

# Memo

To: Vector, First Gas, Powerco

From: Prof. Stephen Gray, Dinesh Kumareswaran, Dr James Key

Date: 28 March 2022

Subject: Response to key submissions made by stakeholders on the Commerce Commission's approach to addressing stranding risks in the Gas Draft DPP3 Decision



## 1. Background

1. The Commerce Commission (Commission) published its Draft DPP3 Decision (draft decision) for Gas Pipeline Businesses (GPBs) on 10 February 2022.
2. The draft decision recognises that recent changes in Government climate change policies and initiatives have increased the asset stranding risk faced by GPBs since the Commission reviewed the Gas Input Methodologies (IMs) in 2016. The Commission has proposed to address this increased asset stranding risk by accelerating the regulatory depreciation allowances of the GPBs.
3. On 16 March 2022, the Commission published submissions received from various stakeholders on the draft decision.
4. Vector, First Gas and Powerco have asked Frontier Economics to review the submissions made by stakeholders, and to provide advice on several key themes and issues raised in those submissions. The key themes in the submissions that we have identified are the following:
  - a. The Commission should delay action to address stranding risks until DPP4 (submitted by MGUG, Fonterra, MEUG and Methanex);
  - b. The Commission's proposed approach of accelerating depreciation would produce future windfall gains to GPBs (submitted by Methanex);
  - c. GPBs have already been compensated for stranding risks via the WACC allowance (submitted by Nova);
  - d. The Commission's proposed approach of accelerating depreciation is likely to accelerate switching away from gas, thereby exacerbating the risk of network asset stranding (submitted by Methanex, MGUG);



- e. Accelerated depreciation should apply only to new assets (submitted by Nova, Munro Duignan);
  - f. The owners of the GPBs should have factored in asset stranding risks when investing in the assets (submitted by Fonterra); and
  - g. Businesses operating in competitive markets would not have the opportunity to accelerate cost recovery in response to the emergence of stranding risks as the Commission proposes but, instead, would have to write down the value of their assets or to innovate. Therefore, the Commission's proposed solution of accelerating depreciation is not consistent with the outcomes that would occur in competitive markets (submitted by Fonterra, Nova and Methanex).
5. We address each of these issues in turn below.

## 2. Should the Commission's decision be delayed for a further regulatory period?

6. A number of submissions have suggested that any decision about accelerated depreciation should be delayed until the next IM review and the next round of DPP decisions. For example, MGUG has submitted that:

*The reasoning for considering that the urgency of the IM amendments should override the opportunity to do this in the normal IM review process is not convincing. Accordingly we submit that for foundational building block IM matters for gas that these should be left to the usual IM review process starting in 2022. The updated IMs from this process would be expected to apply from DPP4 starting in in October 2026.<sup>1</sup>*

7. Similarly, Methanex has submitted that the Commission should undertake:

*...a deeper and more comprehensive analysis of underlying factors shaping the prospect of network stranding that can be better addressed in the 2022-23 IM Review.<sup>2</sup>*

8. And Fonterra has submitted that:

*It is inappropriate for DPP3 to pre-empt the content and details that could be within the Emissions Reduction Plan as it requires the Commerce Commission to act outside of its expertise by making judgement calls on future gas pipeline use as outline (sic) in section 3.3 and 3.4 of the Consultation Paper. There are a range of scenarios and outcomes that could occur, and as we submitted on the proposed IM*

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<sup>1</sup> MGUG submission, 14 March 2022, p. 3.

<sup>2</sup> Methanex submission, 15 March 2022, p. 2.



*amendments, a prudent approach would be to await until these details are known, and any decline in demand is actually observed.*<sup>3</sup>

9. It is clear that the Commission is making the current decision in an environment of material uncertainty. As Fonterra has pointed out, there is not yet any formal legislation limiting the distribution of natural gas to 2050. It is possible that the political imperative for this type of policy may change over time such that the life of natural gas distribution is extended beyond 2050, or advanced prior to 2050. There is also uncertainty about the extent and timing of any future uptake of alternatives to natural gas, such as hydrogen and bio-methane.
10. To address this uncertainty, the Commission has indicated that the asset life would be adjusted at the time of each decision in accordance with the best information available at that time. For example, if legislation were enacted to eliminate natural gas distribution by 2040, asset lives would be shortened accordingly. And if it became clear that the existing infrastructure could be used for other gases, the asset lives would be lengthened accordingly. Such an approach provides the Commission with optionality to adjust asset lives at each regulatory period, to reflect the best information available at that point in time.
11. The Commission recognised the optionality to vary asset life assumptions in future in response to new information explicitly in the draft decision when it noted that:

*by taking this degree of action now we are increasing optionality for the future, while continuing to support our commitment to the ex-ante FCM principle.*<sup>4</sup>

12. Under this approach, gas businesses will, at most, be able to recover their capital investment in regulated assets. We explain below that there is no opportunity for any windfall gain, even if asset lives end up being extended.
13. Thus, the only consequence of a Commission forecast turning out to be 'wrong' is that the timing of payments made by consumers would be changed in an NPV-neutral way. For example, suppose it becomes clear in (say) 2035 that the assets *will* be used to transport other gases beyond 2050. At that time, the asset lives will be increased and it turns out (ex post) that the shortening of asset lives in 2022 was unnecessary. Had the Commission known that information in 2022, it would have retained the original asset lives and the timing of payments made by customers would have been different – although having the same NPV.
14. That is, the 'risk' involved in the Commission acting now is that the action turns out to be unnecessary because the assets turned out to have a long useful life beyond 2050. The consequence in this case is that customers pay more over the forthcoming regulatory period, but then pay less in subsequent regulatory periods – in an NPV-neutral manner.

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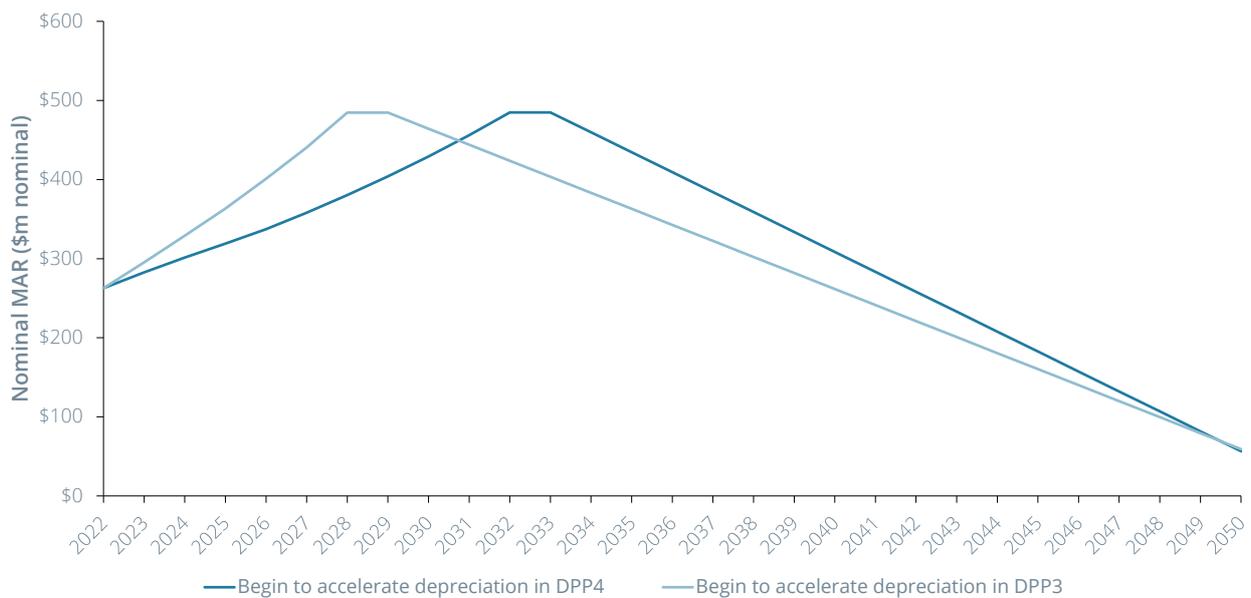
<sup>3</sup> Fonterra submission, 10 March 2022, p. 2.

<sup>4</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 6.138.2.



15. The risk involved in the Commission *not* acting now is that the assets do become stranded in 2050, or before. In this case, the delay means that a larger and sustained price shock will be required when action is eventually taken. That is, any delay is likely to result in a much larger problem for the Commission to address in the future.
16. To demonstrate this point, we used the Commission’s asset stranding model to assess the outcomes of delaying the decision to accelerated depreciation until DPP4. **Figure 1** presents the aggregate MAR profile (summed over all GPBs) between 2020 and 2050 under two scenarios:
  - a. The Commission begins to accelerate depreciation (for a period of six years) in DPP3, as proposed in the draft decision; and
  - b. The Commission waits until DPP4 to accelerate depreciation (again for a period of six years), as proposed by Methanex, MGUG and Fonterra.<sup>5</sup>
17. In both scenarios, the GPBs’ assets are expected to become stranded in 2050 (as assumed by the Commission for the draft decision).

**Figure 1:** Aggregate MAR profile across all GPBs if regulatory depreciation is accelerated



Source: Frontier Economics analysis using Commission's asset stranding model

18. The present value of the MAR to be recovered over the whole period to 2050 is precisely the same under both scenarios. However, under the scenario in which the Commission begins to accelerate depreciation in DPP3, more MAR is recovered earlier when more gas users from whom the costs may be recouped

<sup>5</sup> In order to model the MAR profile under this scenario, set the adjustment factors in the Commission’s draft decision financial model for all the GPBs to 1 (i.e., no acceleration is applied to the regulatory depreciation allowances). This produced a MAR X-factor for each GPB over DPP3, assuming no accelerated depreciation over that regulatory period. We then applied those X-factors to calculate the aggregate MAR profile in the Commission’s asset stranding model for DPP3. We then used the asset stranding model to implement accelerated depreciation starting in DPP4.



exist. If instead the Commission were to wait until DPP4 to accelerate depreciation, a greater amount of MAR would need to be recovered later, when demand is expected to be declining materially.

19. Consequently, if the Commission were to wait until DPP4 to accelerate depreciation, the future gas price increases that would, in expectation, be required in order for the GPBs to recoup their full RABs by 2050 would be materially and persistently higher from approximately 2031 onwards than if the Commission were to begin accelerating depreciation in DPP3.
20. This can be seen in **Figure 2** below, which plots an index of real prices (i.e., MAR/PJ) under the two scenarios above. The projected demand for natural gas used to construct the price indices in the Figure below was the Climate Change Commission's Demonstration Path projections of gas demand in its final advice to the Government.

**Figure 2:** Index of prices (MAR/PJ) if regulatory depreciation is accelerated



Source: Frontier Economics analysis using Commission's asset stranding model; Climate Change Commission Demonstration Path gas demand projections

21. The Figure above shows that under the proposal put forward by Methanex, MGUG and Fonterra to delay the introduction of accelerated depreciation until DPP4, a greater cost recovery burden would be placed on future consumers, since there would (under the Climate Change Commission's projections) be fewer of them.
22. If the willingness to pay of those future consumers was lower than the prices required in order to fully recoup GPBs' costs, then some of those costs may never be recovered. In other words, the GPBs' costs would become stranded, even if the Commission took steps to address asset stranding risk.
23. Therefore, it is appropriate and prudent for the Commission to commence its accelerated depreciation approach immediately to reduce price shocks and to minimise the risk of network costs becoming stranded. Under this approach, the cost recovery burden could be spread over a larger consumer base today than over a much smaller consumer base in the future. This approach best reflects the information about asset lives that is currently available, and it allows the Commission to make adjustments over time to reflect new information as it becomes available.



### 3. Is there any potential of a future windfall gain for GPBs?

24. Methanex submits that under the accelerated depreciation mechanism proposed in the draft decision:

*Pipeline owners would also benefit from windfall gains should alternative gases emerge as a future revenue stream, or to the extent that natural gas use extends beyond 2050, and in so doing extract excessive profits from the consumers who over-paid.<sup>6</sup>*

25. However, a windfall gain would only accrue to a GPB if it was able to recover (in NPV terms) more than the capital cost of the regulated assets. But the proposed accelerated depreciation mechanism is NPV neutral – it has no effect at all on the NPV of capital recovery.
26. Under the Commission’s proposed approach of accelerating depreciation, the *maximum* that a network could recover (in NPV terms) is the capital cost. There is no opportunity for over-recovery of any amount – even if the life of the network turns out to extend well beyond 2050. Once a dollar of depreciation is recovered, it is removed from the RAB and cannot be recovered again, regardless of the eventual life of the network.
27. Consequently, there should be no concerns about any windfall gains arising under the Commission’s proposed mechanism.

### 4. Has the WACC already compensated networks for stranding risk?

28. The Nova submission proposes that the Commission’s allowed return already provides compensation for stranding risk:

*All commercial enterprises face market risks, and this is reflected in their cost of capital. The Commission’s application of WACC to determine the GPBs’ regulated earnings is carefully determined on a comparison of market risks and returns. Their earnings therefore already fully reflect the market uncertainties related to climate change, etc.<sup>7</sup>*

29. The Appendix to this memo explains that:
- a. Stranding risk is likely to have both systematic (i.e., non-diversifiable) and non-systematic (i.e., diversifiable) elements;

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<sup>6</sup> Methanex submission, 15 March 2022, p. 4.

<sup>7</sup> Nova submission, 14 March 2022, p. 1.



- b. The Commission's WACC allowances provide compensation only for systematic risks, so past WACC allowances would have provided no compensation for any non-systematic component of stranding risk faced by GPBs; and
  - c. Under the Commission's regulatory framework, non-systematic stranding risk should be addressed by means other than the WACC allowance – for instance, by accelerating regulatory depreciation as the Commission has proposed in the draft decision.
30. In considering whether networks have already been compensated for stranding risk via allowed returns, we first consider the 2010 IMs where the Commission was clear about the fact that stranding risk was not compensated via the allowed return:

*Even if there were risks such as asset stranding, these can be dealt with in the roll forward mechanism for the RAB by allowing for a depreciation profile that front loads the allowed returns as stranding becomes apparent or allow the stranded asset to remain in the RAB. Presently, the Commission provides for such flexibility in its treatment of the RAB.<sup>8</sup>*

31. In its 2016 IMs decision, the Commission noted that it is possible that stranding risk has a systematic component, but that:

*competitive stranding risk is generally non-systematic in nature, and so is not relevant to WACC. The risk of competitive stranding associated with technological developments such as solar PV panels and battery storage is largely specific to the energy industry (rather than the entire market)<sup>9</sup>*

and:

*Asset beta should only compensate for stranding risk to the extent it is correlated with the market. However, it is difficult to distinguish between systematic and non-systematic stranding risk.<sup>10</sup>*

32. The draft decision also notes that:

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<sup>8</sup> NZCC, December 2010, *Input methodologies (electricity distribution and gas pipeline services): Reasons paper*, paragraph H12.28.

<sup>9</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 424.

<sup>10</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 430.



*While some economic stranding risk is systematic, 'non-systematic' factors are likely to pose a more material stranding risk for DPP3. Non-systematic risk refers to risks which affect an individual company or sector of the economy. In particular there is a risk of government policy changes and shifts in consumer demand for natural gas that specifically lead to economic network stranding for GPBs. We consider that the current Gas IMs do not currently provide adequate compensation for these types of risk.<sup>11</sup>*

33. The critical points to recognise here are that:
- If stranding risk has a systematic component, it is likely to be less material than the non-systematic component; and
  - To the extent that the WACC allowances received by GPBs historically have provided any compensation for stranding risks, they would have done so only in relation to the *systematic* component of stranding risk faced by GPBs. No compensation has been provided for the more material non-systematic stranding risk.
34. Consequently, the suggestion that networks have already been compensated fully for stranding risk is, in our view, incorrect.

## **5. Is the Commission's proposed approach likely to exacerbate the problem?**

35. Methanex has submitted that the Commission's proposed approach to accelerated depreciation will have the effect of increasing prices, which may in turn reduce demand intensifying the problem that the Commission is trying to address:

*The Commission has also not considered the potential that the long-term price signals that result from accelerating capital recovery in DPP3 will itself contribute to the wind-down in pipeline revenues, perhaps inducing it, and increasing the risk of a real-world stranding event the Commission is attempting to avoid or at least delay.<sup>12</sup>*

36. The MGUG submission makes a similar point:

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<sup>11</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 6.20.

<sup>12</sup> Methanex submission, 15 March 2022, p. 5.



*The proposed DPP3 price shocks are not in the interests of consumers and would reasonably be expected to accelerate demand destruction.*

37. However, as we have explained above, any delay in action on this issue is likely to result in a larger problem to fix within a shorter timeframe in the future. Such a delay would then result in a larger price shock when action is eventually taken.
38. Moreover, we note that the Commission has already anticipated and addressed in the draft decision the very concern raised by Methanex and MGUG. Specifically, the Commission has capped GPBs' price increases to 10% per annum over DPP3. This limits the risk that users face such large price increases as a consequence of the Commission accelerating cost recovery that switching away from gas usage is accelerated. The Commission explains in the draft decision that this 10% cap on price increases was binding on First Gas Distribution and First Gas Transmission:

*We have decided to limit real annual prices increases to 10% per annum for DPP3 to manage consumer price shocks. This is consistent with our decision to set alternative rates of change to mitigate consumer price shocks which is discussed in the following section. This cap was applied to First Gas Distribution and First Gas Transmission as the reference scenario would otherwise require real price increases of more than 10% per annum for the first six years.<sup>13</sup>*

39. In other words, the price increases the Commission has allowed in the draft decision for two out of the five GPBs is *lower* than the price increases that would be required in order to accelerate their depreciation in line with the results of the Commission's asset stranding model.

## 6. Should accelerated depreciation be applied only to new assets?

40. A number of submissions have proposed that accelerated depreciation should be applied only to new assets. The general theme of these submissions is that:
- Existing assets are sunk, so there is no need for the regulatory allowance to enable full (NPV=0) recovery of that investment – so long as the regulatory allowance covers the marginal cost, it will be rational for networks to continue operating them.
  - By contrast, new investments will not be made without an expectation of full recovery over the life of the asset, so accelerated depreciation should be used to provide the appropriate incentive for new investments.
41. For example, Nova has submitted that:

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<sup>13</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 4.37.



*...it is clearly incumbent on the Commission to allow GPBs to earn an economic return on new investments. As such, Nova agrees with the Commission's intent to allow an accelerated depreciation rate on incremental capital expenditure required to maintain or expand pipeline capacity. Nova does not agree however with granting the GPBs an increased depreciation rate on existing sunk assets.<sup>14</sup>*

42. And Munro Duignan has submitted that:

*Having decided there is a material likelihood that the time horizon for natural gas pipeline services is only 28 years when considering changes to the IMs regarding depreciation, the logical implication is that the fundamental justification for basing decisions on FCM no longer applies in regard to such services. Consumers of natural gas pipeline services will receive little or no benefit in their narrow role as such consumers from the Commission retaining its credibility.<sup>15</sup>*

43. The approach adopted by the Commission in all of its decisions to date is to set regulatory allowances using the building block approach within the NPV=0 framework. The regulated business is provided with an *ex ante* allowance that is sufficient in expectation to cover its operating costs, to recover the capital that was invested, and to provide a fair return on capital while the investment is in place. The NPV=0 framework—which the Commission also refers to as the Financial Capital Maintenance (FCM) principle—requires the regulatory allowance to be just sufficient, in expectation, to make the investor whole over the life of the asset.
44. The Commission reaffirmed its commitment to the FCM principle in the draft decision—recognising that doing so provides regulated suppliers with appropriate incentives to invest efficiently for the long-term benefit of consumers:

*We have continued to apply our existing frameworks for addressing stranding risk in DPP3 and maintained our commitment to ex-ante FCM. This has resulted in significant price increases for current consumers. However, it should provide incentives for suppliers to continue to invest to maintain safe and reliable networks, for the long-term benefit of consumers.<sup>16</sup>*

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<sup>14</sup> Nova submission, 14 March 2022, p. 1.

<sup>15</sup> Munro Duignan submission, 14 March 2022, p. 4.

<sup>16</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 6.146.



45. As the draft decision explains, the *ex ante* FCM principle requires that investors in regulated assets can expect that they are able to fully recoup their capital costs (i.e., the efficient return on capital and the efficient return of capital):

*Our ex-ante FCM maintenance principle is key to providing investment incentives and an expectation of making a normal return on investments. Ex-ante FCM requires suppliers to:*

- a. have an expected return on capital commensurate with their WACC; and*
- b. a reasonable expectation that the RAB can be recovered through return of capital (depreciation) in the long run.<sup>17</sup>*

46. The Commission emphasises in the draft decision that that adherence to the *ex ante* FCM principle promotes long-term benefits to consumers:

*The economic principle of maintaining ex-ante real FCM through our regulatory settings supports the long-term benefit of consumers by providing incentives for suppliers to invest while limiting excess profits. Increased stranding risk makes it more difficult for us to maintain expectations of ex-ante real FCM through recovery of the RAB over time.<sup>18</sup>*

47. What is proposed in the above submissions would be a clear breach of the *ex ante* FCM principle. The suggestion is that the regulatory allowance on existing assets should be set such that asset owners *do not* in expectation recover the cost of existing assets – because there is nothing the asset owner can do about that, given that the existing assets are already sunk.
48. Such a breach of the *ex ante* FCM principle would clearly have broader implications for the Commission. Owners of other regulated assets—including electricity and fibre networks—would clearly need to have regard to such a precedent set by the Commission. They would need to recognise, when contemplating any investment, that the Commission’s commitment to the *ex ante* FCM principle no longer holds. As Munro Duignan note, this would involve a conscious choice on behalf of the Commission to abandon its “credibility” in relation to the *ex ante* FCM principle.
49. Moreover, it is difficult to understand why some submitters have suggested that the Commission should abandon the *ex ante* FCM principle in relation to existing assets, but then properly incentivise the same GPBs to undertake new investment by adhering to the *ex ante* FCM principle. In our view, a decision to

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<sup>17</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 6.13.

<sup>18</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 6.4.



abandon the *ex ante* FCM principle in relation to existing assets would send a strong signal that investments in future assets could be subject to similar treatment in future, thus distorting incentives to invest efficiently in new assets that would benefit consumers.

## 7. Should regulated asset owners have taken stranding risk into account when investing?

50. The Fonterra submission provides an example of the FirstGas purchase of the Maui and Vector pipelines in 2016. Fonterra summarises the New Zealand commitments to various decarbonisation protocols and concludes that:

*This highlights that FirstGas purchased existing assets with full certainty that:*

- a. Climate Change was occurring;*
- b. the NZ Government had committed NZ to at first maintaining our GHG emissions to 1990 levels and then subsequently reducing them;*
- c. an emissions trading scheme had been implemented which put an additional cost of gas usage.*

*The prudent business owner would infer that all these Government regulations and commitments would result in the reduction in gas use in the long-term. To this end, FirstGas should not be compensated for purchasing an asset that potentially will face declining usage in the long-term future.<sup>19</sup>*

51. This issue is closely related to the potential abandonment of the Commission's long-held *ex ante* FCM principle discussed above.
52. What is particularly relevant to any investment in regulated infrastructure assets is the regulatory allowance that the asset owner might reasonably expect to receive. Thus, the Fonterra submission above is really that, at the time of purchasing the Maui and Vector pipeline assets, FirstGas should have known that the Commission may abandon its guiding *ex ante* FCM principle with asset owners and set the regulatory allowance such that the RAB will not be recovered and regulatory allowances will violate the NPV=0 criterion.
53. Our view, as set out in the previous section, is that there are good reasons for the Commission to maintain its long-held approach to setting prices in way that satisfies the *ex ante* FCM principle. In that case, the suggestion that owners of the GPBs should have anticipated that the Commission would knowingly set *ex ante* allowances without taking any steps to address new/emerging stranding risks has no relevance.

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<sup>19</sup> Fonterra submission, undated, p. 2.



54. Furthermore, much of the New Zealand gas infrastructure was put in place well before any of the events identified in the Fonterra submission.
55. An implication of Fonterra’s submission is that there should *never* be a role for regulators to accelerate depreciation as a means of addressing stranding risk—since any investor in such a business should have factored in the possibility of their investments becoming stranded as a consequence of some exogenous factor such as Government action or changes in market circumstances.
56. This implication is troubling because it calls for a complete abandonment of the *ex ante* FCM framework that underpins the Commission’s regulatory framework, as well as the regulatory frameworks applied in other jurisdictions.
57. Yet, we observe that regulators in other jurisdictions have responded to the emergence of stranding risks in precisely the way the Commission has proposed. For example, in Australia:
  - a. The Australian Energy Regulator (AER) has recently explained that accelerated depreciation is its preferred approach to addressing asset stranding risks faced by regulated gas networks;<sup>20</sup>
  - b. In its final determination on the 2021-26 access arrangement for Evoenergy’s gas distribution business, the AER decided to shorten the standard asset life assumptions for certain classes of Evoenergy’s regulated assets.<sup>21</sup> The AER’s decision to accelerate Evoenergy’s regulatory depreciation allowance was prompted by a change in the ACT Government’s climate policies that increased the stranding risks faced by gas networks.
  - c. Similarly, in its final decision on the 2021-25 access arrangement period for the Dampier to Bunbury Pipeline (DBP), the Economic Regulation Authority (ERA) of Western Australia concluded that DBP’s depreciation allowance should be accelerated in response to a change in the climate policies of the Government of Western Australia, which also increased the stranding risks faced by gas networks.
  - d. In its 2019 final decision for the Hunter Valley Coal Network (HVCN), the Independent Pricing and Regulatory Tribunal decided to shorten the assumed asset life of HVCN on the basis that recent changes in market conditions meant demand for HVCN’s services was likely to decline more rapidly than originally anticipated—thus increasing the stranding risks faced by the company.<sup>22</sup>
58. Thus, there are ample examples of regulators operating under similar frameworks to the Commissions deciding to adopt accelerated depreciation in response to growing stranding risks faced by regulated firms—including gas network businesses. The approach that the Commission has proposed is consistent with accepted regulatory practice in other jurisdictions.

## 8. What is the relevance of stranding risk in a competitive market?

59. A number of submissions have proposed that businesses in a competitive market must bear stranding risk, so the same should apply to regulated gas businesses. For example, Methanex has submitted that:

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<sup>20</sup> AER, Regulating gas pipelines under uncertainty, Information paper, November 2021, p. ix.

<sup>21</sup> AER, Evoenergy access arrangement 2021 to 2026, Final Decision, Attachment 4.

<sup>22</sup> IPART, Rate of return and remaining mine life 2019-24, Final Report, July 2019.



*A competitive industry faced with a circumstance equivalent to network stranding has two stark choices; write-down its assets or innovate and seek new markets. We believe that the Commission's draft decision excessively reduces the risk faced by pipeline owners and so doing removes the pressure on pipeline owners to innovate (ie to pursue re-purposing of its assets).<sup>23</sup>*

60. We make three points in response to this submission:

- a. Unlike firms in unregulated (competitive) industries, regulated gas business do not have the opportunity to price their services so as to provide compensation for potential stranding risk. As explained above, the regulatory allowances received by the GPBs do not include compensation for stranding risk. That is:
  - i. In a competitive market, an individual firm will have to bear the risk of stranding and can factor that risk into the prices it charges; and
  - ii. In the case of monopoly infrastructure, adherence to the *ex ante* FCM principle (as the Commission has done to date, and as the Commission has recommitted to in the draft decision) protects against *ex ante* stranding risk, so such risk is not factored into prices.

In our view, it would be inappropriate to have firms bear stranding risk while providing no compensation for it; and

- b. There remains a very strong incentive for regulated gas businesses to innovate by pursuing a re-purposing of assets. As explained above, under the proposed accelerated depreciation framework, at most a business will be able to recover the capital cost of its assets. If there is no re-purposing of assets (such that they become redundant in 2050), the business will only fully recover its capital costs if the network continues to operate with customers paying the full allowed revenue every year up to 2050. Given the risk of users switching away from gas usage in significant numbers before 2050, and the business becoming unviable because the residual demand for gas is too small to recoup the remaining costs, GPBs would face a strong incentive to repurpose their networks.
- c. Finally, it is true that in a competitive market no individual firm facing a growing stranding risk would be able to raise its prices to recoup its costs more quickly – because doing so would make it uncompetitive compared to its rivals. However, if the stranding risk affected all firms in the industry similarly, then all firms could raise their prices to accelerate cost recovery without facing any competitive disadvantage.<sup>24</sup> This is precisely the circumstance that the Commission is seeking to address in the draft decision. *All* (not some) GPBs face a common emerging stranding risk. Nothing about the Commission's approach to accelerating the cost recovery of *all* the GPBs in response to this common stranding risk is incompatible with the outcomes of a competitive market.

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<sup>23</sup> Methanex submission, March 15 2022, p. 4.

<sup>24</sup> This is a standard result in microeconomic theory. Firms in a competitive market that face the same cost increase will have an incentive to pass those cost increases through in full to their customers, and are able to do so because all other firms in the market face the same cost increase.



## Appendix: Is stranding risk compensated via the WACC allowance?

### A1. Systematic vs. firm-specific risk

61. The Capital Asset Pricing Model (CAPM) distinguishes between two types of risk:
- 'Systematic' risk reflects the extent to which the returns generated by a particular asset vary with the returns generated by a broad 'market' portfolio (usually taken to be the major national stock market index).
  - 'Non-systematic,' or 'diversifiable,' or 'firm-specific' risk reflects the extent to which the returns generated by a particular asset vary over time independent of the returns of the broad market portfolio.
62. Thus:
- The extent to which a particular stock's returns are correlated with the returns on the overall market reflects its systematic risk. For instance, in the case of a positive beta stock, the returns associated with that stock will tend to rise when the broad market is up and fall when the broad market; and
  - The extent to which a particular stock does not correlate with movements in the market portfolio reflects its firm-specific risk.
63. The textbook example of a systematic risk is the onset of a major financial crisis. For example, after the Lehman Bros default in 2008, stocks generally fell sharply. The extent to which a particular stock fell at a time when stocks were generally falling reflects its systematic risk.
64. In general, stocks that tend to increase more than average when the market is up, and fall by more than average when the market is down are said to have high systematic risk (beta above 1). Symmetrically, stocks that tend to rise or fall less than average when the market rises or falls are said to have low systematic risk (beta less than 1).
65. The textbook example of a non-systematic risk is a firm's production facility being struck by lightning. That sort of firm-specific damage is not more or less likely to occur when the broad market happens to be up or down – it is unrelated to the state of the broad market index.

### A2. Elements of systematic risk

66. Systematic risk is defined in terms of the relationship between the *returns* on a particular stock (or asset) and the *returns* on the broad market portfolio. The return on a stock (or asset) is the percentage change in value over a period (such as a week or month):

$$r_t = \frac{V_t - V_{t-1}}{V_{t-1}}.$$

67. The value of the stock or asset at any point in time can be written as the present value of the expected cash flows that stock or asset is expected to generate:

$$V_t = \sum_{i=0}^{\infty} \frac{CF_{t+i}}{(1+r)^i}.$$

68. Thus, the return over a week or a month depends on three things:

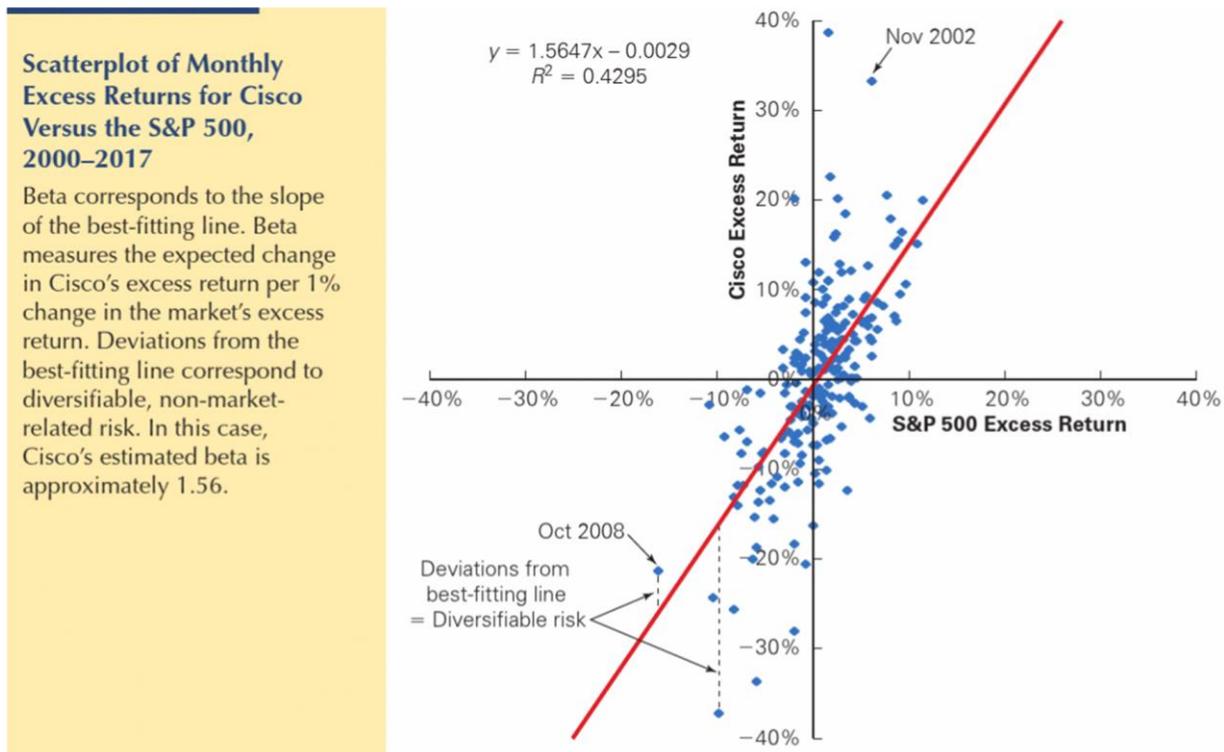


- a. The cash flow that was generated over that week or month;
  - b. Any change in the market's expectation of future cash flows that might be generated; and
  - c. Any change in the return (discount rate) that investors might require.
69. So-called 'first principles' analysis of beta often focuses on just the first element – the cash flow generated during the particular period. That is, the analysis tends to focus on whether a particular stock or asset tends to generate higher cash flows in periods when the market is up and lower cash flows in periods when the market is down. But this reflects only one element of the *returns* beta, and is therefore incomplete.

### A3. Empirical estimation of beta

70. The standard approach to estimating beta, as adopted by the Commission, is regression analysis. A set of comparator firms is identified and, for each firm, a regression of stock returns on market returns is performed over some historical period.
71. For example, the market leading textbook by Berk and DeMarzo contains the illustration reproduced in **Figure 3** below.<sup>25</sup> Each point represents the returns on the stock in question and the broad market in a particular month. Regression analysis produces the line of best fit.

**Figure 3:** Example of regression analysis to estimate equity betas



Source: Berk, J. and P. DeMarzo, 2020, *Corporate Finance: Global 5th edition*.

<sup>25</sup> Berk, J. and P. DeMarzo, 2020, *Corporate Finance: Global 5th edition*.



72. A 45-degree line would indicate a beta of 1 – the stock tends to increase by the same amount as the broad market portfolio. A steeper slope indicates a beta above 1, as the stock tends to increase or decrease by relatively more than the broad market portfolio, and so on.
73. Firm-specific risk is evident in the extent to which data points do not plot precisely on the line of best fit – the stock return in that period is due (at least in part) to something other than movement in the broad market index. In this regard, the R-squared statistic indicates that 43% of the variation in stock returns is due to (or explained by) variation in the broad market and the other 57% is due to firm-specific effects.
74. Note that this regression analysis is performed using stock and market returns, so it includes all three components of returns set out above.

#### **A4. What events/information drives stock returns?**

75. There are myriad events and information that drive stock returns. For example, stock returns may be affected by such things as macroeconomic announcements (e.g., changes to the central bank's interest rate target), the beginning (or end) of a pandemic, the outbreak (or cessation) of armed conflict or war, the emergence (or waning) of a financial crisis, the revision (upwards or downwards) of economic growth forecasts, and so on.
76. All of these things, and many, many others, will affect the returns on all stocks during a particular month. Consequently, all of these things (and anything else relevant to investor valuations) will affect equity beta estimates. Beta represents the extent to which a particular stock is more or less sensitive to these drivers than the average stock in the broad market portfolio.
77. The conventional approach is not to attempt to disaggregate beta estimates into the myriad drivers because such an exercise is infeasible. Rather, the standard approach is to recognise that there are many different things that will drive stock returns and to estimate beta having regard to the combined effect of all such drivers.

#### **A5. Is stranding risk included in the existing empirical equity beta estimates?**

78. The Commission's approach is to estimate beta using regression analysis as described above. The Commission has particular regard to betas estimated using data over the previous 5-year period, but also has regard to estimates from previous 5-year periods. The comparator set considered by the Commission largely consists of international firms operating in different markets.
79. There are no observations in the historical data where a network has been stranded or where stranding has become imminent. That is, the empirical data can tell us little about stranding risk when it does not include observations of such a risk crystallising.
80. In this sense, the speculation of whether stranding might have a systematic element, and whether the sign would be positive or negative, is moot – because the empirical beta estimates do not incorporate such risk.
81. Thus, any allowance for stranding risk is not included in the empirical beta estimates, but would have to be added via an adjustment to the allowed beta.

#### **A6. 'Stories' about the systematic or firm-specific nature of stranding risk**

82. As noted above, 'first-principles' analysis of equity beta tends to focus on the relationship between the cash flow during a particular period (or the manifestation of a risk during a particular period) and the



performance of the broad market during that period. This is an incomplete analysis for the reasons explained above.

83. In this regard, various stories about the systematic or firm-specific nature of stranding risk can be easily generated. For example:
- a. One might argue that stranding risk is non-systematic and independent of the state of the economy and the level of the broad market portfolio – for instance, if New Zealand has committed to phasing out gas distribution by 2050, irrespective of the state of the economy or stock market.
  - b. Another argument might be that stranding risk is non-systematic because the stranding of gas networks depends on whether or not there are technological developments that enable gas distribution assets to be used for other purposes (hydrogen, green gas, etc.) – and those technological developments depend whether or not scientific breakthroughs are made, not on the state of the stock market.
  - c. Alternatively, one might argue that there is a degree of negative systematic risk in that gas distribution assets are more likely to be phased out during a period of strong economic growth, when policy makers consider that the economy is most likely to be able to absorb such a shock.
  - d. By contrast, there is an argument that there might be an element of positive systematic risk in that achieving net zero by 2050, including the stranding of gas distribution assets, will inevitably take a significant toll on the broad economy. Thus, the stranding is likely to occur in circumstances where the broad economy is also negatively impacted.
84. Our view is that there is little to be gained from such speculation – because it is just speculation.
85. Even if one of the above ‘stories’ was adopted, there would be no basis for deciding what impact it might have on equity beta.

## **A7. Has the Commission included an allowance for standing risk in past determinations?**

86. The 2010 IMs allowed an ‘uplift’ to the asset beta for gas distribution businesses (relative to electricity distribution businesses) of 0.1. This uplift was made for reasons other than stranding risk. The Commission observed that:

*When estimating the asset beta for GPBs in prior decisions, the Commission has added 0.10 to the raw asset beta estimated from comparable companies. This increment was intended to reflect GPB's perceived greater exposure to systematic risk. While the Commission considers there are theoretical reasons to expect a higher beta for gas, at least in New Zealand (relating to growth options, operating leverage, the nature of the product and the composition of customers), this was not evident in the Commission's empirical analysis of overseas data. This analysis tends to show slightly lower asset betas for gas companies. Given*



*the theoretical argument for higher gas asset betas for New Zealand GPBs, the Commission retains the 0.10 uplift for GPBs.<sup>26</sup>*

87. The Commission also stated that:

*Even if there were risks such as asset stranding, these can be dealt with in the roll forward mechanism for the RAB by allowing for a depreciation profile that front loads the allowed returns as stranding becomes apparent or allow the stranded asset to remain in the RAB. Presently, the Commission provides for such flexibility in its treatment of the RAB.<sup>27</sup>*

88. The approach of accelerating the depreciation allowance proposed by the Commission in the draft decision is entirely consistent with the approach it outlined in the 2010 IMs for dealing with stranding risk.

89. Thus, it seems clear that the Commission has provided no compensation for stranding risk in allowed returns in determinations made under the 2010 IMs.

90. The 2016 IMs reduced the beta uplift to 0.05, noting that the uplift is due to a number of considerations:

*On balance, we have decided to make a 0.05 upwards adjustment to the gas asset beta. We consider that none of the reasons for an uplift are very strong in isolation. However, when combined, the higher income elasticity of demand for gas, and relatively low gas penetration in New Zealand support an upwards adjustment to the gas asset beta (but not as high as the 0.10 adjustment we made in 2010). We also consider that the comparator sample results provide some limited support for an upwards adjustment to the gas asset beta. In our judgement, 0.05 is appropriate.<sup>28</sup>*

91. It seems plausible that a low penetration rate increases stranding risk. However, it is not possible to determine how much of that risk is systematic and related to asset beta.

92. The 2016 IMs document contains a series of statements about the systematic component of stranding risk, including that stranding risk is:

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<sup>26</sup> NZCC, December 2010, *Input methodologies (electricity distribution and gas pipeline services): Reasons paper*, paragraph 6.5.29.

<sup>27</sup> NZCC, December 2010, *Input methodologies (electricity distribution and gas pipeline services): Reasons paper*, paragraph H12.28.

<sup>28</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraphs 452-453.



*at least partly systematic in nature*<sup>29</sup>

and:

*could have a systematic component*<sup>30</sup>

but also that:

*competitive stranding risk is generally non-systematic in nature, and so is not relevant to WACC. The risk of competitive stranding associated with technological developments such as solar PV panels and battery storage is largely specific to the energy industry (rather than the entire market).*<sup>31</sup>

and:

*Asset beta should only compensate for stranding risk to the extent it is correlated with the market. However, it is difficult to distinguish between systematic and non-systematic stranding risk.*<sup>32</sup>

93. Ultimately, the conclusion is that:

*Overall, we consider that stranding risk for gas is potentially higher than for electricity and some of this is likely to be related to the market (and therefore is systematic risk). We consider this provides support for a small asset beta uplift, but not as large as 0.10.*<sup>33</sup>

<sup>29</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 344.

<sup>30</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 371.

<sup>31</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 424.

<sup>32</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 430.

<sup>33</sup> NZCC, December 2016, *Input methodologies review decisions, Topic paper 4: Cost of capital issues*, paragraph 433.



94. The draft decision indicates that the Commission's view is that any equity beta uplift in relation to stranding risk is minor relative to the current risks of stranding (which are largely non-systematic):

*We did not consider that stranding risk alone would justify an asset beta uplift. However, when combined with other factors, primarily the higher income elasticity of demand for natural gas, we considered there remained support for an upwards adjustment to the natural gas asset beta and allowed an asset beta uplift of 0.05 for GPBs relative to EDBs and Transpower (down from the 0.10 adjustment we allowed in 2010).<sup>34</sup>*

95. And also:

*While some economic stranding risk is systematic, 'non-systematic' factors are likely to pose a more material stranding risk for DPP3. Non-systematic risk refers to risks which affect an individual company or sector of the economy. In particular there is a risk of government policy changes and shifts in consumer demand for natural gas that specifically lead to economic network stranding for GPBs. We consider that the current Gas IMs do not currently provide adequate compensation for these types of risk.<sup>35</sup>*

96. The critical points to recognise are that:

- a. the uplift to the asset beta of 0.05 applied by the Commission for DPP2 following the finalisation of the 2016 IMs was small;
- b. only a portion of this small uplift related to stranding risk; and
- c. the part of the uplift that did relate to stranding risk would have only provided compensation for the *systematic* component of stranding risk faced by GPBs. No compensation has been provided for non-systematic stranding risk.

## **A8. Approaches for incorporating stranding risk**

97. In our view, there are two potential approaches for addressing stranding risk within the regulatory framework:

- a. One approach is to:
  - i. Set the regulatory allowance, from the time the regulated asset is constructed, such that the asset owner recovers the capital outlaid in expectation; and

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<sup>34</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 6.18.

<sup>35</sup> NZCC, February 2022, *Default price-quality paths for gas pipeline businesses from October 1 2022: Draft reasons paper*, paragraph 6.20.



- ii. Provide an allowed return commensurate with the asset owner bearing the risk of stranding.

Under this approach, there is some possibility of over-recovery (if the asset is not stranded) and some possibility of under-recovery (if the asset is stranded, particularly if it is stranded early), such that there is NPV-neutral recovery in expectation.

- b. The alternative approach is to set regulatory allowances on the basis that capital outlaid will be recovered over the life of the asset, and to take actions as required (such as the NPV-neutral acceleration of depreciation allowances) to ensure that full recovery occurs.

Our view is that it is clear that the Commission has been adopting the second approach. There is no sense in which it would be reasonable to suggest that the GPBs have already been adequately compensated for this risk. Consequently, it is the second approach, which was the approach signalled by the Commission in the 2010 IMs and given effect in the recent draft decision, that must be adopted.