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Our Reference: UE.SU.01

Mr Warwick Anderson, General Manager and
Mr Sebastian Roberts, General Manager
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

Dear Mr Anderson and Mr Roberts,

RE: Submission in relation to the current regulatory determination processes for SAPN, AGN, Energex and Ergon Energy

United Energy, (UE), provides this submission on the preliminary determinations for the South Australian and Queensland electricity distribution businesses (the "Qld/SA Preliminary Determinations"), and on the regulatory proposal for the South Australian gas distribution business.

As the AER proceeds to make final determinations for the Qld/SA electricity distributors, and a draft determination for the SA gas distribution business, it will also be making preliminary determinations for the Victorian electricity distribution businesses.

The AER's approach to setting the allowed rate of return for capital and the associated value for gamma is common between gas and electricity, transmission and distribution, and across the different regions over which the AER has jurisdiction. As such, the substance of the AER's final determinations for the Qld/SA electricity distributors, and draft determination for the SA gas distribution business, have a direct bearing on how the AER is likely to approach the cost of capital issues for our own Victorian electricity distribution business.

These determinations will also be made at a time when the equivalent determinations made by the AER in relation to the New South Wales and Australian Capital Territory electricity and gas distributors (the "NSW/ACT Final Determinations") are the subject of appeal before the Australian Competition Tribunal (the "Tribunal").

Much of the supporting expert material that we have submitted as part of the regulatory proposal for our own Victorian electricity distribution business was procured jointly with the businesses that are the subject of the NSW/ACT Final Determinations. We are concerned that a significant proportion of this material was not given adequate attention by the AER in those processes.

We have also jointly procured new material with the Qld/SA distribution businesses and would like to ensure that it is given due consideration. With this submission we also draw the AER's attention to certain new material that has not previously been submitted by any other party.

As we have previously highlighted, the new rules adopted by the AEMC in 2012 concerning the weighted average cost of capital were intended to constitute a significant reform to the pre-existing arrangements which, for the electricity sector, involved moving away from the tightly prescribed use of:

- the SL-CAPM model for establishing the allowed rate of return for equity; and
- the "on the day" method of determining the allowed rate of return for debt.

Under these rules, the AER is required to consider all the available inputs when setting the allowed rates of return for equity and debt. The rules continue to provide that gamma is a market valuation of the imputation credits that would be distributed by a benchmark firm.

In reviewing the NSW/ACT Final Determinations and Qld/SA Preliminary Determinations, UE is concerned that:

- The determinations proceed on the basis of a misapplication and misunderstanding of the evidence before the AER concerning the risks facing the benchmark electricity distribution businesses and also that the material that the AER continues to rely upon is outdated. This leads to a significant under-estimation in these determinations of the required rate of return for equity.
- The AER is approaching the task of establishing an allowed rate of return on equity in a way that is so significantly misconceived that it cannot possibly result in a rate of return that is commensurate with the efficient costs of a benchmark firm, and nor does the AER's method accord with the requirements of the rules.
- Although the central concept of introducing a trailing average for the rate of return on debt is a good one, there are a number of significant issues that need to be addressed in the way that the trailing average would be implemented. Most significantly, the transitional arrangements in those determinations are inconsistent with the AER's own factual findings concerning the efficient 'hybrid' financing practices of an efficient firm. The AER's determination relies in significant part on an "NPV = 0" analysis proposed by Lally that is conceptually unreasonable, factually incorrect and contrary to the rules.

For gamma, the AER's "conceptual approach" is at odds with the economic principle that the energy regulatory businesses need to be given a fair market reflective return, and inconsistent with the rules that define gamma as the "value of imputation credits". A gamma of 0.4 would materially under-compensate the businesses for the costs of equity capital that is invested in their businesses.

Each of these issues is discussed further below under the following headings:

- Flawed risk assessment for electricity distribution network businesses
- Problems with the AER's Approach to Setting an Allowed Rate of Return for Equity
- The International Evidence on Setting Allowed Rates of Return for Equity
- Implementing the Trailing Average Method for Debt
- An appropriate Transition Path for Debt
- Gamma

Please do not hesitate to contact me on (03) 88469854 if you require further information.

Yours sincerely,

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Submission

1. Flawed Risk Assessment for Electricity Distribution Network Businesses

The Qld/SA Preliminary Determinations proceed on the basis that conceptually a gearing ratio, a "beta" value within the SL-CAPM model and a benchmark credit rating can adequately recompense the businesses for the returns required on risky investments and that a specific beta value of 0.7, and a credit rating of BBB+ are adequate for this purpose.

It is simply not the case that an adequate compensation for risk can be provided in that way.

We have three fundamental concerns with the AER's approach.

Firstly, the AER's approach relies in significant part on a report that the AER commissioned from Frontier Economics in 2013 but Frontier Economics has this year prepared an additional report (Frontier Economics, "Review of the AER's conceptual analysis for equity beta", June 2015) explaining that the AER has misunderstood and misapplied the analysis it undertook in 2013.

The most significant misconception in the way the AER uses Frontier Economics' work is that the AER has wrongly equated the issue of how leveraging affects risk with the discussion by Frontier Economics of "financial risks" or "risks that have a financial dimension" and, more generally, the AER has not adequately accounted for the effect of leverage on risk. As the Frontier Report summarises:

> *"The fact that the precise relationship between leverage and equity beta is not known with certainty does not mean that the effect of leverage on beta should be disregarded when making comparisons between estimated equity betas. Such an approach would be at odds with accepted finance and regulatory practice.*
>
> *The "financial risks" that we considered in our 2013 report for the AER are not the same as financial leverage and do not substitute for the leverage component of equity beta. The AER appears to have misunderstood this point in our 2013 report.*
>
> *The evidence that the AER presents in relation to US utility betas supports a re-levered equity beta estimate of close to 1."* [1]

The fundamental point is a simple one. If a business takes on substantial debt (which takes a fixed return and ranks higher than equity in priority on a liquidation), then the risk for equity holders will rise significantly.

Using the language of the SL-CAPM model, Frontier finds that *even though* the underlying business itself may have less systematic risk than the average investment, once the additional risk of leveraging is taken into account, there is no concrete basis to conclude that the appropriate equity beta for a US regulated energy utility is below 1.0. Some alternative models for estimating the return on equity (such as the Dividend Growth Model ("DGM")) do not explicitly contain a "beta" measure of risk. Nevertheless, the DGM accounts for risk in another way, and that is in the process of selecting the relevant comparable

[1] Frontier; *Review of the AER's conceptual analysis for equity beta*; REPORT PREPARED FOR ACTEWAGL DISTRIBUTION, AGN, AUSNET SERVICES, CITIPOWER, ERGON, ENERGEX, JEMENA ELECTRICITY NETWORKS, POWERCOR AUSTRALIA, SA POWER NETWORKS AND UNITED ENERGY, Frontier Economics, June 2015, paragraph [10]; page 2.

entities when running a sector-specific DGM. The fact that correctly specified DGM estimates currently deliver estimates for the return on equity that are materially higher than using a beta of 0.7 in the AER's SL-CAPM Foundation Model, corroborates the primary evidence that we have provided on risk that an equity of beta of 0.7 is too low.

Secondly, the AER has not adequately addressed the effects of disruptive technologies when setting regulatory allowances.

In the regulatory proposal for our Victorian distribution business, we have submitted detailed information on the substantial changes facing our business due to disruptive technologies that mean that the risks facing us into the future are substantially greater than they were historically. Consequently, a regulatory allowance based on an historic assessment of risk will materially under compensate investors. The AER's treatment of the material that SA Power Networks submitted on this issue is inadequate.

This is a significant issue. In Frontier Economics' 2015 report, a statement is made that:

> *"There have been developments in the roll-out and adoption of disruptive technologies since our 2013 report. There is more uncertainty about the future of the industry now than there was even two years ago, and it is not unreasonable to think that investors would take this into account when allocating scarce capital to this industry."*[2]

Although the AER's preliminary determination for SA Power Networks acknowledged that the risk that electricity distribution businesses face has increased significantly in the very recent past, it declined to make any adjustment (to the allowed return, to cash flows, or to depreciation schedules) claiming that the shortest and most recent time period for the AER's beta studies (i.e., studies over five years) should reflect these emerging risks.

The Frontier Economics report states:

> *"The AER suggests that any systematic component of disruptive technology risk would be captured in its equity beta estimates. Our view is that this is very unlikely."*[3]

The AER's response is an inadequate means to address the issue of disruptive technologies because:

(a) the most recent of these five-year studies pre-dated most of the developments detailed in our regulatory proposal;

(b) an up-to-date five-year study would dilute the measure of these new risks in an average that partly pre-dates these developments;

(c) the AER's method is to blend the consideration of short time interval studies with much longer time interval studies which further dilutes the measurement of new risks; and

(d) the majority of the firms that the AER takes to be comparators are not electricity network businesses.

The AER's preliminary determination for SA Power Networks suggests that an additional feature of the NEM regulatory structure reduces risk for the benchmark efficient firm. The AER suggests that the

[2] Ibid; page 3.

[3] Ibid; page 3.

business is insulated from risk as there is a constrained ability for the regulator to remove assets from the regulatory asset base through "optimisation" assessments, and that asset utilisation and cost recovery risks are recompensed through this form of protection for "cash flows". The AER does not have a proper basis for concluding that these mechanisms are effective in controlling these risks particularly if the "death spiral" effect described in the SA Power Networks proposal were to occur.

The Frontier Economics report explains that:

> *"The AER suggests that to the extent that the risks are non-systematic in nature, those risks would more appropriately be compensated through regulated cash flows (such as accelerated depreciation of assets). However, notwithstanding that the AER recognises that disruptive technologies may increase the risks faced by NSPs, the AER has made no allowances for these risks either through the rate of return or through regulated cash flows."*[4]

This conceptual discussion of risk reconciles with Gray and Hall's assessment[5] that the best estimate for beta for the SL-CAPM model is 0.82 (if it is used as part of a multi-model approach) or 0.89 (if the SL-CAPM is used alone and needs to be adjusted for its low-beta bias).

Thirdly, as discussed in the next section of this submission, the SL-CAPM is acknowledged to produce downwardly biased returns for businesses with a beta of less than 1.0. This means that when the SL-CAPM is the primary model used, and an estimate of beta of below 1.0 is used in that model, there is a compounding effect of under-compensation for the business concerned.

At the *very least*, if debate persists on the quantum of the risk facing our business, it is unequivocally the case that the business has moved in the more risky direction since the last round of regulatory determinations conducted in 2010. This is a compelling basis for concluding that the AER's approach of reducing the beta from 0.8 to 0.7 is incorrect and unreasonable and that the only direction in which the beta can be moved from 0.8 is upward.

2. Problems with the AER's Approach to Setting an Allowed Rate of Return for Equity

2.1. Giving real weight to all the available inputs

A significant disagreement inherent in the different ways that the AER and the businesses approach the estimation of the allowed rate of return concerns the requirement in the rules to have regard to the full range of relevant models and data available.

The Qld/SA Preliminary Determinations proceed on the basis that it is sufficient to consider all the available material and then choose to accord some relevant inputs a very substantial weight, some relevant inputs a very constrained role and other relevant inputs no role at all. By contrast, the businesses consider that the requirement to "have regard" to all the relevant material has the same meaning as in the DBNGP case[6]. We are of the view that all of the relevant information needs to be given a *real weight* that is proportionate to its probative merits. It is not acceptable to acknowledge that inputs are relevant and ascribe them no weight or to give such inputs a highly constrained role that does not reflect their probative value.

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[4] *Ibid*; [11]; page 3.

[5] SFG Consulting, The required return on equity for the benchmark efficient entity, 25 February 2015.

[6] re Michael AM; ex parte Epic Energy (WA) Nominees Pty Ltd & anor [2002] WASCA231 at paragraph 55.

The AEMC's explanatory statement that accompanies the rules repeats a number of times that all the relevant material must be accorded an appropriate weight.[7] For example:

> *"Whether or not the estimated rate of return meets the allowed rate of return objective will invariably require some level of judgement, but this judgement should be based with reference to all relevant estimation methods, financial models, market data and other evidence that could reasonably be expected to inform a regulator's decision.*
>
> *…*
>
> *In addition, the regulator must make a judgement in the context of the overall objective as to the best method(s) and information sources to use, including what weight to give to the different methods and information in making the estimate."*[8]

It would be a hollow exercise for the AEMC to have reformed the rules to permit a departure from the SL-CAPM, required an evaluation of all the available alternatives and then permit the decision maker to disregard models or inputs that are found to be relevant and essentially revert to the pre-existing approach.

The businesses have provided a wealth of material to explain why the other relevant equity models provide important additional insights that the SL-CAPM is unable to provide. As well as the expert views of Gray and Hall[9], there is a broad chorus of experts who corroborate the superiority of approaches that use a range of different models concurrently. Dr Robert Malko, a distinguished U.S. regulatory economist with more than 40 years of relevant experience, states:

> ***"Which models are useful for economic regulatory purposes?***
>
> *In my opinion, all of the models discussed above are useful in the determination of allowed return on equity, but each model has both strengths and drawbacks and should not be used alone, nor is any model superior so as to warrant its use as a primary or sole principal model.*
>
> *In particular, the models can be grouped into two 'families': the DGM on the one hand and all the capital asset pricing models or interest rate sensitive models on the other based on how they explain and predict returns. Both major groupings, and all the variants discussed above, provide useful insights into what returns that risk-adverse investors expect to receive when making investments.*[10]
>
> ***Multiple Model Approaches are Preferable***
>
> *In my opinion, no one single financial model is sufficient to estimate the rate of return in every economic circumstance. All models suffer a range of theoretical and/or empirical weaknesses of different kinds. If only one model is used, or if one model is given excessive pre-eminent weight, investors' returns will be highly dependent on the extent to which that model's particular weaknesses lead to over- or under-returns. If multiple models are used, then the returns will vary in response to all the weaknesses but to a smaller extent than if one model is used. It also stands to reason that*

[7] AEMC Rule Determination, 29 November 2012, pages i, iii, 26, 27, 30,31, 48.

[8] AEMC Rule Determination, 29 November 2012, page 48.

[9] SFG Consulting; *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity, Report for Jemena Gas Networks, Jemena Electricity Networks, AusNet Services, Australian Gas Networks, CitiPower, Ergon Energy, Powercor, SA Power Networks, and United Energy*; 27 March 2015; paragraph [107]; page 22.

[10] Statement of J. Robert Malko, Maiko Energy Consulting, 16th June 2015; paragraphs [8.1-8.2]; pages 9-10.

where the weaknesses of different approaches are directionally different, they will to some degree cancel each other out. Additionally, where only one model is used there is insufficient corroborating evidence or ability to cross-check the results. By contrast, the consideration of multiple models enables the decision maker to either become comfortable that different methodologies are corroborative or, where they are not, to question why it is that one or more models may be delivering significant different results at a particular time or in particular economic circumstances. This, in turn, can give an insight into whether results should be adjusted (by altering the weighting or influence) according to particular models and their results.

In my opinion, to ensure the most appropriate decision, it is important to consider the results of several models. In my opinion, using several models helps compensate for the drawbacks in any single model and increases the probability that the appropriate and reasonable range is identified."[11]

Ronald L. Knecht, the Chief Fiscal Officer for the state of Nevada in the United States, who is an experienced former energy regulator, agrees that an approach that employs multiple models is preferable:

"Long-term market trends will tend to drive the estimates of one model higher than another for some years and then lower for another stretch of time. This fact justifies both the use of a wide range of models and also the continuation of the same set of models through these variations.

Using a number of different models is superior to relying on a more limited selection of models. This is because the CAPM, ECAPM, FF3F, and CA+I estimates use basic cost of capital data in a different manner to the DCF models. The CAPM, ECAPM, FF3F and CA+I models extract information from the Cost of Capital data that the DCF models miss – and vice versa. Using multiple models provides additional perspectives and information, yielding a more accurate, reliable, and robust estimate."[12]

The Brattle Group internationally and in Australia also supports the use of multiple models:

"All models have relative strengths and weaknesses, with the result that there is no one model that is the most suitable for estimating the cost of equity at any given time or for any given company. As our colleague and MIT professor Stewart Myers has put it eloquently —Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, only a fool throws away useful information."[13]

The Qld/SA Preliminary Determinations adopt a "foundation model" approach. That is not found in the rules or in the National Electricity Law. The concept itself (i.e. that all other inputs can only contribute to the rate of return via the selection of point estimates for the foundation model's parameter ranges), and its implementation by the AER (i.e. using the SL-CAPM as the foundation model), prevent any real weight being accorded to other models and strictly circumscribe how much weight they are accorded. This is explained in detail in Gray and Hall's 2015 report titled, "The foundation model approach of the Australian Energy Regulator to estimating the cost of equity" (March 2015).

The foundation model approach only permits the other models to contribute to the rate of return estimate in an idiosyncratic and distorted manner. For example, the Black CAPM was conceived of as a means to arrive at a better estimate for the return on equity by freeing the SL-CAPM of an unrealistic constraint. It was conceived of as being a model that takes equity return data and directly estimates a return on equity

[11] *Ibid*; paragraphs [9.1]-[9.2]; page 10.

[12] Knecht, RL; *Statement*; 19 June 2015 (**Knecht**); paragraphs [4.4-4.5]; page 3.

[13] Brattle Group 2013, "Estimating the Cost of Equity for Regulated Companies", prepared by the Brattle Group for the Australian Pipeline Industry Association, 17th February 2013, page 1.

and that is how it is used by finance practitioners. This is not the way in which the AER has taken the model into account. Instead, the AER takes inspiration from its functional form to contribute to a decision to take an upper estimate of a 'rough and ready' range of possible betas for use in the SL-CAPM. This is a completely idiosyncratic use of the Black CAPM.

Indeed, the AER has not even derived estimates for the Black CAPM nor several other relevant models. *Even if* the rule requirement to "have regard" to all the relevant inputs permits relevant information to be given no real weight (i.e. if it is adequate to "consider and discard"), it simply cannot be the case that these models have been given a proper consideration without even having been implemented to produce a rate of return estimate. As we will see below, in the US where it is acceptable to adopt a primary model, at the very minimum the regulator calculates estimates using the alternative models and these estimates are considered in reaching the final decision.

Gray and Hall have instead proposed a multi-model approach that would give all the equity models weight – either equal weight or a more refined approach to how the models might be combined. This is a straightforward approach to including all the relevant inputs and it is a methodology that would produce a high degree of stability and predictability in the overall rates of return for energy businesses and their customers, while continuing to be responsive to the prevailing conditions in equity markets. In their latest report on these issues titled "The required return on equity for the benchmark efficient entity" (February 2015), Gray and Hall have methodically addressed the latest criticisms levelled at their approach in the Qld/SA Preliminary Determinations.

We would urge the AER to discontinue the foundation model approach which is laden with complex implicit constraints on the role that any other information can play in estimating the return on equity capital.

2.2. An unwarranted preference for the SL-CAPM over all other options

Our second concern is that the AER's selection of the SL-CAPM as the foundation model appears to have been undertaken through "rose tinted glasses". This assessment culminates in a glowing statement by the AER concerning the SL-CAPM that simply cannot be supported by the preponderance of the expert material:

> *"We consider there is overwhelming evidence that the SL-CAPM is the current standard bearer for estimating expected equity returns."*[14]

The AER's evaluation of the SL-CAPM makes muted criticisms that involve:

- An inadequate acknowledgement of the flaws of the SL-CAPM;[15]
- an inadequate recognition of the value that other models have in addressing flaws in the SL-CAPM;[16] and

[14] AER (2015), PRELIMINARY DECISION, SA Power Networks determination, 2015−16 to 2019−20, Attachment 3 – Rate of return, April 2015, at [3-122].

[15] Compare SFG Consulting, The required return on equity for regulated gas and electricity network businesses, 6 June 2014, pages 8, and 20 to 24, with AER, Rate of Return Guideline Explanatory Statement, Appendix A, pages 10 to 12.

[16] Compare SFG Consulting, The required return on equity for regulated gas and electricity network businesses 6 June 2014, pages 8, and 26 to 40, with AER Rate of Return Guideline Explanatory Statement, Appendix A, page 17.

- inadequate weight being given to empirical testing of the various models, because empirical tests strongly favour models other than the SL-CAPM.[17]

As Gray and Hall explain that:

> *"i. The AER rejects other models on the basis that the outputs are potentially sensitive to different estimation methods, when the same is true of the SL CAPM. In its recent final decisions, the AER's own range for the allowed return on equity from the Sharpe-Lintner CAPM is 4.6% to 8.6%.*
>
> *ii. The AER cites certain empirical studies to support its rejection of other models. However, the only reasonable interpretation is that the body of available evidence supports the empirical performance of other models over the Sharpe-Lintner CAPM. In some cases, papers that the AER cites as supporting the Sharpe-Lintner CAPM actually do the opposite.*
>
> *iii. The AER rejects all estimates for other models on the basis that it finds some of them to be implausible."*[18]

A significant part of the reasoning supporting the reselection of the SL-CAPM as a foundation model is explicitly conservative. Important factors in selecting this model included giving weight to the idea that other regulators adopt the SL-CAPM, and giving prominence to the AER's perception that the model is "well accepted"[19]. If an existing model is shown to be flawed in ways that newer models are not, then collective inertia should not serve to constrain a decision-maker from giving real weight to a newer model (or models) in accordance with the substantive contribution that the model can make. It cannot be the case that by removing any reference within the rules to the incumbency of the SL-CAPM, the AEMC intended a "chicken and egg" situation that prevents the regulator from moving to adopt a new model until another regulator has done so.[20]

It has been known for well over 40 years that the SL-CAPM tends to underestimate the returns required on low-beta assets. Today it is known that, besides this important empirical problem, the SL-CAPM also has other empirical problems and alternative asset pricing models that do not suffer from these problems are widely available.[21] The SL-CAPM is a highly simplified model that takes a risk-free rate and adds the product of a "beta" and a general market risk premium.

On the "flip-side", when assessing the "pros and cons" of alternative models, the AER is overly critical, testing them against a much more stringent standard than is applied to the SL-CAPM.

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[17] Compare SFG Consulting, The required return on equity for regulated gas and electricity network businesses 6 June 2014, pages 8, 25, 35 with AER Rate of Return Guideline Explanatory Statement, Appendix A, pages 8, 11 to 12.

[18] Frontier; *Key issues in estimating the return on equity for the benchmark efficient entity*; June 2015; paragraph [17]; page 7.

[19] AER Rate of Return Guideline Explanatory Statement, 17 December 2013, page 31.

[20] AER, Rate of Return Guideline Explanatory Statement, 17 December 2013, Appendix A, pages 12 - 13.

[21] SFG Consulting, 6 June 2014, page 25, 35 and SFG Consulting 22 May 2014, Cost of equity in the Black Capital Asset Pricing Model 10 and 11; NERA, 2015, Empirical Performance of the Sharpe-Lintner and Black CAPM.

Before examining this aspect of the Qld/SA Preliminary Determinations, it is useful to observe how the US regulators have assessed the various models because there is a considerably longer history in the US of considering the various options.

The allowed rate of return objective now used in Australia's National Electricity Rules and National Gas Rules effectively codifies long standing U.S. Federal case law:

> *"[T]he return to the equity owner should be commensurate with the returns on investments in other enterprises having corresponding risks."*[22]

In doing so, the same U.S. case law also includes the requirement in the Australian revenue and pricing principles concerning the necessity for the business to have a reasonable opportunity to recover its efficient costs:

> *"That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital."*[23]

The main difference is that there is no explicit requirement upon FERC to have regard to all the available inputs.

The above case was decided in 1944 and in the U.S. there is a history of applying the standards articulated above. At the federal level in the United States, the Federal Energy Regulatory Commission (FERC) describes its use of the DGM *grosso modo* as its "standard bearer" when undertaking economic regulatory work:

> *"For over 30 years, the Commission has based ROEs on the rate of return required by investors to invest in a company – otherwise known as the capital attraction rate of return, or the market cost of equity capital. Over this period,* ***the Commission has relied primarily on the DCF model to provide an estimate of the investors' required rate of return*** *[emphasis added]."*[24]

Even though there is no explicit requirement to consider a range of models, FERC does indeed consider the rates of return that other models produce and these estimates are employed in determining what final rate of return to apply in setting regulated returns. In the leading case, the use of three other models led the Commission to depart from the midpoint of the DCF analysis and to instead adopt a figure three quarters of the way up its DCF range:

> *"The NETOs presented five alternative benchmark methodologies in this proceeding: risk premium analysis, the CAPM, comparison of electric ROEs with natural gas pipeline ROEs, comparison of electric utility DCF results with non-utility DCF results, and expected earnings analysis. Of those five, we find the risk premium analysis, the CAPM, and expected earnings analyses informative,* ***and each produces a midpoint (or median) ROE higher than the midpoint of our DCF analysis here*** *[emphasis added]. In considering these other methodologies, we do not depart from our use of the*

[22] *Federal Power Commission v Hope Gas Co* 320 US 591 (1944) at 603.

[23] *Ibid*.

[24] See Federal Energy Regulatory Commission, Opinion No. 531 (2014) at paragraph 14. This case was the landmark case in which the Commission determined to harmonise the approach in electricity and gas because it had previously used two different forms of the DCF. The approach was to apply the "two-stage" methodology previously used in gas to apply to both energy types. Still relevant, therefore, is FERC June 1999, Cost-of-Service Rates Manual for gas pipelines, page 16 of which clearly identifies the DCF as the dominant US model.

DCF methodology; rather, we use the record evidence to inform the just and reasonable placement of the ROE within the zone of reasonableness established in the record by the DCF methodology.

…

The NETOs' risk premium analysis indicates that the NETOs cost of equity is between 10.7 percent and 10.8 percent, ***which is higher than the 9.39 percent midpoint produced by our DCF analysis*** *[emphasis added]. Similar to the risk premium analysis, the NETOs' CAPM uses interest rates as the input for the risk-free rate, which makes it useful in determining how the interest rate environment has impacted investors' required returns on equity. Further, CAPM is utilized by investors as a measure of the cost of equity relative to its risk. Using the same proxy companies from our DCF analysis, before screening for low-end outliers, the NETOs'* ***CAPM analysis produces an ROE range of 7.4 percent to 13.3 percent, with a midpoint value of 10.4 percent and a median value of 10.9 percent*** *[emphasis added]. Finally, the NETOs' expected earnings analysis, given its close relationship to the comparable earnings standard that originated in Hope, and the fact that it is used by investors to estimate the ROE that a utility will earn in the future can be useful in validating our ROE recommendation. Once again using the same proxy group that we used in our DCF analysis,* ***the expected earnings analysis has an ROE range of 8.1 percent to 16.1 percent, with a midpoint value of 12.1 percent and a median value of 10.2 percent*** *[emphasis added]. The record evidence from each of these models affirms our setting the ROE at* ***a point above the midpoint*** *[emphasis added] under these circumstances."*[25]

At first glance it could be said that the US Federal regulator's approach is similar to that of the AER's foundation model in that it uses a primary model (albeit the DCF model) and other models play a secondary role of selecting a value within a range. However, FERC's use of the DCF model is not at all like the AER's foundation model approach. Most significantly, each of the other models are employed to generate independent rate of return estimates in a manner that is consistent with their application by finance practitioners as stand-alone estimation models rather than using them in an idiosyncratic, indirect way to select parameters in a foundation model. FERC then actually gives the rate of return estimates themselves real weight in selecting the final value for the return on equity.

At the State level in the US there are divergences in the approaches used by the various public utilities commissions. Surveying the picture as a whole, Malko explains how these PUCs all use the DCF model and amongst their number it is common for many of them to also use a range of models. The most common models used in combination are the DCF, ECAPM (which delivers the same results as the Black CAPM) and, in some cases, the Fama-French model. Although the PUCs which use a range of models rarely take explicit simple or weighted averages of the results of the available models, they most often consider the results of each of the models on an equal footing without giving any one model primacy.

The above overview of the US regulatory approach provides a good starting point to explain our concern that the Qld/SA Preliminary Determinations take an overly harsh approach to the criticisms of all the models other than the SL-CAPM which is favoured by the regulator.

The first "family" of models to consider are the various capital asset pricing models.[26] Over the 40 years since the SL-CAPM was first widely used, a range of alternative capital asset pricing models have become

[25] Federal Energy Regulatory Commission, Opinion No. 531 at paragraph 147.

[26] NERA has provided an extensive literature review concerning this family of models. See NERA, Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model, A report for Jemena Gas Networks, Jemena Electricity Networks, AusNet Services, Australian Gas Networks, CitiPower, Ergon Energy, Powercor, SA PowerNetworks, and United Energy, March 2015.

widely accessible. The Black CAPM has a more flexible functional form and can more closely model observed returns and be used for predictions.[27] The Fama-French model has put forward additional variables that can have considerable explanatory power when seeking to explain or predict market rates of return.[28]

The other predominant family of models is the DGM or DCF family of models. This family has a long standing pedigree, particularly in the US, as providing an alternative means to establish a regulatory allowance for the return on equity. Over the last 40 years, regulators have used "one-stage" and "two-stage" versions of these models and, until 2014, both were in widespread use (for example, the "one-stage" version was in active use for interstate electricity transmission regulation and a "two-stage" version for interstate gas transmission). Now a "two-stage" version is used for all Federal decisions for both energy types and it is also the version most commonly implemented by the PUCs.

With respect to the **Black CAPM** the AER asserts[29] that:

- The zero-beta asset is unobservable and there is no reliable way to identify the market return for a zero-beta asset; and
- it is not used for regulatory purposes.

On pages 19 and 20 of the report titled "Beta and the Black Capital Asset Pricing Model" of February 2015, Gray and Hall explain how the first criticism is unreasonably harsh. The AER appears to have reached this conclusion simply because different methods of estimation produce different results but this could be said of almost every single aspect of the estimation process for the return on equity using any of the models. When implementing the SL-CAPM it is necessary to consider the merits of various options for the risk-free rate, beta and market risk premium and make a selection. There is no difference in concept or magnitude when considering the various candidates for the zero-beta rate for use in the Black CAPM.

The second criticism is addressed by Malko who states:

> *"I have been asked to comment on the correctness or otherwise of the statement in the Australian Energy Regulator's (AER) Final Decision, ActewAGL distribution determination 2015-16 to 2018 -19 - Attachment 3 - Rate of Return document:*
>
> > *"There is little evidence that other regulators, academics or market practitioners use the Black CAPM to estimate the return on equity. In particular, regulators rarely have recourse to the Black CAPM" at page 3-256.*
>
> *As I have explained above, although there is little explicit reference to the Black CAPM, in practice the use in the U.S. of the Empirical CAPM by financial analysts both within and outside energy regulatory processes is essentially to the same effect."*[30]

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[27] SFG Consulting, The required return on equity for regulated gas and electricity network businesses 6 June 2014, page 8: "*The Black CAPM provides a better fit to the empirical data than the Sharpe-Lintner CAPM…*"

[28] SFG Consulting, The required return on equity for regulated gas and electricity network businesses 6 June 2014, page 8: "*The Fama-French model has the advantage of providing an unambiguously better fit to the data than the Sharpe-Lintner CAPM.*"

[29] The AER's view on this point dates from at least 2011 when the AER based its Envestra decision on advice to this effect by Kevin Davis.

[30] Statement of J. Robert Malko, Maiko Energy Consulting, 16th June 2015; paragraphs [6.4] and [6.5]; page 8.

Marko explains how the regulators give effect to the Empirical CAPM as follows:

> *"The regulators who have been presented with ECAPM evidence have considered it along with evidence from the DGM or DCF and Sharpe CAPM. The results from all these approaches have been recorded in the decisions and the selection of a particular figure has been made following that consideration."*[31]

Examples of the Empirical CAPM in active use in the US include:[32]

- New York Public Service Commission, 2009;
- New York Public Service Commission, 2007;
- New York Public Service Commission, 2006; and
- Oregon Public Utility Commission, 2001.

With respect to the **Fama-French Three Factor Model,** the AER:

- Claims that the three factor model is lacking in merit because it arose from empirical observation rather than "theory" when in fact all theories are developed as a way to explain observed phenomena. Regardless of which came first – theory or empirical testing – the order does not affect the relevance of the model;[33]
- puts forward the perverse suggestion that because the model's authors continue to seek and find further refinements that may produce even better results, the existing model and the insights that it provides relative to the SL-CAPM should be discarded; and
- makes a spurious distinction between a model's ability to explain past equity returns as opposed to explaining future equity returns.[34] Unless there is a reason why the world has changed there is no basis for doubting the prospective usefulness of a model that very well explains past returns.

Gray and Hall respond to all these criticisms in more detail in their 2015 report titled "Using the Fama-French model to estimate the required return on equity" (February 2015).

Despite being the newer model, since the turn of the century the Fama-French Three Factor model has been part of the evidence in a number of state regulatory proceedings in the United States, including:

(a) Before the Massachusetts Department of Telecommunications,[35] Mr Hunt (an expert witness) cites the Fama-French study.

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[31] *Ibid*; paragraph [5.5]; page 7.

[32] Further details can be found in *Rate of Return on Equity: Proposal for the 2016 to 2020 period*, prepared by United Energy and Multinet Gas; see Table 2.1.

[33] AER Rate of Return Guideline Explanatory Statement, 17 December 2013, Appendix A, page 8

[34] AER Rate of Return Guideline Explanatory Statement, 17 December 2013, Appendix A, pages 19 to 20.

[35] Moul, Paul R.; *'Direct Testimony of Paul R. Moul, Managing Consultant, P. Moul & Associates, Concerning Cost of Equity,' Commonwealth of Massachusetts Department of Telecommunications and Energy*; October 17 2005; page 50.

(b) Before the California Public Utilities Commission,[36] Mr Hunt (an expert witness), used the Fama-French Three Factor model and calculated a cost of equity in September 2005.

(c) Before the Delaware Public Service Commissioner,[37] Artesian Water Company led evidence that included Fama-French model results.[38]

(d) Mr Ronald Knecht (an expert witness for the Nevada Public Utilities Commission)[39] proposed a return on equity that was calculated as an arithmetic mean of four components. He applied two discounted cash flow (DCF) estimates, a 2CAPM/FF3F model average, and one risk premium estimate.

(e) On a separate occasion, in July 2007, Mr Knecht acted on behalf of the Nevada Public Utilities Commission[40] and again used the Fama-French Three Factor Model to assess the rate of return on equity.[41]

(f) On another occasion in December 2014, Mt Knecht gave expert evidence (which included results from the Fama-French model) before the California Public Utilities Commission.[42]

(g) Mr Hayes,an expert from San Diego Gas & Electric used the Fama-French model in his testimony before the California Public Utilities Commission in May 2007.[43]

The cases in point suggest that increasingly more companies are using the Fama-French model as a source of additional data.

The AER singles out the **Dividend Growth Model** or **Discounted Cash Flow** model as being excessively sensitive to the growth input assumption.[44]

In response, Grant Samuel states:

> *"It is also difficult to fathom why the AER states that the DGM is highly sensitive to interest rates but makes no mention of the sensitivity of CAPM to interest rates."*[45]

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[36] *Applications by Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company* 2005 Cal. PUC LEXIS 537; 245 P.U.R.4th 442.

[37] *In the matter of the application of Artesian Water Company, Inc: for an increase in water rates* 2003 Del PSG LEXIS 51.

[38] *Ibid*; at [8].

[39] *Application of Sierra Pacific Power Company,* 2006 Nev. PUC LEXIS 91 at [63].

[40] *Application of Nevada Power Company* 2007 WL 2171450 (Nev. P.U.C.).

[41] *Application of Nevada Power Company* 2007 WL 2171450 (Nev. P.U .C.) at [1 02]; and *Application of Sierra Pacific Power Company,* 2006 Nev. PUC LEXIS 91 at [63].

[42] *Application of Southern California Edison Company 2014 Cal. PUC LEXIS 622 at [7], citing Application of Southern California Edison Company* 2007 Cal. PUC LEXIS 593 at [5.2.5].

[43] Testimony of Garry G Hayes on behalf of San Diego Gas and Electric before the California Public Utilities Commission 2007; page 19.

[44] AER Preliminary Determination Attachment 3 at [3-257].

[45] Letter from Grant Samuel & Associates Pty Limited (Grant Samuel Letter) to the Directors of Transgrid; 12 January 2015, page 2.

and

> *"In our opinion, in examining the CAPM and comparing it to the DGM, the AER has unfairly accentuated the failings of the DGM while, at the same time, it has ignored many real shortcomings in the CAPM."*[46]

The AER also argues that there are insufficient data with which to estimate the cost of equity for a regulated energy utility. For example, the AER states that:

> *"data are now only available for five energy infrastructure businesses: APA Group; DUET; Envestra Limited; SP AusNet; and Spark Infrastructure Group. Given the strong assumptions required when implementing DGMs, we are sceptical about the robustness of deriving a benchmark estimate of the return on equity based on the data of five businesses."*[47]

We note that the AER is content, on the other hand, to rely on a small sample of Australian energy infrastructure businesses in estimating the equity beta of a benchmark efficient entity. Thus the AER is not consistent in expressing its concerns over data availability.

As quoted above, FERC uses the model as its *primary* model. The Malko report provides additional historical background and fills out the picture by surveying the approach of key State regulators:

> *"The Dividend Growth Model (DGM), also the DCF, is based upon the works of Irving Fisher and John Williams in the 1930s. The DGM or DCF was introduced for estimating the cost of common equity for regulated energy utilities by state regulatory authorities during the 1960s and early 1970s.*
>
> *....*
>
> *The adoption of the DGM or DCF constituted a significant advance in the science of what constitutes a fair market reflective rate of return. This model is still considered and almost universally used, alone or in a multi-model approach (as I discuss further below), by almost all energy regulators in the United States."*[48]

With Australia in mind, Gray and Hall[49] have specifically addressed each of the AER's implementation concerns in relation to the DGM.

In conclusion, under the new National Electricity Rules and National Gas Rules that require all the relevant models to be considered, it is untenable to assert, (as the AER effectively does), that the SL-CAPM is the preferable, let alone the only model that is usable for economic regulatory purposes. To the contrary, the evidence suggests that each of the other models that we have proposed is *at least* as worthy as the SL-CAPM.

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[46] *Ibid*; page 2.

[47] AER Rate of Return Guideline Explanatory Statement, 17 December 2013, Appendix E, page 119.

[48] Statement of J. Robert Malko, Maiko Energy Consulting, 16th June 2015; paragraphs [3.1] to [3.2]; page 4.

[49] SFG Consulting, 2015, Share prices, the dividend discount model and the cost of equity for the market and a benchmark energy network.

2.3. The AER's method delivers acute under-compensation in current conditions

There are two aspects to this concern: First, there are features of the AER's foundation model, the SL-CAPM, which will systematically give downwardly biased results over the whole interest-rate cycle. Second, when interest rates are cyclically low – and the 10-year Commonwealth Government Security yield has recently touched record lows – the downward bias of the foundation model may be significantly accentuated.

The foundation model is structurally biased to give inadequate returns across the interest-rate cycle because:

- The level of risk has been under-estimated (this issue is discussed in section 1 of this submission);
- the SL-CAPM has a low-beta bias (this issue is very fully addressed in the submissions of the Qld/SA businesses and there is no basis to conclude that a sufficient adjustment has been made by the AER – that being the 'rough and ready' selection of an SL-CAPM beta at the upper end of an overly constrained range, inspired by the conceptual underpinnings of the Black CAPM); and
- it is quite apparent that there are significant problems with the way in which the AER selects its market risk premium, a point which we explain further in this discussion.

With respect to the market risk premium, the fact that the historical MRP estimates that the AER has considered vary so widely and do not over-lap with each other should sound an alarm. The starting point and the input given the most weight is a whole series of divergent historic averages. It is quite remarkable that these figures diverge so significantly given that they are all averages drawn from the same data series – using two different averaging techniques and overlapping time-based 'panels' of data from the overall series. The principle problems here are that:

- The AER has failed to recognise that only arithmetic averages are appropriate to use because the AER does not compound estimates of the cost of equity or the WACC. Geometric averages would only be relevant if the AER were to compound; and
- The AER continues to adhere to the so-called "Brailsford adjustment" of the historical data on the basis of a misconception that it is an adjustment that was carefully considered and endorsed by the Australian Securities Exchange. In fact, the ASX did not have the benefit of the subsequent work by NERA, the ASX has stated explicitly that it holds no opinion on what adjustment, if any, should be made to the data and the Brailsford authors have never provided an adequate response to the additional discoveries that NERA has made.[50] NERA has recently provided a further report that examines the sensitivity of the adjustments to the historical data, which it provides, to changes in the method that it uses and finds the adjustments are not sensitive.[51]

The above issues are explained in a submission by United Energy to the NSW/ACT distribution determinations dated 26 March 2015 which also explains why these issues are important within the overall AER approach to building up an estimate for the market risk premium. The three exhibits to that submission provide copies of the source material that unequivocally establishes that attributing any form of endorsement by the Australian Securities Exchange to the Brailsford adjustment is incorrect and this is

[50] ASX, Re: Historical price indices, and dividend yield data from the ASX, Letter to Jeremy Rothfield, Economist, 18th March 2015.

[51] NERA; Further Assessment of the Historical MRP: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors, A report for United Energy, June 2015.

significant because it is the primary basis stated for the AER's preference for the Brailsford work over that of NERA.

Turning to the particular problems that arise with the foundation model implemented at a time of record low interest rates, these arise because the foundation model relies on implementing the SL-CAPM by combining a current measure of the risk-free rate with a market risk premium derived from more than 100 years of data. In times of unprecedented low interest rates, this approach is likely to deliver values that are materially lower than prevailing market required returns.

As the Governor of the Reserve Bank of Australia, Mr Glenn Stevens has explained, in reality the return that the market requires on equity does not appear to have followed the unprecedented downward movement in base rates:

> *"[A key] feature that catches one's eye is that, post-crisis, the earnings yield on listed companies seems to have* ***remained where it has historically been for a long time, even as the return on safe assets has collapsed to be close to zero*** *[emphasis added]."*[52]

This is a point that Gray and Hall have made in the various reports lodged by the businesses for quite some time.[53]

This means that adding a long-run average market risk premium to the currently observed risk-free rate will likely deliver downwardly biased results when risk-free rates are low and upwardly biased results when risk-free rates are high. In the current environment of record low risk-free rates, the simple addition of a long-term market risk premium and a currently observed risk-free rate is almost bound to significantly undercompensate equity investors.

Again, it is informative to consider the views of the Federal Energy Regulatory Commission whose decisions corroborate the submissions that the AER has received from the SA and Queensland businesses.

Unlike the capital asset pricing models, the DGM that FERC uses is not structured as a build-up of margins over a base interest rate. Nevertheless, the time span of the regulatory process has traditionally required there to be a post-hearing adjustment to the rate of return that is initially set and, in the past, FERC has done this by making a 1:1 adjustment for changes in US Treasury bond yields over the same period. In the current unprecedented interest-rate environment, FERC has had to reconsider this approach and its conclusions are a powerful corroboration of our concerns with the AER's implementation of the SL-CAPM:

> *"[W]hile U.S. Treasury bond yields are an important indicator of capital market conditions and therefore inform our determination of an appropriate base ROE, the capital market conditions since the 2008 market collapse and the record in this proceeding have shown that* ***there is not a direct correlation between changes in U.S. Treasury bond yields and changes in ROE*** *[emphasis added].*
>
> *…*

[52] Reserve Bank of Australia; the World Economy and Australia, Address to the American Australian Association luncheon hosted by Goldman Sachs, New York, USA (**RBA Speech**); 21 April 2015.

[53] See, for example, SFG Consulting, "The required return on equity for regulated gas and electricity network businesses" 6 June 2014, page 51 to 53.

In Southern California Edison Company, a 2008 case in which the post-hearing adjustment was at issue, expert testimony indicated that, ***as U.S. Treasury bond yields decreased DCF results instead went up, indicating an inverse relationship between U.S. Treasury bond yields and utility ROE*** *[emphasis added]. The record in this proceeding also shows an inverse relationship, but with rates moving in opposite directions:* ***U.S. Treasury bond yields have increased while DCF results for the NETOs have gone down*** *[emphasis added].*

The record in this proceeding also casts doubt on the magnitude, not just the direction, of the relationship between U.S. Treasury bond yields and utility ROE. The Commission's practice traditionally has been to adjust the ROE using a 1:1 correspondence between the ROE and the change in U.S. Treasury bond yields—i.e., for every basis point change in the U.S. Treasury bond yield the Commission would adjust the ROE by one basis point. However, ***the record in this proceeding indicates that the 1:1 correspondence may not be accurate under current financial conditions, and that a significantly different ratio might be more appropriate—i.e., for every basis point the U.S. Treasury bond yields change, the Commission should adjust the ROE by a fraction of that amount. Thus, the record evidence indicates that, currently, adjusting ROEs based on changes in U.S. Treasury bond yields may not produce a rational result, as both the magnitude and direction of the correlation may be inaccurate*** *[emphasis added].*

Upon consideration of the record evidence in this proceeding, and in light of the economic conditions since the 2008 market collapse more generally, ***U.S. Treasury bond yields do not provide a reliable and consistent metric for tracking changes in ROE*** *[emphasis added] after the close of the record in a case."*[54]

It might be tempting to jump to the conclusion that under-compensating investors at this time is of little concern if, once the economic cycle turns, the current under-compensation could be off-set by future over-compensation but this is not the case. If, however, there is a mismatch in either direction between prevailing rates and regulatory allowances, then inefficiencies will arise. Firstly, there are costs for the businesses of absorbing inter-temporal fluctuations in returns through explicitly or implicitly carrying a balance sheet provision for such a mismatch. Secondly, at times of under-compensation, timely investments are discouraged or delayed and at times of over-compensation the opposite effect applies and there is an incentive to invest earlier than required. Neither is efficient. Note also that these effects are pro-cyclical which means that the direction of the mismatch encourages businesses to reduce capital expenditures at times that input costs are likely to be low and to increase capital expenditures at times when input costs are likely to be high.

It is appropriate, therefore, that the rules require (as they do) that each determination provides for a regulatory allowance that is commensurate with the prevailing efficient costs for a benchmark firm at the time. In the AEMC's words:

"If the allowed rate of return is not determined with regard to the prevailing market conditions, it will either be above or below the return that is required by capital market investors at the time of the determination. The Commission was of the view that neither of these outcomes is efficient nor in the long term interest of energy consumers."[55]

In the current economic environment, this requires a significant change in the way in which the AER traditionally combines 'on the day' base rates with an extremely long-run average market risk premium.

[54] Federal Energy Regulatory Commission, Opinion No. 531 at paragraphs 158 to 160.

[55] AEMC Rule Determination, 29 November 2012, page 44.

Using an approach in which the regulatory return on equity moves in a 1:1 relationship with base interest rates is contrary to the observed movements in the prevailing cost of equity. On the other hand, we would not assert that the ratio is 0:1. For this reason:

- In implementing the SL-CAPM, we follow Gray and Hall's advice that the Ibbotson and Wright approaches to implementing the SL-CAPM are at opposite ends of a spectrum, and that a moderate and reasonable approach would be to make full use of the empirical results from the application of both methods; and

- We consider it all the more important to blend the results of the capital asset pricing models with the DGM.

3. Implementing the Trailing Average Method for Debt

UE supports the adoption of a regulatory framework that reflects the efficient costs of a benchmark entity. We agree with the AER[56] that both under the old rules and the new rules, efficient debt raising practices have necessitated the management of refinancing risks and that, therefore, the management of efficient debt portfolios necessarily involves the staggering of debt maturities. The annual updating of the rate of return on debt is also commensurate with efficient practice. However, there are a number of ways in which we consider the approach to establishing the allowed rate of return for debt does not reflect the efficient costs of a benchmark firm.

The first consideration concerns the credit rating. In United Energy's view, the benchmark credit rating should be a BBB credit rating based on the median credit rating of the businesses which do not benefit from the implicit support of significant Australian or foreign government equity. We are also concerned that the AER's approach to setting the benchmark credit rating is based on a very small set of comparator firms and that this means that the benchmark is very sensitive to short-run changes in individual firms' credit ratings. The short-term changes in one company's credit rating should not be allowed to exert a significant and unpredictable effect on the regulatory returns set by the AER. To overcome this problem, it is appropriate to:

- Take the median credit rating over a reasonable period so that short-term ratings decisions do not have disproportionate weight. A five-year period would achieve the necessary stability while still providing a measure of the 'prevailing' cost of equity funds.

- Consider how the credit ratings agencies' methodologies would apply to a hypothetical benchmark entity as CEG did in the report submitted by ActewAGL in its regulatory proposal.

The second consideration is that not all the efficient costs have been included in the AER's proposed allowance. The AER draws its benchmarks from independent service providers which report on secondary market trades. However, businesses do not sell their debt in piecemeal quantities in secondary markets. Rather, electricity network businesses must issue bonds in substantial tranches in the primary market and CEG has established that a new issue premium of approximately 27 basis points is borne by electricity network businesses. [57]

We are disappointed that the AER has rejected CEG's work on this matter based on a long list of potential criticisms. Concrete reasons are not provided as to why the criticisms presented are *likely* to apply in relation to CEG's work. On the other hand, many of the criticisms cannot be wholly dispelled without a

[56] AER Rate of Return Guideline Explanatory Statement, 17 December 2013, page 107.

[57] CEG, The New Issue Premium, October 2014.

great deal of work. In this regard, we consider that the AER is applying the wrong analytical test. Instead of seeking to establish an unbiased estimate of the businesses' costs, it has taken the approach that the businesses must justify a claim to a very high probative level. If the AER were to properly apply the relevant test – that is, to arrive at an unbiased estimate, it would have two choices:

- Adopt the advice in the only substantial body of work on the relevant topic (i.e. the work of CEG and the other studies that CEG reviews) pending the production of any further work; or
- Undertake or procure an analysis of whether the potential criticisms of CEG's approach in fact apply.

In addition, to the extent that our operational expenditure or capital expenditure allowances do not make provision for the direct costs of raising debt (i.e. underwriter fees, legal fees and the like) these also need to be included in the WACC calculation.

The third consideration concerns the source of the market data for debt.

In the draft determinations the AER proposes to source the figures as a simple average of the figures available from Bloomberg and from the RBA (each extrapolated out to the 10-year benchmark tenor). In reaching this decision, the AER sought to follow the approach that the Australian Competition Tribunal requires but in our view this was not done properly.

The Australian Competition Tribunal requires that the AER consider for each of the available services: [58]

- Its approach to bond selection and curve specification.
- The past performance of the service.
- Whether the figures published by the service reflect prevailing market conditions at the time the assessment is made.

In the Jemena Gas Networks draft determination, the AER undertook the first two of these assessments but shunned the third, characterising it as an "indirect" and inferior means of assessing which is a better service compared with the first which it described as a "direct" and superior basis for assessing which of the services better merits selection.[59]

UE does not agree that the draft decision adequately test the merits of the two services because there is no assessment of which of the services better reflects prevailing market conditions. Further, to characterise a comparison of the figures published to prevailing market conditions as an "indirect" assessment indicates that the AER has misdirected itself. The rate of return objective requires that the allowance for debt is commensurate with the prevailing costs of a benchmark firm and a comparison of the figures produced by the independent service provider and the underlying market is the most direct way to bring about an allowance that is commensurate.

Since the AER has determined that there should be annual updating of the benchmark debt data itself, it stands to reason that there also needs to be an updated selection of which third party data service to use.

[58] ActewAGL Distribution [2010] ACompT 5; (2010) ATPR 42-324, paragraph 77.

[59] AER, Draft decision, Jemena Gas Networks (NSW) Ltd, Access arrangement 2015–20, Attachment 3; November 2014, pages 3-144.

There is no legal impediment to doing this because it can be automated, and a formulaic process has been proposed by Jemena Gas Networks.

The Jemena Gas Networks draft determination states that should Bloomberg continue to publish a 10-year yield, then it will be used in the 50:50 average calculation in place of an estimate based on extrapolation. We are concerned that this will be done without having tested the Bloomberg 10-year yield, which appears, upon examination, to provide an inferior estimate of the 10-year yield than one based on extrapolation of the RBA curve. We note that SA Power Networks has submitted a report by CEG that suggests Bloomberg is producing the 10-year yield using an extrapolation method that simply employs the shape of the BVAL curve for Australian, Commonwealth Government bonds (Bloomberg curve BI572). CEG demonstrates that there is evidence in May 2015 that the Bloomberg 10-year BBB yield underestimated the yield on a 10-year BBB bond issued by Asciano.

4. An Appropriate Transition Path for Debt

Rule 6.5.2(j) provides that the allowance for debt may be determined using the "on the day" method, or using an average of the costs of debt raised over an historical period prior to the determination, or by applying a combination of the two approaches. Rule 6.5.2(k) provides that the allowance would take account of any impacts on the benchmark efficient firm arising from a change in methodology.

Under the previous regulatory arrangements, an efficient benchmark business needed to manage as best it could:

- refinancing risk (i.e. the risk that it may not be possible or economic to refinance a business's entire debt portfolio at one time or a substantial part of it); and
- the risk of disparities in interest rates between the averaging period used for the "on the day" methodology and the interest rates prevailing at the time at which the debt was actually raised.

In 2009, as part of consultation on the AER's WACC parameter reset determination, the corporate treasurers of Envestra (paragraphs 5.16, 5.17, 6.4 and 6.5),[60] Jemena (see paragraph 5.19, 5.23 and 5.25),[61] SP Ausnet (paragraphs 4.9 to 4.15 and 5.1 to 5.9)[62] and Citipower and Powercor (paragraphs 5.2, 5.4, 7.1 and 7.2)[63] each provided the AER with statements explaining how, under the previous rules, no business would prudently raise all its debt during the "on-the-day" averaging period. Rather all businesses sought to stagger their maturities to avoid refinancing risk and then generally undertook hedging transactions to control their exposures to interest-rate movements as well as they reasonably could.

Although there is an actively traded market for base-rate swaps, there is no equivalent for generic BBB debt and therefore it is not possible to directly hedge movements in the debt risk premium. Indeed an

[60] Statement of Gregory Meredith (Envestra), an appendix to the Joint Industry Associations' submission to the AER on the WACC parameters review of February 2009.

[61] Statement of Sim Buck Khim (Jemena), an appendix to the Joint Industry Associations' submission to the AER on the WACC parameters review of February 2009.

[62] Statement of Alastair Watson (SP AusNet), an appendix to the Joint Industry Associations' submission to the AER on the WACC parameters review of February 2009.

[63] Statement of Andrew Noble (Citipower and Powercor), an appendix to the Joint Industry Associations' submission to the AER on the WACC parameters review of February 2009.

ability to better manage volatility in the debt risk premium is one of the principal advantages of ultimately moving to the trailing average method. This has been acknowledged by the AER:

> *"For an Australian efficient operator there is no market to effectively, and in a cost efficient manner, hedge their DRP."*[64]

The AER has suggested that an efficient benchmark firm would have managed its debt portfolio under the "on the day" approach in the following way:

> *"Given the observed practices of regulated network businesses and the definition of the benchmark efficient entity, we consider that the following practice is likely to constitute* ***an efficient debt financing practice of the benchmark efficient entity*** *[emphasis added] under the current 'on the day' approach:*
>
> - *holding a debt portfolio with staggered maturity dates and using swap transactions to hedge interest rate exposure for the duration of a regulatory control period…"*[65]

Whether a benchmark efficient entity could have used an alternative strategy to also eliminate at least some of the risk associated with shifts in the debt risk premium is an empirical matter.

Under the previous rules, the "on-the-day" methodology was mandatory and the flexibility concerning whether and how the AER might recompense the businesses for their efficient costs was constrained.

Under the new rules, however, the AER has greater flexibility in setting the returns on debt. However:

- It is mandatory under rule 6.5.2(a) and (b) to determine the debt allowance consistent with the rate of return objective which requires that the rate of return be commensurate with the efficient financing costs of the benchmark efficient entity; and

- where there is discretion to be exercised, that it be done in accordance with the revenue and pricing principles of the NEL, including providing network businesses with a reasonable opportunity to recover their efficient costs.

Having made what the AER believes to be the factual finding that it is efficient under the previous rules for a business to raise debt on a staggered basis and to hedge to the averaging period, it would be an error for the AER to not establish the rate of return on a basis that enables the businesses to recover the efficient costs of doing so.

The transition path in the guidelines is not established on that basis and it is at significant risk of failing to comply with the rule 6.5.2(a) and the section 7A of the NEL unless the AER can demonstrate that the transition path in the guideline provides *at least* as high a return as a transition path that is explicitly calculated on the basis of the costs of a business with a portfolio of debt with staggered maturities and hedging.

It would be considerably safer for the AER to make a determination that directly employs its finding concerning the efficient debt portfolio of a benchmark efficient business.

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[64] AER, Better Regulation, Explanatory Statement, Rate of Return guideline, page 122.

[65] AER, Better Regulation, Explanatory Statement, Rate of Return guideline, page 107.

This means that the benchmark efficient firm would transition into the first determination under the new rules with:

- a trailing average DRP; and
- a floating rate exposure (which can be hedged) for the underlying, base rate component of the cost of debt.

Therefore, in making its regulatory determinations, the AER should adopt a position that is consistent with the analysis that it has undertaken and the expert advice that it has received on this issue. A 'hybrid' transitional arrangement is more appropriate than the AER's own form of the transition, as set on the rate of return guidelines. That is, there should be:

- a 10-year transition to a trailing average estimation of the base rate component of the return on debt; and
- no transition for the debt margin (or debt risk premium) component. That is, the AER should immediately move to a trailing average estimation of the debt risk premium component. This means that for the first year of the forthcoming regulatory period, the debt risk premium would be estimated as a 10-year trailing average, and this trailing average estimate would be updated in each subsequent year.

This approach would provide for an estimate of the return on debt which better reflects the required return on debt for the benchmark efficient entity. As noted above, under the efficient financing strategy identified by the AER in the NSW Draft Decisions, the base interest rate component of the benchmark efficient entity's actual return on debt would have been matched with the regulatory allowance set using an "on-the-day" rate, but the debt risk premium component in each year would have reflected the historical (or trailing) average of the debt risk premiums over the previous 10 years.

However, Lally has suggested that employing the "NPV=0" principle means that the AER should not adopt the hybrid transition because it would result in an alleged windfall gain. We support the explanation provided by the Queensland and SA businesses that Lally's views are factually incorrect (because there is no windfall gain), and that seeking to claw back a windfall gain in the way that is proposed is inconsistent with the rationale that underpins incentive-based CPI-X regulation, and with the express provisions in the rules that implement this regulatory framework.

Accordingly, UE submits that the AER should not adopt the transition set out in the Qld/SA Preliminary Determinations and should instead adopt the hybrid transitional arrangement described above. Variants of the hybrid form of the transition to a full trailing average are also available. The variants are oriented around lower hedging ratios.

5. Gamma

Notwithstanding the detailed material set out in the Qld/SA Preliminary Determinations, UE considers that a correct and internally consistent regulatory determination requires that gamma be established based on a *market valuation* as are all the other WACC parameters.

Although gamma is an input into the corporate income tax calculation, the value adopted for gamma ultimately has a role in determining returns for equity-holders. If the value ascribed to imputation credits is higher than the value that equity-holders place on them, then the overall return to equity-holders will be less than what is required to promote efficient investment in, and efficient operation and use of, energy network services for the long-term interests of consumers.

A secondary reason why gamma needs to be established as a market value concerns internal consistency. If a market valuation for gamma is not adopted, then the market valuations of other WACC parameters would not make sense because the valuations rely on market valuations for gamma.

The Qld/SA Preliminary Determinations reject the notion that a market valuation for gamma is required. Instead redemption rates are employed to calculate a pecuniary value that would best be characterised as tracing cash as it flows from one party to the next.

A new report by Gray and Hall has documented[66] the various ways in which the AER has sought to bridge the gap between its cash-tracing methodology (which has undergone a series of name changes in the various AER documents) and the definition in the rules that gamma is the "value" of imputation credits.

Gamma is the product of two quantities:

- A measure of the proportion of the available imputation benefits that are distributed to shareholders (the "distribution rate"); and

- A pecuniary measure of what is being distributed.

It is clear that the first of these quantities – the distribution rate, would ideally be a firm specific measure. Imputation credits can only be distributed to shareholders attached to a dividend and the choice of what proportion of earnings should be distributed is one element of a series of decisions that a business makes concerning its capital needs. The capital needs of firms will vary across firms and hence the distribution rate will also vary across firms. Up until this point, there does not appear to be any major controversy between the AER and the businesses.

The AER objects to taking a firm specific measure for the distribution rate (or a measure from a small sample) on the basis that it might create incentives to manipulate the dividend distribution decisions of the businesses concerned. Consequently, the AER adopts a distribution rate drawn from a panel of companies. While we do not agree that that the incentive effects are likely, our much more substantial objection is that the panel of firms that the AER has used comprises the largest listed ASX companies and these companies are quite unlike the conceptual benchmark efficient firm. The most significant issue is that the largest ASX companies typically have a diverse range of domestic and foreign income sources and are thereby able to achieve a high distribution rate by distributing all (or most) of their domestic income while simultaneously choosing whether or not to retain a significant quantum of unfranked dividends as a source of investment capital.

The benchmark efficient business, however, is a domestic firm that does not have a choice to both distribute a high proportion of its available imputation credits and simultaneously use retained earnings as a source of capital.

Once distributed by each company according to its own decisions concerning its need for capital, imputation credits can effectively be traded between different parties because it is possible to buy and sell stocks on a 'cum' and 'ex' dividend basis. There is, therefore, the potential for significant arbitrage between imputation credits coming from different firms and there is, therefore, a single market value for these credits.

[66] Frontier Economics, An appropriate regulatory estimate for gamma; June 2015.

One way of establishing the value of an imputation credit is from the transactions of willing but not anxious buyers. This is what Gray and Hall[67] do with dividend drop-off studies according to a methodology. Dividend drop-off studies provide an upper limit on the market valuation for imputation credits as explained by Gray and Hall, and by Wheatley, and as such they provide the highest value that the AER should ascribe to theta. Methodologically, Gray and Hall's approach has been thoroughly scrutinised by a broad range of experts and by the Australian Competition Tribunal. In the Qld/SA Preliminary Determinations, the AER has levelled a new round of criticisms at the work of Gray and Hall. Gray and Hall's report responds to those criticisms in full but, even if Gray and Hall had not addressed the criticisms, the AER has not undertaken or procured any equivalent alternative contemporaneous market based valuation and, as such, there is no choice but to adopt that valuation.

Based on Gray and Hall's work, UE considers that 0.35 is the most appropriate market valuation of gamma and combining this with the 70% distribution rate gives a figure of 0.25.

In the latest issue of Accounting and Finance, Siau, Sault and Warren have considered the work of Gray and Hall and of Wheatley. They provide further evidence that imputation credits may not be capitalised into stock prices. While their work raises a series of new questions and possibilities, it is notable that each of these possibilities would imply that a lower value of gamma might be appropriate: [68]

> *"For cost of capital estimation, arguably it is the returns expected by long-term investors that are of most consequence in setting the hurdle rate for companies to achieve. If imputation credits are not priced and hence do not influence expected buy-and-hold returns, then it may be more appropriate for them to be excluded when estimating the cost of capital. This would imply setting so-called θ = 0 under the commonly used imputation adjusted CAPM."*

This peer reviewed journal article is further corroboration of the material that we have previously submitted to the AER which maintains that 0.25 is as high a value as the AER can responsibly set for the gamma.

[67] SFG Consulting, An appropriate regulatory estimate of gamma, May 2014; Frontier Econmics; An appropriate regulatory estimate for gamma; June 2015.

[68] Siau, K-W., S. Sault and G.J. Warren, Are imputation credits capitalised in stock prices? Accounting and Finance, March 2015, pages 241-277 at page 244.