LNG for NZ ?
The global context

Steve Goldthorpe BSc,

The Sustainable Energy Forum of Aotearoa

invited by Climate Justice Taranaki and Taranaki Energy Watch

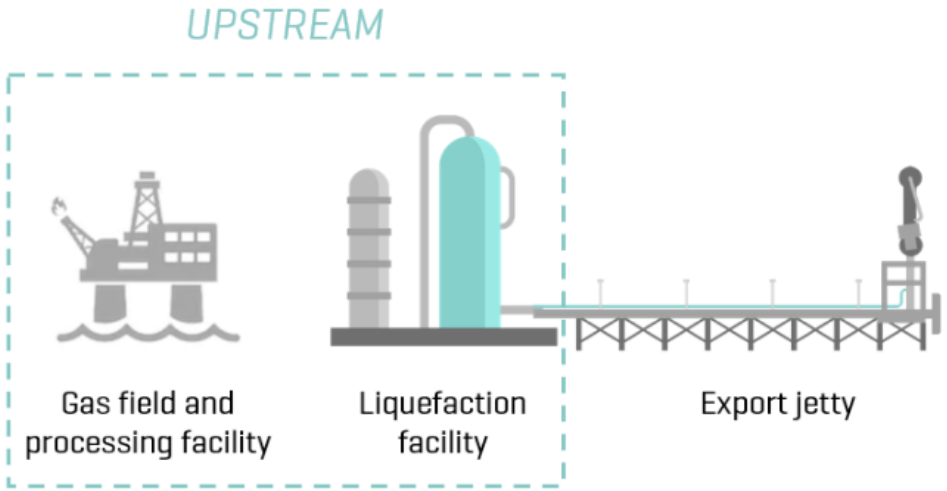
to LNG public meeting in New Plymouth - 9th July 2026

LNG - the global context

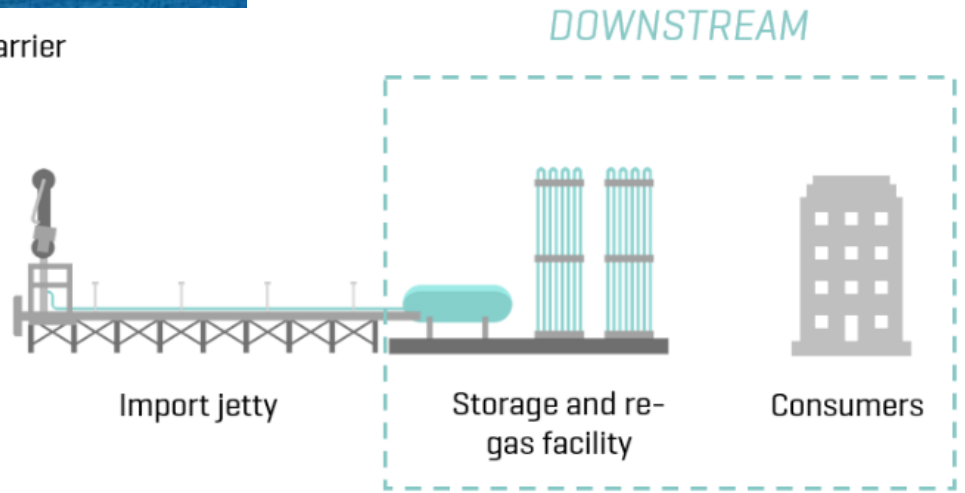
- LNG is traded internationally from countries with surplus gas to countries with declining indigenous natural gas resources or rapid growth.
- The technical challenges of shipping and holding LNG
- The high greenhouse gas footprint of LNG sourced from US gas that is produced with fracking
- The volatile price of LNG on the international market
- The role of gas for power generation in NZ
- The suitability of Port Taranaki for LNG carriers

The LNG value chain

for moving natural gas long distances between countries where pipelining is impractical

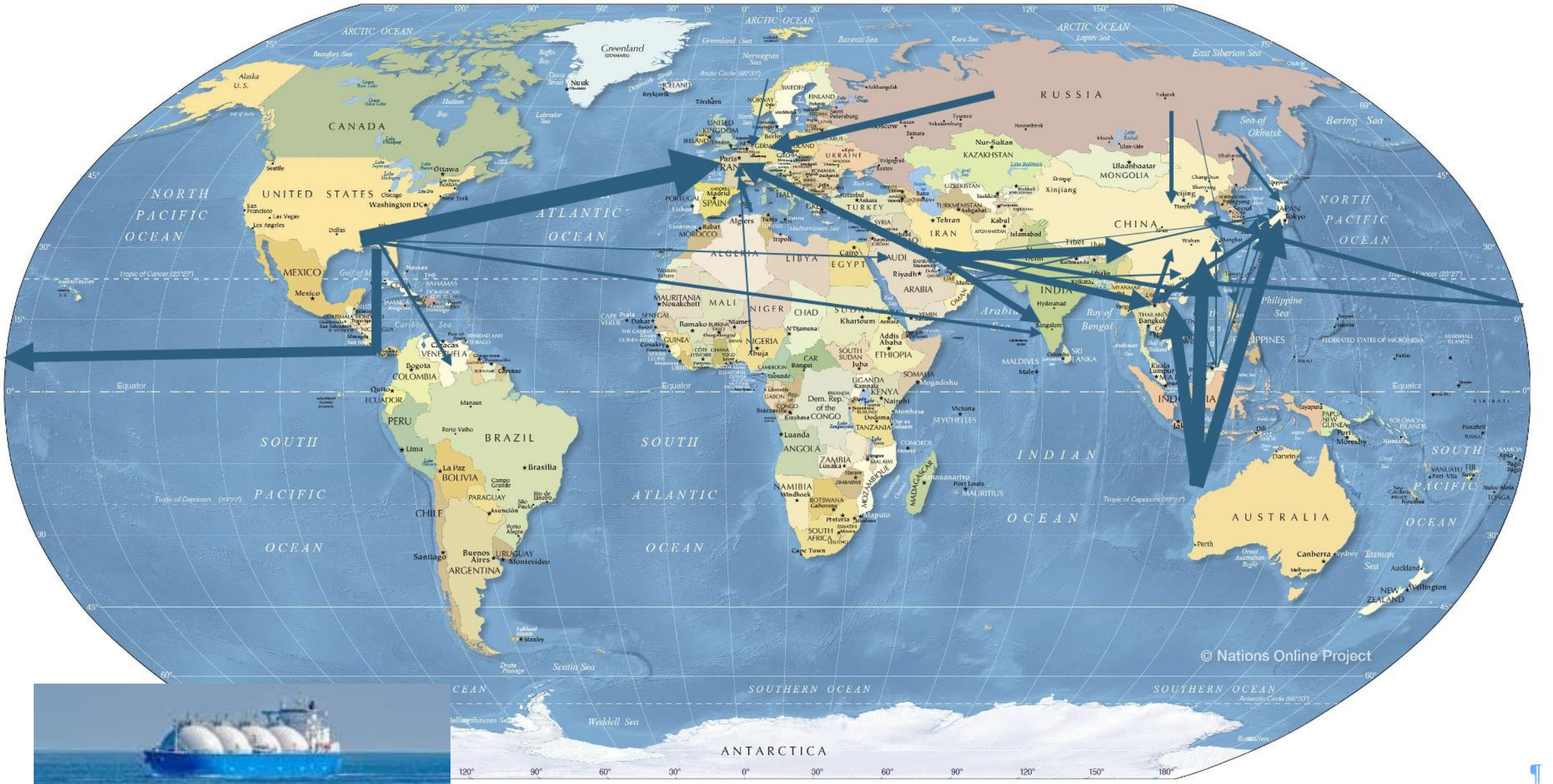


Natural gas is transported as a bulk liquid at -162°C



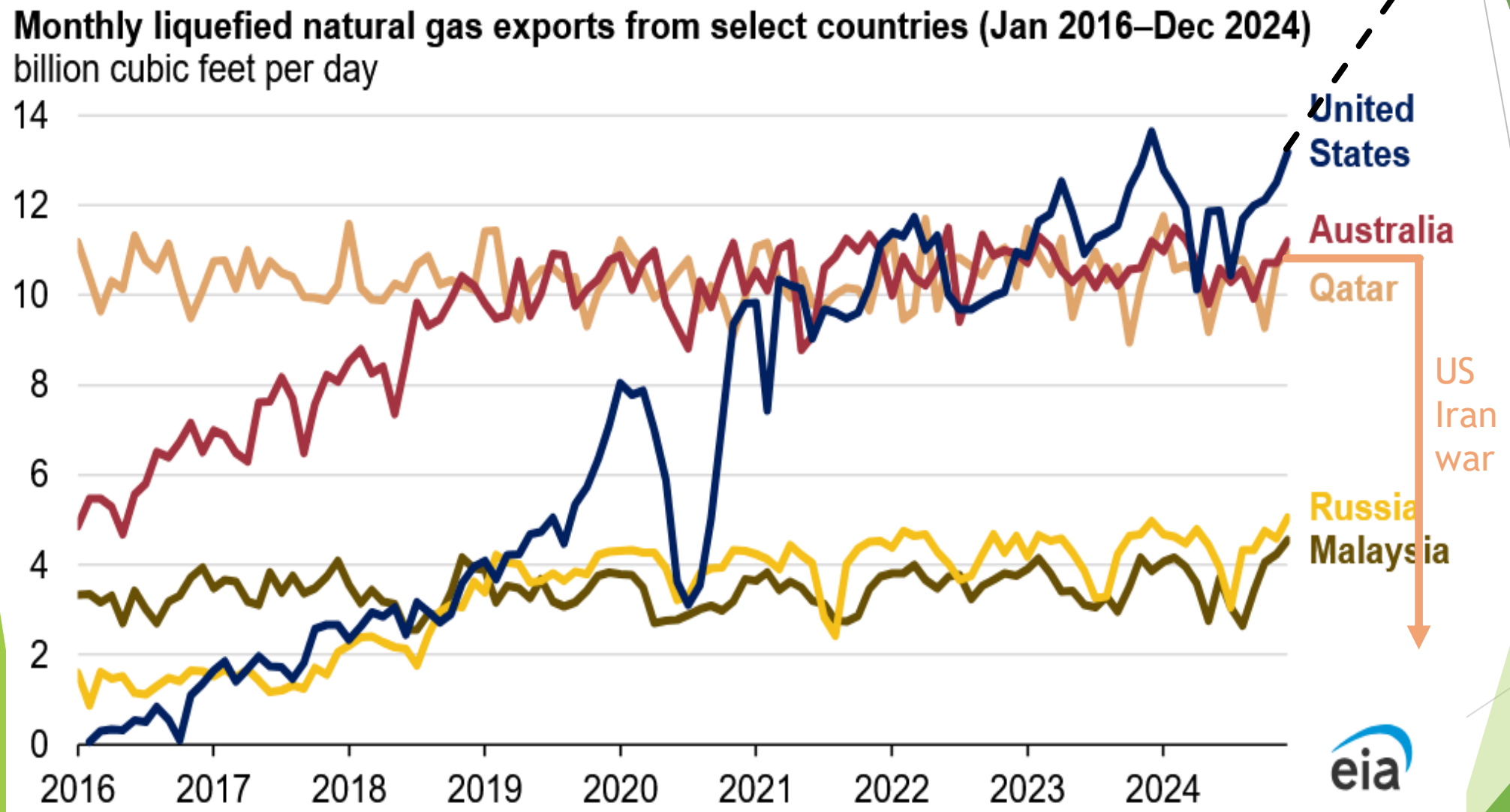
Main International LNG trades in 2024

Line widths: 1pt = 4 million tonnes LNG per year



Source World bank WITS database

History of major LNG Exports



US April 2026
Reuters

Source - https://www.eia.gov/todayinenergy/images/2025.03.27/main.svg

Natural gas management strategies as indigenous supplies naturally decline

- **Business as Usual**
  - Maintain supplies by importing expensive LNG from the international market (e.g. Japan, Korea, China, Europe) – Proposed for NZ.
- **Enhance indigenous production**
  - Additional drilling and fracking of aging gas fields (e.g. USA)
  - Prospecting for new oil fields.
- **Avoid dependence**
  - During the gas boom export gas as LNG instead of building gas consuming industries (e.g. Australia)
- **Manage demand reduction**
  - Phase out gas-based industries. Generate electricity from other energy sources. Make gas from biomass.
  - Is this a better strategy for New Zealand ?

The technical challenges of LNG

- Natural gas must be frozen to -162^{o}C to condense it to a liquid.
- LNG is six times colder than the contents of a home deep freeze.
- LNG must be held in highly insulated containers like liquid nitrogen.
- 0.1% to 0.15% per day typically boils off stored LNG. This gas can be used as fuel for the LNG carrier during the voyage.
- In storage, provision must be made for utilization of boil off gas.
- LNG is hazardous. The danger is generally managed with intrinsically safe exclusion zones around LNG operations.
- LNG production plants and carriers are complex and vulnerable to attack.

LNG – personal experience in Norway

Large battery packs

Four hours' sailing with zero emissions

Energy-efficient hull design

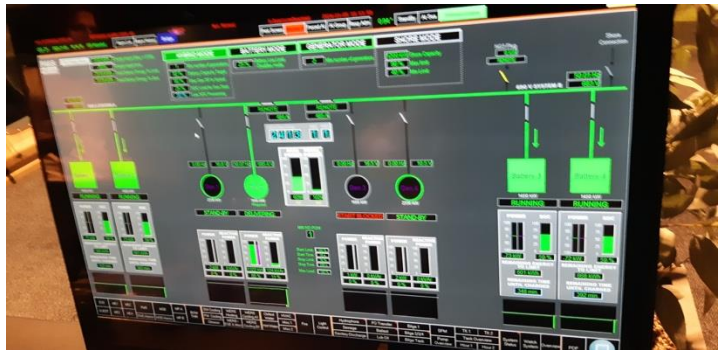
Locally sourced ingredients

Heat recovery from the sea and cooling water

Charging current from hydropower at the quay

Liquid natural gas that cuts Co_2 emissions by 35 %

NOx emissions reduced by 90%

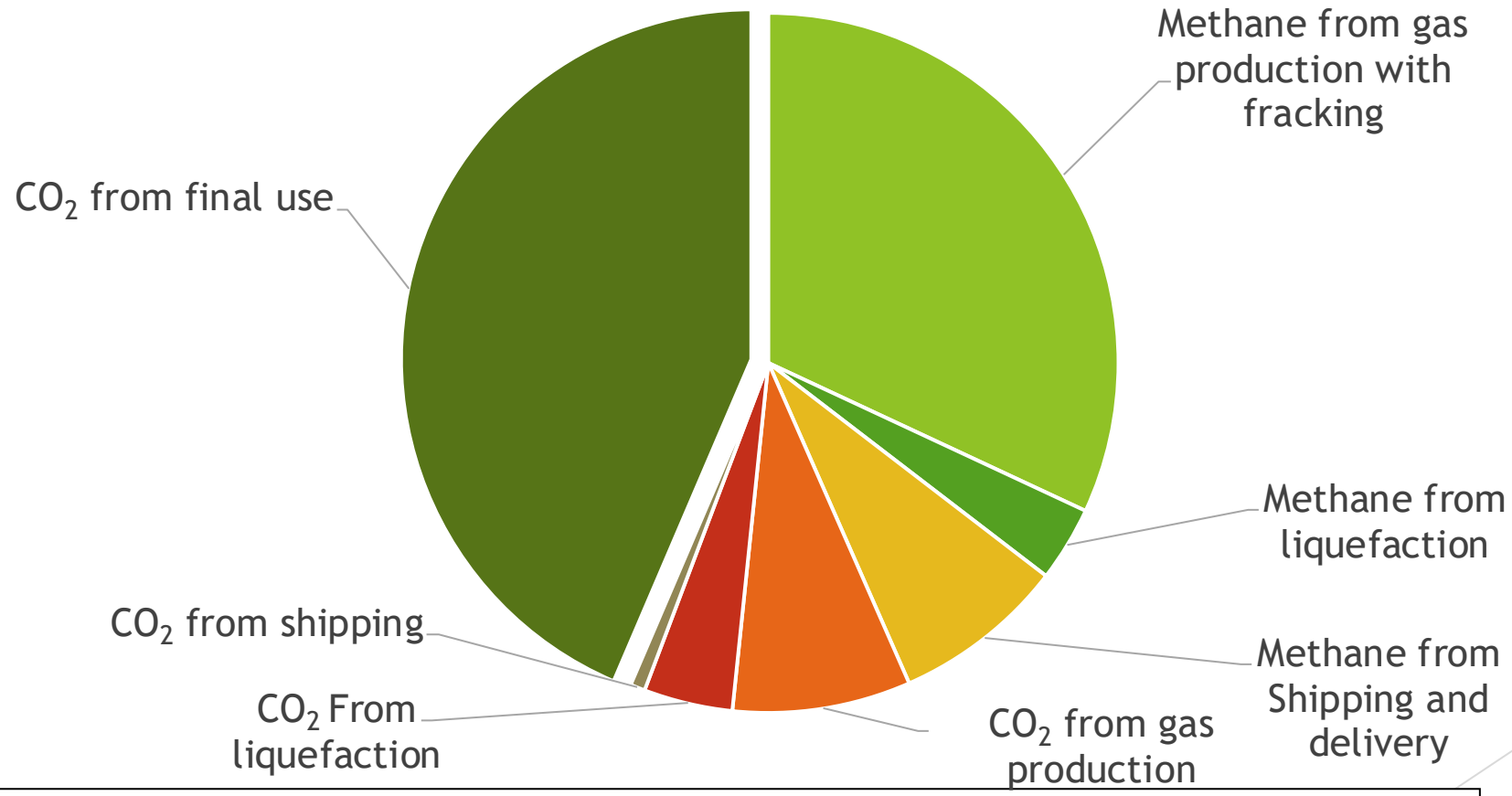


It took 4 hours to unload 2 trucks of LNG


Everett Marine Terminal, Boston Mass. built in 1971
Write a description for your map.
Legend
© 2026 Google
Google Earth
© 2026 Google
2.17 m

How much greenhouse gas is emitted from US LNG production and delivery?

Source: - Prof. Bob Howarth, Cornell University, USA



CO_2-eq emissions from fracking and LNG production - N.B. 20-year GWP

Comparison with US LNG prices

NZ LNG Import Feasibility Assessment – First Gas Ltd – June 2025

https://www.eia.gov/dnav/ng/hist/n9133us3m.htm

LNG Japan/Korea Marker PLATTS Future (JKMc1) - @ Investing .com

NZ LNG Import Feasibility Assessment First Gas Ltd. – June 2025

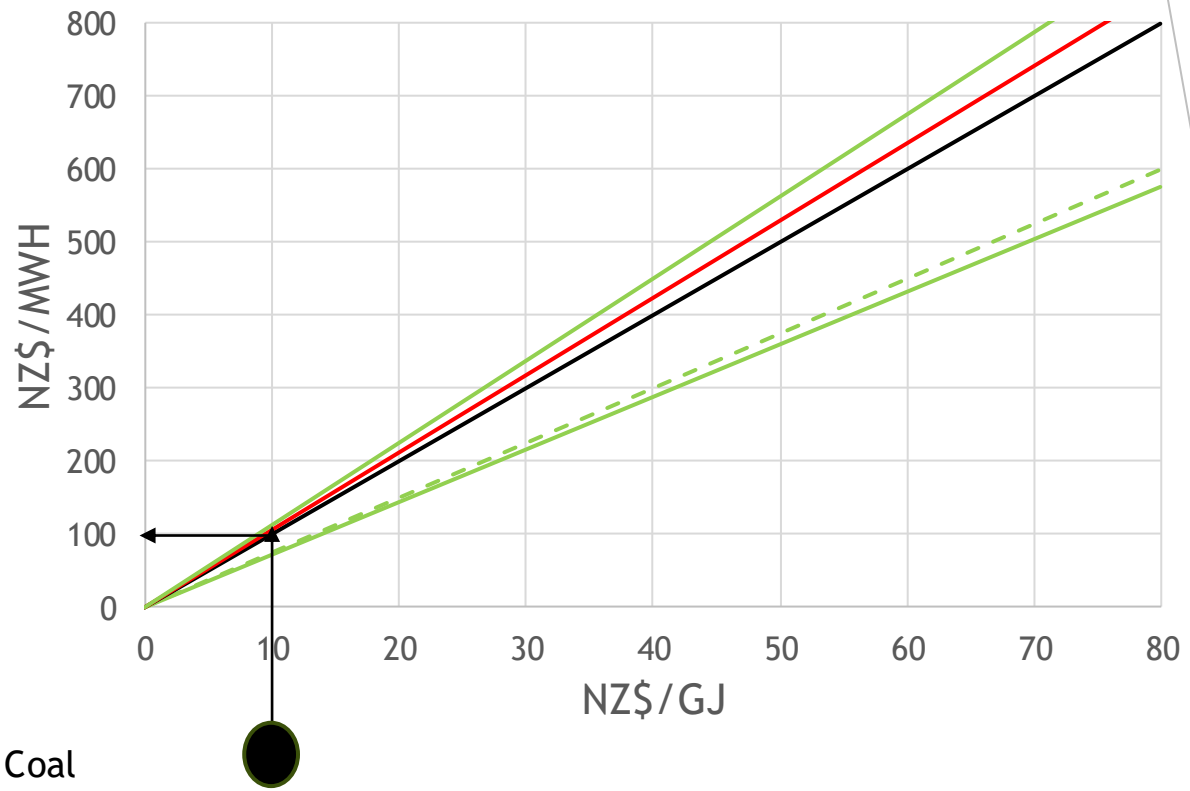
Average of world LNG trades in 2024

Japan-Korea futures for LNG - April 2026

First Gas - projected landed LNG in NZ in 2027

Fuel component of thermal generation costs

Coal at Huntly



Coal

Diesel

NZ Gas

Methanex

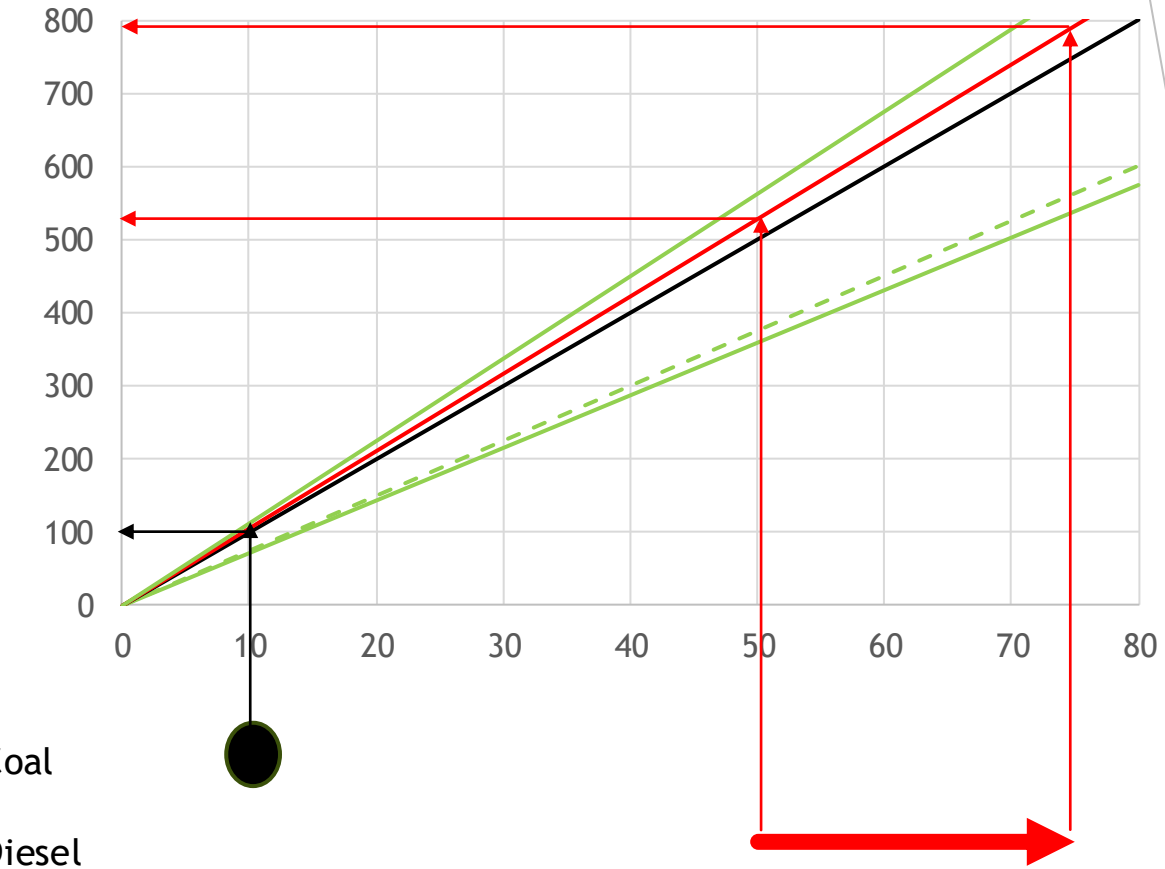
LNG

Fuel component of thermal generation costs

Diesel at Whirinaki

Coal at Huntly

Renewables



Coal

Diesel

NZ Gas

Methanex

LNG

Peak power price in 2024 was $800/MWh for 2 weeks

All electricity generators are paid the price of the most expensive generator that has to be used

Fuel component of thermal generation costs

Diesel at Whirinaki

Methanex gas in peakers

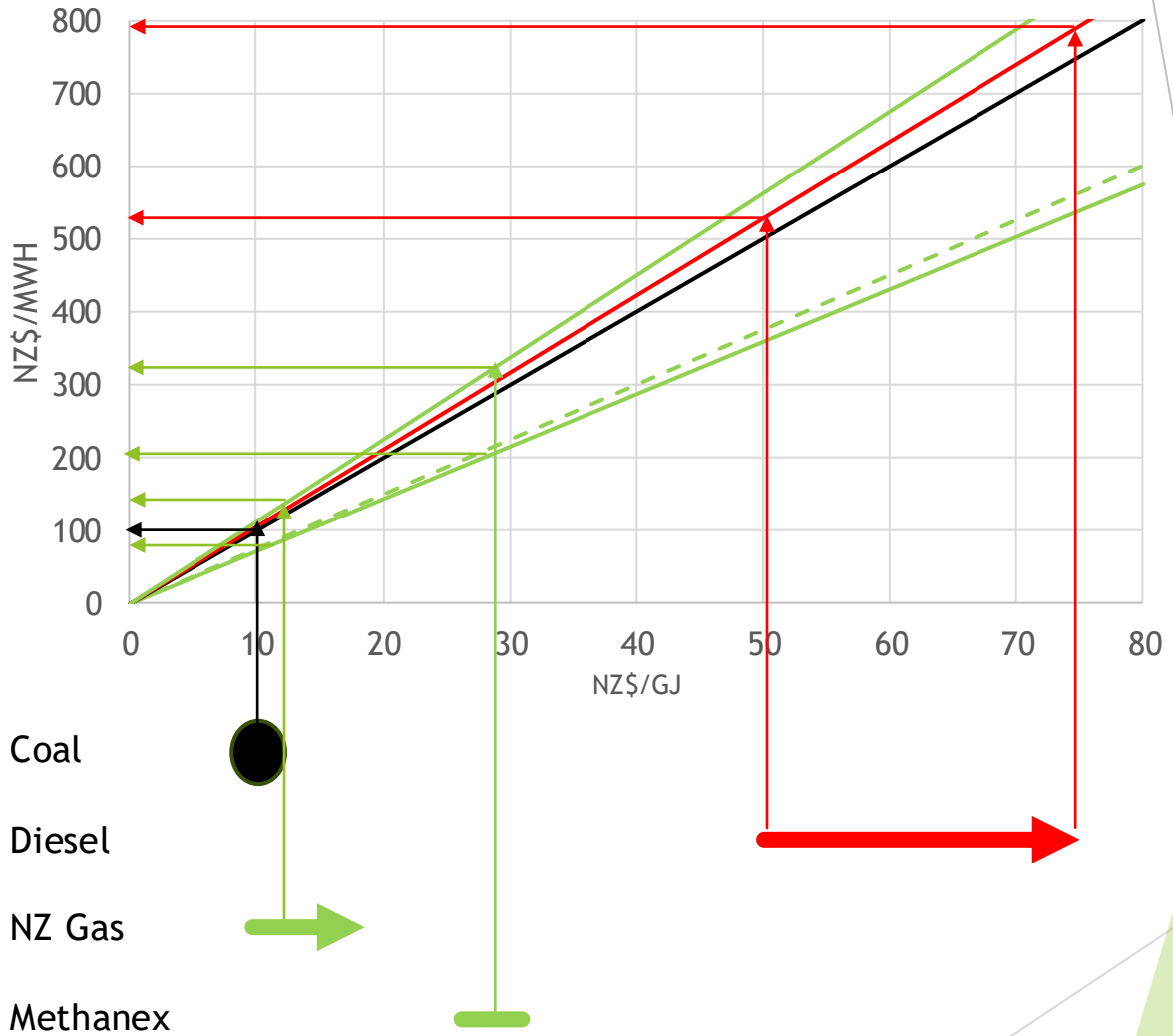
Methanex gas in EP3

NZ gas in peakers

Coal at Huntly

NZ gas at EP3

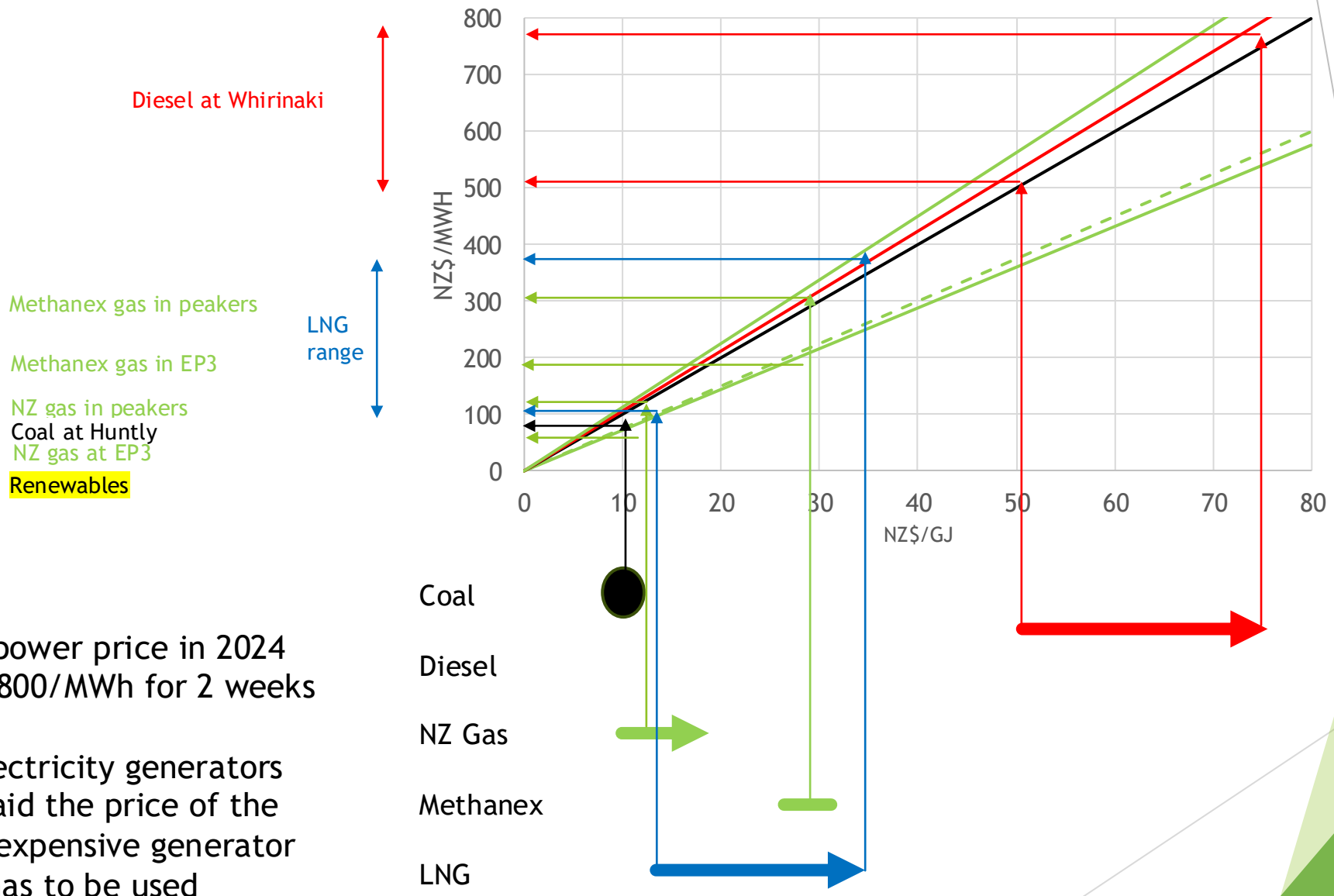
Renewables



Peak power price in 2024 was $800/MWh for 2 weeks

All electricity generators are paid the price of the most expensive generator that has to be used

Fuel component of thermal generation costs



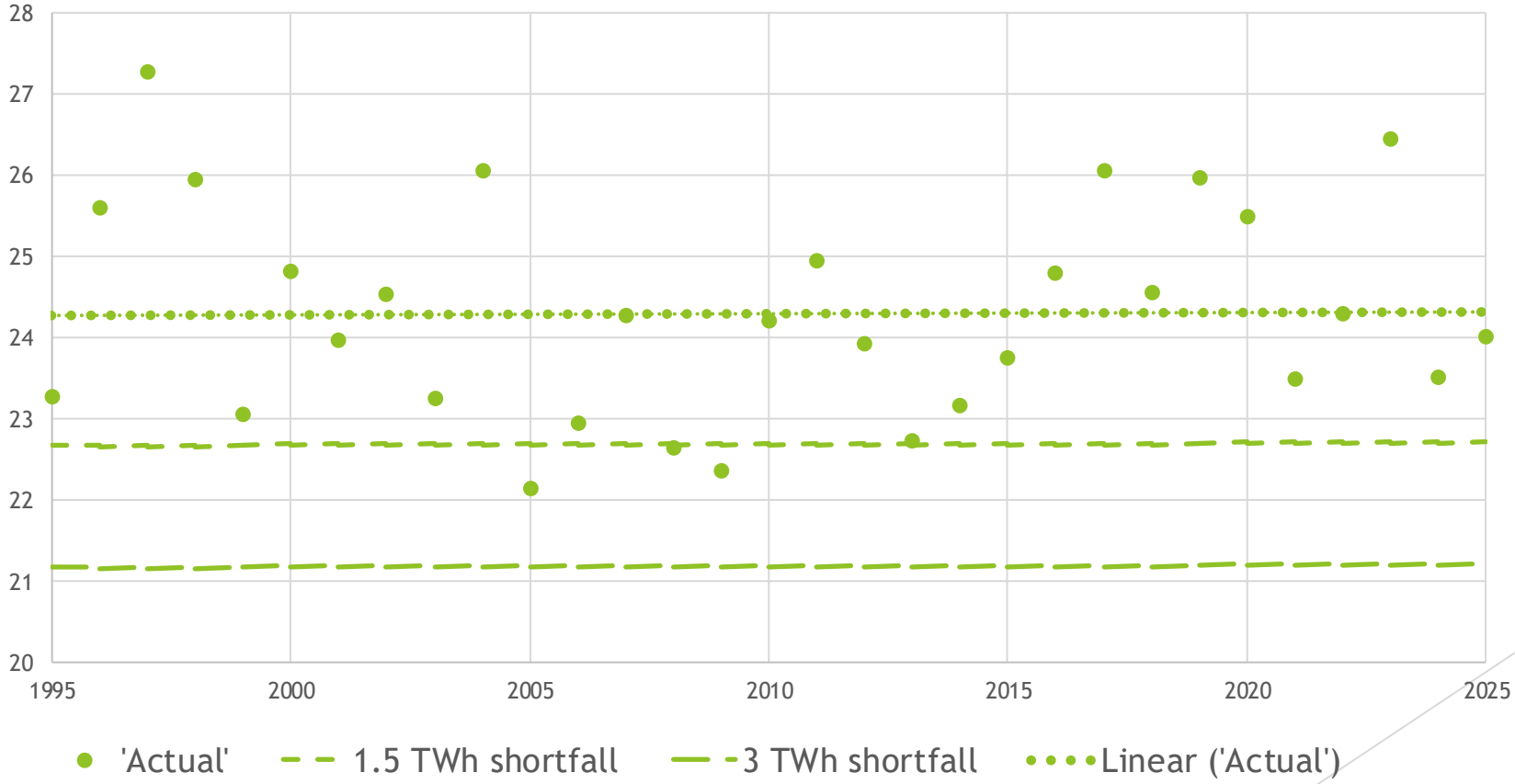
Peak power price in 2024 was $800/MWh for 2 weeks

All electricity generators are paid the price of the most expensive generator that has to be used

"MBIE advises me that in a dry year the shortfall we need to cover is around three terawatt hours over three months. Assuming that coal can fill 1.5 terawatt hours, thanks to the Huntly firming options that have been put in place, this leaves a remaining 1.5 terawatt hours required to be covered."

Minister of Energy – Hon Simeon Brown – 9th June 2026 to Auckland Chamber of Commerce

New Zealand hydro generation quantity (TWh). *MBIE*



Replacing natural gas for dispatchable electricity generation

Application of gas	Alternative technology
Peaking gas turbines to meet morning and evening peak demands	Grid scale batteries Battery costs are rapidly declining
Firming up solar and wind generation during calm and cloudy periods	Batteries and flexibility in hydro generation
Back-up generation in the dry year or cold year scenario	Stockpile of coal at Huntly power station, to be replaced by black wood pellets in due course

200 MWh Battery Energy Storage System in Ruakaka Energy park

Cost NZ$930/MWh installed with European Lithium-ion batteries. Operational in 2025

Sodium-Ion batteries from China are now available at grid scale for NZ$100-200/MWh plus installation costs

Dry year scenario

- Premise: - Operation of 2x 250 MW units of Huntly Power Station 24/7 for 4 months Fuel requirement = 15 Petajoules Electricity output 1.5 TWh

	Imported coal	LNG	3 black wood pellet plants
Mode	Coal stockpile in 10 shipments	5 loads of LNG regasified and stored in wells	Stockpile of wood pellets produced over 2 years
Source	Imported	Imported	Indigenous
Capital cost	none	NZ$1 billion	NZ$150-300 million
Fuel cost	NZ$110 million	NZ$275-500 million	NZ$100-175 million
	7.5 c/kWh	19-34 c/kWh	$7-12 c/kWh
CO_2 emissions	1.5 Mtonnes	1 to 1.5 Mtonnes	none

Practicalities of importing LNG through Port Taranaki

- A dry-year backup campaign may involve the delivery of 4 PJ of LNG from a standard–size LNG carrier once per month for 3 or 4 months.
- Delivery would be into either a Floating Storage and Regasification Unit (FSRU) or fixed LNG storage tanks on land. Either would have to be at least as big as the LNG carrier. Where would they be located in Port Taranaki?
- During the month between deliveries, the LNG would be regasified, odourised and delivered via the Maui pipeline to EP3 at Huntly to generate 400 MW at EP3 and 300 MW from peakers = 0.5 TWh per month.
- Standard-size LNG tankers are 300 m length, 45 m beam with 12 m draft.
- Port Taranaki size limits are 300 m length, up to 32 m beam and 10 m draft (without DUKC systems)
- Extensive dredging and other civil works would be required to accommodate a permanently moored FSRU and the monthly visits of LNG carriers.

Where would the LNG import facilities fit ?

LNG - the global context – conclusions 1

- 350 million tonnes per year of LNG were traded internationally in 2024
  - LNG is mostly produced in Australia (declining), the USA (increasing) and the Middle East (problematic). LNG demand is strong in Europe and Asia.
  - The purpose of LNG is to enable continuous international transport of natural gas
- Strategies for responding to declining indigenous natural gas resources
  - Natural gas is a 'boom and bust' co-product of oil production
  - A long-term gas-reduction strategy would support the Climate Change objective of fossil fuel reduction
- The technical challenges of shipping and holding LNG
  - LNG is a dynamic hazardous evaporating liquid at -162^{o}C
  - LNG is not amenable to long-term storage

LNG - the global context – conclusions 2

- The marginal source of LNG is from the USA
  - Methane emissions from US shale gas fracking are debateable
  - The price of LNG on the international spot market is volatile.
  - Current LNG futures in Asia are 50% higher than in the 2025 NZ LNG feasibility study
- The use of gas for power generation can be phased out to leave NZ's remaining indigenous gas for the industries and consumers that need it.
- Port Taranaki would need major works to accommodate a large LNG carrier off-loading 4 PJ of LNG into a Floating Storage Regasification and Odouridsation Unit or into tanks on land.