



# **Better Regulation**

## **Draft rate of return guideline**

August 2013

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# 1 Nature and authority

## 1.1 Introduction

Consistent with the requirements of clause 6.5.2(m) and 6A.6.2(m) of the National Electricity Rules (NER) and rule 87(13) of the National Gas Rules (NGR), this publication sets out the Australian Energy Regulator's (AER) draft rate of return guidelines (the guideline) for electricity and gas transmission and distribution network service providers (the 'service providers').

## 1.2 Authority

Clauses 6.5.2(m) and 6A.6.2(m) of the NER and rule 87(13) of the NGR requires the AER to develop, and publish, in accordance with the relevant transmission and distribution consultative procedures, a guideline for the assessment of the rate of return for electricity distribution, electricity transmission and gas distribution and transmission, respectively. Clauses 6.5.2(n) and 6A.6.2(n) of the NER and rule 87(14) specifies the matters which must be set out in the guideline.

## 1.3 Role of the guideline

Under clauses 6.5.2(n) and 6A.6.2(n) of the NER and rule 87(14) of the NGR, the AER must set out in the guideline:

- the methodologies that the AER proposes to use in estimating the allowed rate of return, including how those methodologies are proposed to result in the determination of a return on equity and a return on debt in a way that is consistent with the allowed rate of return objective; and
- the estimation methods, financial models, market data and other evidence the AER proposes to take into account in estimating the return on equity, the return on debt and the value of imputation credits.

The guideline applies to electricity distribution and transmission and gas distribution and transmission service providers regulated by the AER.

The guideline is not binding on the AER (or anyone else). However, if we make a determination that is not in accordance with the guideline, our reasons for the determination must state why we departed from the guideline.<sup>1</sup>

## 1.4 Definitions and interpretation

In this guideline the words and phrases have the meaning given to them in:

- the glossary; or
- if not defined in the glossary, the NER or NGR.

## 1.5 Process for revision

The AER may amend or replace these guidelines from time to time in accordance with the consultation procedures under clauses 6.16 and 6A.20 of the NER and rule 9B of the NGR.<sup>2</sup>

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<sup>1</sup> AEMC, Rule determination: National electricity amendment (Economic regulation of network service providers) Rule 2012: National gas amendment (Price and revenue regulation of gas services) Rule 2012, 29 November 2012, p. 46. (AEMC, *Final rule change determination*, 29 November 2012).

## 1.6 Version history and effective date

A version number and an effective date of issue will identify every version of this guideline.

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<sup>2</sup> NER, cl. 6.2.8(e) and cl. 6A,2.3(e); NGR, r. 87(17).

## 2 Overview

The new rules require us to develop a rate of return guideline that sets out the approach we intend to take to determining the allowed rate of return for both electricity and gas service providers. We intend for the final guideline to include sufficient detail to allow a service provider or other stakeholders to make a reasonably good estimate of the rate of return that would be determined by us if the guideline were applied to a determination for a particular business at any given time.

Our Better Regulation program involves the publication of several guidelines, including publication of the rate of return guideline (the guideline) for the service providers. We are required to publish the guideline by 29 November 2013. The guideline will set out the approach we intend to take to determining the allowed rate of return in accordance with the NEL and the NGL (collectively, the law and rules).

The new rules require us to set out in the guideline:<sup>3</sup>

- the methodologies we propose to use
- the estimation methods, financial models, market data and other evidence we propose to take into account.

The major changes we have proposed in this guideline include:

- Considering a broad range of material in arriving at a point estimate for the return on equity. We would continue to use the Sharpe–Lintner CAPM for estimating a starting point and a range for the final return on equity. However, we would use the theory of the Black CAPM and dividend growth model outputs to inform the input parameters we use to estimate the return on equity using the Sharpe–Lintner CAPM. We would also have regard to other information, including the estimated return on equity from the Wright approach, valuation and broker reports, and other regulators. Where appropriate, this information may lead us to select an estimate of the return on equity that differs from the output of the Sharpe–Lintner CAPM.
- Changing from the current 'on the day' approach to a trailing average portfolio approach for estimating the return on debt. The trailing average will be calculated using a simple seven year average and will be updated annually. The yearly average will be calculated over a period of 10 or more consecutive business days using yield estimates from an independent third party service provider for a seven year debt term and the closest proximate for a BBB+ credit rating. There will be a seven year transition period from the current 'on the day' approach to the trailing average portfolio approach.
- Considering a wider range of material to inform the estimation of the value of imputation credits.

### 2.1 Structure of the guideline

There are five main parts to this guideline:

- Chapter three outlines the AER's definition of the benchmark entity and compensation of risk
- Chapter four outlines the AER's approach to estimating estimate the overall return of return

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<sup>3</sup> NER, cls. 6.5.2(n) and 6A.6.2(n); NGR, r.87(14).

- Chapter five outlines the AER's approach to estimating the return on equity. This includes using the Sharpe–Lintner CAPM as the foundation model, and then having regard to other relevant material to arrive at a final point estimate of the return on equity.
- Chapter six outlines the AER's approach to estimating the return on debt. This includes using a seven year trailing average for estimating the return on debt, with annual updates. The transitional arrangements from the on the day approach to the trailing average approach are also outlined.
- Chapter seven outlines the AER's approach to estimating imputation credits.



## 3 Benchmark efficient entity and compensation for risk

This chapter sets out the AER's definition of the benchmark efficient entity. The definition of the benchmark efficient entity has implications for the estimated return on debt and equity (including the choice of data and models used to estimate the return on equity and debt).

### 3.1 Objective

The benchmark efficient entity is defined so that the allowed rate of return estimated for that benchmark efficient entity provides service providers with a reasonable opportunity to recover at least their efficient financing costs, consistent with the national electricity objective (NEO), national gas objective (NGO) and revenue pricing principles (RPP).<sup>4</sup>

### 3.2 Rule requirements

Clauses 6.5.2(c) and 6A.6.2(c) of the NER and rule 87(2)(3) of the NGR set out the allowed rate of return objective. The allowed rate of return objective requires the AER to set the rate of return for a distribution or transmission service provider, which is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the distribution or transmission service provider in respect of the provision of regulated services.

### 3.3 Application

The AER's proposed conceptual definition of the benchmark efficient entity is a pure play, regulated energy network business operating within Australia.

In estimating the return on equity, the benchmark is applied to select comparable entities which are then used to estimate the equity beta (see section 5.3.3). The equity beta, in turn enters the Sharpe–Lintner CAPM model, which is used as the foundation model for estimating the return on equity (see section 5.3.3).

In estimating the allowed return on debt, the definition of the benchmark efficient entity is applied to inform the choice of comparable entities which are used to estimate:

- the benchmark gearing ratio (see section 4.3.2)
- the benchmark credit rating (see section 6.3.3).

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<sup>4</sup> NEL, s. 7; NEL, s. 7A; NGL, s. 23; NGL, s. 24.

## 4 Overall rate of return

This chapter sets out the AER's approach to estimating the overall rate of return for service providers. The overall rate of return is determined using a nominal post-tax vanilla WACC formula, together with a series of reasonableness checks.

### 4.1 Objective

The overall rate of return is to be set such that it meets the allowed rate of return objective. This requires that the AER set a rate of return which reflects the efficient financing costs of a benchmark efficient entity. The benchmark efficient entity is to be subject to a similar degree of risk in providing regulated services as the service provider which is subject to the determination.

Together with the other building block components, the estimate of the overall rate of return is to be set such that:

- it promotes efficient investment in, and efficient operation and use of, electricity and natural gas services for the long term interests of consumers<sup>5</sup>
- a regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in providing regulated services and complying with its regulatory obligations.<sup>6</sup>

### 4.2 Rule requirements

Clauses 6.5.2(d) and 6A.6.2(d) of the NER and rule 87(4) of the NGR specify two elements which the AER is to apply in estimating the allowed rate of return.

The first element, provided by clauses 6.5.2(d)(1), and 6A.6.2(d)(1) of the NER and rule 87(4)(a) of the NGR, requires that the AER apply a weighted average of:

- the return on equity for the regulatory control period in which that regulatory year occurs
- the return on debt for that regulatory year.

The second element provides that the AER must use a nominal post-tax framework to calculate the allowed rate of return.<sup>7</sup> In arriving at the allowed rate of return, the rules require that the AER has regard to:<sup>8</sup>

- relevant estimation methods, financial models, market data and other evidence;
- the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and
- any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

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<sup>5</sup> NEL, cl. 7; NGL, s. 23.

<sup>6</sup> NEL, cl. 7A; NGL, s. 24.

<sup>7</sup> NER, cls. 6.5.2(d)(2) and 6A.6.2(d)(2); NGR, r.87(4)(b).

<sup>8</sup> NER, cls. 6.5.2(e) and 6A.6.2(e); NGR, r.87(5).

## 4.3 Application

This section describes how the overall rate of return is to be estimated. This involves applying the following elements:

- applying a nominal post-tax model
- calculating the WACC using a vanilla WACC formula
- applying intra-period adjustments of the WACC
- assessing reasonableness tests of the overall rate of return.

### 4.3.1 Applying a nominal post-tax model

The AER would continue to apply its current post tax revenue model (PTRM) to fulfil the rule requirements to apply a nominal post-tax framework.<sup>9</sup>

The PTRM accommodates the use of a nominal vanilla WACC for calculating the rate of return.

The treatment of tax enters the PTRM via the operating expenditure cash flows. It is therefore consistent with the use of a nominal vanilla WACC for calculating the rate of return.

### 4.3.2 Calculating the weighted average cost of capital using a vanilla WACC formula

The AER would calculate the WACC by applying the following vanilla WACC formula:

$$WACC_{vanilla} = E(k_e) \frac{E}{V} + E(k_d) \frac{D}{V}$$

where:

- $E(k_e)$  is the expected return on equity
- $E(k_d)$  is the expected return on debt
- $\frac{E}{V}$  is the proportion of equity in total financing (comprising equity and debt).
- $\frac{D}{V}$  is the proportion of debt in total financing, and is equal to our proposed benchmark efficient entity gearing ratio of 0.6.

### 4.3.3 Intra-period adjustment of the WACC

The AER would update the overall rate of return annually. This is a result of the allowed return on debt being updated annually.

The AER would set the return on equity for the duration of the regulatory control period.

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<sup>9</sup> NER, cl. 6.5.2(d)(2) and 6A.6.2(d)(2); NGR r. 87(2)(b).

#### **4.3.4 Arriving at point estimates or ranges**

The overall rate of return is a point estimate, reflecting the use of a point estimate for the return on debt and the return on equity.

#### **4.3.5 Carrying out reasonableness tests**

The AER would use only regulatory asset base (RAB) acquisition and trading multiples as reasonableness tests of our estimate of the overall rate of return.

## 5 Return on equity

This chapter sets out the AER's approach to estimating the return on equity. The AER would apply a six step approach to determine an estimate of the return on equity that is consistent with the allowed rate of return objective. These steps are explained below, and are summarised in figure 1.

### 5.1 Objective

The return on equity must be estimated such that it contributes to the achievement of the allowed rate of return objective.

### 5.2 Rules requirements

Clauses 6.5.2(f) and (g) of the NER and 87(6) and (7) of the NGL specify that:

- the return on equity for a regulatory control period must be estimated such that it contributes to the achievement of the allowed rate of return objective
- in estimating the return on equity, regard must be had to the prevailing conditions in the market for equity funds.

The allowed rate of return objective is that:<sup>10</sup>

- the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider.

In developing a guideline that estimates a return on equity in accordance with the allowed rate of return objective, the AER has had regard to, among other things, relevant estimation methods, financial models, market data and other evidence.<sup>11</sup>

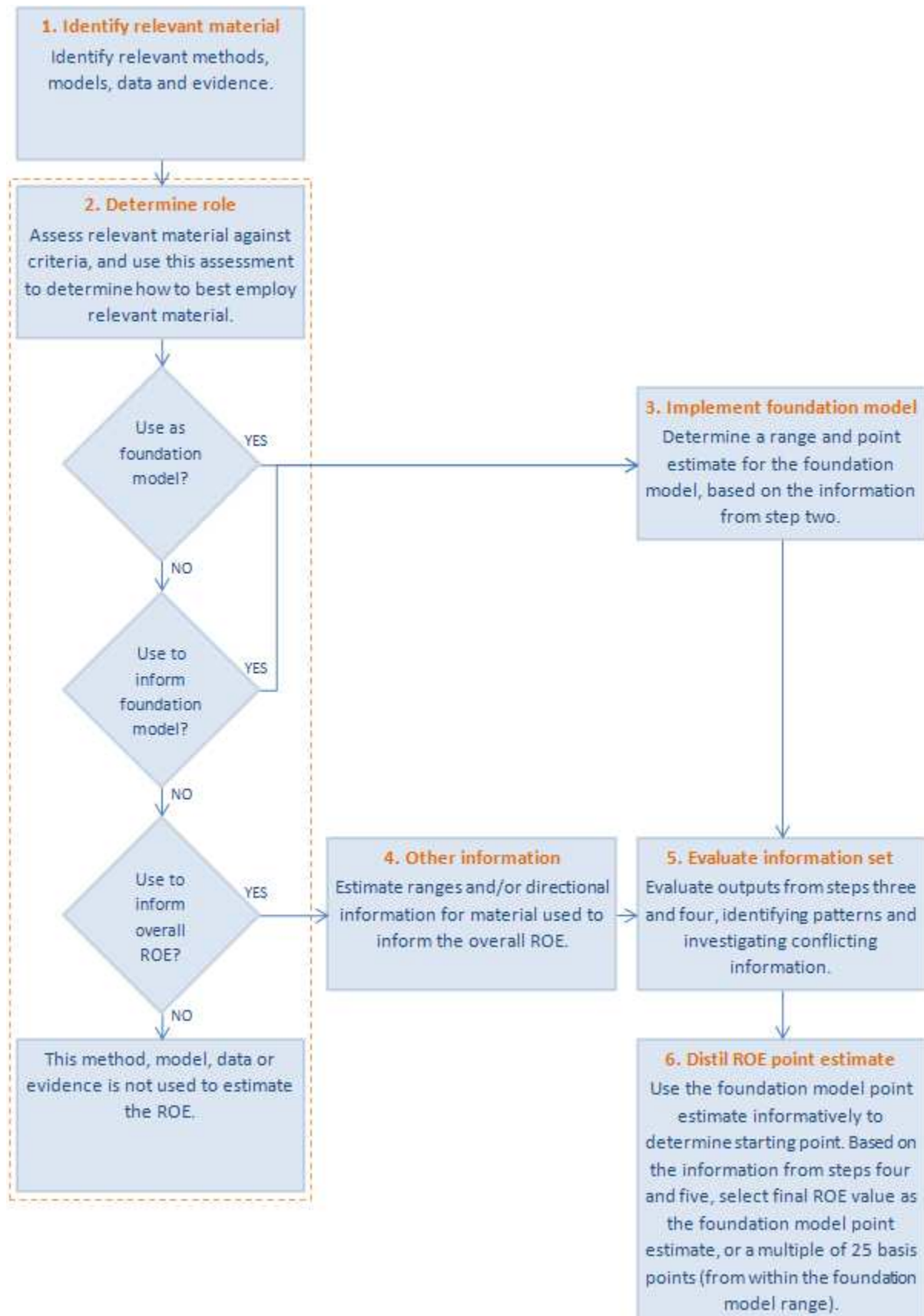
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<sup>10</sup> NER, cl. 6.5.2(c) and 6A.6.2(c); NGR, r. 87(3).

<sup>11</sup> NER, cl. 6.5.2(e)(1) and 6A.6.2(e)(1); NGR, r. 87(5)(a).

## 5.3 Application

Figure 1 Flowchart of proposed approach



### 5.3.1 Step one: identify relevant material

The AER's first step would be to identify the relevant material that may inform the estimate of the return on equity. The material identified by the AER to be relevant is outlined in the explanatory statement to this guideline, and in table 1 and table 2 of this guideline.

### 5.3.2 Step two: determine role

The AER's second step would be to assess the relevant material identified in step one against the AER's assessment criteria. The purpose of this assessment is to identify what role the relevant material would play in estimating the return on equity. Each piece of relevant material would be used only once (to the extent practicable), in one of the four ways:

- (1) Used as the foundation model.
- (2) Used to inform the estimation of parameters within the foundation model.
- (3) Used to inform where within the return on equity range, set by the foundation model, our final return on equity point estimate should fall.
- (4) Not used to estimate the return on equity.<sup>12</sup>

The AER undertook an assessment of the relevant material identified in step 1 against the assessment criteria. The AER assessed models and other relevant material. The detailed assessment is outlined in the explanatory statement to this guideline.

The outcome of the AER's model assessment is outlined in table 1.

**Table 1**      **Role of relevant models**

Material (step one)	Role (step two)
Sharpe–Lintner CAPM	Foundation model
Black CAPM	Inform foundation model parameter estimates (equity beta)
Dividend growth models	Inform foundation model parameter estimates (market risk premium)
Fama–French three factor model	No role

Source: AER analysis.

The outcome of the AER's assessment of other relevant information is outlined in table 2.

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<sup>12</sup> Some of this material may be used to assess the overall rate of return.

**Table 2      Role of other information**

Material (step one)	Role (step two)
Historical excess returns	Inform foundation model parameter estimates (market risk premium)
Survey evidence of the market risk premium	Inform foundation model parameter estimates (market risk premium)
Implied volatility	Inform foundation model parameter estimates (market risk premium)
Other regulators' market risk premium estimates	Inform foundation model parameter estimates (market risk premium)
Historical equity beta estimates	Inform foundation model parameter estimates (equity beta)
Commonwealth government securities	Inform foundation model parameter estimates (risk free rate)
Professor Wright approach	Inform the overall return on equity
Takeover/valuation reports	Inform the overall return on equity
Broker return on equity estimates	Inform the overall return on equity
Other regulators' return on equity estimates	Inform the overall return on equity
Debt spreads	Inform the overall return on equity
Dividend yield	Inform the overall return on equity
Comparison with return on debt	Inform the overall return on equity
Trading multiples	No role informing return on equity (assess overall rate of return only)
Asset sales	No role informing return on equity (assess overall rate of return only)
Brokers' WACC estimates	No role
Other regulators' WACC estimates	No role
Finance metrics	No role

Source: AER analysis.

### 5.3.3 Step three: implement foundation model

The AER's third step would be to use the Sharpe–Lintner CAPM as the foundation model. The AER's implementation of the Sharpe–Lintner CAPM would be as follows:

- The Sharpe–Lintner CAPM would be estimated as the sum of the risk free rate, and the product of the equity beta and market risk premium.



- The AER would select the risk free rate by averaging, over a period of time, Commonwealth government securities with a 10 year maturity. The averaging period will be:
  - 20 business days in length.
  - Nominated in advance by the AER and set out in the draft decision of a particular determination. That is, the averaging period would be after the draft decision but before the final decision.
  - As close as practicably possible to the commencement of the regulatory period.
- The equity beta range would be estimated with regard to theoretical and empirical evidence—based on the observed equity beta for a comparator set of Australian energy networks, cross checked against overseas energy networks and other Australian utilities.
- The equity beta point estimate would be determined based on the AER's regulatory judgement, having regard to the empirical evidence, the theory underpinning the Black CAPM and regulatory precedent.
- The AER intends on including a beta point estimate and range in its final guideline.
- The market risk premium range would be estimated with regard to theoretical and empirical evidence—based on evidence including historical excess returns, survey evidence, financial market indicators and dividend growth model estimates.
- The market risk premium point estimate would be determined based on the AER's regulatory judgement, taking into account estimates from each of those sources of evidence, including their strengths and limitations.
- The range and point estimate for the return on equity would be calculated based on the range and point estimates from the corresponding input parameters. For example, the lower bound of the return on equity range would be calculated by applying the point estimate for the risk free rate and the lower bound estimates of the equity beta and market risk premium. A probability would not be assigned to values within the range, but it would not be assumed that all values within the range are equally probable.

#### **5.3.4 Step four: other information**

The AER's fourth step would be to estimate ranges, directional or relative information that will inform the point estimate of the return on equity.

To determine the form in which each piece of other information would be used, the AER assessed the information against the assessment criteria. This assessment is outlined in the explanatory statement to this guideline.

The outcome of the AER's assessment on the form of additional information is outlined in table 3.

**Table 3 Form of other relevant information**

Additional information	Form of information
Professor Wright approach	Range
Takeover/valuation reports	Range
Broker return on equity estimates	Range
Other regulators' return on equity estimates	Range
Debt spreads	Directional
Dividend yield	Directional
Comparison with return on debt	Relative

Source: AER analysis.

### 5.3.5 Step five: evaluate information set

The AER's fifth step would be to evaluate the full set of material that will inform, in some way, the estimation of the return on equity. This includes assessing the foundation model range and point estimate alongside the other information from step four.

In undertaking this evaluation the AER may have regard to matters including:

- patterns shown in the other information
- the strengths and limitations of the other information
- the magnitude by which the other information suggests that the foundation model's point estimate under or over estimates the return on equity (if at all).

### 5.3.6 Step six: distil return on equity point estimate

The AER's sixth step would be to determine the final point estimate for the return on equity that would be applied. The AER's starting point for estimating the return on equity would be the foundation model's point estimate. Moreover, the final point estimate would be selected from within the foundation model range.

The final point estimate of the return on equity will require the exercise of regulatory judgement. This judgement would draw on the analysis and evaluation of the other information undertaken in step five. For example, if the evaluation of the other information set (step five) suggests that the point estimate from the foundation model is appropriate, then this point estimate (rounded) will be applied. Alternatively, if the evaluation suggests that the point estimate is too high or low, the point estimate will be changed by an amount informed by the other information, using the AER's regulatory judgment.

The final point estimate of the return on equity would be the foundation model point estimate, or alternatively, a different value that is a multiple of 25 basis points. If the foundation model point

estimate is applied, this estimate would be rounded to a single decimal point. This recognises the limited precision with which the return on equity can be estimated.

The approach outlined is premised on the expectation that the analysis in step five should not suggest a final estimate of the return on equity outside the foundation model range. If this expectation is not met, the AER may reconsider the foundation model input parameter estimates, or more fundamentally, the foundation model itself. This recognises that, ultimately, our rate of return must meet the allowed rate of return objective.

## 6 Return on debt

This chapter sets out the AER's proposed approach to estimating the return on debt allowance for service providers.

### 6.1 Objective

The objective of the return on debt is to provide compensation to a service provider for the debt financing cost which is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk. This is achieved by determining a return on debt which promotes efficient investment and provides a service provider with at least the opportunity to recover its efficient costs.

### 6.2 Rule requirements

The rules set out the:<sup>13</sup>

- calculation and form of the calculation to the return on capital
- return on capital objective (including factors the AER must have regard to in setting the return on capital)

In addition, the return on debt may be estimated by the AER using a methodology which results in either:

- the return on debt for each regulatory year in the regulatory control period being the same; or
- the return on debt (and consequently the allowed rate of return) being or potentially being, different for different regulatory years in the regulatory control period.

In estimating the return on debt the AER must have regard to the following factors:

- the desirability of minimising any difference between the return on debt of a benchmark efficient entity
- the interrelationship between the return on equity and the return on debt
- the incentive that the return on debt may provide in relation to capital expenditure over the regulatory control period, including as to the timing of capital expenditure
- any impacts (including in relation to the costs of servicing debt across regulatory control periods) on a benchmark efficient entity referred to in the allowed rate of return objective that could arise as a result of changing the methodology that is used to estimate the return on debt from one regulatory control period to the next.

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<sup>13</sup> NER, cls. 6.5.2 and 6A.6.2; NGR, r.87.

## 6.3 Application

This section sets out the method the AER proposes to use to calculate the allowed return on debt.

### 6.3.1 Trailing average portfolio approach

The allowed return on debt ( $k_d$ ) would be estimated by a trailing average portfolio method following the completion of a transitional arrangement period. In particular, the AER would apply the following:

- a trailing average portfolio approach with the length of the trailing average to be seven years
- equal weights to be applied to all the elements of the trailing average
- the trailing average to be automatically updated every regulatory year within the regulatory control period.

In particular, the allowed return on debt for each regulatory year within a regulatory control period would be determined in accordance with the following formula:

$${}_xkd_{x+1} = \frac{1}{7} \cdot \sum_{t=1}^7 {}_{x-7+t}R_{x+t}$$

where:

- ${}_xkd_{x+1}$  refers to the allowed return on debt for the regulatory year  $x+1$
- ${}_{x-7+t}R_{x+t}$  refers to the estimated prevailing rate of return on debt that was entered into in year  $(x-7+t)$  and matures in year  $(x+t)$  (in the formula above all debt has a seven year term); and
- weights of  $1/7$  will apply to each element of the trailing average.

Estimates of  ${}_{x-7+t}R_{x+t}$  represent simple averages of the estimates for each business day within the averaging period corresponding to year  $(x-7+t)$ . Each daily estimate within the averaging period will be obtained from an independent third party data provider in accordance with the estimation procedure specified in this guideline (as specified in section 6.3.3).

### 6.3.2 Transitional arrangements

A trailing average portfolio approach would be implemented after a period of transition. The AER would apply a transitional arrangement to determine the allowed nominal return on debt ( $k_d$ ) at the commencement of a service provider's forthcoming regulatory control period. The period of transition would be seven regulatory years. The transition method is set out below.

In the transitional formulae:

- ${}_aR_b$  corresponds to the estimated prevailing return on debt that was entered into in year  $a$  and matures in year  $b$ ; and
- ${}_ckd_d$  refers to the allowed return on debt for period beginning in the end of year  $c$  and ending at the beginning of year  $d$ . Estimates of  ${}_aR_b$  are computed in accordance with the specified estimation method and represent simple averages of the estimates for each business day within the corresponding averaging period.

In the first regulatory year of the transitional period, the allowed rate of return on debt would be based on the estimated prevailing rate of return on debt for that year (similarly to the 'on the day' approach):

$${}_0kd_1 = {}_0R_7$$

The allowed rate of return on debt in the second regulatory year would be the weighted average of the prevailing rates in the first and second regulatory year of the transitional period:

$${}_1kd_2 = \frac{6}{7} \cdot {}_0R_7 + \frac{1}{7} \cdot {}_1R_8$$

The allowed rate of return on debt in the third regulatory year would be the weighted average of the prevailing rates in the first, second, and third regulatory year of the transitional period:

$${}_2kd_3 = \frac{5}{7} \cdot {}_0R_7 + \frac{1}{7} \cdot {}_1R_8 + \frac{1}{7} \cdot {}_2R_9$$

The calculation for all subsequent regulatory years until the transitional period is completed is set out below:

$${}_3kd_4 = \frac{4}{7} \cdot {}_0R_7 + \frac{1}{7} \cdot {}_1R_8 + \frac{1}{7} \cdot {}_2R_9 + \frac{1}{7} \cdot {}_3R_{10}$$

$${}_4kd_5 = \frac{3}{7} \cdot {}_0R_7 + \frac{1}{7} \cdot {}_1R_8 + \frac{1}{7} \cdot {}_2R_9 + \frac{1}{7} \cdot {}_3R_{10} + \frac{1}{7} \cdot {}_4R_{11}$$

$${}_5kd_6 = \frac{2}{7} \cdot {}_0R_7 + \frac{1}{7} \cdot {}_1R_8 + \frac{1}{7} \cdot {}_2R_9 + \frac{1}{7} \cdot {}_3R_{10} + \frac{1}{7} \cdot {}_4R_{11} + \frac{1}{7} \cdot {}_5R_{12}$$

$${}_6kd_7 = \frac{1}{7} \cdot {}_0R_7 + \frac{1}{7} \cdot {}_1R_8 + \frac{1}{7} \cdot {}_2R_9 + \frac{1}{7} \cdot {}_3R_{10} + \frac{1}{7} \cdot {}_4R_{11} + \frac{1}{7} \cdot {}_5R_{12} + \frac{1}{7} \cdot {}_6R_{13}$$

### 6.3.3 Estimation procedure

The AER would apply the following estimation procedure for estimating the prevailing return on debt for each service provider during the averaging period:

- using the published yields from an independent third party data service provider
- using a credit rating of BBB+ from Standard and Poor's or the equivalent rating from other recognised rating agencies. If the published yields do not reflect the assumed credit rating of BBB+ or the equivalent from rating agencies, the AER will apply the published yields that are the closest approximation of the BBB+ credit rating
- using a term to maturity of debt of seven years.

If the published yields from an independent third party data service provider are quoted on a semi-annual basis, then the AER would annualise the yields by applying the following formula:

$$y_a = \left(1 + \frac{y_s}{2}\right)^2 - 1$$

where:

- $y_a$  is the annualised yield

- $y_s$  is the semi-annual yield published by an independent third party data service provider.

The AER has a preference for using published yields of an independent third party data provider where the method for estimating the return on debt is transparent, if available.

The AER proposes to specify in a service provider's determination how an automatic update of the trailing average would be applied in circumstances where estimation procedure for calculating the allowed return on debt is no longer available or has been amended during a service provider's regulatory control period.

## Averaging period

For each regulatory year in the regulatory control period, the AER proposes to estimate the prevailing rate of return on debt as a simple average of the prevailing rates observed over a period of 10 or more consecutive business days. Such an averaging period should satisfy the following conditions:

- It should be specified prior to the commencement of the regulatory control period.
- At the time it is nominated, the averaging period must all take place in the future.
- An averaging period needs to be specified for each regulatory year within a regulatory control period.
- The proposed averaging periods for different regulatory years are not required to be identical.
- The nominal return on debt is to be updated annually using the agreed averaging period for the relevant regulatory year.
- Each agreed averaging period is to be confidential.

The starting date of the first agreed averaging period should be a period after submission of a service provider's regulatory proposal. The ending date for the first agreed averaging period should be no later than a month before the release of the AER's final decision for that service provider. For service providers subject to "preliminary determination with mandatory re-opener",<sup>14</sup> the ending date for the first agreed averaging period should be no later than a month before the release of the AER's draft decision for those service providers.

For the subsequent regulatory years in the regulatory control period, the averaging period for service providers on calendar regulatory years can be any period of 10 or more consecutive business days within the most recently concluded 1 July to 30 June financial year. For the service providers on financial regulatory years, the averaging period can be any period of 10 or more consecutive business days within the most recently concluded 1 January to 31 December calendar year.

The averaging periods can be determined as follows:

- proposed by the service provider in its initial regulatory proposal and agreed by the AER; or
- if the AER does not agree to the averaging periods proposed by a service provider, the averaging period would be determined by the AER, and notified to the service provider within a reasonable time prior to the commencement of the first averaging period.

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<sup>14</sup> AEMC, *Final rule change determination*, 29 November 2012, p. 214.

## 7 Imputation credits

This section sets out the AER's approach to estimating the value of imputation credits. This primarily serves as an adjustment made to the cost of company income tax building block allowance.

### 7.1 Objective

The objective of the adjustment for the value of imputation credits is to reduce the cost of corporate income tax such that only the proportion of company tax which is actually retained by government is reflected in the corporate income tax building block. That is, the adjustment is an estimate of the company tax paid which the government subsequently transfers to investors.

### 7.2 Rule requirements

Clauses 6.5.3 and 6A.6.4 of the NER and rule 87A of the NGR set out the cost of corporate income tax rule. This includes an adjustment for the value of imputation credits as follows:

The estimated cost of corporate income tax of a Distribution Network Service Provider for each regulatory year (ETC<sub>t</sub>) must be calculated in accordance with the following formula:

$$ETC_t = (ETI_t \times r_t) (1 - \gamma)$$

Where:

ETI<sub>t</sub> is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of standard control services if such an entity, rather than the Distribution Network Service Provider, operated the business of the Distribution Network Service Provider, such estimate being determined in accordance with the post-tax revenue model.

r<sub>t</sub> is the expected statutory income tax rate for that regulatory year as determined by the AER; and

γ is the value of imputation credits

### 7.3 Application

This section sets out the method to be applied by a service provider to estimate the value of imputation credits.

Overall, the value of imputation credits would be estimated as a market wide parameter. Specifically, it would be determined as the product of:

- a payout ratio
- a utilisation rate.

With current evidence, the AER considers this leads to a value of 0.5, based on a payout ratio of 0.7 and an utilisation rate of 0.7.

#### 7.3.1 Payout ratio

The payout ratio would be estimated using the cumulative payout ratio approach. The cumulative payout ratio is an estimate of the average payout rate from 1987, when the imputation system began, to the latest year for which tax data is available. Based on current evidence, this leads to an estimate of 0.7.



### 7.3.2 Utilisation rate

The utilisation rate would be estimated using the body of relevant evidence with regards to its strengths and weaknesses, checked against a range of supporting evidence. With current information, this leads to an estimate of 0.7 based on:

- the equity ownership approach— with current evidence, this suggests an estimate of 0.7
- tax statistic estimates— with current evidence, this suggests an estimate between 0.45 and 0.8
- implied market value studies— with current evidence, this suggests an estimate between 0 and 1
- other supporting evidence—including observations about market practice, government tax policy, imputation equity funds etc.

## Glossary

This guideline uses following definitions and acronyms.

Term	Definition
ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
capex	Capital expenditure
common framework	Refers to the largely consistent rules framework on the rate of return that applies to gas service providers (NGR), electricity distribution network service providers (NER chapter 6) and electricity transmission service providers (NER chapter 6A).
COSBOA	Council of Small Business Australia
CRG	Consumer Reference Group
determination	In this document generally, in the context of the rate of return, the term "determination" refers both to regulatory determinations under the NER and access arrangement determinations under the NGR.
DRP	Debt Risk Premium
ENA	Energy Networks Association
ERA	Economic Regulation Authority
EUAA	Energy Users Association of Australia
EURCC	Energy Users Rule Change Committee
FIG	The Financial Investor Group
MRP	Market risk premium
MEU	Major Energy Users Inc
NER	National Electricity Rules
NEL	National Electricity Law

NEM	National Electricity Market
new rules	The National Electricity Rules and National Gas Rules that were published by the AEMC on 29 November 2012
NGL	National Gas Law
NSW T Corp	New South Wales Treasury Corporation
opex	Operating expenditure
PIAC	The Public Interest Advocacy Centre
QTC	Queensland Treasury Corporation
RAB	Regulatory Asset Base
RARE	RARE Infrastructure Limited
RDB	Regulatory Development Branch
regulatory control period	In this document generally, in the context of the rate of return, the term 'regulatory control period' refers both to regulatory control period under the NER and access arrangement period under the NGR
service providers	Electricity transmission network service provider, electricity distribution network service providers and gas service providers
SFG	Strategic Finance Group Consulting
subsequent regulatory control period for service providers	Expected to be 1 July 2015 to 30 June 2019.
transitional regulatory control period for service providers	1 July 2014—30 June 2015
transitional rules	Transitional rules contained in the National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 No. 9 (Network Regulation rule change) which the AEMC determined in November 2012. These transitional rules set out the transitional arrangements for the next ACT/NSW electricity distribution determinations.
the guideline	Rate of return guideline
WACC	Weighted average cost of capital
2009 WACC review	AER 2009 review of the weighted average cost of capital (WACC) parameters (published in May 2009).

## A Estimation of the return on debt: an example

The purpose of this appendix is to illustrate how the AER proposes to estimate the return on debt under the trailing average portfolio approach and how the AER proposes to implement the transition.

For the example provided below the AER simulated monthly yield data using the model suggested in appendix A of the QTC's submission to the consultation paper.<sup>15</sup> The AER emphasises that the model was chosen purely for illustrative purposes. The AER makes no comments on how accurately it describes the short-term movements in the rate of return on debt in Australia under the current market conditions.

The simulation model specified by the QTC is as follows:

$$S_t = S_{t-1} + \alpha T(\theta - S_{t-1}) + \sigma\sqrt{T}\varepsilon_t$$

where:

- $S_t$  is the randomly generated interest rate at time t
- $S_{t-1}$  is the randomly generated interest rate at time t-1
- T is the time increment in years (T=1/12 to produce monthly observations)
- $\alpha$  is the parameter characterising annual mean reversion speed ( $\alpha=0.2$ )
- $\theta$  is the long-term average interest rate ( $\theta=7.0$  per cent)
- $\sigma$  is the annualised yield volatility parameter ( $\sigma =12.0$  per cent)
- $\varepsilon_t$  is the independent identically distributed random variables, distributed normally with zero mean and standard deviation of one.

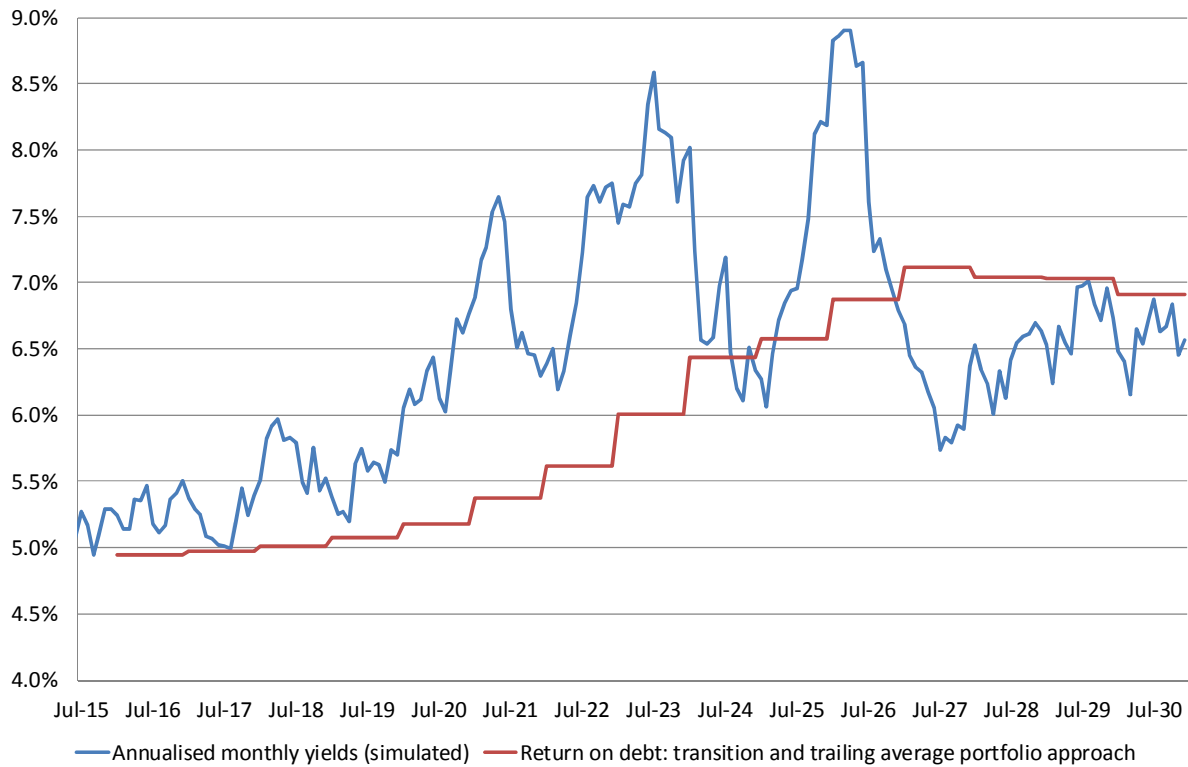
The AER chose the starting rate of return to be equal to the average of Bloomberg seven year BBB yields for the month of July 2013. The AER generated 300 monthly observations. For the purposes of this example, the AER assumed a service provider has a five year regulatory control period, and the next regulatory control period starts on 1 January 2016. The AER also assumed that the averaging periods for each regulatory year are set to the month of September of the previous year.

Figure 2 below illustrates the allowed return on debt during the transitional period of January 2016 to December 2022. It is estimated according to the trailing average portfolio approach, following the transitional period (red solid line). Note that the return on debt allowance in the first regulatory year of the transitional period is equal to the 'on the day' allowance for the same regulatory year.

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<sup>15</sup> Queensland Treasury Corporation (QTC), *Submission to AER's rate of return guidelines consultation paper*, 21 June 2013, pp. 29–30.

**Figure 2** An example of estimated allowed rate of return on debt during a transitional period and under the trailing average portfolio approach



Source: AER analysis.

Table 4 provides details on the estimation of the allowed return on debt for the first eight regulatory years.

**Table 4 Example of the estimated return on debt allowance calculations (per cent)**

Regulatory year	Prevailing rate during averaging period (per cent)	rate the period	Computations (per cent)	Return on debt allowance (per cent)
2016	4.94		4.94	4.94
2017	5.17		$\frac{6}{7} \cdot 4.94 + \frac{1}{7} \cdot 5.17$	4.97
2018	5.19		$\frac{5}{7} \cdot 4.94 + \frac{1}{7} \cdot 5.17 + \frac{1}{7} \cdot 5.19$	5.01
2019	5.41		$\frac{4}{7} \cdot 4.94 + \frac{1}{7} \cdot 5.17 + \frac{1}{7} \cdot 5.19 + \frac{1}{7} \cdot 5.41$	5.08
2020	5.63		$\frac{3}{7} \cdot 4.94 + \frac{1}{7} \cdot 5.17 + \frac{1}{7} \cdot 5.19 + \frac{1}{7} \cdot 5.41 + \frac{1}{7} \cdot 5.63$	5.17
2021	6.34		$\frac{2}{7} \cdot 4.94 + \frac{1}{7} \cdot 5.17 + \frac{1}{7} \cdot 5.19 + \frac{1}{7} \cdot 5.41 + \frac{1}{7} \cdot 5.63 + \frac{1}{7} \cdot 6.34$	5.37
2022	6.62		$\frac{1}{7} \cdot 4.94 + \frac{1}{7} \cdot 5.17 + \frac{1}{7} \cdot 5.19 + \frac{1}{7} \cdot 5.41 + \frac{1}{7} \cdot 5.63 + \frac{1}{7} \cdot 6.34 + \frac{1}{7} \cdot 6.62$	5.61
2023	7.73		$\frac{1}{7} \cdot 5.17 + \frac{1}{7} \cdot 5.19 + \frac{1}{7} \cdot 5.41 + \frac{1}{7} \cdot 5.63 + \frac{1}{7} \cdot 6.34 + \frac{1}{7} \cdot 6.62 + \frac{1}{7} \cdot 7.73$	6.01

Source: AER analysis.