

Gas Industry Company

Briefing to Incoming Minister of Energy and Resources

October 2020



This briefing sets out core facts about the gas industry, the role of the Gas Industry Company as co-regulator, and key issues affecting the industry for your attention.

KEY FACTS

Total gas market demand in 2019 was approximately 192 petajoules, which was about 21 percent of New Zealand's primary energy supply.

The average daily energy output from New Zealand's gas fields is around 533 terajoules per day (about 437TJ/day is typically supplied from the four largest fields, Pohukura, Maui, Kupe and Mangahewa). To put that energy in perspective, the total energy provided by hydro for electricity is about 229TJ/day, and total energy for electricity is typically about 406TJ/day.¹

Over half of natural gas goes into non-energy uses such as methanol for export and urea. Other major uses include cogeneration into industrial plants such as dairy, pulp & paper, refining and food production. Industrial customers consume around 17 percent of annual natural gas production. They include major export industries such as dairy, steel manufacture, oil refining and forestry. In 2019 Fonterra used around 5 PJ of natural gas (2.5%), Marsden Point refinery around 4 PJ, and Kinleith Mill around 3 PJ.

Electricity today uses about 19% of natural gas for generation and 7% for cogeneration.

Natural gas from 15 fields travels through 20,000 km of transmission and distribution pipelines to supply approximately 294,000 consumers (278,000 residential; 16,000 commercial; 300 industrial).

LPG (liquefied petroleum gas) is distributed nationally in bottles to around 150,000 households, industrial, and commercial consumers. LPG market demand is approximately 8.4 PJ a year. LPG is imported from and exported to Australia as domestic consumption meets or exceeds supply.

Gas markets including transmission pipelines are operating efficiently and competitively. Connection and customer numbers are growing.

Industry is moving to facilitate hydrogen and bio-gas. Gas Industry Company is supportive and has begun engagement on regulatory issues such as gas quality, markets and pipeline access.

¹ The figures relate to the energy at the point of production, but can't be directly compared for energy value at the point of use because of factors such as transmission efficiency and utilisation.

GAS INDUSTRY COMPANY

The Gas Industry Company is a special-purpose company, owned by industry shareholders and governed by a board of directors appointed by shareholders. It is the industry co-regulator established under Part 4A of the Gas Act 1992 to develop governance arrangements for the downstream gas industry. Our role covers:

- the operation of gas markets;
- access arrangements to gas infrastructure (pipelines); and
- consumer outcomes.

We are required to develop governance arrangements that ensure gas is delivered in **a safe, efficient, fair, reliable, and environmentally sustainable** manner; and we oversee compliance with regulatory arrangements. Gas Industry Company is a facilitator and adviser, but not a promoter of any gas or industry sector.

We work with the industry to explore non-regulatory options and recommend any regulatory governance arrangements to the Minister for approval.

With hydrogen and bio-gas emerging as important fuels in the low-carbon future, Gas Industry Company's institutional expertise, governance arrangements and statutory tools, are available to ensure they can be delivered safely, efficiently, fairly, reliably, and sustainably. See the Hydrogen section below for examples of initiatives Gas Industry Company is already performing.

ENERGY TRANSITION

Climate change is demanding a faster transition to renewables.

Consumer preferences are changing and new technologies are emerging in response. Industry regulation is adapting to facilitate the transition smoothly and rapidly.

While the global market for natural gas is forecast to substitute for coal to meet growing global demand, in New Zealand lower-carbon energy sources will substitute for gas. Overall, New Zealand's long-term demand and supply outlook has started to decline. Gas Industry Company supports the transition to net zero carbon emissions by assisting the industry to transition in an orderly way to a 100% renewable electricity system by 2030, and the ongoing transition to net zero carbon by 2050.

Long term gas supply and demand scenarios commissioned by Gas Industry Company identify that natural gas supply conditions are likely to tighten over the next several years. New Zealand has around 2000 petajoules of reserves currently booked, however those reserves will only be available to meet demand requirements if industry invests in development of existing production.

Gas Industry Company estimates that **industry will need to invest around \$300-500 million every 3 to 5 years to produce existing reserves** and maintain production levels. Current gas and oil prices are at a level that incentivises the required investment. **Without ongoing investment in development, currently expected gas reserves will not be available for expected demand.**

During the transition to 100% renewable electricity, some customers currently utilising gas for fuel will exit.

After gas exits baseload generation, some gas will continue to be used to provide flexibility for renewable generation.

Today, when renewables availability is insufficient to supply electricity demand, flexibility is provided by reducing gas demand from petrochemical manufacturers (and by releasing stored gas from the Ahuroa storage facility). Thus, gas used in peaking generation (when renewables availability is insufficient) is met mainly from demand side, not by 'turning on' extra gas supply.

In a 100% renewable electricity system, gas can be available as the most cost-effective and efficient energy source to provide flexible security of supply in dry years. This is because gas can be brought to market quickly at a competitive lower cost than alternatives (such as renewables overbuild). For gas to provide that flexible energy security, new contracting arrangements are needed to ensure that gas is available when needed.

As the petrochemical sector exits over the next ten years, new market arrangements will be needed to ensure a flexible supply is available. Contracting arrangements to facilitate flexible availability are a priority for policy attention.

Natural gas sourced from New Zealand will no longer be used for industrial heat when alternatives are available at a lower price. The relevant alternatives will be either switching to LNG imports, shifting activities to other jurisdictions, or renewables where they are available at competitive prices.

A feature of our work programme this year will be a report looking at the role of gas in supporting a transition to net zero emissions.

HYDROGEN

Several sectors are actively researching the role of hydrogen gas as an alternative low-carbon energy source. For hydrogen to achieve its potential to be an important component of the transition to net zero emissions, industry participants will need confidence in the system for access, trade and distribution.

Through its statutory role as the co-regulator of all gases Gas Industry Company has begun a workstream to engage with industry around early stage regulatory issues.

Ultimate uses for hydrogen include industrial and transport applications. Potential demand will be influenced by relative costs and the emergence of technology. Given the diverse range of possible markets

for hydrogen in the energy system, the co-regulatory model will help to facilitate the fastest possible uptake of hydrogen and the most efficient governance.

Existing statutory tools and governance arrangements are adaptable from natural gas for the issues identified at this stage. (See section on co-regulatory model below).

Examples of topics that are receiving attention include:

- certifying the gas quality needed to make supply fungible within a pipeline system,
- transmission pipeline capacity and access rules,
- market operations, and
- odourisation.

Future issues will involve market rules and systems for switching customers, reconciliation of quantities supplied into pipelines, and managing critical contingencies.

PIPELINES

Natural gas is distributed as depicted in the graphic:

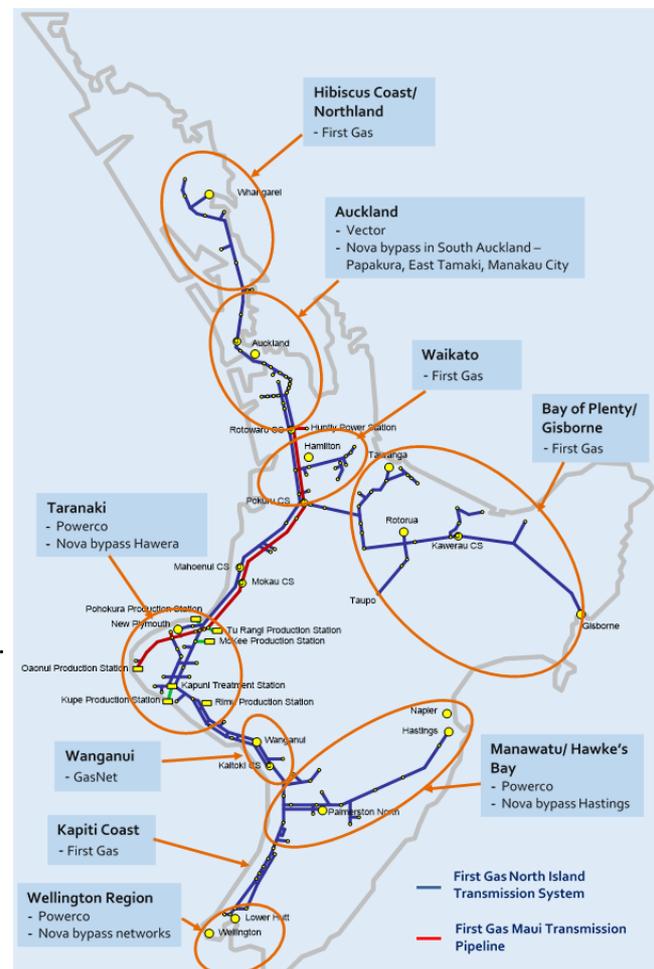
- Open access high pressure transmission pipelines (total length: 2,520km) owned by First Gas Limited.
- Open access lower pressure gas distribution networks owned by First Gas Limited, Vector Limited, Powerco Limited, and GasNet; and a number of private pipelines owned by Nova Energy Limited (total length: 17,967km).

GAS STORAGE

New Zealand has one natural gas storage facility – the Ahuroa Gas Storage Facility owned by FlexGas, a subsidiary of First Gas.

The capacity of the Ahuroa facility is:

- Storage of up to 18 PJ of gas in the underground reservoir,
- Injection into the reservoir and withdrawal of 65 TJ/day.



(These volumes are comparable to the deliverability from the Kapuni, (68.5 TJ/day) Turangi (60 TJ/day) and Kupe (70 TJ/day) fields.

FlexGas injects and stores gas in the reservoir on behalf of others during periods of low demand (such as in summer when demand for electricity is low, or when renewable energy is abundant), and extracts it during periods of high demand.

Flexibility is required because gas fields are engineered to produce at steady rates while market demand is variable. Fields cannot easily be shut in when there is no demand.

Flexibility is also required to maintain pressures required in pipelines by balancing volumes supplied into the system with volumes demanded by users.

Currently all of the storage capacity in Ahuroa is contracted. Further expansion is under consideration. To date, Ahuroa has played a relatively small part in the gas sector. However, it is expected that the facility will play an increasingly active role with the growth of renewable generation and the depletion of gas fields.

LPG

LPG is supplied nationally to around 150,000 customers. Residents are typically supplied via 9kg and 45kg cylinders, while commercial customers are supplied via larger cylinders or, in some cases, banks of 45kg cylinders. Transport includes maritime import/export, trucking and interisland ferry. There are also small LPG pipeline networks in Christchurch, Queenstown, Wanaka, and Dunedin.

CO-REGULATORY MODEL

Co-regulation of downstream gas reduces regulatory burdens while maximising opportunities for government and industry to work together to develop governance arrangements.

Industry participants trade with the confidence that there are robust systems for switching customers, accurately reconciling downstream quantities of gas, and managing critical contingencies.

The Gas Industry Company is the industry body and a co-regulator under the Gas Act.

Current regulatory and non-regulatory gas governance arrangements resulted from industry consultation and either formal approval or endorsement by the Minister:

The **Gas (Switching Arrangements) Rules 2008** enable consumers to choose and efficiently switch between competing gas retailers.

Substantial strengthening of market competition and higher levels of contestability has seen 99 percent of customers with a choice of at least seven retailers (out of a total of 10); Since 2009, the switching rate has more than tripled to around 3600 per month. The churn rate for the 12 months to September 2017 is

15.7%. Switching times have reduced from weeks or months. It now takes less than three business days, on average, for a switch to be completed.

The **Gas (Downstream Reconciliation) Rules 2008 (Reconciliation Rules)** reconcile volumes of gas leaving the high pressure transmission system against the volumes sold by retailers. The Reconciliation Rules have been instrumental in reducing unaccounted-for gas to 1 percent of total allocated volumes. (High levels of unaccounted-for gas are inefficient as the costs associated are paid by all gas retailers and ultimately charged to consumers.)

The **Retail Gas Contracts Oversight Scheme** provides a non-regulated process for reviewing retailers' supply contracts with small consumers.

The **Gas Distribution Contracts Oversight Scheme** provide a process for reviewing gas distribution contracts between distributors and retailers.

Transmission Pipeline Interconnection Guidelines provide for efficient interconnections to the transmission pipelines, both for injecting new gas and for consumers wishing to take gas. Backstop arrangements exist for orderly transition of affected consumers in the case of a gas retailer insolvency.

Gas Governance (Compliance) Regulations 2008 provide a formal compliance regime that deals with alleged breaches of gas governance regulations and gas governance rules.

The **Gas Governance (Critical Contingency Management) Regulations 2008 (CCM Regulations)** provide for the effective management of critical gas outages and other security of supply contingencies without compromising long-term security of supply. Significant critical contingencies are rare events and robust arrangements for managing them are in place.

CORPORATE

The Constitution of Gas Industry Company provides for all 'gas industry participants' to become shareholders in the Company. Shareholders as at September 2020 are:

- Contact Energy Limited
- emsTradePoint Limited
- First Gas Limited
- Genesis Energy Limited
- Greymouth Gas New Zealand Limited
- Mercury NZ Limited
- Methanex New Zealand Limited

- New Zealand Oil & Gas Limited
- Nova Energy Limited
- OMV New Zealand Limited
- Powerco Limited
- Trustpower New Zealand Limited
- Vector Limited

The Board of Gas Industry Co is a mix of independent and industry directors appointed by shareholders, a majority of whom (including the Chair) must be independent of the gas industry.

Board members are:

- Rt Hon. Jim Bolger, ONZ — Independent Chair
- Robin Hill — Independent Deputy Chair
- Andrew Brown — Independent Director
- Parekawhia McLean — Independent Director
- Nigel Barbour (Powerco Limited) — Non-independent Director
- Mike Fuge (Contact Energy) — Non-independent Director
- Gabriel Selischi (OMV) — Non-independent Director

The Management team is:

- Andrew Knight — Chief Executive
- Susan Dunne — General Manager, Corporate Services

Gas Industry Company's funding comes principally from an annual levy and market fees.

Each year, Gas Industry Company consults with government and industry stakeholders on its proposed strategy, work programme and costs for the following year. There has been a high level of concurrence from stakeholders on these matters in recent years. Gas Industry Company then makes a recommendation to the Minister for levy regulations for the next financial year.

Levy and fee revenue has reduced, generally each year, since 2013 reflecting Gas Industry Company's control of costs and the light weight of the co-regulatory model.

CHANGING STATE OF THE GAS INDUSTRY

The following figure summarises changes to the gas industry since 2004.

| In 2004... | ...today |
|---|--|
| Dominant Maui field in steep decline; only 6.5 years' P50 reserves | 15 producing fields (incl Maui); 10 years' P50 reserves |
| Total gas use 156PJ p.a. | Total gas use 191PJ p.a. |
| 238,000 gas consumers | 280,900 gas consumers |
| Methanex cuts production to one methanol production train | 3-train methanol production reinstated using around 50% of NZ supply |
| Gas meets baseload electricity generation (21% of generation) | Reduced 'peaking' role for gas in electricity generation (13% of generation) |
| Maui pipeline not open access; dual ownership of gas transmission systems | All gas transmission open access transmission and under single ownership of First Gas Limited |
| Regulation of transmission/distribution pricing emerging | Commerce Commission's price/quality regime in place |
| Retail competition emerging from historical local monopoly retailers | 10 gas retailers |
| Consumer protection focus emerging | Consumer protection legislation reforms |
| Downstream gas industry governance through voluntary codes | Formal regulation/rules around critical contingency management, downstream reconciliation and consumer switching |
| Industry focus on Maui decline | Industry focus on energy transition |