Gas Industry Governance

Incentives, Regulation and Outcomes

A report prepared for the Major Electricity Users Group

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1. Summary

The Major Electricity Users' Group (MEUG) has commissioned TDB Advisory (TDB) to prepare a high-level assessment of alternative institutional arrangements for governing the gas sector. TDB has been asked to identify and consider the policy and operational issues common to the gas and electricity sectors, and the advantages and disadvantages of alternative institutional arrangements for governing the gas sector, including the option of establishing a joint gas and electricity regulator.

The current basis for gas sector regulation is co-regulation, a hybrid of self- and full regulation. The co-regulation model was introduced in a 2004 amendment to the Gas Act 1992 (the Act). The co-regulators are the Government and an industry-owned body, the Gas Industry Company (GIC). The Act gives the co-regulators objectives to promote gas supply, safety, and competition. The GIC has no power of its own to regulate. Regulation occurs when the GIC recommends regulation and the government agrees. Before making any recommendation, the Act requires the GIC to seek non-regulated solutions and consult with all those affected.

Recent events have raised questions about the effectiveness of the co-regulation model. In 2018, equipment faults cut production from Pohokura, New Zealand's largest gas field. There were two outages, the first between March and July, the second between September and December. The second outage coincided with high gas demand, leading to record wholesale electricity prices. During both outages, concerns were raised about information-sharing to affected downstream gas users. Information about the outage and time to repair was not distributed evenly, and at times was inconsistent or hard to find. In July of 2018, the Minister for Resources and Energy wrote to the GIC asking it to investigate whether the current information disclosure rules were adequate. The GIC responded by launching a workstream to develop disclosure rules. In February 2019, the Electricity Price Review committee recommended further investigation into a joint electricity and gas regulator, which led to the commissioning of this report.

TDB met with industry participants, regulators and representatives from across the gas and electricity sectors to prepare this report. Consultation revealed disclosure as the main issue confronting the gas industry. Other concerns included: whether the GIC is too reluctant to regulate against the interests of industry stakeholders; whether the GIC is sufficiently pro-active or reactive as issues arise; and whether the co-regulation model is vulnerable to gridlock for complicated or adversarial issues. The GIC is not widely seen as having been proactive in response to concerns about disclosure after the first Pohokura event in 2018. Some industry participants suggested industry capture as an explanation.

In order to understand the drivers of the regulator's performance, TDB examined the legislation, and reviewed the academic literature on self- and co-regulation. Industry participation under co-regulation increases the risk of industry capture and perceptions of industry capture. When regulated firms fund the regulator, there may be an incentive for the regulator to see regulated firms as "customers".

The Act embeds a number of protections against this risk of capture. In addition to regulations made on the recommendation of the GIC, the Minister of Energy and Resources (the Minister) may make adjustments to any recommendation for regulation from the GIC. Legislation requires the GIC to be "broadly inclusive of industry participants" and that the majority of the GIC board's seven members are independent of the gas sector. Non-independent directors have a statutory obligation under the

Companies Act to work in the GIC's interests, rather than the interests of other companies they are employed by or are directors of. In practice, only independent members of the GIC's board vote on major decisions, including the recent Gas Transmission Access Code (GTAC) decision. The legislation also requires the GIC to consult those affected by regulation. The consultation and regulation processes run by the GIC are highly transparent.

These factors lean against capture risk. But perhaps the most significant protection is that the Act authorises the Minister to replace the GIC with an "Energy Commission" based on the Electricity Authority. The Minister may replace the GIC for any reason. The legislation provides a clear process for the replacement. In effect, the GIC serves at the Minister's will and must maintain her or his confidence.

The Act places heavy consultation obligations on the GIC and the Minister which have the potential to lead to prolonged processes, but the Act does allow for urgent regulation that postpones the consultation requirements.

These elements, together with an historic track record showing 13 instances of the GIC recommending regulation since 2004 (not including annual levy setting), have led us to conclude the co-regulation model is fit for purpose in New Zealand's gas sector. Legislation gives GIC power and sufficient incentive to act including when it is against the industry's interests. Ministerial powers offer sufficient protections against the risk of gridlock on particular issues.

Capture does not explain the GIC's performance on the disclosure issue. Our discussions with gas producers suggested either indifference or support for increased disclosure obligations. The reluctance of gas producers to share information through outages seems to be explained by rules on information sharing in supply contracts, joint venture agreements and company policies, rather than by opposition to the idea. Even if gas producers were opposed, it is not clear whether the upstream producers could command so much more sway over the regulator than downstream gas users demanding disclosure rules. The better explanation for GIC's performance is legislation. GIC does not have a clear statutory authority to compel disclosure from upstream producers. A forthcoming amendment to the Gas Act will establish this authority. In the meantime, work by the GIC continues on disclosure.

Given current perceptions and the risk of industry capture, we recommend consideration be given to changes to the GIC's constitution to further lean against capture risks. In particular, we recommend that terms limits (of say eight years) be placed on directors of the GIC to enhance the ongoing independence of the directors. On disclosure, we recommend a regulated rather than voluntary solution be sought to cut through the constraints of company policy, and joint venture and supply agreements. We recommend that disclosure requirements cover planned and unplanned outages but is not extended to include commercial information.

We considered the case for a joint gas and electricity regulator. The two sectors have some similarities but overall are quite distinct. The kind of problems that the creation of a joint regulator might solve, including cost savings from economies of scale or scope, cross-sector regulatory coordination, aren't the problems confronting the gas and electricity sectors. Annual expenditure by the GIC is less than $5 million. A recognised benefit of self-regulation is cost containment, something that may be lost in a shift to full regulation. Overseas evidence suggests regulatory amalgamations can deliver savings but generally do not. Furthermore, information disclosure is not a coordination issue *per se*. Gas sector disclosure standards are simply below expectations, a problem that can be solved without the costs and risks of establishing a new regulator.

2. Background

Gas meets 21% of New Zealand's primary energy needs and generates 14% of its electricity.[1] Gas is produced from more than a dozen fields in Taranaki. The largest field is Pohokura, which produced 38% of net production in 2017 but only 32% in 2018. After years of largely-reliable operation since production from Pohokura commenced in 2006, equipment failures led to two prolonged outages in 2018. The first, a fault in the onshore pipeline, cut offshore production between March and July. The second, the discovery of a faulty safety valve on the offshore rig, cut production again between September and December.

The effects of the first Pohokura outage were largely contained. However, the second outage coincided with low lake levels, outages in other gas fields and elevated demand for gas brought about by a high world price for methanol and high dairy production.[2] Severe consequences followed the second outage including for the electricity sector (Figure 1). Electricity wholesale prices spiked to as high as $530/MWh on 23 October, far higher than the long run average wholesale price of $80/MWh.[3] The average wholesale price for October 2018 was double the previous record October high, and the fifth highest of any month since the launch of the wholesale electricity market in 1996.[4]

During and after the first Pohokura outage, concerns were raised about the lack of regulated obligations on upstream producers to share information regarding the state of repairs and estimated time to a resumption of production. Direct purchasers of gas from the affected field were entitled under their purchasing agreements to information, but generally, these agreements forbid downstream dissemination of that information. Those affected by the outage but did not purchase their gas directly from Pohokura received information that was sometimes late, inaccurate, or contradictory. Many relied on informal channels.

After the first Pohokura outage, and before the second, the Minister for Energy and Resources wrote to the GIC, the gas sector regulator, expressing her concern that existing disclosure requirements may be insufficient.[5] The Minister asked the GIC to report back on whether disclosure obligations could be improved under existing legislated settings or whether a change in legislation is required. In its reply to the Minister, the GIC said information disclosure could improve but existing legislative settings would need to change "to clearly provide for the regulation making powers contemplated by your letter".[6]

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[1] Share of primary energy from MBIE Energy Balances, available from: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-publications-and-technical-papers/energy-in-new-zealand/ (for calendar year 2017). Electricity generation from gas from MBIE electricity data, available from: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/electricity-statistics/ (for calendar year 2017).

[2] The production of methanol by Methanex consumes about half of New Zealand's natural gas output.

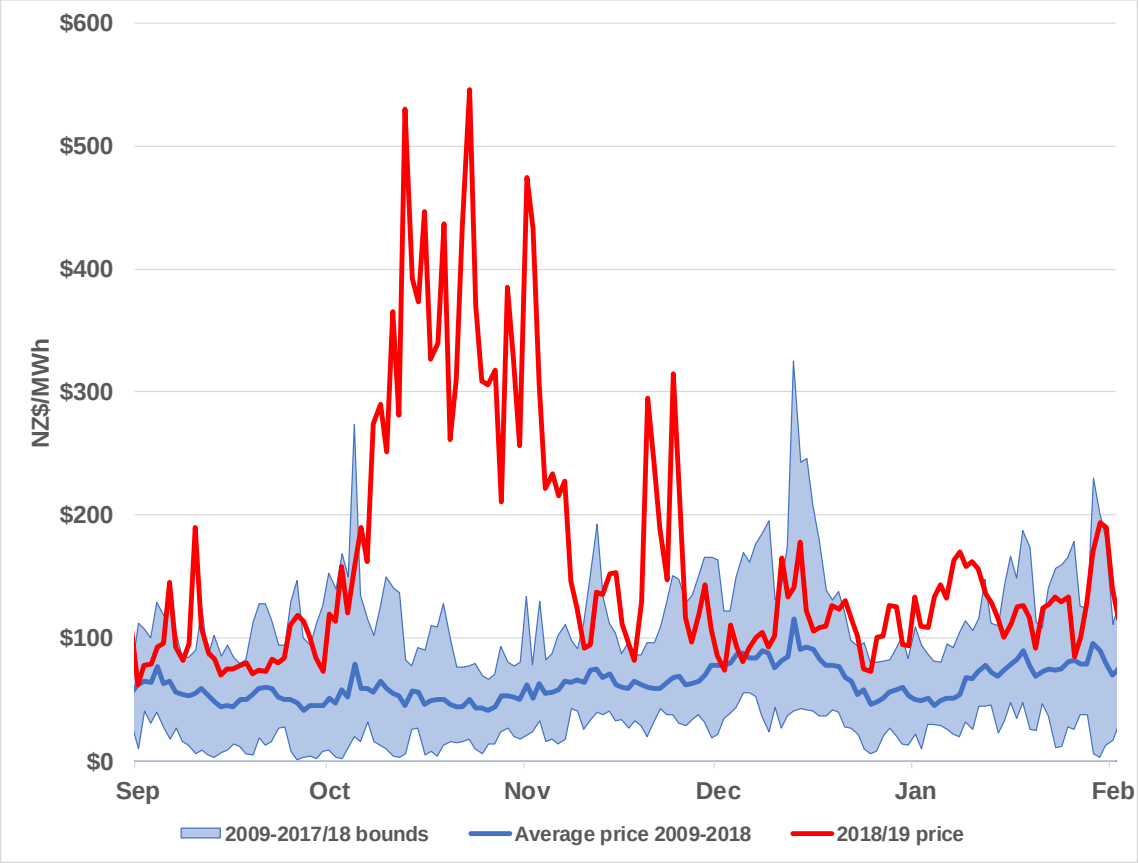
[3] MWh is megawatt-hour, a unit of energy.

[4] After adjusting for inflation. See Electricity Authority, "The Authority's decision on claim of an undesirable trading situation," 28 February 2019. Available from: https://www.ea.govt.nz/code-and-compliance/uts/undesirable-trading-situations-decisions/15-september-2018/

[5] Letter from Hon Megan Woods to Gas Industry Company, 25 July 2018, available from: https://www.gasindustry.co.nz/work-programmes/gas-sector-information-disclosure/overview/

[6] Letter from Gas Industry Company to Hon Megan Woods, 16 August 2018, available from: https://www.gasindustry.co.nz/work-programmes/gas-sector-information-disclosure/overview/

Figure 1: Electricity wholesale daily price, 2009-2017/18 vs 2018/19[7]



In its reply to the Minister, the GIC committed to creating an information disclosure workstream:

> *We intend to ask parties whether they consider existing information disclosure is sufficient for their needs and if not, what the information gaps and issues are. If we consider that information disclosure is not sufficient, we will determine whether industry-led arrangements to improve disclosure are possible or whether regulation may be required.*

Wider questions have also been raised about the performance of gas sector regulation and governance. The gas sector operates under a co-regulation model, a hybrid of self- and full regulation. The GIC is owned by fourteen gas sector participants who each hold a $1 share. Under the Gas Act 1992, the GIC has no regulation-making powers of its own. The GIC recommends regulation to the Minister for Energy and Resources, which under the Act the Minister may accept or reject. However, before making any recommendation, the GIC must be satisfied the objective of regulation is unlikely to be achieved by non-regulatory means.[8] The GIC is also obliged by the legislation to assess regulated and non-regulated options on a cost-benefit basis, and it must consult the industry.[9]

Concerns around the adequacy of disclosure obligations and other issues have led to questions about whether the co-regulation model is fit for purpose. In February 2019, the Electricity Pricing Review (EPR) released an options paper. Among the EPR's recommendations was the suggestion of a preliminary

[7] Source: http://emi.ea.govt.nz
[8] Section 43N(1) of the Gas Act 1992.
[9] Section 43N(1) of the Gas Act 1992.

examination of the costs and benefits of creating a joint electricity and gas sector regulator (recommendation F6):

> *The Government would establish an electricity and gas regulator, incorporating the functions of the Electricity Authority, with comparable regulatory functions for the natural gas industry. The new regulator would make electricity and gas market rules, just as the Electricity Authority does in the electricity industry.*

Though the EPR was undecided about the option, it believed a joint regulator could:[10]

> *…develop and enforce regulations for both industries in a more consistent and coherent way, which would reduce uncertainty for regulated businesses. Economies of scale are likely to result in lower total costs.*

The EPR also recommended extending wholesale electricity market disclosure rules to include the availability of generation fuels including gas (recommendation D1).[11]

2.1 What we have been asked to do

The Major Electricity Users' Group (MEUG) has commissioned TDB Advisory (TDB) to prepare a high-level assessment of alternative institutional arrangements for governing the gas sector. TDB should identify and consider the policy and operational issues common to the gas and electricity sectors, and the advantages and disadvantages of including the option of establishing a joint gas and electricity regulator.

This report proceeds as follows:

- Chapter 3 provides an overview of the gas and electricity sectors in New Zealand;
- Chapter 4 summarises the findings from our consultations with the industry during February and March;
- Chapter 5 describes the framework of legislation, regulation, policy, and institutional arrangements for gas sector governance;
- Chapter 6 develops a framework for governance and regulation to consider options for the gas sector; and
- Chapter 7 concludes.

[10] Electricity Pricing Review, "Options Paper," 18 February 2019, page 33.
[11] Disclosure obligations currently cover generating plant but not fuel availability. See Electricity Pricing Review, "Options Paper," 18 February 2019, pp.18-19.

3. The gas sector in NZ

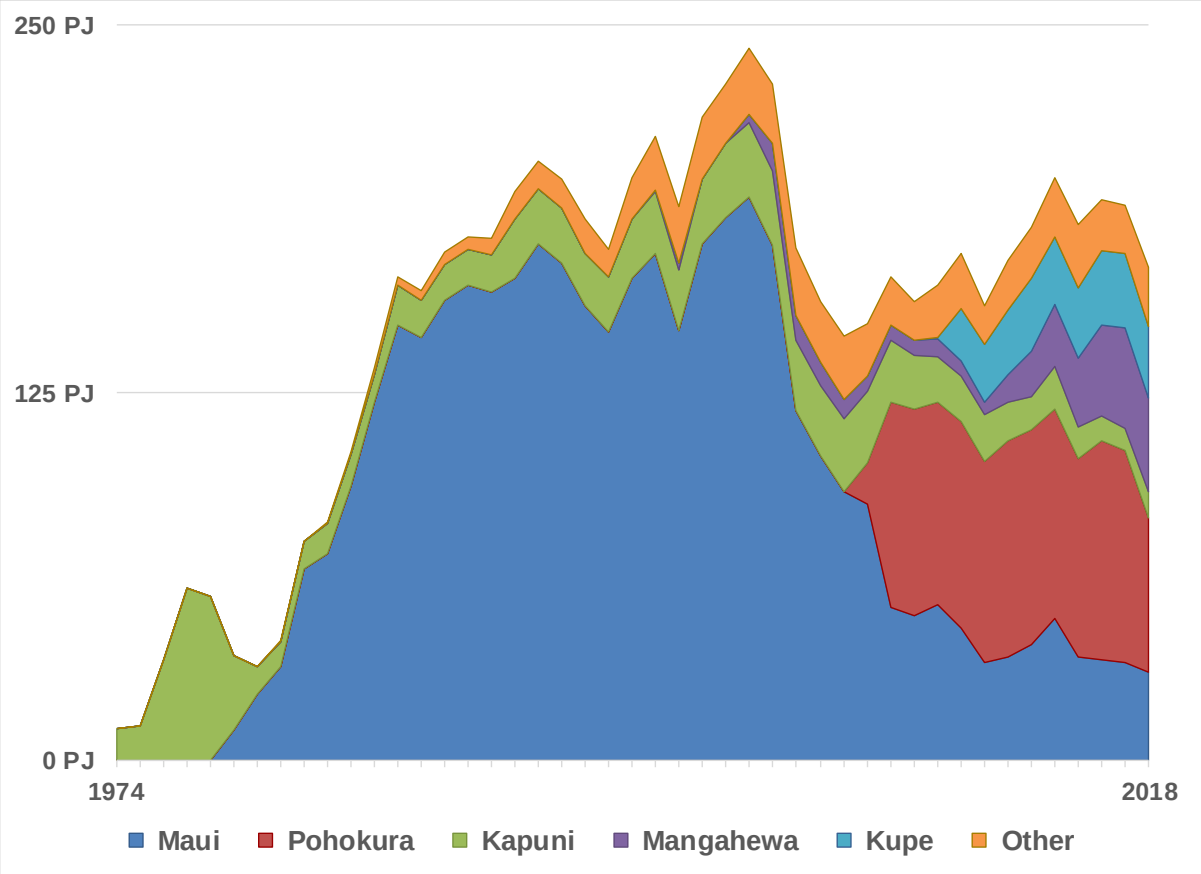
New Zealand's gas industry started with discovery of the Kapuni gas field, an on-shore field in Taranaki, by a joint venture comprising Shell, BP and Todd in 1959. After the discovery of Kapuni, the government decided gas was a premium product that would replace ageing North Island coal-gas plants. By 1969, pipelines had been constructed north from Kapuni to Auckland and south to Wellington. Kapuni came onstream the following year. The state-owned Natural Gas Corporation of New Zealand Limited (NGC) purchased gas from the Kapuni joint venture, processed the gas to specification, then transported the gas to market and sold it wholesale to nine existing gas utilities.

In 1969, the offshore Maui field was discovered. Maui was eight times the size of Kapuni making it large on an international scale. The Crown became a half-owner of Maui in 1973, meeting half the development costs and purchasing all of its output under a 30-year take-or-pay agreement that expired in 2009. Maui's scale, and the oil shocks of the 1970s, led the government of the day to see Maui as a source of economic growth and energy independence. This led to the Think Big policy in the late 1970s and early 1980s, which among other things included the development of an ammonia-urea plant at Kapuni, a synthetic petrol plant at Motunui, and a chemical methanol plant in the Waitara Valley, all of them based on gas production from Maui. Maui would dominate gas production in New Zealand until the mid-2000s, and many of the businesses it spawned continue today.

In 2003, estimated Maui reserves were drastically reduced from 830 PJ to 409 PJ and production from Maui fell substantially.[12] The Maui redetermination brought forward the development of other fields including Pohokura, which commenced production in 2006, Kupe in 2009, and later a ramping up of the Mangahewa field which had commenced production in 1997 but only at limited output (Figure 2). The downgrade of reserves in Maui had two other effects. The splintering of production from mainly one to many fields led to the development of an open access regime for pipelines carrying gas from Taranaki to other parts of the North Island. A second effect was a fall in the flexibility of gas output. The Maui field had the ability to ramp production up and down, whereas Pohokura and other fields have less flexibility.

[12] High Court, Todd Pohokura Limited vs Shell and OMV, CIV-2006-485-1600, 13 July 2010, at 362. Available from https://forms.justice.govt.nz/search/Documents/pdf/jdo/1a/alfresco/service/api/node/content/workspace/SpacesStore/203c8408-7249-4a0b-a187-0f3779d38da1/203c8408-7249-4a0b-a187-0f3779d38da1.pdf

Figure 2: New Zealand gas production by field 1974-2018[13]



Today, as noted above, gas meets about 21% of New Zealand's primary energy needs. In 2017, gas production totalled 194 petajoules.[14] For comparison, annual electricity production in New Zealand is around 154 petajoules.[15] Gas has three main uses in New Zealand. Just over half of natural gas production (51%) is used in the production of methanol and urea. About 26% is used to generate electricity, though this proportion varies according to South Island lake inflows because gas is used to back hydrogeneration, and 23% of gas is used directly as a fuel in the industrial, commercial and residential sectors.[16] Around 264,000 households use natural gas but consume just 4% of gas production.[17]

[13] Source: MBIE Gas Statistics, available from: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/gas-statistics/

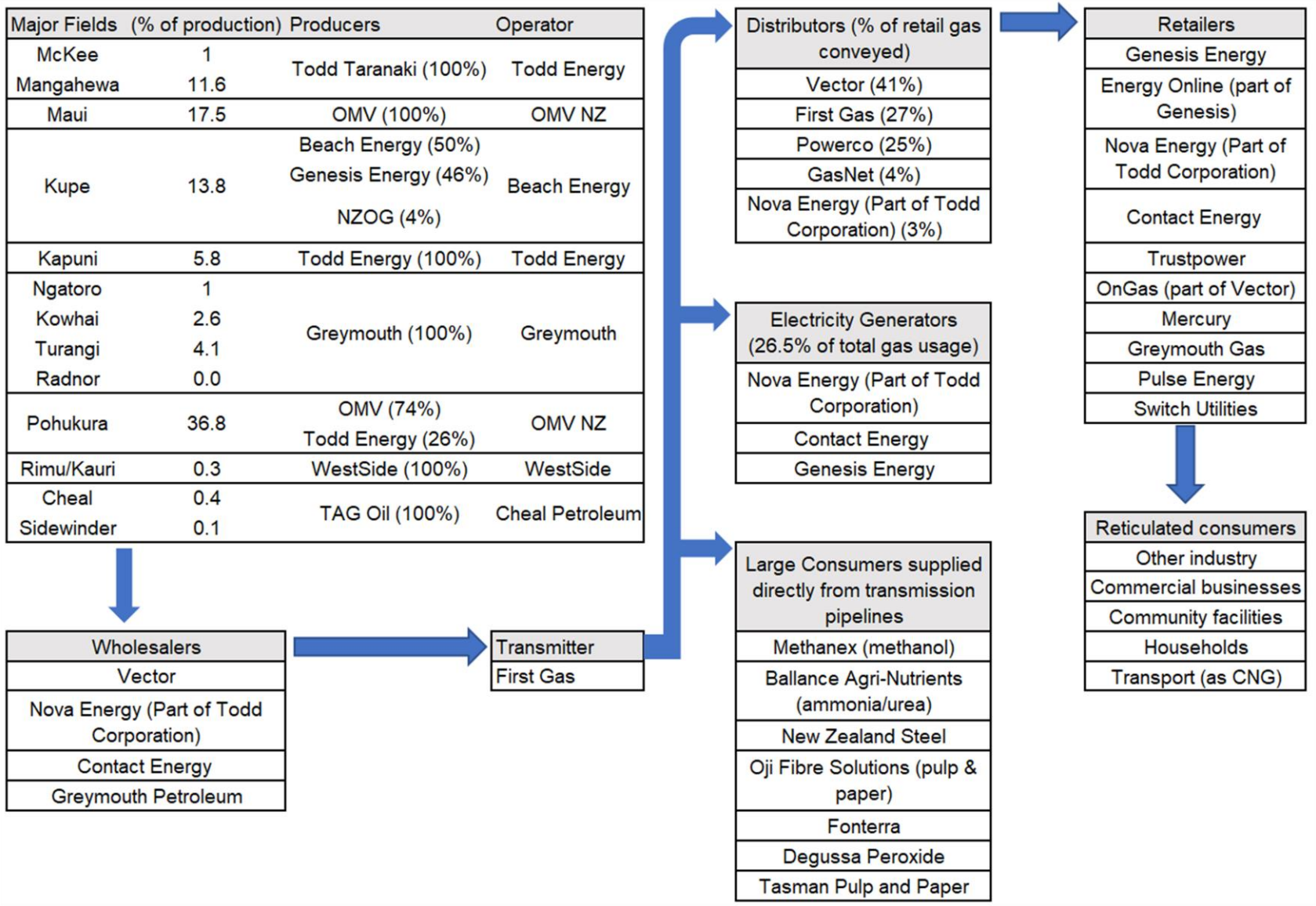
[14] For year 2017. Source: MBIE Energy Balances, source: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-publications-and-technical-papers/energy-in-new-zealand/ Gas output: MBIE Data tables for gas: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/gas-statistics/

[15] For year 2017. MBIE Electricity Statistics, available from: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-publications-and-technical-papers/energy-in-new-zealand/

[16] Based on 2016 calendar year. Source: Gas Industry Company, "Gas industry – facts at a glance," updated November 2017, p.1, available from: https://www.gasindustry.co.nz/dmsdocument/5457

[17] Ibid.

Figure 3: New Zealand gas sector



Source: Gas Industry Company, "New Zealand Gas Story," sixth edition (2017), available from: https://www.gasindustry.co.nz/about-the-industry/nz-gas-story/

3.1 Gas sector structure

The structure of the gas industry is presented in Figure 3. The sector divides between upstream gas production and downstream services:

Upstream:

Gas production from onshore and offshore wells.

Downstream:

Gas processing: separates gases from condensate and water, and separates methane from other gases (propane, butane). Methane (natural gas) is brought within specification before injection into transmission lines.

Transmission lines run across the North Island. Parallel lines run between Taranaki and Huntly (Figure 4). FirstGas completed purchases of the Vector and Maui transmission lines in 2016, unifying ownership for the first time. Major users are supplied directly from transmission lines.[18]

Distribution: smaller users receive gas via reticulated systems in the North Island and mainly bottled LPG in the South Island. Four companies provide distribution lines.

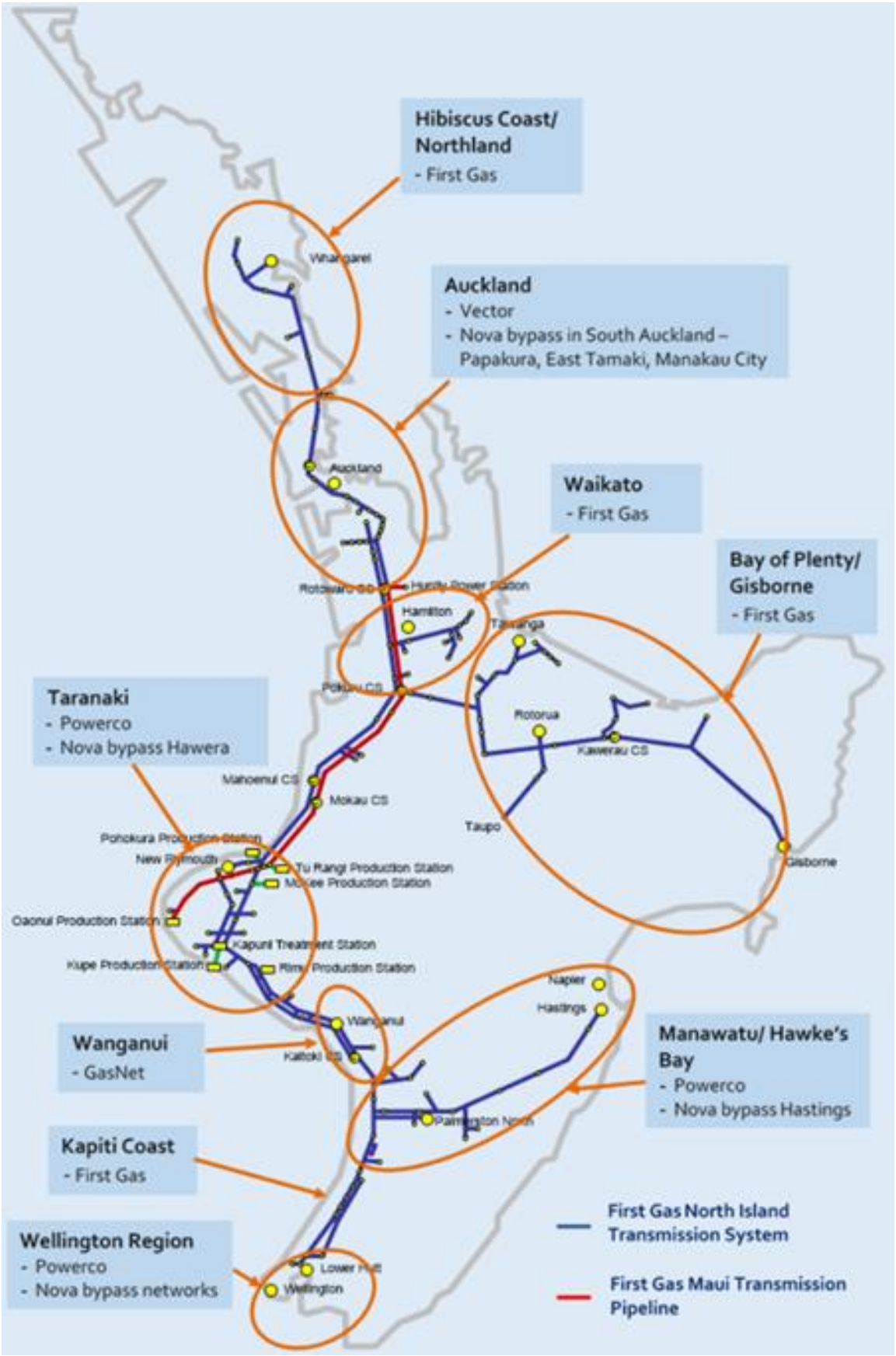
Wholesale: Four companies provide wholesaling services, which involves the packaging and sale of combinations of gas from different fields to large customers and retailers. Gas fields each have different supply risks. Wholesalers can tailor supply risk to customers' needs by assembling various combinations of supply from different fields. A spot market emsTradePoint is owned and operated by Transpower, the owner of the national grid and the electricity System Operator.[19] Three brokers linked to emsTradePoint also facilitate bilateral trades.

Retail: ten retailers provide a retail front-end gas service to households and businesses.[20]

At the wholesale level, gas is traded primarily through bilateral contracts. Between 3% and 5% of gas is traded on the spot market.

[18] Major users supplied directly from transmission include Methanex, Ballance Agri-Nutrients, New Zealand Steel, Carter Holt Harvey, Degussa Peroxide, Fonterra Co-operative, Todd Energy, Refining NZ, and Tasman Pulp and Paper (Energy in New Zealand 18:25).
[19] See https://www.transpower.co.nz/system-operator
[20] The Gas Industry Company lists ten gas retailers https://www.gasindustry.co.nz/consumers/gas-providers-list/

Figure 4: Gas transmission network



3.2 Sector regulation

Chapter 5 discusses the legislation and regulation of the gas sector in detail but here we provide a short overview. The primary legislation governing the gas sector is the Gas Act 1992. The main regulator is the GIC, an entity established in 2004 that is owned by 14 gas sector firms, each holding a $1 share. Objectives given to the GIC in legislation, and by a Government Policy Statement issued in 2008, include safety, reliability, lower prices for consumers, efficiency, and competition.

The legislated scope of the GIC focuses on downstream activities. Upstream gas producers are primarily subject to the Crown Minerals Act 1991 (older gas fields are subject to the Petroleum Act 1937), administered by MBIE. However, upstream producers do come within the scope of the Gas Act, by virtue of being "industry participants" (section 43D) and by the Act's requirement that the GIC be "broadly inclusive of industry participants" (section 43ZL(2)(a)). Some sense of the scope of the GIC's authorising legislation can be seen in its work programmes (Table 1).

Table 1: Selected GIC work programmes[21]

Critical Contingency Management	Management of gas outages and other security of supply contingencies
Downstream Reconciliation	Reconciling volumes of gas leaving the high pressure transmission system with volumes consumed by end users
Gas Metering	Minimum standards for the consistent collection and treatment of advanced metering data
Gas Quality	Standards for chemical make-up, gas detection, and delivery pressure
Gas Supply and Demand	Market studies of gas supply/demand scenarios
Gas Transmission Investment Programme	Gas transmission capacity availability
Information Disclosure	Developing new information disclosure requirements including for gas production outages
Interconnection	Terms of access for third party connections to gas transmission pipelines
Performance Measures	Tracked the performance of switching rules, downstream reconciliation, and CCO regulations (reports ended 2017)
Retailer Insolvency	The process that GIC follows in the event of a retailer insolvency
Switching and Registry	Provides a central database enabling consumer switching between competing gas retailers
Transmission Pipeline Security and Reliability	Examines the legislative, commercial and technical requirements for supply security and reliability

[21] A full list of GIC work programmes is available from: https://www.gasindustry.co.nz/work-programmes/

Other legislation includes:

- Part 4 of the Commerce Act 1986, administered by the Commerce Commission, which is used to cap the economic rate of return on natural monopoly gas transmission and distribution lines; and
- The Health and Safety at Work Act 2015.

The gas sector is covered by the New Zealand Emissions Trading Scheme. Producers and importers of natural gas have held surrender obligations since July 2010.[22]

3.3 Sector dynamics

A number of aspects of gas are particular to the sector and relevant to the assessment of governance and regulation.

Natural gas is taken from underground reservoirs which include a mix of natural gas, oil, condensate,[23] other hydrocarbons, water and impurities like carbon dioxide. These various elements must be extracted together and then separated and processed. Generally, condensates are the more valuable product, so natural gas is a by-product. There are few alternatives to the disposal of natural gas other than selling to end users. Flaring of gas is mostly disallowed in New Zealand law; reinjection of gas back into wells is expensive; storage at any significant scale is limited to Ahuroa, which can hold about 18PJs; and liquefication infrastructure necessary to export natural gas does not exist in New Zealand. This link between the production of gas and other products is significant: the rate at which valuable condensate can be extracted is limited by the rate at which natural gas can be disposed of. To a considerable degree, therefore, upstream producers and downstream users of natural gas are co-dependent. Users depend on production, and production depends on users taking gas.

The widespread use of long-term contracts in the gas sector is a response to the fact that investment in long-lived, sunk assets makes owners vulnerable to opportunistic renegotiation of terms by counterparties. Producers and users have each made large, sunk and substantially specific investments whose returns depend on the performance of users or producers, respectively. The presence of specific assets makes the sector sensitive to the quality of legal and regulatory institutions as checks on political opportunism.

International trade in natural gas is made costly by a need to liquify the gas before shipping and then re-gasify it after shipping. This overhead means imported natural gas is not competitive with domestic production. However, the cost of liquefication/re-gasification is falling, as evidenced by the rising use of floating liquefication platforms on the east coast of Australia to export gas to Asia. However, we understand the average domestic gas price remains well below the imported price.

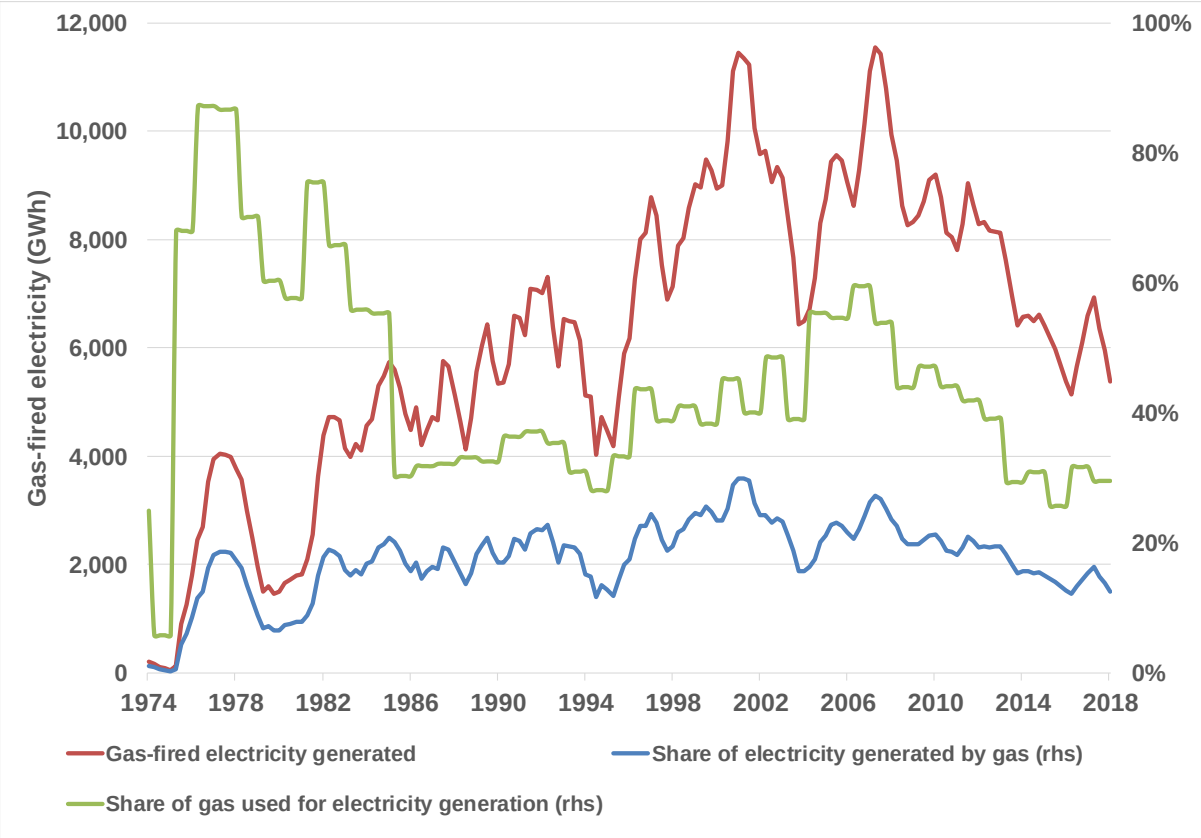
[22] Suzy Kerr, "A Guide to the New Zealand Emissions Trading Scheme," Motu Economic and Public Policy Research paper, August 2018, p.3. Available from: https://motu.nz/assets/Documents/our-work/environment-and-agriculture/climate-change-mitigation/emissions-trading/ETS-Explanation-August-2018.pdf

[23] A light hydrocarbon liquid.

3.4 Relation of gas with electricity

Gas is an important input into electricity generation. About 30% of gas production is used to generate electricity. Gas produces about 14% of New Zealand's electricity, about 6,200 GWh each year on average since 2014.[24] Gas-fired electricity production has roughly halved in the last ten years, from a peak of 11,551 GWh in the year to March 2008 (Figure 5).[25]

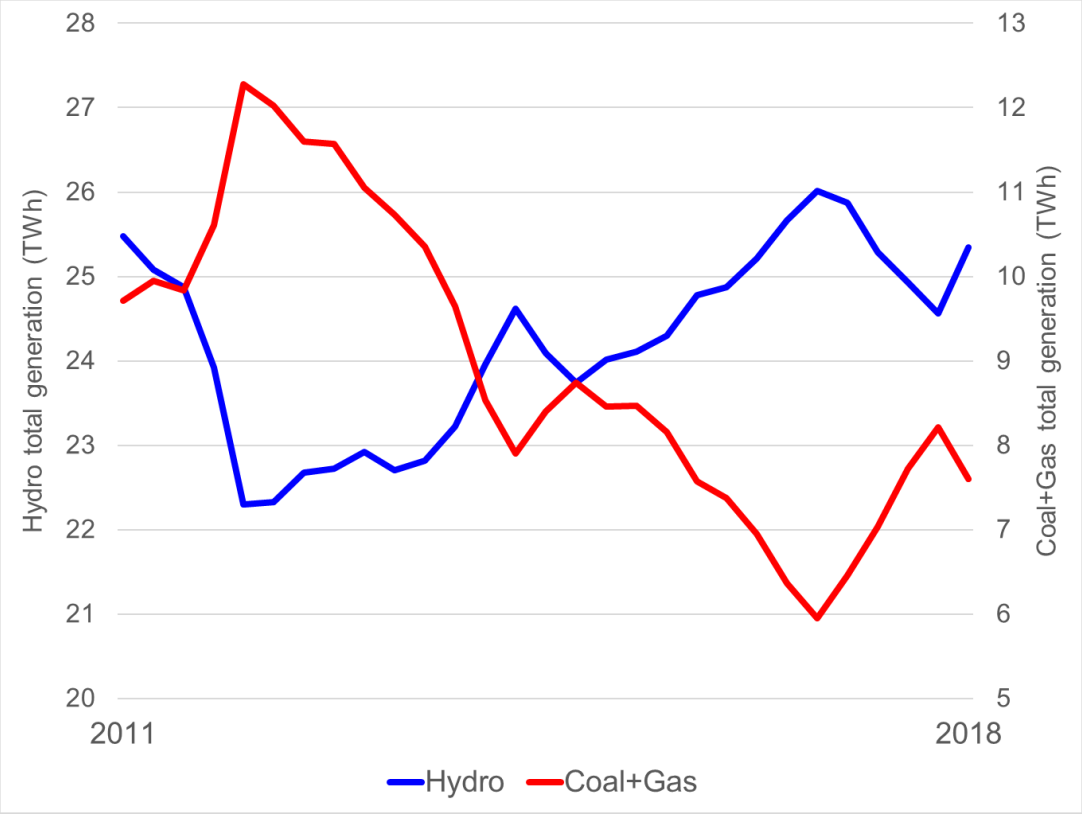
Figure 5: Gas-fired electricity generation in New Zealand, 1974-2018[26]



Hydrogeneration is by far the most important source of electricity in New Zealand, producing about 60% of New Zealand's electricity. Hydro's share of total generation varies substantially with lake inflows and is typically between about 50%-70%. Gas, along with coal, backs hydro in dry years when lake levels run low (Figure 6). Gas provides about 80% of this "firming capacity", coal much of the other 20%.

[24] GWh is gigawatt-hours. 1 petajoule is equal to about 278 GWh.
[25] The share of electricity produced by gas peaked six years earlier, in the year to December 2001, at 30%. MBIE Electricity Statistics, available from: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/electricity-statistics/
[26] Electricity's share of gas use roughly halved with the opening of the methanol production plant at Motunui in 1986. MBIE Electricity Statistics, available from: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/electricity-statistics/

Figure 6: Gas and coal back hydro in dry years



The gas and electricity sectors are primarily related through contract and through joint ownership.[27] Gas is purchased by generators mostly through long-term contracts. Regulation of each sector is mostly siloed. Each sector has its own primary legislation and for most matters its own regulator: MBIE for upstream gas, GIC for downstream gas, and the Electricity Authority over much of the electricity sector. The two sectors share an economic regulator, the Commerce Commission, which regulates the returns on natural monopoly infrastructure assets (the lines businesses in electricity and the transmission and distribution pipelines for gas) through Part 4 of the Commerce Act.

[27] Electricity generators own gas and some gas producers have electricity activities.

4. Summary of feedback

Between 27 February and 29 March 2019, TDB Advisory met with 23 gas industry stakeholders including upstream and downstream firms, experts, and regulators. Meetings were held under Chatham House rules. Our goal in meeting with stakeholders was to hear views on issues facing the industry, the performance of the current regulatory and governance structure, and expectations and demand for changes.

4.1 Regulation structure

We asked stakeholders about the co-regulation model and whether they would prefer an alternative. The weight of sentiment favoured retaining the co-regulation model but for the GIC to be given "more teeth" to act. Co-regulation was praised by some for encouraging wide engagement with the sector and for high levels of transparency brought about by consultation and the publication of submissions.

Three respondents suggested that an advantage of the co-regulation structure is the ability of GIC to engage in more creative forms of engagement than is possible under more formal regulation. An instance cited was GIC facilitating the development of a voluntary disclosure standard for gas quality on behalf of another regulator. Another example offered was GIC establishing its disclosure workstream in advance of authorising legislation, something that is more difficult for a full regulator.[28]

A minority of respondents believed co-regulation is not fit for purpose as a regulation model for the gas sector. However, only a small minority of respondents support a joint gas and electricity or energy sector-wide regulator. One respondent claimed co-regulation presents a double veto on new rules. In one instance, the GIC had approached MBIE with a proposal for a rule change but MBIE declined. Two respondents suggested that had the recently-completed GTAC process failed on a voluntary basis, it would have been seen as a failure of the co-regulation model itself and likely have led to its overthrow. Co-regulation is seen by some as slower than alternative models, although we also heard scepticism about whether alternatives would be much quicker.

Some respondents saw the Electricity Authority model as superior to co-regulation. One respondent anticipated improved access to recourse for decisions made under the EA. However, a few respondents saw the EA as heavy-handed, costly, and vulnerable to entrenchment in its positions that the consultative approach largely avoids. Some respondents saw risks in the creation of a joint regulator, particularly given the time and uncertainty around implementing a new structure; the potential for gas to suffer as the "little brother" of the larger electricity sector; and the risk of losing valuable institutional knowledge in the transition. It took a long time for the benefits of the MBIE amalgamation to be realised, according to one respondent. Calls for joint regulation seemed to be based more in strong dissatisfaction with the status quo, a belief that the current regulator is too close to industry or government, rather than a theory about how a joint regulator could specifically improve things.

[28] We note later in this report, however, that legislation may or may not currently authorise the GIC to regulate disclosure on upstream gas producers.

It was noted that there are already significant amounts of cooperation between the Commerce Commission, the GIC, and the EA. This includes secondments and shared IT infrastructure. This suggests some of the scale or scope economies of joint regulation might already be accessed.

4.2 Regulator performance

GIC is generally though not universally seen as a competent co-regulator.

The GTAC process, which GIC had a significant role in, is generally seen as well run and as having reached the "right result". A number of stakeholders noted the fact that the process held around 30 workshops, but the weight of sentiment was that this number was thorough and not excessive. GTAC's development was industry-led: the pipeline owner proposed rules for approval by the regulator. Two respondents suggested that an advantage of this industry-led approach is a tendency to avoid regulator entrenchment in certain positions, that is, a tendency for the regulator to dig in and defend its ideas that are rejected by the industry indefinitely.

However, a number of respondents expressed discomfort with industry, rather than the GIC, leading the GTAC process. One respondent referred to the GIC as being a "rubber stamp" and having a "she'll be right" attitude through the GTAC process and doing just enough to meet the government's expectations and no more. One respondent felt the outcome from the GIC's gas balancing workstream was unsatisfactory, and prematurely ended by the GIC out of a fear that the Minister would lose confidence the process could ever be resolved. Two respondents were disappointed the GIC did not express its view on GTAC until late in the process, leaving people in the dark.

A number of respondents noted the GIC is careful to protect its independence. However, a greater number of respondents see the GIC as too close to industry and as being unable to disagree with its major players. One respondent recognised the importance of maintaining the Minister's confidence as a counterweight to the potential for industry capture. Another respondent saw things quite differently, suggesting GIC is too close to the government and should be willing to disagree with government policy and more willing to promote the gas sector.

A number of respondents, particularly downstream, felt the GIC is reactive rather than proactive, and some felt GIC was not even reactive. Concerns around Critical Contingency Operator (CCO) curtailment rules (using bands) and oversight of pipeline security were commonly cited instances of perceived GIC reluctance to act.[29] Several respondents also felt the GIC had been too slow to respond to concerns around disclosure.

4.3 The Pohokura event, September-December 2018

Pohokura clearly had a major impact on most of the downstream users we spoke to. Patchy information on the cause, extent, repair and likely duration of the outage was a source of strong frustration for many industry participants. It is clear a number of the players we spoke to spent considerable time trying to source information from whoever they could. Only limited information about the Pohokura and concurrent Maui outages was available, according to one source. Respondents did not generally believe their supplier withheld information from them.

[29] Appendix B on page 62 lists the five transmission pipeline outages in New Zealand since 1970.

Despite frustrations over access to information, a number of respondents indicated that most of the costs of the outage (90%, according to one respondent) was due to the underlying supply problem, rather than limited information disclosure.

The wholesale market worked throughout the Pohokura event, according to most of the stakeholders we asked. Reallocations of gas rights did occur in response to force majeure declarations on many consumers. Gas found its way to its highest value use despite low market liquidity. Reallocations occurred mostly bilaterally rather than via the emsTradePoint platform. In at least one case gas rights were reallocated at great expense because the consumer was in competition with electricity generators. The three market makers in the gas market helped facilitate trades at least early on in the second Pohokura event.

There seem to be few if any limits on secondary trading, though two respondents suggested some contracts might contain rules against secondary trading. New Zealand has flexible arrangements, according to one respondent. We encountered a number of explanations for low market liquidity through the event, and no consensus on its cause. Explanations included: information asymmetry, the high cost of curtailing one's own customers leading to people holding on to whatever gas they had, and strategic withholding of gas. Although information was unevenly distributed, only one respondent believed information was being withheld for the purpose of gaming the market for profit. That respondent said they had raised concerns about gaming with GIC but had been "told to go away." Another respondent suspected opportunistic behaviour by a counterparty to a contract they held. In this case, the respondent made clear that the firm saw this as a commercial matter that was ultimately settled, both sides had recourse through the courts if necessary, and that particular issue did not create any need for further regulation.

Only two respondents raised concerns about whether oil and gas infrastructure at Pohokura is well maintained. One respondent called for mandatory assessment and monitoring of equipment. Other respondents suggested that until 2018 reliability had been high. Two respondents, neither of them upstream producers, suggested New Zealand was likely to be high in the world rankings for reliability, although they did not provide data to support this. One respondent pointed to a number of mechanisms protecting technical reliability: the financial cost of outages for well owners; checks conducted by insurers; the commissioning of expert evaluations of equipment by downstream customers during contract negotiations; and pressure on operators from owners which, in at least one instance in New Zealand, has led to legal action between joint venture partners.

4.4 Information issues

A significant number of respondents including regulators, upstream firms and some downstream firms indicated information was available about the second Pohokura event but was not being picked up by some industry players. As one respondent put it, the information was there but you "had to be alive to it". Outages in other infrastructure around the time of the Pohokura event tended to conceal the information that was important to understand Pohokura, according to one respondent. The problem to be solved, as much as disclosure itself, according to some participants, is the creation of an information hub, or "one source of truth". Part of the cost of patchy information sharing was the time and effort spent in finding information.

A number of respondents indicated that they believed some players – one in particular, who was identified in the EA's undesirable trading situation (UTS) decision – traded on information not in the public domain. A small number of respondents said they had investigated whether any actions had breached New Zealand law, but none concluded that a breach had occurred. A number of respondents talked about investigations by the EA and Australian financial regulator ASIC into trading, none indicated any lack of confidence in these processes. We found one claim of a major transaction, worth millions of dollars, which occurred well after the start of the Pohokura outage that, according to the respondent, would not have occurred had information been shared more widely.

Several respondents noted that there are legitimate reasons for secrecy. Disclosure of some types of information could potentially undermine security (the release of activity data could be used by activists for disruption), and there is sensitivity around commercial data, especially agreed prices in contracts. One respondent noted information flows between a field's operator and its owners are sometimes below owners' expectations.

Since OMV took control of operations at Pohokura in December 2018, some respondents suggested there had been an improvement in disclosure, though others firmly disagreed. A number of respondents pointed to the heavy internal compliance within companies like Shell that make public statements time consuming. It was said by a number of respondents that every public statement had to receive approval from the Hague. JV agreements generally include rules on public statements. One respondent also noted the inertia of oil companies – it can simply take a long time for practices to change. Another respondent said internal processes may make oil companies slow to make information public, but they will always comply with the law. First Gas earned praise for its disclosure as it resolved a recent outage in its pipeline.

A government agency pointed to the extent of information already disclosed. This includes resource consents, reserves and exploration data (after a period of withholding) by MBIE, gas generator availability, and disclosure requirements for listed companies. The agency pointed out that in a small market like New Zealand it is usually possible to piece together a comprehensive picture from information already being published if one is inclined to.

It is clear that patchy information sharing led to costs and significant difficulty for industry players. However, our impression from consultation is that at least a part of the disruption was due to underinvestment in preparedness for disruption to gas supplies. Such under-preparedness may reflect previously high reliability of gas infrastructure in recent years. A number of respondents noted that as gas fields age, production reliability tends to decline.

Information flows are important in both directions in commercial relationships: major users are obliged under their contracts to inform suppliers of downstream outages that prevent gas being taken. We heard no views either way on whether downstream users should be included in disclosure requirements.

4.5 Disclosure regulation

We found something like a consensus that disclosure obligations should improve, with half our respondents expressly supporting stronger disclosure and none disagreeing. We did not come across suggestions that increased disclosure around production outages could be harmful, discourage investment, or be disturbingly far out of line with practices overseas. We encountered no strong objection to a lift in disclosure. In fact, we were surprised at the apparent disinterest on the question

among respondents most likely to be affected by changes in disclosure rules. Some claimed they hadn't thought about the question of improved disclosure.

Notably, despite a wide expectation that disclosure should improve, no respondents indicated any attempts had been made to alter disclosure requirements following the second Pohokura event, although one respondent did indicate their company would seek changes. This might be explained by a comment from one correspondent along the lines that voluntary disclosure is vulnerable to one player holding out: if one holds out then everyone does.

We heard mixed views on whether disclosure will be difficult for the GIC to implement. Some felt disclosure will be simpler for GIC to implement than GTAC. However, a number of respondents pointed out that disclosure around mechanical availability of plant is more straightforward than for the "softer" issue of gas production and availability. Part of the difficulty is greater intrinsic uncertainty of production outages. Offshore repairs are often weather-dependent, and for pipes it is sometimes hard to know the extent of a problem for some time.

We received interesting suggestions on how rules should be targeted. One respondent suggested disclosure rules should target the operator of gas fields, not the owners. Another respondent suggested disclosure must target the wellhead, not just downstream electricity generators using gas. As to what information should be subject to disclosure, there was unanimity among those who expressed a view that mandatory disclosure should include planned and unplanned outages. One respondent drew a distinction between unplanned outages and force majeure. Views were split on whether commercial information, such as contract terms, should be included. Commercially-agreed pricing information was considered by some respondents as more sensitive than most other information. One respondent noted the inconsistency of disclosure rules depending on whether a company is listed or not listed.

A number of respondents emphasised, at some length in some cases, that the intrinsic uncertainty of oil and gas mining is not appreciated and were concerned that disclosure rules might force the appearance of more certainty than was justified. These respondents also felt that it was not well appreciated that limited availability of information during the Pohokura event was the product of genuine uncertainty. Our conversations with downstream players suggested they were not confused on this point. Some made clear that a part of the value of improved disclosure would simply be to communicate at predictable intervals that no new information was available so that players could be sure they had not missed something.

Existing disclosure systems Red Spider, Jam Solutions and OATIS received mixed reviews.

One respondent noted that until about 2012, GIC had actually collected data on a voluntary basis from upstream gas firms on year-ahead production profiles (we have not been able to confirm this). This respondent made a suggestion for a disclosure regime: reinstate this data collection and reporting and require the disclosure of exceptions reports, i.e. departures from this forecast production profile.

We heard mixed views on whether disclosure would present a major overhead for businesses. Perhaps a weak majority felt disclosure would not be a significant overhead.

4.6 Other concerns

Besides disclosure, consultation identified the following issues:

- CCO banding rules are too granular, the process for deciding prioritisation is unreasonably difficult and appeal rights are either limited or unnecessarily expensive ("do I have to go to the High Court for recourse?");
- the GIC has not been sufficiently proactive on pipeline security, a matter raised by a number of Auckland-based firms;
- whether there are sufficient checks and balances on "Chinese walls" information separation within firms operating in both gas and electricity;
- whether there should be disclosure of issues the GIC chooses *not* to pursue;
- whether the GIC funding model is appropriate. Funding increases with the size of the gas industry but may not reflect cost drivers for regulation, or whether a single levy might be more appropriate;
- whether the GIC should remain exempt from the Official Information Act; and
- whether the GIC, rather than firms, should lead regulatory processes like GTAC.

4.7 Miscellaneous issues

The introduction of (stricter) term limits for GIC board members found some support and no opposition.

There was a strong emphasis on regime certainty. The government's decision in April 2018 to ban new oil and gas exploration was cited as significant by a number of players not so much for its content but for the poor quality of the policy process. A number of respondents told us the decision was noted within the oil and gas industry around the world. Two respondents told us that the decision was noticed across the world by investors in other sectors.

One respondent noted that a sentiment to come out of Pohokura was "a loss of confidence in gas". For that respondent, this view is very significant.

A number of respondents suggested liquefication and re-gasification infrastructure, necessary to open the door to international gas trading, is expensive and may present a permanent barrier to importing of gas. However, one respondent noted the costs of this liquefication and re-gasification technology is falling fast, it can be loaded onto boats and moved, and this technology is now used on the east coast of Australia for exporting gas to Asia.

Concerns around upstream market power were not raised with us. A downstream user suggested the benefits of ownership of gas supplies stems from portfolio effect, not from the ability to avoid or exercise market power.

4.8 Summary of findings from industry consultation

The main points we take from our industry consultations are:

- there is strong demand for the introduction of rules or regulations providing for information disclosure regarding gas production outages;
- information issues that arose during Pohokura were not just about disclosure but about the discovery of information i.e. finding information that is in the public domain;
- most of the costs of the second Pohokura outage were due to gas scarcity, not limited information;[30]
- the co-regulation model is generally seen as sound but is insufficiently proactive and needs "more teeth";
- the GIC is seen as too close to industry and too reluctant to pull the trigger on regulation;
- neither a joint gas and electricity regulator or an all-energy regulator has wide support – most stakeholders do not see what problem is solved by a new regulatory structure; and
- there is strong dissatisfaction with the current regulation model among three to four industry participants.

[30] This is not to suggest disclosure was unimportant. Plainly, disclosure is a major concern for many industry participants. However, a number of stakeholders suggested to us that the effects of the Pohokura outages may have been similarly consequential for their operations even with perfect information. It is clear that limited information in many cases added to the problems.

5. Governance and regulation of gas and electricity

In this chapter, we describe the current regulatory and governance arrangements in the gas sector. Our goal in understanding these arrangements is to attempt to identify ways in which those arrangements may lead to the concerns identified in consultation, whether directly or indirectly. This is the necessary foundation for recommending changes.

We open with a description of the legislation and regulations governing the gas sector, with a focus on the three main instruments most relevant to governance:

- the primary legislation is the Gas Act 1992, which establishes co-regulation, the co-regulators, and rules governing the scope and use of their authority;
- the GIC's constitution, which establishes decision rights and procedures by the board and management of the GIC; and
- a Government Policy Statement (GPS) for gas, which assigns additional objectives and outcomes to the GIC.

However, the gas sector is subject to a legislative and regulatory framework that is considerably broader than these three instruments. Table 2 provides an overview of the legislation and regulation impacting on the gas sector.

Table 2: Legislation and regulation governing the gas sector

Legislation and regulation	Functions	Role of regulatory bodies	Exploration and Production	Processing	Transmission	Distribution	Wholesale	Retail
Gas Act 1992	Power to conduct audits, tests, enquires or investigations to determine compliance with the Act, requirement to inform MBIE of key gas activities, establishes co-regulator and sets out regulatory objectives and scope	Responsible department		MBIE				
		Regulator		Gas Industry Company				
		Regulator		WorkSafe				
Gas (Safety and Measurement) Regulations 2010	Safe supply of gas	Responsible department		MBIE				
		Regulator		WorkSafe				
Gas (Downstream Reconciliation) Rules 2008	Provides uniform processes to enable the fair, efficient, and reliable allocation and reconciliation of downstream gas quantities.	Responsible department			MBIE			
		Regulator			Gas Industry Company			
Gas Governance (Critical Contingency Management) Regulations 2008	To achieve the effective management of critical gas outages and other security of supply contingencies without compromising long-term security of supply	Responsible department		MBIE				
		Regulator		Gas Industry Company				
Gas Governance (Compliance) Regulations 2008	Establish a number of compliance processes and key compliance roles, including the Market Administrator, an Independent Investigator and a Rulings Panel.	Responsible department		MBIE				
		Regulator		Gas Industry Company				
Gas Policy Statement 2008	Policy objectives and outcomes for the gas industry	Responsible department		MBIE				
		Regulator		Gas Industry Company				
Commerce Act 1986 (general)	Promote competition and protect against the inappropriate exercise of market power and price fixing	Responsible department	MBIE					
		Regulator	Commerce Commission					
Commerce Act 1986 Part 4	Regulation of the price and quality in markets where there is little or no competition	Responsible department			MBIE			
		Regulator			Commerce Commission			
Crown Minerals Act 1991	Policies on exploration and mining of petroleum products (including gas)	Responsible department	MBIE					
		Regulator	New Zealand Petroleum & Minerals (MBIE)					
New Zealand Standards	Various technical standards that are only mandatory if incorporated into regulations or legislation	Responsible department			MBIE			
		Standard writer			Standards New Zealand			
Emissions Trading Scheme	Incentivise reduction of greenhouse gas emissions through pricing of emissions	Responsible department	Ministry for the Environment					
		Regulator	EPA					
Fair Trading Act	Protects consumers against misleading and deceptive conduct in trade	Responsible department						MBIE
		Regulator						Commerce Commission
Consumer Guarantees Act	Consumer protection legislation	Responsible department						MBIE
		Regulator						Commerce Commission
Health and Safety at Work Act 2015	Improve health and safety at work	Responsible department	MBIE					
		Regulator	WorkSafe					
Resource Management Act 1991	Regulates use of land, air, coastal or water related resources.	Responsible department	Ministry for the Environment					
		Regulator	Territorial Authorities					
Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012	Manages the environmental effects and potential risks of activities in New Zealand's oceans, such as petroleum exploration	Responsible department	Ministry for the Environment					
		Regulator	EPA					
Hazardous Substances and New Organisms Act 1996	Preventing or managing the adverse effects of hazardous substances like gas	Responsible department				Ministry for the Environment		
		Regulator				EPA		
		responsible for ensuring compliance				MBIE and others		

5.1 The legislation

The gas sector's primary legislation is the Gas Act 1992.[31] The Act's purpose (Section 1) is:

> *… (a) to provide for the regulation, supply, and use of gas in New Zealand; and*
>
> *(b) to provide for the regulation of the gas industry in New Zealand; and*
>
> *(c) to protect the health and safety of members of the public in connection with the supply and use of gas in New Zealand; and*
>
> *(d) to promote the prevention of damage to property in connection with the supply and use of gas in New Zealand.*

In 2004, the Act was amended to introduce part 4A. This part establishes the co-regulation model for the gas sector, and the co-regulators the Government and an "industry body" (section 43ZL). Regulation subsequent to the passing of the amendment established the GIC as the industry body.[32]

Part 4A gives the following objectives to the GIC as the industry body (section 43ZN):

> *(a) the principal objective is to ensure that gas is delivered to existing and new customers in a safe, efficient, and reliable manner; and*
>
> *(b) the other objectives are—*
>
> > *(i) the facilitation and promotion of the ongoing supply of gas to meet New Zealand's energy needs, by providing access to essential infrastructure and competitive market arrangements:*
> >
> > *(ii) barriers to competition in the gas industry are minimised:*
> >
> > *(iii) incentives for investment in gas processing facilities, transmission, and distribution are maintained or enhanced:*
> >
> > *(iv) delivered gas costs and prices are subject to sustained downward pressure:*
> >
> > *(v) risks relating to security of supply, including transport arrangements, are properly and efficiently managed by all parties:*
> >
> > *(vi) consistency with the Government's gas safety regime is maintained.*

Sections 43C, 43F and 43G of the Act specify the scope of the GIC's responsibilities to cover:

- transmission and distribution, including pipeline access, and requiring expansion, upgrades or service quality improvements;
- retail and customer issues;
- the wholesale market processes, conduct, and security of supply contingencies;

[31] Other legislation governs various parts of the gas sector, most importantly Part 4 of the Commerce Act 1986, the source of rate of return regulation of gas transmission and distribution lines administered by the Commerce Commission; and the Crown Minerals Act 1991 which covers exploration and oil and gas production, administered by MBIE (older gas fields are subject to the Petroleum Act 1937). A more complete summary of legislation is provided in Table 2.

[32] The Gas Industry Company was appointed the industry body in "Gas (Approval of Industry Body) Order 2004," available from: http://www.legislation.govt.nz/regulation/public/2004/0476/latest/096be8ed80461bc3.pdf

- access to gas processing;
- disclosure of price information by gas transmitters, distributors and retailers; and
- enforcement of gas regulations.

Excluded from this list is upstream production. However, among the "industry participants" listed in section 43D are "gas producer[s]". That is significant because various parts of the Act place obligations on "industry participants". For example: [33]

- 43G(2)(l) says gas regulations may be made for the purpose of "providing for processes for settling particular issues within the gas industry… requiring compliance by industry participants";
- 43U says industry participants must comply with the GIC's investigations; and
- 43ZL says the industry body must be inclusive of industry participants.

We discuss other aspects of this legislation later in this chapter.

5.2 GIC's constitution

The GIC is subject to the Companies Act. Section 31 of the Companies Act says that the constitution of a company is binding between the company and each shareholder, and between shareholders. Given the GIC's industry ownership,[34] its constitution is therefore relevant to understanding the relationship between ownership and decision making.

Section 43ZL(2) of the Act sets conditions for the approval of the industry body. Four of those conditions relate to the industry body's constitution. These are:

> *(b) the constitution of the industry body requires the board of that body to have a majority of independent[35] members, including an independent chairperson; and …*
>
> *(d) the industry body has objectives, in its constitution, that are consistent with the objectives in section 43ZN [quoted above]; and*
>
> *(e) the industry body enables, and has provisions in its constitution that enable, all industry participants to become members of the industry body; and*
>
> *(f) the constitution of the industry body requires it to report regularly to the Minister on—*
>
> > *(i) the performance and present state of the New Zealand gas industry; and*

[33] The legislation has some ambiguity about the scope of the GIC's authority regarding upstream producers. The GIC may have the statutory power to recommend the introduction of disclosure rules on upstream producers. However, in its reply to a letter from the Minister of Energy and Resources asking the GIC to develop information disclosure requirements, the GIC sought a "clear regulation making power". The letter from the Minister (25 July 2018) and the GIC's reply (16 August 2018) are available from: https://www.gasindustry.co.nz/work-programmes/gas-sector-information-disclosure/overview/

[34] Currently, there are 14 shareholders in the GIC from across the gas sector each holding $1 shares. See https://www.gasindustry.co.nz/about-us/shareholders/

[35] Section 43ZL(3) defines a member of the board as not independent if that person has a financial interest in an industry participant, or is a director, officer, member, employee, or trustee of an industry participant,
Or is otherwise directly or indirectly materially interested in an industry participant.

(ii) the industry body's performance and achievement of its objectives; and

(iii) any other matters the industry body thinks fit or the Minister requests in writing.

Notable features of the GIC's constitution relevant to considering the GIC's independence include:[36]

- the board must have seven directors, of which four must be independent (clause 17.1);
- the chair of the board is elected by board members (21.1) and as the legislation requires must be independent (21.2);[37]
- every year, at the annual meeting, at least two directors must retire (20.1) either voluntarily or, failing that, on a last in-first out basis (20.2(b)). Retiring directors may be re-elected (20.4(a)) (and in practice regularly are);
- among the procedural requirements in the constitution are a quorum – at least 2 independent and at least 2 non-independent directors (Schedule 3, 4.1) – and a rule that minutes of all meetings are kept (Schedule 2, 8.1);
- the board may refund fees to shareholders by ordinary resolution (29); and
- the board may delegate any of its powers to any person within the company or without (23.1).

The Gas Act requires that the industry body is broadly inclusive of industry participants and that all industry participants can become members of the industry body (43ZL(2)). Under the GIC's constitution, any industry participant may become a shareholder in the GIC (clause 7.1). Each industry participant may hold one $1 share (7.1). Subsidiaries are not considered separate companies (7.5) unless the GIC board deems a subsidiary sufficiently independent from its parent (7.6). Shares may not be transferred (9).

Share ownership confers a right to propose resolutions (GIC constitution schedule 2, 9.1), and to vote on resolutions (7.8(a)). Resolutions may include director and auditor appointments, altering the constitution, approving a major transaction and liquidating the company.

Shareholder resolutions regarding the management of the GIC do not bind the GIC board (16.3).

Directors are appointed by the vote of shareholders (constitution 19.1). The Board (constitution 20.9) or any shareholder (constitution 20.7) may nominate a person for election as a director. Retiring directors may choose to stand for re-election (constitution 20.8). Shareholders may vote to remove any director (constitution 19.2, Companies Act s156). The chair of the board is elected by directors (constitution 21.1). The Board may delegate its powers to employees of the GIC or any other person (constitution 23.1).

The potential consequences of these rules on the GIC's decision making is analysed later in section 5.9.

[36] The GIC constitution, as amended at 30 September 2008, is available from: https://www.gasindustry.co.nz/about-us/governance/

[37] The term 'independent' is defined in clause 17.2 of the GIC constitution and is identical to the definition in the legislation at section 43ZL(3).

5.3 Government Policy Statement

The third main instrument for gas sector regulation is the Government Policy Statement (GPS). The Act provides that the Minister may use a GPS to set objectives and outcomes that the Government wants the industry body to pursue (43ZO(1)). The Act requires that the GIC "have regard" for the objectives and outcomes of a GPS when making recommendations for regulations (43ZO(4)).

The current GPS was tabled in April 2008.[38] It repeats the objectives for the industry body contained in the legislation and adds additional objectives that include references to efficiency, competition, price signalling, and consumer benefits (section 12):

> *In addition, the Government adds the following objectives as follows:*
>
> *a) Energy and other resources used to deliver gas to consumers are used efficiently;*
>
> *b) Competition is facilitated in upstream and downstream gas markets by minimising barriers to access to essential infrastructure to the long-term benefit of end users;*
>
> *c) The full costs of producing and transporting gas are signalled to consumers;*
>
> *d) The quality of gas services where those services include a trade-off between quality and price, as far as possible, reflect customers' preferences;*

The GPS also includes references to environmental sustainability.

5.4 Co-regulation

Under the co-regulation model, the GIC has no regulatory powers of its own. That power sits with the Government. Regulation occurs when the GIC makes a recommendation for regulation to the Minister of Energy and Resources and the Minister accepts the recommendation (section 43J).[39] Before making a recommendation, the GIC must (43N(1)):[40]

- "seek to identify all reasonably practicable options for achieving the objective of regulation;"
- assess those options against their costs and benefits and the extent to which each option would achieve the objective; and
- be satisfied that the objective cannot be achieved by any means other than regulation.

The GIC must also consult representatives of those it thinks will be affected by the proposed regulation, give them the opportunity to make submissions, and consider those submissions before making any recommendation for regulation (43L(1)).

Upon receiving a recommendation for regulation from the GIC, the Minister may accept or reject the recommendation (section 43ZP(1)). The Minister may also recommend regulation that is different from

[38] Available from https://gasindustry.co.nz/dmsdocument/4791
[39] The Minister also has power under the Act to make "rules" (43Q-43R). Rules are subordinate to regulation – where they conflict regulation wins – but otherwise rules are binding in the same way as regulation.
[40] Section 43N(3) also exempts recommendations from the assessment process in 43N(1) that will have only minor effects.

the GIC's recommendation. However, the Minister must then consult representatives of those affected by the regulation (43L(2)). Regulation is made by Order in Council (section 43F(1)).

The Act provides for urgent regulation (section 43P) that exempts regulation from the consultation and assessment requirements in sections 43L and 43N. Urgent regulation is authorised when, in the GIC's opinion, it is in the public interest. However, the exemption from consultation and assessment is only temporary: these must still occur within six months of the regulation. In addition, the GIC must make a separate recommendation whether to maintain, amend or revoke an urgent regulation (section 43P).

5.5 Minister's powers

The Minister of Energy and Resources has two important powers under the Gas Act relevant to an assessment of governance and regulation of the gas sector. The Act authorises the Minister to modify a recommendation for regulation made by the industry body. If the Minister does choose to make changes, she or he is then required to consult with affected interests and receive and consider submissions (43(L)(1-2)).

The second of the Minister's powers is the ability to shift decision rights held by the GIC as the industry body to the Electricity Authority, creating the Energy Commission (43ZZH(2)). A decision to replace the industry body with the Energy Commission would be made by Order in Council.[41] The legislation places only limited obligations on the Minister:

- he or she must consult with the industry body, and be satisfied either that a Commission has been or will be established, or that the industry body does not meet the conditions in section 43ZL;
- the decision must be published in the Gazette with the Minister's reasons;
- submissions from the public must be invited and then considered;
- the replacement of the industry body is given effect no less than 3 months and no more than 12 months after notice is published in the Gazette.[42]

None of the requirements in the last three bullet points above apply if the Minister considers urgent action is in the public interest.[43]

The legislation does not put any limits on the Minister's reasons. In effect, the GIC serves at the will of the Minister of Energy and Resources, a legislative mechanism that parallels the Minister of Finance's ability to replace the Governor of the Reserve Bank under the Reserve Bank Act. The GIC has a clear incentive to maintain the confidence of the Minister.

[41] It is also worth noting that under the Act the Energy Commission remains subject to the consultation obligations and the requirement to conduct cost-benefit assessment of options, among other things, that the GIC currently operates under.
[42] These requirements are in Gas Amendment Act 2004 No. 83 (17 October) section 3(1).
[43] Gas Amendment Act 2004 No. 83 (17 October) section 3(3).

5.6 Existing disclosure rules

The Act already enables the regulation of disclosure obligations with regard to:

- market information by wholesalers (43F(2)(a));
- information on "tariff and other charges" by gas transmitters, distributors and retailers (43G(2)(e));
- the disclosure of information on "any of the matters specified in the subpart"[44] including the form and manner of disclosure, and when and for how long disclosure is required (43S(1)(a-g));
- disclosure of payments to board members and employees of the industry body (43ZX);
- wholesalers supply prices and terms and conditions of supply (55(1)(a));
- financial statements of wholesalers, pipeline owners, and gas retailers (55(1)(b));
- pipeline owners to publish prices, terms of access, costs, cost allocation policies, performance measures, gas conveyed, and pipeline capacity ((55(1)(c)) and components of charges (55(1)(j)); and
- gas retailers to publish price, terms and conditions of services (55(1)(d)).

At various places, the legislation allows for the exemption of any person or class of persons from disclosure obligations. Section 57 provides penalties for non-compliance with disclosure obligations.

The GIC itself is also subject to standard accountability disclosure obligations, similar to Crown agencies. The GIC must provide:

- an annual report within three months of the end of a financial year that includes audited financial results (43ZW-43ZY); and
- a statement of intent produced before the start of each financial year covering the next three years (43ZQ).

5.7 Other matters

Other matters relevant to the gas industry regime include:

- Compliance: section 43X of the Act provides for a Rulings Panel to consider and rule on any allegation an industry participant has breached any gas governance regulations or rules. The Panel is empowered to set compensation and penalties, impose reporting requirements, and to "make an order terminating or suspending the rights of an industry participant under any gas governance regulation or rule."
- Appeal rights: sections 43ZA-43ZJ of the Act cover appeal rights. Appeals to the High Court are allowed on matters of jurisdiction, and for suspension or termination orders on an industry

[44] This refers to subpart 1 of Part 4A of the Gas Act.

participant. On other matters, the right of appeal on decisions by the industry body (or Commission or Rulings Panel) is limited to a "question of law" (43ZC). Judicial review is allowed. The High Court may confirm, modify or reverse decisions by the industry body, or refer matters back.

- Investigation powers: sections 43U-43W authorise any investigation by the industry body (or the Commission) of industry participants "for the purposes of monitoring or enforcing any gas governance regulations". The Act provides the industry body with powers to compel sharing of documents and information and access to business premises of any industry participants.

- The GIC has signed memoranda of understanding with the Commerce Commission, mainly directed at information sharing, and FirstGas, which concerns the governance of transmission lines and rules for Code changes.[45]

- As a private company, the GIC is not subject to the Official Information Act. Industry consultation did not suggest significant concerns about this.

5.8 Recommendations for regulation by the GIC

The track record of the GIC provides information about its willingness to regulate. Since its launch in 2004, the GIC has made 13 recommendations for regulation or rules[46] to the Minister, excluding annual levy recommendations. The GIC last recommended regulation (other than annual levies) in 2014. A full list of the GIC's recommendations for regulation is provided in Appendix A.

5.9 Analysis

Our industry consultation revealed concerns about whether the GIC is too reluctant to regulate against the interests of industry stakeholders; whether the GIC is sufficiently pro-active or, in some cases, reactive; whether complicated or adversarial regulation issues are vulnerable to gridlock under co-regulation; and whether the GIC will deliver on disclosure under the co-regulation model.

The Gas Act gives the GIC and the Government the necessary authority to regulate gas sector participants. The question is not whether the GIC and the Government have sufficient "teeth" under the Act – they have – but whether we can identify any factors that under co-regulation might inhibit the use of regulation when that is justified by efficiency or any of the other objectives of the GIC and the Government in the Act.

We identify the following issues as having the potential to explain some or all of these concerns:

- industry capture;
- budget constraints;
- consultation obligations; and
- work programme setting.

[45] Code refers to the Maui Pipeline Operating Code. The GIC's memoranda of understanding are available from: https://www.gasindustry.co.nz/publications/landing-pages/memoranda-of-understanding/
[46] The Act provides for "rules" (43Q-43R) which are functionally equivalent to regulation.

Two additional factors may be relevant with respect to upstream disclosure. First, the limited and uncertain legislative scope given to the GIC in the Act may have prevented a more pro-active response. Without certainty that Parliament had authorised the industry body to recommend the regulation of upstream disclosure rules, the GIC may have felt constrained in what it could do, understandably so. A second factor that may be relevant is complexity. Disclosure could turn out to be a difficult problem for the GIC. Prolonged processes add costs, but so do truncated processes.

We now consider each of the four possible factors listed in the bullet points above.

5.9.1 Industry capture

Industries may invest in the capture of their regulator if capture would lead to rules sufficiently more-favourable as to justify the investment. For the New Zealand gas sector, our view of the factors that might raise the risk of capture include:

- industry ownership of GIC;
- repeated interactions between the GIC and industry brought about in part by the consultation requirements in the Act;
- concentrated supply in parts of the gas sector (upstream, transmission);
- long average tenure of GIC board members (see Table 3); and
- lack of gas imports.

Our view of factors that might reduce the risk of industry capture of the regulator in the New Zealand gas sector include:

- the Minister's power to replace GIC for any reason, though it must be noted this mechanism increases risks of political capture;[47]
- the Minister's power to modify recommendations from the GIC, subject to further consultation;
- high transparency – all submissions received by GIC in consultations are published; the Minister is required to table the GIC's annual report and statement of intent in Parliament; the GIC publishes its work programme;
- legislated requirement that the industry body is "broadly inclusive"[48]
- regulation requires the agreement of both the regulator and government;

[47] Norton (2005:51) observes that if a regulator's personnel feel that they work in a body that truly independent then they will be less likely to yield to outside interference.
[48] Gas Act section 43ZL(2)(a).

- GIC has only limited powers to regulate market entry, which reduces the value of investing in capturing the regulator;[49] and
- the sector holds disparate views on some and possibly many matters, including disclosure, that tends to fragment interests and reduce returns on investment in capture.

We conclude that capture is not a convincing explanation for the concerns raised with us by stakeholders.

However, the risks of capture in the future cannot be ruled out. Perceptions of capture matter when the model of regulation itself is in question. Standard protection against risks of capture or perceived capture is the use of term limits for board members. The trade-off with term limits is the potential to deprive a regulator of expertise and experience. One way of reducing such losses is through overlapping terms of board members, which can balance continuity with the protection of independence.

Table 3: Board members and tenures

Name	Tenure	Affiliation
Independent		
Rt Hon James B Bolger	14 years	Independent
Robin G Hill	14 years	Independent
Denis K Clifford	2 years	Independent
Mark J Verbiest	5 years	Independent
Keith Davis	12 years	Independent
Andrew Brown	8 years	Independent
Non-independent		
Stephen P Barrett	1 year	Contact
Mark X Franklin	3 years	Vector
Murray E Jackson	3 years	Genesis
Ajit Bansal	2 years	Shell
David Baldwin	4 years	Contact
Simon Mackenzie	3 years	Vector
Albert Brantley	5 years	Genesis
Dennis Barnes	8 years	Contact
Ron Kelly	1 year	Shell
Andrew Knight	5 years	NZ Oil and Gas
Nigel Barbour	5 years	PowerCo
Gabriel Selischi	2 years	OMV
Average independent	9.2 years	
Average non-independent	3.5 years	
Average overall tenure	5.4 years	

[49] The Crown Minerals Act administered by MBIE governs entry into upstream gas exploration and production. A Rulings Panel, an independent body appointed by the Minister of Energy and Resources, may suspend or terminate an industry participant for breach of rules. See "Gas Governance (Compliance) Regulations 2008 (SR 2008/253)," available from: http://www.legislation.govt.nz/regulation/public/2008/0253/39.0/DLM1452901.html

5.9.2 Budget constraints

GIC's proposed expenditure for the 2019/20 year is $5.2 million.[50] This expenditure will be funded through:

> **industry levies:** The levies comprise a wholesale levy (1.1279 cents per GJ proposed for 2019/20) and a retail levy ($6.12 cents per customer[51] proposed). The industry levies are expected to raise $3.7 million in 2019/20;[52]
>
> **market fees:** Section 43S of the Act provides for industry governance regulations or rules to be funded by industry participants. Fees are used to recover the costs of external service providers and consultants. Downstream Reconciliation Rules, Switching Arrangements and Critical Contingency Management Regulations each contain market fee provisions. Proposed market fees are expected to total $1.5 million in 2019/20;[53] and
>
> **annual shareholder fee:** Shareholders also pay an annual fee, currently set at $2,000 per shareholder, for a total of $28,000 per annum.

The primary source of GIC funding, the levies, are set annually through regulation. The Act authorises the use of regulation to levy industry participants (43ZZB) to fund specific functions (essentially policy work and market administration, see 43ZZC) by the industry body. The level of the levy is based on a recommendation from the GIC to the government. The Act requires consultation on all proposals for levies (43ZZD(2)(b)). The Minister must accept the industry body's recommendation for levy regulation provided the Minister is satisfied the levy is reasonable and that the industry body has consulted with the industry (43ZZD).

The literature recognises that self-regulation tends to provide stronger pressure for cost containment by the regulator than government regulation. We identified funding as a potential constraint on the ability of GIC to respond to unexpected events like production outages and the demands for disclosure that immediately followed. Industry pressure to contain costs might amount to a form of industry capture if that leaves the regulator in a position where it cannot respond to unanticipated events and other demands for an expansion in the scope of its activities.

However, it does not appear that funding constrains the GIC in this way. Each year since 2012, the GIC has refunded an average of $428,000 of levies to industry participants (Table 4). In the GIC's most recent annual report, its financial statement shows reserves of $2 million in cash or cash equivalents, just over one third of its annual operating budget. Furthermore, the Gas Act authorises the GIC and the Government to regulate levy contributions on the condition only that levies are reasonable and the industry has been consulted (43ZZD). In combination, these factors suggest the GIC's finances do not constrain effective operations.

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[50] Gas Industry Company, "Consultation on Gas Industry Co FY2020 Work Programme and Levy," 11 February 2019.
[51] The retail levy is per installation control point to which the retailer has a contract to supply gas.
[52] Statement of Intent June 2018 p.20, available from https://gasindustry.co.nz/dmsdocument/6067
[53] Ibid.

Table 4: GIC levy refunds FY2012-2017

Financial year	Refund
2017	$490,216
2016	$331,757
2015	$383,568
2014	$562,621
2013	$509,253
2012	$287,998

5.9.3 The consultation obligation

Before making a recommendation for regulation, the GIC is obliged under the Act to satisfy all of the following requirements:

- consult with persons that the recommending body thinks are representative of the interests of persons likely to be substantially affected by the proposed regulations (43L(1)(b));
- give those persons the opportunity to make submissions (43L(1)(c));
- consider those submissions (43L(1)(d));
- seek to identify all reasonably practicable options for achieving the objective of the regulation (43N(1)(a));
- assess those options by considering the benefits and costs of each option (43N(1)(b)(i)); and
- ensure that the objective of the regulation is unlikely to be satisfactorily achieved by any reasonably practicable means other than the making of the regulation (for example, by education, information, or voluntary compliance) (43N(1)(c)).

Our concern is whether these statutory requirements set to high a bar for regulation. In combination, could these requirements force the GIC to persist with attempts at voluntary solutions beyond what Parliament might have intended?

We tested this possibility with selected stakeholders. In its recent options paper on disclosure, the GIC noted at least one industry participant has said it will not co-operate. Our question to stakeholders was: does the legislation force the GIC to seek a non-regulated solution even after signals of non-cooperation? We were told the legislation does not oblige the GIC to continue seeking a non-regulated solution, and that a recommendation for regulation could go to the Minister immediately after passing of the enabling amendment to the Gas Act.

We also have concerns about the potential vulnerability of the co-regulation model to strategic behaviour by industry participants. A scenario might arise where participants who have no intention of cooperating with a voluntary solution to a particular issue might nevertheless signal cooperation to the

regulator. The Gas Act requires the GIC to pursue the objective of regulation by non-regulated means up to the point non-regulated alternatives are unlikely to be achieved (43N). It may take some time – possibly years – before it becomes clear that a voluntary solution is unlikely, a time lag that could be valuable for participants if that delays the introduction of unwanted regulation. It is not clear that the legislation gives the GIC the option to go directly to a recommendation for regulation where regulation might be preferred.

5.9.4 Work-programme setting

As part of its levy-setting consultation, the GIC also consults the sector on its proposed work programme, something the legislation does not require but a natural adjunct to consultation on funding.[54] The GIC's work-programme content can come from the industry participants through submissions, the Minister, or from within the GIC.

A potential channel for industry capture is through control of the GIC's work programme. As one stakeholder put it in our consultation, "it would be interesting to see what GIC decides *not* to do." Industry can influence the GIC's work programme by submitting on funding and workstream proposals. But industry also has less direct governance channels: participants may vote to add or remove board members or introduce and then vote on resolutions including those relating to management issues (though management resolutions do not bind the board (constitution 16.3). However, GIC has no obligation to listen to industry demands on its proposed work programme. We see no evidence of capture through industry influence over workstreams.

We do not see elements in the Act, regulation or the GIC's constitution that might prevent the GIC from making rapid adjustments to its workstreams in response to unexpected events. The Gas Act does not appear to prevent the GIC board and management undertaking work outside the scope of the Act, although it plainly prevents the GIC from recommending regulations outside the Act's scope.

Can the GIC prepare recommendations for regulation in advance of an expected enabling amendment to the Gas Act? A principle of public finance is that only Parliament can authorise the use of public funds. It is a public sector norm that agencies do not develop programmes in advance of Parliament's authorisation. The GIC is a company, not an agency, its source of funding is industry, not taxpayers, and industry is demanding action on disclosure. A potential benefit of the co-regulation model is greater scope to undertake work ahead of enabling (or clarifying[55]) legislation in response to such demands.

5.10 Conclusions

Based on the analysis above and from earlier in the report, we offer the following recommendations for governance changes:

- Term limits for directors of the GIC set at 8 years.

[54] Documents supporting the levy regulation for the 2018/19 year is available from https://gasindustry.co.nz/work-programmes/levies/current-arrangements/levy-fy2019-1-july-2018-30-june-2019/

[55] In its August 2018 reply to the Minister of Energy and Resources, the GIC sought an amendment to the Gas Act to "clearly provide" for the power to regulate disclosure obligations on upstream gas producers. However, authority to introduce upstream disclosure regulations may already be in the Act, in which case the amendment merely clarifies authority already held.

- Consider amending the GIC constitution to expressly say non-independent directors must act in the interests of the GIC not the company they are employed by or a director of.
- Consider softening the consultation requirements on the GIC when recommending regulation to reduce the risk of prolonged attempts to find non-regulated solutions on issues like disclosure when regulation can be expected to have an advantage over non-regulated solutions.
    - Alternatively: consider introducing a circuit-breaker mechanism that expressly allows the GIC to skip straight to recommending regulation after only a single round of consultation.

We support the introduction of disclosure obligations on upstream gas producers for planned and unplanned outages including force majeure events, and offer the following recommendations:

- Disclosure should be regulated rather than voluntary. A voluntary solution is more vulnerable to holdout problems that could arise during outage events. Contractual constraints or internal company policies could lead to (possibly inadvertent) non-compliance. Regulation is likely to cut through these contractual constraints and may reduce compliance costs (a voluntary approach may require renegotiating settled agreements whereas a regulated approach may not).
- One option for structuring disclosure is to use exception reporting i.e., require the disclosure of year-ahead production profiles and then exception reporting for departures against those profiles.
    - Alternatively: require disclosure for all events likely to have a significant effect on prices, consistent with the electricity sector disclosure standard.
- We recommend against introducing disclosure obligations for commercial information except where it is clear such disclosure would solve identified problems. Disclosure obligations carry the risk of reducing incentives for investment in the production of information. Compared with outage information, incentive risks are higher around commercial information (see section 6.6).
- We suggest that the GIC should design the process for developing disclosure regulations to protect the *timing* of the delivery of those rules in view of the planned HVDC outage next summer[56] as well as industry demands for action. The GIC should aim to be in a position to send its recommendation for the regulation of disclosure rules to the Minister immediately after the enabling legislation passes, having already met the consultation and other requirements of the Act by that point. GIC should implement the process in a way that means timing does not depend on whether industry can find a consensus on disclosure rules.

[56] High Voltage Direct Current (HVDC) transmission lines connect the North Island and South Island electricity grids. Transpower has scheduled extended planned outages for the HVDC lines next summer. Other things being equal, this will leave less system redundancy for gas outages and might be expected to increase the value of disclosure.

6. Framework for governance and regulation

This chapter provides findings from a survey of the economic literature on regulation and governance. Our goal is to develop a framework that allows us to form a view on the relative merits of co-regulation and full regulation in the gas sector in view of the issues confront gas and electricity currently. Our review includes evidence on the cost and performance effects of amalgamations between regulators.

6.1 Justifications for regulation

Under an economic efficiency objective, regulation and other forms of government intervention may be justified by market failure that causes an unrestrained market to depart from static or dynamic efficiency.

Market failure has specific causes. Those types of market failure that may be relevant to the gas sector are discussed below.

Information asymmetry: competitive markets depend on access to, or discoverability of, information by consumers to inform their decisions. There are a number of reasons why producers in the gas market might fail to provide sufficient information. Information may be costly; it may be advantageous to provide false information if consumers are too diffuse to challenge a supplier; consumers may not have sufficient access to the expertise necessary to understand the information provided; or collusion between providers may act to reduce information below a social optimum.

Coordination: high transactions costs may discourage or prevent contracted solutions to coordination problems when many parties are involved. For example, in principle houses in a neighbourhood could each agree to limit noise. But private action is constrained by transactions costs and hold outs that make such an approach less feasible, giving regulation the advantage.

Monopoly including natural monopoly. The essence of market power is the ability to reduce market output below competitive levels, increasing the market price. Monopoly is the basis for rate of return regulation on gas transmission and distribution assets under Schedule 4 of the Commerce Act.

Missing markets where property rights in some goods, for example, clean air, or peace and quiet in a neighbourhood, are incomplete or absent.

Continuity and availability of service: if the effect of gas outages are felt widely, beyond the customers of a supplier immediately affected by outages (and therefore perhaps not subject to remedy in the contracts between the producer and its customers), then the supplier may not be confronted with the full cost of outages and could underinvest in reliability. A related issue is the supply of spare capacity sufficient to cover outages elsewhere in the system.

Regulation may also be justified on other grounds such as equity, fairness, access, transparency and accountability.[57]

[57] Asquer 2018:21.

The case for regulation is not made merely by observing deviations from theoretical perfection. Regulation, and choices among alternative designs of regulation, depends on comparative institutional advantage over the alternative of private ordering e.g. contract. As Barry (2006) says:

> *Even if there is some remaining "market failure" (or "incomplete contracting"), this doesn't automatically justify government intervention.*[58] *The costs of government intervention need to be assessed against the cost of not intervening. Such an assessment involves a comparison of the costs of contracting via the market with the costs of collective action via the government. That is, it involves assessing whether the costs of voluntary contracting to address the perceived "information asymmetries" … (or other perceived market failures)… are greater or less than the costs of coercive "contracting" (i.e., government intervention).*

6.2 Self-regulation and co-regulation

Self-regulation, a form of regulation, has been defined as "the deliberate delegation of the state's law-making powers to an agency, the membership of which wholly or mainly comprises representatives of the firms or individuals whose activities are being regulated" (Ogus 1999) and as "the formalised promulgation and enforcement of legal rules by the regulated" (Grajzl and Baniak 2009). Self-regulation is an "exceedingly common arrangement in developed countries" (Grajzl and Murrell 2007:521).

Co-regulation mixes self-regulation with oversight or ratification by government or officials representing the public interest (Richemond-Barak 2014:fn 17). Co-regulation seeks the benefits of self-regulation, but with greater controls over costs which can result from rent-seeking by a purely self-regulating body. Co-regulation can solve the problem of information asymmetries between a public agency and a self-regulating body. The self-regulating body can withhold vital information to pursue regulatory solutions which favour its members (Quirk 1981). Co-regulation can solve these problems through shared delegation of responsibility between public and industry entities.

Self-regulation can be thought of as operating on a continuum in two dimensions (Ogus 1999). In the first dimension, self-regulation varies according to degrees of autonomy from the government. At one extreme of autonomy, rules may be set within firms and privately, with enforcement subject only to internal processes. At the other extreme, there is no autonomy: rules may be subject to approval by a minister or public authority. These extremes are connected by a continuum along which interest groups may participate in decision-making, though they may not conclusively determine the outcome. In the second dimension, legal force varies from voluntary standards through to formally binding, public or private law sanctions for non-compliance. Between these extremes sit codes of practice, and non-legal sanctions for breach of norms, such as expulsion from industry groups (Ogus 1999).[59]

[58] For a good discussion of the fallacies of applying a simple market failure analysis in the case of financial reporting refer Leftwich (1980).

[59] For collective action problems in industry self-regulation, see King and Lenox (2000, 2006) and Lenox and Nash (2003). See Nunez (2001, 2007) and DeMarzo et al (2005) for analysis of agency problems between a self-regulatory organisation and its members (via Grajzl, and Baniak, 2009).

Self-regulation's drawback is an inherent bias toward the regulated. Industry's influence leads the self-regulator, and to a lesser extent the co-regulator, to undersupply regulation relative to a socially optimal level, a cost of self-regulation to be weighed against other benefits.

Self-regulation can come about as a co-ordinated industry-wide action to pre-empt government regulation (Maxwell et al 2000; Stefanadis 2003 cited in Grajzl and Baniak, 2009), or as a direct result of the industry's bargain with the government to avoid stiffer regulatory provisions (Glachant, 2003; Segerson and Miceli 1998 cited in Grajzl and Baniak, 2009).

Factors that influence the value of self-regulation relative to the alternative of full regulation are listed in Table 5.

Table 5: Industry features conducive to self-regulation

Industry characteristic	Explanation	References
Relatively few industry players	Lower monitoring costs, larger reputation/brand costs for non-compliance	Priest (1997)
Firms are multi-product	Cheating can be more effectively punished when a firm operates across multiple markets: it is possible to punish the deviating firm in all markets when it deviates in just one	Stefanadis (2003)
Firms can observe rivals' behaviour	Firms in competition have incentives to monitor rivals' activities for breach	Gehrig and Jost (1995)
High industry exit costs/industry-specific human capital	Exit costs cap the punishment self-regulating organisations can impose on industry members: higher exit costs increase maximum effective punishment of self-regulation	Donabedian (1995)
Industry marked by innovation or technology	Information asymmetries between industry and government become severe in innovative industries, resulting in costly delay if regulation is via government	Stefanadis (2003), Gehrig and Jost (1995)
Industry is not dominated by a single large firm	Self-regulating authority may be too lenient to a single large firm which other fringe firms are unable to counter	Nunez (2007)
The industry is not hazardous	In hazardous industries, self-regulation may under-supply compliance on health and safety matters relative to public regulation	Grajzl and Baniak (2009)
Appropriate behaviour hard to codify in legislation	Greater tolerance for imprecision in rules in a non-adversarial regulating environment	Baggott and Harrison (1986), Ogus (1999)
Self-regulation compatible with ethical behaviour	Lowers monitoring costs: if regulated behaviour is consistent with social norms, deviation from regulation is more easily identified	Priest (1997)
Consumers have power in the political process	Greater consumer power raises the efficiency of a regulatory structure that favours producers	Grajzl and Murrell (2007)

In order to develop options for governance changes, we can list some of the characteristics of self-regulation that distinguish it from full regulation. Self-regulation is: relatively low-cost and conserves government resources; it is less adversarial and more flexible (Baggott and Harrison 1986); can be more timely (Stefanadis 2003); will typically reduce monitoring and enforcement costs (Ogus 1999); makes greater use of producers' superior knowledge (Grajzl and Murrell 2007). Under self-regulation, administrative regulatory costs are usually internalised to the industry. This offers a stronger incentive for cost efficiency (Grajzl and Baniak, 2009).[60] Full regulation is more likely to be inefficient than self-regulation (Grazl and Murrell 2007). Other things being equal, self-regulation's lower costs expand the scope of regulation for any given budget constraint (Priest 1997). Self-regulation is frequently broader in scope than government regulation and can be more effective where qualitative factors and matters of morality and taste, which are hard to codify in legislation, are important, as is the case in advertising (Baggott and Harrison 1986). Cost and timing advantages of self-regulation may increase international competitiveness (Priest 1997).

Self-regulatory organisations (SROs) will tend to choose an enforcement policy that is just stringent enough to avoid government intervention (Lokanan 2014:4). SROs are more aggressive where industry believes a public agency may intervene (Ogus 1999:593, Maxwell et al 2000). The threat of public regulation can be efficient in that it induces higher compliance without the full cost of rules development, oversight and enforcement by public authorities:

> *[G]overnment oversight of self-regulation can benefit customers by leading the SRO to engage in more aggressive enforcement. The SRO would choose an enforcement policy that is just aggressive enough to pre-empt the government doing its own enforcement. (DeMarzo et al 2005)*

6.3 Capture

> *"…with self-regulation, regulatory capture is there from the outset." – John Kay (1988)*

A regulated industry has an incentive to influence the regulator to write more-favourable rules. The industry will invest in the capture of its regulator when it has more to gain or lose than the regulator. Concentrated interests (e.g. producers) may outcompete diffuse interests (e.g. consumers) for a regulator's attention because the latter group is more vulnerable to free riding on investment in capture. Capture is more likely when a concentrated interest that demands regulation for its own benefit is not countered by a competing interest group (Stigler 1971).

The literature points to at least three mechanisms that can lean against capture. Cave and Lodge (2011:71) point out that a regulator's reputation for an ability to act autonomously is essential for a regulator to maintain the trust of politicians. If a regulator is perceived as incapable of acting against errant operators, politicians and other actors will cease to delegate decision making to that regulator.

A 'revolving door' mechanism in which regulators intend to move (or return) to the regulated industry tends to lean against capture. The regulator instead will seek to acquire a reputation for competence, a reputation which will be diminished by a failure to discharge his or her obligations as a regulator. Less

[60] However, Priest (1997) warns cost savings may in part be illusory: self-regulation may create market power for members resulting in above-competitive prices.

helpfully, the short-term nature of careers as regulatory officials may produce a bias towards high impact, high visibility regulatory activities over less-visible, difficult but ultimately more valuable work.

A third means of protecting against capture is inclusive and transparent processes. These protect against the pursuit of self-interest by regulators when granted autonomy from political control when using their delegated powers, supporting political as well as public confidence in the regulator (OECD 2014:93-94).

6.4 Structure and performance of regulators

In this section, we provide a brief survey of research on the trade-offs of consolidation among regulators. This is based mainly on research from the financial services sector, which has seen consolidation among its regulators in most developed countries over the last 30 years.

Overall, the literature reaches no generalisable conclusions on the optimal structure of regulators, although it has been observed that smaller countries seem to favour higher integration (Maume 2013:620). The structure should be decided on the circumstances (Cihak and Podpiera 2006:8, Fresh and Baily 2009:26).

A regulator's structure is only one element of what determines the efficiency and effectiveness of regulation. Other factors include giving the regulator clear objectives, the regulator's independence, accountability, adequate resourcing, effective enforcement powers, and whether the scope of its powers is comprehensive.

6.4.1 Potential benefits of integration

Integration of two or more regulators may offer the following benefits:

- improve information flows if information flows more freely within entities than between them;
- increase coordination of regulation. Coordination's value follows from the principle of competitive neutrality. Regulatory arbitrage occurs where the lines between sectors or parts of sectors are blurred and firms can adjust operations or products to come under their preferred regulation.[61] Integration of regulators may improve coordination of regulations. The returns to coordination may be higher where the failure of a single firm poses systemic risks (Hemel 2011:220);
- provide flexibility, be better-positioned to respond to new products and issues as they arise and avoid the turf wars that can break out between separate regulators. Indeed, the battle for turf may explain why there has not been more consolidation among regulators (Fresh and Baily 2009:4);
- economies of scale, perhaps the most-cited reason for integration particularly in small countries (Martinez and Rose 2003:11), through avoided duplication of technical and administrative

[61] Commentators have argued regulatory arbitrage is not necessarily detrimental to the financial industry. In 1997, then (then) chair of the Federal Reserve Alan Greenspan pointed to some market innovations that he suggested were the result of regulatory arbitrage (Norton 2005:41).

structures, and by allowing for increased specialisation of staff, in turn increasing the ability to attract top candidates; and

- increased accountability. A single regulator gives political overseers and the public "one throat to throttle".

6.4.2 Potential costs of integration

Integration of regulators may lead to the following costs:

- the increased range of objectives given to a larger integrated regulator may lead to a loss of accountability where conflicts between objectives arise, to "mission creep", and lower transparency (Norton 2005:42,45);
- diseconomies of scale can occur when the scope of operations becomes too broad, leaving managers unable to understand the organisation's responsibilities. Scale can also produce bureaucratic and inflexible operations;[62]
- Over-standardisation, the application of a "one size fits all approach" to multiple sectors with different characteristics;
- scale brings clout that larger entities can use to protect themselves (see the cross-border example in the next section); and
- reputation losses from an integrated regulator's error or failure in one sector can spill over and reduce its credibility in other sectors (contagion risk). In the financial sector, a related problem moral hazard may arise if creditors of institutions not protected by state guarantees may wrongly believe they are protected if the integrated regulator offers guarantees elsewhere (Norton 2005:34,43).

6.4.3 Other factors

Fragmentation among regulators can lead to regulatory competition. Critics of such competition point to regulatory arbitrage or "race to the bottom" risks that can emerge when regulated entities have the opportunity to shop for their preferred regulator. Clear instances of arbitrage emerged through the GFC at considerable cost.[63]

However, competition can be a source of pressure on regulators for efficiency and innovation, just as it is in markets. Competition's benefits and the problems of monopoly don't necessarily disappear when

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[62] Norton (2005:38) summarises the findings of surveys of financial services executives on the performance of the UK Financial Services Authority, a "mega regulator" launched in 2001 and then disbanded following the GFC. Surveys criticised the FSA for its "perceived regulatory intrusiveness, marginal competence, inefficiencies, lack of checks and balances, and over-burdensome and costly regulation". A report by the Centre for Policy Studies found the FSA suffered from (enjoyed?) a lack of accountability, was vulnerable to political influence, defensive and risk averse leading to prescriptive and complex regulation, and staff were demoralised by constant change, worked in a blame culture, and had no yardsticks for success.

[63] Fresh and Baily (2009:3) offers the following example of regulatory arbitrage from the GFC: "When American International Group (AIG) decided to expand its business into credit default swaps (CDS), they chose to use a small thrift institution through which to channel the multibillion dollar expansion of this highly risky activity. The Office of Thrift Supervision (OTS) was out of its league in trying to regulate this part of AIG; in addition, it was run out of London, making it even harder to track… OTS failed that test in its dealing with AIG—Senator Schumer remarked to the acting head of OTS that whatever came out of the financial reform effort, OTS was "toast"." The Senator was correct: OTS was dissolved in July 2011.

the product is regulation. Competition can deliver benefits for regulation in unexpected ways. For example, the US commenced reforms of its financial regulations in 2009 with a goal to improve international coordination of financial regulations. Conventional wisdom was that international regulatory coordination is more likely with greater consolidation among domestic regulators. But Hemel (2011) found the evidence supported the opposite conclusion – domestic consolidation *reduced* cross-border coordination:

> *When regulatory authority is fragmented among several agencies at the domestic level, U.S. financial regulators turn to their cross-border counterparts in order to circumvent roadblocks erected by domestic rivals. By contrast, in areas where a single regulatory agency enjoys consolidated control over a particular policy matter at the domestic level, that agency is less willing to restrict its policymaking discretion through an international agreement.*

Whether consolidation of regulators leads to benefits substantially depends on whether integration simply puts separate regulators under one roof or goes deeper to create a truly single agency. Economies of scale or scope depend on a true consolidation of regulatory functions. Experience across countries suggests true consolidation frequently fails to emerge (Norton 2005:46). In their survey of financial regulator consolidation, Martinez and Rose (2003:32) noted:

> *One of the main risks of not unifying regulatory and supervisory processes in the integrated agencies is that former specialized agencies will continue to operate separately, each one applying their own approach to regulation and supervision. In the absence of regulatory and supervisory integration, unified agencies may become a simple umbrella providing physical room for former agencies, preserving different approaches to supervision and providing a false feeling that real change has taken place.*

6.4.4 Transition risks

The process of integrating regulators may itself carry risks. Risks include:

- opportunism by political and special interests once legislative reform is underway (e.g. using the change process to renegotiate other elements of the legislation);
- the loss of skilled and experienced staff, potentially reducing the effectiveness of regulation; and
- potential for the technical process of integration to be mismanaged (e.g. "clash of cultures" problems between integrating agencies, loss of focus on sector issues).

6.4.5 Empirical evidence

Over the last thirty years, a wave of amalgamations among regulators in the financial sector has occurred in many countries. Integration has come in two waves, the first beginning in the mid-1980s following financial market innovations in the previous decade. A second wave followed the Global Financial Crisis in 2008. A number of studies have looked into the results of the integration of regulators.

Cihak and Podpiera (2006) analysed the structure and performance of financial services regulators across developed countries for the period 1999 to 2004. They find integration led to more consistent supervision across financial sectors but did not reduce costs. There was no significant reduction in staff numbers after integration.

In a subsequent paper, Cihak and Podpiera (2008) report integration within the banking sector, whether partial or full integration, did not increase the quality of supervision. However, the integration of regulatory oversight between insurance and banking significantly improved the overall quality of supervision. Integration of securities and banking supervision produced modest gains. Cihak and Podpiera (2008) also found integration improved consistency of regulation.

Martinez and Rose (2003) reported there is "still not much evidence that the operating costs of new unified agencies are lower than the sum of its individual predecessor regulatory bodies," citing a 2001 study.

Norton (2005:58) notes a lack of evidence for any gains in efficiency or effectiveness from the creation of the UK Financial Services Authority, which combined nine regulators.

Findings from the financial sector must be interpreted with caution. There are reasons to think that the effects of integration by regulators in the energy sector will be different. At least part of the benefits of consistency of regulation across different parts of financial services is the increasing degree of integration and "blurred lines" between financial products. Regulatory arbitrage is as much a risk in the energy sector as in the final sector, but its nature and size of the problem is likely different. Findings regarding cost efficiency of integration may more readily translate since some of the factors thought to drive cost efficiency are likely common to both sectors.

6.5 Regulatory failure

When designing appropriate institutions and potential responses to market failures it is essential to consider regulatory failures. Sources of regulatory failure include:

Outcome failure: a failure to deliver against the objective or against the outcomes that might have occurred under a different regulatory approach.

Under-regulation: revelations of problems in detecting instances of non-compliance can lead to charges of under-regulation. **Over-regulation**, or excessively prescriptive rules, can reduce innovation. Where excessively prescriptive rules are applied in complex situations, the rules may unexpectedly fail to apply – a case of over-regulation leading to under-regulation. Over- and under-regulation is often the product of **coordination failure** between regulators with over- or under-lapping jurisdiction. The result is frequently a heavy compliance burden.

Failure to maintain reputation: reputation for an ability to act autonomously is essential for a regulator to maintain the trust of politicians. When a regulator is perceived as incapable of acting against errant operators, politicians and other actors will cease to defer to that regulator.

Process failures: regulators fail procedurally when they do not develop and follow procedures that satisfy stakeholders' interest in transparency or accountability of an acceptably representative nature. This problem can be acute when stakeholders have different views about what is acceptable and different regulators operate at different levels of government each with their own approaches.

Regulation can also suffer **tunnel vision**—where there is over-regulation to the point that it brings about more harm than good; **random agenda selection**—where regulatory priorities are driven by issues coming to the public's attention rather than by rational appraisals of risks; and **inconsistency**—where agencies use different methods to calculate the effects of regulation, and the values that regulators implicitly attach to the saving of a statistical life, for example, vary widely from one programme or agency to another. According to Brey, these regulatory problems have three causes: **public perceptions**—in which the public's evaluation of risk problems 'differs radically from any consensus of experts in the field' and does not reflect a 'rational' set of priorities; **congressional action and reaction**—a tendency to respond to risks with detailed statutory directions that later experience shows to be inappropriate; and **uncertainties in the technical regulatory process**—the limitations of knowledge, data, and predictive power that afflict regulatory processes.[64]

6.6 Information and disclosure

Information plays a central role in the organisation of firms and economies. It has been recognised at least since 1945 that the production and dissemination of information about the value of resources in alternative uses, rather than the process by which resources are distributed to those uses, is the central problem of production (Hayek 1945).

Any case for introducing disclosure obligations should recognise not only the benefit of making information to consumers and businesses at the point they make decisions but also the effects on the incentives for the production and dissemination of information. The literature draws a distinction between information that is *produced* and information that is *casually acquired*. This distinction is relevant to assessing how a duty of disclosure could play out: disclosure has the potential to compromise incentives for the production of information but not its casual acquisition.

The right to secrecy, that is, the right of a company or person to withhold information from regulators or other parties, amounts to a form of property. As Kronman (1978:15) says:

> *One (seldom noticed) way in which the legal system can establish property rights in information is by permitting an informed party to enter-and enforce-contracts which his information suggests are profitable, without disclosing the information to the other party.*

In some cases, which may include commercial information, protection of a right to withhold information is necessary to the production of that information in the first place. A duty of disclosure abrogates that right. We, therefore, think there is merit in treading carefully when it comes to extending obligations around disclosure of information. However, we consider disclosure rules around outages are unlikely to have detrimental effects because information is a byproduct of investigating and organising repairs. Mandatory disclosure of commercial information carries greater risks to the extent that information is produced rather than casually acquired. In some, perhaps most, cases it will not be obvious how much of role incentives played in making information available. Kronman (1978:26) points out:

> *the usefulness of market information (as distinct from information regarding the attributes of goods held for sale) is substantially reduced by imposing a duty to disclose on its possessor. It is doubtful whether the benefits of market information which are not*

[64] Stephen Breyer (1993), *Breaking the Vicious Circle: Towards Effective Risk Regulation*, Harvard University Press, Cambridge, Mass.. Breyer's framework is developed in a health context.

> *eliminated by a disclosure requirement are sufficient by themselves to justify a deliberate investment in its production. Consequently, even if we regard these two kinds of information-market information and product information-as equally useful from a social point of view, a legal rule requiring disclosure is likely to have a different impact upon the production of each.*

A further reason for caution about potential overreach on mandatory disclosure is the costs of non-disclosure may be largely borne by the company itself. Myers and Majluf (1984) show that when insiders know more about a firm's prospects than outside investors, for example, securities can be "lemons" so that firms can only issue new securities by offering them at a discount. In a paper on financial disclosure, Barry (2006) points out that mandatory disclosure can lead to the disclosure of information that is misleading, or it can suppress information that may otherwise have been provided voluntarily.

6.7 Application to New Zealand gas and electricity sectors

What does all this mean to the case for a joint regulator of electricity and gas?

On the cost side, it is not clear savings could be large when the annual expenditure of the GIC is less than $5 million.[65] History is not kind when it comes to cost savings from amalgamations of regulators, at least in the financial sector. Savings will be further reduced because the move to full regulation would forgo self- and co-regulation's cost advantages.

On the performance side, we see risks in integration. Scale and scope economies will be realised only if the combined regulator is fully integrated, rather than an umbrella organisation housing two largely separate divisions. Differences between the gas and electricity sectors run deep. The EA and GIC not only oversee quite different systems, but they also start from different models of regulation, and each has experienced staff who have developed deep specialisation in their areas. Together these factors could conceivably produce a clash of cultures, and lead to the departure of experienced staff or a loss of focus that ends up derailing integration's benefits.

The main problem that regulatory integration is supposed to solve – coordination of regulations – isn't among the main concerns of either sector. Instead, the concern is *inconsistency* in disclosure rules: between listed and unlisted companies; for customers and non-customers of upstream gas producers; and within electricity between the disclosure obligations on infrastructure (generators) and fuel, mainly gas. These are not coordination problems *per se*.

We conclude that in the case for a joint regulator the downside looks large, and the upside questionable and in any case small.

On other matters, our assessment is:

- Most of the factors identified in Table 5 tend to support self-regulation as an appropriate model for the gas sector
- One of the benefits of self-regulation and the hybrid co-regulation model is cost containment. The economies of scale cited by the EPR as supporting joint regulation should be net of the

[65] In 2017/18, the GIC reported expenditure for the year of $4,873,940. See Gas Industry Company "Annual Report 2017/18", p.31. Available from: https://gasindustry.co.nz/dmsdocument/6342

costs associated with shifting from the low-cost co-regulation model to higher-cost full regulation;

- References to co-ordinated industry-wide action to pre-empt government regulation or as a direct result of the industry's bargain with the government to avoid stiffer regulatory provisions help explain both the origins of the GIC and the significance of the legislated mechanism that allows the Minister to replace the GIC for any reason. That mechanism creates a clear incentive for the regulator to maintain a reputation for acting autonomously;

- In the case of the gas sector, produced and casually acquired information could be thought of as sitting on a spectrum. Information acquired by investment in exploration might sit at one end of the spectrum. Information on planned and unplanned outages, produced as a byproduct of investigating and resolving repairs, at the other end of the spectrum. In between these extremes might sit commercial information, neither casually acquired nor produced in all cases and in some instances valuable but only if kept secret;

- Efficiency effects of disclosure rules may depend on how disclosure could affect long-term investment incentives either in commercial exploration or development. Effects could be direct, by compromising commercial (and socially valuable) opportunities to create information that depends on secrecy; or potentially indirect if new disclosure obligations signal a more general erosion of protections for property;

- The literature notes a tendency for timeliness and responsiveness among self-regulating entities. However, some of the more common concerns we heard in consultation were the lack of responsiveness to some issues by the GIC and the long timeframes for regulation;

- The GIC holds only indirect authority to limit competitive entry (e.g. by raising compliance costs). Any power to limit entry held by the GIC is substantially checked by the requirement to obtain the Minister's approval for regulation. Other things being equal, this reduces the private returns to investment in capture;

- The apparently wide divergence of interests between different parts of the gas sector, and even between industry participants within each part, also leans against capture risks; and

- The widespread use of long-term contracts in industries marked by sunk and specific assets, such as the gas industry, is a private and efficient response to opportunism (i.e. ex-post hold up) among suppliers and downstream users of gas.

7. Conclusions

The co-regulation model is fit for purpose for New Zealand's gas sector. Legislation gives the GIC power and sufficient incentive to act, including when it is against the industry's interests. Ministerial powers provide protections against the potential for gridlock on particular issues. Enabling amendments to the Gas Act will provide the GIC with the authority to deliver new disclosure rules. The distinct characteristics of electricity and gas and the type of problems confronting the gas sector mean it is unlikely a joint gas and electricity regulator offers advantages over co-regulation sufficient to justify the costs and risks of establishing a new regulator.

We offer the following recommendations:

Governance

1. Set binding terms limits for directors of the GIC at 8 years.
2. Amend the GIC constitution to say non-independent directors must act in the interests of the GIC not the company they are employed by or a director of.
3. Consider softening the consultation requirements on the GIC when recommending regulation or add a circuit-breaker mechanism that allows the GIC to recommend regulation after only a single round of consultation where regulation is preferred.

Disclosure

4. Introduce disclosure obligations on upstream gas producers regarding planned and unplanned outages including force majeure events
5. Regulate disclosure obligations rather than rely on a voluntary solution.
6. The GIC should aim to be in a position to send its recommendation for regulation of disclosure the day after the amendment to the Gas Act passes.
7. Unless justified by a clear problem, do not extend disclosure obligations to cover commercial information.

On the case for a joint gas-electricity regulator

If the Electricity Price Review (EPR) considers further the case for a joint electricity and gas regulator, we suggest other factors besides regulatory consistency and economies of scale are also considered including:

a) whether the characteristics of the gas sector are more-suited to co-regulation or full regulation;

b) whether regulatory consistency and regulatory costs, issues identified by the EPR's options paper (p33), are important issues confronting either sector;

c) what other problems confront each sector, and to what extent can they be solved by a joint regulator;

d) what cost efficiencies might be lost in the move from co-regulation to full regulation, and their expected size relative to scale economies;

e) whether scale economies can be unlocked through cooperation between separate entities (e.g., memorandum of understanding, secondment) and to what extent this is already happening;

f) whether the similarities and links between the electricity and gas sectors mentioned by the EPR options paper will actually lead to deliverable benefits from a single regulator. Although cross-sector consolidation of ownership and products has occurred, this may not signal economies from integration of regulators if the regulatory issues confronting each sector are different; and

g) past experience overseas and in New Zealand about the time, cost and likelihood of success of regulatory amalgamation. Amalgamation risks include the loss of institutional knowledge and talent, the potential to produce an umbrella regulator (i.e., separate regulators under one roof) rather than a truly integrated regulator, the potential for unintended consequences from opening up legislation to significant reform; and the potential for integration issues.

8. References

Baggott R, and L. Harrison (1986), "The politics of self-regulation: the case of advertising control," *Policy and Politics* 14 (2): 143-60.

Barry, Phil (2006), "Financial Disclosure – An Economic Analysis", in *Corporate Governance of Non-Listed Companies in Emerging Markets*, OECD, 2006.

Cave, M., R. Baldwin and M. Lodge (2011), *Understanding Regulation: Theory, strategy and practice*, (2nd ed.). Oxford University Press, Oxford, UK.

Čihák, Martin and Richard Podpiera (2006), "Is One Watchdog Better Than Three? International Experience with Integrated Financial Sector Supervision," *IMF Working Paper* WP/06/57, Washington D.C.

Čihák, Martin and Richard Podpiera (2008) "Integrated financial supervision: Which model?" *North American Journal of Economics and Finance* 19, pp. 135–152.

Dean, Miriam et. al. (2019), *Electricity Price Review Hikohiko Te Uira, Options Paper*, 18 February.

DeMarzo P., M.J. Fishman and K.M. Hagerty (2005), "Self-Regulation and government oversight," *Review of Economic Studies* 72: 687-706.

Donabedian B. (1995), "Self-Regulation and the enforcement of professional codes," *Public Choice* 85:107-18.

Electricity Authority (2019), "The Authority's decision on claim of an undesirable trading situation," 28 February.

Fresh, Adriane and Martin Neil Baily (2009), "What does international experience tell us about regulatory consolidation?" *Pew Financial Reform Project*, Briefing Paper #6.

Gehrig TP, Jost J. (1995), "Quacks, lemons, and self regulation: a welfare analysis," *Journal of Regulatory Economics* 7(3): 309-25.

Glachant M. (2003), "Voluntary agreements under endogenous legislative threats. Nota di Lavoro," *Working Paper* 36.2033. April. Milan, Italy: The Fondazione Eni Enrico Mattei.

Grajzl, P, Baniak A. (2009), "Industry self-regulation, subversion of public institutions, and social control of torts," *International Review of Law and Economics* 29(4): 360–74.

Grajzl, Peter and Peter Murrell (2007), "Allocating Lawmaking Powers: Self-Regulation vs. Government," *Regulation Journal of Comparative Economics*, Vol. 35, No. 3, September.

Hayek, Friedrich August von (1945), "The Use of Knowledge in Society," *American Economic Review*, XXXV, No. 4; September, pp. 519–30.

Hemel, Daniel (2011), "Regulatory Consolidation and Cross-Border Coordination: Challenging the Conventional Wisdom," *Yale Journal on Regulation*, Vol. 28, No. 1.

Kay J. (1988), "The Forms of Regulation," in Seldon A (ed.) *Financial Regulation – or Over-Regulation*. London: Institute of Economic Affairs. pp. 33-42.

King A.A. and Lenox M.J. (2000), "Industry self-regulation without sanctions: the chemical industry's responsible care program," *Academy of Management Journal* 43(4): 698–716.

King A.A. and Lenox M.J. (2006), "The role of private, decentralized institutions in sustaining industry self-regulation," *Organization Science* 17(6): 677–90.

Kronman, Anthony T. (1978), "Mistake, Disclosure, Information, and the Law of Contracts," *Journal of Legal Studies* 1.

Lenox M.J. and Nash J. (2003), "Industry self-regulation and adverse selection: a comparison across four trade association programs," *Business Strategy and the Environment* 12(6): 343–56.

Lokanan, Mark (2014) The Investment Dealers Association of Canada's enforcement record. Journal of Financial Regulation and Compliance, 22 (3). pp. 235-251. Available from: http://nrl.northumbria.ac.uk/21286/2/Agg_Mit_JFRC_revised.pdf

Martinez, Jose de Luna and Thomas A. Rose (2003), "International Survey of Integrated Financial Sector Supervision," *World Bank Financial Sector Operations and Policy Department*, July.

Maume, Philipp (2013), "The Financial Markets Authority: A Model Example for Regulatory Consolidation?" *New Zealand Universities Law Review*, 25, pp. 616-641.

Maxwell J.W., T.P. Lyon and S.C. Hacket (2000), "Self-regulation and social welfare: the political economy of corporate environmentalism," *Journal of Law and Economics* 43(2): 583–617.

Myers, Stewart C. and Nicholas S. Majluf (1984), "Corporate financing and investment decisions when firms have information that investors do not have," *Journal of Financial Economics*, 13(2), pp.187-221.

Norton, Jenny (2005), "Global Financial Sector Reform: The Single Financial Regulator Model Based on the United Kingdom FSA Experience - A Critical Re-evaluation," *International Lawyer (ABA)* Vol. 39, No. 1.

Nunez J. (2001), "A model of self-regulation," *Economics Letters* 74(1): 91–7.

Nunez J. (2007), "Can self regulation work?: a story of corruption, impunity and cover-up," *Journal of Regulatory Economics* 31: 209–33.

OECD (2014), *The Governance of Regulators, OECD Best Practice Principles for Regulatory Policy*, OECD Publishing.

Ogus A. (1999), "Self-regulation," in Bouckaert B, De Geest G. (eds) *Encyclopaedia of Law and Economics* (Vol V: The economics of crime and litigation): 587-602.

Priest M. (1997), "The privatization of regulation: five models of self-regulation," *Ottawa Law Review* 29: 236-314.

Quirk, Paul J. (1981), *Industry Influence in Federal Regulatory Agencies*, Princeton, NJ: Princeton University Press.

Richemond-Barak, D. (2014), "Can Self-Regulation Work? Lessons from the Private Security and Military Industry," *Michigan Journal of International Law* 35(4), pp. 773-826.

Segerson K. and Miceli T.J. (1998), "Voluntary environmental agreements: good or bad news for environmental protection?" *Journal of Environmental Economics and Management* 36: 109–130.

Stefanadis C. (2003), "Self-regulation, innovation and the financial industry," *Journal. Of Regulatory Economics* 23(1): 5-25.

Stigler, George J. (1971), "The Theory of Economic Regulation," *Bell Journal of Economics*, The RAND Corporation, vol. 2(1), pages 3-21, Spring.

Appendix A: List of recommendations from GIC to the Minister, 2004-present

Workstream	Rule/Reg or Industry Arrangement	Year	Explanatory notes	Outcome
Gas specification	N/A	2006	Ran a consultation process to identify any issues with the gas specification and concluded that no change to the gas spec was warranted (response to concerns from certain end users).	No change to gas specification
Wholesale market	N/A	2006	Request for amendment to the Crown Minerals Act to remove the requirement for Ministerial approval for all gas sales agreements entered into by gas producers	CMA changed in 2013 to only require approvals for agreements of duration greater than 12 months or agreements that are not at arm's-length or otherwise not on a fair market basis.
Gas processing information disclosure	Arrangement	2006	Based on positive responses in submissions, recommended that GIC pursue an industry agreement for owners of gas processing facilities to provide basic information , including capacity available, about their facilities.	After spending six months encouraging processing facility owners to sign-up, we had not been successful so switched to pursuing a regulatory backstop
Customer switching	Rules	2008	Gas (Switching Arrangements) Rules implemented on 1 March 2009 after build and commissioning of the gas registry.	Customer switching numbers tripled to 3,000 switches per month and have run at 3,600 to 4,400 per month over the past five years.

Workstream	Rule/Reg or Industry Arrangement	Year	Explanatory notes	Outcome
Downstream reconciliation	Rules	2008	Gas (Downstream Reconciliation) Rules implemented on 1 October 2008 (being the commencement of the gas year).	Fairer, more orderly arrangements implemented which led to resolution of a long-standing unaccounted for gas problem.
Compliance and enforcement	Regulations	2008	Gas Governance (Compliance) Regulations came into effect in September 2008 but full implementation had to await appointment of the Rulings Panel the following year.	The compliance regulations ensured that industry participants took their obligations seriously under the various rules and regulations. After some initial matters before the Rulings Panel in 2009, compliance levels have been high.
Gas processing information disclosure	Rules	2008	Rules were intended to be temporary and came into effect in June 2008. They were allowed to expire after six years (as provided for in the rules themselves) as they had served their purpose.	Processing facility owners made disclosures as required under the rules.
Critical contingency management	Regulations	2008	Regulations came into effect in 2008 but go-live did not happen until January 2010 as the transmission companies took some time to create their respective critical contingency management plans.	The CCM regulations replaced an industry arrangement that was no longer fit for purpose and which had lost support.
Downstream reconciliation	Rules	2009	Minor and technical amendments to the DR Rules as a result of unknown data and measurement issues that only emerged once the DR Rules introduced a more orderly set of arrangements.	Amendments made the rules clearer and clarified the requirements on certain parties.

Workstream	Rule/Reg or Industry Arrangement	Year	Explanatory notes	Outcome
Interconnection guidelines	Arrangement	2009	Recommended to the Minister that regulation in this area would be premature as both transmission owners had interconnection policies that were in broad alignment with Gas Industry Co's interconnection guidelines.	Minister accepted the recommendation and asked to be kept apprised of further developments. Further reviews were undertaken in 2010, 2013, and 2014. All have concluded that regulation in this area is not required.
Retail contracts	Arrangement	2010	Recommendation to the Minister that, instead of regulating contract terms for small gas retailers, an oversight scheme be implemented that would see retailers' standard contracts being assessed against a set of benchmarks.	The Associate Minister endorsed the scheme as meeting the GPS outcome and asked to be kept advised of subsequent assessments and the levels of compliance with the benchmarks.
Customer switching	Rules	2010	Recommendation for minor and technical changes to the Switching rules.	Recommendation accepted and changes made to the Switching Rules to address minor issues around processes for switching requests and switch withdrawals.
Downstream reconciliation	Rules	2012	Revision of certain aspects of the DR Rules to better address atypical gas gates and gas gates that lacked metering or for which the metering was inaccurate.	Revisions brought about a fairer allocation process at atypical gas gates as well as allowing for revision of allocation parameters whenever previous data errors were identified.
Gas distribution	Arrangement	2012	Recommendation to the Minister of Energy to approve an oversight scheme to assess gas distributors' standard use of system agreements against a set of "distribution contract principles"	Recommendation endorsed by the Minister and, after two assessment, use of system agreements were found to be substantially compliant with the principles.

Workstream	Rule/Reg or Industry Arrangement	Year	Explanatory notes	Outcome
Critical contingency management	Regulations	2013	The CCM regulations were reviewed in 2012 following the 2011 outage caused by the failure of the Maui pipeline. Although the vast majority of the regulations remained the same, changes were made that improved the settings for certain parties to have priority access to gas or to be able to defer curtailment in some circumstances	
Compliance and enforcement	Regulations	2013	Recommendation for a range of improvements to streamline the compliance process and avoiding unnecessary breach allegation, as well as some consequential changes arising from the CCM review.	
Switching rules and DR rules and retailer insolvency framework	Rules	2014	Both sets of rules were amended to streamline transition arrangements in retailer insolvencies. These changes were addressed in a single, combined recommendation. In addition, the Switching rules were amended to provide for additional metering fields in the gas registry that would improve conversion efficiency, as well as to introduce performance audits to assure the accuracy of the gas registry.	Recommendation accepted and changes made to both sets of rules. In addition, the Minister accepted a framework to address retailer insolvency by making urgent regulations tailored to the specific circumstances.
Retail contracts	Arrangement	2014	Advice to the Minister on changes to the scheme: assessments would be at three-yearly rests and the benchmarks would be amended to improve the scheme.	Contract assessments in 2015 and 2018 exhibited substantial compliance with the benchmarks.

Source: Gas Industry Company pers. comms. (10 April 2019).

Appendix B: List of transmission pipeline outages in New Zealand

Table 6: Pipeline outages

Pipeline	Year	Cause
Kapuni North, North Taranaki	1977	Slow moving landslip
Kapuni North, Inglewood, Taranaki	1985	Struck by a digger
Kapuni South, Himatangi, lower North Island	2003	Struck by a bulldozer
Hawke's Bay pipeline, Awapuni	2004	Flooding affected pipeline
Maui pipeline, Pukearuhe	2011	Slow moving landslip

The longest outages lasted up to 6 days at Hawke's Bay (2004) and Maui (2011).

Source: Gas Industry Company, "Gas industry – facts at a glance," updated November 2017, p.4.