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Submission on rate of return issues

To the Commerce Commission

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1. Introduction

The Electricity Networks Association (**ENA**) appreciates the opportunity to make a submission to the Commerce Commission (the Commission) on the cost of capital. This submission is on behalf of ENA's members (listed in appendix A to this submission), the electricity distribution businesses (EDBs), of New Zealand.

EDBs are and will play a critical role in supporting and enabling the decarbonisation and electrification of the New Zealand economy, as the country responds to the challenges posed by climate change. It is essential that EDBs are appropriately compensated so they can deliver the long terms benefits that electrification and decarbonising the New Zealand economy will bring.

2. Executive summary

The Commission's rate of return framework is well established, and its application is generally appropriate for the purposes of part 4 of the Commerce Act. This submission highlights specific improvements to the framework to ensure it enables EDBs to support the electrification and decarbonisation of the New Zealand economy.

CEPA report

ENA supports the fundamental findings of the CEPA report. Specifically, ENA's view is that:

- the Commission should, given the compelling evidence that the risk/cost of underinvestment is higher as New Zealand progresses through its transition to a net zero carbon economy, consider an increase of the WACC percentile to the 75th. At a minimum, the 67th percentile should be maintained.
- the use of an asset beta of 0.35, gearing of 0.39 and BBB+ credit rating is appropriate.
- no adjustment should be made to the comparator sample for COVID impacts.

Other rate of return issues

The Commission has invited feedback on other cost of capital issues. There are a number of areas where the input methodologies approach to the cost of capital can be improved to deliver long-term benefits to consumers. Specifically, the ENA recommends that the Commission:

- use the comparator sample to set debt tenor. In the absence of the liquidity of a debt market for bonds of equal length to the comparator sample, the Commission should adopt a 10-year debt tenor;
- accompany the move to a 10-year debt tenor with a transition to the use of a trailing average cost of debt. The AER transition method should be used to make this transition;
- should it decide against the moving to a 10-year debt tenor and to retain the 5-year debt tenor, set the term credit spread differential (TCSD) at 0.91%;

- conduct a financeability assessment as part of its IM review and price-quality setting process which adopts the quantitative metrics used by Moody's and S&P Global Ratings against the benchmark efficient entity;
- include in its financial model an allowance for equity raising costs based on the AER approach;
- correct its calculation of the debt issuance allowance to include the time value of money;
- adopt the average of RBNZ CPI forecast and the 5-year break-even inflation derived from NZ government bonds as its forecast of inflation.

The Commission, when deciding if it should target a real or nominal return on capital and consequentially if the regulatory asset base (RAB) should be indexed, the key criteria must that it should be protecting consumers from inflation forecasting risk, maintaining NPV=0, and ensuring EDBs have sufficient financeability to allow them to achieve the Commission's targeted BBB+ credit rating.

Finally, ENA recommends that the Commission investigate the benefits of allowing EDBs to choose to use an indexed, un-indexed, or partially index (hybrid) RAB, as is the case for airports.

3. CEPA confirms 67th WACC percentile is a lower bound

The CEPA review¹, based on the Commission's empirical model developed by Oxera, quantifiably demonstrates that at minimum the 67th percentile be retained, and serious consideration be given to an increase in the WACC percentile.

ENA notes that the CEPA report doesn't take the updated Oxera modelling to its natural conclusion and quantify the percentile at which the marginal cost and benefit curves intersect.

The attached expert report from the Competition Economist Group (CEG), completed prior to the publication of the CEPA report updates the Commission/Oxera empirical model (Appendix B). Adjusting solely for the lower standard error would raise the WACC percentile that maximises consumer welfare to 69% (although the WACC uplift would effectively remain unchanged – with the higher WACC percentile offset by a narrower distribution of the WACC).

The findings of the CEG report corroborate CEPA's finding that the current percentile would be the lower bound of the estimates supported by the 2014 empirical model.

However, the world has not stood still since the Oxera model was adopted by the Commission in 2014. The two most significant influences likely to alter the intersection points of the Oxera marginal cost and marginal benefit curves are:

- higher demand growth and greater uncertainty around that demand growth in 2025 than in 2014
- the need for a transition of the EDB from a passive 'poles and wires' business to active distribution system operator (DSO).

The transition will introduce greater complexity into EDBs' operating environment however, working together within the regulatory framework, there is opportunity to set free a material amount of economic value and consumer benefit.

The CEPA review notes that some international regulators adopt a mid-point WACC estimate. It highlighted the UK Regulators Network recommendation that "*Regulators should only deviate from the mid-point of the CAPM cost of equity range if there are strong reasons to do so*"². Both CEPA and CEG's updates of Oxera's model empirically demonstrate that the reasons for the adoption of a WACC percentile at 67th or above are strong, especially in the face of the increased opportunity cost to consumers from underinvestment.

¹ CEPA, 2022, Review of Cost of Capital 2022/2023

² UK Regulators Network, 2022, Guidance for regulators on the methodology for setting the cost of capital – consultation

Impact of higher growth and uncertainty on the WACC percentile

It is intuitive that higher demand growth and higher uncertainty about the pace of demand growth increase the risk of (and potential for) underinvestment, and that this would be especially likely if the WACC were materially lower than investors' actual perceived costs.

If expected demand growth is very low and has very little uncertainty there will, by definition, be little or no efficient growth capital expenditure. If there is low or zero efficient growth capital expenditure, it is not possible to materially underinvest in that category of expenditure. By contrast, the larger the required investment program, the greater scope for underinvestment if the WACC is set too low. Similarly, if that growth rate is highly uncertain (i.e., a high mean and a high standard error) then this will add to the risk of underinvestment.

ENA considers that the risk of underinvestment is driven by:

- the expected rate of demand growth (driving the magnitude of the expected investment requirement)
- the uncertainty around that the timing of the expected demand growth.

Both factors are materially higher in 2025 than in 2014. It follows that the marginal benefit curve will be "shifted up" in 2025 relative to its position in 2014. Exactly how much higher is difficult to quantify and will require exercise of judgement.

Shifting the marginal benefit curves to reflect faster and more uncertain demand growth

CEG modelled the increases in the expected cost of underinvestment associated with the higher demand growth/uncertainty faced in 2025, compared to 2014. The four scenarios modelled by CEG were where the marginal benefit curve (expressed as a percentage of RAB) is:

1. 25% higher than it was in 2014 (which is less than proportional to the increase in demand growth/uncertainty since 2014);
2. 50% higher than it was in 2014 (which is less than proportional to the increase in demand growth/uncertainty since 2014);
3. 100% higher than it was in 2014 (which is approximately proportional to the increase in demand growth/uncertainty since 2014);
4. 200% higher than it was in 2014 (derived from the ratio of Oxera's 'low' and 'high' cost of underinvestment estimates (being 6.8% and 20.4% of RAB)).

The results of CEG's modelling is summarised in Table 1 below.

Table 1: Welfare maximising percentile given a 1.01% standard error and various increases in the risk/cost of underinvestment since 2014

Threshold and 2014 starting point cost	Increase in cost/risk	Optimal percentile	2014 uplift (bp)**	2025 uplift (bp)**	Difference (bp)
Standard error of WACC = 1.06% (2014 decision)					
0.5% and 4.0% of RAB	0%	67%	0.53	NA	NA
Standard error of WACC = 1.01% (2016 IM)					
0.5% and 4.0% of RAB	0%	68%	0.53	0.56	0.03
0.5% and 4.0% of RAB	25%	75%	0.53	0.78	0.25
0.5% and 4.0% of RAB	50%	79%	0.53	0.92	0.40
0.5% and 4.0% of RAB	100%	85%	0.53	1.09	0.56
0.5% and 4.0% of RAB	200%	90%	0.53	1.35	0.83
Standard error of WACC = 1.06% (2014 decision)					
1.0% and 6.7% of RAB	0%	67%	0.53	NA	NA
Standard error of WACC = 1.01% (2016 IM)					
1.0% and 6.7% of RAB	0%	66%	0.53	0.42	-0.11
1.0% and 6.7% of RAB	25%	72%	0.53	0.59	0.06
1.0% and 6.7% of RAB	50%	75%	0.53	0.71	0.19
1.0% and 6.7% of RAB	100%	80%	0.53	0.85	0.32
1.0% and 6.7% of RAB	200%	86%	0.53	1.09	0.56
Standard error of WACC = 1.01% (2016 IM)					
Midpoint scenario*	0%	69%	0.53	0.50	-0.03
Midpoint scenario*	25%	75%	0.53	0.68	0.15
Midpoint scenario*	50%	79%	0.53	0.81	0.29
Midpoint scenario*	100%	84%	0.53	1.00	0.48
Midpoint scenario*	200%	89%	0.53	1.24	0.71

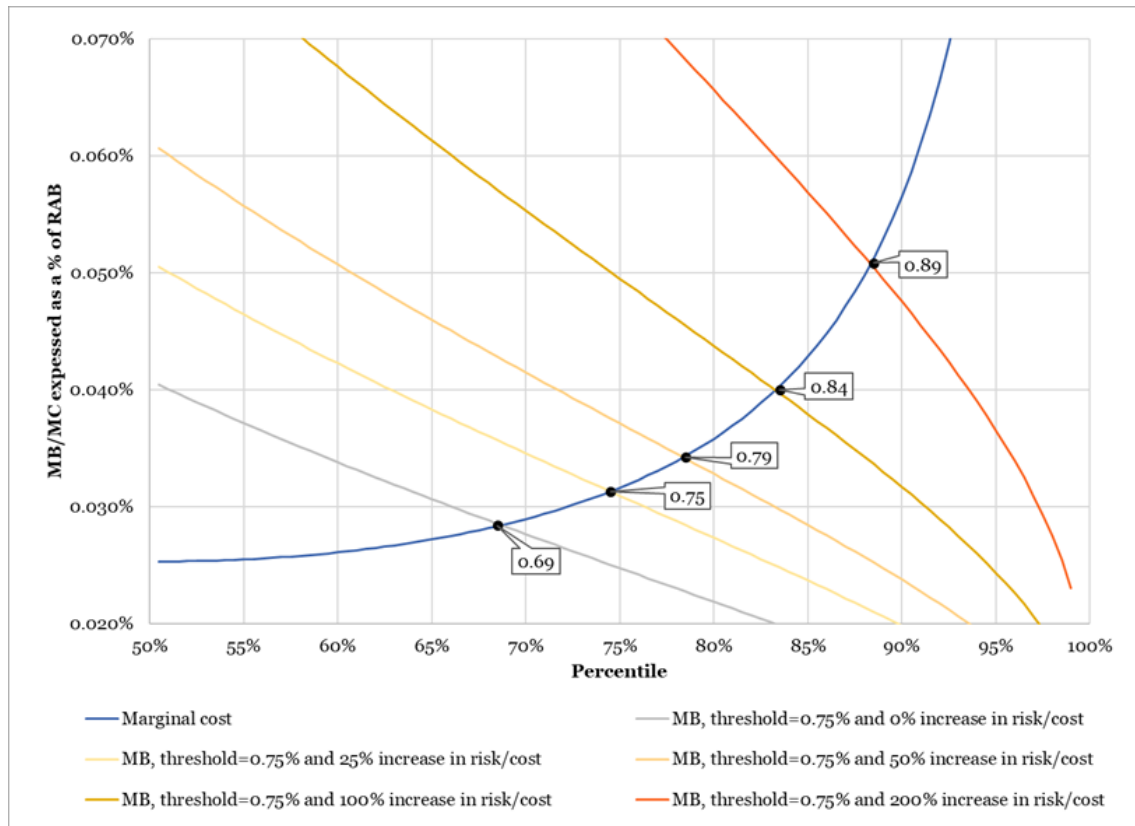
Source: CEG analysis. *The midpoint scenario applies a 0.75% threshold for triggering underinvestment (being the midpoint of 1.0% and 0.5%), and a 5.35% of RAB cost of underinvestment when it occurs (being the midpoint of the “2014 starting point” estimates of 6.7% and 4.0% derived in section 2). ** 2014 WACC uplift is based on 1.2% standard error and 67% percentile. 2025 uplift is based on 2016 IM standard error of 1.01% and varying percentiles.

Focussing on the midpoint scenarios, updating the standard error (from 1.06% to 1.01%) but leaving the marginal benefit assessment unchanged, results in a slightly higher estimated WACC percentile of 69% and a slightly lower WACC uplift (50bp) relative to 2014.

The average estimated WACC percentile rises to 75% (79%), if we assume that the risk/cost of underinvestment is 25% (50%) higher (as a percentage of RAB) in 2025 than was the case in 2014. This results in a relatively small 15bp (29bp) higher WACC uplift than in 2014. Similarly, if we assume that the risk/cost of underinvestment is 100%/200% higher in 2025 than in 2014 then the average percentile increases to 84%/89% and the WACC uplift increases by 46/68bp.

The results of this midpoint modelling are illustrated in Figure 1.

Figure 1: Midpoint marginal benefit curves intersections with marginal cost curve using a Standard Error of 1.01%



Source: CEG analysis

The impact of the evolving role of EDBs

Another critical difference between 2014 and 2025 is the changing role of EDBs driven by the integration of a greater share of intermittent distributed energy resources (DER). This transition, where well-handled by EDBs, regulators and other stakeholders (including the government), has the potential to unlock enormous long-term benefits for consumers. However, at the heart of this process are EDBs evolving from passive 'poles and wires' businesses into a DSO role.

Well-handled, this transition can be expected to result in both:

- a significant shift to electrification from fossil fuelled energy sources
- lower average costs per unit of energy consumed by households as consumers benefit from.
 - a) lower cost electricity for existing uses and appliances
 - b) replacing expensive to run fossil fuel appliances with their electric equivalents such as electric cars and electric heating/cooking.

Putting a dollar value on efficient DSO and flexibility services

Based on the best international evidence, CEG estimated the value of taking efficient actions to implement a DSO-type capability will be to reduce supply chain (grid plus generation) costs by 12% to 19%. As summarised in CEG's report (Appendix B), reasonable lower bound estimates of supply chain

savings from the state-of-the-art US Department of Energy multidisciplinary study³ are that the efficient operation of flexibility platforms delivers savings of at least:

- 4% to 8% for distribution hardware expenditure
- 10% for transmission expenditure
- 22% for generation expenditure.

These are the sources of benefit that give rise to the 12% lower bound estimate of total supply chain savings. The higher bound estimate of 19% is associated with deeper penetration of intermittent renewable generation (solar and wind) and, therefore, greater benefits from flexibility.

The benefits to customers of falling costs of renewable technology and switching from expensive fossil fuels to cheaper electricity are in addition to the supply chain savings. Including these savings, the whole of supply chain benefits to customers is likely more than 20% per annum of the current value of the electricity supply chain.

The conclusion of the evidence surveyed by CEG is that, even in the moderate renewables scenarios, average electricity retail bills for customers would be 12% to 14% per annum lower under the DSO model than the business-as-usual model. Under the scenarios with high penetration of renewables, the net benefits to final customers would be even larger (around 18% to 19% lower retail bills). There is a large number of other important findings, including distributional impacts associated with flexibility markets, also summarised in Appendix B.

The evidence provided by the US studies demonstrates that the marginal benefits quantified by Oxera and updated by CEPA are likely to materially understate the long-term benefits to consumers. This is further evidence that the use of the 67th percentile, while appropriate, does not maximise the benefit to consumers. The Commission should therefore give serious consideration to raising the percentile to the 75th to reflect the increased cost/risk of under investment.

Regulatory precedent from the United Kingdom

CEG's review also highlighted that regulators are beginning to take the evolving role of EDBs into account in their regulatory decision making. Ofgem's DSO strategy has developed over the last seven years through consultation and draft business plan guidance and is now documented in its RII0-ED2 draft decision, where Ofgem states:⁴

"A key objective of RII0-ED2 is to support the delivery of net zero at the lowest cost to the consumer; and the efficient operation of the energy system at all voltages is essential if this vision is to be realised. Changes are required to the operation of electricity distribution networks to maximise the value of decentralised, local markets for flexibility services and to enhance the visibility of network data. DSO is the set of

³ Pacific northwest national laboratory operated by Battelle for the United States Department of Energy, 2022, The Distribution System Operator with Transactive (DSO+T) Study

⁴ Ofgem, Consultation - RII0-ED2 Draft Determinations – Overview Document, p. 61.

activities that are needed to support this transition to a smarter, more flexible, and digitally enabled local energy system. (Emphasis added.)”

UK EDBs (referred to as DNOs) proposed material expenditures on DSO activities. For example, both Scottish and Southern Electricity Networks and UK Power Networks have proposed spending roughly £150m (NZD\$283 million) each over the regulatory period on DSO activities. Ofgem’s June 2022 draft decision states that:⁵

In total, the proposed DSO spend across all companies in RIIO-ED2 was ~£890m, almost four times the forecast spend in RIIO-ED1.

Ofgem’s draft decision also states:⁶

“We propose to accept the majority of the DNOs’ DSO strategy proposals without amendment, with the exception of investments where we have found weak justification in the associated Engineering Justification Paper (EJP).”

The availability of LV network data is a key enabler for DNOs delivering against their and the regulators’ expectations. Ofgem states.⁷

“Access to more granular demand and voltage data will improve understanding of existing capacity on individual LV circuits, which will allow DNOs to produce enhanced forecasts. Better data and forecasting will also support DNOs in tendering for flexibility services on LV constraints.”

Prioritising EDBs developing plans for these capabilities, and being compensated for doing so, is an example of a “no regrets” policy that the Commission can promote. Ofgem’s stated goal is for UK EDBs to achieve full network visibility by the end of RIIO-ED2, and Ofgem is proposing to include an outturn performance metric on network visibility (customer coverage in a new DSO incentive framework).

Even so, Ofgem is concerned that this timeframe may inappropriately delay the development of flexibility markets and, to this end, is setting out a re-opener provision within the regulatory period:⁸

“We also propose to introduce a Digitalisation re-opener to allow DNOs to provide the tools and services required for smart optimisation of the distribution networks during the price control period.”

The regulatory precedent established by Ofgem provides yet more evidence that the marginal cost of under-investment has increased since Oxera’s original 2014 modelling, and that any move to reduce the percentile would be against the long-term benefits to consumers.

Based on the analysis of CEPA, CEG and the impact of the evolving role of EDBs, ENA recommends the Commission consider an increase of the WACC percentile to the 75th percentile to reflect the

⁵ Ofgem, Consultation - RIIO-ED2 Draft Determinations – Core Methodology Document, p. 82.

⁶ Ibid.

⁷ Ofgem, RIIO-ED2 Draft Determinations – Overview Document, p.56.

⁸ Ibid, p.57.

increased risk/cost associated with underinvestment as New Zealand decarbonises . At a minimum maintain, the 67th percentile should be maintained.

4. Comparator sample selection for asset beta and leverage

The Commission's covering letter has sought views of stakeholders on CEPA's findings on the comparator sample used to update the estimate of asset beta and leverage. **ENA supports the Commission's continued use of the compactor sample as the basis for establishing asset beta and leverage.**

ENA also supports CEPA's use of both gas and electricity businesses in the sample for energy businesses and the exclusion from the sample of de-listed companies.

The ENA does not support any COVID adjustments to the electricity and gas sample as the impact of COVID-19 on the utility sector was not material.

CEPA proposed two firms be excluded from the sample, on the basis of the proportion of their revenue generated from regulated activities. ENA does not support the removal of these firms from the sample but notes that their exclusion doesn't alter either the sample asset beta or leverage.

ENA notes that CEPA recommends the Commission has regard to an upward trend in asset betas.

The ENA supports the use of the asset beta of 0.35, leverage of 0.39 and BBB+ credit rating based on the comparator sample.

5. Use of comparator sample to set debt tenor

Internally consistent debt tenor

The Commission currently sets a cost of debt based on the assumption that the EDB maintains a staggered portfolio of 5-year debt. Large EDBs that issue longer tenor debt receive compensation of the higher debt risk premium (DRP) on that debt via the TCSD (discussed below).

However, as discussed above, the Commission sets the asset beta and leverage for all EDBs based on benchmarking against businesses that universally have a longer average tenor of debt. In fact, in the Commission's asset beta sample, the value-weighted average tenor of all bond issues is over 20 years.

The difference between the actual practice of the firms in the asset beta sample (20 years) and the Commission's assumption (5 years) is material. In this context, it is critical to understand why firms choose to issue longer-dated debt even though this is typically associated with a higher cost of debt and, in particular, a higher DRP.

In its report on non-percentile issues (Appendix C), CEG outlines the reason why the equity owners of a firm would choose to issue higher-cost, long-term debt, rather than lower-cost, short-term debt. This must be because doing so reduces the cost of equity. That is, any higher interest costs must be associated with an at least offsetting lower cost of equity – otherwise, it would be irrational to incur the higher costs associated with issuing long-term debt.

The capital asset pricing model (CAPM) used by the Commission to estimate the cost of equity, must manifest through a lower beta. That is, a firm-specific decision to issue longer-term debt can only reduce the cost of equity if it reduces the equity beta for any given gearing level (given that the market risk premium and risk-free rate are market-wide parameters).

This relationship between debt beta and equity beta is well understood and accepted by the Commission. The Commission explains why the existence of positive debt betas means internal consistency requires it to use the same benchmark gearing as the sample average gearing from the asset beta sample of firms. Otherwise, using a debt beta of zero and a value for benchmark gearing above the sample average would tend to overestimate the equity beta and create “the leverage anomaly” whereby WACC increases with gearing when the Modigliani Miller Theorem⁹ argues that WACC should be independent of gearing (within reasonable ranges).

To this end, the Commission has stated:¹⁰

“We continue to consider that using the average leverage of the asset beta comparator samples is the best way of dealing with the anomaly. As we have estimated a notional leverage in line with the companies in our asset beta comparator samples, the resulting

⁹ Modigliani, F.; Miller, M. (1958). "The Cost of Capital, Corporation Finance and the Theory of Investment". American Economic Review. 48 (3): 261–297.

¹⁰ Commerce Commission, Input methodologies review decisions, Topic paper 4: Cost of capital issues, December 2016, p. 144.

WACC will be the same for those services regardless of the value assumed for the debt beta.”

CEG found that the same principle of internal consistency applies in the context where the Commission uses the asset beta for firms with long-term debt and applies it to a benchmark where it assumes short-term debt is being used. Other things equal, this will create precisely the same sort of bias that the Commission is concerned about with the leverage anomaly.

CEG notes that the ‘leverage anomaly’ is a direct corollary of the ‘tenor anomaly’. Choosing a different leverage to the sample average should not affect the WACC but, without accounting for debt beta, it does. Similarly, choosing a different tenor to the sample average should not affect the WACC but, without accounting for debt beta, it does. The Commission has correctly addressed the leverage anomaly, but the same logic means it should also address the tenor anomaly.

Table 2: Leverage anomaly vs tenor anomaly

	Leverage anomaly	Tenor anomaly
Problem	The sample average equity beta reflects the sample average leverage and its effect on the (unknown) sample average debt beta. Debt beta is important. Therefore, setting the benchmark gearing different to the sample average gearing would require an accurate estimate of the value of the debt beta (and how it changes with leverage), but this is not available.	The sample average equity beta reflects the sample average debt tenor and its effect on the (unknown) sample average debt beta. Therefore, setting the benchmark debt tenor different to the sample average debt tenor would require an accurate estimate of the value of the debt beta (and how it changes with debt tenor) but this is not available.
Solution	Set the benchmark leverage equal to the sample average leverage to avoid any adjustments that require an estimate of debt beta.	Set the benchmark debt tenor having regard to the sample average debt tenor to avoid any adjustments that require an estimate of debt beta.

Source: CEG analysis

The main difference between these two problem/solution sets is that adopting the sample average gearing for New Zealand is not viable. The market for very long-dated New Zealand corporate debt is not sufficiently large for even actual or hypothetical large listed New Zealand EDBs to issue an average bond tenor of 20+ years.

Vector is the only New Zealand business in the Commission’s asset beta sample and it has the smallest average tenor (8.7 years) reported in Figure 2.

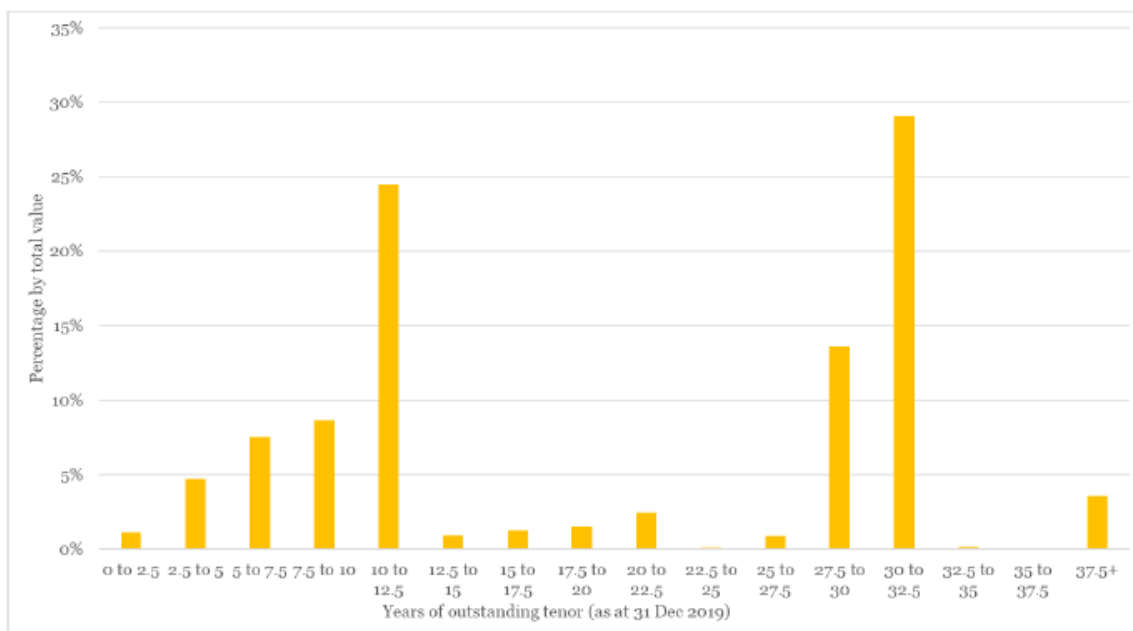
Figure 2: Average debt tenor of CEPA sample



Source: Bloomberg and CEG analysis

The figure below presents the data as a histogram over all maturity profiles (i.e., combine all debts for all firms in the sample before reporting the distribution of those debts). There are two poles of common debt issuance maturity – one at 10 years and one at 30 years. The 30-year maturity is not a realistic option for even a hypothetical large listed New Zealand EDB. However, maintaining a 10-year average debt tenor is a realistic option for a hypothetical large listed New Zealand EDB.

Figure 3: Histogram of all debts



Source: Bloomberg and CEG analysis

This would be consistent with the practice of regulators internationally. In the US and the UK, regulators set the cost of debt with respect to the observed yields on 10+ year maturity debts. In Australia, being the most similar to New Zealand in terms of access to debt funding, the AER has estimated that Australian EDBs have an average debt tenor of between 8 and 11 years and concludes:¹¹

“Our decision is to maintain the benchmark return on debt term at 10 years. This aligns with the debt financing practices of regulated businesses to issue long-term debt. Our analysis of industry debt data also does not show clear evidence that the current benchmark of 10 years is no longer an appropriate benchmark term, or that there is a materially better alternative.”

ENA recommends the Commission use the comparator sample to set debt tenor. In the absence of the liquidity of a debt market for bonds of equal length to the comparator sample, the Commission should adopt a 10-year debt tenor.

Implementation of a 10-year tenor

If a 10-year tenor assumption was adopted, the Commission would then have two options for the implementation of the 10-year tenor:

1. Continue to assume that EDBs engage in an underlying swap strategy to reset the base rate of their debt portfolio to a 5-year rate at the beginning of each DPP. In this case, it would need to:
 - extend the timeframe for observations to 10 years from 5 years;
 - re-estimate the DRP at 10 years rather than 5 years;
 - reconsider its assumed swap strategy to take into account that EDBs would need to now use a 10-year pay fixed/receive floating swap to convert a 10-year debt issue into a floating rate instrument.
2. Adopt a trailing average approach to the cost of debt, as is the practice in Australia and internationally.

ENA recommends that the Commission adopt the second of these options and implement a trailing average approach which has the following beneficial attributes:

- it is hedgeable/implementable
- it has low transaction costs for the business
- the potential cost of estimation error is low
- it gives rise to relatively low price volatility and does not result in higher prices when customer budgets are under stress
- is consistent with standard business practice.

¹¹ AER, Draft Rate of Return Instrument Explanatory Statement, June 2022, p. 194.

In either case, it would be reasonable for the Commission to consider and consult on imposing a transition arrangement. The AER's transition methodology adopted for its move to the use of a trailing average cost of debt in 2013 is appropriate and should be adopted in New Zealand.

ENA recommends the Commission move a 10-year debt tenor should be accompanied by a transition to the use of a trailing average cost of debt. The AER transition method should be used to make this transition.

6. Term credit spread differential

The TCSD refers to the increase in Debt Risk Premium (DRP) as the tenor of the bond increases. This parameter is used by the Commission to capture the additional cost of network operators of holding bonds with tenor greater than 5 years. If the Commission adopts the ENA recommendation on debt tenor, this removes the issue of the TCSD.

Under the current approach, the Commission makes a TCSD adjustment to the allowed revenue for EDBs that have outstanding debt issued with an original tenor greater than the 5-year regulatory period.

In the 2016 IM final decision, the Commission reported an estimate of the TCSD of 4.5-6.0 bps using its own methodology. However, it also relied on an estimate calculated by CEG of 9.5-11.0 bps. In its final decision, the Commission chose a middle value of 7.5 bps.

The differences in the CEG and Commission methods were small. The most material difference is that CEG estimated the TCSD every month of the relevant historical period and then took an average of the monthly estimates. By comparison, the Commission determined that it would break the data into six monthly blocks, rather than monthly periods.

CEG has replicated the calculation of the Commission 2016 TCSD and updated the calculation using up-to-date data (Appendix C). CEG has however been unable to replicate the Commission's final 2016 TCSD estimate.

CEG's updated TCSD estimates to 2022 (using the Commission's description of its method and an updated sample of bonds) are very similar to its estimates in 2016 and its attempted replication of the Commission method in 2016 (see Table 3 below).

Table 3: Updated TCSD estimates*

	Excel software	R Software
Jan 2013 to June 2016	0.10%	0.11%
Jan 2013 to June 2022	0.09%	0.10%
Jan 2016 to June 2022	0.09%	0.10%
Jan 2018 to June 2022	0.10%	0.11%

* The use of NSS curve fitting applies an optimisation algorithm which can affect the result.

For completeness, CEG also calculated the TCSD that would result from aggregating monthly TCSD estimates, which was the method CEG proposed in 2016 in response to the Commission's draft decision (Table 4).

Table 4: Table: Six versus one monthly TCSD estimates, R software

	6 monthly regression (Commission)	Monthly regression (CEG)	Monthly regression (removing two outlier estimates)
Average TCSD from June 2016 July to 2022 June	0.091%	0.160%	0.094%

Source: Bloomberg, CEG analysis.

ENA's view is that CEG's analysis supports the Commission's decision to adopt a six-monthly estimation period in preference to a monthly estimation period. This approach result in a TCSD of 0.091%. On request, ENA will share with the Commission CEG's detailed calculations.

ENA recommends that if the Commission continues to adopt a 5-year debt tenor, a TCSD of 0.091% be used.

7. Financeability and equity raising costs

Financeability

The enablement of the electrification and decarbonisation of the New Zealand economy will result in increased expenditure by EDBs. The funding of this expenditure will put pressure on EDBs' cash flows. The attached report from NERA highlights (Appendix D) the impact this will have on EDBs' financeability.

ENA recommends the Commission incorporate financeability tests into its regulatory regime as a cross-check to ensure the internal consistency of its credit rating assumptions with the revenue allowance for the Benchmark efficient entities.

This cross-check should adopt the quantitative metrics used by rating agencies S&P Global Ratings and Moody's and be conducted at each price quality determination and review of the IMs.

Equity Raising Costs

Equity raising costs are transaction costs incurred when EDBs fund capital investment through equity. As EDBs' capital expenditure rises to enable New Zealand's decarbonisation, it is likely that EDBs may need to raise equity. The Commission's current WACC method does not compensate EDBs for transaction costs involved in the issuance of equity.

The Australian regulatory regime has explicitly incorporated an equity-raising cost since 2009. When introduced, the AER noted:¹²

"In raising new equity capital a business may incur costs such as legal fees, brokerage fees, marketing costs and other transaction costs. These are upfront expenses, with little or no ongoing costs over the life of the equity. Whilst the size of the equity a firm will raise is typically at its inception, there may be points in the life of a firm—for example, during capital expansions—where it chooses additional external equity funding (instead of debt or internal funding) as a source of equity capital, and accordingly may incur equity raising costs."

"The AER has accepted that equity raising costs are a legitimate cost for a benchmark efficient firm only where external equity funding is the least-cost option available."

ENA agrees with AER's view that *"equity raising costs are a legitimate cost for a benchmark efficient firm"* and should be included in the Commission's framework. We recommend that the AER approach to the calculation of this allowance be adopted in the Commission's financial model.

Calculation of equity raising costs

In order to fund capital expenditure, the first option for an EDB is to fund the equity portion of RAB growth utilising retained earnings - but with increases in retained earnings constrained by the need to

¹² AER TransGrid transmission determination 2009-10 to 2013-14, Final decision, 28 April 2009

maintain a minimum rate of dividend payout to shareholders (assumed by the AER to be 63% of taxable profit).

This source of funding is assumed to be costless by the AER. However, if this source of equity raising is exhausted, the EDB has the option of either:

- seeking reinvestment of dividends from its existing equity holders using a 'dividend reinvestment program' often referred to as a DRP. The AER assumes that up to 30% of the dividend is available for reinvestment and that the cost of this option is 1% of the size of the amount reinvested (known as 'Dividend Reduction').
- seek new equity investors via what is known as a 'seasoned equity offer' (or SEO - which distinguishes equity raising for an existing listed firm from the initial public offering for a newly listed firm). The AER assumes that the cost of an SEO is 3% of the amount of equity raised.

The AER assumes that higher-cost funding is relied on only when the available lower-cost funding is exhausted.

A detailed description of the AER's approach to the estimation is set in the CEG report at Appendix C.

The AER approach can be adopted directly into the Commission's financial model. Attached to this submission (Appendix E) is a modified version of the Commission's financial model prepared by CEG that incorporates equity raising costs for each price-quality regulated EDB.

ENA recommends the Commission include in its financial model an allowance for equity raising costs based on the AER approach.

8. Amortisation of debt issuance costs

CEG has identified a potential error (Appendix B) in the Commission's collation of debt issuance cost in its final 2016 decision, which understated transaction costs by around 0.5bp (assuming a 5-year tenor and a 5% discount rate). This mathematical error should be simple to correct.

In the final Topic 4 paper the Commission states:¹³

“Amortisation of upfront costs

CEG submitted that upfront debt costs need to be amortised over time using a cost of capital to take into account the time value of money.

“We disagree with this conclusion because suppliers typically issue some debt each year to manage refinancing risk. They therefore incur some debt issuance costs each year. Assuming that firms issue a consistent amount each year with similar costs, there is no need for a present value adjustment in respect of a portfolio of debt.”

The Commission notes that:

- “a firm operating a trailing average debt 5-year tenor strategy will refinance 20% of total debt each year;*
- every year it will incur 20% of the total transaction costs associated with raising its entire debt RAB; and*
- if it simply provides an ongoing annual allowance for 20% of the total transaction costs associated with raising its entire debt RAB, then the allowance will fully cover ongoing debt issuance costs. “*

This is mathematically correct (assuming a constant value for the RAB). However, it does not follow that this means no NPV adjustment is required. If the Commission were correct, it would imply that in a competitive market: there is no need for a firm to earn a return on its investment in inventory (no holding cost of inventory).

In the regulatory context, we can think of the entire debt RAB as the inventory of debt that is being used up (maturing) and replenished (refinanced) at a rate of 20% per year. The Commission's approach to compensate only for the costs of new debt as it is incurred amounts to, in effect, refusing to compensate for the costs of prior building and holding of that debt inventory.

If the Commission speculates each year's total debt issuance compensation to the debt that has just been raised in that year (being one-fifth of the RAB), then that leaves the other four-fifths of the RAB uncompensated.

¹³ Commerce Commission, Input methodologies review decisions, Topic paper 4: Cost of capital issues, December 2016, p. 56.

That is, at any given time there is an “inventory” of old debt-raising costs that is uncompensated. This uncompensated inventory issue can be addressed by simply adding a NPV adjustment to debt issuance costs.

ENA recommends that the Commission include an NPV adjustment to its estimate of debt issuance cost.

9. Inflation and targeting a real return

Intrinsically and inseparably linked to the calculation of the WACC is how inflation is treated within the regulatory regime. The key inflation related questions for the regulatory model and its WACC calculation are:

- how should expected inflation be estimated; and
- to what extent should the model target a real versus a nominal return?

Estimating expected inflation

The Commission in its 2016 IM determined that expected inflation should be estimated from the RBNZ CPI forecast produced at the time closest to the determination window used to estimate the risk-free rate and then trend to the mid-point of the RBNZ inflation target by the end of year 5.

The Commission decided to not give weight to measures of expected inflation derived from the difference in yields between nominal and inflation-indexed New Zealand government.

Accuracy of the Commission's inflation forecast method

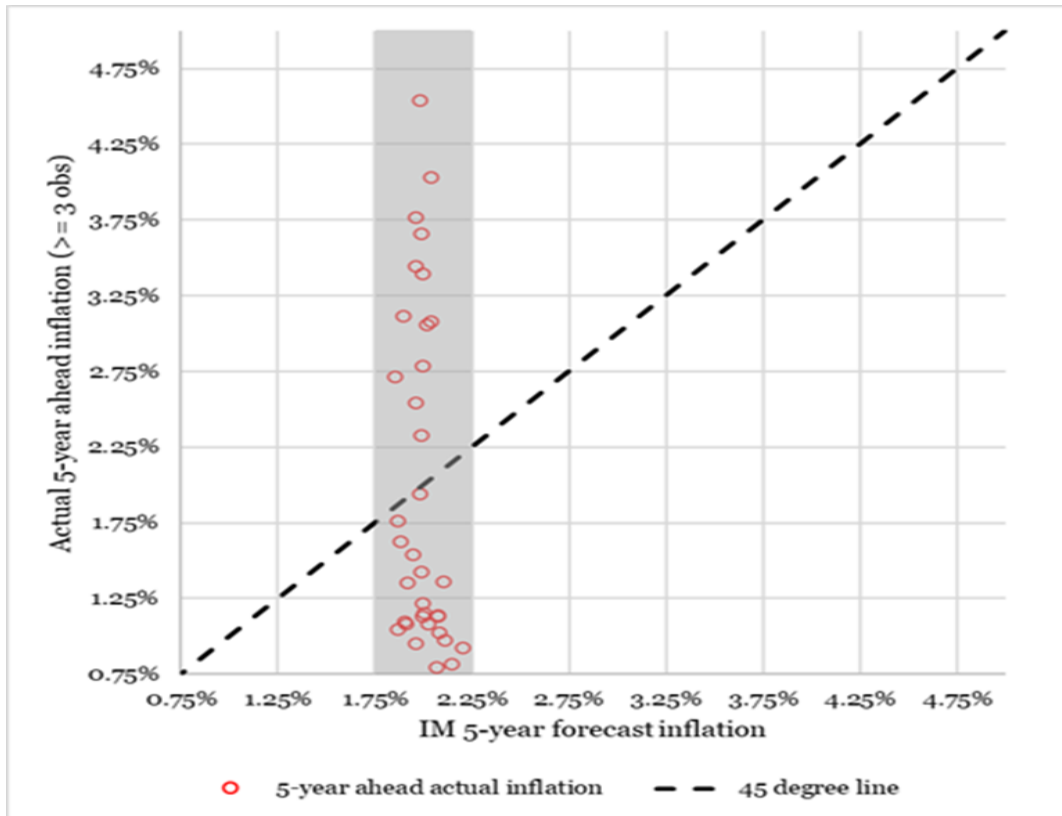
In this section, we examine evidence on the magnitude of inflation forecast error since 2016. This evidence shows larger inflation forecast errors since 2016 than pre-2016. The Commission may wish to recalibrate its assessment that the existing methodology creates only "small" inflation forecast risks.

In the 2016 IM process, the Commission expressed the view that inflation forecasting error was relatively small and would tend to "wash out" if it was unbiased. However, recently experience tends not to support such a conclusion. In summary, the Commission's five-year inflation forecasts have:

1. Either
 - a. overestimated actual inflation; or
 - b. underestimated actual inflation; but
2. almost never accurately estimated actual inflation.

Figure 4 shows the Commission's 5-year forecast inflation on the horizontal axis and actual 5-year inflation (over the same forecast period) on the vertical axis. If forecast inflation was accurate, then the red dots would be spread up and down the dotted 45-degree line.

Figure 4: The Commission’s forecast vs actual 5-year inflation since 2010



Source: Commerce Commission forecast methodology, RBNZ quarterly inflation forecasts, CEG analysis.

It can be seen that the Commission’s 5-year forecast is universally (100%) within a narrow band of 1.75% to 2.25%. By contrast, actual inflation is only twice (5.6%) within that narrow band and, instead, is spread relatively evenly from 0.75% to 4.75%.

The experience of actual inflation since 2016 is inconsistent with the view expressed by the Commission in its 2016 IM decision that inflation forecast error is likely to be small.

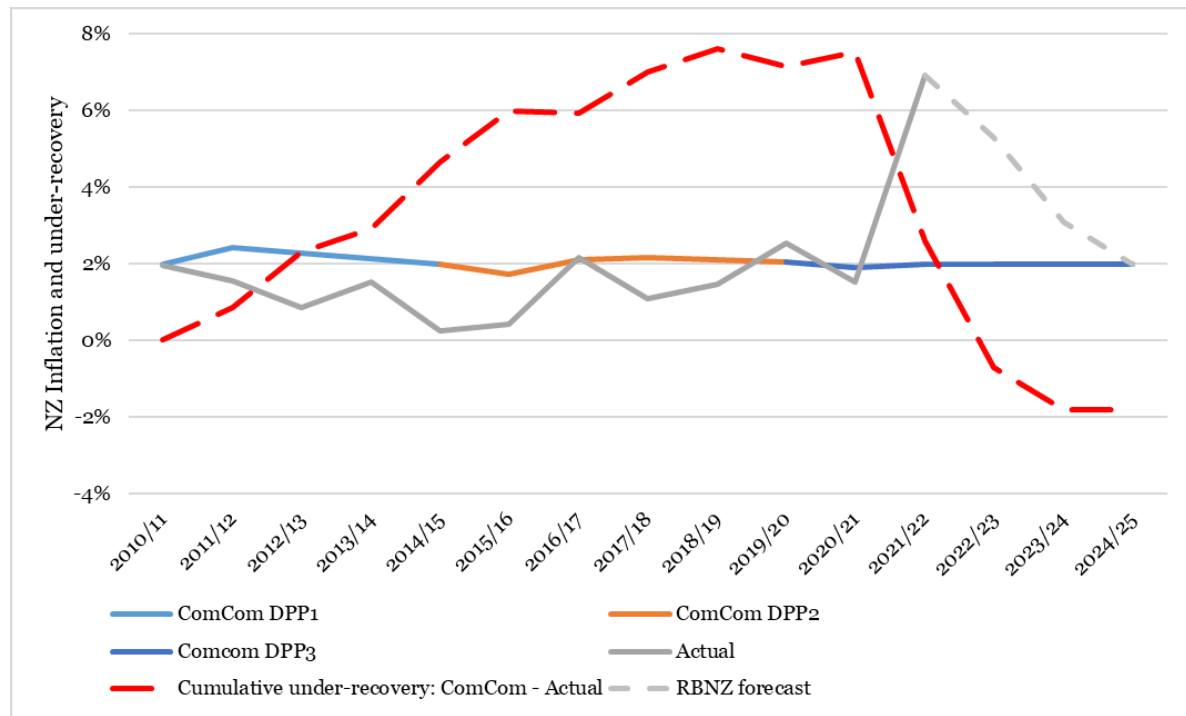
The Commission’s view is that forecast errors “will wash out over time” provided that the forecast of inflation is unbiased. The result is that when the Commission overestimates inflation, customers end up under compensating EDBs for their nominal debt costs. And when the Commission understates inflation, EDBs are over compensated. That is, when we talk about “under” and “over” compensation for costs, we are focussed on the cost of debt – which all parties agree is efficiently incurred in nominal terms.

The statement that forecast errors “wash out” in the long run can only ever be true if the period of “time” being referred to is the very long run. This is because the Commission only makes one forecast every 5 years. Thus, after 50 years there will be only 10 sets of forecasts to average. Even if the Commission’s forecast is unbiased with no autocorrelation with previous forecast errors, it will still take many decades before the law of large numbers takes effect and one can confidently talk about errors “washing out”. For many customers/investors this would not be expected to occur over their remaining life/investment horizon.

When looked at over the last 15 years from 2010 to 2025 (DPP1 to DPP3), which could be considered short run as compared to a 50 year long run horizon, there has been an approximate “wash out” (as shown in Figure 5) with:

- very large cumulative under-recovery of inflation for EDBs (over-recovery for customers) over the 10 years to 2020-21 which has been almost fully offset by
- a single year of very high over-recovery of inflation for EDBs (under-recovery for customers) in 2021-22
- current forecasts until the end of DPP3 in 2024-25 imply more material over-recovery for EDBs such that over 15 years they can expect to have substantially over-recovered actual inflation (without adjusting for discounting or changes in RAB).

Figure 5: Cumulative forecast error over DPP1 to DPP3



Source: RBNZ, Commerce Commission and CEG analysis

The above shows forecast CPI used by the Commission (colour coded by DPP) and actual inflation (grey line) extended out to 2024-25 by the current RBNZ forecasts (4.5% to June 2023, 2.64% to June 2024 and 1.93% to June 2025). The dotted red line is the cumulative sum of the difference between the Commission forecasts and actual CPI over past years.

Over the 10 years to 2020/21, the cumulative forecast error was over 7% (implying that debt costs during that period went uncompensated by over 7% of the debt portion of the RAB). This period is likely to be followed by massive overcompensation for debt costs in DPP3, which is expected to more than fully reverse the previous 10 years' forecast errors.

However, rather than providing comfort that the current regime it can be assumed to inevitably result in forecast errors “washing out”, the opposite lesson can be drawn. If DPP3 looked more like DPP2 and

DPP1 (which could easily have occurred if the forecasts are unbiased) then cumulative under-compensation would be over 10%. If DPP4 and DPP5 look like DPP3 then customers will overcompensate EDBs by more than 20% of the debt portion of the RAB.

An improved measure of forecast inflation

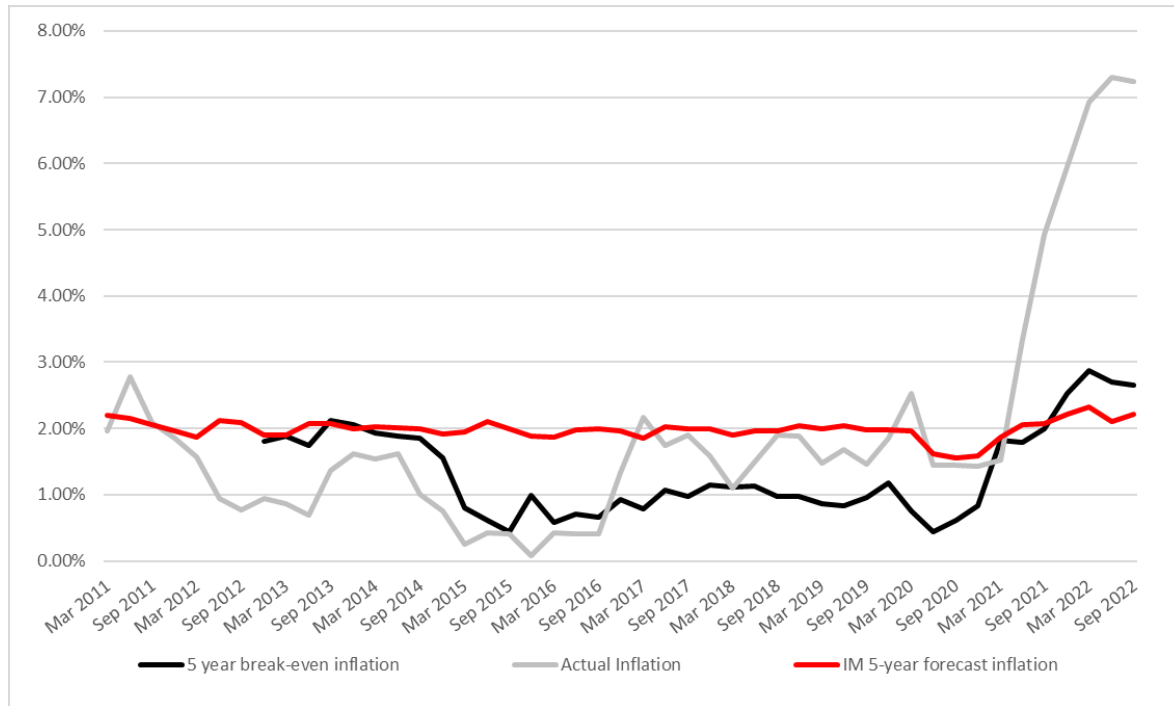
The assumption in the IMs that inflation will return to the midpoint of the RBNZ's target range over the short term is at odds with the evidence surveyed above. Since the global financial crisis, actual inflation in developed countries has been below central bank targets until the post-Covid period when it has been way above target.

Market-based estimates of expected inflation derived from the difference between the yield on nominal and inflation-indexed debt issued by the New Zealand Government provide an alternative to the Commission mechanically assuming inflation is always expected to trend to 2% over the RBNZ forecast period.

This difference is a measure of investors' inflation expectations because, if investors believed that inflation would be higher/lower than this difference, they would rationally sell/buy nominal debt and buy/sell inflation-indexed debt. The difference between nominal and CPI-indexed debt is known as the 'break even' inflation rate.

Pre Covid, 5-year break-even inflation rates were well below the mid-point of central bank target ranges globally, and New Zealand was no exception. This was a more accurate predictor of actual inflation, and was below the midpoint of central bank targets. Post Covid, 5-year break-even inflation responded more aggressively to the high inflation outbreak than the Commissions' method for forecasting 5-year inflation, and now sits above the forecast from the Commissions' method. This is illustrated in Figure 6.

Figure 6: Break-even inflation vs midpoint of RBNZ target range



Source: RBNZ b2 daily publication, CEG analysis.

This evidence suggests that some weight should be given to break-even inflation. In the 2016 IMs, the Commission argued that¹⁴:

“294.1 The shortest dated NZ government inflation-linked bond matures in 2025. Therefore any implied inflation would be an average over the period until the bond matures and would not necessarily correspond to the five-year regulatory period;”

There are currently four inflation-indexed New Zealand government bonds (maturing in 2030, 2035 and 2045). This means that in 2025, at the time of the DPP4 reset, there will be an approximately 5-year maturity bond, as will be the case at the DPP5 reset. The above argument against giving any weight to break-even inflation falls away.

The Commission has also argued that break-even inflation might be biased by other factors (such as illiquidity premium in inflation-indexed bonds and an inflation premium in nominal bonds). This may be true but there is no theoretical reason to believe that the net effect of these results in a material net expected bias (noting that the former would increase indexed yields and the latter would increase nominal yields).

While all approaches to the forecasting of inflation give rise to forecasting error, this can, and should be, minimised to the extent possible. ENA believes inflation forecasting risk can be reduced by utilising both RBNZ inflation forecasts and the break-even rate for New Zealand bonds.

¹⁴ Commerce Commission, Input methodologies review decisions, Topic paper 1: Form of control and RAB indexation for EDBs, GPBs and Transpower December 2016, p. 68.

Therefore, ENA recommends that the Commission adopt the average of RBNZ CPI forecast and the 5-year break-even inflation derived from New Zealand government bonds as the forecast of inflation.

Targeting a real vs nominal return

In the 2016 IM, the Commission determined that it should target real returns for EDBs and GPBs but nominal returns for Transpower.

The Commission's current approach for EDBs involves targeting a real cost of capital by:

- estimating the nominal required return on capital;
- deducting forecast of inflation;
- indexing RAB using actual inflation.

The current regime does not protect customers from inflation forecasting risk

As shown above, the Commission's forecasts of inflation have consistently proved to be inaccurate and given rise to substantial inflation forecast errors. This results in either EDBs being over or undercompensated based on the differential between forecast and actual inflation.

Neither consumer or regulated businesses are able to influence inflation, or the forecasts of inflation, and should therefore bear as little inflation forecasting risk as possible. Inflation forecasting risk can be eliminated in its entirety through the use of an unindexed RAB or materially reduced by adopting a hybrid approach where the debt-funded portion of the RAB is unindexed.

NPV =0 can be achieved by targeting a real or nominal return

As demonstrated by Frontier Economics in its report submitted to the Commission by Transpower, the use of an unindexed RAB, a fully indexed RAB, or partially indexed RAB (the hybrid approach) can all theoretically achieve NPV=0.

Financeability is equally important

As discussed by NERA in its report (Appendix D), financeability is a concern for EDBs facing increased expenditure to facilitate of New Zealand's transition to a net zero carbon economy. The choice to target a real or nominal return on capital can have implications for the financeability of EDBs. The Commission, when making the choice to target a real or nominal WACC, must be careful to ensure the allowable revenues calculated under either approach are sufficient to allow the benchmark efficient entity to achieve the BBB+ credit rating assumed in the WACC.

The IMs should not proscribe a single approach to indexation

The Commission's, when deciding the if it should target a real or nominal return on capital and consequentially if the regulatory asset base (RAB) should be indexed the key criteria must that it

should; protecting consumers from inflation forecasting risk, maintaining NPV=0 and ensuring EDBs have sufficient financeability to allow them to achieve the Commission's targeted BBB+ credit rating.

There are benefits for EDBs facing large investment programmes driven by decarbonisation investment, and the consequential financeability impacts being able to elect to have their RAB unindexed. The Commission's adopted the unindexed approach to Transpower RAB in 2010 for similar reasons noting in 2016 it considered *"this was appropriate in 2010 given their relatively large investment programme, since an unindexed approach would likely lead to higher revenues in the near-term that better matched their investment needs¹⁵"*.

ENA recommends that the Commission investigate the benefits of allowing EDBs to choose to use an indexed, un-indexed, or partially index (hybrid) RAB, as is currently the case for airports.

10. Contact

Thank you again for the opportunity to submit on this important topic. The ENA's contact person for this submission is Keith Hutchinson.

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Phone: (04) 555 0074.

¹⁵ Commerce Commission, Input methodologies review decisions, Topic paper 1: Form of control and RAB indexation for EDBs, GPBs and Transpower December 2016, p.70

Appendix A – ENA members

The Electricity Networks Association makes this submission with the support of its members, listed below.

Alpine Energy

Aurora Energy

Buller Electricity

Centralines

Counties Energy

Eastland Network

Electra

EA Networks

Horizon Energy

MainPower NZ

Marlborough Lines

Nelson Electricity

Network Tasman

Network Waitaki

Northpower

Orion New Zealand

Powerco

PowerNet

Scanpower

The Lines Company

Top Energy

Unison Networks

Vector

Waipa Networks

WEL Networks

Wellington Electricity Lines

Westpower

Appendix B – CEG report, Updating the 2014 WACC percentile

Appendix C – CEG report, Estimating the WACC under the IMs

Appendix D – NERA report, Financeability considerations under the DPP

Appendix E – Revised financial model incorporating equity issuance costs