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Dear Geoff

2023 WACC review

1. This is Vector’s submission on Cambridge Economic Policy Associates Ltd (CEPA) report on aspects of the cost of capital (WACC) input methodologies (IM).
2. Vector, along with Aurora, Orion, Powerco, Unison, and Wellington Electricity (the big six EDBs), has obtained expert reports from Oxera on the WACC percentile and WACC methodology in relation to electricity distribution businesses (EDBs). Vector, along with First Gas Ltd and Powerco (the three GPBs) has obtained an expert report from Oxera on the WACC in relation to gas pipeline businesses (GPBs). These expert reports have been submitted to this consultation.
3. We have set out some material issues raised in the Oxera reports in our submission. However, we recommend the Commission consider all recommendations raised by Oxera in its reports. Oxera’s reports also respond directly to matters raised in the CEPA report.
4. We understand the Commission is considering RAB indexation as part of its incentives and risk allocation workstream. However, we note along with setting an appropriate rate of return, providing sufficient cashflow to fund investment is a crucial part of achieving the Part 4 purpose. Accordingly, we have submitted the following expert reports as part of this consultation in relation to cashflows and financeability concerns arising from the IM approach to inflation.

Expert report	Description
Frontier Economics, <i>Efficient investment in a decarbonising economy</i> (11 January 2023)	This report considers the extent to which the current regime is robust enough to support the significant capital expenditure needed to achieve New Zealand’s decarbonisation goals. It identifies three potential roadblocks – <ul style="list-style-type: none"> • Whether the current regulatory framework can accommodate the quantum and speed of required expenditure. • Whether allowed returns reflect commercial benchmarks. • Whether consumers will be willing to fund the required investment.
Frontier Economics, <i>The Commerce Commission’s treatment of inflation when</i>	Frontier provided this presentation when representatives from the Commission met with the

<p><i>setting EDBs' allowed revenues: Discussion of issues (April 2021)</i></p>	<p>Chairs of some EDBs and their advisors in April 2021.</p> <p>This presentation sets out issues and impact to EDBs on the Commission's approach to inflation forecasting.</p> <p>For completeness, this has been provided previously to the Commission and was written prior to recent CPI escalation.</p>
<p>Frontier Economics, <i>Regulatory inflation and return on debt allowances (May 2021)</i></p>	<p>This note followed Frontier's presentation to the Commission and provides further details on the debt compensation issue.</p> <p>For completeness, this has been provided previously to the Commission and was written prior to recent CPI escalation.</p>
<p>Motu Economic and Policy Research, <i>Performance and Prospects for Inflation Forecasts (9 November 2020)</i></p>	<p>This memorandum considers issues of forecasting inflation over long horizons.</p> <p>For completeness, this has been provided previously to the Commission and was written prior to recent CPI escalation.</p>
<p>CEG, <i>CPI indexed debt: a panacea for EDBs? Report for Vector (February 2023)</i></p>	<p>This report explains why CPI-indexed debt cannot resolve the debt compensation issue caused by the indexation approach in the IMs. It also shows how the indexation approach could cause stress to EDB financeability and credit metrics in funding new investment.</p> <p>This report contains commercially sensitive information. Parts of the public version have been redacted on this basis.</p>

5. We look forward to further engagement with the Commission on RAB indexation and expect to provide further information on this topic as the IM review progresses.

Timing of consultation

6. We note the Commission released the CEPA report and invited feedback on the WACC IM on 8 December with submissions due 3 February. Given the holiday period and complexity of the topic, we consider this provided insufficient time for stakeholders to grapple with the issues and provide detailed and comprehensive feedback. In particular, it created difficulty for stakeholders to engage expert advice in a constrained timeframe over the holidays.
7. Going forward, we request the Commission provides more notice of substantive consultations and a longer timeframe to respond where these consultations intersect with holiday periods or periods where stakeholders have significant competing workloads (for example, other substantive consultations involving the Commission or Electricity Authority).

Executive summary

Topic	Vector recommendation
Questions from the Commission on asset betas	
<p>Timing and impact of covid: <i>“For energy, CEPA’s findings indicate there does not appear to be a need to vary the sampling timing we used last time [to account for Covid]”</i></p>	<p>We agree there is no need to vary the sampling to account for the impact of Covid.</p> <p>Varying the sampling timing to exclude Covid-19 data runs the risk of cherry-picking data.</p> <p>In terms of general approach to timing, we recommend the Commission’s approach be adjusted to place more weight on daily betas calculated across a more recent time-period in line with the approach suggested by Oxera.</p>
<p>Comparator sample: <i>“We are considering whether we should continue to use companies from Australia that have been recently delisted, and whether we should provide weightings to countries to reduce the weighting of companies from the United States in the comparator sample.”</i></p>	<p>We recommend the Commission consider refining the sample of comparators in line with the approach suggested by Oxera in its reports for the big six EDBs and for the three GPBs</p>
<p>Electricity and gas in the comparator sample: <i>“In this review, we are considering whether to split the energy comparator sample into gas and electricity.”</i></p>	<p>We don’t support splitting the electricity and gas sample.</p> <p>CEPA’s report found confidence intervals for the gas sample were particularly wide suggesting the gas sample alone could not be used to estimate the beta.</p> <p>The Commission should continue to apply a beta uplift for regulated gas businesses, as it remains reasonable to expect higher systematic risk for gas.</p>
Questions from the Commission on WACC percentile	
<p>GPB: <i>“We welcome views on whether we should continue to apply an uplift to price quality regulated gas businesses.”</i></p>	<p>The Commission should continue to maintain a WACC uplift for both gas and electricity networks. There is nothing to suggest the cost of outages to consumers in the gas network has reduced that would require a change in approach. Furthermore, decarbonisation provides further rationale to aim up on the WACC. These include: the risks that underinvestment in renewable gas infrastructure could slow the rate at which hard-to-decarbonise sectors can reduce the carbon-intensity of their activities; asset stranding; and the need to ensure an orderly transition.</p>
<p>Impact of electrification: <i>“We welcome views on how the increased electrification of the economy impacts our reasoning around the</i></p>	<p>Increased electrification of the New Zealand economy suggests a higher WACC percentile should be targeted.</p> <p>The cost to consumers of underinvestment has grown since the 2016 IM review.</p>

<p><i>costs of blackouts and our methodology for considering whether a WACC uplift is warranted</i></p>	<p>Oxera’s report for the big six EDBs found network failure for could cost the New Zealand economy between NZ\$0.9bn and NZ\$21.7bn annually. This is consistent with CEPA’s report for the Commission which estimated an annualised cost of a loss of network reliability resulting from underinvestment would be NZ\$1.9bn.</p> <p>Moreover, these costs are estimated under the existing ‘network reliability framework’ which does not account for the social costs and benefits that are affected by the delivery of net zero. This provides a further rationale to aim up for a higher percentile.</p> <p>In relation to gas networks, decarbonisation also provides further rationale to aim up on the WACC. These include: the risks that underinvestment in renewable gas infrastructure could slow the rate at which hard-to-decarbonise sectors can reduce the carbon-intensity of their activities; asset stranding; and the need to ensure an orderly transition.</p> <p>Accordingly, we recommend the Commission – at a minimum – maintain the 67th percentile WACC. The Commission should also consider targeting a higher percentile to better promote the Part 4 purpose.</p>
<p>Other aspects of the cost of capital.</p>	
<p>Risk free rate and the cost of debt</p>	<p>We recommend the Commission –</p> <ul style="list-style-type: none"> • adjust its methodology for the risk-free rate to reflect yields on a sample of Government bonds with a wider range of maturities. • Investigate the ‘convenience premium’ in the use of government bonds. • Introduce mechanisms to mitigate market volatility such as indexing the risk free rate to inflation.
<p>Need for cashflows to support investment</p>	
<p>RAB indexation</p>	<p>We recommend the Commission un-index the RAB from inflation or provide regulated businesses the ability to chose indexation approach. At a minimum, we consider the debt funded portion of the RAB should be un-indexed.</p> <p>We consider the current IM approach of indexing the RAB to inflation significantly undermines the Part 4 purpose. In particular –</p> <ul style="list-style-type: none"> • EDBs have a significant investment programme to enable electrification of the New Zealand economy. The back-ended cashflow profile created by indexation undermines the ability of EDBs to fund this investment. • GDBs face an increased risk of asset stranding and, consequently, a need to recover costs earlier to mitigate this risk. Indexing GDB RABs inflates the scale of asset stranding risk and undermines cost recovery. • It is likely impossible to accurately forecast inflation and volatility in the current macroeconomic environment has made inflation forecasting even more difficult. Historically, the Commission has over-forecast inflation leading to under-compensation for regulated

	<p>businesses. However, current and rising levels of inflation risks over-compensation from consumers.</p> <ul style="list-style-type: none"> Regulated businesses must fund debt in nominal terms while the IM provides cashflow in real terms. This creates a timing mismatch for regulated businesses to pay debt costs which challenges cashflow and credit metrics in funding new investment. This issue cannot be resolved by the issue of CPI-indexed debt.
<p>Need for financeability assessment</p>	<p>We recommend introducing a financeability assessment in line with the approach set out in Oxera’s report for the big six EDBs.</p> <p>It would be a perverse outcome if a regulated businesses could not, in practice, fund an efficient investment programme allowed under the regulatory framework.</p> <p>We consider introducing a formal financeability assessment in the IMs would defend against this. This would support the Part 4 purpose by –</p> <ul style="list-style-type: none"> Supporting the ability of regulated business to innovate and invest and support efficiency gains. We note cashflow and financing issues could result in inefficient deferrals that would otherwise result in higher costs to consumers over time. Supporting stakeholder, including investor, confidence that the regime is delivering appropriate outcomes for regulated businesses and consumers. Supporting regulated businesses to obtain financing on efficient terms thereby reducing financing costs to consumers.

Asset betas

- We recommend the Commission consider Oxera’s recommendations on calculations of the asset beta as set out in Oxera’s reports to the big six EDBs and the three gas networks.

Energy sample timings and the impact of covid

- As stated by the Commission, CEPA’s findings indicate it is not necessary to vary the energy sample timings to account for Covid.
- This is also consistent with Oxera’s findings for the big six EDBs that it is reasonable for data from the Covid period to be included in the sample.
- Oxera stated that, “*the response of an equity’s return to a change in market conditions reflects the exposure of that equity to systematic risk. Such an approach is consistent with that taken by Ofgem, which explained that excluding COVID-19 data could introduce the risk of cherry-picking data.*”¹
- Accordingly, we agree there is no need to vary the timing of the energy sample to account for Covid.

Observation period and frequency

- In terms of the general approach to sample observation period and frequency, we recommend more weight be placed on recent beta estimates.

¹ Oxera, *Review of the NZCC’s WACC setting methodology: Prepared for Aurora, Orion, Powerco, Unison, Vector, Wellington Electricity* (November 2022) page 38

14. Oxera's report for the big six EDBs explains, "*When the regulatory framework changes or market conditions change, the exposure of networks to systematic risk can also change. For this reason, we consider that more weight should be placed on recent beta estimates, but the time period of the estimate should not be too short.*"²
15. We recommend the Commission consider the approach suggested by Oxera in its reports for the big six EDBs and the three GPBs.³

Comparator sample

16. We recommend the Commission consider adjusting its approach to the sample in line with Oxera's suggested approach.⁴

Combined electricity and gas sample

17. We don't support splitting the electricity and gas sample.
18. CEPA's report found that, "*The confidence intervals for the gas sample are particularly wide. Indeed, there are periods where at the 95% confidence interval level the asset beta for the gas sample is statistically indistinguishable from both 0 and 1 at the same time. This may suggest that the gas sub-sample cannot be used alone to estimate asset beta.*"⁵
19. Given this, splitting the sample would likely undermine the accuracy of, and stakeholder confidence in, the beta. This approach would undermine, rather than promote, the Part 4 purpose.
20. The Commission should continue to apply an uplift in the beta for regulated gas networks.
21. Oxera's report for the three GPBs considered both the empirical and theoretical evidence behind the beta adjustment. They found it remains reasonable to expect higher systematic risk for gas networks and therefore maintain an uplift in the beta.⁶

WACC percentile

22. Setting an appropriate WACC percentile is a critical component in achieving the Part 4 purpose.
23. The impact of electrification and need to deliver an orderly energy transition, particularly in response to New Zealand's net zero target, have heightened the risks and potential harm from under-investment to consumers and to 'NZ inc' relative to the 2016 IM review. Furthermore, it has also increased the benefits to consumers arising from investment.

Uplift for regulated gas networks

24. The Commission should continue to apply an uplift in the WACC percentile for both gas and electricity networks.

² Ibid, page 37

³ Oxera, *Review of the NZCC's WACC setting methodology: Prepared for Aurora, Orion, Powerco, Unison, Vector, Wellington Electricity* (November 2022), page 37 – 38 and Oxera, *Asset beta and WACC percentile for New Zealand gas distribution businesses: Prepared for Vector, Powerco and First Gas* (25 January 2023), paras 2.30 – 2.40

⁴ Ibid at pages 35-36; and paras 2.16-2.29

⁵ CEPA, *Review of Cost of Capital 2022/2023: New Zealand Commerce Commission* (November 2022), page 16

⁶ Oxera, *Asset beta and WACC percentile for New Zealand gas distribution businesses: Prepared for Vector, Powerco and First Gas* (25 January 2023), para 3.1 – 3.20

25. In the context of the gas network, the need to ensure an orderly energy transition in response to climate change and New Zealand's net zero by 2050 target means under-investment in the gas network could cause significant harm to consumers.
26. It remains uncertain whether gas networks will ultimately be repurposed into a "clean" gas network or whether they will cease to operate. However, both outcomes require appropriate investment into the existing gas network to avoid consumer harm from failure in the network as currently used. We have not seen any evidence to suggest potential consumer harm resulting from under-investment in the gas network has reduced relative to the 2016 IM review so there is no reason to change approach in terms of aiming up on the WACC.
27. The uncertain future of gas means investors in the gas network face more risk. However, it does not result in less potential harm to consumers if outages occur due to under-investment given consumers still rely on the gas network. The economic consequences of gas outages could be severe, particularly given a large number of major industrial users rely on gas. We note the GIC's 2021 report which explained additional investment in gas networks will be needed to maintain security of supply.⁷
28. Furthermore, if gas networks fail to make appropriate investments there is a risk of delay or disruption to New Zealand's energy transition. This could cause significant consumer harm, including in terms of broader social costs relating to decarbonisation. Gas currently plays an important role in maintaining security of supply in New Zealand. If security of supply is compromised an orderly transition to electrification could be derailed. If hydrogen (or another clean gas) becomes viable, the transition to clean gas could be jeopardised or derailed if appropriate investments in the gas network have not been made.
29. Oxera's report for the three GPBs states:

"Balancing the need to maintain security of supply and delivering decarbonisation as part of the energy transition in the gas sector is an important concern for New Zealand. The transmission and distribution networks play a vital role in meeting these objectives.

The need to maintain security of supply in New Zealand is important context for assessing the percentile of the WACC distribution that the NZCC should target. As gas networks balance the multiple roles of maintaining the reliability of the current gas supply, while redeploying assets as well as potentially investing in assets to facilitate (the option of and transition to) alternative fuel transport such as hydrogen, it is likely that a high proportion of gas infrastructure expenditure will have reliability implications if it is not undertaken."⁸

30. Oxera's report also explains the need for an orderly energy transition provides further support to maintain an uplift in the WACC:

"Ensuring that the efficient investment costs of gas networks are recovered is likely to help with an orderly energy transition. While the precise details of New Zealand's energy transition are yet to be developed, it is possible that many of the existing stakeholders in gas (and electricity) infrastructure will remain the same. This could be in the form of gas networks being repurposed for renewable gas or equity and debt investors in gas networks being the same investors that would fund investment in new infrastructure.

The greater the role that renewable gases have in New Zealand's energy transition, the more important it will be to ensure that new transmission and distribution infrastructure is constructed on a timely basis. This is less likely to happen if the WACC of the (renewable) gas network operator is above the regulated WACC. Due to the high social costs of delaying the energy transition, this risk is likely to increase the asymmetry of the loss function relative to the NZCC's current approach, where the asymmetry arises

⁷ GIC, Gas Industry Co. Market Settings Investigation: Report to the Minister of Energy and Resources (September 2021) page 17

⁸ Oxera, Asset beta and WACC percentile for New Zealand gas distribution businesses: Prepared for Vector, Powerco and First Gas (25 January 2023), paras 4.14 - 15

exclusively from the network reliability framework. This increased asymmetry will provide greater reason to aim for a higher percentile.”⁹

Appropriate percentile

31. We recommend the Commission target a WACC percentile in line with Oxera’s expert reports for the big six EDBs and for the three gas networks. Oxera found that –
 - Evidence supports targeting a WACC estimate in range of the 65th to 75th percentile.
 - This suggests the 70th percentile is the most appropriate percentile to target.
 - However, there is significant value in maintaining regulatory stability, so it is appropriate to continue targeting the 67th percentile.
32. We note CEPA’s report found that, *“Regarding the appropriate WACC percentile, there are two key changes in the evidence which pull in different directions. Firstly, the regulatory precedent from elsewhere has reduced support for selecting a WACC percentile above the mid-point. Secondly, we find evidence that the cost of a loss of network reliability has increased. We also observe that the relative balance between direct costs (which we have also updated) and expected benefits from reduced likelihood of network failure has changed.”¹⁰*
33. We agree with CEPA’s report that the cost of a loss of network reliability has increased. This is consistent with Oxera’s findings for the big six EDBs and three GPBs and suggests a higher WACC percentile should be targeted.
34. We do not consider overseas regulatory precedent reduces support for selecting a WACC percentile above the midpoint. The overseas regulators cited by CEPA do not use the same ‘network reliability’ framework as the Commission so are not directly comparable.
35. Moreover, the moves to a midpoint WACC by overseas regulators have been accompanied by other measures that make it more difficult for the regulated WACC to diverge from the true WACC.
36. We also note a number of overseas regulators do continue to aim up on the WACC and academic research continues to suggest a WACC uplift is appropriate.
37. Accordingly, we consider the Part 4 purpose is best promoted by – at a minimum – maintaining the 67th percentile WACC. Consideration should also be given to targeting a higher percentile since it is clear the asymmetric costs of under-investment have grown since the last IM review.

Asymmetric costs of under-investment

38. As set out in the Commission’s IM Decision Making Framework Paper, recognition of the asymmetric costs of under-investment is one of the key economic principles used by the Commission to give effect to the Part 4 purpose.
39. The Commission’s methodology to calculate the WACC – developed in 2014 by Oxera - recognises that the consequences to consumers of under-investment are asymmetric relative to over-investment.
40. Oxera describes this methodology as primarily a ‘network reliability’ framework where *“aiming up on the WACC is appropriate if a higher WACC is more likely to result in the levels of investment meeting the appropriate level, and if the benefits of meeting this investment level (i.e. through having fewer outages) exceed the additional costs that consumers face as a result of a higher WACC.”¹¹*

⁹ Ibid, 4.70

¹⁰ CEPA, *Review of Cost of Capital 2022/2023: New Zealand Commerce Commission* (November 2022) page 25

¹¹ Oxera, *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022) page 47

Cost of under-investment to consumers

41. Oxera updated its 2014 analysis and found network failure could cost the New Zealand economy between NZ\$0.92bn and \$21.7bn annually.¹²
42. This is consistent with CEPA's report which – building on Oxera's 2014 analysis - estimated an annualised cost of a loss of network reliability resulting from underinvestment would be NZ\$1.9bn.¹³
43. Moreover, the need to decarbonise suggests a higher percentile should be targeted beyond the costs considered under the current 'network reliability framework.'
44. Oxera's report explains:

“Under the NZCC's current framework any asymmetric loss arising from the need to decarbonise, which New Zealand has pledged to do by 2050 through its net zero goal, is not considered. This would tend to imply that the NZCC should target a higher percentile of the WACC than that which has been considered by the NZCC previously, or by us in the earlier parts of this report.

Decarbonisation tends to increase the asymmetry of the loss function for at least two reasons.

First, the need to connect new [low carbon technologies] creates a further social benefit to any particular WACC uplift, without creating an additional countervailing cost. The need to deliver future decarbonisation investments requires that returns are sufficient for investment in infrastructure that facilitates new connections. As part of the energy transition, there will be a substantial increased demand for new connections, as a large number of functions that are currently not electrified will become electrified. These functions include, for example, electrification of heating and transport, and the electrification of various industrial processes. Much of the increased demand for electrification will tend to be distribution-connected, affecting the EDBs, rather than transmission-connected (e.g. increased levels of embedded generation) ...

Accordingly, to successfully decarbonise the New Zealand economy, the EDBs will need to have sufficient capital and incentives to:

- connect new users, batteries, and generators to the grid. If EDBs have insufficient incentives to expand the network, there will not be enough capacity to connect these parties;
- invest in transformational technologies (e.g. digitalisation, data, LV visibility, connectivity, two-way power flows, flexibility markets). These new technologies may be more risky than traditional network investments, such that there is a higher risk of disincentivising (riskier) investments if the WACC is set too low.

Second, as the New Zealand economy electrifies, the impacts of any outages will be more significant than they have been in the past. This could happen if, for example, manufacturing processes that currently use natural gas switch to electricity, or if more domestic heating is electrified. Related to this, if there is not enough spare capacity in the network to manage peak demand (which could happen if the EDBs do not have sufficient incentives to invest in the network), there could also be more outages.

Both of the above points provide a rationale to aim up for a higher percentile, relative to a network reliability framework that does not account for the social costs and benefits that are affected by the delivery of net zero.”¹⁴

45. Increased electrification of the economy in response to climate change has – and will continue to – increase the benefits of investment to consumers and increased the potential harm to consumers if under-investment occurs. We note the recent severe storms and flooding in Auckland highlight the importance of resiliency investment to mitigate the impact of climate change as severe weather events become more common.

¹² Ibid, page 25

¹³ CEPA, *Review of Cost of Capital 2022/2023: New Zealand Commerce Commission* (November 2022) page 39

¹⁴ Oxera, *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022) page 38 - 39

46. In the context of gas networks, the need to maintain security of supply and ensure an orderly energy transition in response to climate change and New Zealand's net zero target means under-investment in the gas network could cause significant harm to consumers.
47. Frontier's report for Vector explains how investment into electrification will also provide additional benefits to consumers:

"Recent modelling demonstrates that network investment over the next decade will benefit consumers in a number of ways, including:

- a. Significant decarbonisation is impossible without electrification, which in turn requires material investment in networks;*
- b. Enhanced network infrastructure facilitates more competition in the generation market, supporting a reduction in wholesale energy costs; and*
- c. Augmentation of networks is required to enable customers to extract full value from their investment behind the meter, including rooftop solar, electric vehicles, and electric appliances.*

For example, modelling by the Australian Energy Market Operator (AEMO) identifies that every dollar of approved transmission network expenditure is expected to generate \$2.20 in customer benefits.

That is, the previously considered trade-off between customer prices on one hand and service quality and reliability on the other is now redundant. It is no longer the case that consumer benefits come at the expense of higher prices. Even disregarding any benefits to consumers associated with decarbonisation itself, recent modelling shows that targeted network expenditure can simultaneously:

- a. Create tangible benefits for consumers; and*
- b. Lower the total price paid by consumers."¹⁵*

Overseas regulatory precedent

48. CEPA's report for the Commission found recent overseas regulatory decisions – based on its review of regulatory decisions in the UK and Australia – reflect *"a shift towards using the midpoint WACC estimate and including appropriate incentive and performance-based conditions in the regulatory package so that the cost of capital is not used to mitigate the risk of underinvestment."*¹⁶
49. Oxera's 2022 reports for the big six EDBs and three GPBs also considered overseas regulatory precedent. Consistent with CEPA's findings, Oxera also noted a generalised move towards a midpoint WACC. However, this was not universal. For example, the French energy regulator has recently selected a WACC above the midpoint.¹⁷
50. Oxera explained that the move to a midpoint WACC *"has tended to be accompanied by other measures that have reduced (but not eliminated) the ability for the regulated WACC to deviate from the true WACC. In the UK, for example, Ofgem has indexed movements in the risk-free rate."*¹⁸
51. Oxera's 2022 reports explain why overseas regulatory precedent does not provide evidence away from a WACC uplift in the New Zealand context –
- As quoted above, moves to the midpoint have been accompanied by other measures to reduce the ability for the regulated WACC to deviate from the true WACC.
 - The Commission has not found any evidence of any overcompensation suggesting there is no reason to adjust the regulatory framework to reduce ex ante returns.
 - The international regulators reviewed by Oxera (including Ofgem and the AER considered by CEPA) do not use the same network reliability framework as the Commission. The choice of WACC percentile by these regulators is not directly comparable given it is made in a different context to the Commission's decision making.

¹⁵ Frontier Economics, *Efficient investment in a decarbonising economy: Report prepared for Vector* (January 2023) para 44 - 46

¹⁶ CEPA, *Review of Cost of Capital 2022/2023: New Zealand Commerce Commission* (November 2022), page 27

¹⁷ Oxera *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022), page 34

¹⁸ *Ibid*, page 32

- The trend to the midpoint WACC is not universal. There are a number of regulators who do aim up on the WACC and academic evidence continues to suggest a WACC uplift is appropriate.¹⁹

Other considerations supporting an uplift in the WACC percentile

52. Oxera's also found three additional considerations that support an uplift in the WACC percentile which the Commission has not taken into account to date –

- **New academic evidence:** New academic evidence, by Romeijnders and Mulder (2022), has been published considering the relationship between WACC uplift and consumer welfare under a theoretical model. Under this model, the research found the optimal solution was to target a percentile above the 50th. Oxera concluded this research provides intuitive and empirical support for Commission's approach aiming up in the WACC.²⁰
- **Decarbonisation framework:** The current framework does not take into account any asymmetric loss from the need to decarbonise. This would imply a higher WACC percentile should be targeted as decarbonisation tends to increase asymmetry of losses. This is because the need to connect low carbon technologies creates a further benefit of the WACC uplift without a countervailing cost. Furthermore, the impact of any outages will be more significant as the economy electrifies.²¹
- In relation to gas networks, Oxera noted decarbonisation also provides further rationale to aim up on the WACC. These include: the risks that underinvestment in renewable gas infrastructure could slow the rate at which hard-to-decarbonise sectors can reduce the carbon-intensity of their activities; asset stranding; and the need to ensure an orderly transition.²²
- **Uncertainty in the WACC estimate:** The Commission calculates the standard error of the WACC considering only three parameters (the TAMRP, debt premium and asset beta). This assumes the other parameters of the WACC can be known with any certainty. However, this is not the case for notional leverage, the risk-free rate or debt issuance costs. For example, the optimal leverage for EDBs may not be correct. The standard error for leverage may be material as the Commission uses a large and diverse set of comparators which is likely to include companies with very different leverages in the estimate. Although the Commission compares its estimates of the mid-point WACC with independent third parties, it doesn't compare the estimates it could generate through applying alternative methodologies. This differs from the approach taken by other regulators which consider a range of parameter values. Not considering alternative sources of evidence will tend to lead to an under-estimate of the allowed point estimate within the range.²³

53. Accordingly, it is clear the Part 4 purpose is best promoted by continuing to aim up on the WACC for electricity and gas networks. The cost of under-investment to consumers has grown since the 2016 IM review. The response to climate change including the electrification of the New Zealand economy provides further reasons to aim up on the WACC for both electricity and gas networks beyond those considered under the current

¹⁹ Oxera, *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022) pages 33-34 and Oxera, *Asset beta and WACC percentile for New Zealand gas distribution businesses: Prepared for Vector, Powerco and First Gas* (25 January 2023), para 4.16

²⁰ *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022), page 36 - 38

²¹ *Ibid*, page 38 - 40

²² Oxera, *Asset beta and WACC percentile for New Zealand gas distribution businesses: Prepared for Vector, Powerco and First Gas* (25 January 2023), section 4.25

²³ *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022), pages 40-41

'network reliability framework. New academic evidence and standard error in the WACC estimate also provide additional support for the WACC uplift.

54. Similarly, overseas regulators moving to the mid-point WACC cited by CEPA are not directly comparable to the Commission given these regulators operate under different frameworks to the Commission and these moves have been accompanied by other measures reducing the potential for the regulated WACC to deviate from the true WACC. In any event, the trend to move to the midpoint is not universal among overseas regulators. For example, the French energy regulator has recently selected a WACC above the midpoint.²⁴ We do not consider there is any evidence that would suggest a change in approach by the Commission from aiming up on the WACC.
55. Along with the Part 4 purpose, the need for appropriate investment to support electrification and an orderly energy transition in response to climate change also means maintaining an uplift for electricity and gas networks would better promote the governments net zero target in line with s5ZN of the Climate Change Response Act 2002.

Other aspects of the cost of capital

56. Oxera, for the big six EDBs, reviewed the Commission's WACC setting methodology.
57. Oxera identified the following issues as the most material. Accordingly, we recommend the Commission prioritise –
- Adjusting its methodology for the risk-free rate to reflect the yields on a sample of Government bonds with a wider range of maturities and also assesses evidence in relation to allowing a convenience yield for New Zealand government bonds.
 - Introducing mechanisms (such as indexing) for some of its WACC parameters to reduce the risk to which regulated businesses are exposed from changes in market movements during a regulatory period. For example, Ofgem indexes risk-free rate and the cost of debt, and the AER indexes the cost of debt.
 - Adding a financeability assessment to its regulatory processes. We discuss this topic further below in the context of cashflows to support investment

Risk-free rate methodology

Term of the risk-free rate

58. The IMs currently use a five-year term for the risk-free rate, matching the term of the regulatory period. This is consistent with the AER who also uses a five-year term. In contrast, Ofgem uses a twenty-year term.
59. The AER's choice of a five-year term was based on academic evidence from Dr Martin Lally that the term should match the regulatory period. However, Professor Schmalensee – whose work Dr Lally used to make this conclusion – has stated Dr Lally misinterpreted his work.²⁵
60. We consider this development should give pause to the Commission's approach of tying the risk-free rate to the regulatory period.
61. Ofgem uses a 20-year term which better reflects the longer asset lives of energy networks. Ofgem's approach places weight on the investment horizons of investors being longer

²⁴ *Review of the percentile of the WACC distribution that should be targeted by the NZCC: Prepared for Aurora, Orion, Powerco, Unison, Vector and Wellington Electricity* (October 2022), page 34

²⁵ *Energy Networks Australia, Rate of Return Instrument Review: Response to AER's Draft Instrument and Explanatory Statement* (2022), page 4

term. Ofgem also considered long term government bonds would have lower levels of volatility.²⁶

62. Oxera investigated the volatility of government bonds in the New Zealand context and found no clear pattern in the volatility of the yields of bonds from different maturities. However, they did find volatility across government bond yields has increased since the 2016 IM review. This has implications for managing interest rate risk.²⁷
63. Based on the above factors, Oxera recommended the Commission take into account the yields on government bonds with a range of maturities.²⁸

'Convenience premium' in the use of government bonds

64. The Commission uses NZ government bonds as a proxy for the risk-free rate. However, Oxera's report explains there is additional demand for government bonds which – as bond yields and prices are inversely correlated – leads to bond yield falling below a normal market-clearing price based on the risk-free cashflows when this additional demand increases bond price (termed a 'convenience premium'). This pushes the rate of return on government bonds below a 'true' risk-free rate.²⁹
65. Regulators in the UK, Germany and Italy have accounted for 'convenience premium' in their WACC decisions.³⁰
66. Oxera found evidence of a convenience premium in the returns of government bonds which indicates using yields on Government bonds could underestimate the risk-free rate. However, Oxera also noted using solely the yield on the highest quality non-government bonds could overestimate the 'true' risk free rate.³¹
67. Oxera recommended the Commission consider further analysis on the convenience yield in New Zealand.³²

Need for the risk-free rate to be updated more frequently

68. Oxera found New Zealand government bond yields have become more volatile since the 2016 IM review. Oxera considered this warrants a reassessment by the Commission on whether to update the risk-free rate annually (as Ofgem does) or otherwise consider measures to address this volatility.³³

Cashflows to support investment

69. Along with a setting an appropriate rate of return, giving effect to Part 4 requires regulated businesses to have sufficient cashflows to fund required investments.
70. The current regulatory settings do not deliver an appropriate cashflow profile for regulated businesses to adequately fund investments. This will significantly undermine the long-term benefit of consumers and the ability of regulated businesses to support the energy transition if left unaddressed this IM review.

²⁶ Oxera, *Review of the NZCC's WACC setting methodology: Prepared for Aurora, Orion, Powerco, Unison, Vector, Wellington Electricity* (November 2022), page 11

²⁷ Ibid, page 15

²⁸ Ibid, page 11

²⁹ Ibid, page 13 - 14

³⁰ Ibid, page 13

³¹ Ibid, page 13-14

³² Ibid, page 14

³³ Ibid, page 11

71. As identified by CEPA's report for the Commission and Oxera for the big six EDBs, the cost to consumers of underinvestment has grown since the last IM review. Accordingly, it is now even more critical to address cashflow constraints in the regulatory framework.
72. We consider key changes needed to ensure regulated businesses have sufficient cashflow to fund investment are –
- Amending the IMs to un-index the RAB from inflation (consistent with the approach to Transpower) or allowing regulated businesses the option to choose an indexed or un-indexed approach (consistent with the approach in the airports IM). At a minimum, regulated businesses should be able to un-index the debt funded portion of the RAB.
 - Introducing a financeability assessment.

RAB indexation

73. We consider the current IM approach of indexing the RAB to inflation significantly undermines the Part 4 purpose. In particular –
- EDBs have a significant investment programme to enable electrification of the New Zealand economy. The back-ended cashflow profile created by indexation undermines the ability of EDBs to fund this investment.
 - GDBs face an increased risk of asset stranding and, consequently, a need to recover costs earlier to mitigate this risk. Indexing GDB RABs inflates the scale of asset stranding risk and undermines cost recovery. We will discuss this further in our response to the Commission's options paper for investment in the context of declining demand.
 - It is likely impossible to accurately forecast inflation and volatility in the current macroeconomic environment has made inflation forecasting even more difficult. Historically, the Commission has over-forecast inflation leading to under-compensation for regulated businesses. However, current and rising levels of inflation risk over-compensation from consumers.
 - Regulated businesses must fund debt in nominal terms while the IM provides cashflow in real terms. This creates a timing mismatch for regulated businesses to pay debt costs which challenges cashflow and credit metrics in terms of funding new investment. Regulated businesses cannot hedge inflation risk by issuing CPI-indexed bonds so un-indexing (as a minimum) the debt portion of the RAB is the only mechanisms to resolve this issue.
74. Accordingly, amending the IMs to un-index the RAB or allowing regulated businesses to choose between indexation or non-indexation would better promote the purpose of Part 4 by alleviating these issues.
75. We consider, at a minimum, the debt funded portion of the RAB should be un-indexed to alleviate the debt compensation issue and avoid consumer over-compensation arising from inflation forecast error. However, we consider the Part 4 purpose is best promoted by un-indexing the entire RAB to provide sufficient cashflow to support investment into electrification.
76. We acknowledge EDBs have different investment needs and capital raising strategies so an approach that allows EDBs to select indexation or non-indexation would be appropriate to ensure EDBs can select a cashflow profile that aligns with their and their consumers particular circumstances.

Need for front-loaded cashflow profiles

77. Unlike EDBs and GDBs, Transpower's RAB is not indexed to inflation. The Commission took this approach to Transpower on the basis Transpower had a significant programme

of investment and a front-loaded cashflow profile was more appropriate to support Transpower's investment needs.

78. The Commission approved Transpower's proposal to un-index its RAB in as part of its 2007 settlement agreement. The Commission stated:

*"Nevertheless, because the application of un-indexed historic cost results in a pricing profile that provides greater cashflows in the first few years following an investment, there may be some limited circumstances where an un-indexed approach is preferable for reasons related to investment, such as when capital expenditure requirements face a significant step change in the short term. If such is the case, then such dynamic efficiency considerations may outweigh considerations of allocative efficiency. However, the Commission notes that cashflows are not the only source of funds that businesses have available to cover their efficient capital expenditure requirements, and as a result providing for increased cashflows may not be necessary even where future investment needs appear to be substantial."*³⁴

79. The situation facing EDBs is directly analogous to Transpower. We do not consider it justifiable for the Commission to maintain different approaches for Transpower and EDBs when faced with an identical policy decision.

80. The current backloaded cashflow profile driven by the indexation approach in the IM undermines the long-term benefit of consumers by –

- Undermining the ability of EDBs to undertake efficient investment. As identified by CEPA's report for the Commission and Oxera's reports for the big six EDBs and the three GPBs, the cost to consumers of under-investment has grown since the last IM review.
- Undermines EDBs ability to improve efficiency and, in particular, dynamic efficiency by inhibiting investment in innovative technologies.
- It also undermines the ability of EDBs to make enabling investments to support electrification necessary thereby undermining New Zealand's net zero target under the Climate Change Response Act 2002.

Inflation forecast error

81. The current indexation approach in the IMs requires the Commission to forecast inflation to deliver a real return on the RAB. Motu, in a memorandum to Vector, has explained the difficulty inherent in forecasting inflation leading to inflation forecast error:

*"Forecasting inflation over five years is a near-impossible task to achieve with any degree of confidence. Many unanticipated events can, and do, happen in a five-year period, such that forming a long horizon forecast will lead to large errors in the calculation of the desired real returns. Given the long-lasting effects of economic events like the global financial crisis (GFC) or the covid-19 pandemic, it is implausible that such errors will wash out in five years."*³⁵

82. Amending the IMs to remove inflation indexation would also remove the need to forecast inflation and therefore eliminate the impact of inflation forecast error.

83. We do not see how this status quo can be justified under the Part 4 purpose.

84. EDBs were materially under compensated for the cost of debt in the 10-years to 2020-21 inhibiting cashflows and therefore their ability to innovate and invest. Along with cashflow constraints, we note EDBs will only be able to attract the capital necessary to innovate and invest if the regulatory regime delivers the efficient return required by investors in every regulatory period.

³⁴ Commerce Commission, *Draft Decision and Reasons for Not Declaring Control & Draft Decision on Resetting Transpower's Thresholds* (5 October 2007), Para 267 - 272

³⁵ Motu Economic and Policy Research, *Performance of and Prospects for Inflation Forecasts* (9 November 2020), page 1

85. In 2021 – 22, consumers significantly overcompensated EDBs and going forward, there is a significant risk that customers will continue to materially overcompensate EDBs based solely on forecast error. This could result in significant consumer harm, particularly given forecast error driven overcompensation is occurring during a time consumers face a difficult economic environment including a cost of living crisis.
86. Furthermore, we consider the interests of consumers are better promoted by ensuring they pay the efficient price in every regulatory period rather than relying on errors to “wash-up” over regulatory periods. This is particularly the case given ongoing volatility in inflation and the material impact of inflation forecast error in previous years. This suggests the impact could become even more severe going forward.
87. Accordingly, we consider the Part 4 purpose is better promoted by eliminating the impact of inflation forecast error by removing RAB indexation.

Debt compensation issue

88. As acknowledged by the Commission, there is a timing issue between debt related inflation costs and regulatory compensation for the inflation component of debt costs. EDBs issue nominal debt and are contractually required to pay nominal interest costs, but the regulatory regime delivers on a real return on debt each regulatory period.
89. This requires equity investors to make up any shortfall between the real return on debt allowance and the nominal cost of debt incurred by EDBs. Where inflation differs from forecast, RAB growth may be higher or lower than necessary to meet contractual obligations to debt holders.
90. This undermines the ability of EDBs to innovate and invest by putting pressure on EDBs cashflow and credit metrics. This is a significant concern given EDBs have significant investment requirements to support electrification.
91. EDBs cannot resolve this issue by issuing CPI-indexed debt as no market for CPI-indexed debt exists in New Zealand.
92. In any event, issuing CPI-indexed debt (even if it could be issued at the same expected cost as nominal debt) would not provide a solution to this issue. Borrowing using CPI-indexed debt would create a trailing average real cost of debt for the EDB while the IMs compensate based on an estimate of the real risk free rate immediately prior to the start of the DPP. Accordingly, this approach would increase rather than reduce the risk of mismatch between cost and regulatory compensation.³⁶ This is explained further in CEG’s report for Vector.
93. Furthermore, issuing CPI-indexed debt would be more expensive and more risky for an EDB. CEG’s report for Vector found no private New Zealand issuers that issue CPI-indexed debt. Where there are issued of CPI-indexed debt it invariably trades at a yield that is materially higher than the yield on similar maturity nominal bonds by the same issuer.³⁷
94. CEG’s report for Vector shows how indexing the debt portion of the RAB could place severe stress on the hypothetical EDBs credit metrics based on the DPP3 financial models in funding new investment.³⁸

³⁶ CEG, *CPI indexed debt: a panacea for EDB’s? Report for Vector* (February 2023), para 8 - 18

³⁷ *Ibid*, paras 21-22

³⁸ CEG, *CPI indexed debt: a panacea for EDB’s? Report for Vector* (February 2023) paras 71 - 74

95. Frontier Economics' presentation and note to the Commission provide further information on the impact of the debt compensation problem.³⁹
96. The only reasonable mechanism to address this issue is to un-index, at least, the debt portion of the RAB from inflation. Failure to address the debt compensation issue could create real stress on EDB financeability for new investment and therefore undermine the Part 4 purpose by compromising the ability of EDBs to invest.

Financeability assessment

97. The existing financeability stressors for regulated business created by IM treatment of inflation provide clear evidence of the need for financeability assessment in the Commission's decision making.

98. Oxera's report describes financeability assessment as:

"Financeability refers to the ability of regulation to ensure that regulated companies can raise and repay capital in financial markets readily and on reasonable terms. It is typically tested by ensuring that certain key financial ratios that demonstrate an ability to repay debt investors are not violated as a result of the regulations proposed in a regulatory period. The assessment of financeability is a critical component of ensuring that a price control is in the public interest, given the potentially significant costs to users (and society) if the company experiences financial distress or it lacks the ability and the incentives to make efficient investments."⁴⁰

99. It would be a perverse outcome if a regulated businesses could not, in practice, fund an efficient investment programme allowed under the regulatory framework. We consider introducing a formal financeability assessment in the IMs would defend against this. This would support the Part 4 purpose by –

- Supporting the ability of regulated business to innovate and invest and support efficiency gains. We note cashflow and financing issues could result in inefficient deferrals that would otherwise result in higher costs to consumers over time.
- Supporting stakeholder, including investor, confidence that the regime is delivering appropriate outcomes for regulated businesses and consumers.
- Supporting regulated businesses to obtain financing on efficient terms thereby reducing financing costs to consumers.

100. We do not consider introducing a financeability assessment would add any significant complexity or cost into the regime, particularly when considered against the potential costs of underinvestment. We note both Ofgem and the AER have implemented financeability assessments in their regulation (albeit using different approaches).

101. Oxera's report for the big six EDBs suggests a method for the Commission to integrate financeability assessment into its approach for determining the WACC.⁴¹ We recommend the Commission consider this approach.

Yours sincerely



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³⁹ Frontier Economics, *The Commerce Commission's treatment of inflation when setting EDBs' allowed revenues: Discussion of issues* (April 2021) and Frontier Economics, *Regulatory inflation and return on debt allowances* (May 2021)

⁴⁰ Oxera, *Review of the NZCC's WACC setting methodology: Prepared for Aurora, Orion, Powerco, Unison, Vector, Wellington Electricity* (November 2022), page 54

⁴¹ Ibid at 54 - 58