Appendix C: Rate of Return

Introduction

The capital already invested in the network and the financing and costs associated with that capital, has by far the greatest impact on prices. The cost of funding this capital is determined by multiplying the value of the asset base by the proposed rate of return.

It is more important than ever for Ergon Energy to ensure we have an appropriate rate of return to attract funds should we be required to.

Using advice of experts and consistent with the views of private sector industry participants, our required equity returns are consistent with statutory objectives, but higher than what was calculated by the AER in its Rate of Return Guideline. A departure from the guideline is therefore necessary. Our required cost of debt is relatively consistent with the AER's guideline calculations.

Customer benefits

We have been able to propose a much lower rate of return, thanks to current market conditions, which is again supporting our commitments around electricity prices.

The placeholder allowed rate of return of 8.02% in our Regulatory Proposal is a reduction on the current period's 9.72% and the 8.50% rate set in the prior period (under the regulation of the QCA).

This supports our target to reduce what we charge for the use of our network in 2015-16, and keep increases overall in network charges under inflation for the next five years.

Appendix C: Rate of Return

1 Introduction

This Appendix describes Ergon Energy's approach to determining the rate of return that we propose to apply to Standard Control Services in the regulatory control period 2015-20.

We have included a placeholder estimate of 8.02% (nominal) for the rate of return based on market conditions at the time our proposal was finalised. In doing so, we have been able to meet our 'best possible price' commitment outlined in *0A.00.01 – An Overview, Our Regulatory Proposal 2015-20.* To the extent that our financing costs continue to improve relative to the assumptions contained in our proposal, we expect the AER to establish a rate of return commensurate with these conditions to deliver even better outcomes for customers in terms of what we charge to build, operate and maintain our network.

1.1 Commercial and market context

The remaining value of capital investments Ergon Energy has made is represented by the approved RAB. Prices are set to enable us to recover our investment over time (a return of that capital or depreciation, referred to in Chapter 3), as well as the cost of funding investments through debt or equity (a return on capital or allowed rate of return).

An allowance for the return on capital is therefore a key revenue building block making up our revenue allowance. The return on capital is calculated as the product of the allowed rate of return and the opening value of the RAB used to provide Standard Control Services for that regulatory year.[111]

As an asset intensive business, Ergon Energy's financing requirements are substantial. Table 51 sets out the assumed funding requirements for Ergon Energy at the beginning of the regulatory control period.

Table 51: Assumed funding requirements, $m[112]

Assumed financing requirement represented by Opening RAB	$10,041.54
Investment requiring debt financing	$6,024.93
Investment requiring equity financing	$4,016.62

Because all distribution network businesses are highly capital intensive, the return on capital tends to be the most significant of the building blocks that make up the ARR. This has been recognised by the Australian Energy Market Commission (AEMC) in the context of the 2012 Rule change process: [113]

[111] NER, clause 6.5.2(a).
[112] Assumes capital structure consistent with the AER's Rate of Return Guideline.
[113] AEMC (2012), *Final Rule Determination, National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012*, ppii-iii.

"Given the capital intensity of energy networks, the rate of return is one of the key determinants of the network prices that consumers pay. The nature of the energy network sector requires service providers to make significant investments in assets over time to maintain and improve their networks. The rate of return allows service providers to attract the necessary funds from capital markets for these investments and service the debt they incur in borrowing the funds."

In the current regulatory control period, the return on capital made up more than half of Ergon Energy's total revenue requirement. The methods used to calculate the return on capital is therefore also one of the more contentious issues when establishing future revenue allowances. The determination of a forward-looking rate of return is an inherently subjective exercise as many of the parameters, in particular the expected return on equity, are not readily observable. Because of the subjectivity and sensitivity to future revenues, the rate of return has been the most debated issue in recent policy developments and regulatory reviews.

The allowed rate of return needs to be commensurate with the return that an investor would require to commit capital to the business, having regard to prevailing conditions in the market for funds. [114] The AEMC has acknowledged that:[115]

"If the allowed rate of return is not determined with regard to the prevailing market conditions, it will either be above or below the return that is required by capital market investors at the time of the determination. The Commission was of the view that neither of these outcomes is efficient nor in the long term interest of energy consumers."

The AER has also noted the adverse consequences of a rate of return set too high or too low:[116]

"A good estimate of the rate of return is necessary to promote efficient prices in the long term interests of consumers. If the rate of return is set too low, the network business may not be able to attract sufficient funds to be able to make the required investments in the network and reliability may decline. On the flip side, if the rate of return is set too high, the network business may seek to spend too much and consumers will pay inefficiently high prices."

[114] NER, clause 6.5.2(g). In the revised NER this clause now only relates to the return on equity. This still applies to the extent relevant in relation to the return on debt, recognising that under the trailing average approach the return on debt will reflect the cost of debt raised historically, with the prevailing return on debt 'averaged in' to that trailing average each year as part of the annual update.

[115] AEMC (2012), Ibid, p44.

[116] AER (2013a), *Better Regulation: Rate of Return Fact Sheet*, December 2013.

While risks occur if the rate of return is set too high or low, there is evidence to suggest that regulatory error tends to have asymmetric consequences. The Productivity Commission has stated: [117]

> "Over-compensation may sometimes result in inefficiencies in timing of new investment in essential infrastructure (with flow-ons to investment in related markets), and occasionally lead to inefficient investment to by-pass parts of the network. However, it will never preclude socially worthwhile investments from proceeding.
>
> On the other hand, if the truncation of balancing upside profits is expected to be substantial, major investments of considerable benefit to the community could be forgone, again with flow-on effects for investment in related markets.
>
> In the Commission's view, the latter is likely to be a worse outcome."

In reporting to the Ministerial Council on Energy as part of its review of energy network pricing, the Expert Panel found:[118]

> "Even if there is no systemic bias in regulatory decisions, the costs of regulatory error are asymmetric, i.e., errors leading to suppression of rates of return and under-provision of infrastructure are likely to outweigh the costs of errors leading to extraction of above-normal rates of return from regulated infrastructure."

The consequences of under-investment in electricity network infrastructure in Queensland are well known. Following a period of extended outages arising from a severe storm season and hot weather, the Queensland Government commissioned a review of electricity distribution and service delivery (the EDSD review), which concluded:[119]

> "While the Panel accepts that it would not be economically prudent to "gold plate" the networks, it is clear that there needs to be sufficient expenditure to maintain them adequately and to develop them to meet new customer demands. For the reasons explained in this Report, the Panel believes that the networks have not had sufficient expenditure outlaid on them to adequately maintain them and to meet increased demand from growth…"

[117] Productivity Commission (2001), *Review of the National Access Regime, Report no. 17*, AusInfo, Canberra, p83.
[118] Expert Panel on Energy Access Pricing (2006), *Report to the Ministerial Council on Energy*, April 2006, p77.
[119] Independent Panel (2004), *Detailed Report of the Independent Panel, Electricity Distribution and Service Delivery for the 21st Century*, p8.

The NER establish a framework based on the forward looking benchmark costs of raising debt and equity from the market to fund investment. The application of this same assumption to government and non-government owned businesses was explicitly considered and endorsed by the AEMC[120] and AER.[121]

It has therefore always been relevant to Ergon Energy to set an allowed rate of return at a level that would be sufficient to attract private capital, regardless of our government ownership. As acknowledged by the AEMC[122] and AER,[123] this is also consistent with the principle of competitive neutrality, which underpinned the corporatisation of government-owned businesses, including Ergon Energy.

In 2014, the Queensland Government released its Strong Choices strategy, which includes plans to introduce private sector funding of the electricity network businesses. For Ergon Energy, this contemplates:[124]

- State responsibility for corporation debt being progressively removed from the State's balance sheet
- potential for the private sector to directly fund future capital expansions or to finance current investment through a long-term lease
- increased private sector involvement in Ergon Energy's investment decision-making processes.

The Queensland Government intends to take this plan to the next election.

While Ergon Energy's allowed rate of return has always been set with reference to an efficient private sector benchmark, the Government's announcement highlights the fact that Ergon Energy expects to be competing with other businesses in the infrastructure sector for scarce capital.

1.2 Legislative context

The regulatory framework in relation to the provision of Standard Control Services to our customers is contained in the NEL. The Revenue and Pricing Principles[125] allow us to "at least" recover the efficient costs of providing these services.

One of these principles stipulates that the price of these services "should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates." This allowed rate of return reflects the efficient costs of financing the capital investments Ergon Energy needs to make in order to deliver our services to our customers.

[120] AEMC (2012). Ibid.
[121] AER (2013b), *Better Regulation, Explanatory Statement, Rate of Return Guideline*, December 2013.
[122] AEMC (2012), Ibid, p79.
[123] AER (2013b), Ibid, p211.
[124] Queensland Government (2014), *The Strongest and Smartest Choice, Queensland's Plan for Secure Finances and a Strong Economy*.
[125] NEL, clause 7A.

The NER now requires the allowed rate of return to achieve the following objective (the 'allowed rate of return objective'):[126]

> "…the rate of return for a *Distribution Network 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 *Distribution Network Service Provider* in respect of the provision of *standard control services*…"

Importantly, consistent with the principles of incentive regulation, the NER requires that the allowed rate of return is based on the efficient benchmark costs of raising debt and equity from the capital markets to fund these investments. It is not based on Ergon Energy's actual financing costs. This provides an incentive for us to achieve efficiency gains and ensures that we cannot be rewarded for inefficient funding practices and costs.[127]

1.3 The Rate of Return Guideline

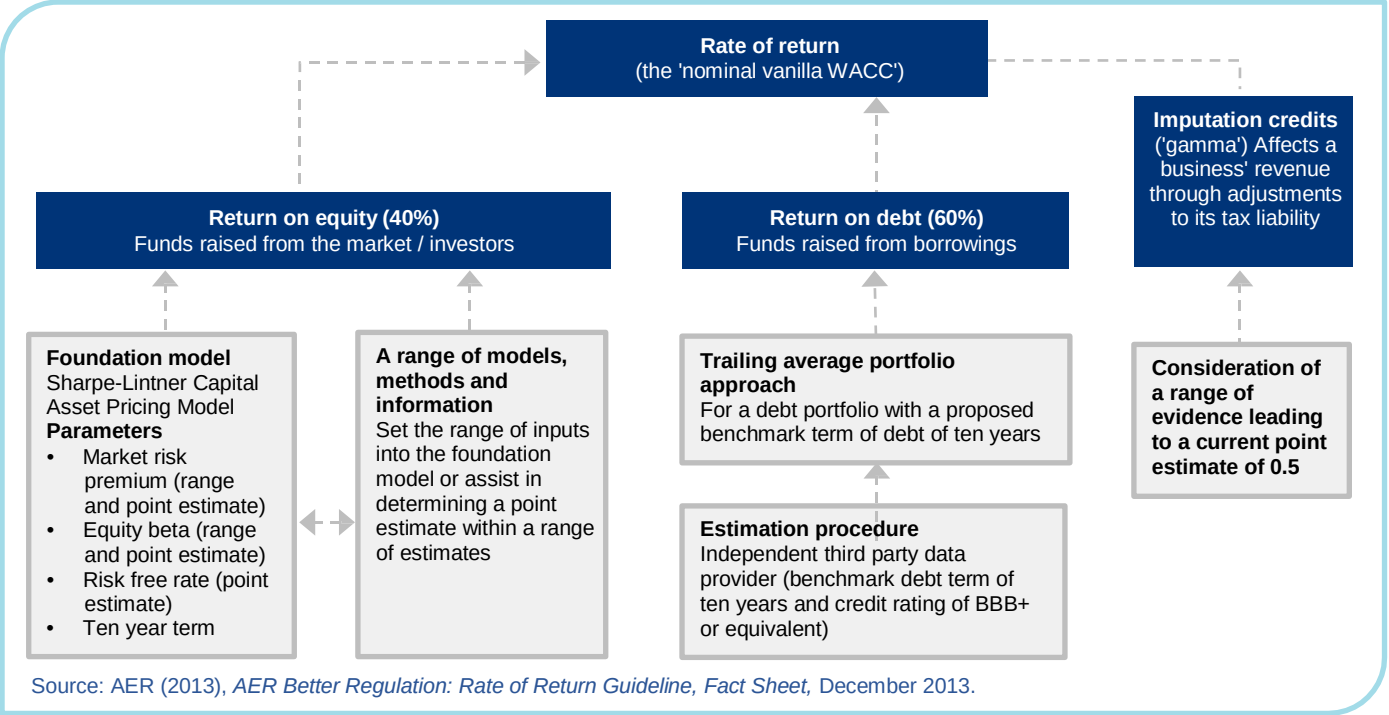
Recent amendments to the NER for the estimation of the allowed rate of return recognise the important role the rate of return plays in attracting the necessary funds from capital markets for these investments. The new arrangements address the need for sufficient flexibility to ensure the allowance for the return is appropriate, based on careful consideration of relevant estimation methods, financial models, market data and other evidence.[128]

To provide NSPs with some degree of certainty as to how the AER is likely to apply these provisions, the NER provides for the AER to make and publish Rate of Return Guidelines.[129] The AER's approach to estimating the allowed rate of return is summarised in Figure 17.

The Rate of Return Guideline is not binding and must be departed from if the outcomes of the guideline will not produce a rate of return that is consistent with the requirements of clause 6.5.2 of the NER and/or will not satisfy the allowed rate of return objective. We highlight the areas where the AER should depart from its Guideline and the reasons why in the relevant parts of this Appendix.

[126] NER, clause 6.5.2(c).
[127] AEMC (2012), p12.
[128] AEMC (2012), Ibid, piii.
[129] NER, clause 6.5.2(m).

Figure 17: AER's approach to estimating the allowed rate of return



Source: AER (2013), *AER Better Regulation: Rate of Return Guideline, Fact Sheet,* December 2013.

2 Our proposed rate of return

Ergon Energy has developed our rate of return proposal with the objective of obtaining the best possible estimate under the NER, which reflects prevailing conditions in the market for funds.[130] Assuming 60% gearing, the proposed estimate for the first year of the regulatory control period is provided in Table 52 below.

Table 52: Summary of key rate of return parameters, 2015-20[131]

Key parameter	Ergon Energy's calculation
Return on equity	10.53%
Return on debt	6.36%
Rate of return	8.02%

This is an indicative 'placeholder' estimate reflecting prevailing market rates in the period prior to the submission of this Regulatory Proposal. Consistent with the AER's normal practice, the return on debt and equity will be updated prior to the AER's Final Determination.

The return on debt will then be updated annually during the regulatory control period in accordance with the trailing average approach,[132] based on averaging periods to be agreed with the AER. For

[130] S6.1.3(9) of the NER provide that Ergon Energy's building block proposal must provide a calculation of the proposed return on equity, return on debt and allowed rate of return, for each regulatory year of the regulatory control period, in accordance with clause 6.5.2, including any departure from the methodologies set out in the Rate of Return Guideline and the reasons for that departure.

[131] To calculate the WACC, the return on equity value has been rounded to 10.5%, consistent with the PTRM.

the purpose of this Regulatory Proposal, our estimate of the return on debt for the first year of the regulatory control period has been applied to each of the remaining four years of the regulatory control period. Section 4.2 of this Appendix sets out the method of calculation of the proposed rate of return on debt which Ergon Energy proposes to apply in the first and each subsequent year of the regulatory control period.

The basis of Ergon Energy's proposal is summarised in Table 53, including identifying where Ergon Energy has departed from the AER's Rate of Return Guideline.

Table 53: Overview of Ergon Energy's proposed approach to estimating the allowed rate of return

Allowed rate of return component / parameter	Rate of Return Guideline approach/value	Ergon Energy's proposal and identified departures
Rate of return on equity	• The AER's starting point is the standard Sharpe-Lintner Capital Asset Pricing model (SL CAPM) – its 'Foundation Model'. Value of certain parameters and overall rate of return on equity estimate informed by considering other models and relevant data/evidence • Estimate to be applied for the duration of the regulatory control period	Ergon Energy has departed from the AER's Rate of Return Guideline on the choice of model. We consider that the application of the SL CAPM as set out in the Rate of Return Guideline will not produce a return on equity estimate that satisfies the requirements of the NER and the allowed rate of return objective. Instead, it is proposed that these requirements would be satisfied by estimating the return on equity by applying all relevant models (the SL CAPM, Black CAPM, Dividend Discount Model and Fama-French model), as permitted under the NER. If the AER rejects our departure from the Guideline, an alternative approach is outlined in Section 3.5.
Return on Equity: Risk free rate	• Observed yield on 10 year Commonwealth Government bonds • Averaged over a 20 business day period, where the period is nominated in advance by the AER and will be as close as practicably possible to the commencement of the regulatory control period	Ergon Energy's proposed approach complies with the AER's Rate of Return Guideline. For the purpose of this Regulatory Proposal, Ergon Energy's proposed risk free rate is 3.63%, which is the average over the 20 business days to 11 July 2014. It is understood that this will be updated for the AER's Final Distribution Determination. It is assumed that any material changes in prevailing market conditions at the time the risk free rate is reset would also necessitate a review of the market risk premium (MRP).
Return on Equity: Market Risk Premium	• 10 year forward looking estimate commensurate with prevailing conditions in the market for funds at the commencement of the regulatory control period • Evidence to be considered includes historical excess returns, dividend	Ergon Energy has departed from the AER's Rate of Return Guideline to estimate the MRP. This is because we do not consider that the evidence relied upon by the AER will result in a return on equity estimate that satisfies the requirements of the NER and the allowed rate of return objective.

[132] Using the methodology specified in clause 6.5.2(j)(2) of the NER – known as the trailing average portfolio approach – the rate of return on debt, and consequently the allowed rate of return, will vary during each regulatory year of the regulatory control period 2015-20.

Allowed rate of return component / parameter	Rate of Return Guideline approach/value	Ergon Energy's proposal and identified departures
	growth model, survey evidence, implied volatility and recent regulatory determinations	Our estimate is instead based on historical excess returns, the Wright approach, the Dividend Discount Model and independent valuation reports. As at 11 July 2014, this results in an estimate of 7.57%.
Return on Equity: Equity beta	• To be estimated using empirical analysis, which focuses on a small sample of domestic energy network businesses • International comparators and the Black CAPM will inform where the point estimate is selected from within the range • The AER's preferred value is 0.7.	Ergon Energy has departed from the AER's Rate of Return Guideline to estimate beta. This is because we consider that the AER's approach to estimating beta is deficient as it fails to take into account relevant current market evidence. The AER's decision to exclude international comparators from its beta sample, but use them to inform where the point estimate is selected from within the range, materially underweights the contribution this data should be given to the beta estimate. The CAPM beta has therefore been re-estimated to include these firms in the sample. The resulting estimate is 0.82. If the AER rejects the multi-model approach and applies the SL CAPM only, Ergon Energy submits that the equity beta estimate applied in that model needs to be set at 0.91 in order to arrive at an estimate of the return on equity that satisfies the requirements of the NER.
Rate of return on debt	• BBB+ credit rating assumption • Based on historical trailing average portfolio approach, assuming one-tenth of the debt portfolio is refinanced each year (simple averaging approach) • Transitional formula will apply for the first ten years • Data used to produce the estimate will be sourced from an independent third party provider • Measured using an averaging period of 10 or more consecutive business days and no more than twelve months. Averaging periods must be nominated by the NSP at the start of the regulatory control period	Ergon Energy has complied with the Rate of Return Guideline in estimating the return on debt in relation to: • adoption of the trailing average approach, with a transition • use of an independent third party provider to estimate the return on debt • nomination of our proposed averaging periods for each year of the regulatory control period. Ergon Energy has departed from the Rate of Return Guideline in the following areas: • *the notional credit rating assumption:* the AER's BBB+ assumption was arrived at having regard to over 10 years of credit rating data. In the case of credit ratings, Ergon Energy disagrees that such a long horizon is necessary and instead, considers that this could be misleading. Focusing on more recent data (the last five years) would indicate that the appropriate assumption is BBB, which is what Ergon Energy has applied in this proposal. • *the averaging approach:* instead of a simple average, Ergon Energy is

Allowed rate of return component / parameter	Rate of Return Guideline approach/value	Ergon Energy's proposal and identified departures
		proposing to apply a weighted average that reflects the approved capital expenditure and associated borrowing profile contained in the approved PTRM. This is because a simple average could still result in a material mismatch between the actual and allowed return on debt given the lumpy nature of an energy NSP's capital expenditure profile. This is not consistent with the NER requirements. Ergon Energy has used data from the Reserve Bank of Australia (RBA) to estimate the debt risk premium. Because the RBA's ten year estimate reflects a term to maturity of less than 10 years, the estimate has been extrapolated to produce a 10 year estimate based on the slope of the RBA's yield curve. Ergon Energy has estimated the return on debt as the Australian Financial Markets Association (AFMA) swap rate plus the RBA's margin to swap. For the first year of the regulatory control period, the indicative risk free rate (for the cost of debt) and the debt risk premium reflects the mid-point of an averaging period that is between one and 12 months. The resulting estimate is 6.36%.
Gearing ratio	• Based on benchmark gearing ratio of 60% (debt to total value)	Ergon Energy has proposed the Rate of Return Guideline value of 60%.
Allowed rate of return	• Defined as a nominal vanilla Weighted Average Cost of Capital (WACC) • To be estimated based on a weighted average of the point estimates of the rate of return on equity and the rate of return on debt, assuming a 60% gearing ratio • To be updated annually each year for adjustments to the rate of return on debt	The return on equity has been estimated based on the four relevant models specified above, applying weights that reflect the relative strengths and weaknesses of each model. This results in an estimate of 10.53%, which has been rounded to the nearest one decimal place consistent with the PTRM, resulting in an input value of 10.5%. Combining this with the return on debt of 6.36%, Ergon Energy's proposed WACC is 8.02% (post tax nominal vanilla).
Imputation credits	• Value of 0.5 assigned to imputation credits	Ergon Energy has departed from the AER's Rate of Return Guideline because we consider that there are a number of material flaws in the AER's reasoning and approach. Ergon Energy has proposed a value of 0.25, which we consider will better meet the requirements of the NER.

3 Proposed return on equity

Ergon Energy has departed from the AER's Rate of Return Guideline in favour of an estimate that gives appropriate regard to relevant estimation methods, financial models, market data and other evidence, as required by the NER and contemplated by the AEMC as an outcome of its 2012 Rule change process. Our estimate reflects the return that an equity investor would require in committing funds to a firm with the same risk profile as the benchmark efficient entity, given prevailing market conditions. Our estimate for the return on equity therefore contributes to the achievement of the allowed rate of return objective.

As a Government Owned Corporation, Ergon Energy does not currently seek to attract equity funds from the market. However, as noted above, these arrangements may change in the future. The Queensland Government has recently announced it is exploring options for private sector involvement in financing Ergon Energy investments. While the NER has always observed the need for rates of return to be commensurate with prevailing market rates that reflect private sector benchmarks, it is more important than ever for Ergon Energy to ensure we have an appropriate rate of return to attract funds should we be required to.

Ergon Energy jointly commissioned SFG Consulting (SFG) to undertake extensive analysis of the methods used to estimate the return on equity within the context of the NER requirements. The outcomes are summarised in SFG's summary report, *The Required Return on Equity for Regulated Gas and Electricity Network Businesses* (the SFG Cost of Equity Report), which forms part of this Regulatory Proposal.[133]

SFG concluded that there is a broad range of evidence that is relevant to the estimation of the required return on equity for the benchmark efficient entity. In particular, four models are proposed as relevant evidence. SFG analyses this evidence, along with the relevant strengths and weaknesses. The relevant methods and models are used in estimating the return on equity, having regard to prevailing conditions in the market for equity funds. SFG also completed separate reports on the:

- Black CAPM[134]
- Dividend Discount Model[135]
- Fama-French model.[136]

The analysis by SFG demonstrates that the return on equity that would result if the Rate of Return Guideline was applied is too low and is well below the estimates produced by applying other relevant models and evidence. While the Rate of Return Guideline attributes some role to some of these alternative models and evidence, the AER intentionally starts with the SL CAPM as its Foundation Model. The effective outcome of applying this approach is that other models have little, if any, material weight.

Ergon Energy submits that the AER's approach, if applied in Ergon Energy's distribution determination, will produce a rate of return that fails to satisfy the requirements of clause 6.5.2 of the NER. If the AER's preferred Foundation Model is implemented in accordance with the Rate of

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[133] *08.01.01 — SFG Consulting: The Required Return on Equity for Regulated Gas and Electricity Network Businesses.* The SFG Cost of Equity Report issued in May 2014 was updated to reflect more up-to-date market parameters. The addendum, *08.01.02 – Updated estimate of the required return on equity*, is also attached to this Regulatory Proposal.

[134] *08.01.05 – SFG Consulting: Cost of Equity in the Black Capital Asset Pricing Model* (SFG Report Black CAPM)

[135] *08.01.07 – SFG Consulting, Alternative Versions of the Dividend Discount Model and the Implied Cost of Equity* (SFG Report Dividend Discount Model)

[136] *08.01.06 – SFG Consulting: The Fama-French Model* (SFG Report Fama French)

Return Guideline, it will result in a return on equity that is too low in the current market environment. This will undermine rather than promote the allowed rate of return objective. For this reason, Ergon Energy has proposed a departure from the AER's Rate of Return Guideline. The form of this departure, and the reasons for it, are explained in more detail below.

3.1 The correct methodology for determining the expected cost of equity

Issues with the AER's approach

Findings of the AEMC's Rule change process

One of the most significant changes emerging from the rule change process concluded by the AEMC in 2012 was recognition of the role that other estimation methods, models, market data and other evidence should have in estimating the return on equity.[137] This role is not a peripheral or secondary one. Rather it recognised that:

> "…no one method can be relied upon in isolation to estimate an allowed return on capital that best reflects benchmark efficient financing costs…"[138]

In its Final Position Paper, the AEMC acknowledged the concerns that stakeholders expressed in relation to the proposed rule changes, which was that the regulator would still effectively be able to exclusively rely on the SL CAPM. It stated that:

> "The Commission understands this concern is potentially of considerable importance given its intention is to ensure that the regulator takes relevant estimation methods, models, market data and other evidence into account when estimating the required rate of return on equity."[139]

However, in the interests of balancing prescription and flexibility, it resisted including a list of relevant models and evidence (which would be non-exhaustive), or assigning weights that should be applied to them.

In Ergon Energy's view, the intent of these changes to the NER and the AEMC's resistance to introduce prescription regarding the models and evidence was not to provide the regulator with the discretion to apply the same approach that it applied prior to the changes. However, this is effectively what the application of the AER's Rate of Return Guideline does in practice. To the extent that it proposes to refer to other models and evidence, they are assigned limited, if any, practical weight in terms of their impact on the overall outcome.

The AER states that the SL CAPM only provides the "starting point" and "will be used informatively, rather than determinately".[140] Ergon Energy considers that this materially understates the role it plays in the AER's decision framework if the Guideline is applied.

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[137] AEMC, Rule Determination, ibid
[138] AEMC, Rule Determination, Ibid, p49.
[139] AEMC (2012), Ibid, p39.
[140] AER (2013b), Ibid, p.75.

The AER's Guideline does also specify a potential role for other market data and evidence in assessing the reasonableness of the return on equity estimated using the SL CAPM. While the AER suggests that this other data and evidence could cause it to depart from the SL CAPM estimate, it has considerable discretion here and the circumstances under which it might do so, and how such an adjustment would be made, without departing from the Guideline, remain unclear.

Overall, under the AER's Rate of Return Guideline the return on equity is still being set within the confines of the SL CAPM and the assumption that a firm's returns are fully explained by systematic risk. Further, it assumes that this relationship between risk and return is linear. As will be set out below, empirical tests of the CAPM have shown that it in fact produces estimates of expected returns that bear little relationship with actual returns, which could also mean that factors or risks that are priced by investors are ignored by the SL CAPM.

Limitations of the Sharpe-Lintner CAPM

There are a number of known limitations of the SL CAPM, which are addressed in detail in SFG's Cost of Equity Report.[141] The key issues are summarised in the section below.

First, the SL CAPM's limiting assumptions have been acknowledged, including by the AER.[142] The SL CAPM's limiting assumptions include:

- investors can undertake unlimited borrowing and lending at the risk free rate
- all investors have homogenous expectations
- there are perfect capital markets, with no taxes or transaction costs.

Second, the SL CAPM has performed poorly in empirical tests. In particular, there is consistent and strong evidence to show that the SL CAPM will tend to underestimate the return on equity for low beta stocks (or stocks that are less risky than the market) and overestimate the return for high beta stocks. The Black CAPM enhances the SL CAPM by relaxing its restrictive assumption that investors can borrow and lend at the risk free rate.

Third, as noted above, the SL CAPM models a linear relationship between risk and return, which assumes that the market portfolio must be efficient. If the market portfolio is not efficient, the relationship between risk and return will not be linear and the application of the SL CAPM will not result in estimates of expected returns that are a good predictor of actual returns.

SFG observes the consistent historical evidence that shows that certain portfolios have consistently outperformed the stock market across time and across markets. This is highly unlikely to occur if the market is (ex ante) efficient. As this consistent evidence has accumulated through time, this more likely suggests that rather than occurring by chance, this is occurring because of the presence of factors that are not reflected in the SL CAPM. The two key factors that have emerged from empirical tests are size and the book to market ratio. The Fama-French three factor model is an alternative asset pricing model that estimates expected returns as a function of systematic risk, along with size and book to market ratios. The use of this model is discussed further below.

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[141] *08.01.01 – SFG Consulting: The Required Return on Equity for Regulated Gas and Electricity Network Businesses*.

[142] The AER has specified a role for the Black CAPM in estimating the equity beta, which as noted below, as implemented by the AER results in that model having limited, if any, practical influence on the return on equity.

While the issues identified above are significant, given different asset pricing models have different strengths and weaknesses it is not proposed to discard the SL CAPM completely. However, it does not rationalise the AER continuing to provide it with the status of sole Foundation Model, while relegating other models to having a very limited practical role, or no role at all (in the case of the Fama-French Model).

As noted above, while the AER describes the SL CAPM as a "starting point", this starting point is the SL CAPM defined range. This is also highly dependent on the way the SL CAPM is implemented and the market data and evidence that is relied upon (this is considered in more detail below in the context of examining each parameter).

At best, the AER has assigned some weight to the Dividend Discount Model in using it, alongside other evidence, to establish the range for the MRP in the SL CAPM. However, in acknowledging that it has some relevance to estimating the return on equity (although no weighting is specified relative to other models and evidence), its practical influence on the overall outcome remains limited and then only within the confines of one of the SL CAPM's inputs. Ergon Energy notes that the AER's current estimate of the MRP, which is 6.5%, was applied in previous determinations under the AER's previous Statement of Regulatory Intent (following the commencement of the GFC).

The Black CAPM has also been used to inform where the AER selects the point estimate for beta within the SL CAPM range. It uses this, along with beta estimates from international firms, to justify selection of the point estimate from the upper bound of that range. This alternative model and market data is acknowledged as relevant but has no influence on the specification of the range itself. The AER had previously selected the beta estimate from the upper bound of its range in the absence of any acknowledgment of the Black CAPM, or this other evidence.

In summary, the AER's Guideline does not give sufficient weight to the range of evidence available. Ergon Energy interpreted the AEMC's process – and the consequent rule changes – as a fundamental turning point in the framework for determining the cost of equity giving more appropriate recognition to these other models and greater flexibility in how they are used in estimating the return on equity. Therefore, appropriate recognition of other models requires a departure from the Guideline.

Summary of concerns with application of the AER's Rate of Return Guideline

The AER's application of the SL CAPM as its Foundation Model therefore introduces two potential sources of error. The first is that the AER's return on equity estimate is based on a model that has been shown to be a poor predictor of actual returns and ignores relevant factors and/or risks that explain returns. The second source of risk is that the parameters themselves are not correctly estimated.

Overall, the key question is whether the AER's framework in the Rate of Return Guideline makes appropriate use of all relevant estimation methods, models, market data and other evidence to produce the best available estimate of the required return on equity in the current market based on the requirements of the NER. In Ergon Energy's view, based on the arguments summarised above and the more detailed analysis and evidence contained in the accompanying SFG reports, it clearly does not.

This is of significant consequence. SFG's analysis demonstrates that the SL CAPM produces a return on equity that is materially below the estimates produced by the other relevant models it has identified, being the Black CAPM, Fama-French Model and Dividend Discount Model, and indeed

is the 'outlier' of the four, producing an estimate that is well below the other three models. This in turn is likely to result in an estimate that is below the return required by investors in the current market environment, which will adversely impact the ability of the business to raise funds to undertake necessary investments.

Ergon Energy's proposal

SFG concluded that all four models (the SL CAPM, the Black CAPM, the Dividend Discount Model and the Fama-French model) have a relevant role to play in estimating the return on equity and that they all:

- have a sound theoretical basis
- have the purpose of estimating the required return on equity as part of the estimation of the cost of capital
- can be implemented in practice
- are commonly used in practice.

Each model has strengths and weaknesses, which are addressed in more detail in the accompanying SFG reports.

SFG's analysis demonstrates that:

- estimates produced by the other models provide evidence that sole reliance on the SL CAPM as a starting point will result in a return on equity estimate that is too low to satisfy the requirements of clause 6.5.2 of the NER and the allowed rate of return objective, having regard to current market conditions
- in any case, while each model has its strengths and weaknesses, these other models are relevant to informing the best possible estimate of the return on equity and therefore should be given more weight. Applying them in this way better satisfies the requirements of the NER and is also more consistent with the intent of the AEMC's rule changes.

A departure from the AER's Rate of Return Guideline is necessary as, when practically applied, it effectively assigns little weight to these other models and evidence even allowing for the reasonableness tests within the Guideline.[143] SFG recommends a weighted average of the estimates produced by each model, where the weights reflect the strengths, weaknesses and relevance of each model. The weights applied are:

- 25% weight to the Dividend Discount Model and 75% to the other three models
- of the 75% weight applied to the other three models, half is applied to the Fama-French Model (37.5%) and half to the CAPM (37.5%)
- the key difference between the two CAPM models (the Black and SL CAPM) is the intercept. The Black CAPM uses an empirical estimate, selected to provide the best fit to the observed data, while the SL CAPM's risk-free rate assumption sets a theoretical lower bound (given a return could not be below this). Twice as much weight is therefore placed on the Black CAPM.

It is noted that this result is relatively insensitive to the choice of weights.

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[143] AER (2013c), *Better Regulation, Rate of Return Guideline*, December 2013, p23.

SFG also shows how the AER's Foundation Model would need to be applied by giving appropriate regard to this other evidence in order to produce a result that meets the requirements of the NER. Not surprisingly, this produces the same return on equity estimate as the multi-model approach because this reflects the best available estimate of the return on equity that satisfies the NER's requirements, in the current market environment.

As highlighted by SFG:

> "Indeed, the foundation model approach can only produce a different estimate of the required return on equity if it is implemented in such a way as to either (a) omit evidence that would otherwise have been considered, or (b) change the relative weights that would otherwise have been applied to some evidence."[144]

Ergon Energy has therefore departed from the AER's Rate of Return Guideline and applied SFG's multi-model approach to estimate our proposed return on equity. The next section summarises how the models have been estimated. Should the AER reject our proposed departure, an alternative approach, which would be consistent with the Foundation Model preferred by the AER, is outlined in Section 3.5.

3.2 Estimation of the relevant models

Sharpe-Linter and Black CAPM

Risk free rate

Approach under the AER's Rate of Return Guideline

Under the SL CAPM, the risk free rate should reflect the return on a riskless asset. The most common proxy that has been used is the return on long term sovereign Government bonds. In the Rate of Return Guideline, the AER has proposed to:

- use the yield on 10 year Commonwealth Government bonds as a proxy for the risk free rate of return
- adopt an averaging period of 20 business days for the purposes of measuring the risk free rate. The sampling window will be as close as practicably possible to the commencement of the regulatory control period.

Ergon Energy's proposal

Ergon Energy has adopted this approach. The risk free rate utilised by SFG in its Addendum to the Cost of Equity report[145] was averaged over the 20 business days to 11 July 2014, resulting in an estimate of 3.63%. The current estimate will need to be updated for the AER's Final Distribution Determination. In order to be consistent with the NER, any material changes in prevailing market conditions at the time the risk free rate is observed would also necessitate a review of the MRP.

[144] SFG Cost of Equity Report, p96.
[145] Refer to *08.01.02 – SFG Consulting: Updated estimate of the required return on equity*.

Zero beta premium (Black CAPM)

Approach under the AER's Rate of Return Guideline

While the AER has referenced the Black CAPM in determining where it will select the point estimate for beta from within its recommended range, it does not address the estimation of the zero beta premium.

Ergon Energy's proposal

SFG's report, *Cost of Equity in the Black Capital Asset Pricing Model,*[146] contains more detail as to how the return on equity has been estimated using this model. As noted previously, the key difference between the SL CAPM and the Black CAPM is the intercept. In the case of the Black CAPM, this is the zero beta return, which represents the risk-free rate plus the zero beta premium.

SFG uses twenty years of returns (from 1994 to 2013) to estimate the zero beta premium. SFG's estimation technique relies solely on stock returns, government bond yields, market capitalisation, book-to-market ratios and industry classifications. The resulting estimate is 3.34%.

Market risk premium

Approach under the AER's Rate of Return Guideline

The MRP is the expected return over the risk-free rate that investors would require in order to invest in a well-diversified portfolio of risky assets. The MRP represents the risk premium that investors who invest in such a portfolio can expect to earn for bearing only non-diversifiable risk.

The Rate of Return Guideline does not specify a preferred value for the MRP but indicates that the AER will adopt a 10 year forward looking MRP and consider a broad range of evidence in arriving at its estimate, including historical excess returns, dividend growth model, survey evidence, implied volatility and recent determinations among Australian regulators. Based on the available evidence, the AER will determine a range and a point estimate for the MRP.

Ergon Energy has a number of concerns with the AER's approach. These are outlined in more detail in Chapter 3 of the SFG Cost of Equity Report.[147] A summary of these concerns include:

1 The AER's reliance on both arithmetic and geometric means of historical excess returns. The concern with the use of geometric means is that this assumes that historical data will repeat in the same sequence in the future. It is also noted that most other Australian regulators rely on arithmetic means only. SFG therefore considers that only the arithmetic mean should be used.

2 The AER has not adopted NERA's proposed adjustment to the Brailsford et al data, which addresses a downward systematic bias in that data. SFG considers that this adjustment should be made.

3 The AER's historical excess return dataset in the materials supporting its Guideline is limited to post 1958, and only goes to 2012. SFG proposes that the entire dataset should be used (including pre-1958) and be updated to include 2013.

4 Given an analysis of historical excess returns will reflect 'average' market conditions over that timeframe, consideration should be given as to what extent prevailing market

[146] *08.01.05 – SFG Consulting: Cost of Equity in the Black Capital Asset Pricing Model*.
[147] *08.01.01 – SFG Consulting: The Required Return on Equity for Regulated Gas and Electricity Network Businesses*, p41.

conditions reflect these average conditions. This is not currently contemplated in the AER's approach.

5 While the Ibbotson approach informs the MRP range, the Wright approach, which has been acknowledged as relevant by the AER, is only proposed to be used to assess the overall return on equity. This relevant piece of evidence could therefore have limited, if any, practical influence on the return on equity outcome. This is not considered to meet the requirements of the NER.

6 SFG considers that the AER's application of the Dividend Discount Model, including the downward adjustment to the growth factor, will not produce the best estimate of expected returns. Instead, it recommends its own approach, which avoids the need to impose a growth rate assumption by simultaneously estimating it.

7 SFG discounts the use of survey evidence, which the AER proposes to rely upon in its Rate of Return Guideline. This is because none of the surveys that the AER proposes to rely upon satisfy the criteria set out by the Tribunal in assessing an appeal made by Envestra.[148] If this evidence is to be relied upon, the estimates need to be adjusted to reflect the assumed value of gamma.

8 While the AER has acknowledged that independent expert reports are relevant, like the Wright approach, they are only proposed to be used to assess the overall return on equity. Again, this relevant piece of evidence could therefore have limited, if any, practical influence on the return on equity outcome and is therefore not considered to meet the requirements of the NER.

Having regard to the above considerations, Ergon Energy is of the view that the AER's approach to estimating the MRP will not produce the best possible estimate in the current market, having regard to the requirements of the NER. This necessitates a departure from the AER's Rate of Return Guideline in terms of the approach that is used to estimate the MRP.

Ergon Energy's proposal

Ergon Energy proposes to depart from the AER's Rate of Return Guideline to estimate the MRP and is relying on the analysis conducted by SFG in its Cost of Equity Report. Again, this involves making appropriate use of all relevant models and evidence, including elevating the status of the Wright approach and independent expert evaluation reports, which while accepted as relevant by the AER, risk having no practical influence on the return on equity outcome under its approach. Each model and data source has its relative strengths and weaknesses and SFG has weighted each approach based on these.

Ergon Energy's addendum to the SFG report includes estimates as at 11 July 2014.[149] Table 54 shows the resulting weighted average MRP estimate.

[148] Application by Envestra Ltd (No 2), ACompT 3.
[149] *08.01.02 – SFG Consulting: Updated estimate of the required return on equity*, p3.

Table 54: Market risk premium estimate

Method	Weighting	MRP	Required return on the market
Historical returns	20%	6.63%	10.26%
Wright approach	20%	8.08%	11.71%
Dividend discount model	50%	7.79%	11.42%
Independent expert valuation reports	10%	7.03%	10.66%
Weighted average		**7.57%**	**11.20%**

SFG also shows that the estimate is relatively insensitive to the weights applied, changing by less than 10 basis points if:

- each of the above methods are equally weighted (i.e. 25%)
- equal weight is applied to the Ibbotson historical returns and Wright approach only
- equal weight is applied to the Ibbotson historical returns, Wright and Dividend Discount Model approaches.

The above estimate assumes a theta of 0.35. If a theta of 0.7 is assumed, the MRP needs to be adjusted for that assumption.

Ergon Energy considers that the thorough and robust approach employed by SFG to estimate the MRP produces the best available estimate that satisfies the requirements of the NER, having regard to prevailing conditions in the market for funds. If there is a material change in market conditions between now and the Final Distribution Determination, the MRP will need to be reviewed and possibly amended consistent with the approach outlined by SFG.

Equity beta

Approach under the AER's Rate of Return Guideline

The AER's Rate of Return Guideline proposes an equity beta of 0.7. SFG has critiqued the approach applied by the AER to arrive at its preferred equity beta estimate and has identified concerns with:

- the AER's conceptual analysis of beta
- the AER's reference to the betas of water utilities, which are not considered relevant to the estimation of beta for the efficient benchmark entity
- the AER's reliance on a small sample of domestic energy network businesses for its empirical analysis
- the limited weight that the AER has placed on some of the relevant evidence to inform its equity beta estimate, for example, relegating the role of the Black CAPM to influence the decision as to where the point estimate should be selected from within the range.

The AER's equity beta of 0.7, which is at the upper bound of its preferred range, most likely underestimates the systematic risk of the efficient benchmark entity. This in turn will result in the return on equity being underestimated, which will fail to satisfy the requirements of the NER.

Ergon Energy's proposal

Ergon Energy is proposing to depart from the AER's Rate of Return Guideline to estimate the equity beta. We are relying on the analysis conducted by SFG in its Cost of Equity Report, which shows that an equity beta of 0.7 underestimates the systematic risk of the efficient benchmark entity.

SFG highlights the unreliability of the AER's small sample of domestic firms and uses a wider sample that includes 56 relevant international firms that are primarily engaged in regulated transmission and distribution activities. This arrives at an equity beta of 0.82.

Ergon Energy therefore proposes to apply SFG's equity beta estimate of 0.82 in the SL and Black CAPM, because this is considered to be the best available estimate that satisfies the requirements of the NER, having regard to prevailing conditions in the market for funds.

Summary: Sharpe-Lintner CAPM estimate

Combining the above parameters, the SL CAPM estimate is as follows:

Required return on equity	= Risk free rate + Equity beta * {Required return on the market – risk free rate}
	= 3.63% + 0.82 * {11.2% - 3.63%}
	= 3.63% + 0.82 * 7.57%
	= 9.82%

Summary: Black CAPM estimate

The approach that has been used to estimate the required return on equity using the Black CAPM is detailed in the accompanying report by SFG.[150] As noted previously, the key difference between the SL CAPM and the Black CAPM is the zero beta premium. Otherwise, it uses the same equity beta (0.82) and required return on the market (11.2%).

The required return on equity under the Black CAPM is specified as:

Required return on equity	= {Risk free rate + zero beta premium} + Equity Beta * {Required return on the market – (Risk free rate + zero beta premium)}
	= {3.63% + 3.34%} + 0.82 * {11.2% - (3.63% + 3.34%)}
	= 10.43%

Fama-French model

The approach that has been used to estimate the required return on equity using the Fama French Model is detailed in the accompanying report by SFG.[151]

[150] *08.01.05 – SFG Consulting: Cost of Equity in the Black Capital Asset Pricing Model.*
[151] *08.01.06 – SFG Consulting: The Fama French model.*

The first step in the process is to consider the return on equity without imputation credits (given the risk premiums for the additional market factors do not include any compensation for imputation credits). As noted above, SFG's with-imputation return on the market estimate is 11.2%, which equates to an ex-imputation required return of 10.12%.

In estimating the compensation for the market, firm size and book to market risk factors, SFG has placed 24% weight on Australian firms and 76% on US-listed firms.[152] SFG used monthly data from January 1985 to February 2014. The factors estimated are:

- market exposure: 0.77 * (10.12 - 3.63)
- size: -0.19%
- book to market: 1.15%.

Applying the risk free rate of 3.63%, this results in an ex-imputation return on equity of 9.63%, which equates to a with-imputation return of 10.66%.

Dividend Discount Model

The approach that has been used to estimate the required return on equity using the Dividend Discount Model is detailed in the accompanying report by SFG.[153] This approach, which was recently published in the *Review of Accounting Studies,*[154] includes a number of methodological enhancements that are designed to address estimation error, some of which address issues previously raised by the AER. For example, one of the particular concerns expressed regarding the use of Dividend Discount Models is the forward-looking growth assumption. SFG has addressed this by jointly estimating the return on equity and long-term growth.

In Ergon Energy's view, SFG's rigorous approach results in the best possible estimate of the return on equity applying the Dividend Discount Model. For the reasons outlined above, this estimate should be considered along with the estimates produced by the other three models in informing the required return on equity that satisfies the requirements of the NER. Confining its role to informing the MRP only (and then only alongside other approaches), as the AER has done, gives insufficient weight to this relevant model.

SFG's estimate of the return on equity using the Dividend Discount Model is 10.77%.

3.3 Other considerations – Consumer Challenge Panel

In our meeting with Consumer Challenge Panel (CCP) representatives in March 2014, Ergon Energy was requested to make some comparison between what current rates of return are being proposed and

- what is currently being considered by the Office of Gas and Electricity Markets (OFGEM)
- what expected returns on equity are received by some of our customer groups.

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[152] Having regard to the composition of the sample, which comprised nine Australian stocks and 56 US stocks, this gives double the weight of Australian stocks to US stocks.

[153] *08.01.07 – SFG Consulting: Alternative Versions of the Dividend Discount Model and the Implied Cost of Equity.*

[154] Fitzgerald, Gray, Hall & Jeyaraj (2013), Unconstrained Estimates of the Equity Risk Premium, *Review of Accounting Studies*, 18:560-639.

Similar questions were raised with our customer representative groups in discussions with them as part of our regulatory proposal development process. We asked Synergies to look at the specific issues raised by the CCP and consumers and their report forms part of our Regulatory Proposal.[155]

The Synergies report does indicate that the issues raised by the CCP and consumers are not determinative in the setting of a forward-looking rate of return under the NER. Nevertheless, in our engagement with customers, the quantum of the rate of return and DNSP departures from the AER's Guidelines were subject to criticism.

We have heard our customers and their disappointment with the quantum of the rate of return. We do note that market rates of return have improved since the time of our last determination and this has contributed to lower revenue requirements for the regulatory control period 2015-20. Changes to the NER also provide some comfort to customers that financing costs will be updated annually to reflect the most up to date market analysis.

Finally, we note at the beginning of this chapter that there are consequences for setting rates of return which are too low. The approach we have taken is focused toward long term stability for customers and equity holders as well as debt financiers. It is also aimed at minimising short term volatility in financial markets. We believe such an approach is consistent with customers' long term interests and those of the financiers of regulated businesses.

3.4 Ergon Energy's proposed return on equity

Applying the weights to each model as specified above, Ergon Energy's proposed return on equity is 10.53%,[156] as shown in Table 55.

Table 55: Ergon Energy's proposed return on equity

Model	Weighting	Return on equity
Sharpe-Lintner CAPM	12.50%	9.82%
Black CAPM	25.00%	10.43%
Fama-French	37.50%	10.66%
Dividend Discount Model	25.00%	10.77%
Weighted average		**10.53%**

Ergon Energy is submitting an estimate that makes appropriate use of all relevant models that have a role to play in informing the required return on equity in the current market and therefore satisfies the requirements of the NER, including satisfying the allowed rate of return objective.

3.5 Alternative approach if multi-model proposal departure from Foundation Model is rejected by the AER

If the AER rejects Ergon Energy's proposed departure from its Rate of Return Guideline in favour of its Foundation Model approach, Ergon Energy does not consider that the estimation of the SL CAPM based on the AER's Rate of Return Guideline will produce an estimate that satisfies the requirements of the NER. As noted above, SFG has shown that the SL CAPM estimate is clearly

[155] Refer to *08.01.04 – Synergies Economic Consulting: Response to Issues Raised by Consumer Challenge Panel*.
[156] The calculated WACC is based on a rounded estimate of 10.5%, as per the PTRM.

an outlier compared to the other three models (and as evident from Table 55 above, remains well below the other three estimates even when the model is re-specified based on SFG's recommendations).

Ergon Energy therefore submits that if the AER is to limit its Foundation Model to the SL CAPM, it must apply a different approach to estimate that model than the approach set out in its Rate of Return Guideline. Ergon Energy's proposed alternative approach, which is set out in the SFG Cost of Equity Report,[157] involves using all relevant models and evidence to estimate the parameters in the SL CAPM. This involves applying:

- the same risk-free rate as specified above (3.63%), which is consistent with the AER's Rate of Return Guideline
- the same MRP estimate as proposed above (7.57%), which departs from the AER's Rate of Return Guideline by using all relevant models and evidence to estimate the MRP
- an equity beta of 0.91, which is different from SFG's empirical estimate of beta if it is applied in the SL CAPM as part of Ergon Energy's proposed multi-model approach. This revised estimate of 0.91 has been informed by the SL CAPM, Black CAPM, Fama French and Dividend Discount Model. It is necessary to replace SFG's empirical beta estimate with this multi-model estimate if the AER rejects the application of all four models as foundation models.

It is not surprising that this re-specified SL CAPM arrives at the same estimate as would result from the application of Ergon Energy's proposed multi-model approach, which is 10.53%. This is because this is the estimate that satisfies the requirements of the NER, including the allowed rate of return objective, having regard to prevailing conditions in the market for funds.

4 Rate of return on debt

Ergon Energy has proposed a return on debt of 6.36% for the first year of the next regulatory control period. It is acknowledged that this will be updated prior to the Final Distribution Determination. The return on debt for the subsequent years of the regulatory control period will be updated annually under the trailing average approach.

Like the return on equity, the return on debt must also be estimated so that it contributes to the allowed rate of return objective.[158] The NER now permits an approach that could result in the return on debt changing in different regulatory years in the regulatory control period (or it could continue to be set for the entire period).[159] The NER provides a choice of three methodologies for estimating the return on debt being:

- an 'on the day' approach, which reflects the return that would be required by debt investors in a benchmark efficient entity if it raised debt at the time or shortly before the making of the distribution determination for the regulatory control period
- a trailing average portfolio approach, which reflects the average return that would have been required by debt investors in a benchmark efficient entity if it raised debt over an historical period prior to the commencement of a regulatory year in the regulatory control period, or
- a combination of the above two methodologies.

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[157] *08.01.01 – SFG Consulting: The Required Return on Equity for Regulated Gas and Electricity Network Businesses*, p92.
[158] NER, clause 6.5.2(h).
[159] NER, clause 6.5.2(i).

4.1 Approach under the AER's Rate of Return Guideline

The AER has proposed to adopt the trailing average portfolio approach to estimate the return on debt. Under this approach:

- the return on debt will be updated each year of the regulatory control period
- a ten year benchmark term will be adopted, based on an assumed BBB+ credit rating
- equal weights will be applied to all elements of the trailing average.

The return on debt would be measured using an averaging period of ten or more consecutive business days and no more than twelve months. The business is required to nominate its averaging periods for each year of the regulatory control period in its Regulatory Proposal.

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

$$\text{allowed return on debt}_{x+1} = \frac{1}{10} \cdot \sum_{t=1}^{10} \text{trailing average}_{x-10+t}$$

where:

- $\text{allowed return on debt}_{x+1}$ refers to the allowed return on debt for the regulatory year x+1
- $\text{trailing average}_{x-10+t}$ refers to the estimated prevailing rate of return on debt that was entered into in year (x-10+t) and matures in year (x+t) (in the formula above all debt has a ten year term)
- weights of 1/10 will apply to each element of the trailing average.

Estimates of $\text{trailing average}_{x-10+t}$ represent simple averages of the estimates for each business day within the averaging period corresponding to year (x-10+t).

The AER intends to transition NSPs from the current 'on the day' approach to the trailing average portfolio approach over a period of ten years. As a consequence of this approach, in the first regulatory year of the transitional period the allowed return on debt would be based on the estimated prevailing rate of return on debt for that year (consistent with the 'on the day' approach), with prevailing rates in subsequent years progressively averaged in, with the prevailing rate in each year having a weight of 10%.

In terms of the data source used to estimate the return on debt, the AER's Rate of Return Guideline proposes the use of published yields from an independent third party data provider. While Bloomberg's fair value curves[160] have been the primary source of data relied upon recently, there have been some concerns raised with this approach, such as the maximum term to maturity currently remaining at seven years and issues with the transparency of its methodology.

The RBA has recently begun publishing its own data series for non-financial corporates rated A and BBB, which includes estimates out to ten year terms. Currently, this data is only published for the last trading day in each month, although it is understood that the RBA intends to commence publishing daily data at some point in the future.

In April 2014, the AER published an Issues Paper on the choice and use of third party data provider, which recognises that the RBA data is now available in addition, or as an alternative, to

[160] It is also noted that Bloomberg will cease publishing its fair value curves in favour of its BVAL curves.

Bloomberg's data series.[161] This also raises issues such as the current frequency of publication by the RBA (which is not technically compliant with its Rate of Return Guideline), as well as whether the return on debt using the RBA data should be estimated based on total yields, the spread to Commonwealth Government bond rates or the spread to the bank bill swap rate. Ergon Energy notes that the RBA data has already been employed by the AER in its recent Transitional Determinations (where a three month average of the month-end data was used).[162]

The AER has indicated that it is not intending to select one series over another. This decision will be made at the time of each regulatory determination. It will therefore not be publishing a specific decision on this matter. It will first be considered in its determinations for the NSW and ACT electricity distribution networks and the NSW, ACT and Tasmanian electricity transmission networks.

4.2 Ergon Energy's proposed approach

Ergon Energy proposes to comply with the AER's Rate of Return Guideline in relation to the estimation of the return on debt in the following areas:

- adoption of a ten year term to maturity
- adoption of the trailing average approach, with annual updates, which will be implemented over the ten year transition period
- the use of an independent third party data provider to estimate the return on debt.

Ergon Energy proposes to depart from the AER's Rate of Return Guideline in the following areas because it does not consider that the AER's approach will result in the best possible return on debt estimate having regard to the requirements of the NER:

- the notional credit rating assumption: Ergon Energy is proposing that this should be BBB
- the weighting approach: Ergon Energy is proposing that this should be a weighted average, based on changes in the PTRM debt balances.

The reasons for these departures are provided below, along with the approach that Ergon Energy has used to estimate the return on debt, including:

- the nomination of future averaging periods
- the data source used to estimate the return on debt
- the process that will be applied to estimate the return on debt each year.

Notional credit rating assumption

Issues with the AER's approach

In assessing the notional credit rating assumption under its Rate of Return Guideline, the AER relied upon a historical analysis of the credit ratings maintained by a sample of energy network businesses over the period 2002 to 2013. It arrives at a median of BBB+ (negative watch) over this period.

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[161] AER (2014b), *Return on Debt: Choice of Third Party Data Service Provider, Issues Paper*, April 2014.

[162] AER (2014c), *Ausgrid, Endeavour Energy, Essential Energy, ActewAGL, Transitional Distribution Determination, 2014-15*, April 2014; and AER (2014d), *Transgrid, Transend, Transitional Transmission Determination, 2014-15*, March 2014.

It also states:

> "We also note that there have been some recent credit downgrades. Notwithstanding, our view is that credit ratings are relatively steady for regulated energy businesses over a period of time. Therefore, we consider a historical credit rating analysis produces a more reliable result."[163]

The AER provides no information or evidence supporting its view, or why this proves that a historical analysis will produce a more reliable result.

Unlike some of the other information sources that inform the rate of return assessment, published credit ratings are truly forward looking. Credit rating information reflects the ratings agency's current view as to the creditworthiness of an entity. While the opinion might be informed by historical data, the opinion itself is forward looking.

On this basis, it could be argued that the only data that is relevant to the assessment of the notional credit ratings is the current ratings of the sample. However, it is accepted that it is useful to consider this in context of any *recent* trends in each entity's rating. At maximum, the horizon of any historical analysis should be limited to five years. The credit rating held by a firm back in 2002 is of absolutely no relevance to an assessment of what its credit rating is expected to be in the next five years.

Indeed, Ergon Energy contends that having regard to this older data could actually be misleading and results in error, that is, a notional credit rating assumption that is higher or lower than what the credit rating of the efficient benchmark firm should be, having regard to the level of gearing.

Ergon Energy notes the analysis submitted by Jemena Gas Networks,[164] which presents the credit ratings for each firm in the AER's sample between 2002 and 2013. This showed that the median credit rating of the sample for each year changed from BBB+/A- in 2007 to BBB in 2009, where it has remained for the duration of the period. The ratings for the last five years are presented in Table 56.

Table 56: Credit ratings of energy network businesses, 2009-2013

Firm	2009	2010	2011	2012	2013
APT Pipelines	BBB	BBB	BBB	BBB	BBB
ATCO Gas	n/a	n/a	BBB	BBB	BBB
DBNGP Trust	BBB-	BBB-	BBB-	BBB-	BBB-
DUET Group	BBB-	BBB-	BBB-	BBB-	BBB-
ElectraNet Pty Ltd	BBB	BBB	BBB	BBB	BBB
Energy Partnership (Gas)	BBB-	BBB-	BBB-	BBB-	BBB-
Envestra Ltd	BBB-	BBB-	BBB-	BBB-	BBB
ETSA Utilities	A-	A-	A-	A-	A-

[163] AER (2013b), Ibid, p229.
[164] Jemena Gas Networks (NSW) Ltd (2014), *2015-20 Access Arrangement Information, Appendix 9.10, Return on Debt Proposal*, 30 June 2014.

Firm	2009	2010	2011	2012	2013
Powercor Utilities	A-	A-	A-	A-	A-
SP AusNet Group	A-	A-	A-	A-	BBB+
SPI (Australia) Assets	A-	A-	A-	A-	BBB
The CitiPower Trust	A-	A-	A-	A-	A-
United Energy Distribution	n/a	n/a	n/a	n/a	n/a
Median	**BBB**	**BBB**	**BBB**	**BBB**	**BBB**

Source: Jemena Gas Networks (NSW) Ltd (2014), *2015-20 Access Arrangement Information, Appendix 9.10, Return on Debt Proposal*, 30 June 2014, p9.

Reference is also made to other evidence:

1 The 2013 report from Kanangra Ratings Advisory Services[165] submitted by the Energy Networks Association (ENA) in the context of the AER's review of its Rate of Return Guideline. This analysis supports a rating of no more than BBB and highlights the potential adverse implications of increased discretion by the AER on the perceived financial health of the NSPs it regulates.

2 A 2014 report prepared by CEG[166] for the NSW DSNPs, which shows that the median credit rating has been BBB over an even longer time horizon.

It is noted that ratings agencies have previously expressed concerns regarding the outlook for regulated Australian energy network businesses in response to the recent changes to the regulatory framework. For example, Standard and Poor's observed that:

> "We believe regulators' greater discretion in determining revenues will have some impact on the predictable, stable, and transparent regulatory practice to date. Consequently, the changes could weaken Standard & Poor's assessment of the sector's regulatory stability and predictability, and ultimately, the credit quality of the rated entities…
>
> If our assessment of regulatory risk for the sector deteriorates materially, our view of the credit rating of the rated network utilities could change significantly. For example, if an entity with "excellent" BRP is weakened to "strong", it could result in the credit rating being lowered by one or two notches, assuming no steps are taken to strengthen the finances. Also, somewhat higher regulatory risks could mean slightly higher threshold financial metrics for a given rating currently."[167]

[165] Refer to https://www.aer.gov.au/system/files/Essential%20Energy%20-%20Attachment%207.6_Kanangra%20-%20Credit%20Ratings%20for%20NSPs%20-%202014.pdf

[166] Refer to https://www.aer.gov.au/system/files/Essential%20Energy%20-%20Attachment%207.1_WACC%20estimates%20A%20report%20for%20NSW%20DNSPs%20-%202014.pdf

[167] Standard and Poor's (2012), *Australian Network Utilities: Draft Reforms Give Regulators More Flexibility, but Raise Credit Risks*, 22 October 2012, pp9-10.

Ergon Energy considers that such statements do not support the AER's assessment of BBB+, noting that they were made at a time when the median credit rating was already at BBB.

Ergon Energy's proposal

For the above reasons, Ergon Energy considers that the AER's notional credit rating assumption of BBB+ does not satisfy the NER's requirements, as it is not considered to reflect the creditworthiness of the efficient benchmark firm. This is of no direct consequence in terms of Ergon Energy's return on debt estimate because the AER (and other Australian regulators) have estimated it for BBB+ rated firms with reference to the broader BBB sample (comprising BBB-, BBB and BBB+). This in turn recognises the lack of liquidity in the Australian corporate bond market, particularly for lower investment grade credits for longer terms (in other words, the sample for BBB+ or BBB only would be too small, which increases the risk of estimation error).

Notwithstanding this, Ergon Energy is proposing to depart from the AER's Rate of Return Guideline on this point and has assumed a notional credit rating of BBB. This is considered to be a more reliable forward-looking estimate of the notional credit rating of the efficient benchmark firm over the next regulatory control period.

Weighting approach

Issues with the AER's approach

The AER proposes to apply a simple weighted average approach to update the return on debt in each year. Ergon Energy's concern with this is that it does not recognise the inherently lumpy nature of network investment, which will similarly be reflected in uneven borrowing profiles across the regulatory control period.

One of the reasons put forward by the AER for this is that it would necessitate different definitions of the efficient benchmark firm in recognition of the different capital expenditure profiles and borrowing requirements.[168] Ergon Energy does not agree that this is necessary and questions why a separate efficient benchmark firm definition is necessary simply because a firm has a different borrowing profile from another.

The key issue is whether or not the decision to invest is consistent with efficient practice, which is considered by the AER in approving the projected capital expenditure program. The onus is on the NSP to show that its capital expenditure program is efficient given factors such as the age and condition of its network assets and expected future demand growth. If this is not the case, it will not be approved by the AER.

The approved capital expenditure and associated borrowing profile is contained in the approved PTRM. Ergon Energy is proposing that instead of applying equal weights, the weighting approach be based on the debt component of the forecast capital expenditure approved in the PTRM. This is a simple and transparent approach, cannot be gamed and is consistent with what an efficient benchmark firm would be expected to do.

It is quite possible that actual borrowings will differ from the approved forecast. It is considered acceptable for this risk to be borne by the NSP. In contrast, the use of a simple average creates a certain mismatch unless expected borrowings are nil (or very small). Apart from ensuring a known

[168] AER (2013b), Ibid.

mismatch between the NSP's regulated and actual cost of debt, this is also inconsistent with the NER requirement that regard must be given to:

> "…the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the *allowed rate of return objective*…"[169]
>
> "…the incentives that the return on debt may provide in relation to capital expenditure over the *regulatory control period*, including as to the timing of any capital expenditure…"[170]

Achieving a better alignment between the return on debt that would apply to new capital expenditure and prevailing market rates provides a clearer investment signal. A significant mismatch between the regulated return on debt and the costs that a NSP would face in undertaking new borrowings is more likely to distort investment decisions.

Ergon Energy's proposal

For the above reasons, Ergon Energy considers it necessary to depart from the weighting approach specified in the AER's Rate of Return Guideline. We consider that a PTRM-based weighting approach better satisfies the requirements of the NER because it will reduce the difference between the actual and benchmark return on debt, as per clause 6.5.2(k)(1) of the NER. It is a clear, transparent approach that can be easily implemented and reflects the practices of a benchmark efficient NSP.

The way that it would be implemented by Ergon Energy is discussed further below.

Nomination of future averaging periods

Issues with the AER's approach

As noted above, while not required under the NER, the AER requires NSPs to nominate their proposed averaging periods for each year of the regulatory control period in the Regulatory Proposal.

Practically, given that most NSPs can be expected to at least start from the position of minimising the difference between their actual cost of debt and the regulated benchmark cost of debt (as recognised by clause 6.5.2(k)(1) of the NER), this requires them to identify the timeframe over which they intend to refinance existing debt, as well as raise new borrowings to fund capital expenditure, in each of the next five years. This is very difficult to do with any certainty now.

The amount and timing of future borrowing requirements is difficult to predict well in advance. This will be a function of a number of factors, including project timeframes, project costs and capital market conditions. Ergon Energy faces the additional uncertainty of possibly being required to raise funds in the private market at some point in the future, which could be within the next five years.

[169] NER, clause 6.5.2(k)(1).
[170] NER, clause 6.5.2(k)(3).

An additional source of uncertainty is the pricing rule change proposal that is currently being considered by the AEMC.[171] This will determine the process and timing of annual price reviews. This will therefore also directly influence the end date of NSPs' proposed averaging periods, noting that the AER's Rate of Return Guideline provides that the averaging period "should be as close as practical to the commencement of each regulatory year in a regulatory control period".[172] The AEMC's Final Determination on this rule change proposal is not due until late November 2014, which is after the date of lodgement of this Regulatory Proposal. Ergon Energy has therefore had to nominate proposed averaging periods based on the Draft Determination, noting that the final process and/or timeframes for the annual price reviews may end up being different.

Ergon Energy's proposal

Ergon Energy's Regulatory Proposal includes a "placeholder" averaging period for the first year of the regulatory period, being 2015-16, based on a mid-point observation between a one month and 12 month averaging period, consistent with or close to what the AER's Rate of Return Guideline considers is within the lower and upper bound for a market observation period.

Ergon Energy submitted our proposed averaging period for the cost of debt in 2015-16 as part of our Framework and Approach submission. We understand the AER's preliminary view is that our proposed averaging period was consistent with conditions outlined in the Rate of Return Guideline, but the AER will make a formal decision in its Final Distribution Determination.

While as outlined above, Ergon Energy has concerns with the requirement to nominate averaging periods for the remaining four years of the regulatory control period so far in advance, the possibility that the AER will impose these future averaging periods could present significant issues for how Ergon Energy manages our future funding and refinancing activities. Nevertheless, as indicated in our Framework and Approach submission, Ergon Energy's proposed averaging periods for the remaining years of the next regulatory control period are included as part of this Regulatory Proposal.[173] As noted above, for the purpose of this Regulatory Proposal, our estimate of the return on debt for the first year of the regulatory control period has been applied to the remaining four years of the regulatory control period as a placeholder.

Data source

Ergon Energy's proposal

For the purpose of calculating the return on debt for the first year of the regulatory control period, Ergon Energy has used the RBA's BBB data series, because:

- the RBA is a reputable and independent data provider
- it currently publishes BBB estimates for the longest term to maturity (which has recently been between eight and nine years)
- the data is readily accessible by all stakeholders
- the methodology it used is transparent (although its underlying sample of bonds is not known).[174]

[171] AEMC (2014). Ibid.
[172] AER (2013c), Ibid, p29.
[173] Refer to Ergon Energy's supporting document *08.02.04 – Proposed Averaging Period for the Cost of Debt*.
[174] It is better suited to automatic updating of the return on debt estimate when applying the trailing average approach.

There are two issues with the use of the RBA data that Ergon Energy has sought to address in this proposal. First, the RBA publishes the average tenor of the sample of bonds underpinning the estimate for each maturity (which it terms the 'effective tenor'). For the ten year estimate, this has been less than ten years. For example, in July 2014 the effective tenor of the ten year estimate was 8.64 years. This means that the RBA's ten year estimate is really an 8.64 year estimate.

Accordingly, consistent with the approach that has been taken in applying Bloomberg data, it is necessary to extrapolate this estimate to obtain an exact ten year estimate. This is based on a methodology produced by the Queensland Treasury Corporation (QTC).[175] QTC presents two alternative extrapolation approaches, one of which only uses the seven and ten year estimates (Method 1) and an alternative that uses all of the spread and tenor estimates provided by the RBA, that is, its published three, five, seven and ten year estimates (Method 2).

QTC considers that Method 2 produces more robust estimates that are less volatile than Method 1. Ergon Energy has therefore applied Method 2. Otherwise, this is consistent with the way in which the AER has applied its paired bonds extrapolation (which only uses two data points).

The second issue with the RBA data is that it currently only publishes estimates as at the last day of each month, which is technically not compliant with the AER's Rate of Return Guideline. Ergon Energy has addressed this issue by interpolating daily estimates using the RBA's month-end observations.

The NER no longer requires the return on debt and equity to be calculated using the same base interest rate (being the risk free rate). Ergon Energy has therefore chosen to use the RBA's margins to the swap rate, which are then added to the daily ten year swap rate to produce daily estimates of the benchmark debt yield. This approach reflects how corporate debt is actually priced and traded in the market. Ergon Energy considers this to be more consistent with the efficient benchmark firm approach and therefore more consistent with the requirements of the NER.

The process that Ergon Energy proposes to apply to estimate the return on debt each year is summarised in the next section.

Alternative approach if Ergon Energy's proposed use of the RBA data is rejected

If the AER rejects Ergon Energy's proposal to use the RBA data and instead proposes to continue to use Bloomberg data to estimate the return on debt (either on its own or in combination with the RBA data), Ergon Energy has concerns with the use of the paired bonds approach that has most recently been used by the AER to extrapolate Bloomberg's seven year BBB yield. In particular, it typically relies on a very small sample, sometimes including firms in the A rating category. This means the estimate is more likely to be influenced by the idiosyncratic features of the bonds or firms in that small sample. Where A rated bonds are used, there is a risk that the increment for an issue in the A category is not sufficiently indicative of the increment for BBB. This increases the risk that the resulting estimate does not satisfy the requirements of the NER.

QTC has developed a preferred method based on its quarterly survey of financial market practitioners, which has been independently endorsed as producing the best estimate of the change in the debt risk premium between seven and ten years.[176] Ergon Energy considers that this methodology would better satisfy the requirements of the NER by producing a more robust and

[175] Refer to *08.01.11 – QTC: Extrapolating the RBA BBB curve to a 10-year tenor*.

[176] Incenta Economic Consulting (2014), *Methodology for Extrapolating the Debt Risk Premium, Report for Jemena Gas Networks and SA Power Networks,* June 2014.

informed estimate of the ten year BBB yield in the current market. If the AER chooses to use Bloomberg data, Ergon Energy therefore proposes that this approach is used for this purpose, as it will produce a more robust estimate of the ten year BBB yield than the paired bond approach and will satisfy the requirements of the NER. It can also be applied formulaically. QTC's methodology is attached to this Regulatory Proposal.[177]

Summary of the methodology applied to estimate the proposed return on debt

The following summarises the approach that Ergon Energy has applied to estimate the return on debt. This is the approach that Ergon Energy proposes to apply each year of the regulatory control period as part of the annual update.

Step 1: collect RBA BBB spreads and tenors

Data is accessed from the spreadsheet *F3 Aggregate Measures of Australian Corporate Bond Spreads and Yields: Non-financial Corporate (NFC) Bonds*, available on the RBA's website.[178] The information that is collected for the relevant months is:

- the spread to swap for the 3, 5, 7 and 10 year BBB rated securities
- the effective tenor of the 3, 5, 7 and 10 year BBB estimates.

Step 2: interpolate RBA month-end estimates to produce daily estimates

Until the RBA commences publishing daily estimates, its month-end estimates can be interpolated to produce daily estimates. This is done by taking the difference between the month-end estimates and dividing this by the number of business days for which observations are reported in that month.[179]

Step 3: extrapolate RBA estimates to produce true 10 year estimates

Ergon Energy has applied the extrapolation methodology proposed by QTC in the accompanying paper, *Extrapolating the RBA BBB curve to a 10-year tenor*.[180] Method 2 has been adopted, as recommended by QTC. This involves the following steps:

1 Estimate the slope of the RBA's BBB swap spread curve using its swap spreads and target tenors for 3, 5, 7 and 10 years. This is done by using the SLOPE function in Excel, which estimates the average slope per year of the relevant curve:

Δ = SLOPE({S_3 S_5 S_7 S_{10}},{ET_3 ET_5 ET_7 ET_{10}})

where:

S_n = RBA BBB swap spread estimate for an n-year target tenor

ET_n = effective tenor of the RBA BBB swap spread estimate for an n-year target tenor

2 Estimate the extrapolation margin by multiplying the slope estimated in the first step by the difference between 10 years and the RBA's effective tenor for its 10 year swap spread:

EM = Δ x (10 – ET_{10})

[177] *08.01.10 – QTC: An alternative extrapolation method to estimate the 10-year BBB+ corporate yield.*
[178] Refer to http://www.rba.gov.au/statistics/tables/index.html#interest-rates.
[179] This is shown in *08.01.09 – QTC: Daily extrapolated RBA yields.*
[180] *08.01.11 – QTC: Extrapolating the RBA BBB curve to a 10-year tenor.*

where:

EM = extrapolation margin

3 Estimate the extrapolated 10 year BBB swap spread by adding the extrapolation margin to the RBA's BBB swap spread for a 10 year target tenor:

$ES_{10} = S_{10} + EM$

where:

ES_{10} = extrapolated 10 year swap spread (semi-annual)

Step 4: collect swap base rate data

This is the end of day 10 year swap rate as published by AFMA. The rate is expressed on a semi-annual compounding basis.

Step 5: calculate 10 year BBB return on debt over relevant averaging period

This involves three steps:

1 Calculate the daily 10 year BBB return on debt, which is the sum of the:

a) extrapolated ten year swap spread (ES_{10}), as per Step 3, and

b) swap base rate, as per Step 4.

2 Convert the semi-annual rates to annual effective rates.

3 Calculate the average of the daily annual effective rates over the relevant averaging period.

The following additional steps will be required to implement the annual update:

Step 6: calculate weights to be applied in the trailing average return on debt

QTC has recommended a method to calculate the updated trailing average return on debt using the PTRM weights.[181] This involves the following steps:

1 Calculate the change in the PTRM debt balance in the relevant year, which is based on the difference between the opening and closing balances in the previous regulatory year. That is:

$\Delta \text{ debt balance}_{t-1} = \text{closing debt balance}_{t-1} - \text{opening debt balance}_{t-1}$

2 Calculate the weight that will be applied to the updated return on debt estimate in that year, or the 'new debt', which is equal to the change in the debt balance in the previous regulatory year, divided by the closing debt balance in that previous regulatory year.

$\text{weight}_{\text{new debt}} = \Delta \text{ debt balance}_{t-1} / \text{ closing debt balance}_{t-1}$

3 Calculate the weight that will be applied to the existing debt in that year, which is equal to:

$\text{weight}_{\text{existing debt}} = 1 - \text{weight}_{\text{new debt}}$

Step 7: calculate updated weighted trailing average return on debt

For details of the calculation please refer to *08.01.12 – Weighted Trailing Average Return on Debt Model*.

[181] QTC's calculation of this is contained in the spreadsheet provided in *08.01.12 – Weighted Trailing Average Return on Debt Model.*

Step 8: update return on debt estimate in the PTRM

The updated trailing average return on debt is then entered as an input into the PTRM, as proposed for use by the AER for the purpose of the annual price adjustment.

Consistent with the ENA's response to the informal consultation on the amendments to the PTRM that implements the Rate of Return Guideline, Ergon Energy proposes that to reduce volatility in the X-factors that the return on debt for the year of the annual update will change. All remaining years of the regulatory control period will retain the return on debt set out in the Final Distribution Determination until the year in which the return on debt is updated.

4.3 Proposed return on debt

Application of the above approach results in a return on debt estimate of 6.36%, comprising a base swap rate of 4.05% and a debt risk premium of 2.31%. Ergon Energy proposes that this approach results in the best estimate of the return on debt having regard to the requirements of the NER, including satisfying the allowed rate of return objective.

5 Gearing

The NER require that the allowed rate of return be calculated as a weighted average of the return on equity and the return on debt for each regulatory year. The gearing ratio reflects the weight that is assigned to the return on debt.

The AER's Rate of Return Guideline specifies a preferred value of 60% for the gearing ratio.

Ergon Energy has adopted a gearing of 60%.

6 Imputation credits

Clause 6.5.3 of the NER requires the income tax building block to be adjusted for the value of imputation credits (gamma). Gamma is estimated as the product of:

- the payout ratio or distribution rate
- the value of imputation credits (theta).

Ergon Energy is proposing a gamma of 0.25, which reflects a distribution rate of 0.7 and theta of 0.35.

6.1 Issues with the AER's approach

The AER's Rate of Return Guideline proposes values for the distribution rate and theta of 0.7 each. Ergon Energy concurs with the AER's distribution rate assumption of 0.7. However, we do not consider that 0.7 is the best value for theta, having regard to the requirements of the NER.

Ergon Energy and other NSPs jointly commissioned a report from SFG Consulting on the value of gamma.[182] The purpose of this analysis was to come up with the best estimate for gamma at the current time, having regard to the requirements of the NER. This also draws upon the Tribunal's findings on gamma as part of the appeal submitted by Ergon Energy, Energex and (now) SA Power Networks.[183]

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[182] *08.01.03 – SFG Consulting: An Appropriate Regulatory Estimate of Gamma* (SFG Gamma Report).
[183] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9.

SFG's Gamma Report identifies a number of issues with the approach taken by the AER in developing its Rate of Return Guideline. It conducts a detailed review of the AER's conceptual interpretation of theta and highlights some fundamental flaws. SFG clearly demonstrates that the relevant task is to establish a market-based value of theta. This also invalidates the equity ownership, tax statistics and 'conceptual goalposts' approach that have been referred to by the AER.

Ergon Energy concurs with this view. The gamma parameter is intended to reflect the value that investors place on franking credits in establishing the rate of return they require from the efficient benchmark firm. This has to be a market value. The AER's conclusion that this should only reflect the extent to which imputation credits might be used to reduce personal tax is erroneous and can (and has) resulted in gamma being overestimated. If the value that investors are assumed to derive from imputation credits is overstated, this will mean that their required rate of return will be underestimated.

SFG has also undertaken an updated empirical analysis of theta using dividend drop-off studies and other market value studies. This analysis concludes that:

- 0.35 remains the best estimate of theta at the current time using a dividend drop-off approach (based on the SFG approach, which has been subject to unprecedented scrutiny)
- other market value studies support an estimate between zero and 0.35.

A value of theta of 0.35 has therefore been recommended by SFG. If anything, the SFG analysis supports the conclusion that a theta of 0.35 is more likely to be at the upper bound of a reasonable range.

Ergon Energy therefore does not consider that the AER's value of theta meets the requirements of the NER. This is primarily because the AER's theta parameter does not reflect the value of theta as assessed from the perspective of investors, who are the providers of capital to the efficient benchmark NSP. In materially overstating the value of theta and hence gamma, the AER is overstating the value that investors place on franking credits, which will result in the return on equity being under-estimated. This will adversely impact on the ability of the business to attract the necessary capital to fund investments, which is contrary to the allowed rate of return objective.

6.2 Ergon Energy's proposal

Based on the advice provided by SFG, Ergon Energy considers that 0.35 is the most appropriate value of theta. A distribution rate of 0.7 and a theta of 0.35 results in a gamma of 0.25. This is the value that Ergon Energy has adopted in this Regulatory Proposal. This is considered the best estimate in the current environment, having regard to the purpose of estimating gamma within the context of the NER and the allowed rate of return objective.

7 Supporting documentation

The following documents referenced in this appendix accompany our Regulatory Proposal:

Name	Ref	File name
SFG Consulting: The Required Return on Equity for Regulated Gas and Electricity Network Businesses (SFG Cost of Equity Report)	08.01.01	SFG Cost of Equity Report
SFG Consulting: Updated estimate of the required return on equity	08.01.02	SFG Addendum to Cost of Equity Report

SFG Consulting: An Appropriate Regulatory Estimate of Gamma	08.01.03	SFG Gamma Report
Synergies Economic Consulting: Response to Issues Raised by Consumer Challenge Panel	08.01.04	Synergies Response to Issues Raised by the CCP
SFG Consulting: Cost of Equity in the Black Capital Asset Pricing Model	08.01.05	SFG Report Black CAPM
SFG Consulting: The Fama-French Model	08.01.06	SFG Report Fama French
SFG Consulting: Alternative Versions of the Dividend Discount Model and the Implied Cost of Equity	08.01.07	SFG Report Dividend Discount Model
QTC: Daily extrapolated RBA yields	08.01.09	Daily Extrapolated RBA Yields
QTC: An alternative extrapolation method to estimate the 10-year BBB+ corporate yield	08.01.10	QTC Alternative Extrapolation Method Attachment A
QTC: Extrapolating the RBA BBB curve to a 10-year tenor	08.01.11	QTC Extrapolating the RBA Curve
QTC: Weighted Trailing Average Return on Debt Model	08.01.12	Weighted trailing avg return on debt model
Proposed Averaging Period on the Cost of Debt	08.02.04	Proposed Averaging Period for the Cost of Debt