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Dear Mr Goodeve,

**2010-15 Default Price-Quality Path Starting Price Adjustments Update Paper:  
Importance of the Forecast of Inflation**

**1. Introduction**

***Purpose***

The purpose of this letter is to:

- explain the role and importance of inflation – and, as a consequence, the forecast of inflation – for the calculation of the starting price adjustment under the default price-quality path; and
- provide advice with respect to a robust and predictable method that could be applied (and reapplied) to obtain the forecast of inflation that is required to determine the starting price adjustment referred to above.

***Summary***

The conclusions reached in this note are as follows.

- An important objective of inflation indexation in a CPI-X regime is to protect investors in long-lived regulated assets from the risk of inflation being higher or lower than forecast. This implies that the same real return must be expected, irrespective of the level of inflation that is observed.
- The Commission's method for forecasting inflation in its starting price adjustment calculations is not consistent with this objective.
  - Its calculations will deliver a real return that varies depending on how the actual level of inflation observed prior to the Commission making its determination and the more recent forecast of inflation is different to the inflation expectation included in the nominal risk free rate of return (which is measured over the month to 1 September 2009).

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- Equally, its suggestion that it will benchmark the nominal return that electricity distribution businesses (EDBs) receive against a fixed nominal WACC risks classifying a higher than forecast revenue indexation / revaluation gain as an excessive return when it is in fact required to compensate for an unexpectedly high rate of inflation.
- The forecast of inflation is an important input – a variation in this input has the same effect on the level of the price cap as the same variation in the (nominal) risk free rate of return. Hence, it is imperative for the forecast to be consistent with the objectives of a CPI-X regime and to be forecast in a robust manner.
- The simplest method for ensuring that the target real return is achieved is to:
  - Use a forecast of inflation in the starting price adjustment calculations that is the best estimate of inflation that is included in the risk free rate of return; and
  - When testing annual returns, either adjust the nominal WACC to be consistent with the actual level of inflation observed, or benchmark returns against a real WACC (in which case the revaluation gain is omitted from the calculation of income).
- The Commission’s proposal to use the Reserve Bank of New Zealand’s forecast of inflation for the period they are available is supported. However, the Commission’s proposal to use the last year of these forecasts to extrapolate a forecast for the period beyond the Bank’s explicit forecasts has no justification. A better medium to long term forecast would be the midpoint of the Bank’s target range for inflation, which is the standard method for deriving a forecast of inflation for regulatory purposes in Australia.
  - Applying this method to estimate the rate of inflation that is embedded in the risk free rate of return (that is, for the five years from 1 September 2009) delivers an inflation forecast of 1.94 per cent, which should be used in the starting price adjustment calculations.

### **Structure**

The remainder of this note addresses:

- The objective of inflation indexation in a CPI-X regime and the consequent role and importance of inflation forecasts;
- Whether the Commission’s treatment of inflation is consistent with the objectives of CPI-X regulation; and
- Whether the Commission’s method for forecasting inflation is consistent with commensurate with the importance of the variable.



These matters are addressed in turn.

## **2. Objective of inflation indexation and forecasting in CPI-X regimes**

An important objective behind escalating prices and asset values by actual inflation (as occurs under a CPI-X regime) is to protect investors in the relevant regulated assets from the risk associated with inflation being unexpectedly higher or lower than forecast. It is understood that the recognition that it is desirable to protect investors in long-lived regulated assets from inflation risk dates back to the 1970s, where the unexpectedly high rate of inflation in that decade and beyond had a substantial adverse effect on the values of regulated businesses in the US, as well as encouraging frequent applications for tariff resets. By the time that modern price cap regulation emerged in the UK in the 1980s, inflation indexation of prices and underlying asset values became a standard part of the regulatory regime.

For investors in regulated assets to be protected from inflation, regulated prices must be determined such that the same real return (that is, the return above what is necessary to compensate for the decline in the purchasing power of money) would be delivered, all else constant, irrespective of the measured rate of inflation. This means that if inflation is higher than forecast, then the nominal return (that is, the return that includes compensation for the decline in the purchasing power of money) must also be correspondingly higher. While there are practical limitations to achieving this objective perfectly (for example, arising from imperfections in the measure of inflation), the widespread application of inflation indexation to prices for regulated businesses (and more generally in long term contracts) suggests that the objective can be achieved with sufficient precision to be a desirable component of regulatory regimes.

## **3. Does the Commission's proposed treatment of inflation for the Starting Price Adjustment meet this objective?**

### ***Commission's method***

The Commission's proposed starting price adjustment calculations require a forecast of inflation over the default price quality path period in order to forecast revenue and the revaluation gains expected from the CPI indexation of the regulatory asset base. The Commission has foreshadowed deriving this forecast by:

- using a measure of actual inflation where this is available at the time of the determination; and
- using the latest forecast of inflation for the period thereafter (the method for which is discussed in the next section).

These forecasts of inflation are to be combined with a single weighted average cost of capital (WACC) that is defined in nominal terms, which in turn is based upon interest rate data as at



1 September 2009 (reflecting the Commission's decision to set the WACC for a new default price quality path period using information up to a point in time that is seven months prior to the commencement of the new period).

However, by applying a constant WACC defined in nominal terms and combining this with actual inflation where available and then a forecast for the period thereafter means that any difference between the inflation forecast that was embedded in the assumed risk free rate of return and the figure that is derived using this method would mean that a correspondingly lower or higher real return was implied by the regulated prices. It follows that this method for forecasting inflation creates a result that is inconsistent with the objective of CPI-X regulation described above, namely to protect investors from inflation risk.

### ***Proposed alternative method***

The forecast of inflation that would ensure that the regulated prices delivered the intended real return (within the Commission's method for deriving the starting price adjustment) is the best estimate of the inflation expectation that was embedded in the assumed risk free rate of return that was used to calculate the regulatory WACC. This forecast of inflation would ensure that the regulated prices would deliver the same real return (all else constant) irrespective of the observed level of inflation over the period. Given the Commission's decision to use a risk free rate calculated over the month to 1 September 2009, this requires a view on the rate of inflation assumed by the market over the five years from that date, and would imply that the real return that is factored into prices would reflect the best estimate of the real risk free rate of return over the month to 1 September 2009, which would appear to be the Commission's intention.

Alternatively, the Commission could generate an identical result by either:

- Defining the WACC in real terms (by deducting the forecast of inflation that is embedded in the nominal risk free rate using the method defined above) and using this figure in its calculations rather than a nominal rate of return, with the consequence that revaluations stemming from inflation indexation would be ignored; or
- Deriving a different nominal WACC for each year of the default price quality path period where the nominal WACC is adjusted such that the same real WACC results, given the difference between the forecast and observed rates of inflation.

It is observed in this regard that the forecast of inflation that is adopted is a critical parameter for the starting price adjustment calculation. A one unit change in the forecast of inflation translates into an equivalent change in the assumed real return, and hence a variation in this parameter (for example, by 20 basis points) has the same impact on the level of the price cap as the same variation in the (nominal) risk free rate of return. Accordingly, it is important for the forecast of inflation to be both consistent with the objective of a CPI-X regime (discussed above) and to be forecast using a robust method (discussed further below).



### ***Measuring returns***

Likewise, it is inappropriate for the Commission to compare the regulated businesses' returns (defined as a nominal return on assets) against a constant nominal WACC. Again, if inflation in a particular year is unexpectedly high, then this would translate into a high observed nominal return, as both revenue and the revaluation gain would reflect this inflation figure. However, this commensurately higher nominal rate of return is required to provide the same real return, as intended in a CPI-X regime. Accordingly, by benchmarking annual nominal returns against the nominal WACC, the Commission risks treating as an excessive return the additional return that is required to compensate for the unexpected inflation. Again, the correct method in principle would be to:

- Compare the regulated businesses' real rates of return (that is, excluding the revaluation gain) against the regulatory WACC defined in real terms; or
- To calculate a different target nominal WACC for each year that is adjusted to reflect the difference between the level of inflation that was factored into the revenue indexation and asset revaluation for the year, and the inflation expectation that was embedded in the risk free rate of return.

### **4. Method for forecasting inflation**

The Commission has proposed using the Reserve Bank of New Zealand's forecasts of inflation for the period for which they are available, and then to assume that the last year of the inflation forecast extends for the remainder of the period.

The first component of the Commission's methodology is consistent with the current standard method for forecasting inflation for regulatory purposes in Australia, whereby the Reserve Bank of Australia's forecast of inflation is employed for as far out as the forecast extends (typically two years).<sup>1</sup>

Turning to the second component of its method, there is little sound basis for assuming that the last year of the Reserve Bank's forecast can be extrapolated forwards. The Bank does not (to my knowledge) present the last year of its inflation forecast as a proxy for the years from that point, and indeed, an examination of its recent forecasts shows substantial variation in the Bank's forecasts from one quarter (and year) to the next.

The standard method for extending the inflation forecast in Australia is to use the midpoint of the Reserve Bank of Australia's target range for inflation as the best estimate of the medium and long term figure.<sup>2</sup> Given the similarity in the roles and functions of the Reserve Bank of New Zealand and Reserve Bank of Australia, the same method would be equally appropriate for New Zealand.

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<sup>1</sup> See: Australian Energy Regulator (October 2010), Final Decision – Victorian Electricity Distributors 2011-2015, pp.515.

<sup>2</sup> See: Australian Energy Regulator (October 2010), Final Decision – Victorian Electricity Distributors 2011-2015, pp.515.



The Reserve Bank of New Zealand's forecast of inflation that is presented in its quarterly Monetary Policy Statement extends out between 2.25 and 3 years, depending on the quarter in question (the longest forecast is provided in the March quarter). In the September 2009 Monetary Policy Statement, the forecasts of inflation were:<sup>3</sup>

- 1.39 per cent and 2.48 per cent for the years until September 2010 and 2011, respectively; and
- 2.49 per cent and 2.43 per cent for the years to December 2011 and March 2012, respectively, which implied a forecast of inflation for these two quarters of 0.40 per cent (implied annual rate of 1.62 per cent) and 0.44 per cent (implied annual rate of 1.77 per cent), respectively.<sup>4</sup>

Combining these forecasts with the midpoint of the Bank's target range (2 per cent) for the remaining 2.5 years implies a forecast of inflation for the five year period that corresponds with the nominal risk free rate of 1.94 per cent.

\* \* \*

Should you wish to discuss this note in any way, please do not hesitate to contact me on +61 3 8603 4973.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'JJ Balchin', written in a cursive style.

Jeff Balchin  
**Principal**

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<sup>3</sup> Reserve Bank of New Zealand, September 2009 Monetary Policy Statement, data accompanying figure 2.2.

<sup>4</sup> The Reserve Bank of New Zealand's forecasts for the year to December 2011 and March 2012 This can be calculated by noting that the June 2009 CPI figure was the latest inflation figure available at the time of the September 2009 Monetary Policy Statement. This means that the Bank's forecast for CPI change over the September 2009 quarter required it to forecast just the last quarter, which means that the Bank's forecast for the September 2009 quarter can be deduced simply from its forecast of the change in the CPI for the year to that quarter. In turn, once the Bank's forecast for the September 2009 quarter is established, its forecast for the December 2009 quarter can be established from its forecast for the year to the December 2009 quarter. This process can be repeated to establish the Bank's forecasts for the December 2011 and March 2012 quarters.