

CO2 Reinjection and Utilisation

Geothermal Week
July 2023



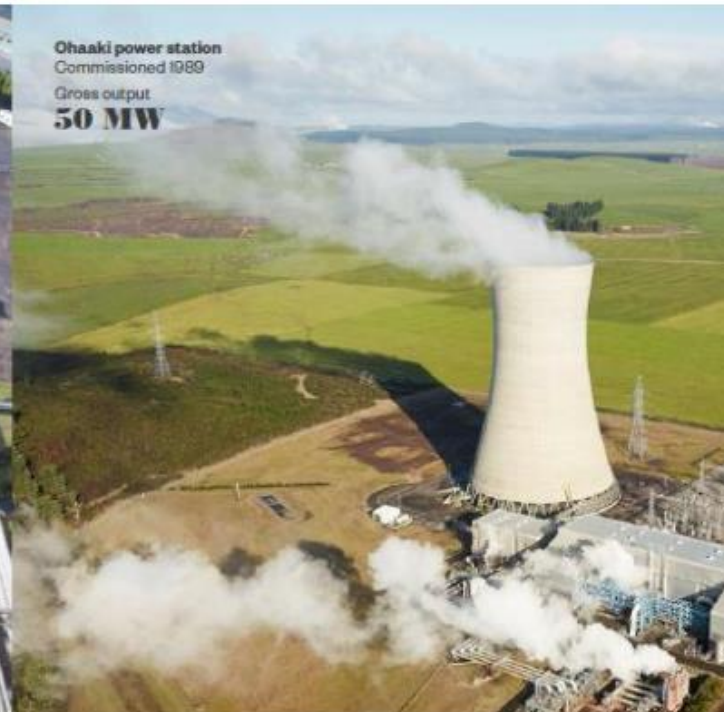
Our
geothermal
power stations

5

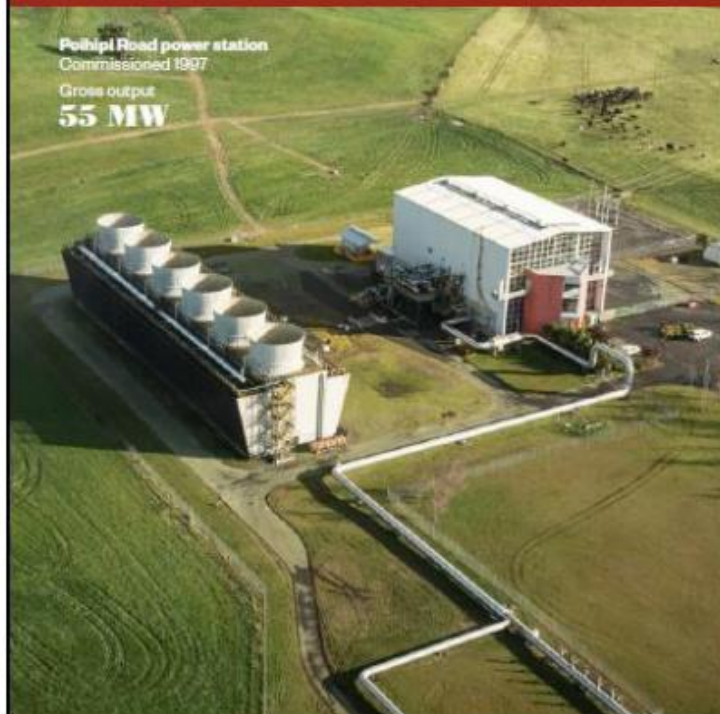
Wairakei power station
Commissioned 1968, and
Wairakei binary plant (2006)
Gross output
132 MW



Ohaaki power station
Commissioned 1989
Gross output
50 MW



Pohihia Road power station
Commissioned 1997
Gross output
55 MW



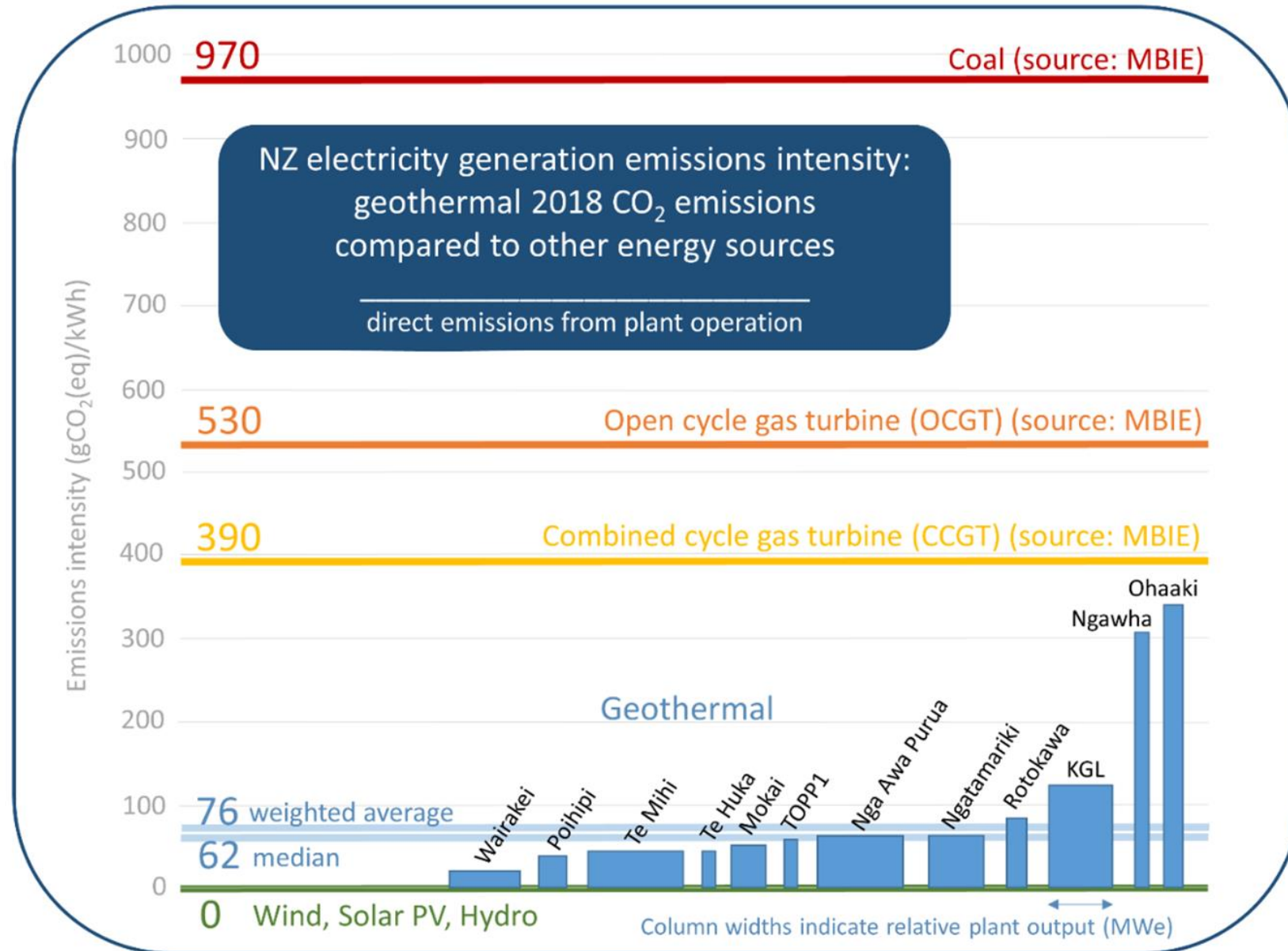
Te Huka power station
Commissioned 2010
Gross output
28 MW



Te Mihi power station
Commissioned 2014
Gross output
166 MW



Geothermal Emissions



Credit: NZGA

Geothermal Emissions Reduction Opportunities

Opportunities to reduce geothermal gas emissions typically fall in to two categories

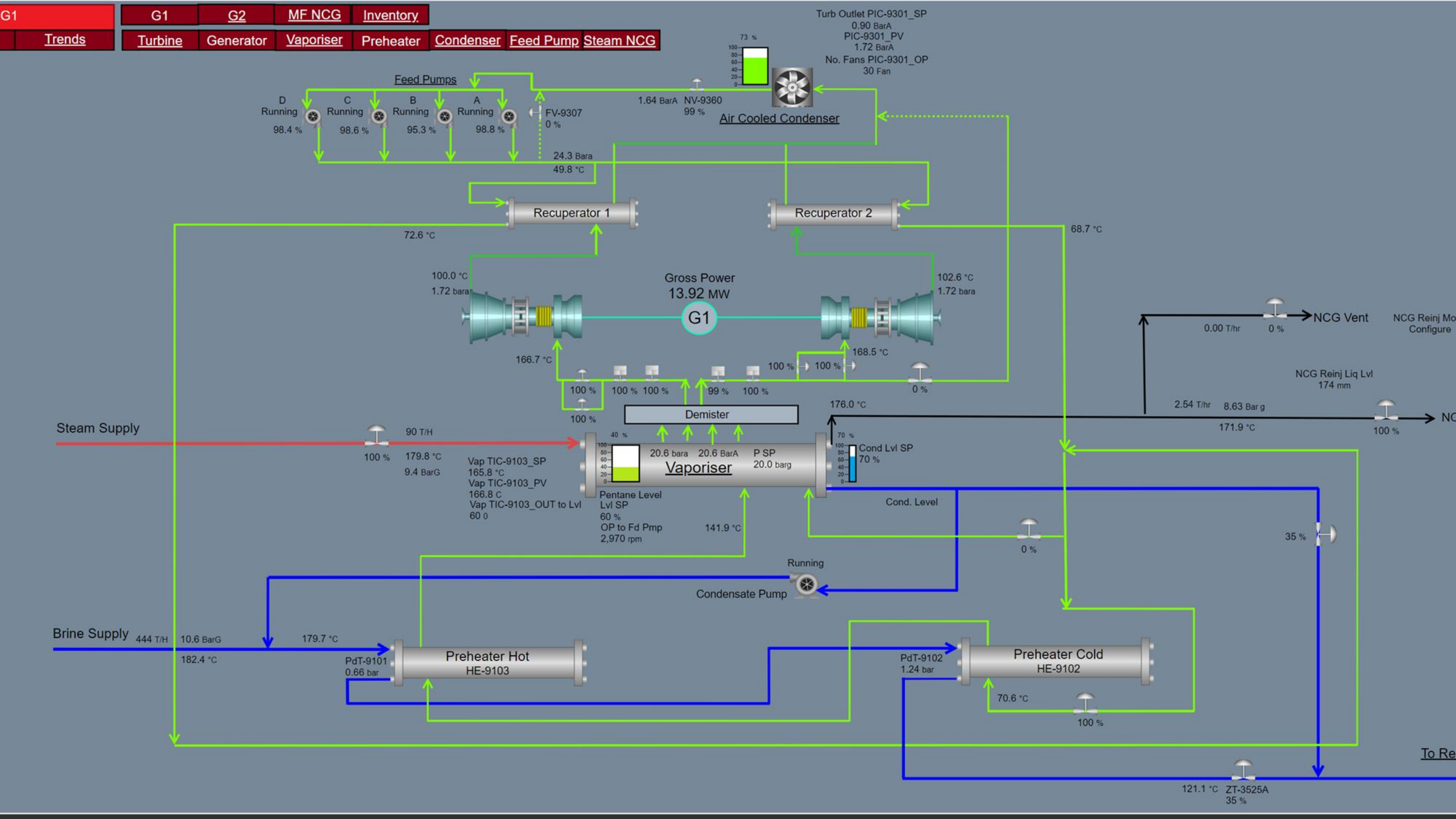
1. Reinjection of the gases into the reservoir
2. Downstream use of the gases

Downstream Use

- Carbon dioxide for:
 - Greenhouses
 - Beverage/food grade production
 - Industrial use
 - Synthetic fuels



Problem: Other gases – H_2S , Hg, CH_4 etc





Project Benefits (so far)



Reduced greenhouse gas emissions



Reduced H₂S Emissions (Odour)



Reduced Noise

Geothermal CO₂ capture will evolve baseload renewable generation from low- to no-carbon



After a successful trial at Te Huka, we're now developing a pathway to apply carbon capture technology across existing and planned plants

Successful CO₂ capture trial at Te Huka

Two units at Te Huka together generate around 24MW.

Fully functioning CO₂ (NCG) reinjection system now operational on both plants.

Currently capturing and reinjecting ~10k tCO₂e of emissions p.a. and dissolving into water that is then reinjected in the reservoir.



Emissions across Contact's current geothermal portfolio (FY22)

tCO₂e | gCO₂/KWh

Ohaaki ▷ 85k | 266

Te Mihi ▷ 55k | 40

Poihipi ▷ 13k | 38

Te Huka ▷ 10k | 53

Wairakei ▷ 19k | 18
(To be replaced)

Under construction

Tauhara ▷ ~80k | ~50

Te Huka 3 ▷ ~13k | ~30

Te Huka 3



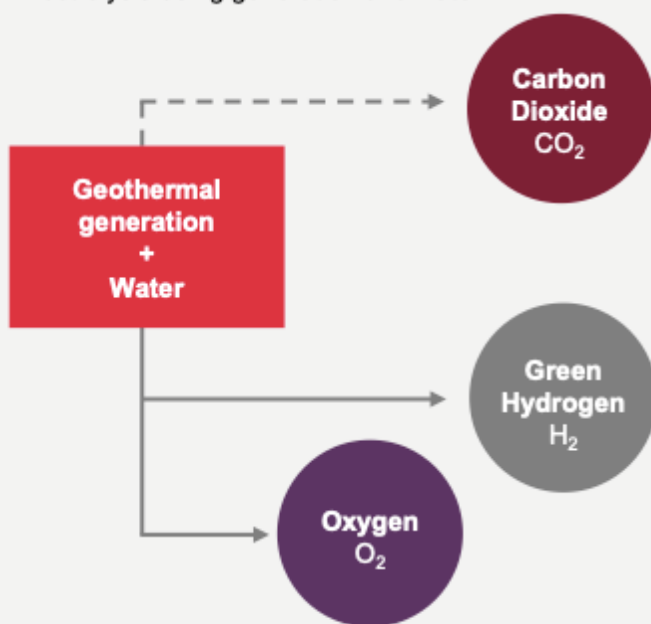
Green chemical pathway at geothermal



Opportunities from our success in geothermal carbon capture include the purification and sale of industrial grade CO₂ (Horizon I) and subsequent eFuel applications (Horizon II)

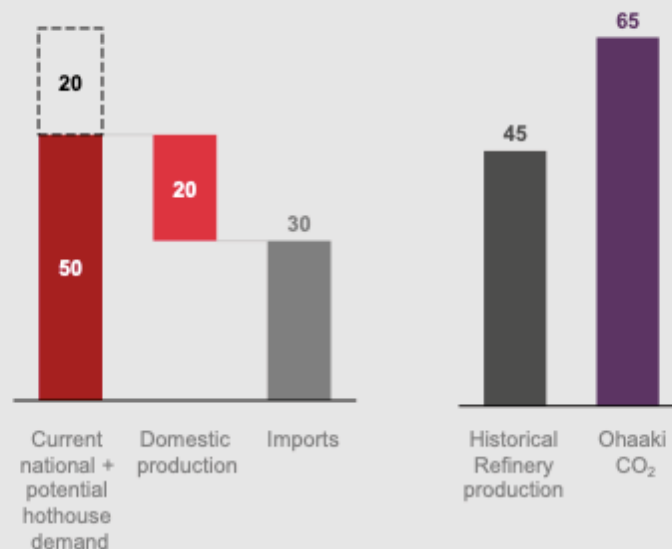
Inputs and outputs

Electrolysis using generation and water



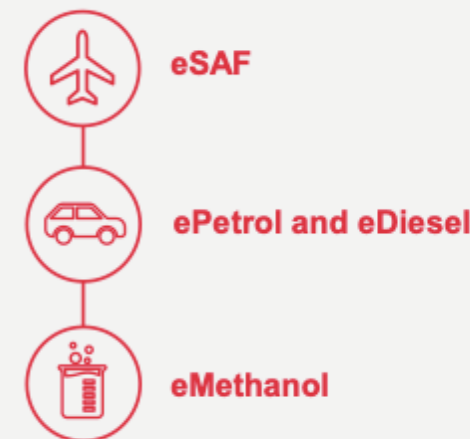
Horizon I: Industrial grade CO₂

Estimated volumes, ktpa



Horizon II: eFuels

Possible options from CO₂ and green hydrogen



Thank you

