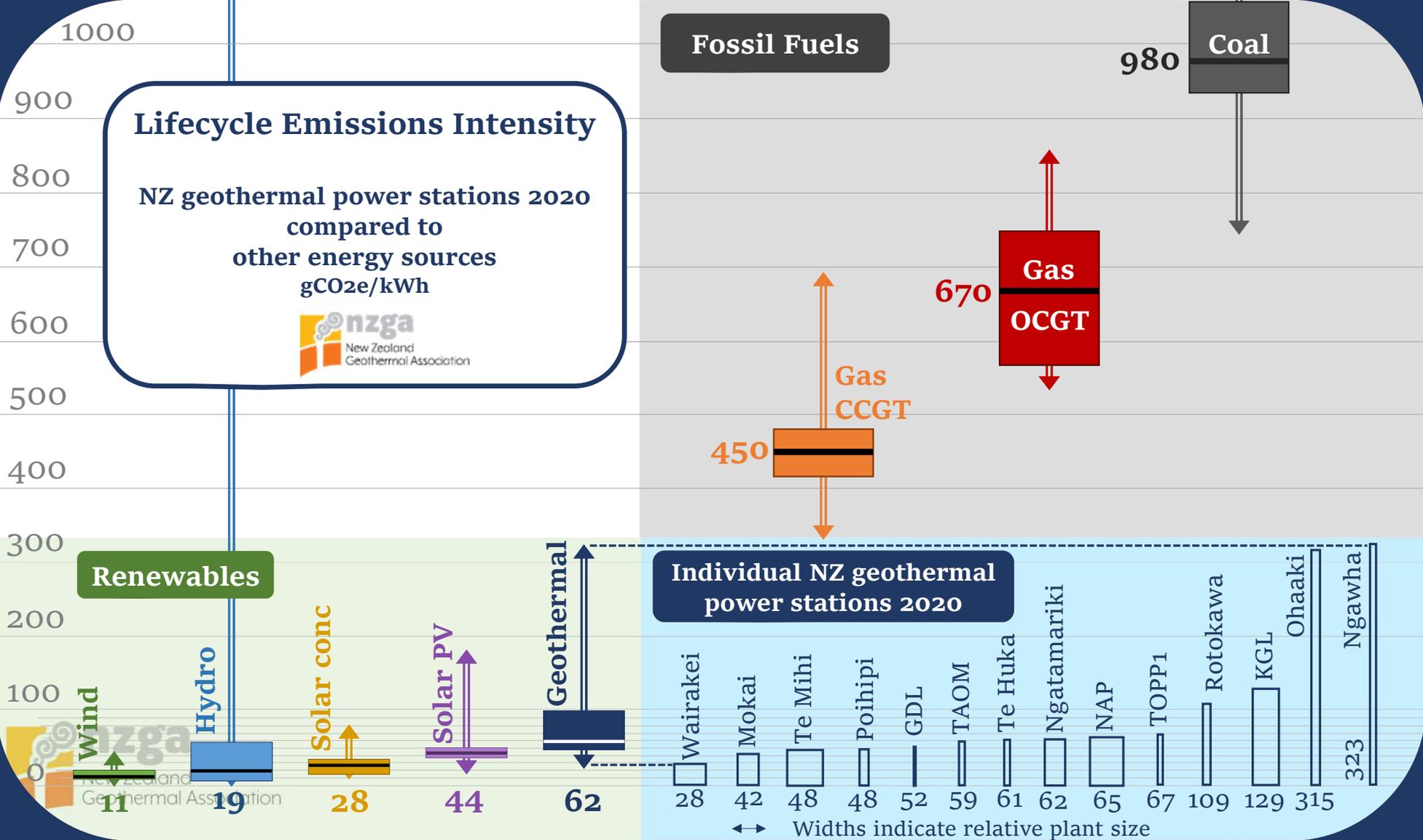


## Key messages

- Geothermal can manage emissions to net-zero
- Geothermal resources are a low-carbon electricity solution
- Geothermal offers wider benefits

# Lifecycle Emissions Intensity

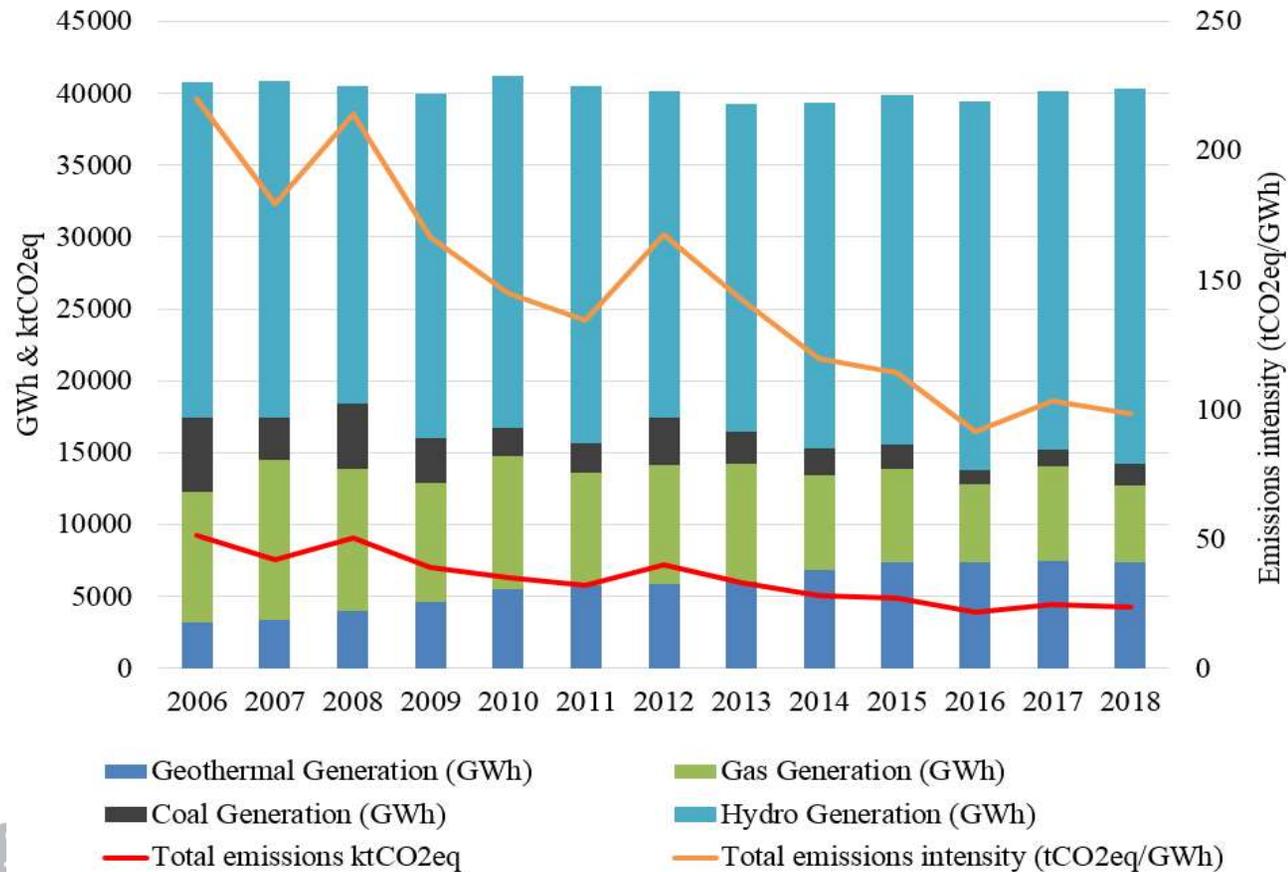
NZ geothermal power stations 2020 compared to other energy sources  
gCO<sub>2</sub>e/kWh



## Individual NZ geothermal power stations 2020

Widths indicate relative plant size

## Geothermal is the heavy lifter in decarbonising the NZ energy mix



McLean, K. and Richardson, I. (2019): Greenhouse gas emissions from New Zealand geothermal power generation in context. Proceedings of New Zealand Geothermal Workshop, 2019.

*You listened*

**Ngāwhā**

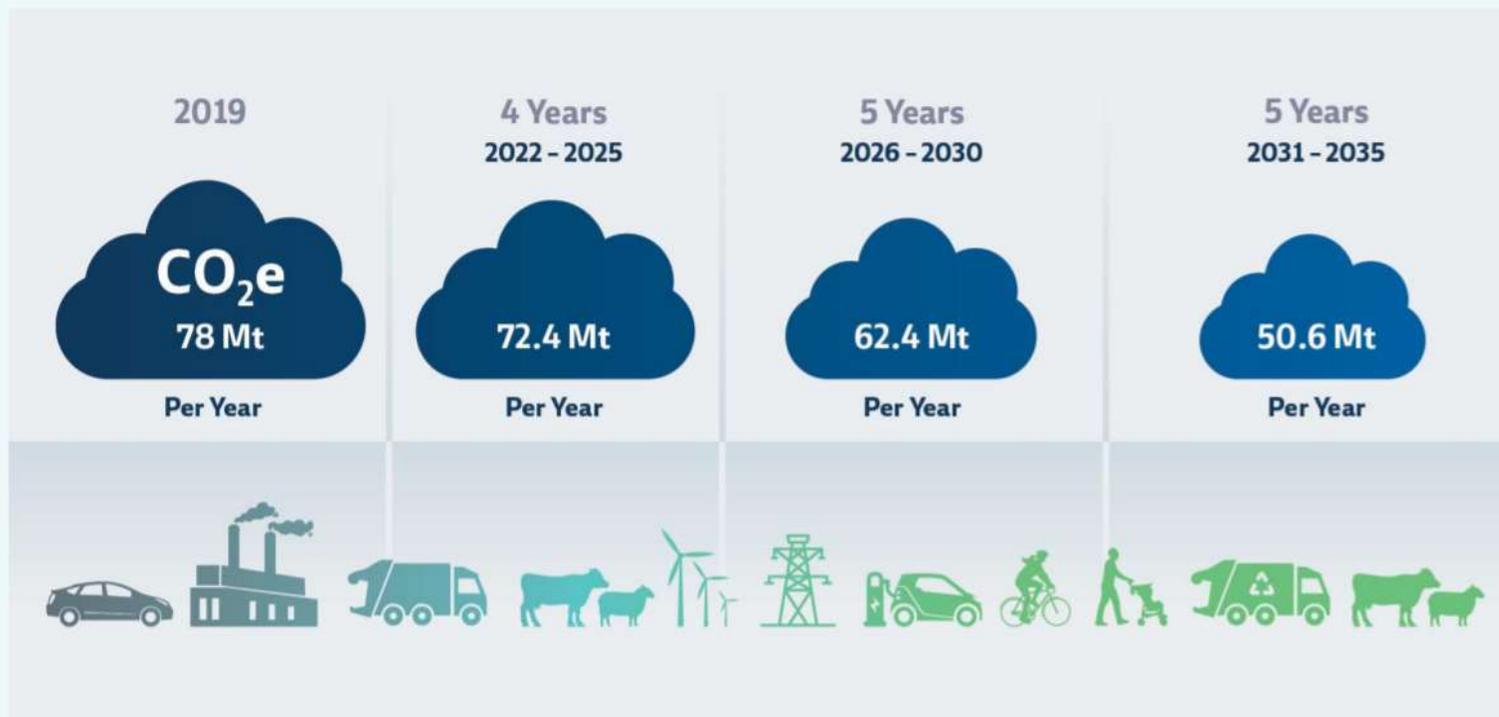


**Ōhaaki**

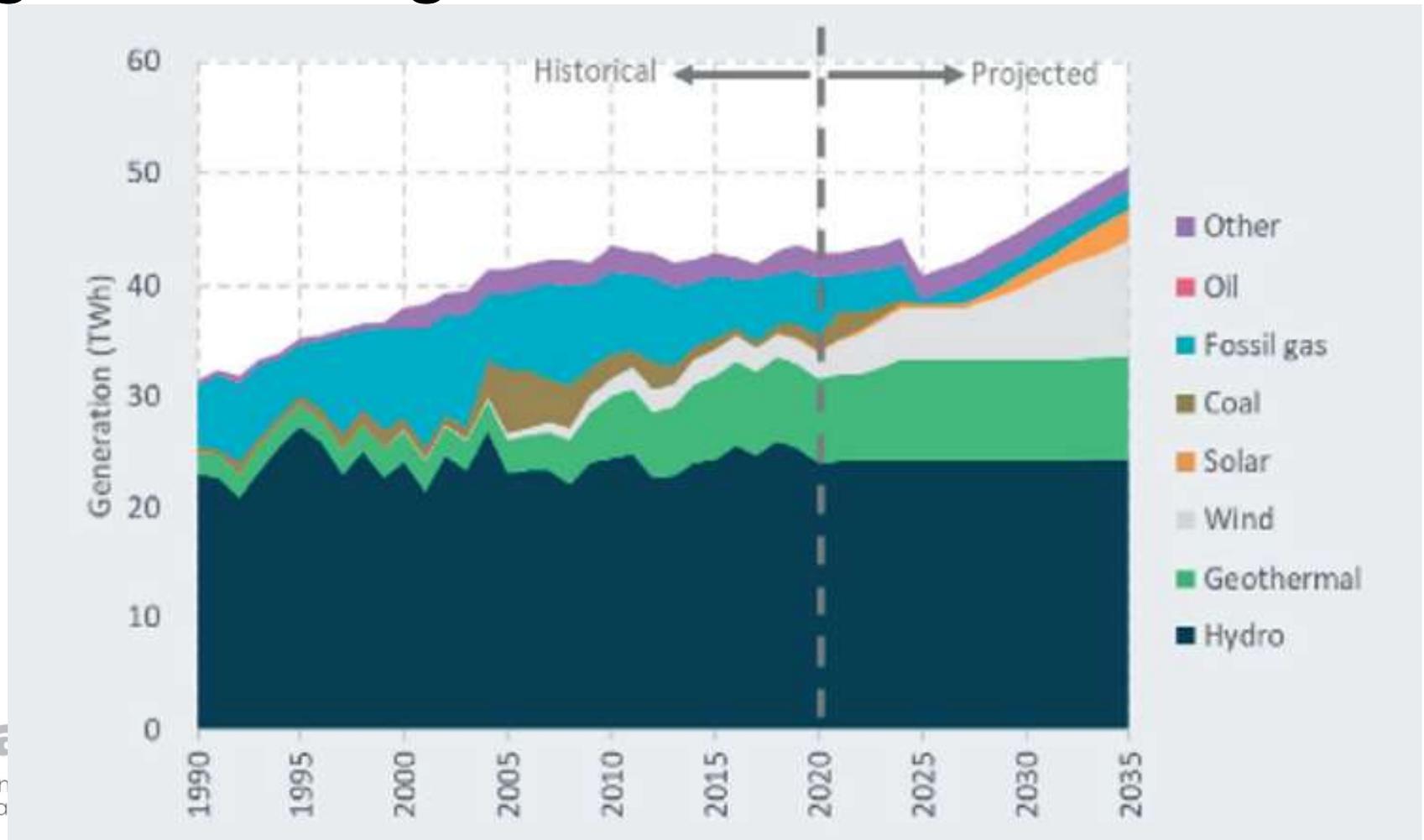


# Final Advice: Ināia tonu nei: a low-emissions future for Aotearoa

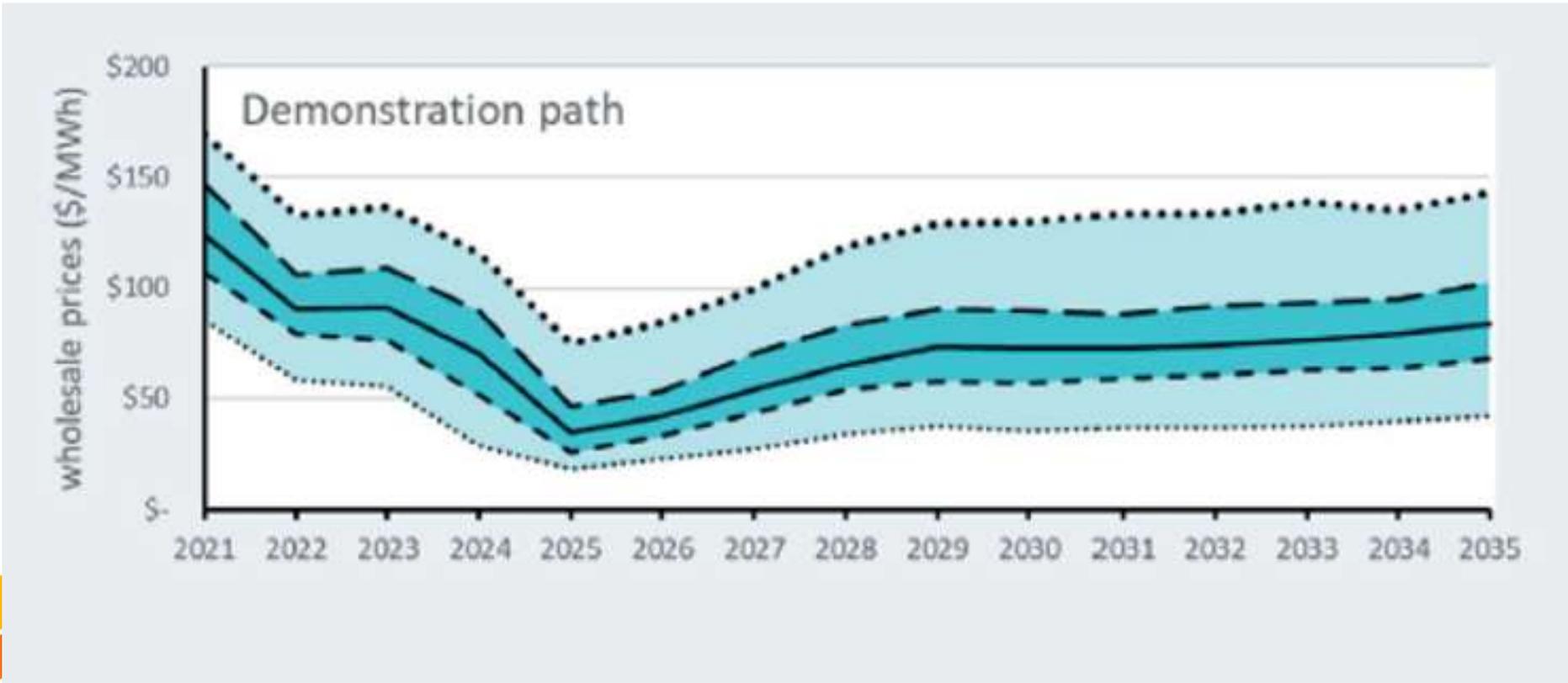
## Our recommended budgets



# Insights into the geothermal sector



# Modelled wholesale electricity prices in real dollars in the demonstration path



# The Final Advice: Ināia tonu nei: a low-emissions future for Aotearoa



## **Closing remarks....**

Me huri ke tātau e hiahia ana kia kitea i te ao.  
We must be the change we wish to see in the world.

Inaia tonu nei – the time is now

Inaia tonu nei – kia whakahekea a Aotearoa Te Hauwaro.

The time is now, a low-emissions future for Aotearoa.

No reira. Tena koutou, tēnā koutou, tēnā koutou katoa. Xie Xie.