Submission on the rate of return to apply to the charges revision applications for Advanced Metering Infrastructure

Prepared jointly by the
Victorian Electricity Distribution Businesses

30 August 2013

Summary

This submission is made on behalf of Jemena Electricity Networks (Vic) Ltd (**JEN**), CitiPower Pty (**CitiPower**), Powercor Australia Limited (**Powercor**), SPI Electricity Pty Ltd (**SPAusnet**), and United Energy Distribution Pty Ltd (**UED**) (collectively **the Businesses**).

The purpose of this submission is to identify and provide supporting evidence for the rate of return proposed by each of the Businesses as part of their charges revision applications for Advanced Metering Infrastructure (**AMI**). Each of the Businesses are required to submit a charges revision application under the Advanced Metering Infrastructure Cost Recovery Order in Council (**CROIC**) in order to set charges for "Regulated Services" (as defined in the CROIC) for the year commencing 1 January 2014.

The CROIC requires the rate of return to be calculated as a weighted average cost of capital (**WACC**), with parameters to be determined in accordance with the CROIC.

The Businesses propose an indicative nominal WACC of 8.23 per cent, calculated based on the parameter values set out below. This calculation is based on a proxy averaging period[1] that gives a placeholder WACC value that will be amended, as agreed with AER staff, once the agreed averaging period has concluded.

Table 1: Businesses' position on proposed AMI WACC

Parameter	Value
Market observables	
Nominal risk-free rate (R_f)	3.85%
Debt risk premium (DRP)	2.95%
Non-market observables	
Equity beta ($ß_e$)	0.8
Expected return on the market (R_m)	12.00%
Market risk premium (MRP = $R_m - R_f$)	8.15%
Value of debt as a proportion of the value of equity and debt (D/V)	0.60
Value of imputation credits (gamma)	0.25
Forecast inflation	2.47%
Nominal vanilla WACC	**8.23%**

Note: MRP, risk-free rate and DRP values are based on a proxy averaging period.

[1] The proxy averaging period is the period of 20 business days between 24 June 2013 and 19 July 2013, inclusive.

The justification for each of the parameters is set out in the body of this submission, and is summarised below:

- In accordance with the AER's Statement of Regulatory Intent (**SoRI**), the nominal risk-free rate is to be calculated on a moving average basis from the annualised yield on Commonwealth Government Securities (**CGS**) with a maturity of 10 years. Table 1 sets out the value for the risk-free rate for the indicative averaging period, and this will be updated for the Businesses' actual averaging period.

- The equity beta is 0.8, as set out in the SoRI. The Businesses do not consider that there is persuasive evidence to depart from the SoRI in respect of the equity beta at this time.

- The market risk premium (**MRP**) is 8.15 per cent. For the reasons set out in section 3.3 of this submission, the Businesses consider that there is persuasive evidence to depart from the MRP value set out in the SoRI. The most recent evidence indicates that the current MRP is well above 6.5 per cent.

- In accordance with the SoRI, the debt risk premium (**DRP**) is calculated as the margin between the annualised nominal risk-free rate and the observed annualised Australian 10-year BBB+ corporate bond rate. The table above sets out the value for the DRP for the indicative averaging period based on extrapolated Bloomberg fair values, and this will be updated for the Businesses' actual averaging period. The Businesses' consider that extrapolated Bloomberg fair values provide the most appropriate basis for estimating 10-year BBB+ corporate bond yields.

- The value of debt as a proportion of the value of equity and debt is 0.6. The Businesses do not consider that there is persuasive evidence to depart from the SoRI in respect of the debt value proportion at this time.

The Businesses propose an inflation rate of 2.47 per cent, based on the most recent annual forecast of inflation by the Reserve Bank of Australia (**RBA**).

The Businesses propose a value for gamma (the value of imputation credits) of 0.25. This reflects the most recent empirical evidence in relation to the value of imputation credits. This position is consistent with the decision of the Australian Competition Tribunal (**Tribunal**) in *Re Energex*[2] handed down in May 2011, and is also consistent with recent decisions of the AER.

The Businesses propose a debt raising costs allowance of 23 basis points per annum, based on recent expert analysis.

Finally, the Businesses note that the AER is currently developing its rate of return guidelines, and is due to publish a draft of these guidelines for consultation on the date of this submission. To the extent that the AER intends to rely on any new material, new methodologies or new approaches to any parameter which may have arisen out of the development of the rate of return guidelines, the Businesses would expect to be consulted on this prior to the AER making a decision on the charges revision applications.

[2] *Application by Energex Limited (Gamma)* (No 5) [2011] A CompT 9.

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1 AMI WACC requirements

1.1 The requirements of the Cost Recovery Order In Council

The AMI WACC for the period 1 January 2014 to 31 December 2015 (**subsequent AMI WACC period**) is calculated under clause 4.1(j) of the AMI CROIC which requires that:[3]

> *The input parameters used to calculate the WACC for the subsequent AMI WACC period must be calculated with:*
>
> *(a) measurement of the market observables to occur in a period in 2013 proposed by the distributor and agreed by the Commission (such agreement not to be unreasonably withheld); and*
>
> *(b) market observables and non-market observables determined in accordance with the Statement of Regulatory Intent issued by the AER pursuant to clause 6.5.4 of the National Electricity Rules and as if clause 6.5.4(g) of the National Electricity Rules applied.*
>
> where:
>
> *"**WACC**" means benchmark weighted average cost of capital calculated in accordance with the formula set out in clause 6.5.2(b) of the National Electricity Rules.*
>
> *"**subsequent AMI WACC period**" means the period commencing on 1 January 2014 and ending on the End Date.*
>
> *"**End Date**" means 31 December 2015.*
>
> *"**market observables**" means the nominal risk free rate and debt risk premium.*
>
> *"**non market observables**" means those input parameters that are not market observables and which are used for calculating the WACC.*

1.2 Application of the CROIC requirements

On 29 November 2012, the Australian Energy Market Commission published its final rule determination and rule (**rule changes**) amending the National Electricity Rules (**Rules** or **NER**).[4] Most relevantly for current purposes, the rule changes deleted clause 6.5.4 of the NER and made significant changes to clause 6.5.2.

This raises a question as to which version of the Rules ought to apply in determining the WACC under the CROIC.

Under section 31 of the *Interpretation of Legislation Act 1984* (Vic), if a subordinate instrument (e.g. the CROIC) refers to a provision of another subordinate instrument (e.g. the Rules) that has been repealed, but that provision in the second instrument has not been re-

[3] Advanced Metering Infrastructure Cost Recovery Order in Council made on 28 August 2007 (as amended), clause 4.1(j).

[4] AEMC, *Rule Determination: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, 29 November 2012.

made or re-enacted then any reference to that repealed provision remains in force in the form that took effect immediately before its repeal.[5]

Since the CROIC does not express an intention to calculate the rate of return by reference to the approach generally adopted in the Rules from time to time, the Businesses interpret clause 4.1(j) of the CROIC to refer to the specific approach of the WACC formula and related input parameters set out in clause 6.5.4 of the NER and the SoRI.[6] For the same reason, the Businesses interpret the reference to clause 6.5.2(b) of the NER in the CROIC as a reference to that clause as in force immediately before 29 November 2012 rather than a reference to clauses 6.5.2(d) and (e) of the current NER.

Under clause 6.5.2(b) of the Rules, as in force prior to amendment in November 2012, the return on capital must be calculated as a nominal post-tax WACC (also referred to as a nominal vanilla WACC), in accordance with the following formula:

$$WACC = k_e (E/V) + k_d (D/V)$$

where:

k_e *is the return on equity (determined using the Capital Asset Pricing Model) and is calculated as*

$$r_f + ß_e \times MRP$$

where:

r_f *is the nominal risk free rate for the regulatory control period;*

$ß_e$ *is the equity beta; and*

MRP is the market risk premium;

k_d *is the return on debt and is calculated as:*

$$r_f + DRP$$

where:

DRP is the debt risk premium for the regulatory control period.

E/V is the value of equity; and

D/V is the value of debt.

Clause 6.5.4 of the Rules (again, as in force prior to amendment in November 2012) details the basis on which the AER must develop a SoRI in relation to the parameters of the rate of return.

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5 *Interpretation of Legislation Act 1984* (Vic), s 31.

6 Based on the same reasoning, the reference to clause 6.5.2(b) of the NER in the definition of "WACC" in the CROIC is a reference to that clause as in force immediately before 29 November 2012 rather than a reference to clauses 6.5.2(d) and (e) of the current NER.

On 1 May 2009, the AER issued a SoRI, which prescribed the following values and methods to be applied in respect of the above parameters:

- r_f – the nominal risk-free rate is to be calculated on a moving average basis from the annualised yield on CGS with a maturity of 10 years. The SoRI indicates the CGS should have a maturity of ten years and the yield is to be determined over a period that is to be as close as reasonably practicable to the commencement of the regulatory control period;

- β_e – the equity beta is 0.8;

- *MRP* – market risk premium is 6.5 per cent;

- *DRP* – the credit level rating for the DRP is BBB+ (the DRP reflecting the margin between the annualised nominal risk-free rate and the observed annualised Australian benchmark corporate bond rate for corporate bonds which have a maturity equal to that used to derive the nominal risk-free rate and a credit rating from a recognised credit rating agency);

- *E/V* – the value of equity as a proportion of the value of equity and debt is (1 – D/V);

- *D/V* – the value of debt as a proportion of the value of equity and debt is 0.6.

Clause 6.5.4(g) of the Rules (as in force prior to amendment in November 2012) states that a distribution determination to which a SoRI is applicable must be consistent with the statement unless there is persuasive evidence justifying a departure, in the particular case, from a value, method or credit rating level set out in the statement.

2 Businesses' position on market observables

Each Business has nominated a future period for the measurement of the market observables and the AER has agreed to these measurement periods. The Businesses will provide the AER with their proposed calculation of the market observables shortly after these periods end. For the purposes of this proposal, placeholder market observables have been calculated using the 20 Business days from 24 June 2013 to 19 July 2013 inclusive.

2.1 Nominal risk-free rate

The placeholder nominal risk-free rate is calculated from the annualised yield on CGS with a maturity of ten years using the indicative mid rates published by the RBA for the placeholder measurement period. The ten-year rate has been calculated by interpolating on a straight line basis between the relevant CGS yields.

Term for the risk-free rate

The Businesses submit that a ten year risk-free rate is appropriate. The Businesses rely on the submissions made by the Energy Networks Association (**ENA**) on why a 10 year term should be adopted for the measurement of the risk-free rate[7], together with the two expert reports commissioned by the ENA on this issue.

[7] ENA, *Response to AER Rate of Return Guideline Consultation Paper*, 28 June 2013, pp. 56–57.

The first report, by Incenta Economic Consulting sets out the following conclusions:

- theory provides no particular guidance about the appropriate term of the risk-free rate, for example, the Sharpe-Linter CAPM (which is one of the theoretical models that may be used) is a one-period model where the length of the period equals the lives of the assets;[8]

- the approach of setting the term of the risk-free rate to the five-year length of the regulatory period, while estimating the market risk premium with reference to a ten-year risk-free rate would be internally inconsistent;[9] and

- the dominant market practice is to set the term of the risk-free rate to ten years when evaluating regulated and unregulated infrastructure businesses.[10]

The ENA also commissioned SFG to examine the practice of independent expert valuation professionals. SFG found:

- the most universal practice of independent expert valuation professionals is to use a 10-year term to maturity when estimating the risk-free rate in asset-pricing models; and

- the only deviation from that dominant practice occurs where the expert notes that the life of the assets being valued is less than ten years.[11]

The placeholder nominal risk-free rate of 3.85 per cent has been calculated for a 10-year term to maturity. The method applied was to interpolate between the yields of individual CGS issues with closely corresponding terms to maturity. Interpolation was done on a daily basis over the reference period from 24 June 2013 to 19 July 2013, with an arithmetic average then taken of the daily results.

2.2 Debt risk premium

The Businesses propose that the DRP be calculated over the agreed measurement periods by taking the arithmetic average of the daily longest-dated Bloomberg BBB fair value yields over the measurement period and extrapolating that to a ten-year yield using a paired bond analysis. This DRP estimation approach is consistent with that used by the AER in its recent decision for the Victorian gas distribution businesses.[12]

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8 Incenta Economic Consulting, *Term of the Risk Free Rate for the Cost of Equity: Report for the Energy Networks Association*, June 2013, pp. 17–21.

9 Incenta Economic Consulting, *Term of the Risk Free Rate for the Cost of Equity: Report for the Energy Networks Association*, June 2013, pp. 31–40.

10 Incenta Economic Consulting, *Term of the Risk Free Rate for the Cost of Equity: Report for the Energy Networks Association*, June 2013, pp. 23–30.

11 SFG, *Evidence on the Required Return on Equity from Independent Expert Reports: Report for the Energy Networks Association*, 24 June 2013, pp. 20–21.

12 In these decisions the AER agreed with the proposals of the Victorian gas distribution businesses to: determine the DRP by defining the benchmark bond as a 10 year corporate bond with a BBB+ credit rating and measuring the benchmark bond using the extrapolated Bloomberg BBB rated seven year fair value curve; and extrapolating the Bloomberg BBB rated seven year fair value curve to a 10 year maturity (consistent with the definition of the benchmark bond) using paired bond analysis. See: AER, *Envestra Ltd (Victoria): Access Arrangement Final Decision 2013-17*, Part 1, 15 March 2013, pp. 29 – 30; AER, *Envestra Ltd (Albury): Access Arrangement Final Decision 2013-17*, Part 1, 15 March 2013, pp. 29 – 30; AER, *SPI Networks (Gas) Pty Ltd: Access*

Term of debt issue

The Businesses submit that the benchmark term of debt issue should reflect the average term of debt at issuance for firms comparable to the benchmark firm. The Businesses rely on the submissions made by the ENA on why a 10 year term should be adopted[13], together with an expert report on this matter from PwC, which was commissioned by the ENA. The PwC report estimates that the average term of debt at issue for ASX listed regulated energy businesses to be 10.2 years.[14] The ENA also commissioned a report from CEG on debt term at issuance, which found that the standard practice of regulated energy businesses is to issue long-term debt of 10 years or more.[15]

Advantages of Bloomberg fair value curve

The Businesses consider that, provided the Bloomberg BBB fair value yield curve is a robust fit to the full set of relevant underlying bond data, there are significant advantages to using the Bloomberg curve to calculate the DRP.

In relation to the use of the Bloomberg fair value curve, the Business rely on a report prepared by CEG in June 2013 and which was submitted by the ENA as part of the AER's consultation process on the rate of return guidelines. The Business have submitted a copy of this report which incorporates an errata notice prepared by CEG with respect to that June 2013 report (**CEG August Report**). The CEG August Report is, in the main, identical to the June 2013 report.[16]

The CEG August Report sets out some of the advantages of using the Bloomberg curve where it can be shown to provide a robust fit to observed yields on BBB+ or similarly rated bonds. These advantages include:

- the Bloomberg BBB fair value curve is built for, and commercially provided to, debt market participants, who pay to use it for commercial purposes;
- Bloomberg has access to a rich data source to derive the BBB fair value curve, including estimates of market prices of many hundreds of bonds across a range of credit ratings and maturities. The data incorporates BBB to A- rated bonds but is not limited to those bond types;
- Bloomberg's fair value curves are independent of market participants and there is no obvious incentive for Bloomberg to try to skew its estimates up or down.[17]

There may be some disadvantages to using the Bloomberg curve. For example, the methodology that Bloomberg uses to construct its curves is proprietary, which can give rise

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Arrangement Final Decision 2013-17, Part 1, 15 March 2013, pp. 23–24; AER, *Multinet Gas (DB No. 1) Pty Ltd and Multinet Gas (DB No. 2) Pty Ltd 2013-17*, Part 1, March 2013, pp. 22–23..

13 ENA, *Response to AER Rate of Return Guideline Consultation Paper*, 28 June 2013, pp. 94–95.

14 PwC, *Benchmark Term of Debt Assumption: Energy Networks Association*, June 2013, p. 10.

15 CEG, *Debt Strategies of Utility Businesses,* June 2013, p. 8.

16 The only changes relate to results for some sub-samples of data examined that were described as not excluding make-whole callable bonds. See explanation in: CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, p. 6.

17 CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, pp. 9 and 10.

to difficulties particularly when the yields estimated by the curve do not appear to be consistent with other observed market data.[18]

However, provided that the Bloomberg curve is consistent with other observed market data, such disadvantages do not outweigh the advantages associated with more transparent methodologies.

As the CEG August Report notes, properly synthesising debt market information is a difficult and complex task. However, Bloomberg is engaged in this task on a daily basis and can combine a large amount of experience and information when assessing the quality of the data used to construct its fair value curves.[19]

In its final decision for the Victorian gas distribution businesses, the AER considered submissions that called for a departure from the use of the Bloomberg fair value curve. The AER reiterated its position from the draft decision that, consistent with previous Tribunal guidance,[20] it would not be appropriate to adopt an alternative unless it was developed in consultation with the relevant regulated businesses and other interested parties.[21] The AER affirmed its view that the most appropriate forum for any such change would be the development of the rate of return guidelines.[22]

Alternatives to the Bloomberg fair value curve

In the event that at a particular point in time the Bloomberg fair value curve is considered to be inconsistent with observed market data then an alternative methodology that provides estimates of the cost of debt that are consistent with observed market data should be used. This alternative methodology should meet criteria such as that:

- it uses as inputs, estimates of the yield to maturity on a sufficiently large number of bonds to allow a robust estimate to be derived of the cost of debt at the benchmark credit rating and maturity;
- the method for selecting the bonds must not exclude bonds that provide information relevant to arriving at an estimate of the cost of debt at the benchmark credit rating and maturity;
- the methodology must be able to account for variations in the bond yield input data due to variations in the:
    - maturity of bonds used as inputs;

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18 CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, p. 10.

19 CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, pp. 9 and 10.

20 See: Australian Competition Tribunal, *Application by Envestra Ltd (No 2)* [2012] ACompT 3, 11 January 2012, [118], where the Tribunal commented: "*In the longer term, as the Tribunal has said, it is open to the AER to adopt a different methodology. Consideration of the proper composition of the comparison sample of bonds, the methodology for deciding on the appropriate sample of bonds and the relevance of these bonds to its task should be undertaken by the AER in consultation with interested parties across the spectrum of entities in the industries it regulates, consumers of their services and other interested parties."*

21 See, for example: AER, *SPI Networks (Gas) Pty Ltd: Access Arrangement Final Decision 2013-17*, Part 2, 15 March 2013, p. 87.

22 AER, *SPI Networks (Gas) Pty Ltd: Access Arrangement Final Decision 2013-17*, Part 2, 15 March 2013, p. 113.

- credit rating of bonds used as inputs.

It is noted that the above three criteria are interrelated. That is, the first and second criteria are necessary conditions to have confidence that the first criteria has been met (i.e., a robust estimate has been derived).

By way of illustration, it can be seen in Figure 1, for the period 24 June to 19 July 2013, that there were no bonds that had a maturity of 10 years and a credit rating of BBB+. There are only two BBB+ bonds with maturity between eight and 12 years (and these are both by the same issuer). Consequently, the first criterion could not be met having regard only to BBB+ bonds with a maturity of 10 years. In order to meet this criterion it is necessary to use as inputs to any methodology bonds that have different maturity and/or credit rating to the benchmark of interest. However, the introduction of such bonds introduces the potential for bias in a methodology if the methodology does not adequately account for the differences between the benchmark credit rating/maturity and the credit rating/maturity of bonds in the sample.

An example of a methodology that meets the criteria is the curve fitting methodology proposed by CEG. This methodology takes into account a large range of bonds that contain information relevant to arriving at an estimate of the cost of debt at the benchmark credit rating and maturity and that is able to account for variations in the maturity of bonds and credit ratings.[23] This methodology uses all bonds of all maturities with credit ratings of between A- to BBB. However, it uses that bond input data to estimate the position and shape of A-, BBB+ and BBB fair value curves. This method uses all of the available and relevant A- to BBB bond yields to estimate how average bond yields vary with both maturity and credit rating – allowing for a robust estimate of the cost of debt for a given maturity and credit rating. The Businesses will use this methodology to provide a robust cross-check on the validity of the Bloomberg fair value curve for the Businesses' actual measurement period.

Concerns with the ERA and IPART approaches

The Businesses do not consider that alternative approaches such as those used by the Economic Regulation Authority (**ERA**) [24] and the Independent Pricing and Regulatory Tribunal (**IPART**) [25] should be used to measure the DRP. Both methodologies have similarities in that they take an average of the yields on a sample of bonds that includes bonds with:

- different credit ratings (IPART has included BBB and BBB+ bonds while the ERA has included BBB to A- bonds); and

- different maturities (both have included all bonds with two or more years to maturity).

Notwithstanding that the methodologies begin with input data that have different maturities and credit rating, no attempt is made to account for the impact of these differences on the input data. This means that the output of the method will be heavily influenced by the average credit rating/maturity of the bonds included in the sample.

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[23] See section 3 of CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013.

[24] As set out in ERA, *Final decision on Proposed Revisions to the Access Arrangement for the Western Power Network*, 5 September 2012, pp. 363 – 370.

[25] As set out in IPART, *Developing the Approach to Estimating the Debt Margin: Other Industries – Final Decision*, April 2011, in particular Box 1.1 on page 2 and Appendix A which sets out a summary of IPART's position on the data source and statistical approach.

For example, if it happens that the sample includes more A- bonds than BBB+ or BBB bonds then both methodologies will tend to give an estimate that is biased towards an A- estimate. Similarly, if the number of shorter dated bonds in the sample is greater than the number of longer dated bonds in the sample then the methodology will give an estimate that is biased towards the yields on shorter dated bonds (and vice versa).

Consequently, these methodologies cannot be used to estimate the cost of debt for any pre-specified benchmark credit rating or maturity. Rather, the implied credit rating/maturity associated with these methodologies depends on the types of bonds that dominate the sample. This in turn depends on the vagaries of bond issuance and credit rating changes. For example, there is no reason why a downgrade of a particular issuer's debt from A to A- should be expected to lower the estimate of a benchmark BBB+ yield. Yet this is precisely what is likely to happen if the ERA methodology used for Western Power is used to estimate the cost of debt. This is because that downgrade would automatically include more A- bonds in the ERA sample – causing the average of the sample to be more reflective of the (generally lower) A- yields than before the downgrade.

CEG noted this critical failing of both the ERA and IPART approaches in section 5 of its report of August 2013.[26] The failure to properly account for the impact of credit rating and maturity on the observations within the sample means that the ERA and IPART methods fail to meet the third criteria set out above. The ERA has compared a version of the curve fitting analysis performed by CEG to its own estimates and concluded that the curve fitting does not give sufficiently different estimates to justify the additional effort.

The ERA concluded that:

> *"…the Authority notes that the estimates of the debt risk premium can be higher (as in the case for WAGN) and lower (as in the case for DBP and Western range of 6 and 14 basis points. However, the Authority is conscious whether or not the difference (both under- and over-estimates) is significant enough to warrant such an extension of using the curve fitting techniques. Using the estimates from the Authority's three most recently regulatory decisions as an example, the difference of the estimates under both approaches fall within a very small margin of less than 5 per cent in comparison with the estimate debt risk premium. For example, for DBNGP's decision, the debt risk premium is 3.196 per cent whereas the difference between the two approaches is 14 basis points (or 0.14 per cent). This difference falls within a margin of 4.3 per cent (taking 0.14 per cent divided by 3.196 per cent).*
>
> *Curve fitting is a complex issue and there are various different techniques which can be used. The Authority considers that the small benefit from this complex technique is not sufficient to outweigh the costs involved in carrying out the exercise."*[27]

The problem with this conclusion is that it can only possibly be true while there is a small difference in the answer given by curve fitting and the answer given by the ERA's more simplistic approach. But there is no reason to believe that this will always be the case – even if it was the case in past applications. One can only make this conclusion having performed the curve fitting, at which point there is no advantage from adopting a less accurate and more simplistic approach because the more accurate and more sophisticated analysis has already been undertaken.

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[26] CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, pp. 28–40.

[27] ERA, *Explanatory Statement for the Draft Rate of Return Guidelines*, 6 August 2013.

The Businesses note that there are other problems with both the ERA and IPART methodologies. These include:

- **The method for arriving at an average.** IPART adopts a median and the ERA adopts a weighted average (where the weights are bond issue size and maturity). Both of these approaches are arbitrary and, depending on the vagaries of the sample, can give clearly inappropriate answers.[28] This is inconsistent with the first criteria set out above;

- **Both approaches, as previously practised, have excluded relevant data.** For example, IPART excludes floating rate bonds while the ERA has excluded bonds issued in foreign currency by Australian firms. [29] This is inconsistent with the second criteria set out above.

One reason given by the ERA for adopting its methodology was that since Bloomberg discontinued the publication of seven and ten year AAA fair value yield curves in June 2010, the use of an historical increment to the DRP for extrapolation would become increasingly out-dated over time.[30] The PwC report notes that other extrapolation methodologies are available, including the paired bond analysis,[31] which is the methodology proposed by the Businesses for this determination.

While two determinations by the Tribunal have not found error with the ERA's approach (aside from an error with the approach to averaging the raw bond data the ERA relied on), the Businesses note that a number of important issues were not exposed in the Tribunal process, including:

- the inability of the method to robustly account for variations in credit rating and maturity of the bonds in the sample;

- that a wider data source was available than that relied on by the ERA, including UBS bond data and data for credit rating bands surrounding BBB / BBB+[32]; and

- the irrationality of the ERA's weighting scheme.[33]

Consistency with recent AER decisions

The approach proposed by the Businesses is consistent with recent AER determinations. For example, in the recent AER determinations for the gas distribution and transmission network service providers in Victoria, the AER approved the proposals to:

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[28] For example, see PwC, *Potential Impact of the ERA's DRP Methodology*, June 2013, p. vii. See also sections 5.2.2 and 5.3.2 of CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013.

[29] For example, see sections 5.2.2, 5.2.3.4, 5.3.2 and 5.3.3.3 of CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013.

[30] PwC, *Potential Impact of the ERA's DRP Methodology*, June 2013, p. vi.

[31] PwC, *Potential Impact of the ERA's DRP Methodology*, June 2013, p. vi.

[32] It is noted that in the ERA's draft cost of capital guidelines the ERA has commented that UBS provides pricing for floating rate notes which are included in the ERA's bond-yield approach and that the draft guideline therefore considers UBS pricing, together with Bloomberg, in the estimates of the debt risk premium. ERA, *Draft Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, 6 August 2013, p. 13, [75].

[33] PwC makes similar points in: PwC, *Potential Impact of the ERA's DRP Methodology*, June 2013, p. 27.

- determine the DRP by defining the benchmark bond as a 10 year Australian corporate bond with a BBB+ credit rating and measuring the benchmark bond rate using the extrapolated Bloomberg BBB rated seven year fair value curve; and

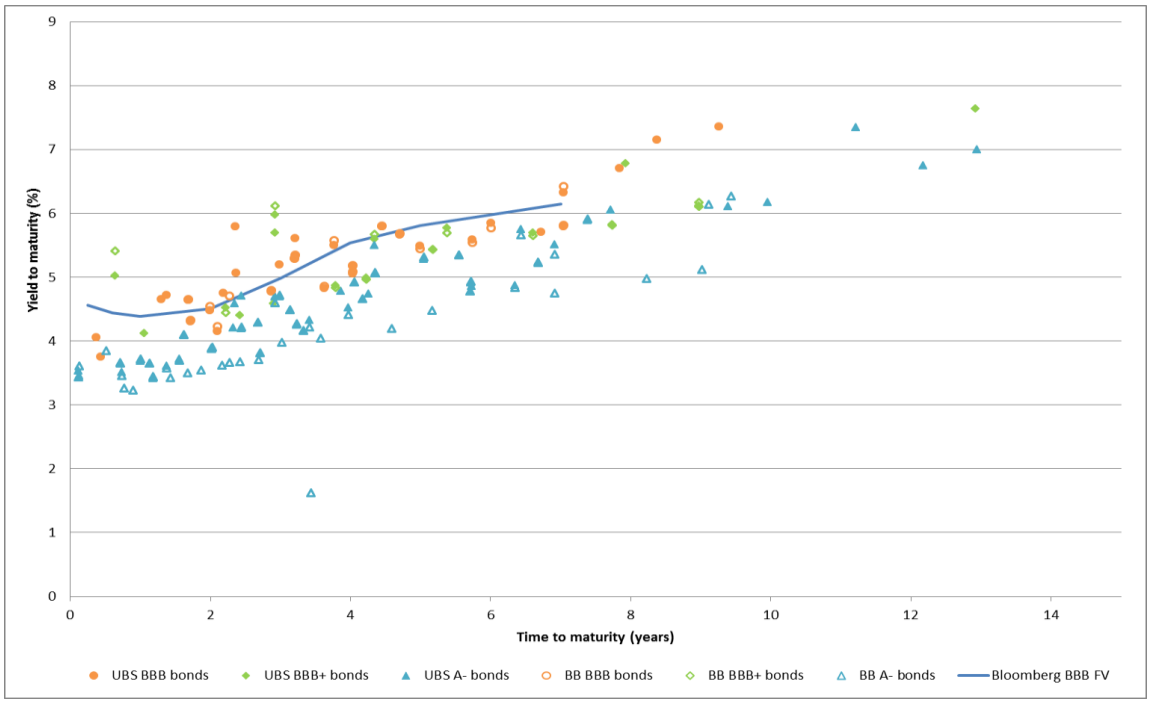
- extrapolate the Bloomberg BBB rated seven year fair value curve to a 10 year maturity using paired bond analysis.[34]

Bloomberg fair value curves remain a reliable measure

The CEG August Report concluded that in the time period examined (February 2013) the Bloomberg fair value curve remained[35] a good fit to the available data. In that exercise, CEG examined data from a large number of issuers and on a large number of different bond types – including bonds issued by Australian companies in foreign currency but converted to Australian dollar yields using prevailing cross currency swap rates.

The Businesses asked CEG to reproduce Figures 13 and 15A from the CEG August Report but for the more recent 'placeholder' period of 24th June to the 19th July 2013. Figure 13 of the CEG August Report showed the Bloomberg fair value curve against a back drop of all bonds issued in Australian dollars by Australian companies.[36] Figure 15A excluded from the sample bonds with optionality features (that is, it excluded bonds with call or put options, but does not exclude make-whole callable bonds).[37] The reproductions are provided below.

Figure 1: Figure 13 from CEG August Report (BBB to A- bonds issued in AUD in Australia) updated for the proxy averaging period 24 June to 19 July 2013



Source: Bloomberg and UBS data, CEG analysis.

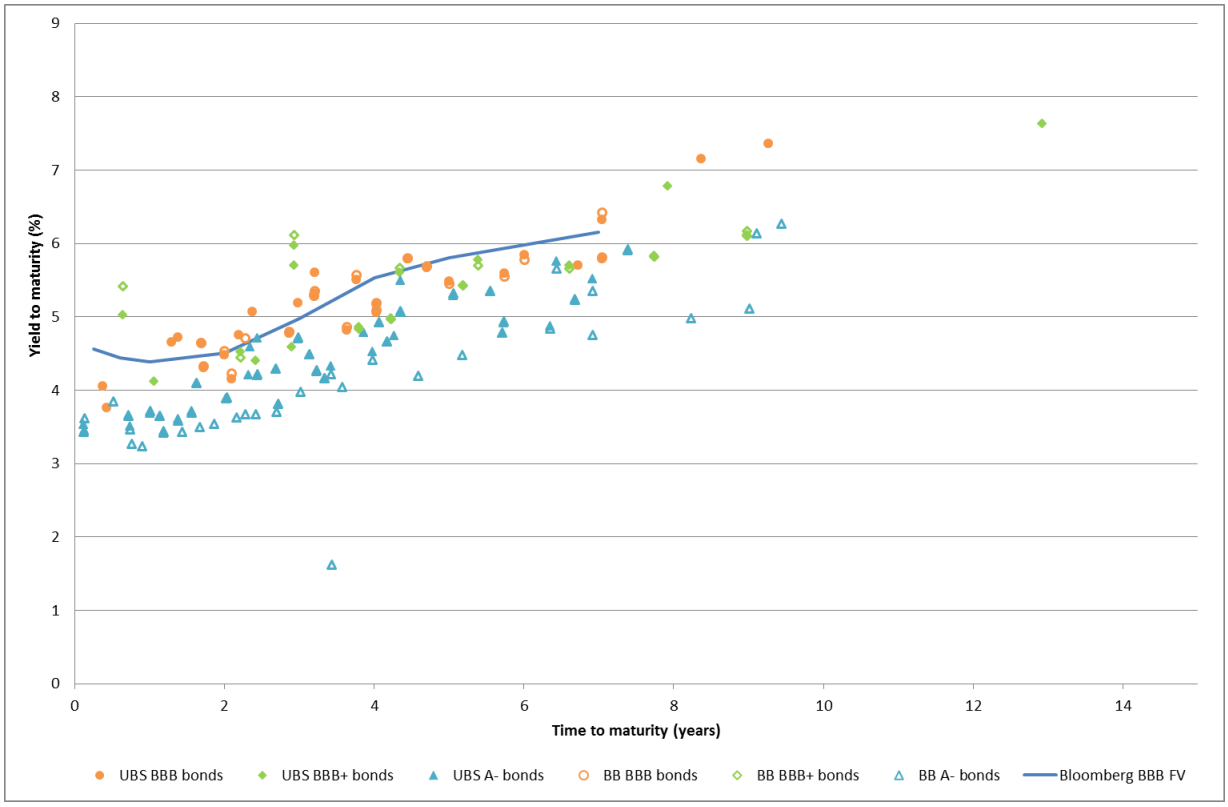
[34] See above note 12.

[35] CEG had previously performed a similar analysis, and came to a similar conclusion, for the Victorian gas businesses focusing on the period November and December 2011. See CEG, *Estimating the Regulatory Debt Risk Premium for Victorian Gas Businesses*, March 2012.

[36] CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, p. 56.

[37] CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, p. 59.

Figure 2: Reproduction of Figure 15 from CEG August Report (BBB to A- bonds issued in AUD in Australia, excluding bonds with optionality features) updated for the proxy averaging period 24 June to 19 July 2013



Source: Bloomberg and UBS data, CEG analysis.

The process used by CEG to derive the bond yield data in these bonds is to first use Bloomberg to identify:

- all bonds that are rated BBB to A- that have been issued in AUD by Australian companies;
- the characteristics of these bonds, specifically: their maturity date, whether they have optionality features and whether they are fixed rate or floating rate bonds;
- these characteristics are then used to identify the same bonds (if they exist) in UBS rate sheets;
- fixed rate yields are taken from both UBS and Bloomberg;
- floating rate yields are calculated using UBS trading margin and Bloomberg swap rates to maturity.

Figure 1 and Figure 2 show that the Bloomberg BBB fair value curve remains a good fit to the available data. As one would expect, the curve passes above the majority of A- data points but within the "cloud" of BBB and BBB+ data points.

Testing the reliability of Bloomberg fair value curves for the agreed averaging period

The Businesses recognise the importance of verifying the reasonableness of the Bloomberg curve over the agreed averaging period. This is consistent with Tribunal determinations that

have considered the performance of the Bloomberg curve by reference to relevant underlying bond data.[38] The Businesses have asked CEG to perform a more detailed analysis using all relevant data in the agreed averaging period.

Extrapolation of the Bloomberg fair value curve from seven to 10 years

The Businesses have extrapolated the Bloomberg fair value curve from seven to 10 years using a paired bonds analysis. The methodology follows the paired bond methodology set out in the CEG August Report[39] – which is itself consistent with the AER method used in the context of the AER's recent assessment of the cost of debt for Victorian gas businesses.[40]

The bond pairs relied on by the Businesses are set out in Table 2 below, which shows the basis points per annum increase in DRP for each bond pair. That is, the increase in DRP from the maturity of the shortest maturity bond to the maturity of the longest maturity bond. An average is taken of these and this is taken to represent the basis points per annum increase in DRP from seven to 10 years.

Table 2: Bond pair analysis and implied increase in DRP (bppa)

Issuer	ISINs	BGN	BVAL	UBS	Average BB and UBS
Coca-Cola Amatil	XS0938014742 – XS0803234094	N/A	6.141	N/A	6.141
Commonwealth Property Office	AU3CB0202901 – AU3CB0202919	N/A	6.658	N/A	6.658
Sydney Airport	AU3FN0001244 – AU3FN0001251	N/A	N/A	12.960	12.960
Wesfarmers	AU3FN0001244 – AU3FN0001251	13.307	13.814	16.229	14.768
Average all					10.132

Source: Bloomberg, UBS, RBA, CEG analysis.

Note: Bppa values are per year of debt term between seven and 10 years.

The differences between these bond pairs and the bond pairs set out in Table 3 of the CEG August Report are:

- the GPT bond pair is excluded because these bonds are now classified by Bloomberg as having downgrade options attached to them and, following the CEG August Report, are excluded due to the possibility that the downgrade options may be priced differently at different maturities and, hence, may affect the extrapolation;
- a new Wesfarmers bond pair is available; and

[38] See for example: *Application by Envestra Ltd (No 2)* [2012] ACompT 3, [78] – [109].
[39] See section 4.2 of CEG, *Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013*), August 2013, pp. 23–24.
[40] See AER, Access arrangement final decision, Envestra Ltd, 2013-17, Part 1, March 2013, pp. 29-30.

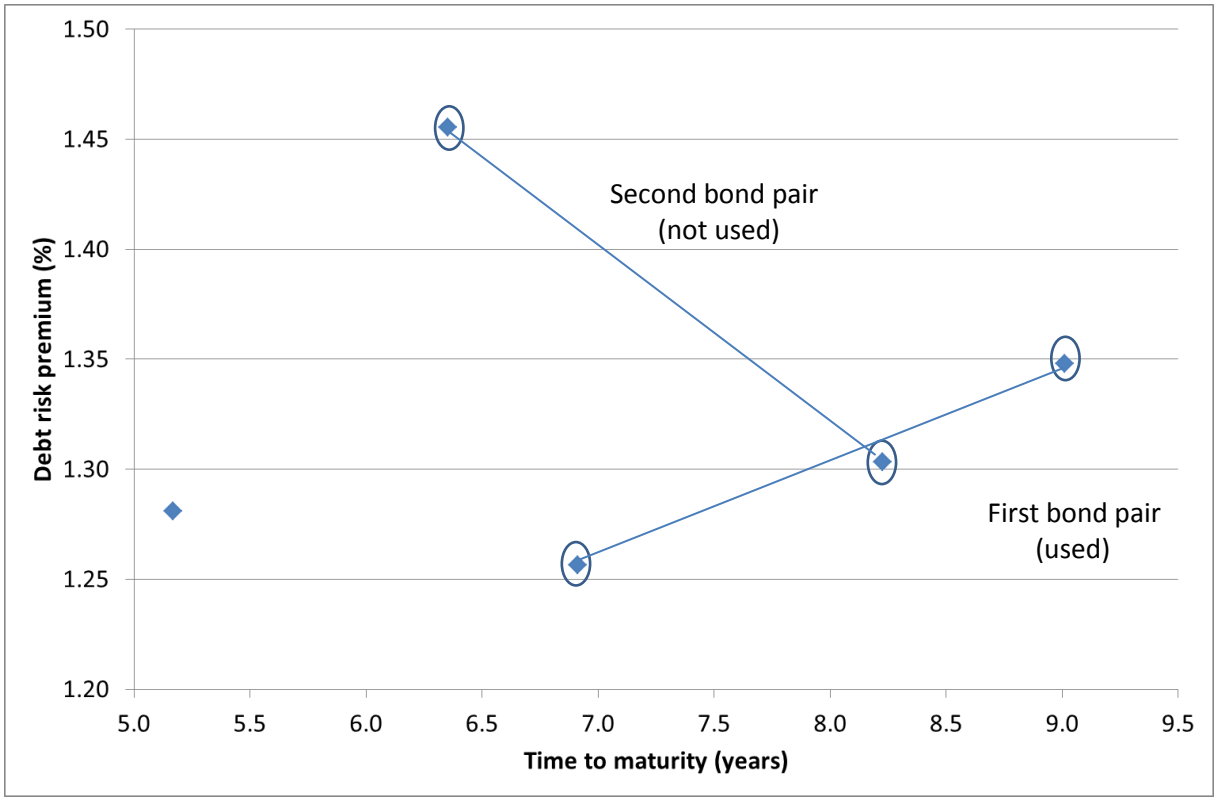
- the second Coca Cola Amatil bond pair is excluded on the grounds that it is an outlier (see below).

With these changes, and updated data, the Businesses arrive at an extrapolation of 0.10 per cent per annum increase in DRP from seven to 10 years. When this is multiplied by three and added to the DRP implied by the Bloomberg fair value curve at seven years (2.64 per cent) the DRP at 10 years is 2.95 per cent.

Exclusion of the Coca Cola Amatil outlier

A total of five bonds issued by Coca Cola Amatil fitted the relevant criteria, giving rise to at most two distinct bond pairs. The first is the pair of bonds closest to seven and 10 years maturity respectively which are used in the analysis and give a 6.1 bppa increase in DRP. The next best pair fitting the same criteria gives a -7.9 bppa increase in DRP. Figure 3 below shows the DRPs on all Coca-Cola bonds with maturity greater than 5 years – all sourced from Bloomberg's BVAL source for consistency (other sources did not have data available for all five bonds).[41]

Figure 3: Debt risk premiums on Coca Cola bonds, 5–12 years



Source: Bloomberg and RBA data, CEG analysis.

Figure 3 shows that there is one very large positive outlier with maturity of 6.5 years that affects the extrapolation estimate derived for the second bond pair in Table 2 above. Using this outlier to form a bond pair results in extrapolation estimates that are manifestly inconsistent with the other bond pairs in Table 2 above and which are also inconsistent with the common trend in DRP evident in the three longest maturity bonds to the right of Figure 3.

[41] The sole use of BVAL is not critical to the analysis. For these five Coca Cola Amatil bonds there are not great divergences between BVAL data and data from BGN and UBS, in cases where the latter are available.

The general issue of how to interpret the evidence provided by more than two bonds is not unique to bonds issued by Coca Cola Amatil. For example, as noted above, four SPI E&G bonds satisfy the collection criteria if ratings sensitive options are allowed. These issues will be considered further should they arise during the actual measurement period.

3 Businesses' position on non-market observables

3.1 Value of debt as a proportion of the value of equity and debt

In accordance with the SoRI, the Businesses propose to adopt a 0.6 value of debt as a proportion of the value of equity and debt.

This position is consistent with recent AER practice. The AER has consistently adopted a value of 0.6 for this parameter in all regulatory determinations since the SoRI[42], and it has not indicated that it considers there to be evidence which would support a departure from this position.

The Businesses would expect that, should the AER propose to depart from the SoRI in respect of this parameter, there would be an opportunity to comment on this proposal and any supporting evidence that the AER may seek to rely on.

3.2 Equity beta

The Businesses propose not to depart from an equity beta value of 0.8.

The Businesses note that there is some recent empirical evidence that indicates that the equity beta for the benchmark efficient business is slightly above 0.8. Based on analysis of risk parameters for Australian and US firms, SFG recommend a value for the equity beta of 0.82.[43]

However, for current purposes, the Businesses do not propose a departure from the SoRI value of 0.8. The recent empirical analysis conducted by SFG broadly supports maintaining the value set out in the SoRI.

This position is also consistent with recent AER practice. The AER has consistently adopted a value for the equity beta of 0.8 in all regulatory determinations since the SoRI[44], and it has not indicated that it considers there to be evidence which would support a departure from this position.

As above in relation to the gearing ratio, the Businesses would expect that, should the AER propose to depart from the SoRI in respect of this parameter, there would be an opportunity to comment on this proposal and any supporting evidence that the AER may seek to rely on.

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[42] In its 2010 distribution determinations for the Businesses, the AER accepted a gearing level of 60 per cent (i.e. 60% value of debt as a proportion of the value of equity and debt) (AER, *Final decision: Victorian electricity distribution network service providers - Distribution determination 2011–2015*, October 2010, pp. 516–517). More recently, in its access arrangement decisions for the Victorian gas businesses, the AER adopted a gearing level of 60% (e.g. AER, *Access arrangement final decision: Envestra Ltd 2013–17*, March 2013, Part 2, p. 151).

[43] SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013.

[44] In its 2010 distribution determinations for the Businesses, the AER accepted an equity beta of 0.8 (AER, *Final decision: Victorian electricity distribution network service providers - Distribution determination 2011–2015*, October 2010, pp. 517–518). More recently, in its access arrangement decision for the Victorian gas businesses, the AER adopted an equity beta of 0.8 (e.g. AER, *Access arrangement final decision: Envestra Ltd 2013–17*, March 2013, Part 2, p. 149–150).

3.3 Market risk premium

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. It represents the difference between the expected return on the market portfolio of risky assets, and the risk-free rate of return at any point in time. That is:

$$MRP = R_m - R_f.$$

Estimating the difference between the market return and the risk-free rate (i.e. the MRP) is a necessary step in estimating the cost of equity under the Sharpe-Lintner Capital Asset Pricing Model (**SL CAPM**). The Businesses do not necessarily support use of the SL CAPM to estimate the cost of equity in all circumstances.[45] However the Businesses accept that the SL CAPM should be used to calculate the cost of equity for the purposes of the charges revision applications, because it is the model referred to in the version of the Rules to be applied for this purpose (i.e. the SL CAPM was the model applied under clause 6.5.2(b) of the Rules, as in force prior to 29 November 2012).

The SL CAPM provides for the cost of equity to be calculated as follows:[46]

$$K_e = R_f + ß * (R_m - R_f)$$

where:

R_f is the nominal risk-free rate;

ß is the equity beta; and

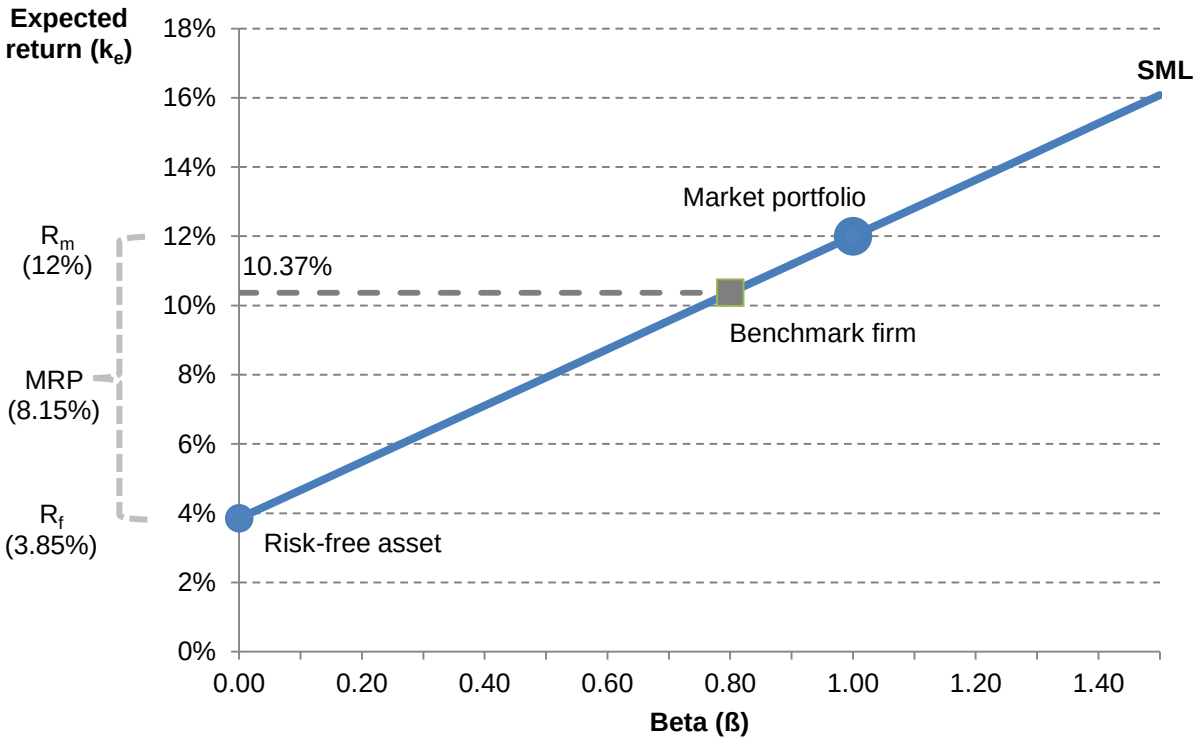
R_m is the expected return on the market portfolio of equities.

The SL CAPM formula implies that the expected return for a particular firm will be proportionate to its equity beta. For a firm with an equity beta of one the expected return will simply be equal to the market return, while for a firm with an equity beta less than (greater than) one, the expected return will be less than (greater than) the market return. This is illustrated by the security market line (**SML**) in Figure 4 below, which shows the relationship between the expected return on an asset for a given equity beta, assuming a risk-free rate of 3.85 per cent and an expected return on the market of 12 per cent. Figure 4 also plots the market portfolio (with a beta of one) and the benchmark firm (with an equity beta of 0.8).

[45] The Businesses support the position taken by the ENA in its recent submission to the AER's rate of return guidelines consultation paper. The ENA proposed a "multi-model methodology" for determining the cost of equity, and argued against reliance on a single model such as the SL CAPM (ENA, *Response to AER Rate of Return Guideline Consultation Paper*, 28 June 2013, pp. 47–76).

[46] Sharpe, William F., Capital asset prices: A theory of market equilibrium under conditions of risk, *Journal of Finance* 19, 1964, pp. 425–442; Lintner, John, The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets, *Review of Economics and Statistics* 47, 1965, pp. 13–37.

Figure 4: Security Market Line



The difference between the expected return on the market portfolio (R_m) and the nominal risk-free rate (R_f) (the bracketed term in the SL CAPM formula) is sometimes abbreviated and referred to as the MRP. However, it is important to bear in mind that in this part of the equation what is being measured is the extent to which the market return exceeds the risk-free rate. The MRP is not a parameter in its own right in the SL CAPM, but rather it represents the difference between the expected market return and the risk-free rate at any point in time.

This implies that in estimating the cost of equity under the SL CAPM, what is required is an estimate of the market return, the risk-free rate and the equity beta. The MRP is a function of estimating the market return and the risk-free rate.

Therefore, in considering whether there is persuasive evidence to depart from the value for the MRP set out in the SoRI, it is necessary to consider the relevant evidence on the market return and the risk-free rate. It is also necessary to bear in mind that the market return, the risk-free rate and the MRP can all vary over time, which means that it is essential to have regard to the most recent empirical evidence.[47]

This section demonstrates that there is persuasive evidence to depart from the value for the MRP set out in the SoRI (i.e. 6.5 per cent). The relevant evidence includes up-to-date empirical estimates of the expected market return which demonstrate that the MRP is now well above the SoRI value, as well as other evidence of an upward movement in the MRP since the date of the SoRI.

[47] In a recent report for the ENA, CEG referred to evidence that both the market return and the MRP are time varying (CEG, *Estimating the return on the market*, June 2013).

The value for the MRP set in the SoRI

In the Review of the WACC Parameters (**WACC Review Final Decision**) the AER concluded that a MRP of 6.5 per cent was reasonable, at the time of the WACC Review Final Decision.[48]

For the reasons set out below, the Businesses consider that there is now persuasive evidence that demonstrates that a value of 6.5 per cent for the MRP is no longer appropriate and that in the current circumstances, a departure from the 6.5 per cent MRP value specified in the SoRI is justified.

The AER's decision in the May 2009 SoRI to set a MRP of 6.5 per cent was based on the following evidence:[49]

- long-term historical estimates, which produce a range of 5.7 to 6.2 per cent;
- surveys, which at that time indicated that 6 per cent was a commonly adopted value for the MRP among market practitioners; and
- cash flow based estimates, which at that time indicated that the forward-looking MRP was well above 6 per cent.

The AER stated that it placed "primary weight" on long-term historical estimates of the MRP, while also placing "some weight" on surveys and cash flow based estimates.[50]

The AER considered that prior to the onset of the global financial crisis, 6 per cent would have been the best estimate of the forward-looking MRP. Under stable market conditions (and assuming no structural break), the AER considered that 6 per cent was the best estimate of the forward-looking MRP.[51]

The AER noted, however, that market conditions at the time of the SoRI were not stable. The AER considered that there was evidence to suggest an MRP above 6 per cent at that time. However, the AER did not consider that the weight of evidence at that time suggested an MRP significantly above 6 per cent.[52]

New evidence since the SoRI

None of the evidence relied on by the AER in the SoRI directly relates to the current forward-looking MRP. Clearly, the long-term historical estimates that were given primary weight by the AER relate to historical returns, and these are only relevant insofar as current investor expectations of the return on the market and MRP reflect what has happened in the past. Similarly the survey-based estimates of the MRP relate to investors' expectations at some point in the past relative to an assumed risk-free rate, and in the case of those surveys referred to in the SoRI, all relate to expectations prevailing prior to the onset of the global financial crisis. As to the cash-flow based estimates referred to in the SoRI, these reflect the forward-looking MRP at the time of the 2008/09 WACC review.

The Businesses accept that historical evidence may help inform the forward-looking estimate of the MRP to the extent that current market conditions generally reflect historical market

[48] AER *Final decision: Electricity transmission and distribution network service providers – Review of the weighted average cost of capital parameters*, May 2009, p. 238.
[49] WACC Review Final Decision, p. 237.
[50] WACC Review Final Decision, p. 237.
[51] WACC Review Final Decision, p. 238.
[52] WACC Review Final Decision, p. 238.

conditions. However, where current market conditions are materially different to the conditions that were prevailing at the time to which the relevant historical evidence relates, this evidence can only be given very limited weight. In these circumstances, much greater emphasis must be placed on current measures of the forward-looking MRP.

In this context, it is relevant to consider whether and to what extent current market conditions may be different to those that have prevailed in the past. If market conditions have materially changed such that expectations of forward-looking returns have deviated from historical levels, then this would suggest that a departure from the MRP set out in the SoRI is warranted.

The Businesses consider that there are four key pieces of evidence that have emerged since the SoRI, which indicate that a departure from the SoRI in respect of the MRP is warranted in the current circumstances:

1. evidence that current market conditions do not reflect historical market conditions;

2. evidence that the MRP has deviated from its historical level, as a result of changed market conditions, meaning that the overall market return has not fallen to the same extent as the risk-free rate;

3. evidence that, in circumstances where the risk-free rate has deviated from its long-term average and there is evidence that the MRP has also deviated from historical levels, using an historically based MRP in combination with a forward-looking risk-free rate will lead to a biased cost of equity estimate; and

4. evidence of the current MRP being at a level well above 6.5 per cent, based on updated and refined dividend discount model (**DDM**) analysis (sometimes referred to as dividend growth model, or DGM) and analysis of independent expert reports.

Each of these points are discussed below, and the relevant evidence is provided with this submission.

Evidence of changes in market conditions

There is substantial evidence that indicates that market conditions have changed since the date of the SoRI. Most notably, there has been a very significant reduction in yields on risk-free assets over the past two years, and evidence of an associated increase in risk premia on riskier assets. This trend has been attributed to heightened perceptions of risk among investors and increased demand for risk-free (or less risky) assets.

This was observed by the RBA in its letter to the Australian Competition and Consumer Commission (**ACCC**) dated 16 July 2012. In that letter the RBA observed:[53]

> *In recent years, changes in investors' risk preferences and/or their perceptions of risk have seen a significant increase in demand for risk-free assets, such as CGS, globally. Within the Australian market, one notable source of demand for risk-free assets has come from non-resident investors, whose holdings of CGS now comprise more than three quarters of outstanding supply. As a result, there has been a widening in the spreads between CGS yields and those on other Australian dollar-denominated debt securities. This widening indeed confirms the market's*

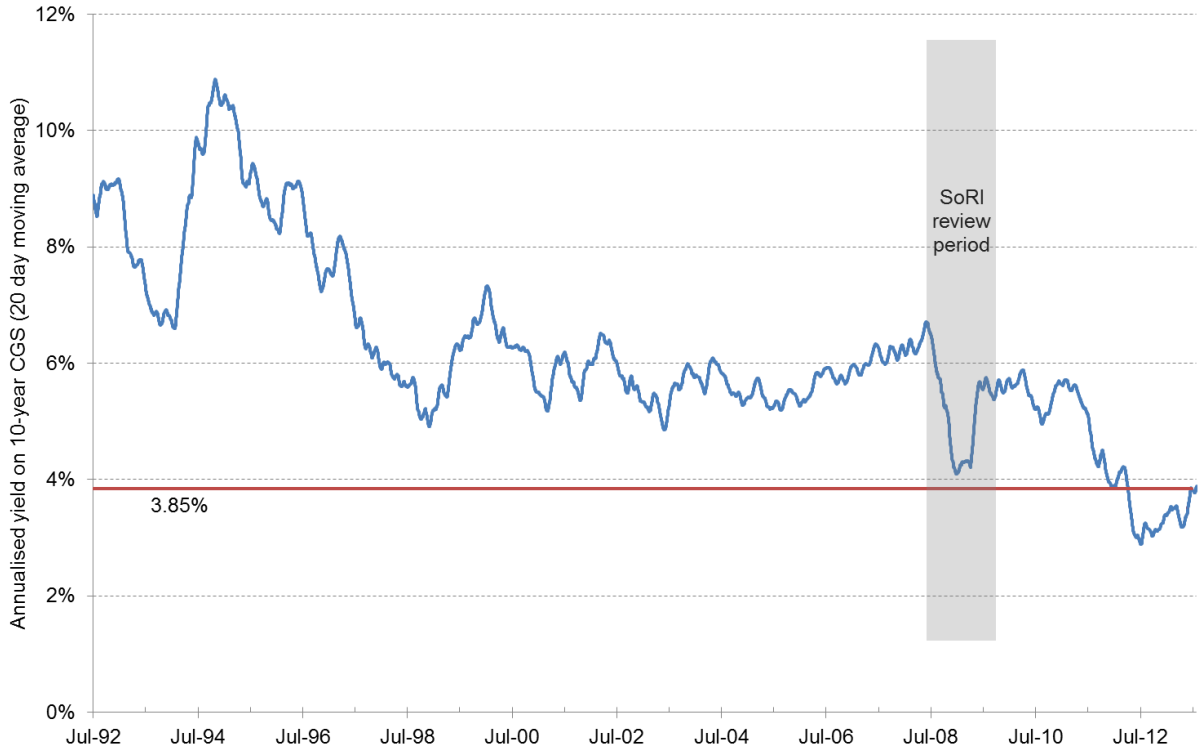
[53] Letter from Mr Guy Debelle (Assistant Governor, Reserve Bank of Australia) to Mr Joe Dimasi (Commissioner, Australian Competition and Consumer Commission), 16 July 2012.

assessment of the risk-free nature of CGS and reflects a general increase in risk premia on other assets.

In a separate letter to the ACCC, the Department of Treasury similarly noted that CGS yields had fallen substantially, and attributed this fall to (among other things) global financial market instability. The Department of Treasury noted that "*the weak and fragile global economy has put downward pressure on benchmark global long-term bond yields, and is driving investors into high quality government debt*".[54]

In June 2012, CGS yields reached their lowest level recorded since the 1940s, and they remain lower now than at any time prior to 2012 (see Figure 5 below). As noted by the RBA and Treasury, this reflects a significant increase in demand for risk-free assets due to fragility in the global economy and heightened perceptions of risk. As also noted by the RBA, these same factors have also been driving an increase in risk premia on riskier assets.

Figure 5: Annualised yield on 10-year CGS (20 day moving average)



Source: RBA.

These trends have also been observed by a range of expert economists. For example:

- CEG noted in its March 2012 report for the Victorian gas businesses that CGS were (at that time) at an historic low (CGS yields declined further past that point). CEG noted that the reduction in CGS yields from mid-2011 coincided with a deepening of the European financial crisis.[55]

[54] Letter from Mr Jim Murphy and Mr Rob Nicholl (Department of Treasury), to Mr Joe Dimasi (Commissioner, Australian Competition and Consumer Commission), 18 July 2012.

[55] CEG, *Internal consistency of the risk free rate and MRP in the CAPM: Prepared for Envestra, SP AusNet, Multinet and APA*, March 2012, p. 4.

- CEG also noted in its March 2012 report that as CGS yields have fallen, risk premia on riskier assets have increased.[56] CEG found that since mid-2011, spreads on state government debt and corporate debt had increased significantly (that is, spreads relative to CGS). CEG also presented evidence that risk premiums on equity had increased.

- SFG, in a report for the Victorian gas businesses dated November 2012, presented a range of evidence that suggested increased risk premiums on risky assets in recent years. This included evidence of increased risk premiums on debt, and in relation to equity risk premiums, heightened dividend yields and suppressed price/earnings ratios (both of which would suggest a higher required return on equity).[57]

- In a recent report for the ENA, CEG noted that the reductions in the risk-free rate over the past two years are associated with a "flight to safety" (and aversion to risk) among investors.[58]

The above evidence demonstrates that market conditions have changed significantly since the date of the SoRI. This implies that the current MRP cannot be assumed to be at the same level as was set by the AER in the SoRI in May 2009, particularly given that the SoRI decision was based largely on historical data. At a minimum, this evidence ought to prompt an inquiry into whether the MRP has moved as a result of changing market conditions.

Evidence that the MRP has moved from 6.5 per cent

There is substantial evidence to demonstrate that the MRP does in fact move in response to changing market conditions, and that it has now moved above 6.5 per cent.

There is incontrovertible evidence that the risk-free rate has declined significantly over the past few years, and is now at historic lows. This raises the question of whether the MRP has also moved as a result of the same (or related) market factors.

As a matter of logic, the MRP may be expected to vary as the risk-free rate rises and falls, given that the risk-free free rate is an input into the calculation of the MRP (i.e. as noted above, the MRP is the difference between the market return and the risk-free rate). The only situation in which the MRP would not vary would be where the expected market return moves one-for-one (or in lock-step) with the risk-free rate. The Businesses are not aware of any evidence that clearly supports such a relationship.

Also, the expected market return need not be constant for the MRP to vary as the risk-free rate rises and falls – it may be that both the expected market return *and* the MRP vary as the risk-free rate changes.

There is recent empirical evidence to demonstrate that when the risk-free rate is depressed, the MRP will be elevated – in other words, there is a negative relationship between the risk-free rate and the MRP. This evidence includes:

- CEG notes that the MRP will often move in the opposite direction to the risk-free rate, and they present evidence that current market conditions are such that there is in fact

[56] CEG, *Internal consistency of the risk free rate and MRP in the CAPM: Prepared for Envestra, SP AusNet, Multinet and APA*, March 2012, pp. 10–19.
[57] SFG, *The required return on equity: Response to the Victorian Gas Draft Decisions: Report for APA GasNet, Envestra, Multinet and SP AusNet*, 7 November 2012, pp. 42–44.
[58] CEG, *Estimating E[Rm] in the context of regulatory debate*, June 2013, p. 26.

a negative relationship between these two parameters.[59] In a later report, CEG explains the intuition behind this result – that the specific factors that have driven sharp falls in CGS yields are also factors that one would associate with an increase in risk premiums in general, including market risk premiums.[60]

- Associate Professor Lally conducted further empirical analysis in a report for the AER dated March 2013, and found an inverse relationship between the risk-free rate and the MRP over time.[61]

- CEG, in a response to Associate Professor Lally, made several corrections to the empirical analysis and in doing so confirmed that there is an inverse relationship between the risk-free rate and the MRP over time. CEG's analysis also demonstrated that this relationship was much stronger than Associate Professor Lally's original analysis had suggested.[62]

- CEG, in a subsequent report for the ENA, noted that both the market return and the MRP will vary over time.[63]

- Professors McKenzie and Partington note that the academic literature does provide some evidence in support of a negative relationship between the risk-free rate and the market risk premium.[64]

- As noted above, SFG presents evidence that risk premiums on riskier assets have increased in recent times as the risk-free rate has fallen. [65]

- As will be discussed in more detail below, recent DDM analysis by SFG demonstrates that the MRP has increased significantly over the past two years, as the risk-free rate has fallen (meaning that the overall market return has not fallen to the same extent as the risk-free rate).

This evidence implies that, in circumstances such as the present where CGS yields are at historic lows, the MRP may be at least above its long-term average. It also implies that in the current circumstances, it would be unsafe to rely on an estimate of the MRP that is predominantly based on historical data, without checking that this estimate is consistent with the most up-to-date empirical evidence.

The Businesses do not contend that the above evidence should, in and of itself, provide a basis for departing from the SoRI. Rather, what this evidence implies is that the value set out in the WACC Review Final Decision may no longer be appropriate and needs to be checked against the most recent evidence of the forward-looking market return.

This evidence also implies that one cannot assume that there is no relationship between the risk-free rate and the MRP, or (put another way) that there is a perfect one-for-one

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[59] CEG, *Internal consistency of the risk free rate and MRP in the CAPM: Prepared for Envestra, SP AusNet, Multinet and APA*, March 2012, pp. 8–9.

[60] CEG, *Response to AER Vic gas draft decisions: Internal consistency of MRP and risk free rate*, November 2012, p. 64.

[61] Lally, Review of the AER's methodology for the risk-free rate and the market risk premium, 4 March 2013, pp. 13–16.

[62] CEG, *Estimating E[Rm] in the context of regulatory debate*, June 2013, Appendix B.

[63] CEG, *Estimating the return on the market*, June 2013.

[64] McKenzie M and G Partington, *Report to the AER: Review of the AER's Overall Approach to the Risk-free Rate and the Market Risk Premium*, 28 February 2013, p. 25.

[65] SFG, *The required return on equity: Response to the Victorian Gas Draft Decisions: Report for APA GasNet, Envestra, Multinet and SP Ausnet*, 7 November 2012, pp. 42–44.

relationship between the market return and the risk-free rate. Where there is evidence that the MRP may vary over time and may move in the opposite direction to the risk-free rate, it cannot simply be assumed that the MRP will remain constant as the risk-free rate moves up and down and that the market return will move in lock-step with the risk-free rate.

Maintaining a constant MRP in circumstances where the risk-free rate is varying substantially implies that the market return is moving in lock-step with movements in the risk-free rate. This is because, as noted above, the MRP represents the difference between the market return and the risk-free rate at any point in time. In circumstances where the risk-free rate has fallen substantially and is near historic lows, maintaining a constant MRP implies that the expected market return has also fallen substantially and is also near historic lows.

The Businesses are not aware of any evidence that clearly shows that the expected market return is at or near historic lows. On the contrary, the available evidence demonstrates that the MRP has increased as the risk-free rate has fallen, such that the overall market return has not fallen in lock-step with the risk-free rate (this evidence is discussed below).

The Businesses consider that such facts (e.g. constant MRP and no relationship between MRP and the risk-free rate) cannot be assumed, particularly where there is some evidence to the contrary. The available evidence indicates that the market return has not fallen in lock-step with the risk-free rate, and as a consequence the MRP has increased as the risk-free rate has fallen.

Evidence that combining an historically based MRP with a forward-looking risk-free rate can lead to a biased cost of equity estimate

There is recent expert evidence that demonstrates that, in circumstances where there is a negative relationship between the MRP and risk-free rate and where the risk-free rate has deviated from its historical average, using an historically based estimate of the MRP in combination with a forward-looking risk-free rate will lead to a biased estimate of the cost of equity.

In a recent report prepared for the AER, Cambridge Economic Policy Associates (**CEPA**) noted the risk of bias in the cost of equity estimate in these circumstances. CEPA explained that an inconsistency can arise in the application of the SL CAPM where an historical MRP is combined with a risk-free rate,[66] a point made by several other expert economists in reports submitted to the AER.[67] CEPA then went on to note that:[68]

> *If it is assumed that the relationship between the risk free rate and the MRP is non-zero and negative, then if (as under current market conditions), the current risk free rate is below the historic (sic) level, an approach as set out in Equation 10) [which combines an historical MRP with a spot risk-free rate] will (due to inconsistency), calculate a return on equity that is lower than if they were consistent with the SL CAPM.*

As noted above, there is some evidence of a negative relationship between the risk-free rate and the MRP, based on the analysis of CEG and Associate Professor Lally. Further, as noted by CEPA, the current risk-free rate is well below historical levels. In these circumstances, based on the advice of CEPA to the AER, a purely historically based

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66 Cambridge Economic Policy Associates, *Advice on Estimation of the Risk Free Rate and Market Risk Premium: Report prepared for the Australian Energy Regulator*, March 2013, pp. 7–8.

67 For example: Gregory A, *The AER Approach to Establishing the Cost of Equity – Analysis of the Method Used to Establish the Risk Free Rate and the Market Risk Premium*, November 2012.

68 Cambridge Economic Policy Associates, *Advice on Estimation of the Risk Free Rate and Market Risk Premium: Report prepared for the Australian Energy Regulator*, March 2013, p. 9.

estimate of the MRP cannot be maintained. Rather, given the changes in market conditions and the associated movements in the risk-free rate, the AER must look beyond purely historical measures and adopt a truly forward-looking estimate of the MRP.

The same point has been emphasised by CEG in a number of recent expert reports. Most recently, CEG has demonstrated that combining an historically based MRP with a forward-looking risk-free rate introduces an unnecessary and potentially material source of bias where betas for nominal CGS are variable over time.[69] CEG demonstrates empirically that betas for nominal CGS are variable over time and that betas are currently sharply negative. This implies that in the current circumstances, combining the current risk-free rate with a historically based MRP will result in a downwardly biased estimate of the market return. CEG's recent analysis on this point is discussed in more detail in Appendix B.

Such bias further highlights the importance of placing real weight on forward-looking evidence. In the current circumstances, the AER cannot maintain its traditional practice (and the practice adopted in the WACC Review Final Decision) of placing primary weight on historical measures in estimating the MRP.

Evidence in relation to the current / forward-looking MRP

There is a large amount of recent evidence in relation to the current or forward-looking MRP. All of this evidence supports a value for the MRP that is well above 6.5 per cent when the risk-free rate is 3.85 per cent (or near historic lows).

The primary evidence in relation to the current MRP comes from DDM analysis, which supports a current MRP of 8.15 per cent. Recent DDM analysis that supports this value includes:

- **CEG 2012 reports.** A series of analyses conducted by CEG in 2012 for the Victorian gas businesses produced values for the MRP above 8 per cent. In a March 2012 report CEG estimated an MRP of 8.52 per cent based on its DDM analysis.[70] In November 2012 report CEG updated their analysis and estimated the MRP at that time to be 8.89 per cent.[71]

- **Lally 2012 report.** Analysis conducted by Associate Professor Lally in July 2012 for the AER, in which adjustments were made to CEG's March 2012 analysis, produced an MRP estimate of 7.82 per cent.[72]

- **SFG 2012 and 2013 reports.** Analysis conducted by SFG for the ENA (and updated for the Businesses) indicates an MRP of over 8 per cent for the 12-month period ending June 2013, once dividend imputation is factored in. For the most recent period analysed by SFG (the first half of 2013), the market return was 12 per cent, which implies an MRP of 8.6 per cent after deduction of the risk-free rate prevailing

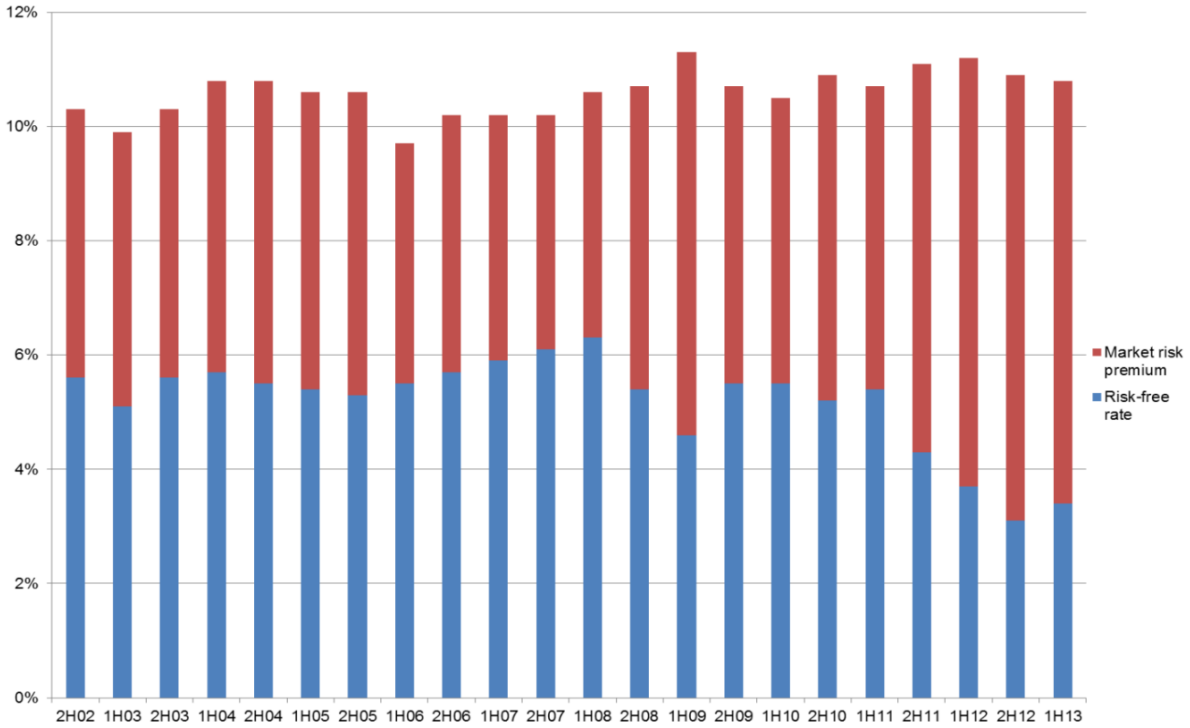
[69] CEG, *Estimating the return on the market*, June 2013, pp. 17–20.
[70] CEG, *Internal consistency of the risk free rate and MRP in the CAPM: Prepared for Envestra, SP AusNet, Multinet and APA*, March 2012, p. 44.
[71] CEG, *Update to March 2012 report on consistency of the risk free rate and MRP in the CAPM,* November 2012, p. 31.
[72] Lally, *The cost of equity and the market risk premium*, 25 July 2012, p. 20.

over the same period.[73] The methodology employed by SFG in this report is state-of-the-art, and has recently been published in a peer reviewed journal.[74]

The SFG analysis referred to in the last bullet point above also shows how the MRP has moved over time. As shown in Figure 6 below, the SFG analysis demonstrates that the MRP has increased over the past two years as the risk-free rate has decreased. Between the first half of 2011 and the first half of 2013, the MRP estimated by SFG exclusive of the value of imputation credits increased from 5.3 per cent to 7.4 per cent, while over the same period the risk-free rate fell from 5.4 per cent to 3.4 per cent.[75] Over the period analysed by SFG, the total market return (the sum of the risk-free rate and MRP) has been relatively stable, while the MRP has generally increased as the risk-free rate has fallen.

The SFG analysis indicates that the MRP is higher now than it was at the time of the WACC Review Final Decision. The MRP estimated by SFG for the first half of 2009 (the time of the WACC Review Final Decision) is 6.7 per cent, which is broadly in line with the value for the MRP set in the SoRI. However SFG's analysis indicates that the MRP is now well above the value set out in the SoRI – SFG estimates an MRP for the first half of 2013 of 7.4 per cent excluding the value of imputation credits (8.6 per cent including the value of imputation credits).

Figure 6: SFG estimates of the risk-free rate and market risk premium



Source: adaptation of: SFG, Cost of equity estimates implied by analyst forecasts and the dividend discount model, 28 August 2013, Table 4.

Note: The values in the chart are not grossed up to include the impact of dividend imputation.

[73] SFG, *Cost of equity estimates implied by analyst forecasts and the dividend discount model*, 28 August 2013.

[74] Fitzgerald, Gray, Hall, Jeyaraj, 'Unconstrained estimates of the equity risk premium', *Rev Account Stud* (2013) 18:560–639.

[75] SFG, *Cost of equity estimates implied by analyst forecasts and the dividend discount model*, 28 August 2013, Table 4.

The Businesses understand that the AER has expressed some concern around the reliability of DDM estimates, in particular because the AER considers that these estimates are highly variable and sensitive to input assumptions.[76] The Businesses consider that these concerns are not warranted in respect of the recent SFG analysis, for three reasons:

- First, as discussed in the SFG reports and as outlined below, the SFG methodology has been designed so as to address the concerns previously raised by the AER and its consultants.

- Second, the SFG methodology has been published in a peer reviewed journal and reflects the most recent academic research in this area; and

- Third, as Figure 6 above demonstrates the variability in DDM-based estimates of the MRP is often attributable to time-variant factors, and does not necessarily indicate flaws in the methodology or sensitivity to input assumptions. SFG's analysis shows that the MRP has varied over the past decade, and has generally increased as the risk-free rate has fallen (and vice versa).

The Businesses therefore propose to place greatest weight on the more recent analysis by SFG in determining the MRP to apply to their charges revision applications. The SFG analysis is the most up-to-date, and addresses the concerns that have previously been expressed by the AER and its consultants around previous DDM analyses. In particular:[77]

- **Dividend growth.** The SFG analysis does not make any assumption regarding future growth in dividends. Rather, SFG draws on a rich dataset, comprising analyst forecasts of earnings, dividends and price targets over an 11 year period. This dataset is used by SFG to derive estimates of long-term growth that are based on independent analyst forecasts. This methodology addresses the central concern of the AER in relation to previous DDM analyses, that they are sensitive to subjective judgements about the future growth of dividends.

- **Constant growth and mean reversion.** The SFG analysis is conducted on the basis of both constant growth assumptions and mean reversion assumptions. This addresses the concern expressed by Associate Professor Lally regarding the reasonableness of the constant growth assumptions implicit in CEG's earlier analysis.

The results of the SFG analysis for the 12-month period ending June 2012 are set out in the table below. These results indicate an MRP of over 8 per cent for this period.

Table 3: Results of SFG DDM analysis

Period	Market cost of equity	Risk-free rate	MRP
Jul-Dec 2012	12.2%	3.1%	9.1%
Jan-Jun 2013	12.0%	3.4%	8.6%

Source: SFG, Cost of equity estimates implied by analyst forecasts and the dividend discount model, 28 August 2013.

Note: Market cost of equity values are grossed up to include the impact of dividend imputation.

[76] AER, *Access Arrangement Final Decision: APA GasNet Australia (Operations) Pty Ltd 2013–17*, March 2013, Part 2, pp. 80–82.

[77] SFG, *Dividend discount model estimates of the cost of equity*, 19 June 2013, s 3.

The SFG estimates presented in the table above include the benefit of dividend imputation. SFG reflects this in their estimates by grossing up the expected market return for the value derived from imputation credits, assuming a corporate tax rate of 30 per cent and an assumed value of imputation credits of 0.25. The AER recognised in the WACC Review Final Decision that this grossing up is necessary, given that the value of imputation credits represents part of the return required by equity holders.[78]

The estimates derived from SFG's DDM analysis are supported by recent market evidence. In a recent review of independent expert reports, SFG found that:[79]

- **Expected return on the market.** The average market cost of equity in independent expert reports since 2008 is 11.1 per cent (consistent with SFG's DDM estimate of the cost of equity of 11.0 per cent for the second half of 2012 when dividend imputation is ignored) [80];

- **Implied MRP.** All independent expert reports over the 2012/13 period estimate a higher cost of equity than would be implied by mechanistic application of the SL CAPM with a 6.5 per cent MRP. This result is achieved in a variety of ways, either by applying a risk-free rate that is above the current spot risk-free rate, by applying an MRP that is above the long-term average, or by applying some form of "uplift factor". In none of the independent expert reports over the 2012/13 period has the SL CAPM been applied in a way that combines the spot risk-free rate with an historically based MRP. As a result, in all reports over this period the cost of equity is higher (and in almost all cases at least 2 per cent higher) than would result from combining a spot risk-free rate with an historically based MRP.

Recent analysis of market survey evidence by NERA similarly shows that the MRP implied in reports produced over the past 18 months has been significantly above 6.5 per cent. NERA estimates that the MRP relative to 10-year CGS yields computed from 20 independent expert reports published between 27 April 2012 and 26 April 2013 is between 7.56 per cent and 8.22 per cent, excluding the impact of dividend imputation.[81]

SFG's DDM analysis of the expected return on the market is also consistent with historical realised returns on the market. NERA undertook a re-appraisal of the historical data series that had been used by Brailsford, Handley and Maheswaran (2008 and 2012) and worked out that the historical average realised return on the market was 8.84 per cent in real terms over the period from 1883 to 2011.[82]. Based on this estimate of the historical average realised real return on the market, and adding currently expected inflation, CEG estimates the nominal market return to be 11.56%.[83]

The Businesses consider that this recent evidence supports a value for the MRP that is well above 6.5 per cent. This implies that a departure from the SoRI value of 6.5 per cent is warranted given current market conditions and the evidence of an elevated MRP.

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78 WACC Review Final Decision, pp. 204–209.

79 SFG, *Evidence on the required return on equity from independent expert reports: Report for the Energy Networks Association*, 24 June 2013.

80 SFG, *Dividend discount model estimates of the cost of equity*, 19 June 2013, p. 22.

81 NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, pp. 75-77.

82 NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, section 2. In a spreadsheet provided to the AER, NERA estimated the historical average realised return on the market in nominal terms to be 12.11 per cent.

83 CEG, *Estimating the return on the market*, June 2013, p. 31.

Based on the most recent and robust evidence, the Businesses propose a value of 8.15 per cent for the MRP for the indicative averaging period, based on the difference between SFG's estimate of the market return for the first half of 2013 (12 per cent) and the risk-free rate prevailing over the indicative averaging period (3.85 per cent). The Businesses will provide an updated estimate of the MRP for the actual averaging period.

The evidence supports a MRP well above 6.5 per cent, and does not support a MRP below this level

For the reasons set out above, the Businesses consider that there is persuasive evidence to support a value for the MRP that is above 6.5 per cent. This includes the recent DDM analysis conducted by SFG which indicates a current MRP of 8.15 per cent, as well as evidence from independent expert reports and analysis of historical data.

The Businesses note that in some recent decisions the AER adopted a MRP value that is below 6.5 per cent (i.e. a value of 6 per cent). The AER justified this on the basis of:[84]

- historical excess returns, which it says provide a range of 4.9–6.1 per cent for the MRP if calculated using an arithmetic mean or 3.0–4.7 per cent if calculated using a geometric mean;
- survey evidence, which it says support a value for the MRP of approximately 6 per cent;
- forward-looking measures such as DDM, which the AER has said support a range for the MRP of 5.9-8.4 per cent;
- academic research and consultant advice; and
- previous decisions of regulators (including the AER itself) and the Tribunal, which have adopted a value for the MRP of 6 per cent.

For reasons outlined below and set out in detail in Appendix A, the Businesses consider that none of these forms of evidence in fact support a MRP value below 6.5 per cent. Rather, the weight of this evidence supports a value for the current MRP that is well above 6.5 per cent.

For the reasons discussed above, the Businesses consider that in current market conditions, primary weight must be given to forward-looking evidence. Therefore, of the evidence referred to by the AER in recent decisions, the most relevant will be the forward-looking evidence (i.e. DDM evidence). As noted above, the most up-to-date and robust DDM evidence indicates a value for the current MRP of 8.15 per cent.

In any event, as noted above, the historical data referred to by the AER also does not support a value for the MRP of 6 per cent. The historical data indicates a return on the market of approximately 12 per cent (excluding the impact of imputation credits), which implies a MRP of approximately 8 per cent given the current risk-free rate.

In relation to market survey evidence, this will be most relevant where it reflects current expectations of the market return and MRP – as opposed to expectations prevailing at some point in the past. However many of the surveys previously relied on by the AER relate to historical periods and are therefore of limited relevance to current market conditions (a number of these surveys pre-date the onset of the GFC).[85] As noted above, the most recent

[84] For example: AER, *Access Arrangement Final Decision: APA GasNet Australia (Operations) Pty Ltd 2013-17*, March 2013, Part 2, p. 60.

[85] For example: AER, *Access Arrangement Final Decision: APA GasNet Australia (Operations) Pty Ltd 2013-17*, March 2013, Part 2, pp. 84–85. The AER refers to a number of surveys covering periods prior to the on0set of the GFC – for example the KPMG (2005) survey referred to be the AER covers the period from January 2000 to June 2005.

survey of independent expert reports (the SFG and NERA surveys) indicate a current MRP implied by those reports that is well above 6.5 per cent.

The Businesses consider that the weight of current academic research and consultant advice also supports a value for the MRP above 6.5 per cent. The most up-to-date and robust analysis of the current MRP is provided by SFG through their DDM analysis and accompanying review of independent expert reports. The DDM methodology employed by SFG is genuinely state-of-the-art, and has been published in a peer reviewed journal.

Finally, the Businesses do not consider that recent regulatory decisions should necessarily be relied upon as support for a certain MRP value, particularly where the MRP may be variable over time. Those decisions relate to an assessment of the MRP at a previous point in time and do not necessarily provide any relevant information on the current MRP. These previous decisions also do not reflect the most recent evidence on the current MRP, particularly the recent DDM analysis by SFG.

Therefore, the Businesses consider there to be persuasive evidence that the current MRP is well above 6.5 per cent. The available evidence certainly does not support a value for the MRP below 6.5 per cent.

Conclusion on the MRP

The MRP established in the SoRI was, as acknowledged by the AER at the time, primarily based on historical evidence. Moreover even the forward-looking evidence that was taken into account at the time is now effectively historical evidence (i.e. it is evidence of the MRP seen to have been prevailing at that time).

The Businesses acknowledge that historical evidence may be relevant to determination of the MRP, to the extent that current market conditions reflect those of the past. However there is now overwhelming evidence that current market conditions do not reflect those of the past. Moreover, there is persuasive evidence that the MRP does move in response to changing market conditions, and in fact has moved as market conditions have shifted over the past two years. There is also *no* evidence to support the contrary proposition – that the market return has fallen in lock-step with the risk-free rate as market conditions have changed, such that the MRP has remained constant.

In these circumstances, the AER should investigate whether the value for the MRP in the SoRI remains appropriate, by considering evidence of the current forward-looking MRP. In other words, real weight must be given to forward-looking measures of the MRP in considering whether the MRP has deviated from the value set out in the SoRI.

The most recent and robust empirical evidence indicates that the current forward-looking MRP is significantly above the value set out in the SoRI. This implies that there should be a departure from the historically based estimate of the MRP set out in the SoRI, in favour of an MRP that reflects current market conditions.

The Businesses consider that the most persuasive evidence of the current MRP is provided by SFG's recent DDM analysis. This analysis supports a current MRP value of 8.15 per cent for the indicative averaging period. This is further supported by market evidence from independent expert reports.

The Businesses will provide an updated estimate of the MRP for the actual averaging period.

4 Businesses' position on proposed AMI WACC

The Businesses propose WACC parameters and methods that, at the time of preparing this proposal, deliver a nominal vanilla WACC of 8.23 per cent. In reaching this value, the Businesses have adopted values for the market observables and non-market parameters as shown in **Table 4**.

With the exception of the MRP and gamma, the parameter values and methods used below are consistent with those specified in the SoRI. For the reasons set out above, the Businesses consider that there is persuasive evidence to justify a departure from the SoRI in respect of MRP.

Table 4: Businesses' position on proposed AMI WACC

Parameter	Value
Market observables	
Nominal risk-free rate (R_f)	3.85%
Debt risk premium (DRP)	2.95%
Non-market observables	
Equity beta ($ß_e$)	0.80
Expected return on the market (R_m)	12.00%
Market risk premium (MRP = R_m - R_f)	8.15%
Value of debt as a proportion of the value of equity and debt (D/V)	0.60
Value of imputation credits (gamma)	0.25
Forecast inflation	2.47%
Nominal vanilla WACC	**8.23%**

Prior to 31 October 2013, the nominal risk-free rate, DRP, and MRP will be replaced with data from the agreed averaging period.

5 Businesses' position on expected inflation rate

The expected inflation rate is not used to calculate the nominal vanilla WACC, although it underpins some of the WACC parameters and is therefore determined in conjunction with the WACC parameters.

The proposed method for determining the expected inflation rate is to take a geometric average of the forecast inflation rate for each year over the ten year period starting from 1 January 2014, where the annual expected inflation rates are taken from:

- the most recent annual forecast of inflation by the RBA; and
- for the remaining years in the ten year period, the mid-point of the RBA target inflation range, that is 2.5 per cent, per annum.

At the time of preparing this proposal, the most recent RBA inflation forecast from the August 2013 Statement on Monetary Policy was 2.50 per cent for 2014 and 2.25 per cent for 2015.[86] Adopting the mid-point of the RBA inflation target for the remaining eight years results in a geometric average expected inflation rate of 2.47 per cent.

6 Businesses' position on value of imputation credits

Clause 4.1(f) of the CROIC prescribes that the value of gamma is to be benchmarked. The Businesses interpret this as requiring gamma to be calculated as a market-wide parameter (i.e. based on the market-wide value of imputation credits), rather than as a business-specific parameter.

Gamma is traditionally calculated as the product of two parameters:

- the distribution ratio (**F**) which represents the proportion of credits that are distributed to shareholders; and
- theta, the utilisation ratio (the value of imputation credits that are distributed to investors as a proportion of their face value).

The relevant evidence on each of these parameters is discussed below. Consistent with the requirement in the CROIC for gamma to be benchmarked, the evidence that is discussed below relates to the market-wide values for the distribution rate and theta.

6.1 Distribution ratio

The most recent evidence indicates that the market-wide distribution ratio is no higher than 0.7, or 70 per cent.

In a recent report for the ENA, NERA found that:[87]

- the cumulative payout ratio over the period from 1996–97 to 2010–11 was 0.69, based on changes in the franking account balance as recorded in ATO statistics (this is referred to by NERA as the "tax measure" of the distribution ratio);
- the cumulative payout ratio over the period 2002–03 to 2010–11 was 0.53, based on NERA's alternative method of measurement, which it refers to as the "dividend method".

Based on these results, NERA concludes that the tax statistics support a distribution ratio of no more than 0.7.

This is consistent with:

- the decision of the Tribunal in *Re Energex*, where it was found that the appropriate value for the distribution ratio was 0.7;[88]

[86] The RBA forecasts inflation to December 2014 of 2–3 per cent and to December 2015 of 1.75–2.75 per cent. From these ranges, the Businesses propose point estimates of 2.50 per cent and 2.25 per cent, respectively. See Reserve Bank of Australia, *Statement on Monetary Policy,* 9 August 2013, p. 55.

[87] NERA Economic Consulting, *The Payout Ratio: A report for the Energy Networks Association*, June 2013, p. 9.

[88] *Application by Energex Limited (Distribution Ratio (Gamma)) (No 3)* [2010] ACompT 9, [4].

- the recognition by the AER in proceedings before the Tribunal that there was no empirical data capable of supporting a value for distribution ratio higher than 0.7;[89] and

- recent decisions of the AER, in which a distribution ratio of 0.7 has been applied in calculating gamma.[90]

Therefore, the Businesses support a dividend payout ratio of no more than 0.7 (0.7 .

6.2 Theta

The Businesses propose a value for theta of 0.35. This value is consistent with the most recent empirical evidence on the value of distributed imputation credits.

In its 2011 study, SFG estimated the value for theta to be 0.35. This estimate was based on a "state-of-the-art" dividend drop-off study which had been undertaken at the request of the Tribunal. The study was state-of-the-art in the sense that the methodology was designed in such a way so as to overcome methodological shortcomings in previous studies. The estimate derived by SFG was accepted by the Tribunal as the best dividend drop-off estimate of theta.[91]

SFG has recently updated its analysis, using more recent data. On the basis of this analysis, SFG concludes that 0.35 remains the best estimate of theta.[92]

The Businesses note that in the past (but not recently), tax statistics have also been used as part of the process of estimating theta. However, as noted by the Tribunal in *Re Energex*, tax statistics can provide no more than an upper bound for the value of theta.[93] Certainly, tax statistics cannot be used as a direct input into the calculation of theta, for example as part of an average calculation.[94] The only role that tax statistics may potentially have is in confirming that the estimate from a dividend drop-off study is not too high.

In the present case, the Businesses propose to rely on the results of the most recent dividend drop-off analysis in estimating theta. This approach is consistent with recent regulatory practice.

SFG's recent dividend drop-off analysis supports a value for theta of 0.35.

6.3 Conclusion on gamma

Combining the values for the distribution rate and theta discussed above, the value for gamma proposed by the Businesses is 0.25 (0.7 x 0.35).

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89 *Application by Energex Limited (Distribution Ratio (Gamma)) (No 3)* [2010] ACompT 9, [2].

90 AER, *Access Arrangement Final Decision: APA GasNet Australia (Operations) Pty Ltd 2013–17*, March 2013, Part 2, p. 149.

91 *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [29].

92 SFG, *Updated dividend drop-off estimate of theta: Report for the Energy Networks Association*, 7 June 2013.

93 Application by Energex Limited (No 2) [2010] ACompT 7, [91] – [95].

94 The Tribunal noted in Re Energex, that the AER's approach in that case, which had involved averaging the results from dividend drop-off studies with tax statistics, "had no logic to it" (*Application by Energex Limited (No 2)* [2010] ACompT 7, [95]).

7 Business' position on debt raising costs

The CROIC provides no guidance on how to determine debt raising costs for the subsequent AMI WACC period. The CROIC only establishes a value for debt raising costs for the initial AMI WACC period (of 12.5 basis points).

In the absence of any specific guidance in the CROIC for the subsequent AMI WACC period, the Businesses have included a debt raising cost allowance that reflects the most recent evidence.

The most recent evidence of the best estimate of the cost of raising debt for a benchmark efficient network service provider is provided by PwC in a report for the ENA. PwC identify two broad categories of debt raising costs:[95]

- direct costs, which include the arrangement or placement fees charged by investment banks for managing capital raising; and
- indirect costs, which include commitment fees, establishment fees and other transaction costs such as legal fees.

PwC estimate that, assuming a 10-issue bond programme for bonds with a 10 year term and a total value of $2.5 billion over 10 years, total debt raising costs would be equivalent to 23 basis points per annum (bppa). This estimate would change if either the number or term of issues, or both, change.

A summary of PwC's debt raising cost estimate is set out in the table below.

Table 5: PwC estimate of debt raising costs

Component	Value (bppa)
Direct cost	9.9
Indirect costs	
Commitment fees	7.6
Establishment fees	0.6
Other transactions costs	0.3
Early re-finance cost	4.7
Total debt raising cost (rounded to nearest basis point)	**23.0**

Source: PwC, Energy Networks Association: Debt financing costs, June 2013, p. 25.

The Businesses note that the AER has previously excluded indirect costs on the basis that there may be some duplication between those items included as "direct" and "indirect" costs.[96] However, as explained by PwC, there is no duplication between what are included as indirect costs, and those items traditionally included as direct costs.

The CROIC allows for the recovery of costs regardless of whether they are direct or indirect. Specifically, the purpose of the CROIC (as set out in section 1A) is to provide for the setting of charges that may be charged for or in connection with the costs of providing, installing,

[95] PwC, *Energy Networks Association: Debt financing costs*, June 2013, p. 25.
[96] For example: AER, *Final decision: South Australia distribution determination 2010–11 to 2014–15*, May 2010, p. 384.

maintaining and operating advanced metering infrastructure – the CROIC does not restrict the types of costs that may be recovered to only direct costs.

The CROIC also allows for:

- pass through of the costs of a distributor for regulated services (clause 4.1) – there is no distinction drawn in the CROIC between indirect or direct costs;

- recovery of costs unless such costs are in respect of activities that are outside scope or are not prudent costs –[97] there can be no argument that the indirect costs associated with debt raising are either outside scope or are not prudent.

The Businesses therefore propose to include an allowance of 23 bppa for debt raising costs for the purposes of the charges revision applications.

Finally, the Businesses note that debt raising costs are dependent upon the term of debt. Therefore in the event the AER determines that the term that should be used for the measurement of the cost of debt is other than 10 years (for the reasons set out above the Business submit that a 10 year term is appropriate), the calculation of debt raising costs will need to be recalculated accordingly.

[97] CROIC, clause 5C.2.

Appendix A: Detailed critique of the AER's current approach to the MRP

The AER's current approach to estimating the MRP (as set out in recent decisions) involves weighing up various sources of evidence, and making a judgement as to the appropriate value for the MRP based on the weight of this evidence.

The evidence relied on by the AER was recently summarised by Associate Professor Lally in his March 2013 report, *Review of the AER's methodology for the risk free rate and the market risk premium*. Table 3 of Lally's report summarises the evidence as follows:

Table 6: Estimates of the MRP referred to by Associate Professor Lally

	Australia	19 Other Countries
Historical averaging	6.0%	5.9%
Modified historical averaging	4.9%	4.0% – 5.0%
DDM	5.9% – 8.4%	n/a
Survey	< 5.9%	< 5.8%
Gregory/Wright Methodology	6.6% – 8.2%	n/a

Source: Lally, Review of the AER's methodology for the risk free rate and the market risk premium, March 2013, Table 3.

Associate Professor Lally and the AER rely on this evidence to support a value for the MRP of 6 per cent.

Each of the above sources of evidence are discussed below.

Historical averaging and modified historical averaging

There is evidence that the estimates from historical averaging (as presented by Lally and the AER) are subject to some flaws. In particular:

1. The historical MRP figure of 6.0 per cent has been used widely and has been attributed to the work of Brailsford, Handley and Maheswaran, a paper which re-examined historical data that had first been compiled by Officer. However recent analysis by NERA for the ENA indicates a downward bias in the historical estimates produced by Brailsford *et al*.[98]

   NERA investigated the factors that have given rise to differences between the historical excess return series produced separately by Dimson, Marsh and Staunton (2012) and by Brailsford *et al*.[99] In their Credit Suisse Global Investment Returns Sourcebook 2012,[100] Dimson, Marsh and Staunton report that the arithmetic mean of the annual return to a value-weighted portfolio of Australian stocks, exclusive of imputation credits, from 1900 to 2011, is 12.9 per cent, whereas the arithmetic mean of the series of annual returns to a value-weighted portfolio of Australian stocks that Brailsford, Handley and Maheswaran supply, and that has been updated by NERA, gives a value of 11.9 per cent, from 1900 to 2011, exclusive of imputation credits.

[98] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013.

[99] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, s 2.

[100] Dimson, E., P. Marsh and M. Staunton, Credit Suisse Global investment returns sourcebook 2012, Credit Suisse, February 2012; p. 57.

Thus the arithmetic mean of the series of annual returns that Brailsford, Handley and Maheswaran supply is a full percentage point below the arithmetic mean of the series that Dimson, Marsh and Staunton use. The difference between the two arithmetic means is primarily explained by differences in the way in which the dividends distributed by a value-weighted portfolio of Australian stocks were determined by those who provided the data to the two sets of authors.

NERA investigated whether there was merit in the adjustments to the historical dividend yield series that had been made by Brailsford *et al*. These adjustments had been made by Brailsford *et al* because of perceived deficiencies with the original Lamberton series.

The work by NERA was performed by reconstructing historical records from source material, and then re-calculating value-weighted dividend yields for selected years between 1891 and 1957. The results of the analysis demonstrated that Brailsford *et al* had caused a downward bias to Lamberton's original dividend yield series, with the result that the MRP that they calculated was under-stated.[101] NERA estimated that a corrected value for the MRP should be 6.47 per cent over the period from 1883 to 2011.

2. The concept of *modified* historical averaging is underpinned by a concern (expressed by Associate Professor Lally) that the sample mean of a series of historical returns to the market portfolio in excess of the yield on a government bond will provide an upwardly biased estimate of the long-run MRP.[102] Lally's concern is based on a view that investors have systematically underestimated inflation and that while the real returns to stocks are, in the long run, protected against unanticipated inflation, the real returns to bonds are not protected against unanticipated inflation. Lally argues that while investors have, in the past, underestimated inflation, they will not do so in the future. As a result, he propounds that while the real return to the market portfolio in the future will on average be similar to its real return in the past, the real return to a government bond in the future will on average be higher than it has been in the past. Lally therefore argues that an unbiased estimate of the long-run MRP going forward will be lower than the sample mean, computed from past data, of a series of returns to the market portfolio in excess of the government bond yield.

   NERA has demonstrated that Lally's argument makes little sense because the available evidence does not support the idea that those whose business it is to forecast inflation – that is, professional forecasters – systematically underestimate inflation.[103] Indeed, the available evidence also shows that those who are not professional forecasters do not systematically underestimate inflation.[104] NERA identified periods over which individuals have underestimated inflation but found that these were matched by periods over which individuals have overestimated inflation.[105] Therefore, there is no basis to support the claim that the sample mean of a series of returns to the market portfolio in excess of the yield on a government bond can be viewed as an upwardly biased estimate of the long-run MRP.

[101] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, pp. 8–17,
[102] Lally, *The cost of equity and the market risk premium*, 25 July 2012; pp. 28–29.
[103] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, s 3.
[104] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, pp. 21–22.
[105] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, pp. 21–22.

Accordingly, no weight should be given to the results of modified historical averaging, as proposed by Associate Professor Lally.

More fundamentally, the Businesses consider that any review of historical evidence should pay attention to the long-run average realised return on the market, not just the long-run average of excess returns. As noted in the body of this submission, the historical data indicates an historical average realised return on the market of 12.11 per cent, measured in nominal terms.[106] This figure implies an MRP of over 8 per cent given the current risk-free rate.

Associate Professor Lally's application of the DDM

The DDM produces a single internal rate of return that will discount back the market's expectations of the dividends that the market portfolio will pay in all future periods – not just over the next regulatory period – back to the current market value of the market portfolio. This internal rate of return will be a complicated average of the expected returns to the market portfolio over the next year and over all future years. As Lally pointed out in his July 2012 and March 2013 reports, the internal rate of return may lie above or below the current expected return to the market.[107]

Lally has exploited these relationships to argue that while the DDM may give a correct estimate of the return to the market portfolio over all future time periods, the return to the market portfolio may lie below the DDM derived estimate over the next ten years, and may sit above the DDM derived estimate over the subsequent ten years. Investors might be applying a lower discount rate to dividends over the next ten years than they are applying to dividends beyond ten years.

Lally has therefore imposed certain prior assumptions about term structures on the outputs from the DDM applied by CEG. Lally has not, however, referred to any relevant market evidence that might support these assumptions.

A range of outcomes were developed by Lally for the MRP with each result depending, in part, on the time that is taken for the short-run expected dividend growth rate to converge on the long-run expected dividend growth rate.[108] Lally set a long-run average value for the market cost of equity of 11.86 per cent, based on a long-term average, nominal risk-free rate of 5.86 per cent, and a long-run average MRP of 6 per cent. Lally assumed that the market cost of equity from year eleven onwards would correspond to this long-run average value.

Lally accepted that dividend growth rates over the next two years might be comparatively high, and he made use of the consensus forecasts from Bloomberg. However, if the assumed market return on equity from year eleven onwards is relatively high (assumed to be 11.86 per cent), whilst the overall DDM estimate is not that high, then the calculated market return on equity from years one to ten will be comparatively low. The overall DDM estimate will be brought down if dividend growth rates are assumed to converge rapidly from the high short-term consensus forecasts to the lower long-term growth projections.

Lally's DDM analysis, which relies on these assumptions around convergence to long-term growth rates, is flawed in a number of respects:

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[106] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, supporting spread sheet workbooks supplied to AER.

[107] Lally, *The cost of equity and the market risk premium*, 25 July 2012; p. 3; Lally, *The Dividend Growth Model*, 4 March 2013; pp. 5–9.

[108] Lally, *The Dividend Growth Model*, 4 March 2013; section 8, pp. 16–20.

- First, as noted by CEG, Lally's own statement that a sensible convergence period is at least 10 years can be used to rule out those scenarios in which there is a rapid trajectory towards long-term dividend growth rates after the first two years of consensus forecasts.[109]
- Second, CEG (and also NERA) argue that the projected long-term growth rate for dividends per share used by Lally was in some cases unjustifiably low.[110] Lally did not provide evidence to support his perspective that the future growth in dividends per share, when measured in real terms, might be significantly lower than historical growth rates.
- Third, NERA shows that market evidence can be used to construct term structures for the mean, real return to the market portfolio.[111] The term structures will show how the market anticipates that the mean, real return to the market portfolio will change over the next few years. A curve of best fit, such as a Nelson-Siegel type yield curve, can be estimated for the observed data points. If the shape of the Nelson-Siegel curve suggests a term structure which is different to that assumed by Lally in his analysis, then Lally's scenarios can be shown to be flawed. The market return on equity for each year will be determined by the shape of the curve, and no assumption needs to be made about when a particular long-run average value might take effect.

In any event, the Businesses consider that the DDM analysis conducted by Lally has now been superseded by the more recent and demonstrably more robust analysis conducted by SFG. The results of this analysis are presented in this main body of this submission.

Survey methods

NERA has previously identified a number of shortcomings in the surveys relied on by the AER in previous decision. For example, in relation to the 2011 Asher survey, NERA pointed out that:[112]

- there were only 49 responses received out of 2,000 persons to whom a survey was sent;
- Asher conducted the survey when a DDM forecast of the MRP would have been 295 basis points lower than an otherwise identical forecast constructed in December 2011; and
- Asher stated in a seminar in May 2010 in front of individuals whom he later surveyed that 'the implied equity premium is more or less equal to the dividend yield which is probably at this stage somewhere between 3 and 4 per cent – I think that may be a reasonable thing to work on.'

Similarly, Associate Professor Lally has stated in relation to the Asher survey that:[113]

> *The survey conducted by Asher is targeted at a narrow segment of the professional community (actuaries) and warrants a lower weight for this reason.*

[109] CEG, *Estimating E[Rm] in the context of regulatory debate*, June 2013, Appendix C.
[110] CEG, *Estimating E[Rm] in the context of regulatory debate*, June 2013, Appendix C; NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, pp. 50–57.
[111] NERA, *The Market, Size and Value Premiums: A report for the Energy Networks Association*, June 2013, pp. 50–57.
[112] NERA (2012), *Prevailing Conditions and the Market Risk Premium: A report for APA Group, Envestra, Multinet and SP AusNet*, March 2012; s 6, p. 44.
[113] Lally, *Review of the AER's Methodology for the Risk-Free Rate and the Market Risk Premium*, 4 March 2013; s 5, p. 30.

Associate Professor Lally has similarly identified shortcomings in the Fernandez (2013) survey referred to by the AER in recent decisions, including that it does not appear to account for the value of imputation credits to investors.[114]

The AER does not appear to have taken into account the deficiencies in some survey evidence identified by Lally and NERA. Rather, the AER has looked generally at the high level results of the available surveys without carefully considering the relevance of each one.

The Businesses consider that, to the extent that market survey evidence may be taken into account, the best evidence comes from surveys of independent expert reports. The most recent and relevant evidence from surveys of independent expert reports is summarised in the main body of this submission.

Gregory/Wright methodology

Associate Professor Lally refers to the Gregory/Wright method, which it is said gives rise to an MRP of between 6.6 per cent and 8.2 per cent. However, Lally's presentation of the results from this methodology is misleading.

Gregory's proposed method involves using historical data to estimate a series of real dividend yields and real dividend growth, with these components summed to produce an expected real return to the market. Gregory estimates that the expected real return to the market was 8.14 per cent over the period from 1958 to 2011.[115] The result is equivalent to a nominal expected return of 10.84 per cent using the AER's inflation forecast of 2.50 per cent.

However, in his report to the AER, Lally has focussed not on the expected real return to the market portfolio, but on the historical average real market return. The result for the latter was reported by Gregory to be 8.60 per cent in real terms, over the period from 1958 to 2011, and 11.31 per cent in nominal terms.[116]

Lally has reported that the risk-free rate was 3.26 per cent in December 2012,[117] which means that the implied MRP from Gregory's method would be 8.05 per cent, if the realised, nominal return to the market (of 11.31 per cent) were used. However, Lally reported an MRP range of 6.6 per cent to 8.2 per cent, based on the application of the Gregory/Wright methodology. Lally's explanation of his calculations is unclear.

Lally also appears to have adjusted the MRP range, without a clear justification, to arrive at the low point of the range – which is 6.6 per cent. The low point of the range appears to correspond with a risk-free rate of 5.95 per cent – a value from August 2008 that, according to Lally, is the period immediately preceding the onset of the GFC. But it is unclear why this risk-free rate is used by Lally to calculate the low point in the range.[118]

In short, it not clear why Lally did not simply report the result of the Gregory/Wright methodology as being 8.05 per cent, rather than the 6.6 per cent.

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[114] Lally, *Review of the AER's Methodology for the Risk-Free Rate and the Market Risk Premium*, 4 March 2013; s 5, p. 30.

[115] Gregory, *The AER Approach to Establishing the Cost of Equity – Analysis of the Method Used to Establish the Risk-Free Rate and the Market Risk Premium*, November 2012, p. 26.

[116] Gregory, *The AER Approach to Establishing the Cost of Equity – Analysis of the Method Used to Establish the Risk-Free Rate and the Market Risk Premium*, November 2012, p. 5.

[117] Lally, *Review of the AER's methodology for the risk-free rate and the market risk premium*, 4 March 2013, p. 33.

[118] Lally, *Review of the AER's methodology for the risk-free rate and the market risk premium*, 4 March 2013, p. 33.

Appendix B: CEG analysis of CGS betas

Recent analysis undertaken by CEG presents a different perspective on the errors that are inherent in the AER's practice of estimating the expected return on the market as the sum of the prevailing yields on 10-year CGS and the historical difference between the average market return and average CGS yields.

In a recent report, CEG shows that the expected forward-looking betas for CGS change over time. CEG argues that differences in the value of beta have implications for how the AER should use current and historical risk-free rate values.[119] CGS betas can be estimated empirically – and the way that these change over time directly affects how the expected return on the market should be estimated.

CEG cites academic literature that explains that long-dated default free bonds can, and often do, have non-zero betas over different investment horizons. These betas can switch between being positive or negative because they reflect changes in liquidity premiums and market interest rates over time – which, in turn, may reflect changes in inflation expectations and risk premiums. To the extent there is co-variation between the prices of CGS and changes in the market portfolio – whether positive or negative – this will appear in time-varying values of CGS betas.

Davis (2005) (a paper referred to by CEG) examined Australian data for the period December 1979 through February 2004 and concluded that CGS betas "are subject to time series variation and over the past few years the pre-existing positive correlation between bond and stock returns appears to have disappeared".[120]

Figure 7 shows the CEG analysis of CGS betas, calculated using the method applied by Davis, and updated by the Businesses to the end of July 2013.

[119] CEG, *Estimating the return on the market*, June 2013, pp. 17–20.
[120] Davis, Kevin, 2005, *The systematic risk of debt: Australian evidence*, Australian Economic Papers 44, 30–46 (referred to in: CEG, *Estimating the return on the market*, June 2013, footnote 26).

Figure 7: CGS beta over time

Source: Figure 4 in Appendix A of: CEG, Estimating E[Rm] in the context of recent regulatory debate, June 2013, updated by the Businesses.

CEG concludes that estimating the expected return on the market as:

- the prevailing CGS yield, plus
- the historical difference between the average market return and average CGS yields

will introducing an unnecessary and potentially material source of bias.[121] The bias arises because this approach assumes that any errors in using CGS as a proxy for the risk-free asset are the same in history as they are now. However, the Businesses are not aware of any justification for such an assumption, especially given that CGS betas vary over time.

Figure 7 shows that CGS betas are currently sharply negative. In history, CGS betas have generally been positive. This implies that the AER's current practice of adding the average return on the market in excess of the average return on a positive beta asset to the average yield on a negative beta asset will produce a downwardly biased estimate of the current expected return on the market. As shown by CEG, the errors in the two different proxies for the risk-free rate will not be the same, and will not cancel out.

CEG concludes that since there is time-varying estimation error associated with the proxy for the risk-free asset, then one solution is to simply avoid using estimates for that asset.[122] If historical average values are used to estimate the expected return on the market, then that return should match the historical average realised return.

[121] CEG, *Estimating the return on the market*, June 2013, p. 19.
[122] CEG, *Estimating the return on the market*, June 2013, p. 24.

Appendix C: Index of supporting documents

	Author	Title	Date	Public
1.	AER	*Electricity Transmission and Distribution Network Service Providers: Review of the Weighted Average Cost of Capital (WACC) Parameters*	May 2009	*PUBLIC*
2.	AER	*Electricity Transmission and Distribution Network Service Providers: Statement of the Revised WACC Parameters (Transmission) and Statement of Regulatory Intent on the Revised WACC Parameters (Distribution)*	May 2009	*PUBLIC*
3.	AER	*Final decision: South Australia distribution determination 2010–11 to 2014–15,* Appendix J: Debt raising costs for completion method	May 2010	*PUBLIC*
4.	AER	*Final decision: Victorian electricity distribution network service providers - Distribution determination 2011–2015,* Chapter 11: Cost of Capital	October 2010	*PUBLIC*
5.	AER	*Access Arrangement Final Decision: APA GasNet Australia (Operations) Pty Ltd 2013-17,* Attachment 5: Rate of return and Attachment 9: Corporate income tax	March 2013	*PUBLIC*
6.	AER	*Access Arrangement Final Decision: Envestra Ltd (Victoria) 2013-17*, Part 1	March 2013	*PUBLIC*
7.	AER	*Access Arrangement Final Decision: Envestra Ltd (Victoria) 2013–17,* Attachment 5: Rate of return	March 2013	*PUBLIC*
8.	AER	*Access Arrangement Final Decision: Envestra Ltd (Albury) 2013-17*, Part 1	March 2013	*PUBLIC*
9.	AER	*Access Arrangement Final Decision: Multinet Gas (DB No. 1) Pty Ltd and Multinet Gas (DB No. 2) Pty Ltd 2013-17*, Part 1	March 2013	*PUBLIC*
10.	AER	*Access Arrangement Final Decision: SPI Networks (Gas) Pty Ltd 2013-17*, Part 1	March 2013	*PUBLIC*
11.	AER	*Access Arrangement Final Decision: SPI Networks (Gas) Pty Ltd 2013-17*, Attachment 5: Rate of return	March 2013	*PUBLIC*

	Author	Title	Date	Public
12.	Cambridge Economic Policy Associates	*Advice on Estimation of the Risk Free Rate and Market Risk Premium: Report prepared for the Australian Energy Regulator*	March 2013	*PUBLIC*
13.	CEG	*Estimating the Regulatory Debt Risk Premium for Victorian Gas Businesses*	March 2012	*PUBLIC*
14.	CEG	*Internal consistency of the risk free rate and MRP in the CAPM: Prepared for Envestra, SP AusNet, Multinet and APA*	March 2012	*PUBLIC*
15.	CEG	*Response to AER Vic gas draft decisions: Internal consistency of MRP and risk free rate*	November 2012	*PUBLIC*
16.	CEG	*Update to March 2012 report on consistency of the risk free rate and MRP in the CAPM*	November 2012	*PUBLIC*
17.	CEG	*Debt Strategies of Utility Businesses*	June 2013	*PUBLIC*
18.	CEG	*Estimating E[Rm] in the context of regulatory debate*	June 2013	*PUBLIC*
19.	CEG	*Estimating the Debt Risk Premium (Incorporating CEG notice of errata dated 22 August 2013)*	August 2013	*PUBLIC*
20.	CEG	*Estimating the return on the market*	June 2013	*PUBLIC*
21.	Davis, Kevin	*The systematic risk of debt: Australian evidence*, Australian Economic Papers, 2005, 44, 30-46	2005	*NOT PUBLIC*
22.	Debelle, Guy (Assistant Governor, Reserve Bank of Australia)	*Letter to Joe Dimasi, Commissioner, Australian Competition and Consumer Commission*	16 July 2012	*PUBLIC*
23.	Energy Networks Association	*Response to AER Rate of Return Guideline Consultation Paper*	28 June 2013	*PUBLIC*
24.	ERA	*Draft Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*	August 2013	*PUBLIC*
25.	Fitzgerald, Gray Hall, Jeyaraj	'Unconstrained estimates of the equity risk premium', *Rev Account Stud (2013) 18:560–639*	May 2013	*NOT PUBLIC*

	Author	Title	Date	Public
26.	Gregory, A	*The AER Approach to Establishing the Cost of Equity – Analysis of the Method Used to Establish the Risk Free Rate and the Market Risk Premium*	November 2012	*PUBLIC*
27.	Incenta Economic Consulting	*Term of the Risk Free Rate for the Cost of Equity: Report for the Energy Networks Association*	June 2013	*PUBLIC*
28.	Lally	*The cost of equity and the market risk premium*	25 July 2012	*PUBLIC*
29.	Lally	*Review of the AER's methodology for the risk-free rate and the market risk premium*	4 March 2013	*PUBLIC*
30.	Lally	*The Dividend Growth Model*	4 March 2013	*PUBLIC*
31.	Lintner, John	The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets, *Review of Economics and Statistics* 47, 1965, 13 - 37	1965	*NOT PUBLIC*
32.	McKenzie, M and Partington, G	*Report to the AER: Review of the AER's Overall Approach to the Risk-free Rate and the Market Risk Premium*	28 February 2013	*PUBLIC*
33.	Murphy, Jim and Nicholl, Rob (Department of Treasury)	*Letter to Joe Dimasi, Commissioner, Australian Competition and Consumer Commission*	18 July 2012	*PUBLIC*
34.	NERA	*Prevailing Conditions and the Market Risk Premium: A report for APA Group, Envestra, Multinet and SP AusNet*	March 2012	*PUBLIC*
35.	NERA	*The Market, Size and Value Premiums: A report for the Energy Networks Association*	June 2013	*PUBLIC*
36.	NERA	*The Payout Ratio: A report for the Energy Networks Association*	June 2013	*PUBLIC*
37.	PwC	*Energy Networks Association: Benchmark Term of Debt Assumption*	June 2013	*PUBLIC*
38.	PwC	*Energy Networks Association: Debt financing costs*	June 2013	*PUBLIC*
39.	PwC	*Energy Networks Association: Potential Impact of the ERA's DRP Methodology*	June 2013	*PUBLIC*

	Author	Title	Date	Public
40.	Reserve Bank of Australia	*Statement on Monetary Policy*	9 August 2013	*PUBLIC*
41.	SFG	*The required return on equity: Response to the Victorian Gas Draft Decisions: Report for APA GasNet, Envestra, Multinet and SP AusNet*	7 November 2012	*PUBLIC*
42.	SFG	*Updated dividend drop-off estimate of theta: Report for the Energy Networks Association*	7 June 2013	*PUBLIC*
43.	SFG	*Dividend discount model estimates of the cost of equity*	19 June 2013	*PUBLIC*
44.	SFG	*Evidence on the Required Return on Equity from Independent Expert Reports: Report for the Energy Networks Association*	24 June 2013	*PUBLIC*
45.	SFG	*Cost of equity estimates implied by analyst forecasts and the dividend discount model*	28 August 2013	*PUBLIC*
46.	SFG	*Regression-based estimates of risk parameters for the benchmark firm*	24 June 2013	*PUBLIC*
47.	Sharpe, William	Capital asset prices: A theory of market equilibrium under conditions of risk, *Journal of Finance* 19, 1964, 425 – 442	1964	*NOT PUBLIC*
48.	Staunton, Marsh, Dimson	Credit Suisse Global investment returns sourcebook 2012 (extract)	February 2012	*NOT PUBLIC*

Cases

1.	*Application by Energex Limited (Distribution Ratio (Gamma)) (No 3)* [2010] ACompT 9	24 December 2010	*PUBLIC*
2.	*Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9	12 May 2011	*PUBLIC*
3.	*Application by Envestra Ltd (No 2)* [2012] ACompT 3	11 January 2012	*PUBLIC*