

NZ Geothermal Week

1-6 July 2024 | Taupo

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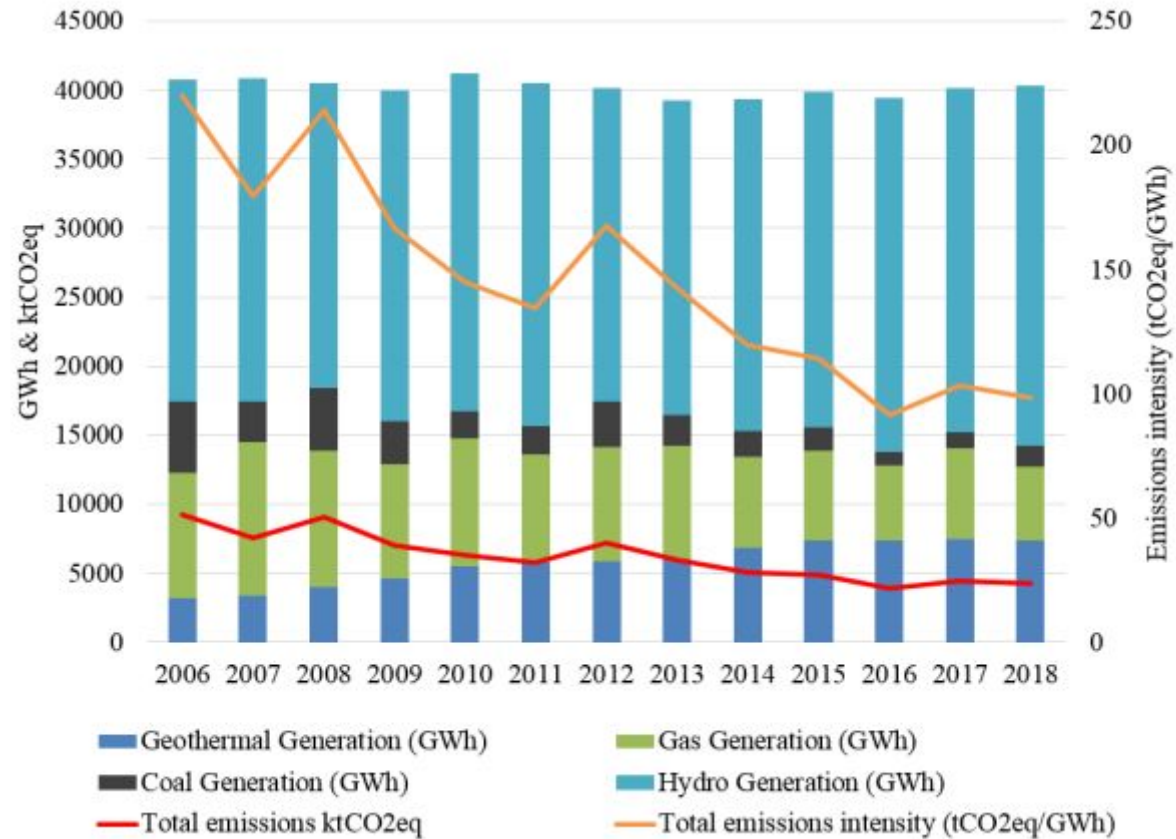
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Geothermal's Impact on Emissions



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Emissions intensity (gCO₂e/kWh)

2023
NZ Geothermal Lifecycle
Emissions Intensity
Compared to
Other Renewables
and Fossil Fuels

Fossil Fuels

980

Coal

670

Gas

OCGT

Gas

CCGT

450

Renewables

NZ Geothermal 2023

Wind
11

Hydro
19

Solar conc
28

Solar PV
44

60

Old Ngawha
10

Wairakei
31

Te Huka
34

Mokai
37

Te Mihi
44

Poihipi
49

Nga Tamariki
53

TOPP1
66

GDL
66

Rotokawa
68

NAP
69

TAOM
71

New Ngawha
105

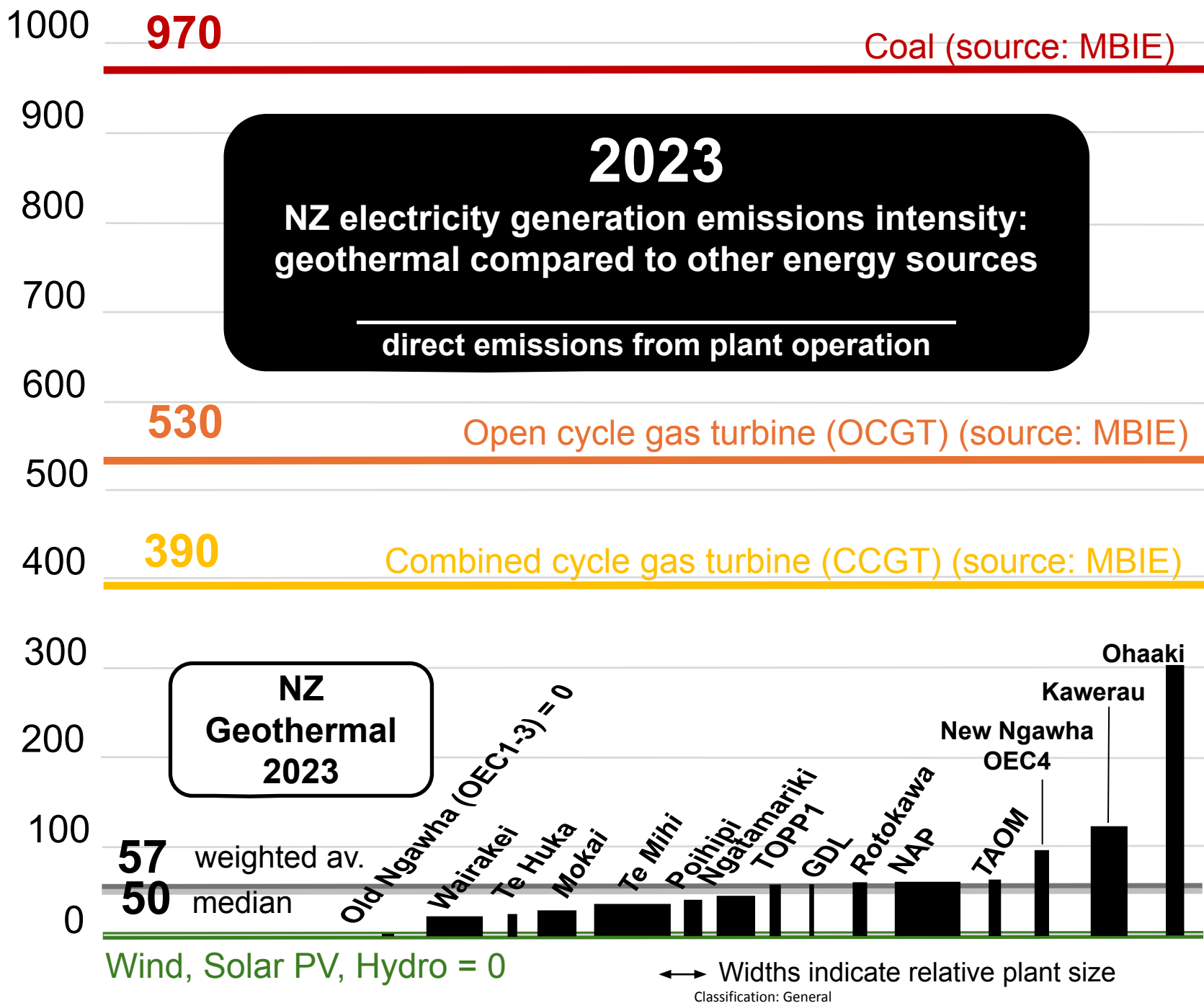
Kawerau
132

Ohaaki
312

Classification: General

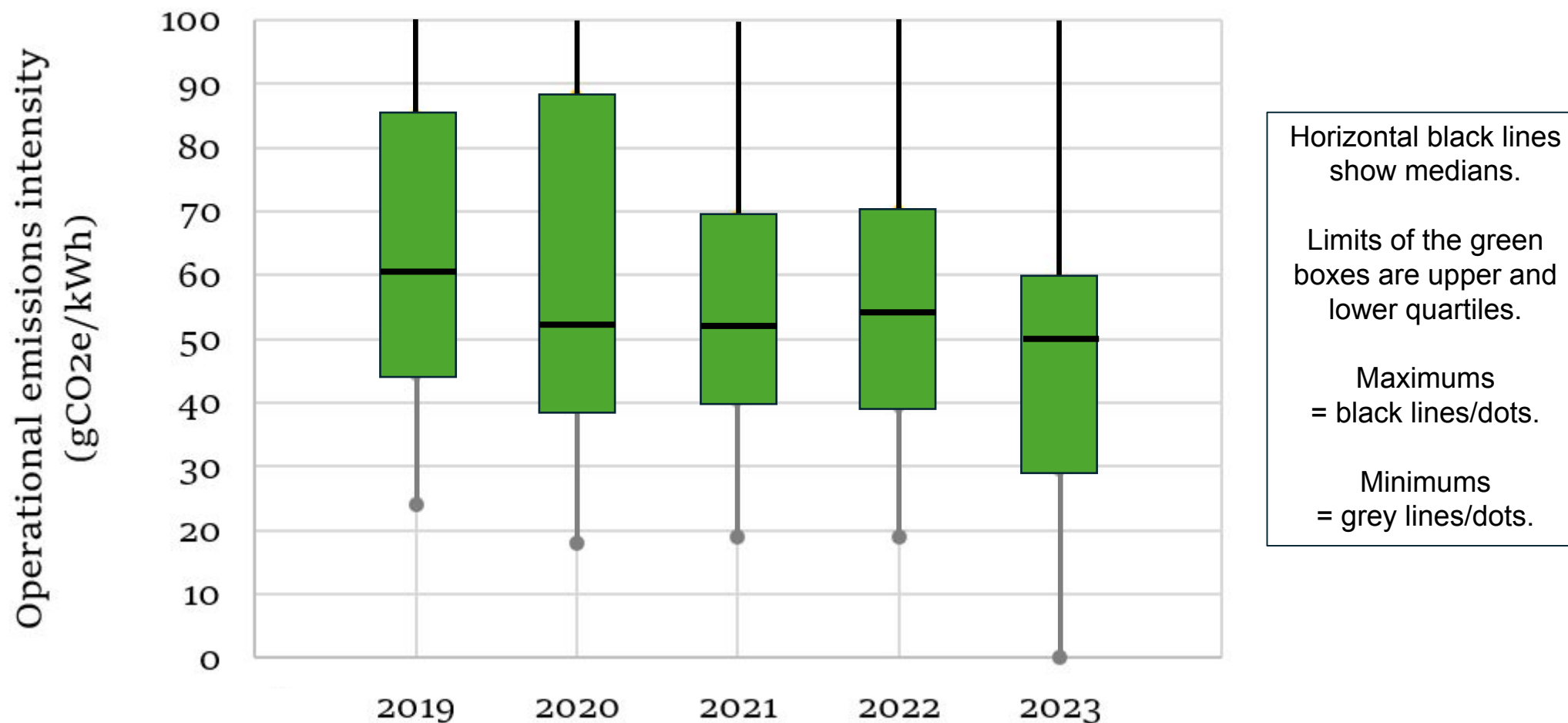
Widths indicate relative plant size

Emissions intensity (gCO₂e/kWh)

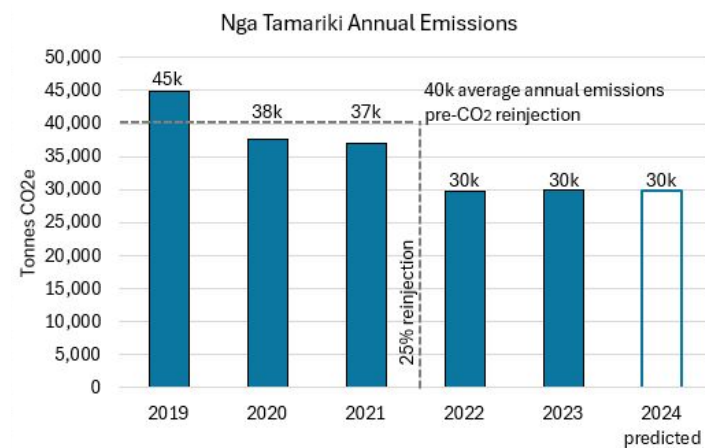
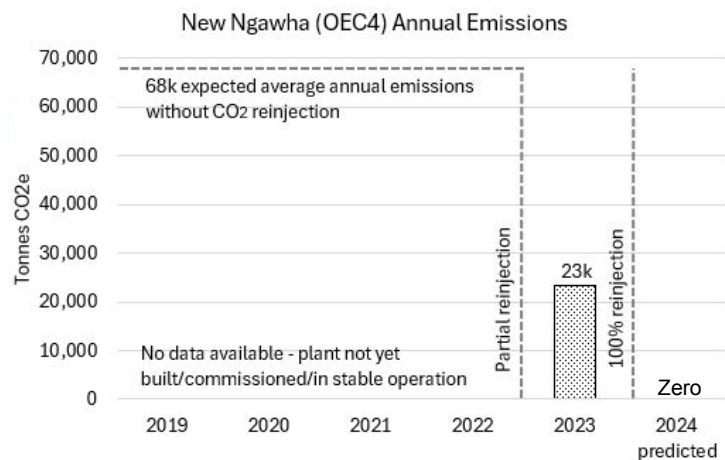
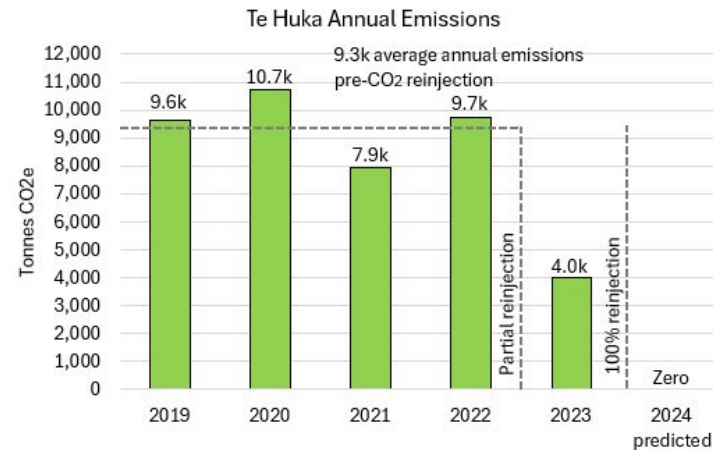
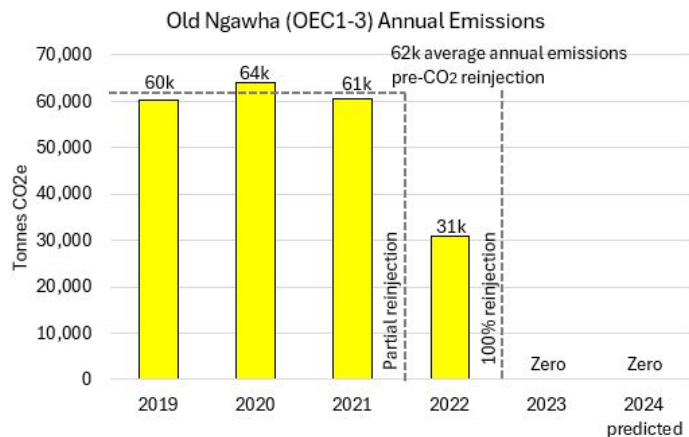


Old Ngawha (OEC1-3)	0
Wairakei A&B and binary	21
Te Huka	24
Mokai	27
Te Mihi	34
Poihipi	39
Ngatamariki	43
TOPP1	56
GDL	56
Rotokawa	58
Nga Awa Purua	59
TAOM	61
New Ngawha (OEC4)	95
Kawerau	122
Ohaaki	302

Operational emissions intensity 2019 - 2023



Actual Emissions



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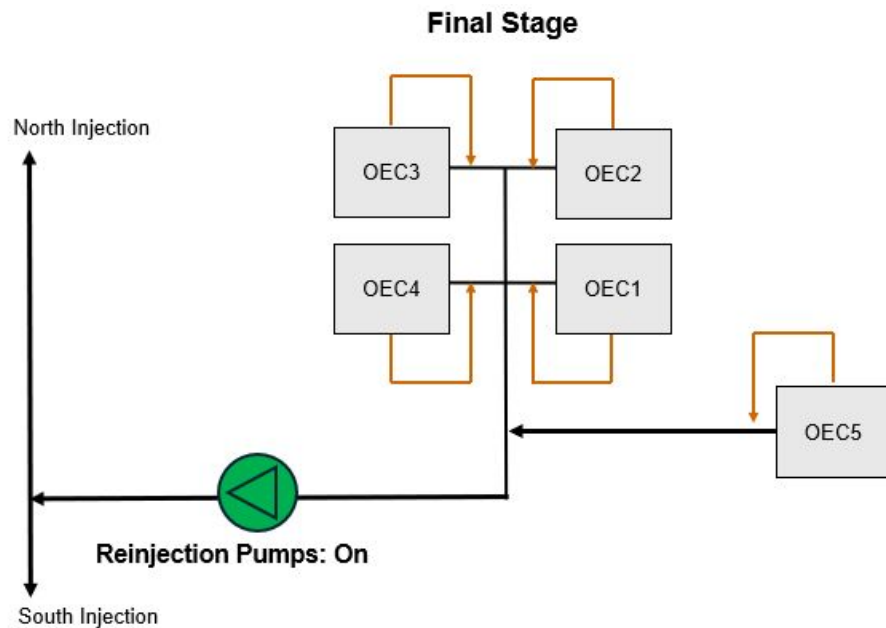




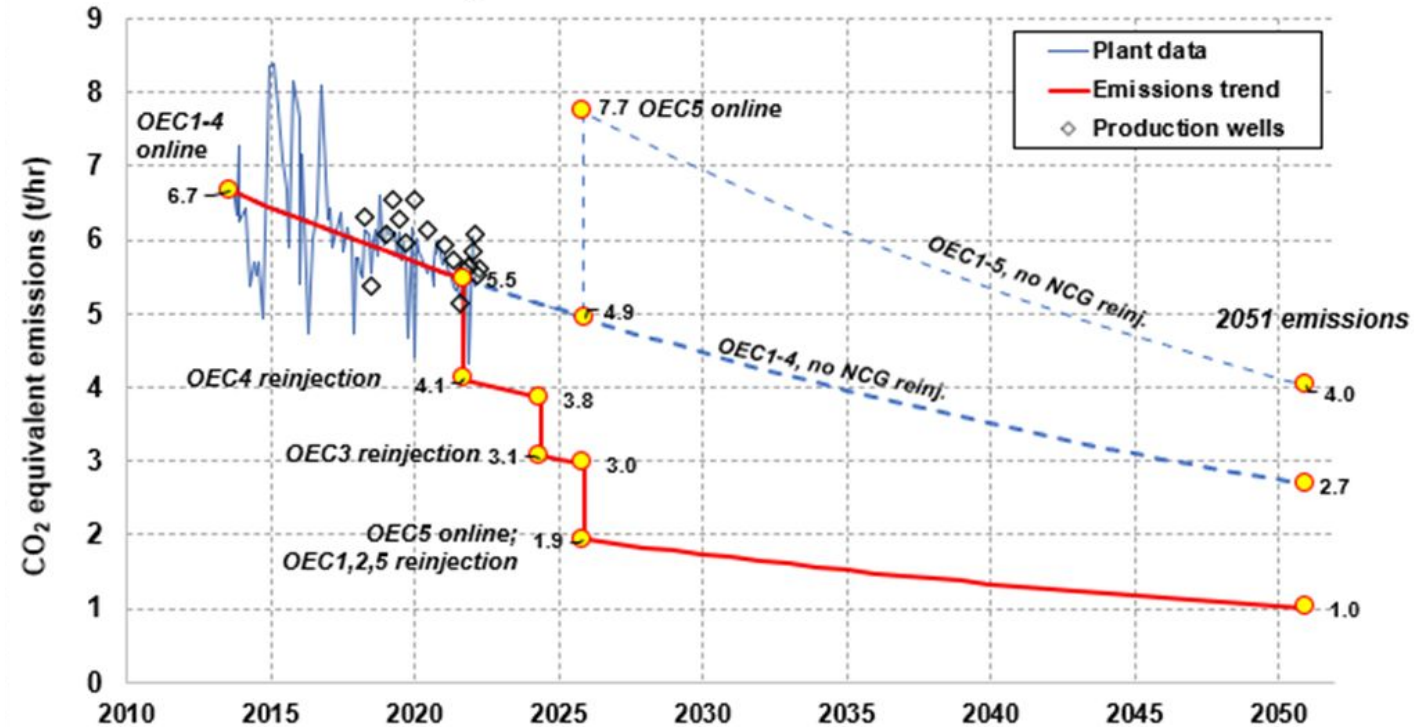
Mercury NZ Update

Expansion at NTM continuing

- Overall NTM reinjection strategy defined. Targeting 80% emission reduction by 2026.



Ngā Tamariki Emissions to 2050



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Mercury NZ Update

Flash Plant Feasibility Study for NCG reinjection on-going

- Leveraging internal capabilities to assess reservoir and plant risks.
- Working with external consultants to investigate O2 removal technologies and compression requirements
- Targeting preferred option selection by end of CY 2024
- Case study: KGL plant in Kawerau



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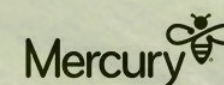
Contact Energy



- Te Huka 1&2
 - Operating as a “zero emission” plant
 - 100% NCG Reinjection – commissioned 2022
 - UEF of zero approved
 - System upgrades undertaken in 2023
- Te Huka 3 power plant commercial operation Q4 2024 – 100% NCG reinjection system designed in with experience from Te Huka 1&2.
- Ohaaki CO₂ Recovery project continuing – preparing for Front End Engineering Design (FEED) stage
- Work is ongoing to address emissions from Contact Energy’s geothermal flash plants with concept design and plant testing continuing

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Ngawha Generation



- NCGR is ongoing across the fleet at NGL.
- Monitoring NCG field recharge rate closely.
- Construction drawings for station two (OEC3) reinjection pumps have been issued and are ready for tender if implementation is needed.
- Future proofed design input for OEC5 Pre-FID and FEED.

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Eastland Generation

- Developing options for reinjection on the Kawerau field
- TAOM and TOPP1 will transition to CO₂ injection in the next 12-18 months, followed by GDL
- The TOPP2 station is under construction and includes CO₂ capture. Working with fuel suppliers, NTGA, to develop injection solutions

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