

Gas Matters

Presentation to University of Auckland
Energy Centre Summer School

Nick Hannan, Chair, GasNZ

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 **GASNZ**

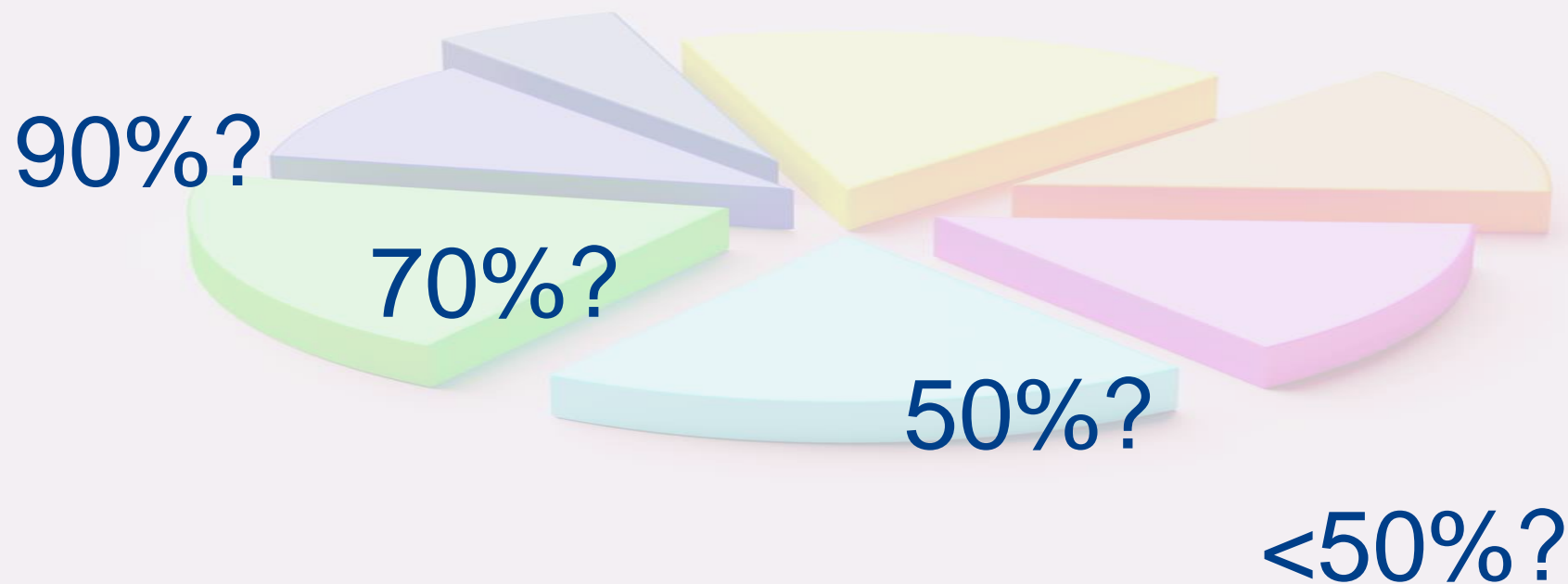
Today's discussion

- The role of gas today
- Gas supply/demand projections
- Opportunity for renewable gas
- GasNZ and its role
- Summary: Gas Matters!



First, a question...

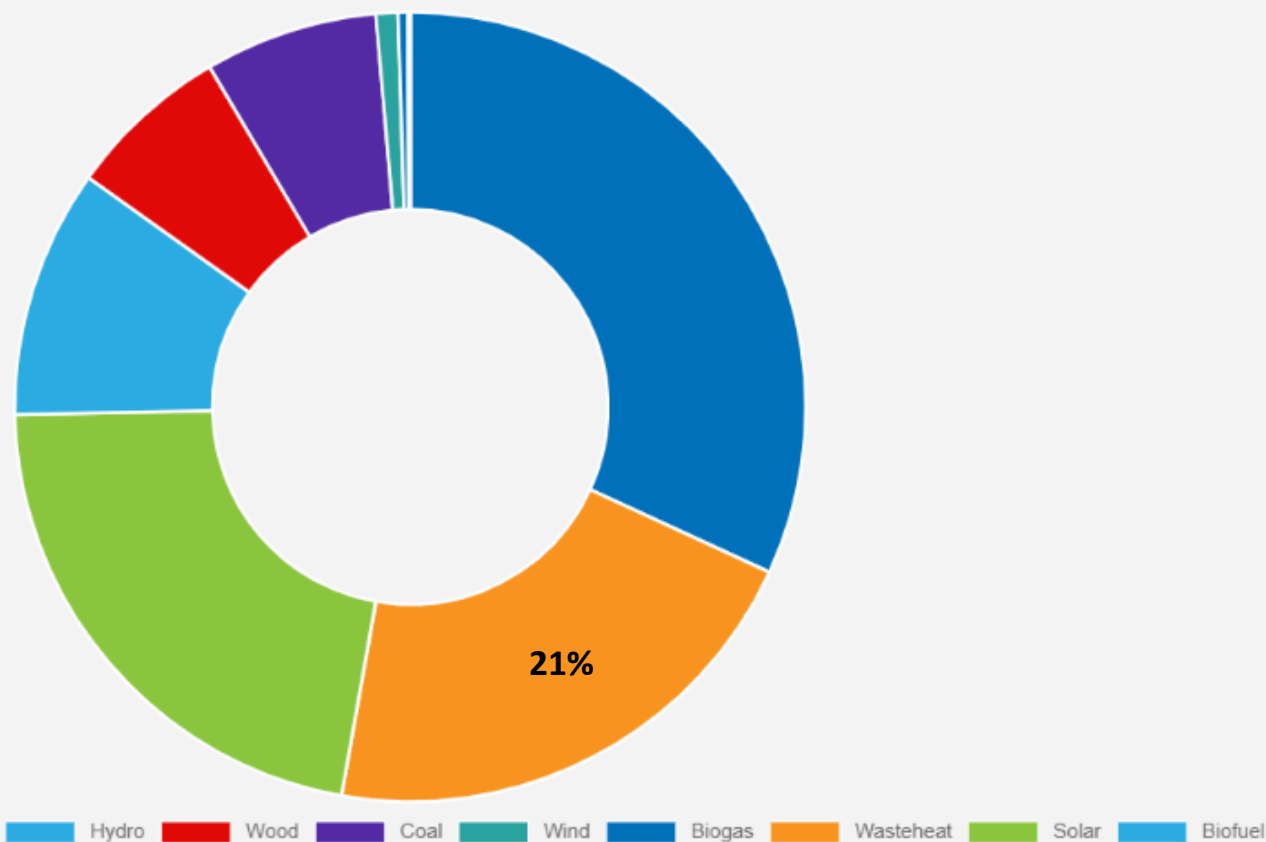
How much of New Zealand's total energy consumption is currently delivered from renewable sources?



Total energy consumption

Right now, 60% of our energy supply comes from oil, gas and coal. Renewable energy sources supply 40% of our energy needs.

This is one of the highest proportions of renewable energy in the world.



Source: Energy Resources Aotearoa (ERA)

The conundrum: Gas is critical now but it's a fossil fuel

- Currently oil, gas and coal provide 60% of New Zealand's energy needs
- Gas is a critical fuel source for:
 - Electricity generation
 - Process heat for industry
 - Residential consumption (cooking, heating, hot water, BBQ)
 - Remote areas (LPG) as a backup to electricity when power fails – disaster recovery



Gas in electricity generation

In 2022, the total electricity generated came from:

- Hydroelectric – 60%
 - Geothermal – 18%
 - Natural gas – 10%
 - Wind – 6.5%
 - Coal – 2.9%
 - Solar - <1.0%
-
- 30 percent of natural gas produced in NZ is used for electricity generation
 - Due to the ability of open cycle gas turbines to rapidly ramp up or down, gas can play a crucial buffering role, backing up intermittent renewable sources of electricity such as wind and solar.

(GIC report)

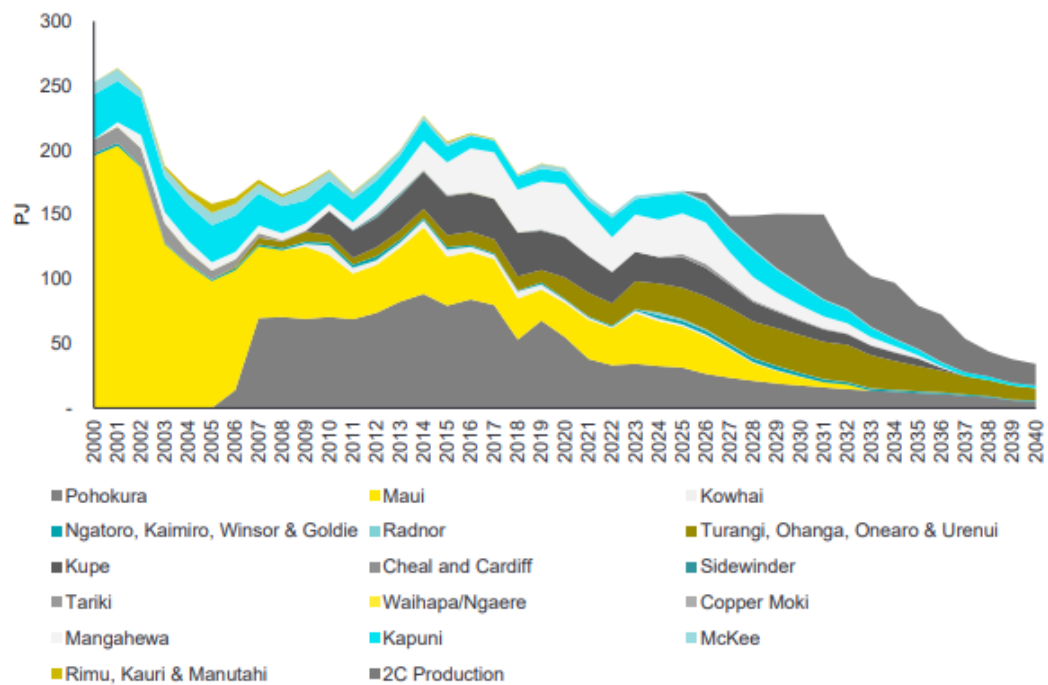


Government needs to support gas supply to facilitate the pathway to electrification

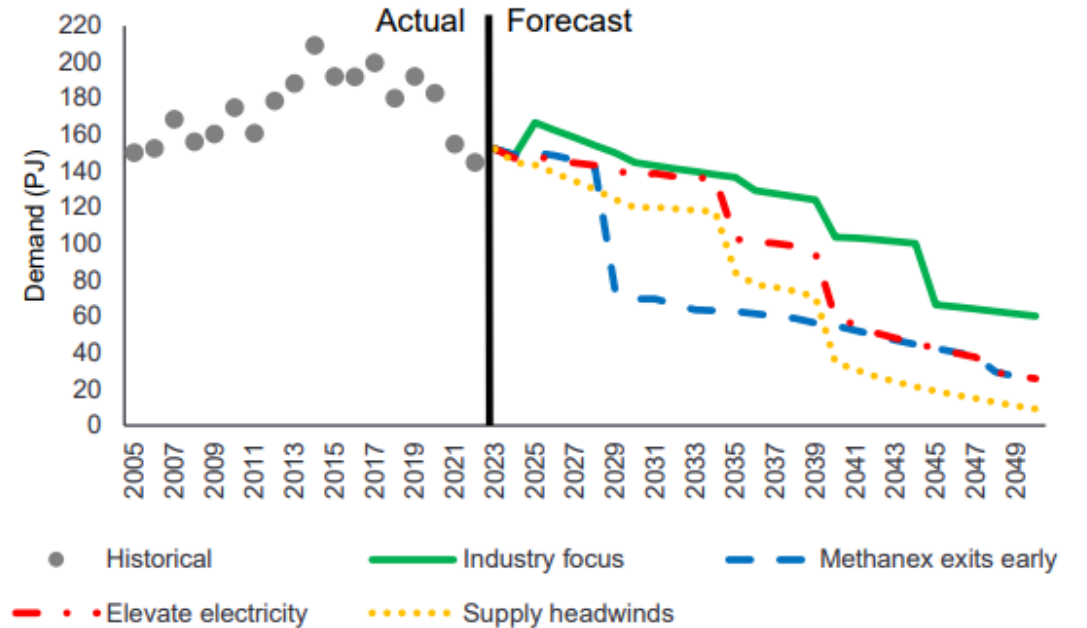
Forecast gas supply and demand

Potential shortfalls in supply after 2026

Forecast supply unconstrained*



Forecast demand scenarios



*2C= not currently commercial



MBIE advice to incoming Minister for Energy

As part of the energy system, gas is vital to our energy security in the short to medium term and is likely to have a part to play in the longer term depending on future technology solutions.

It is also likely to remain central to industrial and commercial activities, such as generating high temperature process heat and as a chemical feedstock.

In addition, if there is not a clear future pathway forward for the gas sector there will be a further eroding of investor confidence. This could give rise to a risk that producers do not have the commercial confidence to make necessary investments and the real risk of an unplanned and abrupt loss of reliable gas supply.

Source: MBIE briefing for incoming Minister of Energy Nov 23





Minister Jones:

“There’s been a fairytale conception that by 2030, we’re not going to need coal or gas...”

“It’s my view that we’re going to need gas till 2050. We’re always going to have to rely upon a contingency backup.

“The last Government was not honest about that. If you’ve got any doubts about that, read the report issued by the gas company, chaired by Jim Bolger.”

Source: Min. Jones interview with Energy News Feb 24



The renewable gas opportunity

**A NEW KINDA GAS.
KINDER TO THE PLANET.**



Renewable gas opportunity

While natural gas supply is the critical concern in the medium term, work needs to continue to transition towards emissions reduction facilitated by renewable gas. Several potential products:

- Renewable “green” hydrogen
- Biogas
- Renewable natural gas
- Renewable LPG (rLPG)
- Renewable DME (rDME)



Renewable hydrogen

Produced using renewable electricity by separating hydrogen from water.

(Sometimes referred to as green hydrogen.)

It is possible that hydrogen gas could be used much the same way that current gas is used in homes today.

Hydrogen can also be converted back to electricity using a fuel cell.



Biogas

Biogas is naturally produced from the decomposition of organic waste during anaerobic digestion.

When biogas is processed to regulatory pipeline standards, it is considered renewable natural gas.



Renewable natural gas

Renewable natural gas is methane produced from renewable sources like digested organic waste and gasified biomass.

It has the same chemical make up as the methane in fossil-sourced natural gas and is also known as biomethane.

It is a cleaner version of biogas – produced by further processing or “scrubbing” of biogas.



Renewable LPG (rLPG)

rLPG is created from renewable and waste materials.

The feedstocks undergo a series of sophisticated treatments to purify their energy content.

It is chemically identical to conventional LPG and is transported and stored in the same tanks and used for the same applications and equipment – making the transition from LPG to rLPG seamless.



Renewable DME (rDME)

Renewable DME is dimethyl ether, a clean, colourless gas that is produced from renewable or recycled carbon feedstocks, such as manure.

rDME is easy to liquefy and transport and can be used as a replacement for, or blended with, LPG.



Renewable gases are already in wide use internationally

- **Germany** has over 9,500 biogas plants, producing 300 PJ biogas annually
- **United States** has over 2200 biogas plants producing 163 PJ biogas annually
- **Denmark** has replaced nearly 40 percent of natural gas supply with biogas generated from organic waste and have plans to get this to 100 percent by 2034
- **Sweden** is investing heavily in new biogas plants – projecting to increase production from 7.3 PJ (2021) to 25 PJ using farm manure as the main feedstock
- **Australia** has approx 250 biogas plants and produces 16 PJ of biogas annually – 75% of which comes from landfill capture
- **China:** In 2023 more than 40 million rural Chinese households use biogas digesters



Renewable gas activity – “ready now” technology

- Ecogas is working with Firstgas (now Clarus) to inject biomethane from its Reporoa organic waste plant into the gas grid in 2024
- Elgas is piloting an rDME/LPG blend with a major customer in forklifts, and has been using DME/LPG blend in its own forklifts successfully



Realising the renewable gas opportunity in New Zealand

- Requires policy, regulatory and market-based incentives including potentially:
 - feed-in tariffs
 - investment grants
 - organic waste disposal restrictions/higher levies
 - tradeable renewable gas certificates
- Economic incentives and signals could be required to ‘level-the-playing field’ with non-renewable fuel energy sources and encourage investment.



GasNZ and the gas sector

GasNZ supports members through the transition by:

- *Being the sector wide voice of gas for today and tomorrow.*
- *Enabling safe practices, policies and regulations for natural gas, LPG and renewable gases.*

[Gas New Zealand - Renewable Gases are part of our future \(gasnz.org.nz\)](http://gasnz.org.nz)

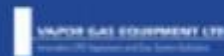
Gas producers



Gas distribution owners, gas wholesalers and gas retailers



Gas network contractors and transporters



To summarise – Gas Matters!

- The New Zealand gas sector is transitioning towards a low carbon future, and while gas is currently critical to New Zealand's energy system, gas itself is a fuel in transition.
- Decarbonisation is not just about electrification. There are benefits in a diversified energy system, and giving consumers energy choices.
- There is very real potential for renewable gas to be introduced in New Zealand, and GasNZ is focused on making this happen.





NGĀ MIHI THANK YOU

 GASNZ