



# RAB indexation



Report for Transpower | 7 July 2022



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# 1 Regulatory RAB indexation

## 1.1 Instructions for this report

Frontier Economics has been engaged by Transpower to:

1. Explain the difference between the 'nominal' approach that the Commission applies to Transpower and the 'real' approach that is applied to EDBs;
2. Summarise any relevant developments in this area that have occurred since the Commission's 2016 IMs review; and
3. Quantify the difference between the 'nominal' and 'real' approaches in the context of Transpower's RCP3.

## 1.2 Issue and Commission's current approach

### No RAB indexation for Transpower

The Commission's approach has been to apply no RAB indexation for Transpower. Under this approach, the Commission estimates the nominal required return on capital, provides that as a cash allowance, and makes no indexation of the RAB. There is no 'taking out' or 'adding back' in relation to inflation. Rather, Transpower simply receives a nominal return as a cash allowance in each year of the regulatory period.

During the 2016 IMs Review, the Commission confirmed its approach of applying no RAB indexation for Transpower. Ultimately, the Commission concluded that:

*On balance, we have decided to maintain the existing approach, whereby we do not index Transpower RAB to inflation. We have not identified any problems in relation to our approach and we are not aware of a compelling enough reason that warrants a change to the status quo.<sup>1</sup>*

During the 2016 IMs review, the Commission also noted that indexing Transpower's RAB (without concurrently shortening its asset lives) would expose Transpower to greater asset stranding risk by back-loading the recovery of Transpower's RAB at a time it faced competitive threats from emerging technologies:

*The uncertainty around capital recovery resulting from emerging technologies means that indexing Transpower's RAB is not consistent with our approach to shortening asset lives for EDBs. To be consistent we would have to allow an equivalent treatment for Transpower, but this would add complexity for a similar outcome to that achieved under no RAB indexation.<sup>2</sup>*

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<sup>1</sup> New Zealand Commerce Commission, December 2016, Input Methodologies Review Decisions: Topic Paper 1: Form of control and RAB indexation for EDBs, GBPs and Transpower, paragraph 309.

<sup>2</sup> Commerce Commission, Input methodologies review decisions, Reasons Papers, Topic paper 1: Form of control and RAB indexation for EDBs, GBPs and Transpower, December 2016, Chapter 6, p. 71.



## The Commission currently provides a real return to EDBs

The Commission's current approach to EDBs involves the following steps:

1. The Commission first estimates the nominal required return on capital;
2. The Commission then deducts its forecast of future inflation over the regulatory period;
3. The difference is then provided to the regulated business as a cash allowance; and
4. The RAB is indexed to reflect observed inflation over the regulatory period.

Under this approach, the Commission:

- 'takes out' its forecast of inflation; and
- 'adds back' actual inflation.

If the Commission's inflation forecasts are unbiased, what the Commission 'takes out' will equal what it 'puts back,' on average over the long run.

The Commission adopts this approach to provide investors with a real allowed return – investors will receive a real return in terms of the cash allowance plus compensation for observed outturn inflation.

Symmetrically, consumers will pay a real return plus compensation for observed inflation.

The Commission has stated that this approach protects regulated firms and consumers from inflation risk.

*[T]he central purpose of RAB indexation is to maintain the regulatory value of the RAB in real terms over time, which provides an expectation of real FCM and delivers an ex-post real return (things other than inflation being equal). In doing so, it protects consumers and suppliers from inflation risk. The frontloading of cashflows achieved by removing RAB indexation could also be achieved through alternative depreciation profiles. However, removing RAB indexation would expose consumers and suppliers to inflation risk.<sup>3</sup>*

The assumption underlying the Commission's view about inflation risk is that investors require a real rate of return – they seek to earn a real rate, plus whatever inflation turns out to be, and the Commission's approach to RAB indexation delivers this.

It is possible that equity investors do target a real rate of return – a target of X% over observed inflation. But it is also likely that some equity investors target a nominal return – for example, a target internal rate of return (IRR) on their investment.

However, it is very clear that debt investors require a nominal return. We note below that New Zealand infrastructure firms overwhelmingly issue nominal debt – where the full nominal interest bill must be paid every year. These debt instruments do not require payment of a real return plus actual inflation, so a regulatory regime that provides such a payment will not match what investors actually require.

Symmetrically, it is unclear that consumers would prefer to pay a real return plus observed inflation. Such a regime would result in electricity and gas prices rising just when other costs are

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<sup>3</sup> New Zealand Commerce Commission, May 2022, Part 4 Input Methodologies Review 2023: Process and issues paper, paragraph 5.177.



also rising. To the extent that incomes and allowances lag (or fall short of) general CPI increases, 'protecting consumers from inflation risk' may do them a disservice.

### The Commission proposes to maintain RAB indexation for gas pipelines in its DPP draft decision

In its February 2022 DPP draft decision for GPBs,<sup>4</sup> the Commission has proposed to maintain RAB indexation for GPBs at this stage and to revisit that question as part of the IMs review. An alternative, that performs essentially the same economic function, is to reduce asset lives to increase depreciation allowances.

The Commission's draft decision for GPBs proposes to accelerate depreciation allowances by shortening asset lives – in line with evidence that the economic lives of gas pipelines may be shorter than originally forecast as the economy decarbonises. Asset lives would be adjusted in future decisions in line with updated evidence at that time, including the IMs review.

Whereas a nominal rate of return allowance and a shortening of asset lives both have the effect of moving cash flows forward in an NPV-neutral way, the cash flow profiles will differ under the two approaches. Shortening asset lives produces a cash flow profile that ends with the (shorter) assumed economic life of the asset. Under the nominal approach, regulatory allowances continue until the end of the original economic life of the asset. This appears to be why the Commission has adopted the approach of shortening asset lives for the GPBs – to reflect their shorter economic lives.

### A simple numerical example of different approaches

To illustrate the effect of RAB indexation, we present a simple numerical example below. In that example, we consider three potential regulatory frameworks:

- Full RAB indexation (the 'real' approach that currently applies to EDBs) – indexation is applied to the entire RAB;
- No RAB indexation (the 'nominal' approach that currently applies to Transpower) – no indexation is applied to any part of the RAB; and
- A hybrid approach, whereby RAB indexation is applied to the equity component of the RAB, but not to the debt component.

Consider the following figures for the purpose of this example:

- $RAB = 100$ ;
- $E = 40, r_e = 6\%$ , Annual required return on equity is  $\$2.40 = 6\% \times 40$ ;
- $D = 60, r_d = 4\%$ , Annual interest bill is  $\$2.40 = 4\% \times 60$ ;
- $WACC = 4.8\% = 0.4 \times 6\% + 0.6 \times 4\%$ ;
- *Forecast inflation = Actual inflation = 2.5%*.

The operation of the three different regulatory frameworks is summarised in **Table 1** below.

<sup>4</sup> New Zealand Commerce Commission, February 2022, Default price-quality paths for gas pipeline businesses from 1 October 2022.



**Table 1:** Illustration of different regulatory frameworks

	Full RAB indexation (real)		No RAB indexation (nominal)		Hybrid	
Total return on capital	<b>4.80</b>	4.8% × 100	<b>4.80</b>	4.8% × 100	<b>4.80</b>	4.8% × 100
Less inflation	<b>2.50</b>	2.5% × 100			<b>1.00</b>	2.5% × 40
Allowed cash return	<b>2.30</b>	4.80 - 2.50	<b>4.80</b>		<b>3.80</b>	4.80 - 1.00
Less interest payment	<b>2.40</b>	4.0% × 60	<b>2.40</b>	4.0% × 60	<b>2.40</b>	4.0% × 60
Cash flow to equity	<b>-0.10</b>	2.30 - 2.40	<b>2.40</b>	4.80 - 2.40	<b>1.40</b>	3.80 - 2.40
Plus equity benefit from RAB indexation	<b>2.50</b>	2.5% × 100			<b>1.00</b>	2.5% × 40
Total return to equity	<b>2.40</b>	6.0% × 40	<b>2.40</b>	6.0% × 40	<b>2.40</b>	6.0% × 40

Source: Frontier Economics calculations.

**Table 1** shows that the key difference between the three approaches is the way in which the allowed return on equity is provided – in particular the split between the cash allowance during the regulatory period and future cash flows arising from RAB indexation.

In the full indexation case in the example above, the cash allowance is negative, requiring a cash injection from the equity holders who are ultimately made whole via RAB indexation.

By contrast, in the no indexation case, equity holders receive their full required return as a cash allowance during the regulatory period and receive no benefit from RAB indexation.

### 1.3 Developments since the 2016 IMs Review

#### Summary of developments

In this section, we summarise a number of developments since the 2016 IMs Review. These developments tend to strengthen the case for maintenance of the non-indexation approach that is currently applied to Transpower. In summary, the relevant developments are:

- Acknowledgement of the ‘debt compensation issue.’

The Commission has acknowledged a ‘debt compensation issue’ that applies to EDBs that are subject to full RAB indexation. The core of this issue is that EDBs tend to issue nominal debt that requires nominal interest payments. But the current regulatory framework provides a cash allowance for only the real component of those interest payments, resulting in a cash flow shortfall.

By contrast, Transpower receives a cash flow allowance that is sufficient to pay the full nominal interest bill each year – because there is no deduction in relation to forecast inflation. Thus, simply maintaining the current approach means that the debt compensation issue has already been resolved for Transpower.

- Recent Australian transmission project examples.



In Australia, there have been some recent examples where the regulatory framework (with full RAB indexation) has impacted the commercial viability of major new transmission projects. Under the Australian framework, full RAB indexation has resulted in the speed of cash allowances being so slow that investment in major new projects would cause a significant credit rating downgrade.

This is not such an issue for Transpower under the current nominal framework, because the allowed cash flows are not reduced by forecast inflation.

- Increased need for major transmission projects.

As governments seek to decarbonise their economies, there is a need for significant investment in new transmission assets. Any move away from Transpower's current nominal framework towards RAB indexation would reduce the speed of cash flow allowances raising the prospect of the cash flow timing issues identified above.

Indeed, the need to support significant new transmission investment was one of the key reasons for the Commission maintaining the nominal framework for Transpower in the 2016 IMs review:

*Our lack of indexation of Transpower's RAB means that capital recovery is front-loaded relative to an indexed approach (as applied to the EDBs). We considered this was appropriate in 2010 given their relatively large investment programme, since an un-indexed approach would likely lead to higher revenues in the near-term that better matched their investment needs. We signalled that we would re-consider the arrangement in the future once their major investment tranche came to an end. This has now happened.<sup>5</sup>*

The need for major transmission investment, to support decarbonisation objectives, has intensified since the 2016 IMs review.

- Recent high inflation outcomes.

In recent months, observed inflation has been relative to the Commission's forecasts that were locked into regulatory decisions even two or three years ago. In such market conditions, the result is that what is 'added back' via RAB indexation will be materially higher than what was 'taken out' via forecast inflation. Thus, EDBs are currently benefitting from actual inflation exceeding the Commission's forecast.

We note that a submission in favour of retaining the current approach is likely to be viewed as more credible and principled when made in the current circumstances.

In the remainder of this section, we expand upon each of these recent developments.

### The Commission's recognition of the 'debt compensation issue'

The current Issues Paper notes the Commission's recognition of what it calls the 'debt compensation issue.' This issue was identified during the 2020 Regulatory Inflation Review conducted by the Australian Energy Regulator and the Commission notes a recent submission on this issue from Vector.<sup>6</sup>

<sup>5</sup> New Zealand Commerce Commission, December 2016, Input Methodologies Review Decisions: Topic Paper 1: Form of control and RAB indexation for EDBs, GBPs and Transpower, paragraph 307.

<sup>6</sup> New Zealand Commerce Commission, May 2022, Part 4 Input Methodologies Review 2023: Process and issues paper, paragraph 5.195.





The essence of this issue is that regulated businesses in New Zealand (like similar businesses in Australia) tend to issue fixed rate nominal debt. Indeed, all infrastructure businesses in Australia and New Zealand tend to issue this type of debt, given the scarcity and cost of alternative forms of debt such as inflation-indexed bonds.

Nominal debt requires the payment of the full nominal interest payment each year, whereas the regulatory framework (with RAB indexation) provides a cash allowance for only the real part of each interest payment. Any shortfall must be met by equity holders. Although the regulatory framework (with RAB indexation) is consistent with NPV=0 (so long as the regulator's inflation forecast is unbiased), it can produce short-term cash flow difficulties.

The cash flow difficulties that can arise are illustrated in the 'Full RAB indexation' column of the table above. In that example, the cash allowance for the return on capital is insufficient to pay the nominal interest bill. This requires a cash injection from the equity holders, and would be consistent with the business recording an accounting loss – because allowed revenues are lower than interest expense. This timing issue can present difficulties for a firm, even though the equity holders are ultimately made whole via RAB indexation.

The Commission notes that Vector has identified this problem<sup>7</sup> and that First Gas has proposed that RAB indexation should be removed for GPBs.<sup>8</sup>

The Commission also correctly notes that there are two separate issues to consider:

- There is a cash flow timing issue that arises even when its inflation forecasts are unbiased. (Indeed, the above table documents the cash flow timing issue even when the inflation forecast is perfectly accurate); and
- There is an additional problem if the Commission's inflation forecast is systematically too high or low – because that would create a wedge, on average, between what is 'taken out' and what is 'added back.'

*Firstly, although we provide a real WACC return to the firm, firms tend to issue debt in fixed nominal terms. Therefore, even though the firm as a whole is protected from inflation risk, equity holders - when considered in isolation - may not receive a real return as they may be exposed to the inflation risk that exists due to their debt obligation being in nominal terms. We previously acknowledged this and considered that, over the long-term, this risk is small and will wash out over time; and that suppliers could potentially mitigate this to some extent by issuing inflation-indexed (or at least floating) debt.*

*However, we note that stakeholders have since pointed out that this risk has been material for EDBs, and that there is no guarantee that the risk will wash out over time. Furthermore, they pointed out that inflation can remain persistently low or high for prolonged periods of time, which would expose 'generations' of consumers to pay less than, or more than, efficient prices.*

*Secondly, to provide an ex-post real return, we require consistency between the forecast inflation used to determine the forecast revaluation (subtracted from the revenue path) and*

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<sup>7</sup> New Zealand Commerce Commission, May 2022, Part 4 Input Methodologies Review 2023: Process and issues paper, paragraph 5.195.

<sup>8</sup> New Zealand Commerce Commission, May 2022, Part 4 Input Methodologies Review 2023: Process and issues paper, paragraph 5.200.



*the implicit inflation forecast inherent in the WACC. We cannot observe the inflation forecast inherent in the WACC, so it is difficult to ensure consistency.<sup>9</sup>*

### Australian transmission project examples

The cash flow timing issue is currently receiving some attention in the Australian regulatory setting. Australian transmission networks actually receive slower cash allowances relative to EDBs. Whereas Australian EDBs do receive a return of capital allowance (depreciation) during construction, Australian transmission networks receive no depreciation allowances until new projects are completed and commissioned into service. Thus, not only is the allowed return on capital reduced by deducting expected inflation, but there is no allowed return of capital until the new project is commissioned.<sup>10</sup>

This situation led Transgrid to propose a rule change to the Australian Energy Markets Commission (AEMC) in relation to its Project EnergyConnect (PEC). PEC is a major new transmission project linking NSW to Northern Victoria and South Australia. Modelling indicated that it would result in material retail bill savings for consumers in NSW and SA, and it had been approved as an actionable project under the Integrated System Plan. However, due to the delay in receiving cash allowances under the regulatory framework, Transgrid identified that proceeding with the project would result in a downgrade of its credit rating below investment grade status. On this basis, it proposed a rule change to allow it to accelerate depreciation allowances in an NPV neutral way.

The AEMC denied this request and Transgrid is on the record stating that the project would not go ahead due to the impact on its credit rating. A government agency, the Clean Energy Finance Corporation, then provided \$295 million of subsidised mezzanine financing to enable the project to proceed under the existing regulatory rules.

The AEMC has since commenced a consultation process on 'financeability issues' – not conceding that there was an issue in relation to PEC, but recognising that cash flow timing issues might arise in relation to future major transmission projects. As part of this process, the AEMC has proposed that the Australian Energy Regulator should be able to accelerate depreciation allowances to the extent required to ensure that such approved projects are 'financeable' and able to proceed as commercially viable investments.

### Increased need for major transmission projects

As governments seek to decarbonise their economies, there is a need for significant investment in new transmission assets. Any move away from Transpower's current nominal framework towards RAB indexation would reduce the speed of cash flow allowances raising the prospects of the cash flow timing issues identified above.

### Recent high inflation outcomes

In recent months, observed inflation has been high relative to the Commission's forecasts that were locked into regulatory decisions even two or three years ago. In such market conditions,

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<sup>9</sup> New Zealand Commerce Commission, May 2022, Part 4 Input Methodologies Review 2023: Process and issues paper, paragraph 5.203.

<sup>10</sup> We note that Transpower also receives no return of capital allowance during construction – only a return on capital known as interest during construction. The lack of a return of capital allowance makes a nominal allowed return on capital allowance even more important when there is a delay in the allowance for the return of capital.



the result is that what is 'added back' via RAB indexation will be materially higher than what was 'taken out' via forecast inflation.

## 1.4 The financial impact of the nominal approach applied to Transpower

The 'nominal' regulatory framework that is applied to Transpower (with no RAB indexation) differs from the 'real' approach (that does involve RAB indexation) in two ways:

- Cash flow timing:

Under the nominal approach:

- The cash flow allowance (in each regulatory period) is accelerated because the Commission makes no deduction in relation to forecast inflation; and
- As a result of higher cash allowances during the regulatory period, Transpower will have a lower RAB at the end of the regulatory period because no indexation is applied to it. This results in relatively lower cash flow allowances in later periods.

These two effects cancel exactly in NPV terms.

- Sensitivity to differences between actual and forecast inflation:

Under the nominal approach, regulatory allowances are insensitive to any difference between actual inflation outcomes and the Commission's forecast.

By contrast, under the real approach, a regulated business receives additional compensation when actual inflation is higher than the forecast (via higher RAB indexation) and lower compensation in the opposite scenario.

To quantify the impact of these differences for Transpower, and consumers, we perform a series of calculations below.

We begin by contrasting the Commission's inflation forecasts with actual inflation outcomes in **Table 2** below. We note that inflation generally turned out to be below the Commission's forecast over RCP3, but that current inflation outcomes are materially higher than the Commission's forecast in RCP4.

**Table 2:** Forecast vs. actual inflation for the RCP3 period

	FY21	FY22	FY23	FY24	FY25
Commission forecast	1.72	2.06	2.04	2.02	2.00
Outturn inflation (current RBNZ forecasts in italics)	1.52	6.93	<i>4.40</i>	<i>2.50</i>	<i>2.00</i>

Source: RBNZ, Commission decision for RCP3. Figures in italics are current RBNZ forecasts.

In **Table 3** below, we compare the evolution of the Transpower RAB under three different approaches:

1. The current nominal framework, under which no RAB indexation is applied;



2. A scenario in which the RAB is indexed (as it is for the EDBs) and where actual inflation turns out to equal the Commission's forecast; and
3. A scenario in which the RAB is indexed (as it is for the EDBs) but where actual observed inflation is used.

**Table 3:** Impact of non-indexation on Transpower closing RAB (\$ billions)

	FY21	FY22	FY23	FY24	FY25
1. RAB (no indexation)	4.80	4.82	4.88	4.91	5.01
2. RAB (indexation using forecast inflation)	4.88	4.99	5.14	5.26	5.45
3. RAB (indexation using actual inflation)	4.87	5.21	5.47	5.61	5.78
Differential 1 vs 2					0.43
Differential 2 vs 3					0.34

Source: RBNZ, Commission decisions for RCP3 and RCP4, Frontier Economics calculations using Transpower revenue model.

We note that the difference between the end-of-period RAB in Scenarios (1) and (2) quantifies the impact of the acceleration of allowed cash flows into the regulatory period. For example, the figure of \$430 million indicates that, had RAB indexation been applied to Transpower:

- Its allowed cash flows for the RCP3 period would have been \$430 million<sup>11</sup> lower; and
- The present value of future cash flows<sup>12</sup> over subsequent regulatory periods would have been (symmetrically) \$430 million higher.

We note that this effect is an NPV-neutral shift in the timing of allowed cash flows.

We also note that the difference between the end-of-period RAB in Scenarios (2) and (3) quantifies the impact of differences between actual and forecasted inflation.

For example, the figure of \$340 million indicates that Transpower's future customers have benefitted by Transpower not passing through the extent to which actual inflation has exceeded the Commission's forecast. That is, consumers benefit by \$340 million<sup>13</sup> from not having 'protection against inflation' provided by the Commission over RCP3.

<sup>11</sup> As at the end of the regulatory period.

<sup>12</sup> Again, as at the end of the regulatory period.

<sup>13</sup> As at the end of the regulatory period.

## **Frontier Economics**

Brisbane | Melbourne | Singapore | Sydney

Frontier Economics Pty Ltd  
395 Collins Street Melbourne Victoria 3000

Tel: +61 3 9620 4488

<https://www.frontier-economics.com.au>

ACN: 087 553 124 ABN: 13 087 553 124