

Approach to trend analysis of gas pipeline businesses



Purpose of this paper

- 1 This paper accompanies the ‘Trends in gas pipeline business performance’ report (the **report**).
- 2 We completed the report as part of our responsibilities to summarise and analyse the information that we require gas pipeline businesses to disclose under the powers within the Commerce Act 1986 (the **Act**).¹ We note that gas pipeline businesses were also subject to price-quality regulation during the period of analysis, under which we placed maximum limits on the aggregate price that they could charge to consumers and required them to meet minimum standards of service quality.
- 3 This paper discusses the key features of our approach to the analysis undertaken in the report, and is structured as follows:
 - 3.1 How we regulate gas pipeline businesses under Part 4 of the Commerce Act 1986 (the **Act**);
 - 3.2 Our primary method of analysis is trend analysis, predominantly in nominal price terms and relating to customers on average;
 - 3.3 Our analysis is based on data published by the gas pipeline businesses under our information disclosure (**ID**) requirements;
 - 3.4 We have adjusted the data to enable consistent analysis where clearly required, accounting for differences in reporting periods between gas pipeline businesses, and First Gas’ acquisitions in 2016; and
 - 3.5 The results of our analysis reflect the regulatory context under which gas pipeline businesses have operated during the period of our analysis.

How we regulate gas pipeline businesses under Part 4

- 4 The purpose of Part 4 of the Act is to promote the long-term benefit of consumers in these regulated markets where there is little or no competition, and little or no likelihood of a substantial increase in competition.²
- 5 Under Part 4 we have a role in regulating these markets. To do this, we focus on promoting outcomes that are consistent with the outcomes seen in competitive markets, such that regulated businesses have incentives to innovate, invest, improve efficiency, and to provide services at a quality that reflects consumer demands.³ We also aim to ensure the benefits of efficiency gains are shared with consumers (including through lower prices) and to limit the ability of regulated businesses to earn excessive profit.⁴

1. Commerce Act 1986, s 53B(2).

2. Ibid, s 52A(1).

3. Ibid, s 52A(1)(a) and s 52A(1)(b).

4. Ibid, s 52A(1)(c) and s 52A(1)(d).

- 6 The businesses that provide gas distribution and gas transmission services (collectively, gas pipeline businesses) are regulated under Part 4 because they are natural monopolies (ie, there is little or no competition in the markets for the services they offer). The two types of regulation that we use in relation to gas distribution and gas transmission networks are:
- 6.1 Price-quality (**PQ**) regulation: we set price and quality controls for gas pipeline businesses, which are called ‘price-quality paths’. These paths limit the maximum aggregate price that each business can charge to gas consumers and requires them to deliver services above a certain level of quality.
 - 6.2 ID regulation: we set requirements for gas pipeline businesses to publicly disclose information relevant to their performance. The purpose of ID regulation is to ensure that sufficient information is readily available to interested persons to assess whether the purpose of Part 4 is being met. ID provides transparency about the performance of gas pipeline businesses to interested persons, and provides an ongoing source of information so that trends can be identified and monitored over time. The types of information that gas pipeline businesses are required to publicly disclose under ID requirements include data on prices, measures of quality, financial information and forecasts of future investment and expenditure.
- 7 We summarise and analyse the information that gas pipeline businesses disclose under ID. When they disclose information under our ID requirements, Part 4 requires us to publish a summary and analysis of that information for the purpose of promoting greater understanding of the performance of individual businesses, how they are performing compared to each other and any changes over time.⁷ We may also, as part of that summary and analysis, include an analysis of how effective the ID requirements imposed on the services are in promoting the purpose of Part 4.⁸
- 8 The analysis in the report builds on existing summary and analysis of ID data that we have undertaken under Part 4.⁹ The analysis draws on revenue, costs and quality data disclosed under ID regulation. We note that this does not cover all the data we receive from gas pipeline businesses under ID.¹⁰
- 9 We expect that the analysis in the report and associated materials will be of interest to all stakeholders in the gas industry. Gas sector stakeholders need to have confidence that the prices customers pay for gas pipeline business services, and the quality of the services they receive, reflect an industry that is working efficiently, and for their long-term benefit. This analysis will be an important input into assessments of the performance of gas pipeline businesses and the effectiveness of our regulation.

5. Ibid, s 53A.

6. As well as publicly disclosing information under ID regulation, gas pipeline businesses may also choose to voluntarily disclose additional information. We note that information provided voluntarily may not be subject to as much (if any) assurance or sign-off as information required to be disclosed under ID regulation.

7. Ibid, s 53B(2)(b).

8. Ibid, s 53B(3).

9. See <https://comcom.govt.nz/regulated-industries/gas-pipelines/gas-pipelines-performance-and-data>

10. Asset Management Plans (**AMPs**) are made publicly available by each gas pipeline business; the information they contain has not been used explicitly in analysis but has been used in conjunction with qualitative ID data to inform explanations within the report. AMP-related data (ie, expenditure and demand forecasts, asset condition reporting) is provided to us under ID requirements, but these datasets are mostly forward-looking, whereas the report focusses on historical activities.

Our primary method of analysis is trend analysis

- 10 Given fluctuations in gas pipeline businesses' revenue and expenditure from year-to-year, we have assessed changes over time using trend analysis.
- 11 Assessing a dollar or percent increase by using the beginning and endpoints of a data series can misrepresent the direction of travel if either point represents a relative peak or trough, so we have only used this method within the report for data series with relatively stable trends.
- 12 Using trends is similarly imperfect, as it can over or under-represent the change that has occurred, but we consider it provides an informative representation of the issues facing the industry. The purpose of the analysis in the report is to understand trends over time, but we also provide precise reporting of changes where their impact is large.
- 13 The report uses a combination of the slope of the linear trend which gives an annual change in dollars, an approximation of a compound annual rate of growth, and dollar or percentage increases using the beginning and endpoints of a data series. The specific descriptor used for any single piece of analysis (eg, average percentage increase per year) has depended on what we considered best described the underlying drivers and issues, given the relatively short length of the data series. The interactive dashboard primarily uses the slope of the linear trend or an approximation of a compound annual rate of growth.

We have defined profit in a way that allows it to be presented clearly

- 14 References to "profit" in the report are to what ID defines as regulatory profit, although for clarity the report frequently breaks this down into cash profit and non-cash revaluations. Regulatory profit is defined under ID as income minus expenses and tax, plus non-cash revaluations.¹¹ For the purpose of this definition:
 - 14.1 income means the sum of line charge revenue, gains/losses on asset disposals, and other regulated income;
 - 14.2 expenses means the sum of operating expenditure (**opex**), pass-through and recoverable costs, and depreciation; and
 - 14.3 non-cash revaluation means the annual increase in asset values recorded by the gas pipeline business, in line with reported inflation.

Our analysis is predominantly given in nominal price terms

- 15 All the financial analysis we present in the report is given in nominal terms, or 'dollars-of-the-day'. Some proportion of the trends we see will therefore reflect general price inflation that consumers will have experienced across all their spending. We have chosen to present most of our analysis in this way because we think it will be most familiar to consumers' experience and is therefore the most meaningful approach.
- 16 Further, the factors influencing general price inflation as experienced by consumers are not the same factors influencing the cost of gas distribution and gas transmission services. Where we do address inflation in this report, we have used Stats NZ's consumer price index (**CPI**) for all groups.¹²

11. Commerce Act (Gas Distribution Information Disclosure) Determination 2012 [2017] NZCC 34, page 155 and Commerce Act (Gas Transmission Information Disclosure) Determination 2012 [2017] NZCC 35, page 154.

12. Stats NZ Infoshare, table reference: CPI009AA (viewed on 3 October 2022).

Our analysis relates to customers on average, rather than an ‘average’ customer

- 17 In the case of local gas pipeline businesses (ie, not gas transmission businesses), we present some of our analysis in dollars per customer. We calculate this simply as the total dollars under consideration, divided by the total number of customer connections (represented by installation control points (**ICPs**)). This is both a way for us to normalise the data given the varying size of local gas pipeline businesses, and to relate the results to the experience of customers on average.
- 18 However, this captures customers of all sizes and demand profiles, some of whom will contribute a much greater share of local gas pipeline business revenue than others. We therefore emphasise that the figures we present in the report do not reflect the experience of an ‘average’ or ‘typical’ customer, but rather the experience of customers on average. The experience of an ‘average’ customer of a local gas pipeline business will depend on how each local gas pipeline business sets its prices for all the different groups of customers of that local gas pipeline business, which we have not considered as part of this analysis.

Our analysis is based on data published under our information disclosure requirements

- 19 The report draws on data provided by gas pipeline businesses as IDs from 2012. In the report, an ‘analysis year’ refers to the 12-month period ending 30 September. While it is a comparatively short period within the analysis, we also note that the impact of the COVID-19 pandemic is visible within the 2020 analysis year ie, delay of work programmes.
- 20 We have generally based our analysis on the data as it has been disclosed by the gas pipeline businesses, which may contain some errors and differences in interpretation. For example, opex classed as ‘asset replacement and renewal’ by one gas pipeline business may be classed differently by another gas pipeline business. The data may also be defined within ID in a way that is specific to the regulatory context. For example, tax amounts may not be the same as the actual tax paid in that year by the gas pipeline businesses because of certain tax effects that are outside our regulatory scope. Our analysis also uses the average number of customer connections as a proxy for the number of customers.
- 21 Prior to 2012, ID requirements were materially different, so it is difficult to readily compare that data with more recent data. The transitional 2012 disclosure was a subset of the current ID requirements, and changes in the way costs have been categorised between 2013 and 2014 means that we have limited the time period of our analysis to start from the year ending 30 September 2014. The analysis extends to the year ending 30 September 2021, the last year for which ID data was available at the time of the report’s preparation.
- 22 Not all gas pipeline businesses have provided data for a 12-month period ending on 30 September between 2012 and 2021, so it has been necessary to adjust the data to enable consistent analysis as described below.

We adjusted the data to enable consistent analysis where clearly required

- 23 For the analysis in this report, we have generally relied on data ‘as disclosed’ by gas pipeline businesses. We have used this approach because we recognise that the onus is on gas pipeline businesses to be sufficiently confident in their data before it is publicly disclosed. This information is subject to independent audit requirements and is certified by gas pipeline businesses’ directors. Our compliance checks and exploratory analysis preceding the report has given rise to some corrections and anomalies, and we note that these may continue to arise in the disclosed data.
- 24 There are likely to be some other errors in the disclosed data, which may be identified after this report has been published. We invite gas pipeline businesses to contact us if they identify an error in the data used in this report that they consider should be addressed.¹³

Differences in reporting periods between gas pipeline businesses required timing adjustments for reported data

- 25 Powerco and First Gas provide information disclosures for years ending 30 September, which is in line with the analysis years that are used in the report. However, other companies (ie, GasNet, Vector and previously, Maui Development Limited) provide information disclosures for years ending 30 June or 31 December, which has required us to:
- 25.1 split the reported data between 1 July and 30 June, or 1 January to 31 December, into four quarters; and
- 25.2 allocate quarters to different disclosure years as follows:
- In the case of reporting for 1 July to 30 June, allocating one of these quarters (representing 1 July to 30 September) to the previous reporting year, and leaving the remaining three quarters (representing 1 October to 30 June) allocated to the original disclosure year in which it was reported.
 - In the case of reporting for 1 January to 31 December, allocating three of these quarters (representing 1 January to 30 September) to the previous reporting year, and leaving the remaining quarter (representing 1 October to 31 December) allocated to the original disclosure year in which it was reported.
 - Summing the newly allocated quarters and original quarters together to represent data between 1 October to 30 September.
- 26 We note that some expenditure activities can be seasonal, so splitting annual figures evenly into four quarters may not appropriately represent the actual quarterly spend. However, in the absence of data at a monthly or quarterly granularity, it is difficult to otherwise align disclosures from the different gas pipeline businesses to enable comparison of data between them. Comparison of an individual year between businesses is complicated slightly by the timing adjustment, but the effect is not an issue when looking at multiple years of a trend.
- 27 This allocation method has not been applied to: the average number of customer connections; opening and closing regulated asset base (**RAB**) values; assets commissioned, disposed, lost or found; or depreciation within the report – the figures used for these categories are ‘as disclosed’. GasNet’s reliability metrics (ie, System Average Interruption Duration and Frequency Indices (**SAIDI**, **SAIFI**)) and interruptions opex were also ‘as disclosed’, to prevent the large financial and quality impacts of a water leak into their gas pipeline system in February 2020 from spreading into the 2019 analysis year.

13. We can be contacted by email: regulation.branch@comcom.govt.nz

Differences in reporting on customer types

- 28 Local gas pipeline businesses report on customer types using customer groups or price category codes, which are not consistent between businesses. We have used the businesses' AMPs and pricing methodologies to group customers into load categories for consistent reporting.
- 29 The resulting groups are:
 - 29.1 **Residential and small business:** a load of less than 13 scm/h.¹⁴ Includes households, cafes, and small takeaways.
 - 29.2 **Business and small commercial:** a load of 10-60 scm/h. Includes restaurants, small apartments, office buildings, and small to medium-sized motels.
 - 29.3 **Medium and large commercial:** a load of 40-200 scm/h. Includes hotels, large motels, shopping complexes, swimming pools, large office buildings, apartment blocks, commercial kitchens, commercial laundries, and dry cleaners.
 - 29.4 **Industrial and non-standard:** a load of more than 180 scm/h. Includes large commercial customers, large hotels, manufacturing and industrial businesses (eg, dairy, meat or food processing plants). Non-standard customers are individually priced.
- 30 The categories have been kept as consistent as possible with the businesses' descriptions of their customers, however sometimes it was not possible to remove overlap between groups based on the data available.

The acquisition of local gas pipeline networks and the gas transmission network by First Gas also required adjustments to the reported data

- 31 First Gas acquired Vector's local gas pipeline networks outside of Auckland, and the assets of the two gas transmission networks from Vector and Maui Development Limited (**MDL**) in 2016. As a result, First Gas does not have data prior to 2016 for local gas pipeline business activities, and Vector's data will reflect the network it owned outside of Auckland before it was sold. Therefore, for graphs describing data series for individual local gas pipeline businesses, we typically only show 2016 onwards. Gas transmission pipeline data used in the analysis does not make any distinctions between Vector, MDL or First Gas ownership, so graphs describing gas transmission activities show data prior to 2016.
- 32 First Gas provided transitional ID data for each gas transmission system in 2016 and 2017, before consolidating reporting across the Maui and non-Maui transmission pipeline systems from 2018 onward. First Gas' transitional disclosures for gas transmission networks added an additional layer of complexity into the timing adjustment, as the transitional disclosures included one with nine months of data reported and one with 15 months of data. Quarters were generally allocated by the same method described above (and the same categories above remained 'as disclosed'). Additionally, return on investment percentages were averaged, weighted by closing RAB values in 2017 to account for the reporting transition. First Gas also provided us with an additional data point to extend the dataset for gas delivered through transmission pipelines in 2018, as the data was not reported in the ID schedules of the time.

14. Standard cubic metres per hour.

Data granularity and availability limits the recalculation of some quality metrics

- 33 Some quality metrics (ie, SAIDI, SAIFI, publicly reported gas escapes, self-reported leaks and third-party damage events) have been provided at a network level by some local gas pipeline businesses, where they own networks across many geographical regions. To compare these metrics across the different companies, it is necessary to aggregate them across the networks. However, ID schedules do not include all the data necessary for us to recalculate these statistics at an aggregate level, requiring a simple averaging to produce a company or industry view for a given metric.¹⁵ While averaging the metrics does not reflect the relative sizes of each network, summing would overstate the metrics for a given business relative to other local gas pipeline businesses (which do not report metrics at a network level).

The results of our analysis reflect the regulatory context under which gas pipeline businesses have operated

- 34 Although the analysis in this report identifies trends in gas pipeline businesses' revenue and reliability and begins to explore the drivers of these trends, it does not generally conclude whether these changes over time constitute poor performance or strong performance. The context and situation of each gas pipeline business is important for understanding how 'good' their performance is, which requires detailed company-specific analysis.
- 35 PQ regulation has applied across the full period of analysis in the report:
- 35.1 Gas pipeline services have been subject to PQ regulation under Part 4 since 1 July 2010. The first default price-quality paths (DPPs) that we set for open access gas pipeline businesses under Part 4 applied from 1 July 2013 to 30 September 2017, following the redetermination of the input methodologies for gas pipeline businesses. The input methodologies set out the rules, requirements and processes that must be applied to regulation of gas distribution and gas transmission services.¹⁶
- 35.2 We reset DPPs in 2022, and the reset will apply until 30 September 2026.¹⁷

15. In particular, the number of customer connections and system length for each individual network, and the total duration of outages across all networks are not reported in ID schedules.

16. Input methodologies are the rules, requirements and processes that underpin regulation under Part 4 of the Commerce Act 1986. We must apply the input methodologies when we set price-quality paths and ID requirements. Regulated businesses are also required to apply the input methodologies. They are important because they increase certainty about how price-quality paths and ID requirements will be set. The input methodologies cover matters like how assets are to be valued, depreciated and revalued, how we estimate the cost of capital, how tax should be treated, and how common costs should be allocated where businesses provide both regulated and unregulated services.

17. The current DPP for local gas pipeline businesses is the *Gas Distribution Services Default Price-Quality Path Determination 2022* [2022] NZCC 15. The current DPP for the gas transmission business First Gas is the *Gas Transmission Services Default Price-Quality Path Determination 2022* [2022] NZCC 14. Documents available at <https://comcom.govt.nz/regulated-industries/gas-pipelines/gas-pipelines-price-quality-paths/gas-pipelines-default-price-quality-path/2022-2027-gas-default-price-quality-path>

- 36 The trends we observe across gas pipeline businesses reflect the price-quality paths that we have set. In the case of the second DPP, we determined that gas pipeline business revenue should reduce to reflect decreases in opex allowances and the estimated weighted-average cost of capital (**WACC**), to prevent excessive profit. The price-quality paths provide incentives for gas pipeline businesses to do things like reduce their costs, so short-term increases in profit can effectively represent a gas pipeline business receiving an incentive payment for improved performance.¹⁸ In circumstances where a gas pipeline business has not complied with the requirements of its price-quality path, we have a range of enforcement responses available to us.¹⁹
- 37 We use relatively low-cost approaches to set price-quality paths for gas pipeline businesses, and DPPs use a broadly standardised approach. If a DPP does not suit the particular circumstances of a business, that business can apply for and propose its own ‘customised’ price-quality path (**CPP**). CPPs use more business-specific information, and rely on more in-depth audit, verification, and evaluation processes. To date, no CPPs have been put in place for gas pipeline businesses.

18. These incentive mechanisms are designed to share the benefits of improvements between the gas pipeline businesses and their customers so that there is incentive for the gas pipeline businesses to improve, while also ensuring that the customers benefit from the improvements.

19. Our case register contains the enforcement outcomes we have taken (such as judgments, enforceable undertakings and warning letters), and is available on our [website](#).

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