Keston Ruxton
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Regulation Branch
Commerce Commission

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24 March 2016

Dear Keston

Re: Comments on Professor Lally's Review of WACC Issues

First State Investments (FSI) is pleased to make this submission on the Commerce Commission's (Commission) review of the Input Methodologies (IMs) for determining the weighted average cost of capital (WACC). This submission is provided in response to Professor Lally's paper "Review of WACC Issues" (25 February 2016), and focuses in particular on the gas asset beta (Section 2 of Professor Lally's paper).

1 Introduction and Summary

FSI has agreed to purchase gas pipelines in New Zealand with a combined regulatory asset base of around $1 billion. The transactions that we have entered into involve merging the two existing gas transmission businesses (currently owned by Vector Limited and Maui Development Limited), and acquiring Vector's non-Auckland gas distribution business. These investments will bring New Zealand's gas transmission assets under a common owner focused on maximising the use and value of gas infrastructure.

Having made substantial investments in regulated gas infrastructure in New Zealand, we are understandably keen to see a stable and predictable approach to estimating the regulatory cost of capital applied to gas pipelines. Any proposal to adjust important elements that determine regulated cash flows (such as the asset beta) will have significant impacts on both the value of FSI's investment, and on the incentives for further efficiency-enhancing investments in New Zealand's regulated infrastructure.

We therefore do not support any change in the asset beta that applies to gas pipelines:

- **We consider that the objective of promoting investment in regulated industries would be undermined by change at this time.** We support the position taken in the Commission's decision-making framework for the input methodologies review (IM Review) that changes should only be made where needed to create a fit-for-purpose regulatory system. Adjusting the asset beta for a subset of regulated assets does not meet this test and would not enhance certainty for either regulated suppliers or consumers.
- **The available empirical evidence and technical analysis of WACC does not support a change in approach to gas asset beta.** Professor Lally's paper does not provide new evidence to support a change in approach to the gas asset beta. We asked Incenta Economic Consulting to review Professor Lally's paper (and his

earlier work on this topic). Incenta has analysed the earnings profile of comparable United States gas transmission businesses, and finds strong empirical support for the current gas beta uplift. We also asked NERA from the United Kingdom to summarise international regulatory precedent on this issue. NERA concludes that an uplift in allowed rates of return for gas assets is common across Europe—particularly in countries that share many of the characteristics of New Zealand's gas industry.

We discuss these points in further detail in the remainder of this submission. We start by explaining why we as investors perceive different risks in gas assets in New Zealand than we do for investments in electricity networks. We then discuss how changing the approach to gas asset beta could affect incentives to invest in New Zealand's regulated industries, and how those changes fit with the decision-making framework for the IM Review. Finally, we summarise the results of the empirical and technical analysis that we have commissioned to help inform the Commission's decision on this issue. Also, attached to this submission are:

- **Attachment A**: An expert report from Incenta which provides direct empirical estimates of whether gas pipeline businesses have higher asset betas than electricity networks
- **Attachment B**: An expert report from NERA Economic Consulting which reviews international regulatory precedent on setting the WACC for gas pipelines.

We welcome further opportunities to engage with the Commission on this issue. We have committed substantial resource to providing considered, detailed comments on Professor's Lally paper because this issue is extremely important for our business.

2 Gas Pipelines in New Zealand Have a Different Risk Profile than Electricity Networks

Gas pipelines in New Zealand have long been considered to have a different risk profile than electricity networks. This reflects the differing characteristics of the gas and electricity industries in New Zealand, which have not changed in any fundamental ways to align perceptions of risk across the different industries.

Our intuitive understanding of systematic risk differences

The traditional acceptance that gas pipelines and electricity networks face different systematic risk in New Zealand is not surprising given their different purpose, market penetration, and sector dynamics:

- Over 70 percent of gas use is concentrated in large industrial users whose input costs are dominated by gas and for whom New Zealand's gas competes as a source of process heat or as a feed-stock
- Gas is a fuel of choice for residential gas customers who must actively choose to pay for a gas connection in addition to their existing electricity connection, and make gas-specific appliance investments
- There is significant room to grow the use of gas, with gas accounting for only 23 percent of New Zealand's primary energy needs, including only 15 percent of

consumer energy use.[1] Significant opportunities exist to expand the geographic reach of gas pipelines in New Zealand, and to increase customer penetration in areas that already have gas networks.

In contrast, electricity networks are near-universal in coverage and essential to most businesses and households in New Zealand.

These factors all intuitively lead to gas pipelines having a higher exposure to systematic risk than electricity networks—with returns that are more closely correlated to economic cycles. During times of economic growth, gas pipelines will have more opportunities to grow their business. While earnings growth will be constrained by regulation, a growing gas sector creates opportunities by meeting new customer demands and efficiently managing capital investments. In economic downturns, gas pipelines businesses face the risk of being unable to recover their full revenue allowance, decreasing earnings.

When making investment decisions, FSI expects returns for gas pipelines to follow business cycles more closely than electricity network assets. We understand that other investors and analysts share this view.[2]

We do not see any recent changes in the gas industry affecting this view of risk

FSI's views are consistent with those expressed over more than a decade by the Commission and its experts.[3] We do not see any changes in the gas industry that would justify a shift in the Commission's current approach to setting the asset beta for gas pipelines.

In contrast, as we discuss later in this submission, changes in who uses gas infrastructure and how their demand affects earnings risk all tend to support an uplift in the asset beta over electricity networks.

3 The Importance of Promoting Investment in Regulated Industries

The Commission has given considerable thought to its decision-making framework for the input methodologies review and consulted with stakeholders on its approach. Our understanding is that the decision-making framework has three levels:

- **Ensuring the purpose of Part 4 is met.** When making decisions under Part 4 of the Commerce Act, the Commission is required to promote investment in regulated industries (Section 52A(1)(a)). We submit that a material change in approach to gas asset beta would work against this objective. In contrast, retaining the current approach to setting the gas asset beta the Commission would maintain incentives to efficiently acquire and merge regulated businesses under Part 4.
- **Providing certainty for suppliers and consumers.** The purpose of input methodologies (stated in Section 52R of the Act) is to promote certainty for

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[1] Gas Industry Company 'The New Zealand Gas Story: The State and Performance of the New Zealand Gas Industry' Fourth Edition – December 2015, p.7 accessible at this link.

[2] Incenta Economic Consulting 'Asset Beta for Gas Pipelines in New Zealand' March 2016.

[3] Dr Martin Lally 'The Weighted Average Cost of Capital for Gas Pipeline Businesses' 28 October 2008, accessible at this link; Dr Martin Lally 'The Weighted Average Cost of Capital for Gas Pipeline Businesses' 14 May 2004, accessible at this link; Commerce Commission 'Input Methodologies (Electricity Distribution and Gas Pipeline Services Reasons Paper', December 2010 at 6.5.29, accessible at this link.

regulated suppliers and customers. The decision-making framework therefore explicitly prioritises certainty. In our view, retaining the current approach to the gas asset beta maintains certainty, while changing the beta will give rise to uncertainty.

- **Minimising compliance costs.** In our view, this third level is not particularly relevant to the asset beta set for gas pipelines.

Investors value predictability and stability in regulatory regimes

One of the key factors that attracted FSI to invest in gas pipelines in New Zealand is that we consider the regime under Part 4 to have reached a point of relative maturity—where significant changes and resulting swings in asset values are unlikely to be observed.

That is not to say regulatory settings should not evolve—including in ways that do not serve investors' interests. However, it is important that the Commission fully understands the impacts of its decisions on incentives to invest, and that those decisions avoid weakening investment incentives where possible.

The approach to parameters that are used to set the cost of capital warrant particular stability. Changes in approach directly affect value, so have a large impact on investment incentives. Any decision to reduce the asset beta that applies to gas pipelines would have a strongly negative impact on incentives to invest. It would certainly affect FSI's perception of investment risk in other regulated assets in New Zealand.

Applying the decision-making framework for the input methodologies review

Our understanding is that the purpose of the IM Review is not to tweak the regulatory settings. Rather, it is to examine whether parameters "remain fit for purpose given changes in the overall environment faced by suppliers".[4] This intent is reflected in the decision-making framework for the input methodologies review, where the Commission proposes to only make changes that:[5]

- Promote the Part 4 purpose in Section 52A more effectively
- Promote the IM purpose in Section 52R more effectively (without detrimentally affecting the promotion of the Section 52A purpose), or
- Significantly reduce compliance costs, other regulatory costs or complexity (without detrimentally affecting the promotion of the Section 52A purpose).

The IM purpose in Section 52R is to promote certainty for suppliers and consumers. We do not consider that changing the approach to gas asset beta would promote certainty. Instead, it risks sending negative messages about the stability of key regulatory parameters.

In this case, the Commission announced that it would review the asset beta for gas assets in its update paper on 30 November 2015[6]—three weeks after the announcement of the sale of Vector Gas Limited to FSI on 9 November 2015. We believe that perception matters in capital markets—and decisions to adjust key regulatory parameters shortly after significant transactions will influence investor appetite for transactions in regulated industries in the

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[4] See Commerce Commission 'Input Methodologies Review: Invitation to Contribute to Problem Definition' 16 June 2015 at para 253, accessible at this link

[5] See Commerce Commission 'Decision-Making Framework Draft for the Input Methodologies Review: Discussion Draft' 22 July 2015 at para 5, accessible at this link.

[6] Commerce Commission 'Input Methodologies Review: Cost of Capital Update Paper' 30 November 2015 at para 2.14, accessible at this link.

future.

The current approach remains the best way to achieve the policy intent of the IMs

The decision-making framework for the IM Review lists a number of questions (at paragraph 11) that the Commission might take into account when evaluating possible changes. In our view, the answers to these questions do not support a change in approach to gas asset beta as part of this review.

We present our response to the questions listed in the decision-making framework paper in Table 3.1.

Table 3.1: Responses to Questions Posed in Decision-making Framework

Questions in Decision-making Framework	FSI Response on Gas Asset Beta
What was the IM attempting to achieve, either on its own or as part of the IMs as a package?	The uplift to gas asset beta aimed to reflect differences in the systematic risks facing gas pipelines and electricity networks in New Zealand
Is the objective of the IM still valid and consistent with Section 52A, in light of the type of regulation where the IM is applied?	Yes—where suppliers in different regulated industries face different systematic risk, this should be reflected in the asset beta
Has the relevance of the policy intent been questioned (either by stakeholders, the Court or the Commission)?	▪ Neither the policy intent or application of the asset beta uplift was questioned during the merits review by stakeholders or the Court ▪ The uplift was mentioned by experts for Transpower (Frontier Economics) in order to make a point about the limitations of comparable company analysis (while agreeing with the gas asset beta uplift itself)
Have external circumstances changed in a way that disrupts the assumptions underlying the original policy decision and therefore would cause a need for a change to the policy behind the IM?	No. There has been no change in circumstances between when the gas beta uplift was first applied in the 2010 IMs and today. As discussed in supporting expert reports, if anything, industry changes (such as changes in gas consumption) tend to reinforce the rationale for an uplift in the gas asset beta
Is the IM still required or could the policy intent be achieved without the IM?	We consider that the IM is still required and there are no better ways to achieve the policy intent
Is there other evidence that suggests that the original policy is no longer promoting 52A?	No. As discussed above, the original policy has facilitated investment and efficient mergers—which will ultimately benefit consumers. Rates of return on gas pipelines also appear reasonable—for example, Vector's 2015 ROI for gas transmission was 7.23%, compared to the regulated vanilla WACC of 7.44%[7]

[7] See Vector Gas Transmission Information Disclosures to 30 June 2015, Schedule 2

4 Technical Arguments Do Not Support Change

We have reviewed Professor Lally's 2008 and 2016 papers on the gas asset beta, and the Commission's IM Reasons Paper released in 2010 when the IMs were first determined. Together with our experts (Incenta and NERA), we have carefully considered the reasons for the uplift and Professor Lally's recent change of opinion on whether the uplift is required. From our review, we are convinced that both the conceptual arguments and the empirical evidence support a continued uplift in the gas asset beta.

This section summarises our understanding of the technical arguments for and against a change in the gas asset beta. We start by presenting our understanding of Professor Lally's views. We then step through the two main conceptual arguments that Professor Lally believes might support an uplift—growth options and the relative levels of demand from commercial/industrial and residential consumers. To this list, we add the risk of asset stranding, which we believe has some relevance for gas pipelines in New Zealand. We conclude by presenting empirical estimates of asset beta differentials between gas pipelines and electricity networks (further details of this analysis are provided in the Incenta report).

4.1 Our Understanding of Professor Lally's Views

In his 2008 paper, Professor Lally explains the following potential reasons why the beta for gas pipelines may be higher than that for electricity networks:

- **Growth options.** Gas pipelines have greater options to extend their business than electricity networks, which may give rise to a higher asset beta
- **Relative use by residential versus commercial customers.** A greater proportion of gas produced is supplied to commercial and industrial users than electricity. Given the demand from commercial and industrial users tends to be more sensitive to economic conditions than residential demand, the beta for gas would be expected to be higher. Professor Lally also notes two other factors that might increase the income elasticity of demand for gas:
  - **Petrochemical demand.** A significant proportion of gas is used in the petrochemical industry, which is likely to have a higher income elasticity of demand than the demand for electricity, which is used exclusively as a power source
  - **Supply of gas for peaking generation.** Of the gas that is used to generate electricity, some is used to generate variable (peaking) rather than baseload supply. Since variable supply is more sensitive to market conditions than baseload supply, the beta for gas may be higher than electricity.

Based on the above arguments and some empirical analysis of comparator betas, Professor Lally concluded in 2008 that the asset beta for gas pipelines should be 0.10 higher than for electricity transmission. Professor Lally also noted some other factors that affect beta for an industry, such as operating leverage and regulatory threat of price control, but concluded that both electricity and gas were similarly affected by these factors.

In his 2016 paper, Professor Lally reaches a different conclusion—that there is now insufficient reason to set different asset betas for electricity and gas. In this more recent paper, Professor Lally appears to only refer to two of the four points raised in his 2008 paper: growth options and relative use by residential versus commercial customers. He does not provide any discussion of whether the demand for gas from the petrochemical industry

remains more income elastic or whether the supply of gas for electricity has become more variable.

4.2 Growth Options

Professor Lally argues that the growth option in gas pipelines should only be reflected with a higher beta if expansion results in revenues in excess of costs.[8] Professor Lally states that under formal regulation (as now applies to gas pipelines under Part 4), earnings growth is less likely to occur and so the growth option is less valuable. He places significant emphasis on the suggestion that a change in regulatory settings implies that the beta for gas pipelines should not be adjusted upwards for any growth option.

Although Professor Lally is correct to state that economic profits are less likely to occur under Part 4, it does not follow that the growth option does not exist. If a gas pipeline business chooses to expand the reach of gas pipeline network, then under the current regulatory settings it will expect to earn the allowed rate of return (reflecting a fair return for the risk undertaken). However, it will also have opportunities to outperform some aspects of the regulatory allowance—for example, in optimising the timing of investment or minimising cost by delivering capital expenditure more efficiently. Without this upside, the regulated business will clearly have less incentive to undertake the investment.

Under the current default price-quality path, the Commission allows companies to outperform the regulatory cost forecasts on new assets.[9] This ability to outperform means that companies can achieve higher returns by outperforming on new investment, and therefore have incentive to undertake the investment. In an environment of economic growth, these opportunities will be more likely to occur—providing a higher level of correlation with market returns than in industries (like electricity) where customer penetration has reached its maximum extent.

As a result, the revenue cap under Part 4 still provides gas pipelines with the incentive to exercise growth options if they receive a fair return. As Professor Lally states in his 2008 paper:[10]

> *"The existence of such growth options should increase the firm's sensitivity to real GNP shocks, because the values of these growth options should be more sensitive to real GNP shocks than the firm's value exclusive of them, and these two value components should be positively correlated."*

We can see no reason why this growth option no longer exists, and therefore submit that Professor Lally is incorrect to suggest there should be no beta differential relative the electricity businesses because of the lack of growth option.

To illustrate this point, we can consider the example of production from dairy processing facilities, which use gas in their production processes. The demand for gas from these dairy processing facilities is a function of dairy commodity prices, which are correlated with the

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[8] Lally, M (25 February 2016): "Review of WACC Issues", p6.

[9] Commerce Commission New Zealand (28 February 2013): "Setting Default Price-Quality Paths for Suppliers of Gas Pipeline Services", Section 2.

[10] Lally, M (28 October 2008): "The Weighted Average Cost of Capital for Gas Pipeline Businesses", p52.

economic cycle.[11] If the demand for gas from these facilities increases during an economic upturn, gas pipelines are more likely to exercise their growth option to earn a fair rate of return. By implication, since gas pipelines can outperform or underperform on costs on any new investment, the growth option results in additional systematic risk for the company. Therefore, the volatility in customer demand for gas that is correlated with the economic cycle, with dairy processing facilities being only one such example, means that the growth option facing gas pipelines requires a beta differential to electricity networks, which do not face the same type of volatility in customer demand.

We consider that the growth option will also tend to correlate with market returns during economic downturns. If new sources of demand default or retrench after gas pipelines have been expanded, then networks will be left with significant sunk costs that have not been fully recovered. This asset stranding risk appears greater for new investments (such as new gas pipelines) because there is greater uncertainty about the costs that the regulator should allow the company under the revenue cap.

We note that asset stranding risk has been incorporated in the allowed rate of return by some international regulators, including the UK Competition Commission in a recent determination for Phoenix Natural Gas:[12]

> *"In the specific context of regulation of a greenfield infrastructure asset, these project-specific risks may require compensation. This is because if greenfield utility investors are exposed to asymmetry due to capped upside returns but unlimited downside returns due to project risks, they will refrain from investing unless they receive a return over and above the WACC. This premium may justify an allowed rate of return above the WACC."*

4.3 Commercial/Industrial v Residential Customer Use

In his 2016 paper, Professor Lally acknowledges that differences between the proportion of revenues that come from residential and commercial customers affects the beta because demand from commercial customers tends to be more income elastic. However, Professor Lally concludes that this effect should be small, based on an illustrative analysis of how sensitive the beta is to varying proportions of commercial/industrial versus residential use.

Professor Lally estimates what the asset beta for gas pipelines should be given:

- The Commission's asset beta for electricity networks
- Assumptions on the relative weights of residential versus commercial users for electricity and gas, and
- The ratio between the betas for commercial/industrial users to residential users (the K factor).

Based on these assumptions, Professor Lally finds the beta for gas businesses exceeds that for electricity businesses by 0.03, on which basis he concludes there should be no adjustment to the beta for gas relative to electricity.

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[11] See for example http://www.ifa.ie/market-reports/market-reports-7/.

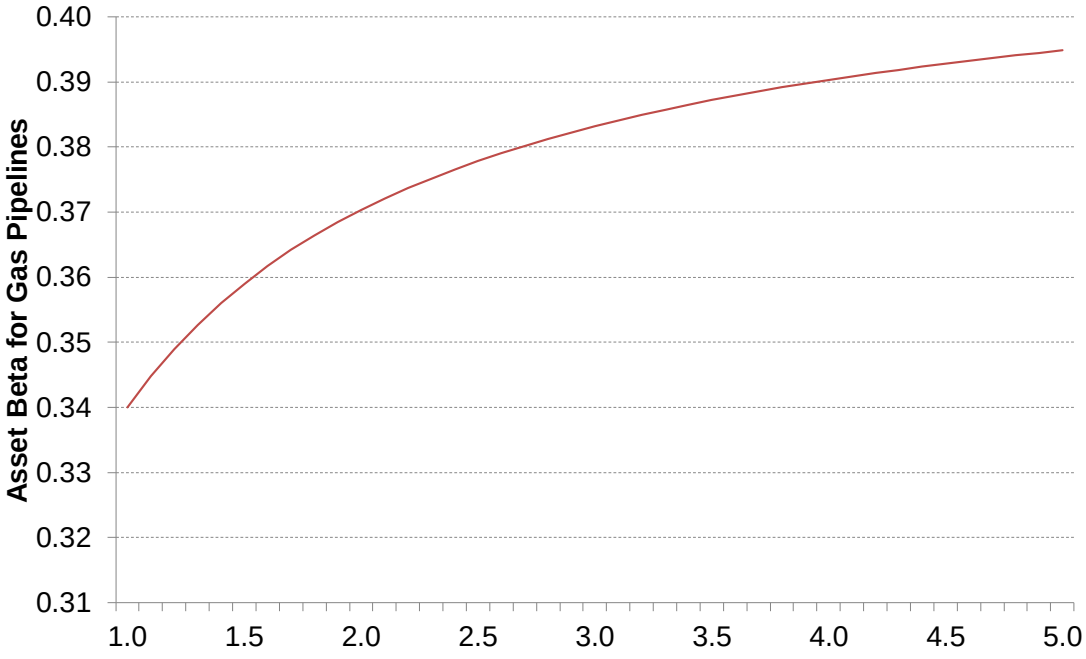
[12] Competition Commission (28 November 2012): "Phoenix Natural Gas Limited price determination", para 7.33, p7-8.

Different income elasticities support an uplift in the gas asset beta

We see three main problems with this analysis:

- **Professor Lally's finding of a 0.03 difference between gas and electricity beta is material.** Even with the assumptions used by Professor Lally, he finds evidence of an asset beta differential of 0.03. The correct conclusion from this is that some upward adjustment to the asset beta for gas relative to electricity is justified. Furthermore, since the 0.03 difference only relates to one of the arguments for a beta differential presented in Professor Lally's 2008 paper, a 0.03 appears to be the lower bound of the uplift that is justified.
- **Professor Lally's evidence is sensitive to the assumptions.** Professor Lally assumes the beta for commercial customers is 2-3 times that of residential customers (the K factor), without providing any evidence to support this assumption. We have considered whether changes in this ratio, which reflects how much more elastic demand the demand from commercial customers is relative to residential customers, leads to different estimates for the beta for gas. The relationship between the ratio of commercial to residential betas and the consequent gas beta is shown in Figure 4.1 (using the starting point of the electricity beta of 0.34). By varying this ratio to a degree that implies the beta for commercial users is five times as sensitive as for residential users, the gas pipeline beta can be as much as 0.06 higher than the electricity distribution beta.

Figure 4.1: Ratio Beta for Commercial/Industrial Users to Residential Users



Note: Aside from adjusting the ratio of beta for commercial users to residential users (Parameter K in Lally (2016)), all other assumptions are the same

- **Revenue (rather than volume) should be used to measure the relative importance of residential and commercials users for gas and electricity.** In his analysis, Professor Lally applies weights on the betas for residential and commercial users based on the volume of electricity or gas that goes to residential and commercial users. However, the beta is a measure of systematic risk of returns, not of demand. Therefore, the weights should reflect relative returns coming from residential and commercial users (and volumes are not necessarily a

good proxy for returns). Incenta has inserted revenue shares into the equations provided in Professor Lally's 2016 paper as a better proxy for returns, and finds much stronger support for the current uplift in gas beta than suggested by Professor Lally.

Overall, we consider that Professor Lally does not provide compelling evidence as to why his reasons for estimating a beta differential in 2008 are no longer valid, based on his arguments on growth options and differences in beta between residential and commercial users.

Academic literature on income elasticities also supports a gas asset beta uplift

In preparing this submission we have found academic estimates of the relative income elasticity of demand between electricity and gas. Specifically, Liu (2004) conducted a study estimating price elasticity and income elasticity of demand for several energy goods in OECD countries over 1978 to 1999 by applying a panel data approach.[13] Liu estimated separate income elasticities for residential and industrial customers, both on a short-run and long-run time horizon.

The results of this analysis are shown in Table 4.1and suggest that the income elasticity of demand is:

- Consistently higher for gas than for electricity, both for residential customers and industrial customers across all time frames
- Consistently higher for industrial customers than residential customers for both gas and electricity across all time frames (the K factor ranges from between 2.7 to 5.2 depending on sector and time frame).

Table 4.1: Income Elasticity of Demand for Electricity and Gas

	Residential		Industrial		Implied K Factor	
	Short-run	**Long-run**	**Short-run**	**Long-run**	**Short-run**	**Long-run**
Electricity	0.058	0.303	0.300	1.035	5.2	3.4
Natural Gas	0.137	0.490	0.376	1.363	2.7	2.8

Source: Liu, G (March 2004): "Estimating Energy Demand Elasticities for OECD Countries – A Dynamic Panel Data Approach".

4.4 Risk of Asset Stranding or Devaluation

In our first submission on this issue, we described what we see as an important intuitive reason for a gas beta uplift.[14] The systematic risks that need to be compensated through WACC include that investors in gas pipelines face low probability, high consequence risks that their infrastructure becomes stranded or devalued, even with the near term revenue

[13] Liu, G (March 2004): "Estimating Energy Demand Elasticities for OECD Countries – A Dynamic Panel Data Approach", Discussion Papers No. 373, Statistics Norway.

[14] FSI First State Global Asset Management 'FSI Submission on Input Methodologies Review: Cost of Capital' 5 February 2015, accessible at this link.

protections provided by Part 4. These risks are greater for gas pipelines than electricity networks, including because of the greater concentration of gas demand in industrial users whose gas use is more closely linked to business cycles.

For New Zealand gas pipeline businesses, we see a risk of asset stranding if there is a significant decline in the demand for gas in the long-term. The Commission forecast zero constant price revenue growth for gas transmission during the current regulatory period,[15] but if there was a decline in the demand for gas across multiple regulatory periods, then suppliers would face the asymmetric risk of not being able to recover their sunk investments. We see this risk as asymmetric because there is no equal upside opportunity under Part 4.

In a similar way, gas pipeline businesses face asset stranding or devaluation risks from a decline in recoverable gas reserves. New Zealand currently has around 10 years of remaining reserves in operating gas fields.[16] The value of gas pipelines will not be recovered over the next 10 years, creating particular risks of asset stranding. These risks do not seem relevant for electricity networks, where networks are required to transport electricity even as the generation resource mix changes over time.

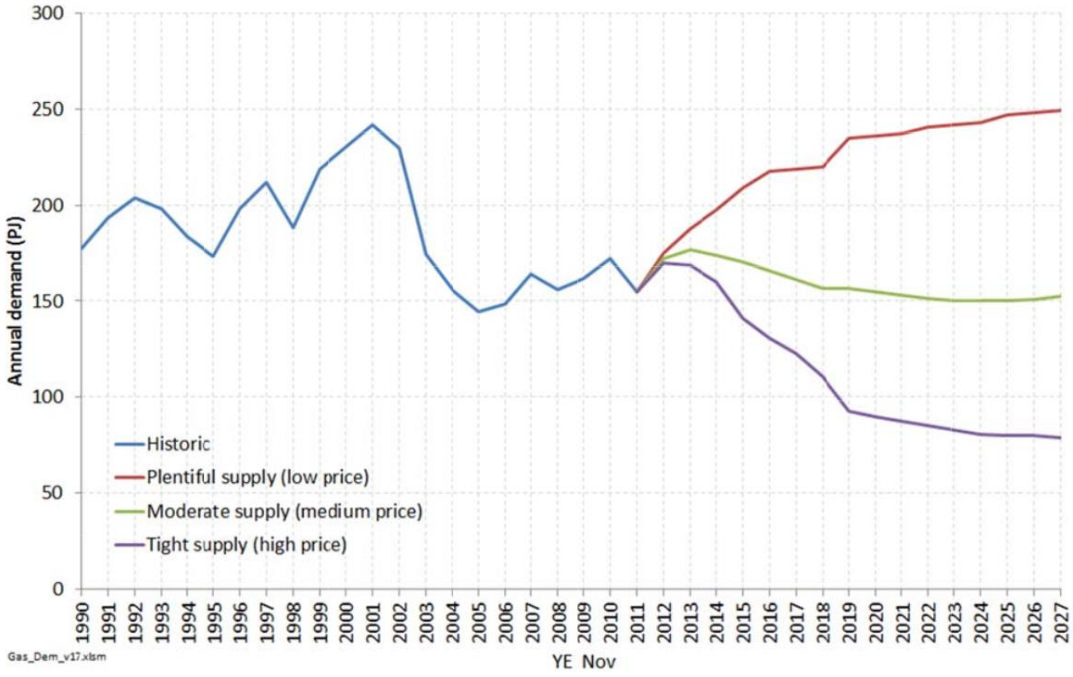
We acknowledge that these risks are likely to be limited within each regulatory period, given the revenue cap protects companies from changes in demand in each period. However, the risk of asset stranding does appear relevant when undertaking investments that are recovered over multiple regulatory periods, since there is no certainty that changes over a long time period will allow gas pipelines to recover all investments made today.

In 2012, Concept Consulting forecast total New Zealand gas demand from 2012 to 2027. Its projections are shown in Figure 4.2, and indicate that gas demand is expected to decline over the next decade under the central scenario of moderate supply. The forecast shows a significant degree of uncertainty about future demand, with the negative scenario of tight supply resulting in very significant drops in demand. This decline in demand over multiple regulatory periods threatens the ability of the gas pipeline companies to recover their sunk costs, and thereby increases the threat of asset stranding risk.

[15] Commerce Commission New Zealand (28 February 2013): "Setting Default Price-Quality Paths for Suppliers of Gas Pipeline Services", Table A8, p53.

[16] Gas Industry Company 'The New Zealand Gas Story: The State and Performance of the New Zealand Gas Industry' Fourth Edition – December 2015, p.56 accessible at this link

Figure 4.2: New Zealand Gas Demand Forecast (2012-2027)



Source: Concept Consulting (December 2012): "Gas Supply and Demand Scenarios 2012 – 2027", Figure 2, p7.

We consider that the risks of asset stranding or devaluation for gas pipelines may justify an uplift in asset beta, even though this has not been explored in any depth by Professor Lally.

4.5 Empirical Estimates of Asset Beta Differentials

The conceptual arguments canvassed in this section provide strong grounds for expecting gas asset betas to be higher than electricity network asset betas. To support this submission, we also asked Incenta to conduct an empirical analysis to directly estimate whether gas pipeline business are observed to have a higher asset beta than electricity networks.

For this empirical analysis, Incenta directly compared the asset betas of a sample of six gas transmission companies in the United States with the asset betas of an updated sample of energy (electricity and gas) distribution networks used by the Commission in 2010. The advantage of this approach is that allows some of the unique risks of gas transmission businesses canvassed above to inform decisions on the magnitude of beta uplift that is justified.

The results of this empirical analysis are shown in Table 4.2. Incenta concludes that the empirical evidence supports the current position in the IMs that the asset beta for gas transmission is higher than the asset beta the Commission is expected to derive for the New Zealand energy networks. The uplift supported by Incenta's analysis is between 0.11 and 0.14.

Table 4.2: Results of Comparable Company Asset Beta Analysis

	Regulated electricity and gas distribution (CEG)			Regulated gas pipelines	
	Previous 5-year beta	Last 5-year beta	Last 10-year beta	Last 5-year beta	Last 5-year beta
	Average	Average	Average	Average	Median
Data to:	2010	2015	2015	2015	2015
Monthly	0.35	0.30	0.33	0.50	0.47
Weekly	0.38	0.36	0.37	0.51	0.50
Daily	0.39	0.40	0.40	0.47	0.45
Average	**0.37**	**0.35**	**0.37**	**0.49**	**0.47**

Source: CEG and Incenta

5 Consistency with International Regulatory Approaches

We also asked NERA in the United Kingdom to provide a brief report summarising international regulatory experience relating to the relativity of gas and electricity asset betas. FSI has built a constructive working relationship with NERA through our regulated businesses throughout Europe, and wanted to provide the Commission with NERA's insights working across a range of jurisdictions grappling with the issues discussed in this report.

In summary, NERA find that the current approach of providing an uplift in gas asset beta is not uncommon. Regulators in France and Sweden also set the gas asset beta at a premium to electricity, and the regulator in Finland achieves the same outcome by providing an uplift on the cost of equity. While an uplift is not universal, the characteristics of countries that do allow an uplift have some of the characteristics found in New Zealand's gas industry (referred to in Section 2 of this submission).

6 Conclusion

Thank you for the opportunity to make this submission. To summarise the key points of this submission:

- Gas pipelines in New Zealand face different systematic risks than electricity networks
- These differences are recognised in the current IMs through an uplift in the asset beta that applies to gas pipelines, and this reflect a long-held position of the Commission and its expert advisors
- Professor Lally's most recent paper has cast doubt on the merits of this uplift. However, the conceptual arguments continue to justify an uplift:
  - Growth options continue to have value for investors in gas pipelines in times of economic growth
  - Risks of asset stranding or devaluation exist for gas pipelines that are not present for electricity networks

  - The higher income elasticity of demand of commercial and industrial gas customers further strengthens the link between gas pipeline earnings and economic cycles
- Analysis of comparable gas transmission companies provides empirical support for the uplift.

We look forward to continuing our engagement with the Commission on how to incrementally improve the regulatory settings for gas pipelines in New Zealand.

Yours sincerely

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