Response to Issues Raised by the Consumer Challenge Panel

Report for Ergon Energy

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1   Introduction

Ergon Energy has requested analysis from Synergies Economic Consulting (Synergies) in the following areas:

- Ofgem's recent decision on the return on equity to apply to electricity distribution network operators (DNOs) in the UK;

- a measure of Ergon Energy's profitability over the current regulatory control period to date; and

- an analysis of the returns required by Ergon Energy's customers.

We understand that Ergon Energy requests our advice in response to queries raised by Consumer Challenge Panel (CCP) members and consumer representatives, in the context of Ergon Energy's Regulatory Proposal for the 2015-20 period, and more specifically its approach to proposing the Weighted Average Cost of Capital (WACC).[1]

Each of these areas is addressed in turn below.

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[1]   AER Consumer Challenge Panel (2014). Current and Emerging Issues for the Queensland Distributors' Revenue Determinations, Queensland Consumers' Meeting 8 August 2014, http://www.aer.gov.au/sites/default/files/Consumer%20Challenge%20Sub-Panel%202%20%28Hugh%20Grant%29%20-%20Presentation%20to%20Qld%20consumer%20forum%20-%208%20August%202014.pdf; Consumer Challenge Panel (2014). Smelling the Roses and Escaping the Rabbit Holes: the Value of Looking at Actual Outcomes in Deciding WACC, Prepared for the Board of the Australian Energy Regulator, July, https://www.aer.gov.au/sites/default/files/CCP%20report%20prepared%20for%20AER%20Board%20-%20Rate%20of%20Return.pdf; Ergon Energy (2014). Customer Council AER2015 Working Group Meeting Notes, 28 August 2014, https://www.ergon.com.au/__data/assets/pdf_file/0004/218416/Customer-Council-AER2015-Working-Group-August-meeting-notes.pdf.

2 The OFGEM decision

The RIIO-ED1[2] price control will set the outputs and revenues for the 14 electricity distribution network operators (DNOs) in the UK for the eight year period from 1 April 2015 to 31 March 2023. On 17 February 2014, Ofgem released its Final Decision on the methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls. In the Final Decision, Ofgem set the central reference point for the cost of equity for RIIO-ED1 at 6.0% (real). This represented a 0.3% reduction in the cost of equity used in the assessment of business plans and reflects the greater weight placed on current market conditions.

The decision is not explicit on the final parameters underpinning its 6% estimate, apart from an equity beta of 0.9 (with 65% gearing). Using the Brealey-Myers formula applied by the Australian Energy Regulator (AER)[3], this equity beta equates to an asset beta of 0.32 at 65% gearing.

Overall, it is not valid to make direct comparisons between Ofgem's decision and the return on equity that would apply to a regulated network business in Australia and the reasons for this are set out below.

Similar to the AER, Ofgem primarily relies on the Sharpe Capital Asset Pricing Model (CAPM). Putting aside the issues with the application of the Sharpe CAPM and whether it produces an adequate estimate of the return on equity in the current market (which we understand is addressed in detail in Ergon Energy's Regulatory Proposal 2015-2020), we can therefore directly compare the inputs applied by Ofgem and whether they are relevant to an Australian energy network business.

The first point we would make is that Ofgem's 6% return is a real return. This cannot be directly compared against Ergon Energy's required return on equity, which is expressed in nominal terms. Assuming 2.57% inflation as per Ergon Energy's proposal, Ergon Energy's real return on equity is 7.75%. If anything, this is the relevant number to compare with Ofgem's estimate.

The second and key point we would make is that rates of return cannot be directly compared across different markets (even if they are specified in real terms). Recognising the integration of global capital markets that has occurred, all of the inputs in the CAPM will still be heavily influenced by domestic market conditions, being:

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[2] 'RIIO-ED1' is an acronym for 'Revenue = Incentives + Innovation + Outputs' and is a type model of network regulation. 'ED' stands for 'Electricity Distribution' and '1' signifies that it is the first review to use the RIIO model

[3] Australian Energy Regulator (2014). Better Regulation, Explanatory Statement, Rate of Return Guideline (Appendices).

- the risk free rate, which is estimated based on the prevailing sovereign government bond rate;

- the market risk premium, or the average premium that investors in that market expect for bearing risk; and

- beta, which is a measure of the riskiness of the firm's returns relative to the domestic sharemarket index.

2.1 Risk free rate

The risk free rate will be influenced by a number of factors, including government monetary policy, the size and liquidity of the government bond market, the outlook for the domestic economy, market volatility (and the 'flight to quality' in times of increased risk aversion) and the outlook for inflation.

Risk free rates in the UK remain at historical lows, with the cash rate remaining at 0.5% for the last five years, which is 200 basis points below the RBA's official cash rate of 2.5%. With major economies such as the UK still recovering from the Global Financial Crisis (having fared comparatively worse than Australia), the Bank of England has been reluctant to raise interest rates so as to not derail the economic recovery.[4]

The relevant rate here is the ten year rate. A comparison of the current yield to maturity spread between 10 year Australian Government Bonds and 10 year UK Government Bonds was approximately 96 basis points as at early August 2014, as shown below.

Table 1   Australia and UK 10 year interest rate differentials (as at 7 August 2014)

	Current (%)	1 Month ago (%)	1 Year ago (%)
10 year Australian Government Bond Yield	3.51	3.54	3.80
10 year UK Government Bond Yield	2.55	2.75	2.43
Australian-UK Spread	0.96	0.79	1.56

Source: Bloomberg

Holding all other factors constant, the materially lower risk free rate in the UK compared to Australia will therefore result in a lower return on equity if estimated using the CAPM.

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[4]   W. Schomberg (2014). "IMF says UK interest rates should stay low for now", Reuters, http://uk.reuters.com/article/2014/07/28/uk-britain-economy-imf-idUKKBN0FX1BQ20140728, Accessed 4 September 2014.

In the consultation document released in December 2013, Ofgem considered that a range of 1.3% to 1.6% for the real risk-free rate was appropriate. In its Final Decision on its methodology, Ofgem did not specify a risk-free rate used in the calculation in the final cost of equity of 6%. However, Ofgem stated that contemporary market evidence indicated that the risk-free rate over the RIIO-ED1 period was unlikely to be as high as the range identified in the consultation document.

This statement was partially based on analysis of the implied real forward yield curve in the UK gilt market. Ofgem considered that the data implied a forward rate rise to a peak of 0.7% to 0.8% in nine years' time, before declining again. The implied real forward yield curve used in Ofgem's analysis is shown below.

Figure 1   Ofgem's implied forward yield curve
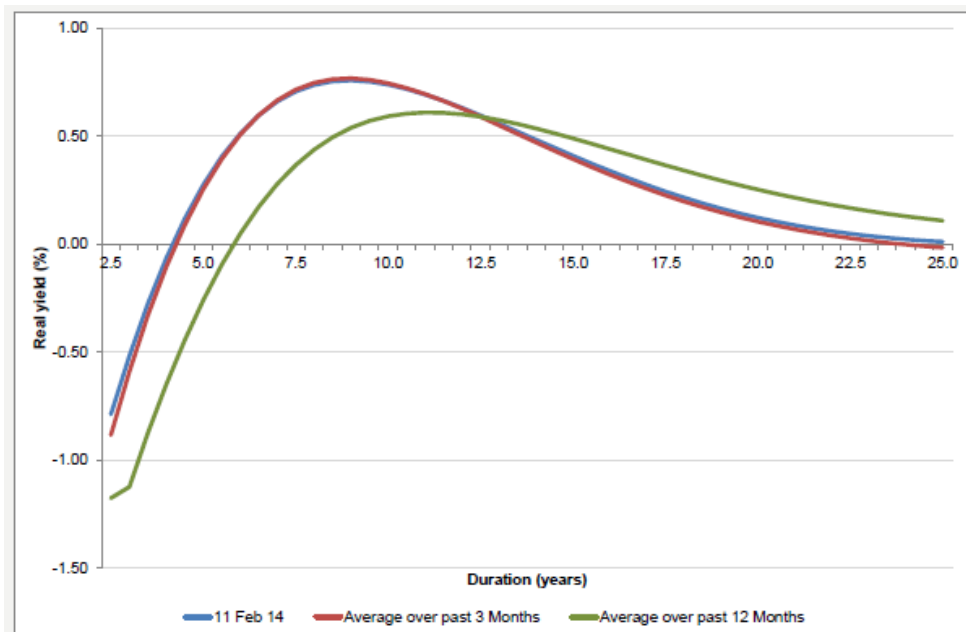
Source: Bank of England

**Data source: Data source: Ofgem. (2014). Decision on our methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls**

The implied real forward yield curve will depend upon the current bond yields across a variety of maturities. For a comparison of current bond yields, the index-linked yield curves for Australia and the UK are shown below.

Figure 2   Real yield curve for Australia and the UK (as at 7 August 2014)
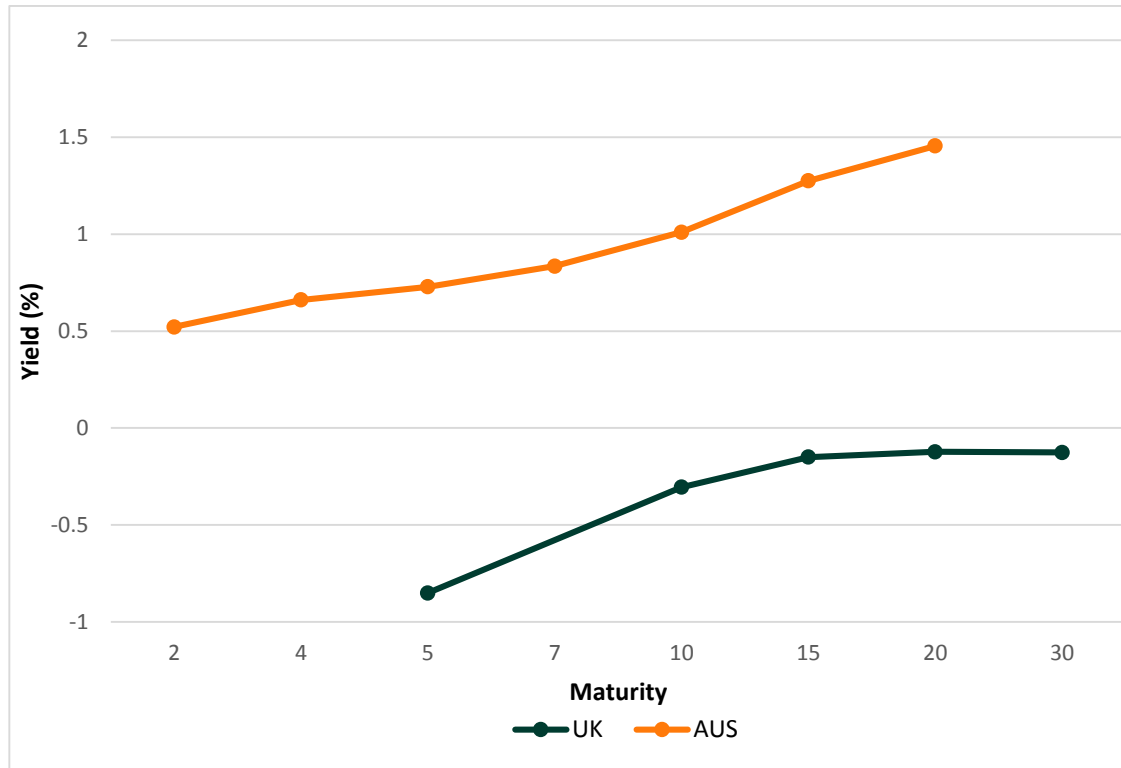
Data source: Bloomberg. (2014). I204 Australia Inflation Linked Curve; I98 UK Index-Linked Curve

As can be seen, the index linked yield curve for Australia is upward sloping and is positive for all maturities. Conversely, the current index linked yield curve for the UK is negative for all maturities and flattens out for longer maturities.

While we have not sought to derive the implied real forward yield curve for Australia, it is clear from the shape of the current real yield curves that the forward looking yield curve would be of a significantly different shape. Thus, Ofgem's assertion that the risk-free rate over the regulatory period is likely to be lower than the long-term average is unlikely to be directly relevant in an Australian context. In any case, the AER does not examine the forward yield curve for Commonwealth Government bonds in assessing the risk free rate to apply in the return on equity.

In 2012, the AER commissioned Professor Stephen Wright[5] to compare the AER's methodology for estimating the cost of equity with the methodology employed by the UK regulator, Ofgem, and the UK appeals body, the Competition Commission (CC). In Wright's overall conclusions, he states that both Ofgem and the CC had adopted risk-free rates that were not fully adjusted downwards to align with the low market rates at

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[5]   Professor Wright had previously acted as an advisor to Ofgem on the estimation of CAPM betas

the time.[6] Combined with adopted estimates of the equity betas of close to 1, Wright states that this has resulted in a stable cost of equity for the relevant regulated companies.

By contrast, Wright says that the AER's methodology of assuming a constant MRP and adding current market-based measures of the risk-free rate had resulted in an abrupt fall in the assumed real market cost of equity of more than 200 basis points.[7] He further states that the shift from an equity beta of 1 to 0.8 had aggravated this effect, leading to a decrease in the assumed real cost of equity of over 300 basis points for regulated companies.[8]

Given the above analysis, it is possible that Ofgem's decision to lower the risk free rate for the RIIO-ED1 review is simply a belated move towards a practice already implemented by other regulators, such as the AER, which fully aligns the risk free rate in the return on equity with prevailing market rates.

2.2 Market risk premium

Market risk premiums also vary between countries. This is a function of a number of factors. The factors that are more likely to vary between countries are:[9]

- economic risk, including the outlook for interest rates, inflation and economic growth;

- information, with different markets varying in terms of transparency and disclosure requirements;

- liquidity, which can vary depending on the size and composition of the market, as well as the state of the economy; and

- government policy (including in relation to matters such as financial system regulation).

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[6] Wright, S. (2012). Review of Risk-free rate and Cost of Equity Estimates: A Comparison of UK Approaches with the AER. Available from: https://www.aer.gov.au/sites/default/files/5%206%20Wright,%20S.,%20Review%20of%20the%20Risk%20Free%20Rate%20and%20Cost%20of%20Equity%20Estimates%20Oct%202012.pdf [Accessed 6 August 2014]. p.2

[7] Wright, S. (2012).p.11

[8] Wright, S. (2012).p.11

[9] A. Damadoran (2013). Equity Risk Premiums (ERP): Determinants, Estimates and Implications – the 2013 Edition, file:///C:/Users/j.blades/Downloads/SSRN-id2238064.pdf. Accessed 4 September 2014.

For example Professor Stephen Wright, who has advised Ofgem on the return on equity to apply to UK network businesses, has noted the following in comparing the MRP in the UK and Australia:[10]

> However on a priori grounds it seems plausible that if anything the appropriate figure for Australia should be higher, rather than lower than in the UK, given that Australia's market is relatively small, and disproportionately influenced by the commodities sector.

Noting that our focus here is on the relativities between the premia applying in different jurisdictions rather than the absolute estimates, we can examine comparisons of the actual observed MRP in different markets. For example, in its Explanatory Statement accompanying the Rate of Return Guideline, the AER cites KPMG's Survey of Valuation Practices. Based on this survey, in terms of the value of the MRP applied by practitioners in the UK and Australia:[11]

- approximately 45% of UK practitioners surveyed applied a risk free rate of 5%, compared to only around 2.5% in Australia;

- approximately 72% of Australian practitioners surveyed applied a risk free rate of 6%, compared to around 20% in the UK; and

- approximately 22% of Australian practitioners surveyed applied a risk free rate of 7%, compared to around only 5% in the UK.

While we don't consider that this survey can be used to inform what the value of the expected MRP should be in Australia, what we can conclude from this study is that based on those practitioners surveyed, on average a lower MRP is applied in the UK compared to Australia.

Another survey referred to by the AER in its 2013 analysis was a global survey undertaken by Fernandez et al, which is periodically updated. The latest (2014) version of this survey covers 88 countries.[12] Estimates for selected economies are shown in the following table.

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[10] S.Wright (2012). Review of Risk Free Rate and Cost of Equity Estimates: A Comparison of UK Approaches with the AER, p.11.

[11] KPMG (2013). Valuation Practices Survey 2013, p.16.

[12] P. Fernandez, P. Linares and I. Fernandez Acin (2014). Market Risk Premium used in 88 Countries in 2014: A Survey with 8,288 Answers, http://ssrn.com/abstract=2450452. Accessed 4 September 2014.

Table 2   MRP used for selected economies in 2014

Economy	Average MRP	Country	Average MRP
USA	5.4%	Austria	5.5%
Spain	6.2%	Belgium	5.6%
Germany	5.4%	Denmark	5.1%
UK	**5.1%**	Japan	5.3%
Italy	5.6%	Finland	5.6%
Canada	5.3%	New Zealand	5.6%
France	5.8%	Ireland	6.8%
China	8.1%	Singapore	5.7%
Australia	**5.9%**	Hong Kong	7%
Netherlands	5.2%	Malaysia	6.4%
Switzerland	5.2%	Hungary	8.3%
Sweden	5.3%	United Arab Emirates	7.7%

Source: P. Fernandez, P. Linares and I. Fernandez Acin (2014). Market Risk Premium used in 88 Countries in 2014: A Survey with 8,288 Answers, http://ssrn.com/abstract=2450452. Accessed 4 September 2014, pp.3-4.

Again, while we do not consider this data to be reliable in informing the actual estimate of the forward-looking MRP for the efficient benchmark network service provider (NSP), the relativities between the different jurisdictions are informative. This again clearly shows the application of a lower MRP in the UK than in Australia.

2.3   Equity beta

Ofgem's equity beta is 0.9. Ergon Energy's proposed asset beta for application in the Sharpe CAPM, as applied as part of the multi-model approach, is 0.82. It is necessary to compare asset betas given Ofgem assumes 65% gearing. Using the Brealey-Myers formula applied by the AER in its Rate of Return Guideline review and assuming 60% gearing, Ergon Energy's implied asset beta is 0.33. As noted above, Ofgem's implied asset beta based on 65% gearing in 0.32.

Ergon Energy's proposed beta is therefore very close to Ofgem's. Based on its upper bound equity beta of 0.7 and gearing of 60%, the AER's implied asset beta is 0.28, which is lower than Ofgem's estimate.

2.4   Other factors specific to this jurisdiction

There is another feature of this decision that is specific to this jurisdiction. Although Ofgem considered the balance of uncertainty in light of all the new evidence, particular attention was paid to a 2013 decision made by the Office of National Statistics (ONS) to not change its methodology for the calculation of the retail price index (RPI). This decision caused a significant reduction in index-link gilt yields, reflecting the second

largest one-day movement (slightly over 0.4%) in ten year breakeven inflation since index-linked gilts were introduced in 1985.

However, this one-day movement of 0.4% did not form the basis of Ofgem's eventual decision to lower the risk-free rate and equity market return.[13] Rather, the decision was based on a 2010 ONS decision to change the way it collects data for clothing items. Ofgem considered that this decision caused a long term increase in an overestimation bias present in the RPI formula of around 0.42%.[14]

This adjustment was required due to an idiosyncrasy of a statistical method used in the calculation of the RPI, known as the Carli formula. The fundamental problem of the Carli formula is that it has the propensity to have an upwards bias, known as the 'formula effect'. Ofgem states that the formula effect increased by 0.42% in 2010, when the ONS changed the way it collected data for clothing items.[15]

This long-term aggravation of the formula effect had a large influence on Ofgem's decision to reduce its assumptions for the risk-free rate and equity market return.[16] Ofgem considered that the conclusions of the ONS had the effect of reducing the yields required by investors in RPI-indexed assets by about 0.4%. This is significant, given that Ofgem uses the RPI to index the Regulatory Asset Value (RAV), primarily because the RPI is the indexation basis for index-linked bonds issued by network operators.[17]

Ofgem cites the ONS's decision on its methodology for the calculation of RPI as an important factor in its own decision to lower the real risk-free rate from 2% to 1.6% and the equity market return from 7.25% to 6.85%. This underpinned its provisional estimate of 6.3%, which reduced further to 6% in the Final Decision, which as noted above, reflected a decision to place greater weight on current market conditions.

Overall, this UK- and Ofgem-specific factor had the effect of lowering the cost of equity in Ofgem's Final Decision. Given that this factor was unique to the UK and Ofgem's methodology, it is clearly not suitable to apply this part of Ofgem's downward adjustment to the cost of equity in an Australian context.

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13 Ofgem. (2014). Decision on our methodology for assessing the equity market return for the purpose of setting RIIO-ED1 price controls. Available from: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/decision_on_equity_market_return_methodology.pdf [Accessed 4 August 2014]. p.26

14 Ofgem. (2014). p.26

15 Ofgem (2013).

16 Ofgem. (2014). p.26

17 Ofgem. (2013). p.12

Conclusion

The above analysis confirms that it is inappropriate to attempt to compare Ofgem's real return on equity of 6% with Ergon Energy's proposed real return on equity of 7.75%. In any case, given:

- the risk free rate in the UK is materially lower than in Australia;

- the MRP in the UK is also lower than in Australia;

- Ergon Energy's beta estimate is very close to Ofgem's (after adjusting for gearing differences); and

- it reflects some specific issues with the estimation of the RPI in the UK,

in referring to this Ofgem decision there is no basis to claim that Ergon Energy's proposed return on equity is unreasonable or excessive.

3   Ergon Energy's profitability

We have been asked to come up with an appropriate estimate of Ergon Energy's profitability over the current regulatory control period to date. We understand that the CCP has claimed that Ergon Energy's return on equity has been as high as 22%. While the details underpinning this estimate are unknown, we understand that it may include payments made to government such as dividends, the Competitive Neutrality Fee (CNF) and tax equivalents. We have not sought to replicate the CCP's estimate.

Our analysis has been undertaken for the company, not the consolidated entity. We have sourced information directly from Ergon Energy's published financial statements for the years 2009-10 to 2012-13 and is therefore based on audited data.

The return on equity can be calculated using the standard measure:[18]

$$ROE = \frac{Net\ profit\ after\ tax}{Equity}$$

Based on the items reported in Ergon Energy's financial statements, net profit after tax is calculated as follows:

	Sales revenue
plus	Other revenue[19]
equals	Total revenue
less	Network/electricity purchases
less	Operating expenses[20]
equals	EBITDA[21]
less	Depreciation, amortisation and impairments
equals	EBIT[22]
less	Finance charges
equals	Earnings before tax
less	Tax
equals	**Net profit after tax**

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[18]   This can be verified from any finance textbook, such as: Ross, Christensen, Drew, Thompson, Westerfield and Jordan (2011). Fundamentals of Corporate Finance, McGraw-Hill Australia Pty Limited; Peirson, Brown, Easton, Howard and Pinder (2006). Business Finance, McGraw-Hill Australia Pty Limited.

[19]   This is the sum of: non-refundable capital contributions, interest received, dividend income – controlled entities, other operating income and gain on disposal of property, plant and equipment.

[20]   This is the sum of: employee expenses, materials and services and other expenses.

[21]   Earnings before interest, tax, depreciation and amortisation.

[22]   Earnings before interest and tax.

Equity has been measured as average equity (that is, the average of the opening and closing equity balances), given profit is earned over the course of the year.

The resulting ROE measures are shown in the following table.

Table 3   Ergon Energy (company): ROE based on published financial statement data ($million)

	2009-10	2010-11	2011-12	2012-13
Sales Revenue	1,306	1,632	1,752	1,879
Other Revenue/Income	177	282	344	354
Total Revenue	1,483	1,913	2,096	2,233
Network/Electricity Purchases	236	269	307	307
Operating Expenses	498	630	667	623
EBITDA	749	1,013	1,122	1,303
Depreciation, Amortisation & Impairments	285	308	370	390
EBIT	465	705	752	913
Finance Charges	243	293	320	366
Earnings Before Tax	222	413	432	547
Tax	50	96	112	140
Net Profit After Tax	172	316	320	407
Average Equity	2,505	2,887	3,202	3,388
Return on Equity	**6.86%**	**10.95%**	**9.99%**	**12.01%**

It is also not valid to include dividend payments in the ROE calculation. Dividends are declared and paid from net profit after tax. Profits not distributed are retained in the business. Net profit after tax therefore has two components, the portion distributed (dividends) and the portion retained (retained profits). To adjust net profit after tax for dividends is to double count dividends.

It is also not valid to include other payments made to government, such as tax equivalents and the CNF, in the ROE calculation. Apart from the fact that this is not a valid measure, such a treatment can only imply that a government owned NSP should be treated differently from a private NSP. That is, it would appear to imply that the required rate of return should be somehow set differently to – and lower than – privately owned NSPs.

Such a claim is inconsistent with the fundamental principles of competition policy and competitive neutrality. One of these core principles is that government owned businesses engaged in the provision of a commercial activity should earn a commercial rate of return on that activity (including if those activities involve the provision of

services with natural monopoly characteristics). Further, in order to ensure that government owned businesses operate on competitively neutral terms, the *Competition Principles Agreement* agreed to by the Council of Australian Governments (COAG) requires them to pay dividends, tax equivalents and debt guarantee fees to government.

The roles of government as policy maker (including collector of fees and charges) and shareholder in corporatised government owned businesses are necessarily separate and distinct roles. As with any other commercial business, a government owned corporation is required to make decisions that maximise the value of that business to its shareholders, which is ultimately the taxpayer, recognising that there are alternative uses for the capital that has been invested in that business. In relation to the obligation to pay fees and charges, the Australian Energy Market Commission (AEMC) noted:[23]

> If state-owned service providers were not required to pay any competitive neutrality/debt guarantee fees to reflect their stand-alone credit ratings, taxpayers in general would effectively be subsidising electricity consumers. Taxpayers would be taking the financial risk of guaranteeing debt repayment by these businesses without any compensation.

The rationale for, and principles underpinning, national competition policy and competitive neutrality remain uncontentious and accordingly we do not propose to review this in any detail here.[24] To suggest that governments should somehow account for tax equivalents and debt guarantee fees in setting the required rates of return for State-owned businesses that operate in a commercial market (or vice versa) blurs the important distinction between these responsibilities, unwinds key requirements of competition policy and could have significant and adverse consequences for these businesses, the markets in which they operate and the wider economy.

This issue was considered by the AEMC as part of the rule change process underpinning the new rate of return provisions in the national energy framework. It was also considered by the AER in developing its Rate of Return Guideline. In both cases, it was clearly and unequivocally concluded that no distinction should be made between government and non-government owned businesses in setting the required rate of return under the national energy framework, with the relevant benchmark being a business operating in the private sector.

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[23] Australian Energy Market Commission (2012). Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 15 November 2012, p.67.

[24] For example, refer: OECD (2012). Competitive Neutrality: Maintaining a Level Playing Field Between Public and Private Businesses.

4 Customer return analysis

4.1 Scope

It is understood that the CCP has asked Ergon Energy to consider the required return on equity of some of its customer groups. The concern has been expressed that the rates of return proposed by Energex and Ergon are unreasonably high, and much higher than the returns earned by network customers (noting that we are not aware of any specific information or evidence of this).

Further, to the extent that these comments have been specifically targeted at government owned NSPs, including Ergon Energy, they would appear to relate to the concerns discussed above regarding the treatment of government and non-government owned NSPs.

4.2 The relevance of customer returns in cost of capital analysis

Ergon Energy has prepared its rate of return proposal based on the requirements of the National Electricity Rules (NER). While it must have regard to the AER's Rate of Return Guideline, it can depart from the Guideline if it considers that its approach better meets the requirements of the NER. Ergon Energy must provide reasons for this and the AER must still approve that departure. If the AER rejects that departure, it will (presumably) apply its Guideline value or approach. The AER can also depart from its Guideline.

Neither the NER, the AER's Rate of Return Guideline nor the explanatory materials supporting that Guideline make any reference to having regard to the returns of the NSP's customers when assessing the required rate of return. Similarly, this was not required under the previous version of the NER or the AER's *Statement of Regulatory Intent*. There is no evidence that the AER, its predecessor the ACCC, or any other Australian regulator has ever had regard to the returns earned by the customers of a regulated business in assessing the rate of return that should be earned by that business.

The reason why this is not referred to is because such an approach is incompatible with accepted finance theory and practice. This is because of the models that explicitly account for risk (Sharpe CAPM, Black CAPM and Fama French (the latter considering systematic risk along with other factors)), the only relevant risk is the risk of the firm's returns relative to the market as a whole.

It is not a question of how customer returns could be taken into account (noting that the CCP has not made any suggestions as to how Ergon Energy should be factoring customer returns into its analysis). The fact is that there is no logical or theoretical justification to consider customer returns and hence it would be incorrect to take such an approach and to (somehow) do so will end up either:

- overstating Ergon Energy's required rate of return, which would result in it earning above-normal profits; or

- understating Ergon Energy's required rate of return, which will adversely impact its ability to raise capital and ultimately lead to under-investment in the network.

The National Electricity Law entitles Ergon Energy to fully recover its efficient costs, including a return on capital that is commensurate with the return required by the efficient benchmark firm. Unless directed otherwise, Ergon Energy has an obligation under the legislation, and ultimately to its shareholders, to propose a rate of return that meets the requirements of the NER and satisfies the allowed rate of return objective.

Where the underlying customer base does become relevant is in terms of the demand for Ergon Energy's services and its longer term exposure to volume risk. When assessing beta, one issue of relevance is the extent to which that demand is correlated with domestic economic activity. Otherwise, volume risk will influence Ergon Energy's future revenues and revenue risk, which will ultimately impact its returns.

If an individual customer or group of customers becomes unprofitable, this could have an impact on future volumes. However, this is only relevant to volume forecasts.

Analysis of customer returns

While it is considered inappropriate to factor customer returns into Ergon Energy's rate of return analysis (however that might be done), as requested by the CCP, we have examined the expected returns earned by Ergon Energy's customers, to the extent feasible. This analysis will show that Ergon Energy's required return for the 2015-20 regulatory control period cannot be regarded as excessive.

Composition of the customer base

Ergon has two lines of business – the part that builds and maintains the electricity distribution network and the retail arm that sells electricity to residential and business

customers. Servicing over 710,000 customers, Ergon has Australia's largest single distribution network with an area covering 97% of Queensland.[25]

Clearly, this analysis can only focus on Ergon Energy's commercial and industrial customers, which therefore excludes the large residential portion of its customer base. Segmentation of Ergon Energy's business consumers (distribution and retail) shows that the Agriculture, Government and Retail sectors have the largest number of customers, while the Mining Industry is the main customer group in terms of revenue contribution.[26] This is shown in the figure below.

Figure 3 Commercial and industrial consumption by segments 2011/12
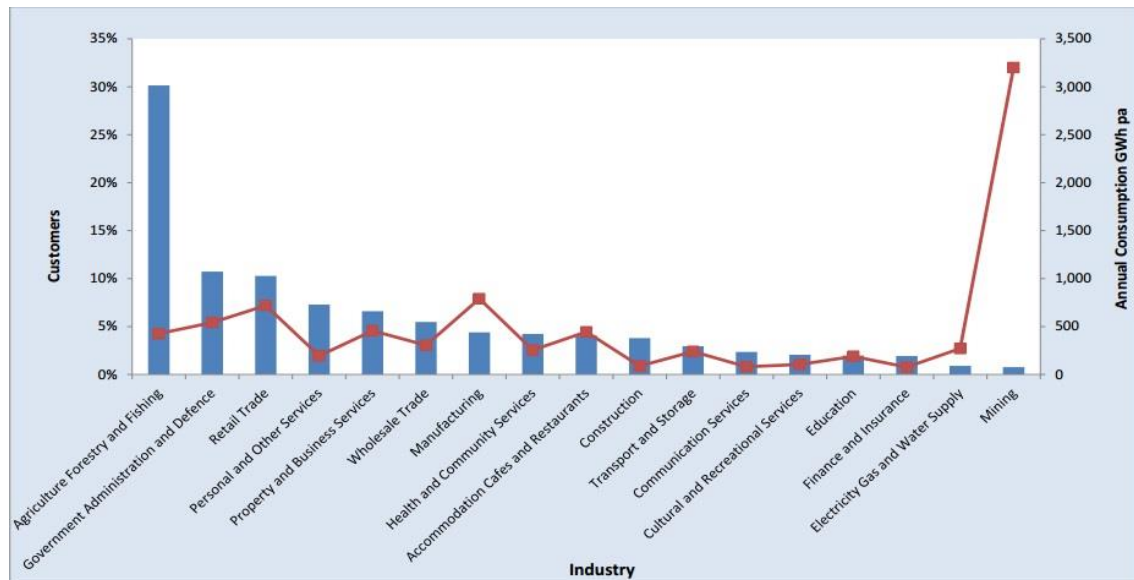
Note: Red line indicates kWh per annum.
Data source: Ergon Energy. Demand management plan 2013/14, p. 15.

The assessment of required returns requires access to financial data. For this purpose, Ergon Energy's customers can be broken down into three groups:

(a)   private firms;

(b)   publicly listed companies; and

(c)   a private business unit or group that is a subsidiary of a publicly listed parent company.

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[25]   Ergon   Energy.   Demand   management   plan   2013/14,   p.   8.   Available   online: https://www.ergon.com.au/__data/assets/pdf_file/0004/167755/Ergon-Energy-DM-Plan-2013_Final-Web.pdf.

[26]   Ergon   Energy.   Demand   management   plan   2013/14,   p.   15.   Available   online: https://www.ergon.com.au/__data/assets/pdf_file/0004/167755/Ergon-Energy-DM-Plan-2013_Final-Web.pdf.

Financial data is publicly disclosed for listed companies, not for private firms. With regard to a business unit that is a subsidiary of a publicly listed company, although the financial data of the parent (holding) listed company may not be the most appropriate representation of the returns that would be required by that subsidiary if it operated on the stand-alone basis, we have still collected this data.[27]

Recognising that the CCP question only refers to "some" of Ergon Energy's customers, we have sought to collect the data for all of the firms where feasible. However, the resulting final sample of customers that we have been able to analyse is limited. This reflects the practical limitations of data availability, rather than deliberate choices to either include or exclude certain firms.

Of Ergon Energy's customers, the publicly listed companies and private subsidiaries of publicly listed companies for which we have been able to collect data are identified in Table 4. These companies are further classified by energy usage (high and low).

Table 4   List of Ergon's customers that have publicly available financial data

Main customers (higher energy usage)	Other customers (lower energy usage)
AGL Energy Services (QLD) Pty Ltd – Moranbah Generator LOAD	AGL Energy Services (QLD) Pty Ltd – Isis Cogeneration Plant LOAD
Aurizon Operations Limited – Clayton Rail Site	Casinos Austria International – Reef Hotel Casino Cairns
Conquest Mining Limited – Mt Carlton Mine	Downer EDI Services Pty Ltd
Evolution Mining Limited – Mt Rawon	Kagara Limited
Linc Energy Pty Ltd – Gas to Liquid Pilot Plant Chinchilla	Lend Lease Property Management (Australia) Pty Ltd – Cairns Central Centre Management
Orica Australia Pty Ltd	Linc Energy Pty Ltd – Gas to Liquid Pilot Plant, Chinchilla
Peabody Energy Australia PCI (C&M Management) Pty Ltd – Coppabella Coal Mine	Mackay Sugar Co-operative Assoc Ltd – Farleigh Mill
Queensland Cotton Corp Ltd – Cotton Ginnery	Peabody Energy Australia – Wilkie Creek
Rio Tinto Coal Australia Pty Ltd – Hail Creek Coal Mine	Queensland Cotton Corporation Ltd – Dalby Gin
Wesfarmers Curraph Pty Ltd – Curraph Mine	Ramsay Health Care Aust Pty Ltd – Cairns Private Hospital
	Stockland (Prop) Pty Ltd – Stockland Cairns
	Tabcorp Holdings – Jupiters Townsville Hotel & Casino
	Woolworths (QLD) Pty Ltd

Source: Ergon data.

Use of Bloomberg data

All financial data presented has been sourced from Bloomberg. We have focussed on two key parameter that are relevant to this assessment, being:

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[27]   A more detailed analysis could seek to estimate what the return for the relevant subsidiary might be, which would be based on an analysis of listed firms that are directly comparable to that subsidiary.

- the return on equity; and

- beta, given that within the context of the asset pricing models that account for financial risk (i.e. the Sharpe CAPM, Black CAPM and Fama French), this will be a key driver of differences between the returns required for different firms as estimated using those models.

We have limited our analysis to the parameters as published by Bloomberg. For example, in terms of beta, we have referenced Bloomberg's published betas (raw, not adjusted[28]), rather than undertaken our own regression analysis. This is because such an analysis involves a number of methodological choices and assumptions, which could become subject to debate. We consider that using Bloomberg's estimates is sufficiently indicative for this analysis, particularly as we are not seeking to use these firms to estimate Ergon Energy's required rate of return.

Return on equity

The first parameter we have examined is the return on equity for each firm, as reported by Bloomberg. This is the 'WACC Cost of Equity' field in Bloomberg, which it defines as follows:

Cost of equity as defined by the Capital Asset Pricing Model (CAPM). Specifically,

Cost of equity = risk free rate + [Beta x Country risk premium]

The default value for the risk free rate is the country's long-term bond rate (10 year).

Figures are drawn from the company's most recent report, annual or interim.

The relevant data for comparison with Ergon Energy is the current data, given Ergon Energy's required return on equity is forward looking. The current return on equity reported by Bloomberg (as at the end of August 2014) is presented in the following table (this is based on monthly data).

Table 5   Current return on equity of Ergon's customers as reported by Bloomberg (%)

Firm	Current ROE (%)
AGL Energy Services	8.3354
Aurizon Operations Limited	12.0296
Conquest Mining Limited	13.1887
Evolution Mining Limited	15.6939
Linc Energy Pty Ltd	10.6836

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[28]   The adjustment Bloomberg applies here is the Blume adjustment, which accounts for mean reversion.

Firm	Current ROE (%)
Orica Australia Pty Ltd	12.1298
Peabody Energy Australia	13.1894
Queensland Cotton Corp Ltd	6.7385
Rio Tinto Coal Australia Pty Ltd	15.5569
Wesfarmers Curraph Pty Ltd	10.8185
Casinos Austria International	N/A
Downer EDI Services Pty Ltd	15.2830
Kagara Limited	22.0336
Lend Lease Property Management (Australia) Pty Ltd	12.2889
Mackay Sugar Co-operative Assoc Ltd	12.0605
Ramsay Health Care Aust Pty Ltd	8.2863
Stockland (Prop) Pty Ltd	7.8362
Tabcorp Holdings	9.644
Woolworths	9.8367
Simple average[b]	**11.9796**

a: Average does not include shaded cells as data is either unavailable or reflect extreme points.
Source: Bloomberg.

This shows that the current return on equity varies from between 6.7% to 22%, with an average of around 12%. This is higher than Ergon Energy's proposed return on equity of 10.53%. In a report prepared for Ergon Energy by SFG Consulting (SFG), it has been estimated that the current forward-looking return on the market is 11.2% (SFG's estimates were produced as at the 11th of July 2014).

Beta

The equity beta measures the covariance of the returns a company and the returns of the market as a whole. A company's equity beta is affected by its business risk as well as its financing risk (i.e. gearing level). To isolate the effect of financing risk on a company's equity beta, the equity beta needs to be 'de-levered' to derive the asset beta. The asset beta measures the relative risk of a company to the market, with the assumption that the company is purely equity financed. As noted previously, we have used the Brealey-Myers formula to de-lever the betas, consistent with the AER's approach.

Bloomberg's 'default' for its beta estimates is two years of weekly data. We note that the AER has used a number of horizons in its beta assessment, including:[29]

- the longest period available

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[29] Australian Energy Regulator (2014). p.74.

- the period from the end of the technology bubble, and excluding the GFC

- the last five years.

We have therefore also examined five yearly monthly estimates.

The following table presents Bloomberg's equity beta estimates based on two years of weekly data as at 29 August 2014.

Table 6   Bloomberg equity beta and asset beta assessment at 29 August 2014 (2 years weekly data)

	Equity beta	Gearing (D/E)	Asset beta (derived)
AGL Energy Services	0.5653	0.4895	0.38
Aurizon Operations Limited	0.9116	0.4457	0.63
Conquest Mining Limited	N/A	N/A	N/A
Evolution Mining Limited	1.8017	0.2056	1.49
Linc Energy Pty Ltd	N/A	1.1040	N/A
Orica Australia Pty Ltd	1.4543	0.6442	0.88
Peabody Energy Australia	N/A	N/A	N/A
Queensland Cotton Corp Ltd	N/A	N/A	N/A
Rio Tinto Coal Australia Pty Ltd	N/A	N/A	N/A
Wesfarmers Curraph Pty Ltd	0.9262	0.1949	0.78
Casinos Austria International	N/A	N/A	N/A
Downer EDI Services Pty Ltd	1.6698	0.2373	1.35
Kagara Limited	N/A	N/A	N/A
Lend Lease Property Management (Australia) Pty Ltd	1.3717	0.5013	0.91
Mackay Sugar Co-operative Assoc Ltd	N/A	0.5459	N/A
Ramsay Health Care Aust Pty Ltd	0.5664	0.9431	0.29
Stockland (Prop) Pty Ltd	0.451	0.3758	0.33
Tabcorp Holdings	0.8051	0.7387	0.54
Woolworths	0.7644	0.4248	0.54
Average[a]	**1.0261**	**0.5270**	**0.73**

a: Average does not include shaded cells as data is either unavailable or reflect extreme points.
Source: Bloomberg.

The implied asset beta for these businesses ranges from 0.29 to 1.49, with an average of 0.73 (which is close to the market average). As noted above, the implied asset beta in Ergon Energy's proposal is 0.33, which is just above the lowest observation in this range.

The Bloomberg betas using five years monthly data as at 29 August 2014 are presented below.

Table 7   Bloomberg equity beta and asset beta assessment at 29 August 2014 (5 years monthly data)

	Equity beta	Gearing (D/E)	Asset beta (derived)
AGL Energy Services	0.329	0.4895	0.22
Aurizon Operations Limited	0.581	0.4457	0.40
Conquest Mining Limited	1.276	N/A	N/A
Evolution Mining Limited	1.121	0.2056	0.93
Linc Energy Pty Ltd	4.088	1.1040	1.94
Orica Australia Pty Ltd	0.748	0.6442	0.45
Peabody Energy Australia	1.415	N/A	N/A
Queensland Cotton Corp Ltd	0.378	N/A	N/A
Rio Tinto Coal Australia Pty Ltd	0.570	N/A	N/A
Wesfarmers Curragh Pty Ltd	0.817	0.1949	0.68
Casinos Austria International	0.344	N/A	N/A
Downer EDI Services Pty Ltd	1.947	0.2373	1.57
Kagara Limited	2.270	N/A	N/A
Lend Lease Property Management (Australia) Pty Ltd	1.429	0.5013	0.95
Mackay Sugar Co-operative Assoc Ltd	N/A	0.5459	N/A
Ramsay Health Care Aust Pty Ltd	0.151	0.9431	0.08
Stockland (Prop) Pty Ltd	0.715	0.3758	0.52
Tabcorp Holdings	1.003	0.7387	0.58
Woolworths	0.492	0.4248	0.35
Average[a]	**0.9168**	**0.5270**	**0.61**

a: Average does not include shaded cells as data is either unavailable or reflect extreme points.
Source: Bloomberg.

Based on this horizon, the implied asset beta for these businesses is within the range from 0.08 to 1.94, with an average of 0.61 (the average excludes the 1.94 estimate). This shows that Ergon Energy's proposed asset beta remains low within the context of these customers.

Arguments could be raised about the reliability of the beta estimates and the methodology that has been used, including time horizons. However, when Ergon Energy's implied asset beta is considered within the context of this sample, there is no evidence to suggest that its proposal is too high.

Ergon Energy has a large and diverse customer base (including residential customers). Indeed, it could be expected that if anything, the starting point for the average return of an energy network NSP is the return on the market, given its customers could be seen to represent most of the key commercial and industrial sectors in the economy, all of who require energy to conduct their activities.

As noted above, SFG has estimated that the current forward-looking return on the market is 11.2%. The information in Table 5 suggests that the average return for some of Ergon Energy's commercial and industrial customers is above this. We recognise that significant caution needs to be exercised in interpreting the above data, including that Bloomberg's estimates have been derived using the Sharpe CAPM, which is known to have its own deficiencies (albeit currently the favoured model of the AER).

However, given Ergon Energy's proposed return on equity is below the return on the market estimated by SFG, and below the required returns of many of its customers, we do not consider that there is any validity to the claim that Ergon Energy's returns are 'excessive'.

How should the return on equity be estimated

It is not appropriate to assess Ergon Energy's required rate of return by having regard to the returns earned by its customers. Under the NER, the rate of return is being estimated from the perspective of investors in the efficient benchmark NSP, who provide capital to fund investments.

This decision is made having regard to the returns offered by the efficient benchmark NSP – and that firm only – compared to other comparable alternatives available in the market (which means it also needs to be commensurate with current market conditions). For example, if an investor is considering investing in a thermal coal mine, they will evaluate that firm's returns against other thermal coal mines, and perhaps other firms in the mining sector. They will not have regard to the returns earned by a coal-fired generator that might purchase that mine's coal in forming those return expectations. This is uncontentious in academic theory, commercial practice, judicial decisions and economic regulation.

Ergon Energy's regulatory proposal details how this rate of return needs to be estimated in order to meet the requirements of the NER, having regard to prevailing market conditions. The need to have the flexibility to respond to market conditions was clearly recognised by the AEMC in approving the recent changes to the NER.

As detailed in the proposal, producing an estimate that meets these requirements means that adjustments may need to be made to a model if the required return is not

considered to be commensurate with what investors might require in the current market. This is particularly an issue with the Sharpe-Linter CAPM, which has been consistently shown to underestimate the required return for low beta stocks. Properly addressing these issues requires placing more weight on other relevant asset pricing models, having regard to the relative strengths and weaknesses of each, as well as reviewing how the parameters in the Sharpe-Lintner CAPM are estimated.

Treatment of government owned businesses

As noted above, it is possible that the CCP's comments continue to reflect concerns about the treatment of government and non-government owned businesses under the NER (and the AER's Rate of Return Guideline), in particular, the application of the efficient (privately owned) benchmark firm definition to Energex and Ergon Energy.

As noted above, this issue has been addressed in detail by both the AEMC (as part of the Rule change process) and the AER (in the development of its Rate of Return Guideline). Both concluded that no distinction would be made between government and non-government owned businesses for the purpose of assessing the rate of return. Accordingly, to the extent that the CCP is suggesting that the rates of return applied to Energex and Ergon Energy should be lower than privately owned NSPs, this proposal has already been considered and rejected in the context of the approved regulatory framework within which they both operate.