



The merits of introduced a revenue cap for gas distribution businesses



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1 Executive summary

1.1 Background

1. In its final decision for the default price-quality paths (DPP) for gas pipeline businesses from 1 October 2022 (DPP3), the Commerce Commission (Commission) decided to retain a weighted average price cap (WAPC) form of control for gas distribution businesses (GDBs).
2. As actual volumes vary from the forecasts used to set the WAPC, the weighted average price that GDBs can charge remains unchanged. Hence, if actual demand over regulatory period turns out to be higher than forecast, GDBs would earn more revenue than is required to recover their efficient costs in that period, and consumers would pay more than the efficient costs needed to deliver the regulated services. Conversely, if demand turns out to be lower than forecast, GDBs will earn less revenue than is needed in that period to recover their efficient costs, and consumers would pay less than the efficient costs needed to deliver the regulated services.
3. In the context of the ongoing Input Methodologies review, and given the changes in Government climate change policies that have been introduced to help New Zealand achieve its net zero commitments, Vector has asked Frontier Economics to consider whether a WAPC remains fit for purpose as a form of control for GDBs.
4. In this report, we consider whether the continued application of a WAPC as the form of control for GDBs would best promote the purpose of Part 4 of the *Commerce Act 1986* (the Part 4 purpose), and whether there is now a strong case for the Commission to switch to a revenue cap form of control.

1.2 Authors of this report

5. This report was prepared by Dinesh Kumareswaran and Ehson Shirazi.
6. **Dinesh Kumareswaran** is a Director of Frontier Economics and an economist with 20 years of experience in competition and regulatory economics. Dinesh advises regulators and regulated businesses on the different forms of economic regulation, the principles of best practice regulation, asset valuation, regulatory depreciation, the allowed rate of return, forecasts of efficient costs, incentive mechanisms and economic benchmarking. Before joining Frontier Economics, Dinesh was a Senior Economist at New Zealand's competition authority and economic regulator, the New Zealand Commerce Commission. Between 2010 and 2012, Dinesh lectured an MSc course in regulatory finance at the Imperial College Business School, London. Dinesh holds Master's and Honours degrees in economics from Victoria University of Wellington, New Zealand.
7. **Ehson Shirazi** is an Economist with Frontier Economics and specialises in the application of economics to regulation, competition and policy matters. Ehson has advised extensively on the regulation of infrastructure. This includes advice on the principles of best practice regulation, the different types of regulation, the estimation of regulated revenues, cost of capital, the design and application of incentive mechanisms, tariff design and regulatory modelling. Ehson holds a Bachelor of Economics and a Bachelor of Laws (First Class Honours) from the University of Sydney.



1.3 Key findings

Significant uncertainty over how New Zealand's energy transition will unfold has increased materially the difficulty of forecasting gas demand accurately. In these circumstances, a WAPC is more likely to produce outcomes that would not promote the long-term benefit of consumers.

8. The main economic rationale that is typically expressed by regulators when adopting a WAPC form of control is that it incentivises regulated suppliers to utilise regulated assets as efficiently as possible, and to grow demand and new connections, as a means of increasing consumer welfare.
9. This may have been a good reason to apply WAPCs to regulate GDBs in New Zealand in the past. However, new Government climate change policies seek to reduce (rather than increase) fossil gas consumption over time to help meet the country's net zero targets. In our view, this weakens the conventional rationale for a WAPC significantly.
10. A perceived benefit of a WAPC is that it achieves price stability for consumers within each regulatory period.
11. However, the very significant uncertainty about how the transition to a decarbonised economy will unfold makes accurate forecasting of demand for the services delivered by GDBs over even short horizons (e.g., the next regulatory period) very challenging. In these circumstances, the intra-period price stability of the WAPC merely introduces unnecessary (and unmanageable) volatility into the recovery of efficient costs, since GDBs typically have little control over the factors that might cause demand to fluctuate over the regulatory period.
12. In our view, there are two key consequences of being unable to forecast demand accurately over a regulatory period, under a WAPC:
 - a GDBs may over/under-recover their efficient costs; and
 - b GDBs may face financeability concerns in those periods when efficient costs are under-recovered materially.
13. Neither of these outcomes would promote the long-term benefit of consumers.

[Regulators overseas are considering a switch to revenue caps, or have already done so, for the purposes of regulating GDBs](#)
14. We have reviewed the form of control used by the AER and Ofgem when regulating GDBs in their respective jurisdictions.
15. The AER currently applies a WAPC to regulate GDBs. However, we note that:
 - a The AER has recently published an Information Paper explaining that there are many sound reasons to regulated GDBs using revenue caps, given the increased difficulty in forecasting demand accurately during the transition period towards a decarbonised energy system;
 - b The AER has not made a regulatory determination for a GDB since it published that Information Paper, so it remains to be seen whether/how soon it will adopt a revenue cap form of control; but
 - c In a determination made shortly before the publication of the Information Paper, the AER recognised the challenges of forecasting gas demand accurately—even over the near term—given changes in Government climate change and net zero policies. The AER introduced a demand re-opener that would allow the GDB to propose a variation to its price cap if a



material divergence between the actual demand and the demand forecasts used to set the original price cap.

16. Ofgem switched from a “weighted price cap” form of control to a pure revenue cap for GDBs in 2007, and has maintained that approach ever since.
17. Ofgem’s decision to set price controls for GDBs using revenue caps rather than price caps followed a recognition by Ofgem that nearly all of the costs incurred by GDBs in delivering regulated services are fixed. Therefore, exposing GDBs to volume risk did not improve incentives to match available network capacity to peak demand. Instead, allowing GDBs’ volumes to vary with volumes simply introduced unnecessary (and unmanageable) volatility into the recovery of efficient costs, since GDBs typically have little control over the factors that might cause demand to fluctuate over the regulatory period

A revenue cap form of control for GDBs would better promote the long-term benefit of consumers than a WAPC approach

18. The combination of a revenue cap and the ‘overs and unders’ account ensures that regulated suppliers can expect to recover their prudent and efficient costs, and no more. This outcome is consistent with the ex-ante FCM principle and would promote the Part 4 purpose.
19. A revenue cap also has the benefit of being simpler to implement and enforce than a WAPC, thus reducing the regulatory burden for both the Commission and GDBs. The Commission has already implemented revenue caps for electricity distribution businesses (EDBs) and gas transmission businesses (GTBs). This means that implementation of revenue caps for GDBs should be a relatively low-cost change for the Commission to make.
20. In our view, the reasons given by the Commission for not adopting a revenue cap for GDBs in the gas DPP3 determination do not properly take account of GDBs’ ability to influence demand, nor the Part 4 purpose. GDBs have limited ability to grow demand in an environment where Government decarbonisation policies are expected to incentivise consumers to switch from fossil gas to alternative fuels, and adoption of low carbon gas is highly uncertain. The alternative options identified by the Commission for managing demand risk, including increasing fixed charges, or changing expenditure profiles, or by submitting a CPP, are either not available to GDBs or would be ineffective.
21. The Commission has previously determined that setting revenue caps rather than price caps is appropriate in circumstances where demand is difficult to forecast accurately. This is reflected in its decision to retain a revenue cap for GTBs. The recent changes in Government policy in particular make demand forecasting for GDBs more difficult and results in GDBs having less influence over demand. Based on the Commission’s previous reasoning, there would now seem to be a much stronger case to move away from WAPCs to revenue caps for GDBs.



2 WAPC under demand uncertainty

2.1 Background

22. In its final decision for the default price-quality paths for gas pipeline businesses from 1 October 2022 (DPP3), the Commerce Commission (Commission) decided to retain a weighted average price cap (WAPC) form of control for gas distribution businesses (GDBs).
23. The WAPC is derived by dividing the total (smoothed revenue requirement) by a forecast of demand over the regulatory period. GDBs are permitted choose and vary their individual tariff structures within the regulatory period provided that the overall WAPC is not breached.
24. Under a WAPC, GDBs bear within-period demand risk (i.e., the risk that actual demand turns out differently to the forecast of demand used to set the WAPC for each period). As actual volumes vary from the forecasts used to set the WAPC, the WAPC itself remains constant. This means that if demand turns out to be higher than the forecast, GDBs will earn more revenue than their revenue requirement. Conversely, if demand turns out to be lower than forecast, GDBs will earn less revenue than their revenue requirement.
25. This was explained by the Commission in its Final Reasons Paper for the gas DPP3 determination:

Within-period demand risk falls on GDBs under a WAPC as when volumes vary, the weighted average prices GDBs can charge remain the same. Therefore, if quantities delivered fall below the forecast quantities, GDBs earn less revenue (until prices are reset in DPP4). They also bear the upside of this risk. If they outperform the forecast of quantities delivered, they retain the additional revenue during DPP3.¹

26. By contrast, under a revenue cap form of control, GDBs would be permitted to earn revenues over a regulatory period that are capped at the GDBs' total revenue requirement over the period. If revenues in one or more years falls below the cap, then the business would be permitted to adjust its prices in subsequent years to recover more revenue up to the capped level. The ability of GDBs to adjust prices within each regulatory period in this way could result in revenue caps delivering more intra-period price volatility than a WAPC.
27. Revenue caps are not set by reference to a forecast of demand over the regulatory period. Hence, under revenue caps, the GDBs would not be exposed to within-period demand risk.

¹ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, para E30.



2.2 Economic rationale for a WAPC

28. Which of these two forms of control should be adopted depends on the particular circumstances of the industry being regulated, and the key regulatory and policy objectives pertaining to the industry.
29. Because a WAPC allows regulated suppliers to earn revenues in excess of allowed revenues if actual demand exceeds forecast demand, a WAPC can incentivise regulated suppliers to:
 - a Utilise existing network capacity more efficiently (e.g., through tariff structures, less demand side management activities); and/or
 - b Expand capacity (e.g., by pursuing and facilitating new connections and augmenting the network to accommodate new customers).
30. The WAPC form of control can increase consumer welfare by incentivising a regulated supplier to increase demand for the regulated services it offers, and to facilitate increased consumption (and the economic welfare that generates) by expanding supply to meet demand. As such, WAPCs are typically used to regulate expanding and maturing industries serving markets with potentially large unmet demand.
31. In our view, the standard rationale for WAPCs is weakened significantly in circumstances where:
 - a Expected growth in demand is likely to be flat;
 - b There are societal benefits and clear Government policy objectives to encourage a reduction in demand over time (as there is in New Zealand in relation to the consumption of fossil gas); or
 - c The regulated supplier has little or no influence over demand.
32. Some regulators (including the Commission) have been attracted to WAPCs because they deliver more stable prices to consumers within each regulatory period. However, WAPCs can result in inter-period price volatility.²
33. Moreover, the stable prices produced by WAPCs can also result in windfall gains and losses being imposed on consumers and regulated suppliers. This is because, under a WAPC:
 - a Consumers would pay more than the efficient cost of the regulated services when actual demand exceeds forecast demand; and
 - b Consumers would pay less than the efficient cost of the regulated services when forecast demand exceeds actual demand.
34. For the reasons explained in section 2.5.1 below, we do not think either of these outcomes would promote the long-term benefit of consumers.

2.3 Challenges in forecasting demand accurately

35. In its submission to the Commission's Draft Determination for DPP3, Vector noted that there are significant challenges associated with forecasting demand accurately at the present time,

² As discussed in section 3, the Australian Energy Regulator (AER) has recently made this very point in relation to WAPCs applied to regulated gas pipelines.



principally due to changes in recent Government climate change policies and uncertainty about how the decarbonisation transition path will unfold.

Future demand for the gas network is heavily dependent on government policy decisions that are currently unknown. We do not consider it is possible to produce a reliable constant price revenue growth (CPRG) forecast given the current uncertainty, amplified by Covid19 impacts and volume fluctuations that have been experienced over the last 24 months.³

36. This sentiment was also expressed by the Commission's own consultant, Concept Consulting:

Overall, the above analysis points to there being considerable uncertainty with regards to gas demand projections, and this uncertainty should be taken into account when considering the form of price control. Further, our view is that this uncertainty is likely to grow significantly due to decarbonisation. This is due to uncertainty over future policy decisions, and uncertainty over the extent to which 'green' sentiments may increasingly drive consumer decisions.⁴

37. We agree with Concept Consulting that the transition path to a decarbonised economy that New Zealand is currently on creates significant challenges in forecasting demand accurately, even over the short-term (e.g., the next regulatory period). We also agree with Concept Consulting that these increased difficulties in demand forecasting warrant a reconsideration of the WAPC form of control that is currently applied to GDBs.
38. New Zealand, when compared to other developed economies, faces unique challenges in decarbonising. New Zealand has a distinctive emissions profile, where approaches being pursued in other countries to reduce carbon emissions—such as significant investment in renewable electricity generation, or the use of forestry as carbon sinks—have already been implemented.
39. The Government has identified the energy sector as being crucial to meeting the targets set in the first emissions budget. There is now a consensus that electrification of the economy will play a key role in helping New Zealand meet its decarbonisation goals. Average electricity demand is projected to grow above recent historical trends with peak demand also expected to rise substantially. The largest drivers of electrification are expected to be the shift away from fossil gas for heating, cooking and industrial uses, and the widescale adoption of electric vehicles.
40. However, there remains significant uncertainty about exactly how the path to decarbonisation will unfold. In particular, there is considerable uncertainty over how quickly users of fossil gas will switch to alternatives, such as electricity, hydrogen or biogas. This is driven by uncertainty over:

³ Vector, Default Price-Quality Paths for Gas Pipeline Businesses from 2022 Submission on the Commerce Commission's Draft Decision, 14 March 2022, p. 3.

⁴ Concept Consulting, *Basis and methodology for producing gas demand projections to feed into the default price-quality path (DPP) regulation of gas distribution businesses*, 15 November 2021, p. 15.



- a How quickly new technologies and production process can be developed to allow users to feasibly switch from fossil gas to the alternatives; and
 - b The willingness and ability of consumers to meet the costs of switching away from fossil gas. (e.g., the cost of replacing appliances and existing production processes).
41. These uncertainties are unlikely to resolve themselves in the near term and are beyond the ability of GDBs to manage. In these circumstances, the difficulties associated with forecasting demand accurately would merely introduce volatility into the revenues of—and, therefore, the recovery of efficient costs by—GDBs.

2.4 Consistency of a WAPC with decarbonisation objectives

42. As explained above, under a WAPC form of control, GDBs are incentivised to grow (or at least slow down the decline of) demand for fossil gas, since the revenues that GDBs are able to earn over a regulatory period will depend on demand. This point was recognised by the Commission in its Final Reasons Paper for the gas DPP3 decision:

*Under a WAPC, the GDBs bear the within-period demand risk **and are incentivised to grow demand** while maintaining incentives for cost efficiency.⁵ [Emphasis added.]*

43. As discussed in section 3.1, the Australian Energy Regulator (AER) has recently observed that the incentives created by a WAPC to increase demand growth and new connections is inconsistent with Government policies and societal efforts to reduce fossil fuel use and decarbonise economy.
44. In particular, the financial incentives imposed on GDBs to maximise revenues (particularly in circumstances where the long-term outlook for the industry is highly uncertain) may result in action by GDBs that makes consumer switching to electricity less attractive than it otherwise would be, thus slowing the pace of New Zealand's energy transition.
45. Such conflicts between the incentives faced by GDBs (as a direct consequence of the design of the regulatory framework) and Government and societal objectives to decarbonise the economy are unlikely to be desirable.

2.5 Consequences of being unable to forecast demand accurately

46. The sections above have explained that the key economic rationale for adopting a WAPC form of control is to incentivise regulated suppliers to promote the efficient utilisation of regulated assets, and to incentivise the growth of new demand and connections as a means of increasing consumer surpluses from consumption of regulated services.
47. This may have been a good reason to apply WAPCs to regulate GDBs in New Zealand in the past. However, the recent changes in Government policy, which seeks to reduce (rather than increase)

⁵ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, para E29.



fossil gas consumption over time to help meet net zero targets, weakens the conventional rationale for a WAPC significantly.

48. In our view, there are two key consequences of being unable to forecast demand accurately over a regulatory period, under a WAPC:
 - a The risk of GDBs over/under-recovering their efficient costs; and
 - b The risk of GDBs facing financeability concerns in those periods when efficient costs are under-recovered.
49. We discuss each of these issues in turn below.

2.5.1 Recovery of prudent and efficient costs

50. One perceived advantage of a WAPC is stability of prices to consumers within each regulatory period. However, as the Commission has acknowledged recently, a consequence of this price stability is the risk of suppliers over/under-recovering their efficient costs:

*a WAPC provides within-period average price stability for consumers, but suppliers are exposed to the risk of over- or under-recovery of revenue;*⁶

51. In our view, neither of these outcomes—the over-recovery or under-recovery of efficient costs—would promote the long-term benefit of consumers (i.e., the purpose of Part 4 of the *Commerce Act 1986* (the Act)).
52. For instance, if GDBs were to recover more than the efficient costs of delivering regulated services simply because it is difficult to forecast demand accurately (and not because of improvements in efficiency and/or service quality that consumers ultimately benefit from), that would simply be a windfall gain to the GDBs. In our view, such windfall gains would be inconsistent with a key objective of the regulatory framework—namely to promote the long-term benefit of consumers by limiting the ability of GDBs to “extract excessive profits” (section 52A(1)(d) of the Act).
53. Conversely, if GDBs expect that they may unable able to recover their efficient costs, that could reduce “incentives to innovate and to invest, including in replacement, upgraded, and new assets” (section 52A(1)(a) of the Act). This would not promote the long-term benefit of consumers either.
54. The Commission has recognised the statutory requirement for the regulatory framework to promote efficient investment by regulated suppliers and has established the ex-ante financial capital maintenance (FCM) principle as a means of providing appropriate incentives for efficient investment in regulated assets.
55. The ex-ante FCM principle holds that regulatory allowances should be set in such a way as to provide regulated suppliers with a reasonable expectation that they will be able to recover all of their efficient costs over the expected lifetime of those assets once those costs have been incurred. This would provide regulated suppliers with confidence to invest, safe in the expectation that they

⁶ Commerce Commission, *Part 4 Input Methodologies Review 2023, Process and Issues paper*, 20 May 2022, para. 5.125.



will be provided a reasonable opportunity to recoup all of their efficient costs over the expected economic lifetime of the assets.

56. If GDBs expect that they may not recover all of their efficient costs (due to the difficulties of forecasting demand accurately for the purposes of setting a WAPC), then this would violate the FCM principle. That, in turn, could deter efficient investment by GDBs in regulated assets. This would ultimately be to the long-term detriment, rather than benefit, of consumers.
57. As we have explained in a previous report, whilst demand for fossil gas in New Zealand is likely to trend down over time, some users (including industrial users, such as electricity generators) are expected to continue to use fossil gas for decades to come.⁷ In these circumstances, it is vital that gas pipeline businesses in New Zealand be provided with incentives to invest efficiently in the safe and reliable supply of fossil gas to support an orderly energy transition. A premature withdrawal of fossil gas supply would undermine an orderly energy transition and would not promote the long-term benefit of consumers.

2.5.2 Impact on financeability

58. When setting the allowed rate of return for GDBs under the DPP framework, the Commission assumes a 'benchmark' credit rating that is used to determine the allowed return on debt (BBB+ under the current IMs). This benchmark credit rating may differ from the actual credit rating of the GDBs regulated by the Commission.
59. Similarly, for the purposes of setting the allowed rate of return for GDBs, the Commission determines a benchmark level of leverage, which determines:
 - a The weights between the allowed return on equity and the allowed return on debt; and
 - b In part, the equity beta.
60. The Commission currently adopts a benchmark gearing level of 42% for GDBs, meaning that the Commission assumes that a benchmark efficient GDB would finance 42% of its RAB using debt and the remaining 58% using equity. The actual level of leverage of each GDB may differ from the benchmark 42% level of leverage assumed by the Commission when setting allowances.
61. In our view, an internally consistent regulatory determination requires that the regulated cash flows available to an GDB in each regulatory period are at least sufficient to support the benchmark credit rating (BBB+) at the benchmark level of gearing (42%). If this is not the case, then equity investors in the GDB cannot expect to receive the return on equity allowance set by the Commission. In these circumstances, the (benchmark) GDB cannot be said to be financeable.
62. Consider an GDB that had geared up to a level that is exactly in line with the benchmark level of leverage determined by the Commission. If the regulated cash flows are at least sufficient to support the benchmark BBB+ rating, then:
 - a Equity investors in the GDB could expect to earn the return on equity allowance set by the Commission; and
 - b Debt investors in the GDB could expect to earn the return on equity allowance set by the Commission.

⁷ Frontier Economics, [Options to maintain investment incentives in the context of declining demand](#), 9 February 2023.



63. If the Commission's estimates of the required return on equity and the required return on debt are unbiased, then each of these types of investors would expect to receive the minimum return they require, and the GDB would be able to attract the capital it needs in order to invest in regulated assets.
64. However, if the regulated cash flows available to a GDB were only able to support a BBB credit rating (i.e., a rating level lower than the BBB+ benchmark), then:
 - a The regulated GDB's return on debt allowance would be set by the Commission in line with a benchmark BBB+ rating; but
 - b The GDB would be facing a cost of debt commensurate with a BBB rating.
65. That is, the regulatory allowance would be *lower* than the cost of debt faced by the benchmark GDB that had adopted a capital structure precisely in line with the benchmark level of leverage.
66. This shortfall between the regulatory allowance and the cost of debt incurred by the benchmark GDB would need to be made up by equity investors (the residual claimants on the cash flows of the business) sacrificing some of their returns.
67. Consequently, if there is an internal inconsistency in the regulatory decision such that the regulated cash flows are insufficient to support at least the benchmark credit rating, then equity investors in a benchmark GDB that had adopted the efficient capital structure assumed by the Commission would expect to earn a return that is *below* the return required by such investors in order to commit capital to the firm. If the GDB cannot attract the finance it needs, then it will be unable to invest in regulated assets.
68. It is not commercially viable for equity holders to provide capital at an expected return below their opportunity cost of funds. Consequently, the GDB could not expect to attract the equity capital it requires to invest in regulated assets. In other words, the regulated assets would not be financeable.
69. If actual demand falls below forecast demand, a GDB under a WAPC would be prevented from recovering its efficient costs. If the under-recovery is sufficiently large, the resulting regulated cash flows available to the GDB may be too low to support the benchmark credit rating at the benchmark gearing level—in which case the GDB may face a financeability constraint that prevents it from attracting sufficient capital to invest efficiently in regulated assets.
70. In our view, the best way to prevent such outcomes would be to ensure that GDBs are allowed to recover their efficient costs in each regulatory period.

2.6 Conclusion

71. The main economic rationale that is typically expressed by regulators when adopting a WAPC form of control is it incentivises regulated suppliers to utilise regulated assets as efficiently as possible, and to grow demand and new connections, as a means of increasing consumer welfare.
72. This may have been a good reason to apply WAPCs to regulate GDBs in New Zealand in the past. However, new Government climate change policies seek to reduce (rather than increase) fossil gas consumption over time to help meet net zero targets. This weakens the conventional rationale for a WAPC significantly.
73. A perceived benefit of a WAPC is that it achieves price stability for consumers within each regulatory period.



74. However, the very significant uncertainty about how the transition to a decarbonised economy will unfold makes accurate forecasting of demand for the services delivered by GDBs over even short horizons (e.g., the next regulatory period) very challenging. In these circumstances, a WAPC merely introduces unnecessary (and unmanageable) volatility into the recovery of efficient costs, since GDBs typically have little control over the factors that might cause demand to fluctuate over the regulatory period.
75. In our view, there are two key consequences of being unable to forecast demand accurately over a regulatory period, under a WAPC:
 - a The risk of GDBs over/under-recovering their efficient costs; and
 - b The risk of GDBs facing financeability concerns in those periods when efficient costs are under-recovered.
76. Neither of these outcomes would promote the long-term benefit of consumers.



3 The overseas experience

77. This section discusses the consideration of revenue caps as the relevant form of control for gas pipelines by two prominent economic regulators overseas:
 - a The Australian Energy Regulator (AER); and
 - b Ofgem in Great Britain.
78. This section also outlines mechanisms that the AER and Ofgem have introduced specifically to manage uncertainty created by climate change policies and their impact on regulated suppliers' revenues.

3.1 Australian Energy Regulator

79. In November 2021, the AER published an Information Paper that considered how gas pipelines should be regulated in an environment of heightened uncertainty, given significant shifts in Government policy to transition the energy system in Australia away from dependence on fossil fuels towards greater reliance on renewables in order to reach net zero emissions by 2050.
80. Given that New Zealand is undergoing a similar energy transition, including Government policy decisions to reduce the use of fossil gas, many of the considerations set out in the AER's information are highly relevant to the Commission's deliberations on the form of control in the current IMs review.
81. The Information Paper recognised that gas pipelines on the east coast of Australia are currently regulated using WAPCs, but that the significant uncertainty over future demand for gas created by changes in Government policy might require a rethink of the form of control that is used to regulate these businesses:

Given the uncertainty around future gas demand and the decarbonisation policy objectives, there may be a need to change the form of regulation control or to embed some flexibility into the price control framework to manage risk.⁸

82. The AER noted that whilst price caps provide within-period price stability to consumers, price caps also increase the risk of price volatility to consumers between regulatory periods:

Revenue caps and price caps both promote and reward a business for cost-efficiency in supply of the regulated service. However, the choice between revenue caps and price caps influences the variability and predictability of consumer prices and regulated businesses' revenues. A price cap provides within-period average price stability for consumers but regulated businesses are exposed to the risk of over-

⁸ AER, *Regulating gas pipelines under uncertainty, Information paper*, November 2021, p. 54.



or under-recovery of revenue. A revenue cap provides regulated businesses with guaranteed revenue, but may lead to more price volatility for consumers within the price control period. Consumers face higher risk of price volatility between periods under a price cap compared to a revenue cap.⁹

83. The AER recognised that price caps can result in:
- a consumers paying more than the efficient costs of delivering regulated services if actual demand turns out to be higher than the demand forecasts used to set the price caps; or
 - b regulated suppliers not recovering their efficient costs if actual demand turns out to be lower than the demand forecasts used to set the price caps.
84. For example, the AER explained that:

Under price-cap regulation, network businesses have an incentive to under-forecast demand or use more conservative estimates of demand, to avoid under-recovering their required revenues during the period. The uncertainty surrounding future gas demand makes it very challenging to forecast demand robustly and accurately. This increases the risk that consumers will pay more than necessary for regulated pipeline services under price-cap regulation if actual demand turns out to be higher than forecast. Conversely, if actual demand is lower than forecast, regulated businesses will bear all the costs associated with the demand risk.¹⁰

85. For the reasons explained in section 2.2, in our view, neither of the outcomes identified by the AER—the over-recovery or under-recovery of efficient costs—would promote the long-term benefit of consumers (i.e., the purpose of Part 4 of the Act).
86. The AER also recognised that price cap regulation incentivises regulated suppliers to grow demand (including through tariff structures) and new connections, which would be inconsistent with Government decarbonisation policies. By contrast, revenue cap regulation would not promote such incentives and therefore may be more compatible with the objectives of a transition away from fossil gas:

Another effect of price-cap regulation is that it incentivises demand growth and new connections. These incentives are inconsistent with efforts to reduce fossil fuel use and decarbonise the Australian economy (this is further discussed at section 6.1). Revenue cap regulation removes the incentive for regulated businesses to under-forecast demand, but also removes the financial incentive for them to increase connections and gas consumption even when efficient to do so.

⁹ AER, *Regulating gas pipelines under uncertainty, Information paper*, November 2021, p. 54.

¹⁰ AER, *Regulating gas pipelines under uncertainty, Information paper*, November 2021, p. 54.



Under price-cap regulation, regulated businesses generally design their tariff structures to be declining block tariffs to incentivise customers to use more gas. The price per unit falls as consumption increases. This encourages greater utilisation of gas networks, and minimises bill impacts of higher usage during peak times of the year for customers. Declining block tariffs are also inconsistent with governments' decarbonisation policies. If revenue cap regulation is adopted, the resulting tariff structures would likely be changed from declining block tariffs to one that has less incentives on consumption growth.¹¹

87. In summary, the AER has recently outlined many compelling reasons why revenue caps rather than a WAPC would be a more appropriate form of control to apply to regulated gas pipelines, given the significant challenges in forecasting demand accurately for such networks as the economy decarbonises.

3.2 Ofgem

88. The economic regulation of gas pipelines in Great Britain was introduced in 1986 following the privatisation of British Gas. Between 1986 and 2002, aggregate price controls were put in place encompassing gas transmission and gas distribution networks—referred to, collectively, as 'gas transportation'.¹²
89. In the earliest transmission price controls, gas costs were treated as a pass through item. This meant that regulated revenues effectively varied with the volume of gas transported to end consumers. During the second gas transmission price controls (TPCR2), which were implemented in 1997, the form of control was amended to what Ofgem described as a "weighted price cap", whereby 50% of allowed revenues were fixed and the remaining 50% of allowed revenues were driven by forecast gas throughput. If outturn demand differed from forecasts, the business's actual revenues would vary accordingly.
90. The proportion of revenue that was allowed to vary with gas volumes was referred to as the "revenue driver" or "volume driver." The rationale for applying a volume driver was to incentivise the GDBs to "meet customer demands for new capacity and for the connection of new customers."¹³ Ofgem believed that the costs of operating the GDBs' networks increase as overall capacity requirements increase, and that peak capacity could be represented well by annual demand:

Capacity in each LDZ is driven by peak capacity requirements which, given the stable load factor of LDZ demand year-on-year, can be represented by the level of annual LDZ demand.¹⁴

¹¹ AER, *Regulating gas pipelines under uncertainty, Information paper*, November 2021, pp. 54-55.

¹² A brief history of the regulation of GDBs in Great Britain may be found in: Ofgem, *Regulating energy networks for the future: RPI-X@20, History of energy network regulation, Supporting paper*, 27 February 2009.

¹³ Ofgem, *Review of Transco's price control from 2002, Draft proposals*, June 2001, para. 2.27.

¹⁴ Ofgem, *Review of Transco's price control from 2002, Draft proposals*, June 2001, para. 2.28.



91. Therefore, Ofgem considered that in order to encourage an expansion of capacity of the gas distribution networks in response to demand, allowed revenues would need to be linked explicitly to gas volumes in the form of a volume driver.
92. In 2002, Ofgem separated the elements of the price control for gas transmission assets and gas distribution networks in 12 Local Distribution Zones (LDZs) within a single determination. In that determination, Ofgem proposed to recalibrate the form of control such that 65% of allowed revenues were fixed and 35% of allowed revenue was related to volume.¹⁵
93. However, during the first separate price control for GDBs (referred to as GDPCR1), which came into effect in 2008, Ofgem removed the volume driver altogether. Ofgem explained that throughput had not increased steadily as it had forecast over the previous regulatory period. Instead, throughput had varied in response to weather conditions and gas prices (factors outside the control of the GDBs), and that these fluctuations did not trigger changes in peak demand and the need to expand network capacity:

In the 2002-07 price control 35 per cent of the GDNs' allowed revenue varied with gas throughput on the network. The rationale for a throughput-based revenue driver (or volume driver) was that the costs of operating the network increase as the overall capacity requirements increase and that changes in throughput would reflect changes in capacity (which cannot be directly independently measured).

In the previous price control period throughput did not grow steadily as forecast but fluctuated in response to weather and gas prices. This fluctuation did not trigger changes to peak demand and hence changes in capacity. Gas shrinkage and odorant costs do vary with throughput. Odorant costs typically account for less than 0.2 per cent of revenues. Gas shrinkage costs are recovered through a separate incentive mechanism.¹⁶

94. Ofgem therefore concluded that annual throughput was no longer a good proxy for peak demand and, therefore, that linking GDBs' revenues to volumes was not an effective way to incentivise capacity growth to match consumer demand.
95. Allowing GDB revenues to vary in line with demand merely introduced unnecessary (and unmanageable) volatility into the recovery of efficient costs, since (as Ofgem realised) GDBs typically have little control over the factors that might cause demand to fluctuate over the regulatory period.

3.3 Uncertainty mechanisms

96. The AER and Ofgem have both recognised that GDBs face considerable new sources of uncertainty as a result of Government climate change and net zero policies, and have introduced specific regulatory mechanisms to help manage the impact of this uncertainty on GDBs' revenues.

¹⁵ Ofgem, *Review of Transco's price control from 2002, Final proposals*, September 2001, section 3.

¹⁶ Ofgem, *Gas distribution price control review, Final proposal*, 3 December 2007, paras. 2.1-2.2.



97. For instance, Ofgem has introduced a 'net zero re-opener' that applies to all regulated energy networks (including GDBs) to allow for any necessary adjustments to the price control within the RIIO-2 regulatory period in response to unforeseen developments related to the delivery of net zero targets. Ofgem's net zero re-opener is very broad in design, meaning that Ofgem has not restricted the types of circumstances that could warrant the application of the re-opener. However, the re-opener is subject to a materiality threshold.¹⁷
98. Ofgem explained its rationale for the re-opener as follows:

In our view, it is critical that the price controls enable the gas and electricity networks to support the achievement of Net Zero targets. We recognise that Net Zero policy will not develop in five-year segments, aligned with our RIIO-2 timetable. Accordingly, there may be circumstances during the price control period where assumptions made to set the price control are no longer appropriate, due to changes related to the transition to Net Zero.

Where material changes occur that require significant adjustment to expenditure due to changes in policy, the role of network companies, or technological or market developments, it may be necessary to make adjustments. This mechanism is, therefore, designed to increase or decrease allowed revenues, as well as amend outputs, during the period rather than waiting until the next price control review.¹⁸

99. As noted in section 3.2, gas pipelines in Great Britain are regulated by Ofgem under revenue caps rather than WAPCs. Therefore, Ofgem's net zero re-opener does not involve mid-period adjustments to price caps to reflect revised demand forecasts. However, the net zero re-opener does recognise the significant uncertainties that regulated suppliers (including GDBs) face during the energy transition, and it represents a serious effort by Ofgem, an experienced and well-respected regulator, to help manage those uncertainties.
100. The AER (which explicitly recognised Ofgem's net zero re-opener in its Information Paper) has introduced a demand/volume re-opener for gas networks regulated under price caps.
101. Whilst the AER has set out many compelling reasons for regulating gas networks using revenue caps rather than price caps (see the discussion above in section 3.1), it has not yet adopted revenue caps as a form of control for gas pipelines as it has not yet made any regulatory determinations for GDBs since the publication of its Information Paper in late 2021. However, in a recent determination for Evoenergy (which operates a gas distribution network in the ACT), made prior to the release of the Information Paper, the AER did introduce a demand re-opener that would allow mid-period adjustments to the WAPC set for Evoenergy.
102. In making that decision, the AER acknowledged the difficulties in forecasting demand accurately for a GDB operating in a jurisdiction subject to ambitious decarbonisation policies:

¹⁷ Ofgem has determined that it would only consider a re-opener if the resulting revenue adjustment "exceeds 0.5% of annual average ex ante base revenue." See Ofgem, *RIIO-2 Final Determinations – Core document (revised)*, 3 February 2021, para. 7.21.

¹⁸ Ofgem, *RIIO-2 Final Determinations – Core document (revised)*, 3 February 2021, paras. 8.50-8.51.



We acknowledge there is significant uncertainty with demand forecasting in Evoenergy's service area. In particular, the effect of decarbonisation policies, electrification incentive schemes and changes to connections policy for new greenfield and urban infill developments will put downward pressure on gas demand. This downward pressure is unlikely to be captured in standard historical trend driven demand forecasts, and it is reasonable to make adjustments to capture the effect of these changes.¹⁹

103. The AER went on explain the possible consequences associated with the difficulties of forecasting demand for Evoenergy's regulated services accurately as follows:

Evoenergy's tariffs are derived using a weighted average price cap. That is, the total amount of revenue set by this determination is divided by the amount of gas forecast to be delivered in the period to arrive at a price for customers for use of the network. Consequently, an under-estimation of demand will result in a higher revenue collection for Evoenergy, while an over-estimation will result in a lower revenue collection. Underestimation places the forecast demand risk on consumers via higher consumption charges. Conversely, an over-estimation of demand will result in a lower revenue collection for Evoenergy and places the forecast demand risk on Evoenergy via lower consumption charges.²⁰

104. The AER described the new demand re-opener as follows:

Given the unique situation in the ACT, we are open to Evoenergy submitting an application mid-period to vary its 2021–26 access arrangement if the trajectory of its demand significant differs to our final decision.²¹

105. The AER explained in its Information Paper that:

In our final decision for Evoenergy 2021-26 gas access arrangement, we rejected Evoenergy's proposed residential demand forecast and substituted a revised (higher) forecast. Nevertheless, we recognise the significant uncertainty with demand forecasting in Evoenergy's service area and noted that Evoenergy

¹⁹ AER, *Evoenergy access arrangement 2021 to 2026, Final decision*, Attachment 12, p. 4.

²⁰ AER, *Evoenergy access arrangement 2021 to 2026, Final decision*, Attachment 12, p. 24.

²¹ AER, *Evoenergy access arrangement 2021 to 2026, Final decision*, Attachment 12, p. 4.



*may seek to vary its access arrangement in mid-period if actual demand is substantially different to our demand forecast.*²²

106. Hence, whilst the AER has not yet adopted revenue caps to regulate GDBs (as it has not yet had to make a GDB revenue determination since it considered seriously the case for doing so in its 2021 Information Paper), it is important to recognise that the AER has introduced a demand re-opener to manage the risks faced by gas pipelines under price caps in an environment where accurate demand forecasting may be very challenging.

3.4 Conclusion

107. We have reviewed the form of control used by the AER and Ofgem when regulating GDBs in their respective jurisdictions.
108. The AER currently applies a WAPC to regulate GDBs. However, we note that:
- a The AER has recently published an Information Paper explaining that there are many sound reasons to regulated GDBs using revenue caps, given the increased difficulty in forecasting demand accurately during the transition period towards a decarbonised energy system;
 - b The AER has not made a regulatory determination for a GDB since it published that Information Paper, so it remains to be seen whether/how soon it will adopt a revenue cap form of control; but
 - c In a determination made prior to the publication of the Information Paper, the AER recognised the challenges of forecasting gas demand accurately—even over the near term—given changes in Government climate change and net zero policies. The AER introduced a demand re-opener that would allow the GDB to propose a variation to its price cap if a material divergence between the actual demand and the demand forecasts used to set the original price cap.
109. Ofgem switched from a “weighted price cap” form of control to a pure revenue cap for GDBs in 2007, and has maintained that approach ever since.
110. Ofgem’s decision to set price controls for GDBs using revenue caps rather than price caps followed a recognition by Ofgem that nearly all of the costs incurred by GDBs in delivering regulated services are fixed. Therefore, exposing GDBs to volume risk did not improve incentives to match available network capacity to peak demand. Instead, allowing GDBs’ volumes to vary with volumes simply introduced unnecessary (and unmanageable) volatility into the recovery of efficient costs, since GDBs typically have little control over the factors that might cause demand to fluctuate over the regulatory period.

²² AER, *Regulating gas pipelines under uncertainty, Information paper*, November 2021, pp. 54-55.



4 Merits of adopting a revenue cap

111. In section 2, we identified the issues with adopting a WAPC form of control in circumstances where future demand is highly uncertain and therefore difficult to forecast accurately. In section 3, we examined how regulators in other jurisdictions have addressed demand uncertainty when regulating gas networks. In this section, we consider how the use of a revenue cap form of control would help to address the problems associated with forecasting demand under significant uncertainty, and would result in outcomes that better promote the Part 4 purpose than a WAPC approach.

4.1 A revenue cap addresses issues with demand uncertainty

112. A revenue cap is a cap on the maximum revenue that a regulated supplier is entitled to recover in a given regulatory period from the provision of regulated services. A business subject to a revenue cap is entitled to set prices to recover the maximum allowable revenue. A regulator accounts for any differences between actual revenue recovered and the revenue allowance in future years. This typically occurs through an 'overs and unders' account, where any over-recovery (under-recovery) is deducted from (added to) the revenue allowance in future years.
113. A revenue cap can address the problems that arise with respect to cost recovery and financeability under demand uncertainty. This is because, under a revenue cap, there is no need to forecast demand at all. The revenues that a regulated supplier is permitted to earn are set in line with its revenue requirement in each regulatory period. The regulated supplier is allowed to adjust prices within each regulatory period to recover its efficient costs in each period, provided it does not breach its revenue cap.
114. The combination of a revenue cap and the 'overs and unders' account ensures that regulated suppliers would recover their prudent and efficient costs, and no more. This outcome is consistent with the ex-ante FCM principle, and promotes the Part 4 purpose.
115. A revenue cap also has the benefit of being simpler to implement and enforce than a WAPC, which would reduce the regulatory burden for both the Commission and regulated suppliers. This is because a revenue cap would obviate the need for a forecast of demand (by tariff) over the regulatory period

4.2 The Commission's reasons for not adopting a revenue cap

116. In the gas DPP3 determination, the Commission considered whether to adopt a revenue cap for GDBs, but ultimately decided to retain the current WAPC. In support of that decision, the Commission argued that:



We continue to consider that, even in the current environment where there is potentially more uncertainty, that GDBs are best placed to manage the within period demand risk and still have incentives to maintain their customer base.²³

117. The Commission responded to Vector's concerns about its inability to forecast gas demand accurately in a dynamic environment by arguing that Vector could manage the risk of demand forecasting errors through means other than the implementation of a revenue cap form of control:

We considered Vector's points from the submission but did not find any new evidence that a change in the form of control would better promote the long-term benefit of consumers. We consider that Vector has other options to mitigate this risk including by adjusting pricing policy settings, by adjusting the ratio of its line and volume charges, by reducing (or increasing) expenditure as demand (and thus revenue) decreases (or increases) or through a CPP.²⁴

118. In our view, the considerations put forward by the Commission for not adopting a revenue cap do not properly take account of a GDB's ability to influence demand in the current environment, nor the Part 4 purpose. We set out our reasons below.

4.2.1 Limited ability to manage within period demand volatility

119. In its Process and Issues paper for the 2023 IMs review, the Commission stated that GDBs are best placed to manage within period demand risk as they are able to actively drive growth in new connections. In reaching this conclusion, the Commission considered both the ability and incentive of GDBs to grow demand.
120. The Commission considered that GDBs' ability to influence demand by growing new connections would be contingent on Government policy decisions that are yet to be made. It acknowledged that if the Government adopts the Climate Change Commission's final advice to set a date where new fossil gas connections are restricted, then a GDBs ability to influence demand would be severely constrained. On the other hand, it considered that if final government policy was more supportive of repurposing natural gas pipelines towards low carbon gases, GDBs would continue to be able to influence demand by promoting new connections throughout the regulatory period.
121. The Commission considered that a GDB's incentive to grow demand is also likely to be affected by the current high levels of uncertainty about the future direction of government policy. In particular, it noted that GDBs may find it uneconomic at this time to subsidise new connections if they expect demand to decline in the future. Notwithstanding this, the Commission concluded that suppliers

²³ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, paragraph E38.

²⁴ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, paragraph E37.



may still have an incentive to connect more customers in the short term because of the fixed cost nature of their network.

122. The Commission's analysis is heavily caveated by the uncertain impact of the Government's future decarbonisation policies and how the energy transition may unfold. As with all ex-ante analyses that involve an uncertain future, a decision must be reached by considering the expected likelihood and impact of different reasonable future scenarios eventuating.
123. The Commission recognises that there is a state of the world in which the Government's decarbonisation policies would lead to a fall in the demand for gas distribution services, which would undermine the ability and incentive of GDB's to grow demand. Given the Commission's decision to retain the WAPC, it would appear that the Commission has given a relatively low weight to that state of the world occurring. In our view, this position is not supported by the development of decarbonisation policies and technologies in New Zealand, and around the world.
124. Decarbonisation in New Zealand will face unique challenges compared to other economies. New Zealand has a distinctive emissions profile where many gains in renewable electricity generation or using forestry as carbon sinks have been realised. As noted in section 3, the energy sector will play an outsized and crucial role in meeting New Zealand's emissions targets. Customer energy demand will increasingly shift to electricity supply supported by small scale renewable generation connected to the distribution network. The largest electrification drivers relate to shifts away from natural gas and internal combustion engine vehicles. With this in mind, it is reasonable to expect that future government policy will involve incentivising consumers switching away from natural gas.
125. The Commission considered the prospect of repurposing natural gas pipelines towards low carbon gases. In our view, whether low carbon gas will become sufficiently feasible is highly uncertain. The extent to which customers will switch to low carbon gas will depend on a range of factors, including technological capability of incorporating low carbon gas into end use consumption, the upfront and ongoing costs of fuel switching, and the cost of alternative fuels. The likelihood of these outcomes are difficult to predict with any reasonable certainty, particularly for emerging technologies like hydrogen.
126. In our view, the Commission has not given appropriate weight to these factors. Specifically, it has not given sufficient weight to a reasonable state of the world in which Government policy results in a material reduction in the demand for the regulated services offered by GDBs. In light of this, we consider that the Commission has over-estimated the ability and incentive of GDBs to grow demand in the future. We consider that a more likely outcome is that GDBs will have limited ability and incentive to grow demand as such action would be antithetical to Government policy, which is actively discouraging fossil gas use in New Zealand.
127. We note that this conclusion is consistent with the findings of the Commission's own consultant, Concept Consulting, and the AER, who recognise that price cap regulation would be inconsistent with the Government's decarbonisation policies. It is also consistent with Ofgem's findings that GDBs have little control over the factors that might cause demand to fluctuate over the regulatory period.
128. Even if the Commission disagrees with our assessment of the future state of the world, we consider that it should be conservative in its assessment. The consequences of getting it wrong are high. If the Commission retains a WAPC in order to incentivise GDBs to grow customer connections, but it turns out that a GDB's ability to do so is constrained, then this may have a significant impact on a GDB's ability to recover its prudent and efficient costs, and its financeability (as set out in section 3). These outcomes are not consistent with the Part 4 purpose. In our view, the Commission should



minimally act to avoid outcomes that are inconsistent with its regulatory objectives if finds (as we do) that these outcomes have a reasonable chance of occurring.

4.2.2 Potential for windfall gains and losses

129. In its Final Reasons Paper for the gas DPP3 determination, the Commission was particularly concerned with the allocation of risk between GDBs and consumers and suggested that GDBs (rather than consumers) bear “demand risk” (i.e., the risk of actual demand differing from the forecast of demand used to set allowances) under a WAPC. For example, the Commission stated that:

Ultimately, the form of control determines who bears the within-(regulatory) period demand risk. Under a WAPC, the GDBs bear the within-period demand risk and are incentivised to grow demand while maintaining incentives for cost efficiency. Under a revenue cap, consumers bear the within-period demand risk.

...

Within-period demand risk falls on GDBs under a WAPC as when volumes vary, the weighted average prices GDBs can charge remain the same. Therefore, if quantities delivered fall below the forecast quantities, GDBs earn less revenue (until prices are reset in DPP4). They also bear the upside of this risk. If they outperform the forecast of quantities delivered, they retain the additional revenue during DPP3.²⁵

130. In our view, the Commission is incorrect in this assessment. Under a WAPC, GDBs and consumers are *both* exposed to demand risk—they are simply on opposite sides of the same risk.
131. As the Commission notes in the excerpt above, if actual demand turns out to be lower than forecast demand, GDBs would earn less revenue than would be necessary to recover what the Commission has determined to be the efficient cost of delivering the regulated services (i.e., GDBs would suffer a windfall loss). The corollary to this outcome is that consumers would pay less than the efficient cost of delivering the regulated services (i.e., consumers would be the beneficiaries of a windfall gain). In this situation, GDBs may be incentivised to stem the loss by, for instance, deferring or reducing investment, or reducing the quality of services they provided.
132. Conversely, if actual demand turns out to be higher than forecast demand, GDBs would earn more revenue than would be necessary to recover what the Commission has determined to be the efficient cost of delivering the regulated services (i.e., GDBs would enjoy a windfall gain). Consequently, consumers would pay more than the efficient cost of delivering the regulated services (i.e., consumers would suffer a windfall loss).
133. That is, GDBs *and* consumers are exposed to the risk of windfall gains and losses under a WAPC, if actual demand differs from forecast demand.

²⁵ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, paras. E28-29.



134. By contrast, under a revenue cap GDBs can expect to earn sufficient revenue to recover their efficient costs (no more and no less), and consumers can expect to pay only the efficient costs required for GDBs to deliver the regulated services (no more and no less).
135. In circumstances where consumer benefit could be enhanced by incentivising GDBs to grow demand (e.g., by facilitating more consumption of fossil gas), then allowing GDBs the opportunity to earn revenues in excess of their efficient costs via a WAPC to encourage demand growth might be justified. However, when there is no clear consumer benefit case for incentivising a growth in demand, the windfall gains that GDBs could receive under a WAPC would simply be ‘functionless rents’ – i.e., excess returns to GDBs with no offsetting benefits to wider society.
136. In any event, for the reasons explained in the previous section, we think that GDBs’ ability to influence demand is significantly constrained by Government policy to reduce consumption of fossil gas over time. In these circumstances, it is unclear that application of a WAPC would incentivise GDBs effectively to pursue demand growth.
137. A WAPC may help to achieve price stability within each regulatory period. However, given the high level of uncertainty associated with future gas demand, the probability of demand forecast error is high. This means that within-period price stability comes at the expense of considerable downside risk to consumers if there is a mismatch between actual and forecast demand. Furthermore, as noted in section 3.1, the AER has pointed out that whilst a WAPC promotes within-period price stability, “consumers face higher risk of price volatility between periods under a price cap compared to a revenue cap.”
138. In our view, the Commission should take these shortcomings of the WAPC in the present circumstances into account when deciding which form of control is likely to best promote the long-term benefit of consumers.

4.2.3 GDBs cannot manage demand risk under a WAPC effectively

139. In its Final Decision for DPP3, the Commission argued that concerns around demand uncertainty could be addressed through alternative options, including increasing fixed charges, or by changing expenditure profiles, or by submitting a customised price path (CPP) proposal. In our view, the alternative options identified by the Commission are either not available to GDBs or would not be effective.
140. The first option raised by the Commission is that GDBs can change the ratio of fixed and volumetric charges. We understand that the Commission’s point here is that by increasing the proportion of revenue that GDBs recover through fixed charges that are invariant to demand (as opposed to volume-based charges that vary with the level of consumption) the less exposed GDBs will be to demand forecasting error.
141. In our view, this solution is counterintuitive. This is because it does not adequately account for the competitive constraint that gas faces from alternative fuels, such as electricity. In practice, raising fixed tariffs will increase barriers for customers to connect to the network. This will likely reduce overall gas demand and make it harder for GDBs to recover their efficient costs. This is why gas networks typically seek to maintain low fixed charges to reduce barriers to connecting to gas, and so maximise network connections, and recover residual costs by marking up usage charges.
142. This is reflected in the following statement from Jemena Gas Networks in Australia:



Given gas is a discretionary fuel for many customers, fixed charges are a barrier to gas connection as it must be paid in addition to the electricity fixed charge. To ensure natural gas remains competitive—recovering some costs via usage rather than fixed charges empowers customers to be able to control their bills and increases the attractiveness to new connecting customer.²⁶

143. The second option raised by the Commission is that GDBs can change their expenditure profile in response to unexpected changes in demand. We understand that the Commission's point here is that GDBs could reduce their expenditure as demand (and thus revenue) decreases to minimise the extent to which a GDB under-recovers its efficient costs.
144. In our view, this solution is not practical. A GDB's expenditure is unlikely to be sufficiently flexible given that certain investments may be necessary to meet required service standards and cannot easily be deferred. Any investment that falls within this category cannot be reduced as doing so would mean the GDB may fail to meet minimum service and safety standards. This may introduce penalties under the quality path of the Commission's regulatory framework, or more generally for failing to meet its licence conditions. Moreover, most of the costs that GDBs seek to recover through allowed revenues are capital costs that have already been sunk. By definition, these costs cannot be avoided because they have already been incurred. In addition, network investment by GDB's is typically characterised by large and lumpy projects. Incremental changes in such investment projects to manage short-term demand volatility is impractical.
145. The third option raised by the Commission is that GDBs could apply for a CPP. Whilst there are benefits to allowing GDBs to opt for a CPP over a DPP to better meet their individual circumstances, given the costs and complexities of undertaking a CPP, it is desirable that the CPP process be the exception rather than the norm. While the CPP is flexible, it is not timely or cost effective. The issues presented in this paper are likely to affect all GDBs and, in our view, reflect a change in the status quo environment in which all GDBs operate. It follows that a CPP is unlikely to be an appropriate or cost-effective means for GDBs to manage demand risks. A more effective way to manage demand risk would be for the Commission to adopt a form of control that does not unnecessarily impose demand risk on consumers or GDBs.
146. Given these considerations, it seems that the Commission's objective should be to allow GDBs to rely on the DPP framework to promote efficient investment in, and operation of, their network in light of the New Zealand Government's decarbonisation and net zero emissions targets, without GDBs needing to apply often for a CPP to cover their reasonable expenditure requirements. This means that the DPP framework should be made as robust as possible (in terms of satisfying the purpose of the Act) to allow GDBs to recover their prudent and efficient costs in circumstances where future demand is (and will likely continue to be) dependent on uncertain Government policy.

4.3 Consistency with the framework adopted for GTBs

147. The Commission has previously determined that setting revenue caps rather than price caps is appropriate in circumstances where demand is difficult to forecast accurately.

²⁶ Jemena Gas Networks (NSW) Ltd, 2020-25 Access arrangement proposal – Attachment 4.1: Our reference services and tariffs, 30 June 2019, p.36



148. The Commission adopted revenue caps (rather than price caps) for gas transmission businesses (GTBs) in 2013 on the grounds that forecasting demand for GTBs is very challenging and GTBs have little influence over demand.²⁷ The decision to apply revenue caps to GTBs was reaffirmed by the Commission in the 2016 IMs review. In fact, the Commission adopted a purer form of a revenue cap for GTBs on the grounds that doing so would help manage demand risk more effectively and improve incentives to invest efficiently.

we consider that gas transmission demand is difficult to forecast and that transmission businesses have little ability to influence demand, and so keeping a revenue cap is in the long-term interests of consumers by ensuring suppliers are more likely to be incentivised to invest efficiently compared to alternatives (consistent with s 52A(1)(a) and (b))²⁸

149. The Commission decided to apply a revenue cap to GTBs in its DPP3 determination.²⁹ In doing so, the Commission noted:

The GTB differs from GDBs in that they are highly exposed to volatility in demand throughout the regulatory period from factors outside of their control, such as changes in global prices for certain commodities. We have therefore maintained a revenue cap for the GTB.³⁰

150. The Commission linked its adoption of price caps for GTBs to the promotion of incentives to invest efficiently consistent with sections 52A(1)(a) and 52A(1)(b) of the Act. The Commission has previously accepted that adopting revenue caps will better promote the long-term interests of consumers than price caps when there is a high degree of demand uncertainty.
151. As explained above, demand uncertainty has increased unambiguously for GDBs. The recent changes in Government policy in particular make demand forecasting for GDBs more difficult and results in GDBs having less influence over demand. Based on the Commission's previous reasoning for applying revenue caps to GTBs, there would now seem to be a much stronger case to move away from price caps to revenue caps for GDBs.

²⁷ Commerce Commission, *Setting Default Price-Quality Paths for Suppliers of Gas Pipeline Services*, 28 February 2013, Attachment F.

²⁸ Commerce Commission, *Input methodologies review draft decisions – Topic paper 1: Form of control and RAB indexation for GDBs, GPBs and Transpower*, 16 June 2016, paragraph 148.

²⁹ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, paragraph E28.

³⁰ Commerce Commission, *Default price-quality paths for gas pipeline businesses from 1 October 2022 – Final Reasons Paper*, 31 May 2022, paragraph E51.



4.4 Conclusion

152. The combination of a revenue cap and the 'overs and unders' account ensures that regulated suppliers can expect to recover their prudent and efficient costs, and no more. This outcome is consistent with the ex-ante FCM principle and would promote the Part 4 purpose.
153. A revenue cap also has the benefit of being simpler to implement and enforce than a WAPC, thus reducing the regulatory burden for both the Commission and GDBs. The Commission has already implemented revenue caps for electricity distribution businesses (EDBs) and gas transmission businesses (GTBs). This means that implementation of revenue caps for GDBs should be a relatively low-cost change for the Commission to make.
154. In our view, the reasons given by the Commission for not adopting a revenue cap for GDBs in the gas DPP3 determination do not properly take account of GDBs' ability to influence demand, nor the Part 4 purpose. GDBs have limited ability to grow demand in an environment where Government decarbonisation policies are expected to incentivise consumers to switch from fossil gas to alternative fuels, and adoption of low carbon gas is highly uncertain. The alternative options identified by the Commission for managing demand risk, including increasing fixed charges, or changing expenditure profiles, or by submitting a CPP, are either not available to GDBs or would be ineffective.
155. The Commission has previously determined that setting revenue caps rather than price caps is appropriate in circumstances where demand is difficult to forecast accurately. This is reflected in its decision to retain a revenue cap for GTBs. The recent changes in Government policy in particular make demand forecasting for GDBs more difficult and results in GDBs having less influence over demand. Based on the Commission's previous reasoning, there would now seem to be a much stronger case to move away from WAPCs to revenue caps for GDBs.

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