Jemena Electricity Networks (Vic) Ltd

2016-20 Electricity Distribution Price Review Regulatory Proposal

Revocation and substitution submission

Attachment 6-1 Rate of return, gamma, forecast inflation, and debt and equity raising costs

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ABBREVIATIONS

2012 Rule Amendment	November 2012 changes to NER and NGR relating to the allowed rate of return and gamma
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
ARORO	Allowed Rate of Return Objective
BEE	Benchmark Efficient Entity
CEG	Competition Economists Group
CGS	Commonwealth Government Securities
CPI	Consumer Price Index
DGM	Dividend Growth Model
DNSP	Distribution Network Service Provider
DRP	Debt Risk Premium
ERA	Economic Regulation Authority In WA
ERP	Equity Risk Premium
FFM	Fama-French Three Factor Model
Frontier	Frontier Economics
GFC	Global Financial Crisis
Guideline	Rate of Return Guideline
HML	High Minus Low
JEN	Jemena Electricity Networks (Vic) Ltd
MRP	Market Risk Premium
NEL	National Electricity Law
NEO	National Electricity Objective
NER	National Electricity Rules
NGL	National Gas Law
NGR	National Gas Rules
NSW and ACT merits reviews	NSW Electricity Distributors (Ausgrid, Endeavour Energy, Essential Energy), the ACT Electricity Distributor (ActewAGL), And The NSW Gas Distributor (JGN)
Optimal NEO Position	The position which contributes to the achievement of the NEO to the greatest degree and best promotes the long term interests of consumers of electricity
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
PTRM	Post-Tax Revenue Model

S&P	Standard and Poor's
SAPN	SA Power Networks
SMB	Small Minus Big
SLCAPM	Sharpe-Lintner Capital Asset Pricing Model
Tribunal	Australian Competition Tribunal

OVERVIEW

Table OV–1: Overview of our response to the preliminary decision on rate of return, gamma, inflation and debt and equity raising costs

Components of rate of return	Preliminary decision	Our response to AER PD	Our submission
Return on equity	Rejected our proposal to use multi models and instead relied on a single model and our proposed inputs to it	✖	Retains our April 2015 proposal, and responds to the preliminary decision by showing how to adjust for bias if only a single model is used based on new evidence responding to issues raised in the preliminary decision
Gamma	Rejected our proposal and instead adopted a gamma of 0.40	✖	Retains our April 2015 proposal for a value of 0.25, in part based on new evidence responding to issues raised in the preliminary decision
Return on debt	Rejected our proposal, including on how to transition to the trailing average return on debt, and instead retained the approach in the rate of return guideline	✖	Responds to the preliminary decision by proposing an immediate transition to the trailing average return on debt and retains our proposed method for estimating the prevailing return on debt, again based on new evidence responding to issues raised in the preliminary decision
Forecast inflation	Adopts 2.50%, using a method that tends towards the mid-point of the Reserve Bank of Australia's inflation target range (i.e. 2.50%)	✖	Relies on market data to propose forecast inflation of 2.19%, consistent with how the other rate of return parameters are estimated
Debt and equity raising costs	Rejected some of our proposed debt raising costs, but accepted our proposed equity raising costs	≈	Adopts the preliminary decision on the basis that that these costs may be partly (but not entirely) compensated for through the timing assumptions in the PTRM

Key messages

- We need to be able to earn a fair rate of return on capital to continue investing in our network in a manner that best promotes the Optimal NEO Position.[1] This rate of return must also comply with the allowed rate of return objective.[2]
- Our April 2015 proposal included a rate of return of 7.18% in the first year of the 2016 regulatory period—which is significantly lower than our allowed rate of return for the 2011 regulatory period (10.33% per annum). This reflects the easing in market conditions after heightened perceptions of risk during the global financial crisis (**GFC**).
- We also proposed that our rate of return be updated in each of the remaining years to account for movements in the return on debt and ensure that the benefits of further reductions in interest rates are passed on to our customers.
- The preliminary decision does not provide for an overall rate of return that is consistent with the allowed rate of return objective (**ARORO**) and does not promote the NEO (and as such cannot best promote the Optimal NEO Position) as:
  - The allowed rate of return is not commensurate with the efficient financing costs of a benchmark efficient entity (**BEE**) with a similar degree of risk as that which applies to Jemena Electricity Networks (**JEN**) in respect of our distribution services
  - The value of imputation credits is over-estimated, meaning that the reduction to the overall return to account for imputation credits is too large
  - The Australian Energy Regulator's (**AER's**) forecast of inflation does not reflect current market expectations, which means that the preliminary decision over-estimates the return that investors will receive from indexing the regulatory asset base (**RAB**).
- Our submission includes a rate of return of 8.62% in the first year of the 2016 regulatory period—which is higher than our April 2015 proposal because of an upward shift in the risk free rate. Our submission also includes forecast inflation of 2.19% per year, which is lower than our April 2015 proposal because it is estimated using a method that better reflects current market conditions.
- Our proposed rate of return in this submission reflects the efficient costs associated with borrowing in debt markets and providing returns to investors in equity markets, and reflects the risks associated with providing distribution and metering services to our customers over the 2016 regulatory period—and therefore promotes the Optimal NEO Position.
- We note that the Australian Competition Tribunal (the **Tribunal**) is currently considering the merits of rate of return, gamma and inflation proposals that are similar to ours. Our submission is made without knowing the Tribunal's position on these proposals, and so we may need to reconsider these once this position becomes known.

1. This section summarises our submission on the allowed rate of return, the value of imputation credits (gamma), the method for forecasting inflation, and debt and equity raising costs.[3] These topics are addressed together in this section because they each impact on the overall return to investors.

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1 The 'Optimal NEO Position' is the position which contributes to the achievement of the national electricity objective to the greatest degree and best promotes the long term interests of consumers of electricity.

2 NER, cl. 6.5.2(b).

3 The April 2015 proposal (together with any supporting material contained or referred to in the April 2015 proposal) is incorporated into, and forms part of, this submission.

2. Specifically:

- **Rate of return**—under the National Electricity Rules (**NER**), the allowed rate of return is the post-tax return allowed to investors, calculated as a weighted average of the return on equity and return on debt[4]
- **Gamma**—represents the value of imputation credits to investors associated with the payment of company tax. This value effectively forms part of the overall return to equity investors
- **Forecast inflation**—is used to adjust the cash flows to maintain a real rate of return framework.[5] It thus has an important interrelationship with the rate of return, and impacts on the overall return to investors—it is akin to capital gains earned on an investment. If inflation is not forecast correctly, the adjustment to cashflows may be too large (or too small) and thus investors may receive an overall return that is too low (or too high).
- **Debt and equity raising costs**—is the allowance for raising debt and equity from time to time, and includes the transaction and related costs of raising this capital.

3. In order to promote the national electricity objective (**NEO**), the overall return to investors must be sufficient to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers. Critical to the promotion of efficient investment is that businesses are provided with a reasonable opportunity to recover efficient costs (i.e. the costs that would be incurred by an efficient business in a workably competitive market).

4. This means that:

- The return on debt allowance must provide a reasonable opportunity to recover at least the efficient debt financing costs of a BEE with a similar degree of risk as that which applies to JEN in respect of the provision of standard control services
- The return on equity allowance must reflect returns required by equity investors to invest in businesses facing a similar degree of risk
- Gamma must reflect the value that equity-holders place on imputation credits (not simply their face value or utilisation rate)—if the value of imputation credits is over-estimated, 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, electricity services for the long term interests of consumers, and
- The inflation forecast must reflect market expectations of inflation over the 2016 regulatory period.

5. The preliminary decision does not provide for an overall return that is consistent with the NEO. For reasons set out in this attachment

- The allowed rate of return is not commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to our business in respect of the provision of standard control services
- The value of imputation credits is over-estimated, meaning that the reduction to the overall return to account for imputation credits is too large, and
- The forecast of inflation is also over-estimated, meaning that the reduction to the overall return to account for expected indexation of the RAB is too large and otherwise does not reflect current market expectations.

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4 NER, cl 6.5.2(d).

5 While the PTRM is a nominal model in that it has nominal inputs including for the rate of return, the PTRM is properly understood as embodying a real rate of return framework. This model derives a real revenue path for the 2016 regulatory period—expressed in terms of the real X factor for each regulatory year of that period—that includes compensation for a real rate of return (which is effectively derived by the PTRM by taking a nominal input for the return on debt and equity and deducting forecast inflation).

6. This section of our submission explains our specific concerns with the preliminary decision in relation to the rate of return, value of imputation credits and forecast inflation.

7. As explained below, in some areas (such as the benchmark gearing level and term of debt) we agree with the AER's position in the preliminary decision. To the extent that the AER proposes to change its position in any of these areas in its final decision, JEN would need to be informed of that, and provided with a reasonable opportunity to respond.

ACHIEVING THE ALLOWED RATE OF RETURN OBJECTIVE

8. The ARORO is the touchstone for estimating the allowed rate of return. The NER require that:

   - The return on equity for a regulatory period be estimated such that it contributes to the achievement of the ARORO,[6] and
   - The return on debt for a regulatory year be estimated such that it contributes to the achievement of the ARORO.[7]

9. The ARORO is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the service provider in respect of the provision of standard control services.[8]

10. As can be seen, the ARORO has two key elements:

    - *First*, the ARORO requires one to identify the level of risk that applies to the service provider in respect of the provision of standard control services, and
    - *Second*, the ARORO also requires one to estimate efficient financing costs for a BEE facing a similar degree of risk.

11. We consider that the relevant level of risk is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia. Therefore, in constructing comparator datasets to estimate a rate of return that is commensurate with efficient financing costs of a BEE, these datasets should include entities that face a similar degree of risk to that faced in the provision of electricity distribution services. That is, they should not be restricted to regulated entities.

12. If we are wrong about this (such that the relevant level of risk is that of regulated energy network), then 'efficient financing costs' in the ARORO refers to costs incurred—and therefore financing practices adopted—in a workably competitive market to finance an investment with that risk profile. Regardless of what the relevant degree of risk is, once this risk benchmark is established, assessing efficient financing costs requires one to consider what financing practices businesses operating in a workably competitive market, facing the relevant degree of risk, would engage in.

13. Such an interpretation of the term 'efficient financing costs' in the ARORO is consistent with the object of regulation itself—which is to simulate competitive market outcomes. This is because it is ultimately competition that drives efficient behaviour and is the benchmark that the National Electricity Law (**NEL**) seeks to replicate. The 'workably competitive market' concept is described in more detail in section 1.2 below.

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6 NER, cl 6.5.2(f).

7 NER, cl 6.5.2(h).

8 NER, cl 6.5.2(c).

CURRENT PROCEEDINGS

14. Many of the issues dealt with in this attachment are the subject of applications for merits review of the AER's distribution determinations for:

- The NSW electricity distributors (Ausgrid, Endeavour Energy, Essential Energy), the ACT electricity distributor (ActewAGL), and
- The NSW gas distributor (JGN)

(collectively the **NSW and ACT merits reviews**).

15. These issues include the approach taken by the AER to estimating gamma and the return on equity and the methodology to estimate the return on debt.

16. The applications were heard in September and October 2015. Once the decision of the Tribunal has been published, we will review the decision and consider the implications, if any, of that decision for the determination the AER is required to make for JEN. To the extent we consider that the decision does have implications for its determination, we will make any submissions to the AER on those implications as soon as practicable after the Tribunal's decision has been published and considered by JEN.

RETURN ON DEBT

17. As became clear from the detailed consideration of the return on debt issue in the NSW and ACT merits review processes, the method that the preliminary decision adopts for estimating the return on debt will not deliver a return on debt estimate which contributes to the achievement of the ARORO and the NEO. The ARORO is concerned with the financing costs and practices that are efficient in the economic sense—that is, the financing costs incurred, and practices adopted, in a workably competitive market.

18. As set out below, the debt management practice that is expected absent regulation is the holding of a staggered portfolio of fixed rate debt, the cost of which can be estimated by the trailing average approach. Given the intent of regulation is to replicate, insofar as possible, the outcomes expected in workably competitive markets, the efficient financing costs estimated pursuant to clause 6.5.2 of the NER should be estimated using the trailing average approach and this approach should be adopted without any transition (referred to in the preliminary decision as 'Option 4').

19. The preliminary decision transition to the trailing average approach will lead to a return on debt allowance for the 2016 regulatory period that is below the efficient financing costs of a BEE for that period. This is because:

- **The preliminary decision was wrong to look at what regulated firms did under regulation previously.** The preliminary decision proceeds on the incorrect premise that the efficient financing costs of a BEE are those that would be incurred under the financing practices that would emerge under the previous regulatory approach to estimating the return on debt. The correct approach is to identify the efficient financing costs of a BEE—which are the costs that would be incurred in a workably competitive market or, put another way, the costs that would be incurred absent regulation.

- **The trailing average approach better reflects actual debt management practices absent regulation.** The preliminary decision considered that the trailing average approach may better reflect the actual debt management approaches of non-regulated businesses and, therefore, more likely to represent efficient financing practice.[9] The preliminary decision found that the efficient financing practice under the trailing average approach is to hold a staggered portfolio of fixed rate debt.[10] The efficient financing costs of a BEE are thus the costs associated with a staggered portfolio of fixed rate debt.
- **Expert evidence supports the trailing average approach.** Expert advice from Competition Economists Group (**CEG**) confirms that a 10 year trailing average approach would largely mimic the debt management strategy employed by unregulated infrastructure businesses.[11]
- **There is no reason to delay implementing the trailing average approach.** Given that the costs associated with a staggered portfolio of fixed rate debt are best approximated by a trailing average approach, immediately implementing that approach to estimate the return on debt will provide an allowance that reflects efficient financing costs. Conversely, applying a transition that results in the return on debt being different from efficient financing costs will, by definition, lead to an allowance that is not commensurate with the efficient debt financing costs of a BEE.

20. For these reasons, we consider that the trailing average approach should be implemented immediately, with no transition.

21. Alternatively, even if the preliminary decision approach of estimating efficient financing costs by reference to the financing practices that would emerge under regulation were correct, the appropriate approach would be to adopt a hybrid form of transition where only the hedged base rate component of the return on debt is subject to a transition (referred to in the preliminary decision as 'Option 3'). This is because the AER has concluded that under the previous on-the-day approach to estimating the return on debt, an efficient financing practice would have been to engage in hedging of the base rate. By contrast, the AER has conceded that the debt risk premium (**DRP**) component of the return on debt cannot be (and could not have been) hedged, with the result that there is no reason for a transition to be applied to it.

22. If the hybrid transition is adopted, it is then necessary to consider to what degree hedging would have been 'efficient' by reference to the objectives the AER considers the financing practice under the on-the-day approach would have sought to achieve. While the AER's reasoning assumes that the efficient level of hedging was 100%, this is incorrect as a matter of fact and the evidence demonstrates that the efficient level of hedging of the base rate under an on-the-day approach to estimating the return on debt is significantly less than 100%.

23. On any view of what are efficient financing costs, the AER's transition cannot be justified. Even on the AER's view of the correct approach to estimating efficient financing costs, and assuming that the BEE hedged the base rate 100%, application of the AER's transition would lead to a mismatch between efficient financing costs and the regulatory allowance on the DRP component as the DRP could not have been hedged by a BEE.

24. In respect of implementation issues, the AER should:

- Adopt a benchmark credit rating of BBB+, as in the preliminary decision
- Continue to adopt a benchmark term of 10 years
- For the first regulatory year, use the fair value curve or combination of curves published by independent third parties that best fits observed bond yields, and

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9 AER, *Rate of return guideline: Explanatory Statement*, December 2013, pp 108–111.

10 AER, *Rate of return guideline: Explanatory Statement*, December 2013, pp 108–110.

11 CEG, *Efficiency of Staggered Debt Issuance*, February 2013, [92], [97], [101] and [102].

- For subsequent regulatory years, apply that same method to future averaging periods if the curves diverge sufficiently and adopt a simple average of them if not.

25. While we agree with the preliminary decision to adopt a benchmark credit rating of BBB+, for the reasons set out in this submission we submit that the evidence supports a credit rating of BBB to BBB+. For this reason, the preliminary decision to set the return on debt by reference to data for a BBB broadband credit rating when the AER considers that the benchmark is BBB+ cannot be viewed as an 'outcome towards the end of the range of options that may be favourable to the businesses'.[12] Rather, in light of the evidence that an appropriate credit rating assumption is in the range of BBB to BBB+, using a broad BBB band data series is entirely appropriate.

26. Our proposed method for estimating the return on debt does not make any allowance for a new issue premium. In light of evidence supporting a positive and significant new issue premium, making no allowance for this premium (as JEN does) is conservative in that it is likely to lead to under-estimation of the efficient financing costs of a BEE.

RETURN ON EQUITY

27. The method adopted in the preliminary decision does not result in a return on equity that is consistent with the ARORO.

28. The evidence before the AER is that its estimate is too low. In particular, the preliminary decision estimate:

- Fails a number of the AER's own cross-checks
- Is below all available and relevant evidence as to the return on equity required by investors.

29. This outcome is the result of:

- The preliminary decision relying solely on the output of a model that is known to produce biased estimates, without correcting for this bias
- The preliminary decision applying this model in a way that does not reflect market practice and which results in the return on equity simply tracking movements in the risk-free rate, and
- Errors in interpretation and use of key evidence, including empirical evidence relating to the estimation of the market risk premium (**MRP**) and equity beta.

30. The ARORO is best achieved through an approach that properly has regard to estimates from all relevant return on equity models. In our April 2015 proposal, we proposed that:

- Each of the Sharpe-Lintner capital asset pricing model (**SLCAPM**), the Black CAPM, the Fama-French three factor model (**FFM**) and dividend growth model (**DGM**) be estimated, and that
- These estimates each be given appropriate weight in deriving a return on equity estimate.

31. We maintain our view that this approach would best achieve the ARORO.

32. However, if the final decision continues to rely solely on the SLCAPM to estimate the return on equity, it becomes even more important that the estimates of the MRP and equity beta are calculated in a manner that has proper regard to relevant material to ensure that the return on equity estimate is consistent with the ARORO

[12] Preliminary decision (Overview), p 50.

and reflects prevailing market conditions. Of particular importance are the DGM estimates for the MRP and evidence from wider datasets for the equity beta.

33. This submission outlines an alternative approach that involves properly adjusting SLCAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:

- Determining a robust 'starting point' equity beta estimate, based on a sufficiently large sample of comparable businesses
- Making a transparent and empirically based adjustment to the equity beta estimate to account for the known shortcomings of the SLCAPM, particularly low beta bias and book-to-market bias, and
- Deriving the MRP in a way that gives appropriate weight to measures of the prevailing market conditions (i.e. the prevailing MRP).

34. This alternative approach leads to an estimate of the prevailing return on equity of 9.9%.

GEARING

35. JEN maintains its proposed gearing ratio of 60%, accepted in the preliminary decision, for the reasons set out in our April 2016 proposal, and the preliminary decision. This gearing assumption is broadly consistent with evidence of gearing ratios for businesses operating in a workably competitive market providing services similar to standard control services.

GAMMA

36. The preliminary decision estimate of gamma does not reflect the value of imputation credits to investors. The preliminary decision over-estimated gamma—meaning that the reduction to the overall return to account for imputation credits is too large.

37. The preliminary decision approach to estimating gamma is premised on an incorrect interpretation of the NER. That decision seeks to estimate gamma on a 'pre-personal-costs' basis—which is equivalent to estimating gamma as the *rate of utilisation* (or assumed utilisation) of imputation credits, rather than their value to investors.

38. As a result, the preliminary decision errs in how evidence on gamma is used. Specifically, that decision:

- Uses equity ownership rates as direct evidence of the value of distributed credits (theta), when in fact equity ownership rates are no more than an upper bound (or maximum) for this value
- Uses redemption rates as direct evidence of the value of distributed credits (theta), when in fact redemption rates are no more than an upper bound (or maximum) for this value, and
- Concludes that market value studies can reflect factors, such as differential personal taxes and risk, which are not relevant to the task of measuring theta; market value studies are direct evidence of the value of imputation credits to investors.

39. Further, the preliminary decision made errors in how key evidence is interpreted and used, including by proceeding on the incorrect footing that estimates of theta based on data for listed companies can only be combined with estimates of the 'listed equity' distribution rate.

40. On a proper interpretation of the empirical evidence:

- Both tax statistics and equity ownership data indicate that theta can be no higher than 0.45, and that therefore the upper bound for gamma is 0.3
- The best evidence as to the value of imputation credits—from SFG's updated dividend drop-off study—indicates that theta is approximately 0.35 and that gamma is 0.25.

41. Even if the interpretation of the provisions relating to gamma as set out in the preliminary decision is correct (which JEN disputes), a gamma of 0.40 cannot be supported. The evidence demonstrates that if gamma is estimated on a '*pre personal costs*' basis, the best estimate is approximately 0.3.

FORECAST INFLATION

42. Recent market evidence demonstrates that the forecasting method in the preliminary decision is currently over-estimating inflation.

43. The consequence of this is that:

- The inflation forecast used to make adjustments to cash flows is inconsistent with the forecast of inflation implied in the nominal rate of return, and
- The downward adjustment to depreciation cash flows will be too large—thus artificially depressing the overall return to investors.

44. We propose that an alternative forecasting method, based on market data, is adopted. This alternative method will ensure consistency between the inflation forecast used to make adjustments to cash flows and the forecast of inflation implied in the nominal rate of return.

45. We propose forecast inflation of 2.19%.

DEBT AND EQUITY RAISING COSTS

46. Debt and equity raising costs are an important part of efficient financing costs. Although we broadly agree with the preliminary decision on these costs and adopt the position in the preliminary decision in our submission, we do not agree with the extent of generosity in the post-tax revenue model (**PTRM**)—if any—suggested in that decision.

INTERRELATIONSHIPS

BETWEEN MRP AND GAMMA

47. There is a well-recognised interrelationship between the return on equity and the value of imputation credits—since the MRP needs to be grossed up for the value of imputation credits, a higher theta estimate implies a higher required return on equity.

48. Importantly:

- This interrelationship is accounted for in this submission and the supporting expert advice.

- If the final decision were to reduce theta to 0.35, while maintaining its current approach to estimating the MRP, no adjustment to the AER's MRP estimate would be necessary—this is because the top of the preliminary decision's range of estimates of the historical average MRP (used in the preliminary decision as the MRP point estimate) would remain at 6.5%.[13]

BETWEEN FORECAST INFLATION AND DEPRECIATION

49. There is also an interrelationship between the method for forecasting inflation and the amount that is deducted from the annual revenue requirement for indexation of the RAB, and between the allowed rate of return and the method for forecasting inflation.

50. Due to these interrelationships, the forecast of inflation needs to be accurate (i.e. as close as possible to actual inflation) and consistent with the implied forecast of inflation in the nominal rate of return. The best way to do this is to rely on the same dataset (i.e. market prices of securities) to estimate both.

BETWEEN EQUITY BETA AND THE RETURN ON DEBT TRANSITION

51. We do not accept that there is an interrelationship between the method for transitioning to the trailing average approach to estimating the return on debt and the equity beta. As noted by Chairmont, the required return on equity is not affected by the DRP mismatch risk as it is a diversifiable specific risk rather than a component of market systematic risk.[14]

52. Therefore, any change in the approach to estimating the return on debt (including any change to the transition method) will not affect the equity beta.

BETWEEN THE RETURNS ON EQUITY AND DEBT

53. Finally, we consider that the return on equity and return on debt need to be estimated on the basis of a consistent approach to the ARORO. As explained below, our proposed approaches to estimating the return on equity, return on debt, and the overall rate of return (as set out in section 8) are consistent with the approach to the ARORO described in section 1 below.

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[13] For reasons set out in section 3.4, we do not agree with the preliminary decision approach to estimating the MRP. However, we note that if the final decision were to maintain the same approach to estimating the MRP while lowering theta, the MRP would not need to change.

[14] Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 40.

1. BACKGROUND

1.1 RECENT CHANGES TO THE RATE OF RETURN RULES

54. The rules relating to the allowed rate of return and gamma were amended in November 2012 (the **2012 Rule Amendment**). A key change removed the requirement to estimate the return on equity using the SLCAPM. This was replaced with a requirement to estimate the return on equity such that it contributes to the achievement of the ARORO, having regard to relevant estimation methods, financial models, market data and other evidence.

55. In making the rule amendments, the Australian Energy Market Commission (**AEMC**) stated that the amendments provided the regulator with flexibility to adopt the approach it considers appropriate to estimate the rate of return, 'provided it considers relevant estimation methods, financial models, market data and other information'. The AEMC noted that:[15]

> *This is so the best estimate of the rate of return can be obtained that reflects efficient financing costs of the service provider at the time of the regulatory determination.*
>
> *In this way, the regulator can better respond to changing financial market conditions, particularly where volatile market conditions impact on a service provider's ability to attract sufficient capital to finance the expenditure necessary to provide a reliable energy supply to consumers.*

56. In relation to the return on equity, a key driver of the rule changes was a concern that estimation of the return on equity had become overly formulaic, and unduly bound to a single model (the SLCAPM). Such a concern was expressed by the Expert Panel on Limited Merits Review:[16]

> *Put bluntly, at the moment the AER is required to proceed, as a matter of law, on the basis of a model that is known to abstract from a factor considered (in the Panel's view, rightly) to be a matter of such significance (i.e. regulatory risk or uncertainty) that it is afforded special mention in the revenue and pricing principles section of the NEL.*
>
> *That this is more than a theoretical point is indicated by the fact that the Financial Investors Group told us that they had been concerned about the narrow, CAPM focus of the regulatory approach to date, and had urged the AER to pay more attention to conditions in capital markets themselves (in contrast to models of those markets). Whilst the Panel believes that the AER has rather more discretion than the AER itself appears to believe it has, it does appear to be the case that there is an inconsistency in the current combination of laws and rules that is impeding a more realistic, market-focused approach to the determination of returns on capital.*
>
> *The practical relevance of the problem has also been illustrated by the ACT's recent ATCO decision, the detail of which the Panel has not yet had time to fully absorb. In the name of regulatory certainty, the decision appears to elevate the standing of the CAPM in the NGR to something akin to its standing in the NER. The Panel is concerned that binding regulatory decisions hand and foot to a financial model **with known defects** does not immediately commend itself as an approach that will advance the NEO and NGO. [Emphasis added.]*

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15 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, November 2012, p iii.

16 Professor George Yarrow, The Hon Michael Egan, Dr John Tamblyn, *Review of the Limited Merits Review Regime: Stage One Report*, 29 June 2012, pp 41-42.

57. The AEMC echoed this concern in its rule determinations, and accordingly devised a new framework for estimating the rate of return that required the regulator to consider a wider range of models and estimation techniques. In its draft rule determination, the AEMC stated:[17]

> *The rate of return estimation should not be formulaic and be driven by a single financial model or estimation method. The estimation approach to equity and debt components should include consideration of available estimation methods, financial models, market data and other evidence to produce a robust estimate that meets the overall rate of return objective. This means giving the regulator discretion on how it should estimate these components, rather than limiting the estimation process to a particular financial model or a particular data source.* ***In the context of estimating the return on equity, the estimation should not be limited to the standard CAPM, but should consider other relevant evidence****. [Emphasis added.]*

58. The AEMC, like the Expert Panel on Limited Merits Review, clearly considered that an estimation approach that was limited to a single model would not best meet the NEO and the revenue and pricing principles. Rather, the AEMC considered that estimates are likely to be more robust and reliable if they are based on a range of estimation methods. The AEMC explained:[18]

> *There are a number of other financial models that have varying degrees of weaknesses. Some of the financial models that have gained some prominence include the Fama-French three-factor model, the Black CAPM, and the dividend growth model. Weaknesses in a model do not necessarily invalidate the usefulness of the model.* ***Ultimately, it is important to keep in mind that all these financial models are based on certain theoretical assumptions and no one model can be said to provide the right answer****.*
>
> *Given that there are other financial models and methods for estimating the cost of equity capital that vary in their acceptance academically and consequent usage by market practitioners, restricting consideration to the CAPM alone would preclude consideration of other relevant estimation methods.*
>
> ***The Commission is of the view that estimates are more robust and reliable if they are based on a range of estimation methods, financial models, market data and other evidence****. A framework that eliminates any relevant evidence from consideration is unlikely to produce robust and reliable estimates, and consequently is unlikely to best meet the NEO, the NGO and the RPP. [Emphasis added.]*

59. The changes to the return on debt rules were at least partly driven by a concern that the 'on-the-day' approach to estimating the return on debt previously required by the NER did not reflect efficient financing practices engaged in by businesses operating in competitive markets. The AEMC considered that the NEO would be advanced by an approach that better aligned with the efficient financing and risk management practices expected in the absence of regulation.

60. The AEMC also indicated that a fundamental policy objective in amending the allowed rate of return framework was to provide flexibility to consider changing market conditions by making necessary adjustments to the method for estimating the return on debt.[19]

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17 AEMC, Draft Rule Determinations: Draft National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; Draft National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, August 2012, p 47.

18 AEMC, Draft Rule Determinations: Draft National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; Draft National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, August 2012, p 48.

19 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, pp. 44, 45-46, 49 and 55-56.

61. The AEMC emphasised the intention of the amended rule to align the return on debt estimate with the return required by investors of debt capital issued by a benchmark efficient service provider: [20]

> *The return on debt estimate represents the return that investors of debt capital would require from a benchmark efficient service provider. Aligning the return on debt estimate with the efficient expected cost of debt of a service provider is therefore an important element in determining the rate of return.*

62. The 2012 Rule Amendment amended clause 6.5.2 of the NER to explicitly permit the return on debt methodology to be designed to reflect an average return that would have been required by debt investors in a BEE if it raised debt over an historical period. The AEMC considered that the amendment would permit the adoption of the trailing average approach to estimate the return on debt, which would better align efficient debt costs with the regulatory allowance:[21]

> *The Commission's rate of return framework draft rule proposal provides the flexibility for the regulator to consider alternative approaches to estimating the return on debt, including historical trailing average approaches that may better align the debt servicing costs of an efficiently run service provider with the regulatory estimate of the return on debt.*

63. While the amended rules did not specify the methodology to use when estimating the return on debt, the AEMC was clear in the guidance set out in its final rule determination that whatever methodology was used, it should result in a regulatory allowance for the return on debt that reflects financing practices (and ultimately costs) that, insofar as possible, would be expected absent regulation:[22]

> *In its draft rule determination, the Commission considered that the long-term interests of consumers would be best served by ensuring that the methodology used to estimate the return on debt reflects, to the extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation.*

64. The AEMC went on to consider whether it should depart from this approach in the draft determination, and concluded that (relevantly) there should be no change. Further, the AEMC observed that the NEO and the revenue and pricing principles are more likely to be met by a methodology that allows the AER to more accurately match debt conditions in the market for funds.[23]

1.2 THE ARORO

65. Under the rules as amended by the AEMC, the ARORO is the touchstone for estimating both the return on equity and the return on debt. The NER require that:

- The return on equity for a regulatory period be estimated such that it contributes to the achievement of the ARORO,[24] and

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20 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, p. 73.

21 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determinations, 23 August 2012, p. 78.

22 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, p. 76.

23 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, p. 86.

24 NER, cl 6.5.2(f).

- The return on debt for a regulatory year also be estimated such that it contributes to the achievement of the ARORO.[25]

66. The ARORO is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the service provider in respect of the provision of standard control services.[26]

67. As can be seen, the ARORO has two key elements:

- *First*, the ARORO requires one to identify the level of risk that applies to the service provider in respect of the provision of standard control services
- *Second*, the ARORO requires one to estimate efficient financing costs for a BEE facing a similar degree of risk as that service provider.

68. The relevant level of risk is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia. Therefore, in constructing comparator datasets for estimating a rate of return that is commensurate with efficient financing costs of a BEE, these should include entities that face a similar degree of risk to that faced in the provision of electricity distribution services. That is, they should not be restricted to regulated entities.

69. For example, as will be discussed below:

- **Equity beta**—in estimating the equity beta for a BEE facing a similar degree of risk as that which applies to the service provider in respect of the provision of standard control services, businesses in other sectors and other countries that face a similar degree of risk should be included in the dataset
- **Return on debt**—in estimating the return on debt, yields are measured using benchmark indices for the relevant credit rating band, with those indices reflecting bond yields across a wide range of businesses within that credit rating band (i.e. a range of different businesses facing a similar degree of risk, including businesses operating in competitive markets).

70. If we are wrong—such that the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NEL—then 'efficient financing costs' in the ARORO must refer to costs incurred (and therefore financing practices adopted) in a workably competitive market to finance an investment with that risk profile.

71. Moreover, even if the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NER / NEL, in many cases one must look beyond just those businesses that supply regulated energy network services within Australia in order to produce sufficiently large datasets for the estimation of risk parameters. Specifically, for equity beta, given that the sample of Australian energy network businesses is too small, the dataset for estimating risk parameters needs to be enlarged by adding other businesses facing a *similar* degree of risk (such as other Australian businesses or those from the US).

72. Once the relevant degree of risk is established, the task is then to estimate the efficient financing costs of a BEE facing a similar degree of risk. As noted above, regardless of what the relevant degree of risk is, once this risk benchmark is established, assessing efficient financing costs requires one to consider what financing practices businesses operating in a workably competitive market (and facing the relevant degree of risk) would engage in. Such an interpretation of the term 'efficient financing costs' in the ARORO is consistent with the object of regulation itself—which is to simulate competitive market outcomes. This is because it is ultimately competition that drives efficient behaviour.

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25 NER, cl 6.5.2(h).

26 NER, cl 6.5.2(c).

73. The rationale for economic regulation of network assets is to, insofar as possible, mimic the operation of, and replicate the outcomes in, a workably competitive market. This is because, by reason of the adjustments to quantity and pricing that occur in response to changes in these markets, it is in such markets that economic efficiency is achieved. For example, the Expert Panel on Energy Access Pricing has noted:[27]

> *The central objective of price control is to constrain the exercise of market power by firms that do not face effective competition for their services. Regulation and, specifically, the periodic determination of maximum prices or revenue is directed at achieving outcomes that could otherwise be expected from effective competition.*

74. The Expert Panel noted that regulatory regimes typically set prices by reference to costs because costs associated with supply are a central element of pricing outcomes in competitive markets:[28]

> *Virtually all regulatory regimes set controlled prices by reference to an assessment of costs. The reason is that the cost of supply – in conjunction with the role of consumer preferences in determining the appropriate service and product mix – is a primary driver of price outcomes in effectively competitive markets.*

75. The AEMC has commented on the objective of regulation in similar terms to the Expert Panel:[29]

> *The role of incentives in regulation can be traced to the fundamental objective of regulation. That is, to reproduce, to the extent possible, the production and pricing outcomes that would occur in a workably competitive market in circumstances where the development of a competitive market is not economically feasible.*

76. The AEMC has also noted that regulatory arrangements attempt to mimic competitive markets given that economic efficiency is achieved in those markets. In the context of electricity transmission, which is subject to a similar regulatory framework to electricity distribution, the AEMC stated:[30]

> *TNSPs, like most businesses, operate in an uncertain environment. Uncontrollable, external events as diverse as changes in economic growth, climate and regulatory obligations can alter the quantity and nature of the services required to be provided by TNSPs. In a normal competitive market, production and pricing behaviour adjusts in response these changes. In these markets, efficient producers are able to recover their costs and should generally earn at least a normal return on their investments. As highlighted above, the regulatory arrangements need to mimic the operation of a competitive market as closely as possible.*

77. The term 'workably competitive market' refers to a market in which no firm has a substantial degree of market power and in which market forces increase efficiency beyond that which could be achieved in a non-competitive market, even if perfect competition is not attained.

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27 Expert Panel on Energy Access Pricing, *Report to the Ministerial Council on Energy*, April 2006, p 118.

28 Expert Panel on Energy Access Pricing, *Report to the Ministerial Council on Energy*, April 2006, p 98.

29 AEMC, *Draft National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006, Rule Determination*, 16 November 2006, p 96.

30 See for example: AEMC, *National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006, Rule Determination*, 16 November 2006, p 54; and AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p 182.

78. These concepts were explored by the Western Australian Supreme Court in the context of section 8.1 of the Gas Code that set out general principles applying to reference tariffs, which included that reference tariffs should be designed with a view to achieving the objective of replicating the outcome of a competitive market:[31]

> *Workable competition is said originally to have been developed over half a century ago by anti-trust economists. In simple terms it indicates a market in which no firm has a substantial degree of market power…I am left with the clear impression that in the field of competition policy, especially market regulation, the prevailing view and usage among economists is that a reference to a competitive market is to a workably competitive market. In the particular context of the promotion of a competitive market for natural gas it would be surprising if what was contemplated was a theoretical concept of perfect competition, as the subject matter involves very real-life commercial situations. Workable competition seems far more obviously to be what is contemplated. This is clearly consistent with the approach of the Hilmer Report…*

79. The Court went on to set out its interpretation of the requirement to replicate the outcome of a competitive market in the context of a regulatory framework applying to monopoly infrastructure:[32]

> *What is in contemplation in s 8.1(b) is a competitive market in the field of gas transportation. The objective is to replicate what would be the outcome if there was competition for the transportation of gas by the pipeline in question, even though it is the premise of the Act and the Code that the pipeline is in a monopoly situation and it would be uneconomic to construct another. The objective seems to necessitate the application of economic methods and theory, albeit to replicate the outcome of a workably competitive market, because the achievement of competition in fact is not possible.*

80. The Court then discussed the relationship between efficiency and the outcomes of a workably competitive market, noting that the revenues earned from the provision of services in a workably competitive market would approximate efficient costs:[33]

> *Section 8.1(b) provides that a reference tariff should be designed with a view to replicating the outcome of a competitive market, ie as indicated earlier, a workably competitive market. The discussion of the concept of a competitive market earlier in these reasons, especially the close interrelationship recognised by economists between the role of a competitive market and the achievement of economic efficiency, suggests that s 8.1(b) and s 8.1(a) are more complementary than antithetical, although they need not always be in harmony. As far as the expert evidence discloses, a competitive market in the sense of a workably competitive market appears to be viewed by the general body of economic opinion as likely, over time, to lead to economic efficiency or at least to greater economic efficiency. As the Hilmer Report puts it, the promotion of effective competition is generally consistent with maximising economic efficiency. This would suggest that, over time, the revenue earned by a service provider from a reference service, if that service was provided in a workably competitive market, would approximate the efficient costs of delivering the service. That also helps to confirm that the concept of efficient costs, like the outcome of a workably competitive market, is not capable of precise or certain calculation and at best, can only be approximated. Both are based on many assumptions. How best to determine the efficient level of costs or the outcome of a competitive market are matters of economic theory and practice which, on the evidence, are in the course of constant revision, development and refinement.*

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31 *Re Dr Ken Michael AM; Ex parte Epic Energy (WA) Nominees Pty Ltd* [2002] WASCA 231, [124].

32 Re Dr Ken Michael AM; Ex parte Epic Energy (WA) Nominees Pty Ltd [2002] WASCA 231, [127].

33 *Re Dr Ken Michael AM; Ex parte Epic Energy (WA) Nominees Pty Ltd* [2002] WASCA 231, [143]. Section 8.1(a) of the Code referred to the objective of providing the service provider with the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the reference service over the expected life of the assets used in delivering that service.

81. In the context of gas regulation under the National Gas Law (**NGL**) and National Gas Rules (**NGR**)—the objective of which is similar to electricity regulation—the AER has also drawn the connection between the efficiency objective and the recovery of costs that would be incurred in a workably competitive market:[34]

> *The AER submitted that rule 91 requires the AER to permit service providers a reasonable opportunity to recover what the AER considers "legitimate costs". Legitimacy, according to the AER is informed by the NGO [National Gas Objective] and, in particular, means costs that would be incurred in a "workably competitive market". The requirement for replication of a workably competitive market outcome is said to be derived from the intent of the regulatory framework.*

82. The Tribunal has confirmed that the NEL and the NER 'seek to ensure that an NSP operates and invests efficiently in the manner of a firm in a competitive environment'.[35] It is implicit in the Tribunal's observations that it accepted the notion that 'efficient costs' are those that would be incurred by the hypothetical business in a workably competitive market.

83. The term 'efficient' in the ARORO is to be interpreted consistently with how that term is used elsewhere in the regulatory regime. Most relevantly, the term 'efficient' appears in the NEO and the revenue and pricing principles.

84. The second reading speech made on the introduction of the Bill which contained the NEL with the current NEO noted the following with respect to the NEO:[36]

> *The national electricity market objective in the new National Electricity Law is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity, and the safety, reliability and security of the national electricity system.*
>
> *The market objective is an economic concept and should be interpreted as such. For example, investment in and use of electricity services will be efficient when services are supplied in the long run at least cost, resources including infrastructure are used to deliver the greatest possible benefit and there is innovation and investment in response to changes in consumer needs and productive opportunities.*
>
> *The long term interest of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised. If the National Electricity Market is efficient in an economic sense the long term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised.*
>
> *…*
>
> *It is important to note that all participating jurisdictions remain committed to the goals expressed in the current market objectives set out in the old Code, even though they are not expressly referred to in the new single market objectives. Applying an objective of economic efficiency recognises that, in a general sense, the national electricity market should be competitive…*

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34 Application by Envestra Ltd (No 2) [2012] ACompT 3, [183].

35 Application by EnergyAustralia and Others [2009] ACompT 8, [106].

36 South Australia, *Parliamentary Debates*, House of Assembly, 9 February 2005, 1452 (John David Hill).

85. The AER has previously referred to this text of the second reading speech, noting that the NEO is fundamentally an efficiency objective and that the NEO seeks to emulate effectively competitive market outcomes. For instance:[37]

> *In a competitive market, a firm has a continuous incentive to respond to consumer needs at the lowest cost (that is, operate efficiently) because competition may force it to exit the market if it does not. In addition, the firm has an incentive to improve its efficiency because it will enjoy greater market share if it can provide the best service at the lowest cost to the consumer. Essentially, the NEO imposes the pressures of competition on natural monopolies.*

86. In its report on energy access pricing the Expert Panel also referred to the second reading speech text extracted above and noted that 'the elements of productive, allocative and dynamic efficiency, neatly encapsulated in the first paragraph of the extract, are at the core of the objective'.[38]

87. The term 'efficient' is also used in other provisions of the NER, including clauses 6.5.6 and 6.5.7 relating to forecast operating and capital expenditure. The AER has interpreted 'efficient costs' in the context of the expenditure provisions of the NER as being 'those expected costs based on outcomes in a workably competitive market'.[39]

88. It is a principle of statutory interpretation that where a word is used consistently in legislation it should be given the same meaning.[40] Further, the NEL provides that words and expressions used in the NER have the same meaning as they have in the NEL.[41] Therefore, the term 'efficient' in the ARORO is to be given the same meaning as 'efficient' in the NEO. Further, in construing the term 'efficient costs' where it appears in the NER, the interpretation that will best achieve the purpose or object of the NEL is to be preferred to any other interpretation.[42] As such, the term 'efficient costs' is to be construed consistently with the economic concept of efficiency with which—as set out in detail above—it is well accepted the NEO is concerned.

89. Interpreting 'efficient costs' (in the ARORO) as the costs that would be incurred in a workably competitive market is consistent with the intent of the AEMC—as stated in its final position paper accompanying the 2012 Rule Amendment. As noted above (in the context of the return on debt), the AEMC made clear that the NEO is best served by adopting a return on debt estimation method that reflects the efficient financing and risk management practices expected in the absence of regulation.[43]

90. Clearly, the return required by debt investors is also relevant when estimating the return on debt. This return is largely (or wholly) unaffected by the method adopted by the regulator to estimate the return on debt allowance. As such, it should be clear that efficient financing costs are those that would be incurred absent regulation and cannot be defined by reference to how a regulated entity might respond to any particular methodology adopted by the regulator to estimate the return on debt.

91. The AEMC material also indicates that the intent of the 2012 Rule Amendment was to align the regulatory estimate with the return that investors of debt capital would require from a benchmark efficient service

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37 AER, Expenditure Forecast Assessment Guideline: Explanatory Statement, November 2013, p 17.

38 Expert Panel on Energy Access Pricing, *Report to the Ministerial Council on Energy*, April 2006, p 37.

39 AER, Expenditure Forecast Assessment Guideline: Explanatory Statement, November 2013, p 47.

40 See discussion in: D Pearce and R Geddes, *Statutory Interpretation in Australia* (LexisNexis Butterworths, 2014), pp 150-151.

41 NEL sch 2, cl 13(1). See also NEL, s 3 and sch 2, cl 41.

42 NEL sch 2, cl 7. See also NEL, s 3 and sch 2, cl 41.

43 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, p. 76.

provider.[44] The regulatory method does not determine those costs. Rather, it must respond to such costs—they exist independent of the regulatory method and that method must be designed to capture them.

92. Consistent with the statements of the AEMC set out in section 1.1, the long term interests of consumers (i.e. the Optimal NEO Position) are best served by ensuring that the method used to estimate the return on debt reflects, to the extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation. Specifically, when determining the characteristics of the BEE, the AEMC stated that the most appropriate benchmark to use in the regulatory framework for all service providers is **the efficient private sector service provider**.[45]

93. The AER itself appears to recognise that in estimating the financing costs of a *regulated* business under the NER, these should be consistent with what would be expected in the context of *unregulated* efficient businesses:[46]

> *The allowed rate of return objective requires us to set a rate of return commensurate with the efficient financing costs of the benchmark efficient entity. We do not consider this to be only a theoretical proposition. Rather, it should be consistent with observable good practice in efficient businesses. We consider that, in practice, businesses make financing and investment decisions using widely accepted economic and financial models of the efficient cost and allocation of capital. To the extent that we use models for estimating the rate of return that are consistent with those widely used in practice, we are more likely to achieve the allowed rate of return objective.*

94. Identifying efficient financing practices by reference to the incentives created by a particular regulatory approach avoids the very object of the regulatory regime—being to, insofar as possible, create an environment in which the costs incurred (and ultimately allowed to be recovered) are efficient costs. The correct enquiry starts with an identification of what are efficient costs, and then a methodology is designed that, insofar as possible, permits those efficient costs to be recovered.

95. A paper published by the Australian Competition and Consumer Commission (**ACCC**) and AER's Regulatory Development Branch summarises the point accurately:[47]

> *[W]hen determining a new regulatory cost of debt approach, debt practices which are a product of the regulatory environment should be ignored. This is because these practices will change if the regulatory environment changes. If in setting a new regulatory framework, a regulator considers debt practices that are a result of businesses reacting to the existing regulatory framework, it may create a self fulfilling method that may not necessarily be efficient…*
>
> *The use of swap contracts to lock in the cost of debt for the access arrangement is a consequence of the regulatory framework, and their use by regulated businesses would change if the regulatory framework were to change. Ideally the regulatory framework for the cost of debt should reflect the efficient debt practices that occur in a competitive market. This would align competitive incentives with regulatory incentives.*

96. In short, the ARORO requires the methods used to estimate the rate of return (including the return on debt), insofar as possible, provide a return that is commensurate with forward-looking efficient costs, being the costs that would be incurred in a workably competitive market. Any other approach would lead to the absurd and

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44 AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 73.

45 AEMC, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, p 72.

46 AER, Rate of return guideline: Explanatory Statement, December 2013, p 28.

47 Regulatory Development Branch, Australian Competition and Consumer Commission (H Smyczynski and I Popovic), *Estimating the Cost of Debt: A Possible Way Forward*, April 2013, p 11.

circular result that any cost incurred is efficient where the regulatory approach provides an incentive for it to be incurred, even though it would not be incurred in a workably competitive market. Such an approach is inconsistent with the objective of the regulatory regime.

1.3 MATTERS THAT THE AER MUST HAVE REGARD TO WHEN ESTIMATING THE RATE OF RETURN

97. Regard must be had to several relevant matters in estimating the rate of return, including:[48]

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

98. This requirement reflects the AEMC's view (referred to above) that no one model or method can be said to provide the 'right' answer, and that estimates are more robust and reliable if they are based on a range of estimation methods, financial models, market data and other evidence.

99. In estimating the return on equity, regard must also be had to the prevailing conditions in the market for equity funds.[49]

100. In estimating the return on debt, the NER also require that regard be had to the following four factors:[50]

- The desirability of minimising any difference between the allowed return on debt and the return on debt of a BEE referred to in the ARORO
- Any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt
- The incentives that the return on debt may provide for spending capital expenditure over the 2016 regulatory period, including as to the timing of any capital expenditure, and
- Any impacts (including in relation to the costs of servicing debt across regulatory periods) on a BEE referred to in the ARORO that could arise from changing the method used to estimate the return on debt from one regulatory period to the next.

1.4 GAMMA—THE VALUE OF IMPUTATION CREDITS

101. The NER now require an estimate of '*the value of imputation credits*'.

102. Importantly, clause 6.5.3 of the NER was amended in November 2012 to change the definition of gamma from '*the assumed utilisation of imputation credits*' to '*the value of imputation credits*'. This change was entirely appropriate, given that gamma is an amount to deduct from allowed revenue for the value that investors obtain

[48] NER, cl 6.5.2(e).

[49] NER cl 6.5.2(g).

[50] NER, cl 6.5.2(k)

from imputation credits.[51] It is important that gamma be accurately estimated since, if the value of imputation credits is over-estimated, this deduction will be too large and the overall return will be too low.

1.5 THE IMPORTANCE OF AN ACCURATE INFLATION FORECAST

103. Forecast inflation impacts the overall return by reducing the allowance for the return of capital (or depreciation), which lowers the allowed revenue requirement. This deduction is a negative building block that accounts for forecast indexation of the RAB in the second and subsequent regulatory years (which is applied in practice as a deduction to the depreciation building block).[52]

104. This deduction is made to maintain a real rate of return framework (i.e. because under the NER, a nominal rate of return[53] is applied to an inflation-adjusted asset base[54]). To ensure an appropriate overall return, the inflation forecast used to make this adjustment to cash flows needs to be as accurate as possible, and consistent with the forecast of inflation implied in the nominal rate of return.

1.6 ACHIEVING THE NEO

105. Providing for an overall return that is consistent with the ARORO is necessary to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers, consistent with the NEO.

106. If the level of return is set too low, JEN may not be able to attract sufficient funds to make the required investments in the network and reliability and service standards may decline. We refer to a position that best promotes the NEO as an 'Optimal NEO Position'.

51 NER, cl 6.5.3.

52 NER, cl 6.4.3(a)(1) & (b)(1).

53 NER, cl 6.5.2(d)(2).

54 NER, cl S6.2.3(c)(3).

2. RETURN ON DEBT

2.1 INTRODUCTION

107. The preliminary decision on the return on debt is to maintain the return on debt methodology proposed in the rate of return guideline (**guideline**).[55] That is, applied to the 2016 regulatory period, the preliminary decision on the return on debt is to:

- Estimate the return on debt using an on-the-day rate in the first regulatory year (2016) of the 2016 regulatory period, and
- Transition this rate into a trailing average approach over 10 years by updating 10% of the return on debt each year to reflect prevailing interest rates.[56]

108. The preliminary decision implements the return on debt approach using:

- A benchmark credit rating of BBB+
- A benchmark term of debt of 10 years
- A simple average of the broad BBB rated debt data series published by the Reserve Bank of Australia (**RBA**) and Bloomberg, adjusted to reflect a 10 year estimate and other adjustments, and
- An averaging period for each regulatory year of between 10 business days and 12 months (nominated by the service provider) prior to 25 days before submission of the annual pricing proposal or reference tariff variation proposal.[57]

109. In making a new distribution determination in substitution for the revoked preliminary decision, the return on debt should be estimated using the trailing average approach. We agree that the trailing average approach should be adopted to estimate the return on debt because:

- Infrastructure businesses operating in workably competitive markets would be expected to hold a staggered portfolio of fixed rate debt, and
- The costs of holding such a portfolio are best approximated by the trailing average approach to estimating the return on debt.

110. However, we do not agree that the proposed 10-year transition to the trailing average approach (as set out in the preliminary decision) should be adopted. Rather, we submit that there should be no transition to the trailing average approach.

111. The reference to 'efficient financing costs' in clause 6.5.2(c) can only be understood to be the costs that would be incurred in a workably competitive market—this is what efficient financing costs are. As the debt financing practice that is expected absent regulation is to hold a staggered portfolio of fixed-rate debt, and the trailing average approach provides an estimate of the return on debt that is commensurate with this practice, the NER require the immediate adoption of the trailing average approach.

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55 Preliminary decision, p 3-143.

56 Preliminary decision, p 3-144.

57 Preliminary decision, pp 3-148 – 3-149.

112. If we are wrong—such that the return on debt should be estimated by reference to efficient financing costs incurred by a BEE subject to economic regulation under the NER—then the final decision should adopt a 'hybrid' transition approach. The hybrid approach involves:

- For the base rate component of the return on debt, adopting:
  - A 10 year transition to a trailing average for the proportion of the debt portfolio assumed to have been hedged by the BEE using interest rate swaps, and
  - No transition for the proportion of the debt portfolio assumed not to have been hedged by the BEE (that is, moving immediately to the trailing average approach), and
- For the debt margin (or DRP) component, applying no transition by moving immediately to the trailing average approach from the first year of the 2016 regulatory period.

113. In respect of the implementation issues, the final decision should:

- Adopt a benchmark credit rating of BBB+
- Continue to adopt a benchmark term of 10 years
- For the first regulatory year, use the fair value curve or combination of curves published by independent third parties that best fits observed bond yields, and
- For subsequent regulatory years, apply that same method to future averaging periods if the curves diverge sufficiently and adopt a simple average of them if not.

114. While accepting the preliminary decision to adopt a benchmark credit rating of BBB+, for the reasons set out in this submission the evidence supports a credit rating of BBB to BBB+. For this reason, the preliminary decision to set the return on debt by reference to data for a BBB broadband credit rating when the AER considers that the benchmark is BBB+ cannot be viewed as an 'outcome towards the end of the range of options that may be favourable to the businesses'.[58]

115. Our proposed method for estimating the return on debt does not make any allowance for a new issue premium. In light of evidence supporting a positive and significant new issue premium, making no allowance for this premium (as JEN does) is highly conservative in that it is likely to lead to under-estimation of the efficient financing costs of a BEE.

116. Our position on each of the above issues is addressed in detail below.

2.2 TRAILING AVERAGE APPROACH

117. The guideline proposed estimating the allowed return on debt using:

- A trailing average approach with the length of the trailing average being 10 years
- Equal weights to be applied to all the elements of the trailing average
- The trailing average to be automatically updated every regulatory year within the regulatory period.[59]

118. We agree that the return on debt should be estimated using a trailing average approach. We also agree that that approach is likely to contribute to the achievement of the ARORO and recognise it is desirable to minimise

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58 Preliminary decision, Overview, p 50.

59 AER, *Rate of return guideline*, December 2013, p 19.

any difference between the return on debt and the return on debt of a BEE referred to in the ARORO.[60] This includes because, as noted in the guideline, the trailing average approach allows a service provider to manage both interest rate risk and refinancing risk without using interest rate swaps—which are a product of the on-the-day approach.[61] As discussed below, the trailing average approach will provide an estimate of the return on debt that is commensurate with the financing costs that would be incurred by a firm operating in the manner of a firm in a competitive environment.

119. However, and as discussed in detail below, we do not agree with the proposed approach in the guideline—and as adopted in the preliminary decision—to implement the trailing average approach after a period of transition.[62] That is, the final decision should immediately apply the trailing average approach without a transition.

2.3 THE PRELIMINARY DECISION TO IMPOSE A 10 YEAR TRANSITION TO THE TRAILING AVERAGE APPROACH

2.3.1 PRELIMINARY DECISION VIEW OF EFFICIENT FINANCING COSTS

120. The preliminary decision adopts the conceptual definition of the BEE as set out in the guideline, namely:[63]

> *[A] pure play, regulated energy network business operating within Australia.*

121. In relation to the 'regulated' aspect of this definition, the preliminary decision states:[64]

> *A regulated entity for the purposes of our benchmark is one which is subject to economic regulation (that is, price cap regulation) under the National Electricity Rules and/or the National Gas Rules.*

122. The preliminary decision describes the efficient debt financing costs of a BEE in the following way:[65]

> *[T]hose which are expected to minimise its debt financing costs over the life of its assets, while managing refinancing risk and interest rate risk:*
>
> - *Refinancing risk—the risk that a benchmark efficient entity would not be able to refinance its debt when it matures.*
> - *Interest rate risk—the risk associated with a mismatch between the allowed return on debt and a benchmark efficient entity's actual return on debt.*

123. Having defined the BEE and the efficient debt financing costs of a BEE, the preliminary decision concludes that the efficient debt financing practices of the BEE under the previous on-the-day approach to estimating the return on debt would have involved the following:[66]

- Borrowing long term (10 year) debt and staggering the borrowing so only a small proportion (around 10%) of the debt matured each year

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60 AER, *Rate of return guideline*, December 2013, p 19.

61 AER, *Rate of return guideline, Explanatory Statement*, December 2013, p 108.

62 AER, *Rate of return guideline*, December 2013, p 19.

63 Preliminary decision, p 3-24.

64 Preliminary decision, p 3-25.

65 Preliminary decision, p 3-166.

66 Preliminary decision, p 3-186.

- Borrowing using floating rate debt, or borrowing fixed rate debt and converting it to floating rate debt using fixed-to-floating interest rate swaps at the time of the debt issue, which extended for the term of the debt (10 years), and
- Entering floating-to-fixed interest rate swaps at, or around, the time of the service provider's averaging period, which extended for the term of the regulatory period (typically five years).

124. The preliminary decision concludes that, under the financing practice described above, the base rate component of the AER's BEE's actual return on debt would have broadly matched the on-the-day rate, while the DRP component each year would have reflected the average of the previous 10 years.[67]

125. Critical to the preliminary decision findings on the efficient financing practices (and, in turn, efficient financing costs), is that such practices involve the BEE hedging the base rate component. It is uncontroversial that the financing practice as described above would only be engaged in under the on-the-day approach. However, efficient financing costs—achieved through the adoption of efficient financing practices—under the NER should not be identified by reference to what a regulated entity might do in response to a particular method adopted by a regulator to calculate the return on debt allowance. Rather, as elaborated below, efficient financing costs are properly identified by reference to financing practices that would be adopted in workably competitive markets.

2.3.2 EFFICIENT FINANCING COSTS REFERRED TO IN THE ARORO

126. As noted in section 1.2, the term 'efficient financing costs' in the ARORO refers to the costs expected to be incurred in a workably competitive market.

127. A firm operating in the manner of a firm in a competitive environment would have a conventional debt portfolio of the type held by privately-owned entities in unregulated markets, namely a staggered portfolio of fixed rate debt.

128. This is confirmed by the AER's consultant, Chairmont, who states:[68]

> *The decision to adopt a strategy of gradual staggered issuance of fixed rate debt is consistent with behaviour where the regulatory cost of debt framework does not apply.*

129. Similarly, CEG has found that unregulated businesses typically raise debt in a staggered manner.[69]

> *In reality, almost all businesses, including regulated infrastructure businesses, raise debt in a staggered fashion over time. Moreover, for infrastructure businesses with very long lived assets, the average maturity of this debt at the time of issue tends to be long term (10 years or more). It is very likely that this is a response to a desire to minimise transaction costs, in particular insolvency/bankruptcy costs, that are heightened if too much debt must be refinanced in a short period of time. Consequently, a business's cost of debt at any given time will reflect the costs incurred when issuing debt over the last decade (i.e., not just over the last 20 days).*
>
> *…A 10 year trailing average approach would largely mimic the debt management strategy employed by infrastructure businesses (regulated and unregulated) around the world.*

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67 Preliminary decision, p 3-186.

68 Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, p 38. At page 38, Chairmont references UBS' statement that: 'The 'trailing average' approach used by Networks NSW was consistent with debt management strategies adopted by non-regulated entities in the infrastructure sector – ports, airports, road and railways': UBS, *UBS Response to the TransGrid Request for Interest Rate Risk Analysis following the AER Draft Decision of November 2014*, undated, p 5. See also: Frontier Economics, *Cost of Debt Transition for NSW Distribution Networks*, January 2015, pp 8-9.

69 CEG, *Efficiency of Staggered Debt Issuance*, February 2013, [92] and [97].

130. The debt financing costs of a staggered fixed rate debt portfolio matches the debt cost calculated under the trailing average approach. Put another way, the efficient financing costs of a BEE (being an unregulated entity operating in a workably competitive market) are the costs produced by application of the trailing average approach. Therefore, on a correct construction of the term 'efficient financing costs' in the ARORO, there is no basis to impose a transition.

131. The guideline identified that the trailing average approach promotes the productive, allocative and dynamic efficiency of debt financing practices, and specifically provides incentives for service providers to seek the lowest debt financing costs.[70] This is consistent with the outcomes of a workably competitive market. Having concluded this, preliminary decision should have adopted the trailing average approach as the method to estimate the return on debt, without any transition.

132. Adopting the transition set out in the preliminary decision is inconsistent with the NEO and the revenue and pricing principles. This transition provides an allowance for costs associated with financing practices adopted in response to a prior regulatory regime—and so does not impose an appropriate pricing signal for investment. That is, rather than sending a pricing signal that mimics the pricing signal that would be sent as a result of competition in a workably competitive market, the pricing signal sent under the preliminary decision approach is that arising from (idiosyncratically) applying a prior regulatory method to estimate the return on debt.

133. The preliminary decision does not agree that immediately applying the trailing average approach is reasonable or would contribute to the achievement of the ARORO.[71] The reasons given in that decision are that an immediate transition:

1. Has the potential to create a bias in regulatory decision making that can arise from the selection of historical data after the results of that data are already known
2. Would exaggerate a mismatch between the allowed rate of return and the efficient financing costs of a BEE over the life of its assets such that, over the life of the assets, a BEE is likely to materially either over- or under-recover its efficient financing costs, and
3. Does not approximately match the allowed return on debt with the efficient financing costs of a BEE over the 2016 regulatory period as it transitions its financing practices to the trailing average approach.[72]

134. If we are correct that the term 'efficient costs' means the costs that would be incurred in a workably competitive market, immediately adopting the trailing average approach will approximately match the allowed return on debt with the efficient financing costs of a BEE. Therefore, the last reason in the list above is not a reason to delay the immediate application of the trailing average approach.

135. In relation to the first two reasons, these policy issues are not relevant under the NEL and the NER decision-making framework and, even if they were, they do not support the AER's transition. These issues are discussed below in the context of the hybrid approach.

136. If we are wrong and efficient financing practices (and, in turn, efficient financing costs under the ARORO) refer to what a BEE would be expected to do in response to the regulatory framework, then there is no sound basis upon which to apply a transition to the DRP component of the return on debt. This issue is also discussed below.

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70 AER, *Draft rate of return guideline: Explanatory Statement*, August 2013, pp 83-84.

71 Preliminary decision, p 3-165.

72 Preliminary decision, p 3-165.

2.3.3 EVEN IF THE PRELIMINARY DECISION'S VIEW OF EFFICIENT FINANCING COSTS IS CORRECT, IT HAS ADOPTED THE WRONG TRANSITION

137. As the preliminary decision acknowledges, the DRP component of the return on debt cannot be—and thus in and prior to the 2011 regulatory period could not have been—hedged.[73]

> *For the debt risk premium component, we consider the allowed and actual return of a benchmark efficient entity would have usually differed in each access arrangement period [sic]. This is because the DRP component could not have been efficiently hedged to the allowed debt risk premium. So, in some access arrangement periods [sic], the allowed debt risk premium would have exceeded the actual debt risk premium of a benchmark efficient entity. In other access arrangement periods [sic], the allowed debt risk premium would have been less than the actual debt risk premium.*

138. Therefore, even if hedging strategies under the previous regulatory approach were relevant, it logically follows (given that the DRP component could not have been hedged) that no transition should apply to the DRP component and one should immediately adopt the trailing average approach. This is the advice given by Chairmont in its April 2015 report: [74]

> *The DRP does not need to be transitioned because the NSP already has a staggered floating rate debt portfolio.*

139. And: [75]

> *A [BEE] will already have a staggered DRP in its portfolio, but not evenly distributed, i.e. not smooth. Therefore, to match this situation the AER should not transition the DRP, but instead move immediately to a 'trailing average' for this element. As there is no standard methodology to account for the non-smooth portfolio, AER should adopt a smooth 'trailing average' for the DRP. It is acknowledged that the measurement of historical DRP is difficult, because it is accurate only at the time of debt issuance; however it is likely that a reasonable estimate could be determined…*

140. The October 2015 Chairmont report reiterated that, if the AER's identified efficient financing practice were adopted, a trailing average DRP should apply for consistency. The report stated that if the AER's proposed efficient financing practice were adopted, 'the allowed return on debt should be calculated in line with the Basic Approach, i.e. a trailing average DRP'.[76]

141. Chairmont concludes that the AER's 'Basic Approach' to efficient financing practices—which involves entities hedging the base rate component of the return on debt and having a trailing average DRP—minimises differences between the regulated return on debt and the actual return on debt faced by a BEE in the transition phase:[77]

> *The Basic Approach to EFP [efficient financing practices], i.e. the trailing average DRP plus the average 1-10 year swap rates, minimises any discrepancy between the allowed and actual cost of debt in the transition phase for a BEE [benchmark efficient entity], whereas the Guideline Allowance does not.*

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73 Preliminary decision, p 3-175.

74 Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, pp 8-9.

75 Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, p 47.

76 Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 14.

77 Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 13.

142. The preliminary decision agreed with Chairmont that the hybrid approach would provide a good match over the 10 year transition period to the costs of the AER's BEE.[78] However, the preliminary decision did not adopt the hybrid approach to calculate the return on debt:[79]

> *We agree with Chairmont that the hybrid approach will provide a good match over the 10 year transition period to the costs of a benchmark efficient entity entering the transition from the 'on-the-day' regime. However, having regard to wider policy issues, we have maintained the Guideline approach. In particular we consider that proposal and adoption of the hybrid approach on the basis of changes in prevailing rates would introduce bias into regulatory decision making and violate the NPV=0 principle.*

143. There is no scope in the NEL and the NER to incorporate these 'wider policy' issues when determining the return on debt, as was done in the preliminary decision. Even if these matters as formulated that decision were properly considered when determining the return on debt, neither the purported introduction of 'bias' into regulatory decision making, nor alleged 'violations' of the NPV=0 principle, provide a logical or reasoned basis to transition the DRP component of the return on debt.

2.3.3.1 Bias

144. The preliminary decision states that the use of data from earlier periods—which is necessary under the trailing average approach—results in biased estimates and that use of unbiased estimates promotes the ARORO:[80]

> *We consider the use of an unbiased estimate is of significant importance in achieving the allowed rate of return objective. This provides for the rate of return to be commensurate with the efficient financing costs of a benchmark efficient entity.*
>
> *We do not consider the practice of selecting averaging periods after they have occurred is an effective mechanism for achieving the allowed rate of return objective. This is because choosing the averaging period in advance is important for obtaining an unbiased estimate. By bias, here we mean that at the time the averaging period is selected, it is not known with certainty whether it will result in a higher or lower estimate than the estimate from a different potential averaging period.*
>
> *If an averaging period is chosen after the nominated period has occurred, the knowledge of the return on debt at any past point of time may influence the choice. It would not matter if the period were chosen by the AER, the service provider, a user or consumer, the Australian Competition Tribunal or another stakeholder. We made this clear in the Guideline when we specified the importance of determining an averaging period in advance. In particular, we specified that if a service provider could select an averaging period by looking at historical yields, it could introduce an upwards bias.*

145. In the above extract, the preliminary decision misstates the relevance of 'bias' when making a decision required under the NEL and the NER. An estimate of the return on debt will be 'unbiased' in a relevant sense when it has a value that is commensurate with expected efficient debt financing costs over the relevant regulatory period.

146. To the extent that the efficient financing costs of a BEE identified in the preliminary decision is correct, it is common ground that the outcome of the efficient financing practice adopted by that entity is that it will face a trailing average DRP over the regulatory period. In the prevailing market conditions, adopting a method to estimate the return on debt that does not calculate the DRP component using a trailing average approach

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78 Preliminary decision, p 3-164.

79 Preliminary decision, p 3-164.

80 Preliminary decision, pp 3-190- 3-191.

results in a return on debt below that which is commensurate with expected efficient financing costs. This much is accepted in the preliminary decision as noted in respect of the adopted transition:[81]

> *Whether the allowed DRP matches, or is higher or lower than, a benchmark efficient entity's financing cashflows with respect to the DRP component depends on whether the prevailing and historical average DRP is higher, lower, or around the same level as each other.*

147. In the case of JEN, the preliminary decision notes that prevailing interest rates are currently lower than the historical average of interest rates over the past 10 years,[82] and therefore the AER transition results in a DRP that is lower than the AER's BEE's financing cashflows. The preliminary decision goes on to state that the fact that prevailing interest rates are lower is simply due to the particular timing of the decision,[83] suggesting that the under-compensation relative to efficient financing costs is an irrelevant matter. However, not only can the AER deal with that issue under the NER and the NEL, it is in fact required to when making its decision. The NER require that any method selected for estimating the return on debt must compensate the provider for efficient financing costs.

148. The final decision must be in accordance with the NEL, and more specifically, with the NEO and the revenue and pricing principles.[84] The revenue and pricing principles are consistent with and designed to promote the NEO.[85] In discussing the revenue and pricing principles, the Tribunal has previously noted how important it is to provide an opportunity to recover at least efficient costs in the context of efficiency objectives:[86]

> *It is well accepted in the literature of regulatory economics and in regulatory practice that all these efficiency objectives [efficient investment, efficient provision of services, efficient use of system] are in principle met by setting prices for services that allow the recovery of efficient costs, including the cost of capital commensurate with the riskiness of the investment in the assets (infrastructure or 'system', as the term is used in the NEL) used to provide services.*
>
> *It might be asked why the NEL principles require that the regulated NSP be provided with the opportunity to recover at least its efficient costs. Why 'at least'? The issue of opportunity is critical to the answer. The regulatory framework does not guarantee recovery of costs, efficient or otherwise. Many events and circumstances, all characterised by various uncertainties, intervene between the ex ante regulatory setting of prices and the ex post assessment of whether costs were recovered. But if, as it were, the dice are loaded against the NSP at the outset by the regulator not providing the opportunity for it to recover its efficient costs (eg, by making insufficient provision for its operating costs or its cost of capital), then the NSP will not have the incentives to achieve the efficiency objectives, the achievement of which is the purpose of the regulatory regime.*
>
> *Thus, given that the regulatory setting of prices is determined prior to ascertaining the actual operating environment that will prevail during the regulatory control period, the regulatory framework may be said to err on the side of allowing at least the recovery of efficient costs. This is in the context of no adjustment generally being made after the event for changed circumstances.*

149. The benchmark efficient financing practices that the preliminary decision assumes that the BEE would have adopted would result in that entity facing a trailing average DRP over the 2016 regulatory period. Given this, the AER can permissibly only calculate the DRP component of the return on debt using an approach other than

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81 Preliminary decision, p 3-189.

82 Preliminary decision, p 3-147.

83 Preliminary decision, p 3-147.

84 NEL, s 16.

85 *Application by EnergyAustralia and Others* [2009] ACompT 8, [75].

86 *Application by EnergyAustralia and Others* [2009] ACompT 8, [76]–[78].

using a trailing average is if that average would generate a return on debt that is inappropriate, in the sense of being either too high or too low over the 2016 regulatory period.

150. The preliminary decision raises the concept of avoiding 'bias' when selecting an averaging period, explaining that this bias is avoided if at the time when it is selected it is not known with certainty whether it will result in a higher or lower estimate than would arise if a different period were used.[87] However, the relevant task under the NER is to estimate the return on debt that contributes to the ARORO. Using the trailing average approach to estimate the DRP component will not introduce bias because using that approach is required by the NER, as opposed to any foreknowledge of the outcome of selecting that approach on the part of the AER or the service provider. Further, the return on debt under existing facilities—i.e. facilities on foot for some time—is a known quantity. The fact that it is known does not give rise to 'bias' in any relevant sense.

151. In any case, to the extent that there is foreknowledge (of the outcome form selecting the trailing average approach), there is equal foreknowledge of the outcome of selecting the AER's approach. That is, the differences (or likely differences) between the two approaches to estimating the DRP component was known to the service provider and the AER at the time the first debt averaging period for the 2016 regulator period was selected. This is despite the fact that that averaging period was yet to occur because prevailing interest rates are currently lower than the historical average of interest rates over the past 10 years and were unlikely to rise above this by the time of that period—a fact acknowledged in the preliminary decision.[88]

152. The only thing that is unknown is the precise amount by which the AER approach to estimating the DRP component will deliver a return on debt that varies from the trailing average approach to estimating the DRP. As such, the foreknowledge of relevance to the preliminary decision concern about bias cannot be remedied by applying the preliminary decision transition to the DRP component.

153. However, it is in fact applying the AER's transition approach that results in a biased (in the relevant sense) estimate of the return on debt. Given the AER's assumptions as to a BEE's efficient financing practices in and prior to the 2011 regulatory period, the BEE will face a return on debt reflecting a 10-year trailing average DRP component. The AER's approach, therefore, produces a biased estimate of the return on debt insofar as it varies from the efficient financing costs of the benchmark efficient operator. It is in this context that the concept of 'bias' has any relevance—not in the sense that the AER has used that concept. To use the words of the Tribunal above, the approach in the preliminary decision seeks to 'load the dice' against JEN at the outset by not providing the opportunity for us to recover our efficient costs by providing an insufficient return on debt.

154. The hybrid transition avoids the bias associated with the AER's transition. As noted in the preliminary decision, the hybrid transition:[89]

> *[P]rovides a good match between the allowed return on debt and a benchmark efficient entity's financing costs over the period it takes a benchmark efficient entity to transition its financing practices to the trailing average approach.*

155. Once it is accepted that a trailing average approach should apply to the DRP, there also can be no concern as to bias or opportunistic behaviour when selecting averaging periods for it given we propose using full calendar year averaging periods.

156. Relevant to the issue of bias, is the preliminary decision's criticism that the hybrid transition (referred to 'Option 3') and immediate transition (referred to as 'Option 4') are 'backwards' looking.[90] That decision suggests that starting with the on-the-day approach and transitioning to the trailing average approach (referred to as 'Option

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87 Preliminary decision, pp 3-190- 3-191.

88 Preliminary decision, p 3-147.

89 Preliminary decision, p 3-164.

90 Preliminary decision, p 3-191.

2') is forward-looking because each addition to the average occurs at the prevailing rate in an averaging period nominated in advance.[91]

157. However, this is not correct. A trailing average return on debt is forward-looking because it is the return on debt that an entity—which had historically adopted a fixed-rate staggered approach to its debt portfolio—would face now and in the future. An entity in a competitive market would have facilities currently on foot at different interest rates (i.e. reflecting the different years in which they were entered into). For example, a service provider might have a facility at 7%, a facility at 8%, a facility at 9%, a facility at 6.5%, and so on. The combined interest payable on these facilities constitutes *current* interest costs and they will continue to apply in subsequent years in the regulatory period (until those facilities expire). These interest costs are in no sense 'backwards looking'. The trailing average approach calculates the return on debt now, and as it will change over the five year regulatory period. It is not possible to know at present precisely what the future costs of debt will be—they will be determined in future regulatory years. This is a forward-looking approach.

158. In regulatory terms, a 'backwards-looking' approach is one that involves the regulator looking back over previous regulatory years to see whether the regulatory allowance matched the actual costs of the regulated entity. This is what the preliminary decision does in appearing to rely on Dr Lally's conclusion that there are some 'accumulated differences' between the return on debt estimate and the actual return on debt of a BEE arising from prior periods (this issue is discussed further below).[92] Therefore, it is that decision that uses a backwards-looking analysis by seeking to determine if there was some 'windfall gain' arising from the previous regulatory period and then using that to reduce the forward-looking return on debt calculated over the forthcoming period.

159. The ARORO requires that the rate of return for a service provider is to be 'commensurate with the efficient financing costs of a BEE'. A methodology that estimates the return on debt using a trailing average approach will provide for a return that is commensurate with the financing costs that a BEE will face over the 2016 regulatory period. It is forward-looking in precisely the manner that is relevant under clause 6.5.2(c) of the NER.

160. The preliminary decision's debt transition is not forward-looking in the relevant sense required by clause 6.5.2(c). Even in respect of the AER's own BEE—being one that would have entered into swaps to hedge the base rate component of its return on debt—the preliminary decision transition does not provide for a return on debt that is commensurate with the costs that entity will face over a regulatory period. This is because this entity would face a trailing average of the DRP component of its return on debt. The preliminary decision transition is designed to provide an allowance in respect of the notional DRP component of the return on debt over the 2016 regulatory period (and beyond) that is different to the DRP cost that will be faced by the AER's BEE.

161. There are two fundamental difficulties with the AER's approach, which are discussed below under the 'NPV= 0' topic. These are:

- **First**—the preliminary decision considers that its approach is authorised by the NPV=0 approach to account for assumed positive 'accumulated differences' arising from previous regulatory periods. However, the regulatory regime does not permit 'true-ups' of this kind based on an ex post review of the regulatory allowance provided for a particular component of a building block and the costs that were actually incurred by the service provider in respect of that component.
- **Second**—there is no reasoned basis that lets one determine whether there has been over-recovery and if so, the quantum of this over-recovery.[93]

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91 Preliminary decision, p 3-191.

92 Preliminary decision, p 3-180.

93 See preliminary decision, p 3-183, where the AER states: 'due to the unavailability of reliable older data, we are unable to draw reliable conclusions about accumulated windfall gains or losses in preceding regulatory periods'. Also: Chairmont, *Financing*

2.3.3.2 NPV = 0

162. The second drawback that the preliminary decision concludes arises under a hybrid transition is that it can create a mismatch between the allowed return on debt and the efficient financing costs of a BEE *over the life of its assets*. The preliminary decision stated:[94]

> *Transitioning from the on-the-day approach using the hybrid transition can create a mismatch between the allowed return on debt and the efficient financing costs of a benchmark efficient entity over the life of its assets. The change in the regulatory regime can therefore create windfall gains or losses to service providers or consumers. Windfall gains or losses do not result from a service provider's efficient or inefficient decisions. In effect, they are a side effect of changing the methodology for estimating the return on debt at a particular point in time. They should be avoided, so that economic regulatory decisions deliver outcomes based on efficiency considerations, rather than timing or chance.*

163. The preliminary decision notes that the NEL requires the AER to take into account that a regulated service provider should be provided with a reasonable opportunity to recover at least its efficient costs.[95] Based on advice from Dr Lally, the preliminary decision considers that this principle is equivalent to the NPV principle.[96] The AER explains that the NPV principle is that the expected present value of a BEE's regulated revenue should reflect the expected present value of its expenditure, plus or minus any efficiency incentive rewards or penalties.[97]

164. In his advice, Dr Lally stated that the requirement in the NER that the return on debt be commensurate with the efficient financing costs of a BEE is 'not sufficiently precise to be readily implemented and therefore requires formalizing'.[98] However, it is unclear why Dr Lally considers the requirement as stated in the NER to be imprecise.

165. The requirement is simply stated and does not require any overlay or 'formalisation' in order to implement it. What is required is to:

- Ascertain efficient financing costs—which (as stated above) are the costs that would be expected in a workably competitive market or, if that position is incorrect, the costs that would be incurred having regard to the AER's assumptions about the financing practices of a BEE under the on-the-day approach to estimating the return on debt, and
- Design a method for estimating the return on debt that matches those costs as closely as possible.

166. The preliminary decision speaks very generally about NPV 'over the life of the assets', but does not actually identify what life and what assets, and how any particular debt instrument relates to the life of any particular asset. The relevant asset here is the RAB of the regulated entity.

167. The RAB is made up of capital expenditure on thousands of assets, with lives ranging from five or fewer years to 60 or more years. The regulatory regime, as applied in the preliminary decision, assumes that for a benchmark entity 60% of the RAB is funded by debt. Debt is not raised in respect of particular assets, either notionally in this regime or in practice. Debt instruments do not attach to specific assets.

Practices Under Regulation: Past and Transitional, 13 October 2015, p 38, where Chairmont says: 'it is concluded that there is insufficient history of relevant BBB bond data to measure over and under compensation for an adequate time period to come to any definitive conclusion about the net result over the life of energy assets'.

94 Preliminary decision, p 3-165.

95 Preliminary decision, p 3-173.

96 Preliminary decision, p 3-173.

97 Preliminary decision, p 3-173.

98 M Lally, Review of Submissions on the Cost of Debt, April 2015, p 19.

168. Rather, in respect of the BEE it is assumed that there is simply *a portion* of the RAB that is funded by debt—and, in accordance with the debt / equity ratio assumed under the regulatory regime, the BEE takes out debt instruments to fund that proportion. In this way, it is nonsensical to talk about NPV over the life of the assets. To the extent that there is a relevant 'asset' in a NPV = 0 context, it is the RAB, the life of which is indeterminate and indefinite.

169. Moreover, the NPV principle cannot override the requirements in the NEL and the NER. In particular:

- The revenue and pricing principles—which require that a service provider should be provided with a reasonable opportunity to recover at least the efficient costs it incurs in providing direct control services, and
- The ARORO (clause 6.5.2(c) of the NER)—which requires that the rate of return for a service provider is to be commensurate with efficient financing costs.

170. These requirements apply to the decision that the AER must make for the 2016 regulatory period. That is,

- The service provider is to be provided with a reasonable opportunity to recover at least the efficient costs it incurs in providing direct control services *in the 2016 regulatory period*, and
- The rate of return is to be commensurate with efficient financing costs the service provider will incur *in the 2016 regulatory period*.

171. As set out below, this follows as a matter of statutory construction.

172. Section 16(1) of the NEL requires the AER to make a distribution determination in a manner that will or is likely to contribute to the achievement of the NEO. Section 16(2) requires the AER to take into account the revenue and pricing principles when exercising discretion in making those parts of a distribution determination relating to direct control network services.

173. The AER is bound to do these things in respect of *each* individual distribution determination it makes. That is, section 16 of the NEL does not require the AER to make determinations for a service provider over some indefinite period of time that collectively or overall contribute to the achievement of the NEO, and take into account the revenue and pricing principles. Such an interpretation would be absurd, including because it would purport to authorise the AER to provide a service provider with less than efficient costs in some periods, and more than efficient costs in other periods—which is clearly inconsistent with the regulatory framework established by the NEL and the NER. Yet this is how the preliminary decision seeks to apply the NPV=0 principle in applying a transition to the DRP component of the return on debt.

174. Various provisions in the NER also make clear that the distribution determination is in respect of a regulatory control period and that the forecasts and estimates used to determine allowed revenues are based on the best estimate of forecast costs over that period. For example, the provisions relating to the making of the building block determination refer to determining the annual revenue required for each year of the regulatory control period.[99] Specifically, in connection with the rate of return, clause 6.5.2(a) refers to the return on capital for each regulatory year being calculated by applying a rate of return for that regulatory year which is determined in accordance with clause 6.5.2. This last provision indicates that the task is to determine a rate of return for each regulatory year of the 2016 regulatory period that satisfies the requirements of the NER (including the ARORO), not to determine a rate of return that satisfies those requirements over some other, unspecified, period.

[99] NER, cl 6.4.3(a).

175. The preliminary decision concludes that its transition provides a BEE with a reasonable opportunity to recover efficient financing costs over the life of its assets, whereas the hybrid transition does not. It is unclear from the preliminary decision precisely what finding underpins this conclusion.[100]

176. In particular, the preliminary decision:

- Explicitly concludes that it has 'not relied on the historical balance of over or under recoveries' in making its decision[101]—which suggests that this conclusion does not rest upon a finding as to the existence of any accumulated windfall gains or losses
- Yet, at the same time, under the heading 'fairness of returns in expectation', it also appears to rely on analysis conducted by Dr Lally where he claimed that the AER's transition 'allows the regulatory regime to account for accumulated differences between the return on debt estimate and the actual return on debt of a benchmark efficient entity'.[102]

177. It is impermissible to consider differences between the allowed and actual return on debt faced by a benchmark service provider in previous regulatory periods when calculating the return on debt for the 2016 regulatory period (for the reasons discussed below). However, even assuming that it was permissible, it is not clear that the preliminary decision transition applied to the DRP provides a BEE with a reasonable opportunity to recovery its efficient financing costs over the life of its assets. For this to be clear, the benchmark service provider would need to enter the 2016 regulatory period with a positive accumulated difference between the allowed and actual return on debt faced by the benchmark service provider in previous regulatory periods. The preliminary decision does not establish this.

178. The preliminary decision concludes with a 'reasonably high degree of confidence' that the benchmark operator would have been overcompensated over the previous regulatory period.[103] However, the material referred to in that decision does not support such a conclusion for JEN.

179. The preliminary decision ultimately concedes that it is 'unable to draw reliable conclusions about accumulated windfall gains or losses in preceding regulatory periods'.[104] This finding is supported by Chairmont's October 2015 report.[105]

180. It is common ground that applying a transition to the DRP component of the return on debt will result in a mismatch between the cost of debt that would be incurred by the AER's BEE and the regulatory allowance for the return on debt. Therefore, it cannot be concluded that that transition provides a BEE with a reasonable opportunity to recover efficient financing costs over the life of its assets. Assuming any such 'look back' was permissible, such a conclusion could only be drawn if:

- The benchmark service provider has 'accumulated' gains (i.e. has been 'overcompensated' for the return on debt in previous regulatory periods) at the commencement of the 2016 regulatory period, and
- Gains over prior periods are precisely offset by the anticipated shortfall in the return on debt during the 2016 regulatory period.

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100 This conclusion is set out in Table 3.23 on page 3-184 of the preliminary decision.

101 Preliminary decision, p 3-183.

102 Preliminary decision, p 3-180.

103 Preliminary decision, p 3-182.

104 Preliminary decision, p 3-183.

105 Chairmont, Financing Practices Under Regulation: Past and Transitional, October 2015, pp 38–39.

181. In any case, as a matter of construction, the statutory regime does not permit the AER to seek to 'clawback' differences between the allowed and actual return on debt faced by a benchmark service provider in a prior regulatory period.

182. A fundamental principle of the regulatory regime is that it embodies incentive regulation. Under incentive regulation, regulated revenues are set ex-ante and firms have an incentive to reduce costs to outperform regulated revenues such that over time regulated revenues are expected to converge to the efficient level. Once the regulatory allowance has been set, ex post adjustments are not made to that regulatory allowance based on differences between forecasts and actual costs, other than for the impact of inflation.[106]

183. Consistent with the incentive regulation basis of the regime established by the NER, the task of setting a regulatory allowance for a regulatory period prescribed by the NER is a forward-looking one. Pursuant to the building blocks approach set out in clause 6.4.3(a) of the NER, there are only a few specified matters that may have occurred in a prior regulatory period that have any relevance to the calculation of the regulatory allowance in the subsequent regulatory period.

184. There are three discrete matters:

- The value of the RAB—which rolls forward over time
- Revenue increments and decrements arising from applying any relevant incentive scheme or control mechanism in the previous regulatory period, and
- Cross-period pass-throughs.[107]

185. With the exception of these three matters, the regulatory framework does not look back at what has happened in a previous regulatory period when calculating the annual revenue requirement for a future regulatory period in an attempt to capture some prior difference between allowable revenues and costs. Rather, the regulatory framework is designed and operates in such a way that once regulated allowances are set, they are taken to be the efficient allowance for the BEE and there can be no retrospective adjustments for departures from this allowance.

186. Regulated entities could not match the DRP component of their debt costs to the regulatory allowance for the return on debt under the on-the-day approach—which inevitably created a mismatch between any debt costs incurred by a benchmark regulated entity and the return on debt allowance for that entity. However, that was simply a consequence of the regulatory approach; the allowance was the allowance and regulated entities were required to manage their operations in accordance with that allowance.

187. This much was accepted in the preliminary decision:[108]

> *Incentive based regulation uses the combination of financial rewards and penalties to promote efficient behaviour. In particular, it means that where a service provider:*
>
> - *matches the efficient regulatory benchmark—it recovers its efficient costs. We consider this would be the outcome for the benchmark efficient entity. As it operates efficiently, it would recover its efficient costs.*

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106 Even where the NER permit ex post review of actual expenditure, they do not permit any ex post adjustment to be made to the regulatory allowance that was set in the distribution determination. See NER, cl S6.2.2A which permits reductions to the amount of capital expenditure that would otherwise be added to the RAB where the AER has found that the expenditure does not reasonably reflect the capital expenditure criteria. The threshold to be passed before any such reduction can be made is that the sum of all capital expenditure incurred during the relevant review period exceeds the sum of the forecast capital expenditure accepted or substituted by the AER for the review period, and any reduction cannot be greater than this amount (cl S6.2.2A(g)).

107 NER, clauses 6.5.1(e), 6.4.3(a)(5) and (6), and 6.5.10.

108 Preliminary decision, p 3-170.

- *does not match the regulatory benchmark—it keeps the financial benefits or financial detriments that flow from its actions. An example of this would be where a service provider is able to source debt at rates cheaper than the allowed return on debt it is able to keep the difference.*

- *adopts a risk position which is either higher or lower risk than that embedded in the regulatory process—it keeps the financial benefits or wears the financial detriments that flow from its actions.*

188. The NER require that the rate of return for a regulatory period is commensurate with the efficient financing costs of a BEE. As noted by Professor Gray:[109]

> *The new Rules state that for each determination the allowed rate of return must be commensurate with the efficient financing costs of a benchmark efficient entity. The Rules do not provide for an exception in cases where the regulator considers that it should set the allowed return to be different from the efficient financing costs of a benchmark efficient entity in order to square up the regulator's assessment of any windfall gains or losses from prior regulatory periods.*

189. Professor Gray notes the following further problems with the AER's decision to seek to erode the perceived windfall gain:

- **The gain depends on the number of periods considered.** The amount of any gain to be eroded or 'clawed back' will depend on how many prior regulatory periods are included in the regulator's mental accounting. It is possible that any perceived windfall gain that may have accrued in the prior regulatory period has already been squared up by shortfalls in regulatory periods preceding the prior regulatory period.[110]

- **The gain may have balanced out against losses in other parts of prior regulatory decisions.** The perceived windfall gains may have been balanced out by other features of the prior regulatory determination. In periods where investors are requiring higher risk premiums on debt investments in the benchmark firm, for example, they will also be requiring higher equity risk premiums (**ERP**s) in the same benchmark firm. However, recent AER decisions essentially fixed the ERP in its allowed return on equity.[111]

190. Imposing the preliminary decision transition is also at odds with the 2012 Rule Amendment—which is directed at better matching the regulated return on debt (and the overall rate of return) with costs that would be incurred pursuant to efficient financing practices. With respect to the DRP component of the return on debt, there is no mismatch between the cost incurred by the benchmark efficient firm and that allowed by a trailing average approach after the regime change. This was noted by the AER's consultants (see above). As such, no transition method appears warranted and, if one was used, Lally notes that it would introduce a mismatch that would not otherwise arise.[112]

191. In summary, the NPV=0 justification:

- Is inconsistent with:
  - The ARORO—which, as noted above, requires that the allowed rate of return for each regulatory year reflects the efficient financing costs of a BEE for that year

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109 SFG, *Return on Debt Transition Arrangements under the NGR and NER: Report for Jemena Gas Networks, Jemena Electricity Networks, Citipower, Powercor and United Energy*, 27 February 2015, p 4.

110 SFG, *Return on Debt Transition Arrangements under the NGR and NER: Report for Jemena Gas Networks, Jemena Electricity Networks, Citipower, Powercor and United Energy*, 27 February 2015, p 26.

111 SFG, *Return on Debt Transition Arrangements under the NGR and NER: Report for Jemena Gas Networks, Jemena Electricity Networks, Citipower, Powercor and United Energy*, 27 February 2015, pp 25–26.

112 Lally, *Transitional Arrangements for the Cost of Debt*, 24 November 2014, p. 7.

  - The NEO and the revenue and principles—which demand that a service provider be provided with a reasonable opportunity to recover at least the efficient costs incurred in providing regulated services, and

- Introduces regulatory risk and is inconsistent with incentive-based regulation—in that it introduces an ex post adjustment mechanism after a regulated firm has benefited from operating in a way that the regulator itself considers to be efficient (and relied on this belief when making investment decisions).

192. In any event, there is no evidence that adopting a hybrid transition would violate the NPV=0 principle, as claimed in the preliminary decision. This is because—as acknowledged in the preliminary decision and as advised by Chairmont—one cannot ascertain with any certainty the extent to which there are accumulated windfall gains or losses from prior periods.

193. In short, imposing a transition for the DRP where that component of the return on debt cannot be hedged under the on-the-day approach is inconsistent with the NEO, the revenue and pricing principles, and the requirements of the NER. It will not provide a BEE with a return on debt that is commensurate with efficient financing costs or provide a reasonable opportunity to recover at least the efficient costs that the BEE incurs in providing distribution services.

2.3.4 OTHER MATTERS RELIED ON BY THE AER IN SUPPORT OF ITS TRANSITION

194. The preliminary decision finds that its transition has two further positive attributes, in addition to providing a service provider with a reasonable opportunity to recover its efficient financing costs over the life of its assets and being unbiased. These are that:

- The transition maintains the outcomes of the service provider's past financing decisions, consistent with the principles of incentive regulation, and

- It avoids practical problems with the use of historical data 'as estimating the return on debt during the GFC is a difficult and contentious exercise'.[113]

195. Dealing with the second point first, the preliminary decision notes that it is satisfied that 'this is a relatively minor issue'.[114] The only issue with respect to historical data needed to estimate the trailing average approach relates to the DRP component of the return on debt—and it only relates one to select a data source to use, as opposed to the data not being available at all.[115] Chairmont does not note any particular difficulty with the use of historical data to estimate a return on debt using the trailing average approach and states that it is likely that a reasonable estimate could be determined.[116]

196. The preliminary decision finds that maintaining the on-the-day approach is consistent with incentive regulation—which is illogical. The preliminary decision states that effective ex ante incentive regulation relies on service providers understanding and accepting the financial consequences of their decisions at the time they make their decision.[117] However, the preliminary decision acknowledges that service providers have limited control over the DRP component of the return on debt. As such, as a general matter, there is no relevant incentive with respect to this component that service providers could be said to have 'understood and accepted the financial consequences of their decisions'.

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113 Preliminary decision, p 3-163.

114 Preliminary decision, p 3-163.

115 Lally, *Transitional Arrangements for the Cost of Debt*, 24 November 2014, p 15.

116 Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, p 47.

117 Preliminary decision, p 3-171.

197. Therefore, even if it is relevant to maintain outcomes from past financing decisions consistent with principles of incentive regulation, it does not support either the continuation of the on-the-day approach or the preliminary decision transition. It does, however, support the hybrid transition because, as noted in that decision, applying the hybrid transition maintains the incentive for service providers to reduce risks that are within their control.[118]

2.3.5 CONCLUSION

198. For the above reasons, we consider that the trailing average approach should be implemented immediately, with no transition.

199. Alternatively, if estimating efficient financing costs by reference to the financing practices that would emerge under regulation were correct (as per the preliminary decision), the appropriate approach is to adopt a hybrid form of transition where only the hedged base rate component of the return on debt is subject to a transition. This is because the preliminary decision concludes that under the on-the-day approach, an efficient financing practice would have been to engage in hedging of the base rate. By contrast, the AER has conceded that the DRP component cannot be—and could not have been in the past—hedged, with the result that there is no reason for a transition to apply to it.

200. If a transition is applied to the base rate, then it is necessary to consider to what degree hedging would be efficient. A transition can only apply to the base rate component to the extent that the BEE used hedging to match the previous on-the-day approach to setting the allowed return on debt, and one cannot simply assume that 100% of that component was hedged under that approach without evidence to support it.

201. The evidence demonstrates that the efficient level of hedging under the previous on-the-day approach was significantly less than 100%. Empirical analysis by CEG demonstrates a hedging ratio of approximately one third would have minimised interest rate risk.[119] In a further expert report accompanying this submission, CEG considers and responds to criticisms made by Chairmont and Professor Lally of this analysis. Following this review of the Chairmont and Lally reports, CEG's view as to the optimal hedging ratio under the previous on-the-day approach is unchanged.[120]

202. Therefore, if a hybrid transition is adopted (i.e. if the AER's view of efficient financing costs were correct), the transition should only apply to one third of the base rate, reflecting the extent to which a BEE would have been expected to hedge the base rate component.

2.4 BENCHMARK CREDIT RATING AND TERM

2.4.1 CREDIT RATING

203. Assuming a BBB+ credit rating for the BEE is conservative, in the sense that it is likely to understate the degree of risk faced by JEN in when supplying standard control services.

204. The empirical evidence referred to in the preliminary decision in support of a BBB+ rating, when correctly applied and interpreted, supports a BBB to BBB+ rating. As noted in that decision, the median credit rating over

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118 Preliminary decision, p 3-172.

119 CEG, *Efficient Use of Interest Rate Swaps to Manage Interest Rate Risk*, June 2015; CEG, *Critique of the AER's approach to transition*, January 2016, [9].

120 CEG, *Critique of the AER's approach to transition*, January 2016, [10].

the past ten years (2006-2015) across all businesses in the AER sample is BBB to BBB+.[121] A credit rating of BBB to BBB+ is also consistent with the advice from Professor Lally to the AER.[122]

205. Therefore, assuming a BBB+ credit rating (and using it to directly estimate the return on debt) is likely to under-estimate the efficient financing costs of a BEE facing a similar degree of risk as that which applies in respect of the supply of standard control services. In short, we may be inadequately compensated for efficient financing costs, creating a risk that we cannot attract the capital required to undertake efficient investment.

206. If a broad BBB band data series is available and is used to estimate the return on debt, then whether a BBB or BBB+ credit rating assumption is adopted is of little practical consequence. However, if the AER were to start using a BBB+-specific data series (should one become available), it is likely that this would lead to under-estimation of the efficient financing costs of a BEE facing a similar degree of risk as that which applies to JEN in respect of the supply of standard control services. This is because a BBB+-specific data series is likely to over-estimate the return on debt for businesses with a risk profile in the BBB to BBB+ band.

207. For the same reasons, continuing to use a broad BBB band data series to estimate the return on debt is not materially 'favourable' to JEN, as suggested in the preliminary decision.[123] Rather, given that the evidence supports a credit rating of BBB to BBB+, using a broad BBB band data series is entirely appropriate.

2.4.2 TERM

208. Empirical evidence continues to support a benchmark term of debt of 10 years. This includes evidence for Australian energy network businesses, and for businesses operating in other sectors and jurisdictions facing a similar degree of risk.[124]

209. We do not agree with the statement in the preliminary decision that a 10 year term assumption is more likely to overstate than understate the debt term (and therefore, the efficient financing costs) of a BEE.[125] A 10 year term assumption properly reflects the efficient financing practices of a BEE facing a similar degree of risk to that faced by JEN in the provision of standard control services.

2.5 PREVAILING RETURN ON DEBT FOR THE FIRST YEAR

2.5.1 DATA SOURCES FOR PREVAILING ESTIMATES

210. There are currently three data sources available to estimate the prevailing return on debt for a BEE with the characteristics described above (i.e. with a credit rating of BBB to BBB+ and a term of debt of approximately 10 years). These are:

- The Bloomberg BBB fair value curve
- The RBA estimates of BBB Australian corporate bond yields, and
- The Reuters BBB fair value curve.

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121 Preliminary decision, p 3-591 (Table 3-70). The 2006-2015 period is directly relevant because it is the period over which data is used to apply our proposed immediate transition to the trailing average return on debt.

122 Lally, *Implementation issues for the cost of debt*, November 2014, p. 4.

123 Preliminary decision, p 50.

124 PwC, *Energy Networks Association: Benchmark term of debt assumption*, June 2013. Based on a sample including Australian, UK and US businesses operating in the energy and water sectors, PwC concluded that such businesses issued debt with a weighted average term in the range of 10 to 21 years.

125 Preliminary decision, p 3-212.

211. We maintain our proposal on how to select data sources when estimating the prevailing return on debt. That is:

- In each future averaging period, estimates of the prevailing return on debt are taken from each available independent data source, each extrapolated using the AER and SA Power Networks (**SAPN**) methods where relevant
- For the first averaging period (i.e. for the 2016 year), the data source or combination of data sources that best fits a representative sample of bond yields is used
- For subsequent averaging periods (i.e. for the 2017-2020 years):
  - Where the available estimates are within 60 basis points of each other, a simple average is used to estimate the prevailing return on debt
  - Where the available estimates are not within 60 basis points of each other, the data source that best fits a representative sample of bond yields is used.

212. For the subsequent averaging periods, the average of the available estimates can be used only when the highest and lowest estimates fall within 60 basis points of each other. If the divergence is greater than that, there is a significant probability that the reported data from one (or more) services, using one (or both) extrapolation methods, has diverged significantly from the underlying market data and the rate of return objective would not be met.

213. For example, the following kinds of problems have arisen in the past:

- Third parties may at any time cease to publish the series—indeed at one time the series most commonly used in regulatory decision making was a series published by the Commonwealth Bank of Australia (the 'CBA Spectrum' series) and it ceased publication in 2010, and
- It is not always transparent how third parties perform their calculations and in the past flaws have been discovered in the way the calculations are performed after the regulatory decision has been made—for example, flaws in the CBA Spectrum service led to the revocation and substitution of several revenue determinations in 2005.

214. The Tribunal has recognised that where more than one data source is available, the one that should be used to estimate the return on debt is the one that best fits the market data. In cases where estimates from available sources materially diverge, it may not be appropriate to simply average the available estimates. Rather, in such cases the available data sources will need to be tested to identify the estimate that best fits the data. In Jemena (No 5), the Tribunal observed that in such cases the available data sources '*must be subjected to the ultimate test – that of the relevant data*'.[126]

215. Therefore, the following process should apply when the spread between available independent data sources, on an annualised basis, is greater than 60 basis points:

1. **Identify data sources.** All independent data sources with relevant data available during the nominated averaging period should be identified (and where there is no 10 year data and extrapolation is required, separate data points for each extrapolation method should be identified). An independent data source with relevant data is one that publishes yield information for corporate bonds on estimated yields for corporate bonds in the BBB credit rating band up to at least a seven year term to maturity for at least one business day during the nominated averaging period. For the purpose of the following steps, the average of the available data sources is treated as a separate independent data source.

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126 *Application by Jemena Gas Networks (NSW) Ltd (No 5)* [2011] ACompT 10, [88].

2. **Select best fit data source.** Select the independent data source, or a simple average of all the available services, that best fits the underlying market data as follows:

   a) A sample of bonds is formed for the nominated averaging period, comprising all bonds for which there are yield observations available from the Bloomberg BVAL pricing source for each business day of that period, and which have the following characteristics:

      i) Issued by an entity or entities domiciled in Australia

      ii) Issued in Australian dollars, United States dollars, Euros or British pounds

      iii) Issued by corporations in any industry, excluding sovereign entities, regional and local government entities, government agencies, supranational entities and government development banks, and

      iv) Have a credit rating from Standard & Poor's of BBB-, BBB or BBB+ on the final day of the averaging period.

   b) For each bond in the sample, the average observed yield across the nominated averaging period is to be calculated using the Bloomberg BVAL pricing source:

      i) For bonds with embedded options, option adjusted yields are derived by adding interest rate swaps interpolated to the maturity of the bond to the option adjusted spreads sourced from the Bloomberg BVAL pricing source

      ii) For bonds issued in United States dollars, Euros or British pounds, yields are to be converted to Australian dollar equivalents by use of interest rate swaps and cross-currency basis swaps in a method that is well accepted within the finance industry

   c) For each independent data source, or simple average of data sources, a sum of the weighted squared differences across all the bonds in the relevant bond sample will be calculated as follows:

      i) **Step one**—for each bond in the relevant bond sample, a corresponding estimated yield for each of the independent third party yield curves at the bond's average time to maturity is calculated using linear interpolation across business days

      ii) **Step two**—for each bond in the relevant bond sample, a squared difference between the observed yield of the bond and the yield of each of the independent third party interpolated yield curves, or simple average of curves, at the same maturity is calculated

      iii) **Step three**—the squared difference for each bond in the relevant bond sample is weighted using a Gaussian kernel with a mean of 10 years and a standard deviation of 1.5 years—the purpose of using a Gaussian kernel weighting is to give greater weight to observations that are closer to the benchmark term to maturity (10 years), and

      iv) **Step four**—for each independent third party data source, the sum of the weighted squared differences across all the bonds in the relevant bond sample is calculated from the independent data source where the best fit is the independent data source, or simple average of sources, with the lowest sum of weighted squared differences.

3. **Annualise yields.** For the purposes of applying the determination of best fit in the preceding steps, all yield data is to be sourced on an annualised basis. Where a data source publishes yield estimates or observations for a nominated averaging period on a semi-annual basis, these estimates are converted to annualised yields in accordance with the following formula:

$$R_{ia} = \left(1 + \frac{R_{is}}{2}\right)^2 - 1$$

Where:

R_{ia} is the annualised yield, and

R_{is} is the semi-annual yield.

216. This process is summarised in the formula set out in Box 2–1.

Box 2–1: Formula for testing independent service providers

If: $| ITP_{MAX} - ITP_{MIN} | \leq 60$ basis points,

Then: $R_t = \frac{ITP_1 + ITP_2 + \cdots + ITP_n}{n}$

Where:

- R_t is the yield determined for year t
- ITP_i is the annualised 10-year BBB yield from independent data source *i* (where, if an independent data source requires extrapolation to produce a 10-year BBB yield, the extrapolations based on the AER and SAPN methods are to be treated as two separate independent data sources).

Otherwise, the formulae for testing which independent service provider is, for each independent data source, and for a simple average of all the independent data sources:

- $R_t = R_t \text{ of } ITP_y$

Where ITPy satisfies:

- S_{ITP_y} = minx = all available independent data sources (S_{ITP_x}),

And:

- $S_{ITP_x} = \sum_{i=1}^{n} \frac{(B_i - Y_i^{ITP_x})^2}{\sqrt{2\pi} \cdot 1.5} \cdot e^{-\frac{(m_i - 10)^2}{2 \cdot (1.5)^2}}$

Where:

- S_{ITP_x} is the sum of the weighted square differences of the bond sample and the corresponding yield for the independent third party ITP_x (each independent data sources taken separately and also the simple average of all independent data sources)
- B1, B2, B3, … , Bn is the bond sample, and Bi is each bond in the bond sample
- m_i is the remaining time to maturity of bond I
- $Y_i^{ITP_x}$ is the calculated corresponding yield for bond Bi for the independent third party ITP_x.

2.5.2 EXTRAPOLATION

217. Where a data source does not provide estimates out to 10 years (in effect)[127], extrapolation can be used to arrive at a 10 year figure.

218. CEG has reviewed two methods for extrapolation—which it calls the AER and SAPN methods.[128] At the time of writing, the difference in the two approaches was not material but it is possible that it may be in the future. To minimise the difference between the allowance established from the extrapolated data and commensurate market returns, we consider that the results of the two extrapolation methods should both be calculated and used in the manner discussed above.

219. The SAPN extrapolation formula is set out in Box 2–2.

Box 2–2: SAPN Extrapolation Method

For each service provider the average slope of the DRP with respect to changes in maturity at each point on the published yield curve at or above 1 year maturity is estimated as the slope coefficient using ordinary least squares (**OLS**) regression on observations of fair value DRP against maturity with an intercept term. That is, the formula below:

- Average slope = $\frac{\sum_{i=1}^{n}(DRP_i-\overline{DRP})(M_i-\bar{M})}{\sum_{i=1}^{n}(M_i-\bar{M})^2}$

Where:

- DRP_i = published yield at maturity of 'i' years less the swap rate at maturity 'i' based on data published by the relevant service provider;
- $\overline{DRP}$ = the mean of all DRP_i for 'i' greater than or equal to 1;
- M_i = is the maturity of 'i' years associated with DRP_i (in the context of the RBA publication this is effective maturity);
- $\bar{M}$ = the mean of all M_i for 'i' greater than or equal to 1;
- n = the number of observations of fair value DRPs with maturity greater than or equal to 1.

The extrapolated DRP at 10 years is given by:

- $DRP_{10} = DRP_{i_{max}}$ + (Average slope)×(10 - i_{max})

Where i_{max} is the longest maturity associated with a published yield.

The extrapolated yield at 10 years is given by:

- Extrapolated yield = 10 year swap rate + DRP_{10}.

The RBA publishes the DRP to swap at each maturity and the yield at each maturity, so the implied swap rate at each maturity to be used for RBA data can be calculated as:

- $Swap_i = Yield_i - DRP_i$.

Bloomberg publishes swap rates that can be sourced through the ADSWAP fields within the Bloomberg

[127] Some curves, such as those published by the RBA, state they are '10-year' curves but have an effective term to maturity of less than 10 years.

[128] CEG, *Critique of the AER's JGN draft decision on the cost of debt,* February 2015, pp 38–40 and Appendix B.

environment. For example, 'ADSWAP1 Index' is the field for Australian swap rates with 1 year to maturity.

2.5.3 RETURN ON DEBT FOR THE FIRST YEAR

220. Under any of the available transition methods, an estimate of the prevailing return on debt for the first year of the 2016 regulatory period is required. If there is an immediate transition to the trailing average, this estimate will contribute 10% to the calculated return on debt for each year of the 2016 regulatory period.

221. Under the preliminary decision transition, the prevailing rate for the first year assumes much greater importance—contributing 100% to the calculation of the return on debt for the first year, 90% for the second year, and so on.

2.5.3.1 Estimate based on the placeholder period

222. The year one return on debt proposed in this submission uses a prevailing return on debt observation for 2016 that is based on a placeholder averaging period (20 business days to 30 September 2015). This has been done because, at the time JEN was finalising this submission, data for JEN's actual averaging period was not yet available. As explained below, the prevailing return on debt observation for 2016 and the year one return on debt will be updated to reflect data for JEN's actual averaging period.

223. In estimating the prevailing return on debt for the placeholder period, JEN has relied on the RBA estimates. This is based on advice from CEG that the RBA data source performs best against five criteria. CEG finds that the Reuters and Bloomberg data sources perform relatively poorly against these same criteria.[129]

224. The five assessment criteria applied by CEG to each data source are that it:[130]

- Is derived from a dataset that best matches the characteristics of debt issued by a BEE
- Is derived from a large data set of the type of bonds specified in the first criterion
- Is derived using a transparent method that is accurate and robust—in the sense that the source can be relied on to provide an accurate estimate of the costs of debt for a BEE that is not unduly influenced by a small number of observations in the dataset
- Is regularly published by an independent organisation that is not a stakeholder in regulatory determinations, and
- Has a track record of accuracy.

225. Based on its assessment of the available data sources against these criteria, CEG concludes:[131]

> *Relative to the RBA, the Bloomberg and Reuters sources perform less strongly against four of the five criteria. The RBA curve is the only curve that performs well against all criteria. For these reasons we consider that the RBA is clearly the best performer against the five criteria. Consequently, if one were to limit oneself to choosing one, or a set of predetermined sources, with predetermined weights we consider that the RBA source should be selected with 100% weight.*

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129 CEG, *Criteria for assessing fair value curves*, January 2016, [25] and [131].

130 CEG, *Criteria for assessing fair value curves*, January 2016, [4].

131 CEG, *Criteria for assessing fair value curves*, January 2016, [25].

226. Over the placeholder averaging period (20 business days to 30 September), the RBA data source produces an estimate of the prevailing return on debt of 5.37%, on a semi-annual basis.

227. This estimate is combined with estimates of the prevailing return on debt for the prior nine years[132] to produce a placeholder estimate of the 10-year trailing average return on debt of 7.77%. This trailing average estimate is adopted by JEN as a placeholder estimate of the return on debt for the first year of the 2016 regulatory period.

Table 2–1: Calculation of trailing average return on debt for first year (%)

Year of data observation	10 year swap rate (base rate)	DRP	Return on debt	Basis for estimation
2006	6.077	0.643	6.720	Average of Bloomberg and RBA estimates over full calendar year
2007	6.639	0.941	7.580	
2008	6.659	2.972	9.631	
2009	5.591	3.946	9.537	
2010	5.872	2.780	8.652	
2011	5.505	2.828	8.333	
2012	4.165	3.084	7.249	
2013	4.238	2.841	7.080	
2014	4.011	2.059	6.069	
2015[1]	3.014	2.357	5.372	RBA estimate in placeholder averaging period (20 business days to 30 September)
Simple average return on debt			**7.622**	
Annualised trailing average return on debt			**7.768**	

(1) The observed return on debt in 2015 is treated as the prevailing return on debt for the 2016 regulatory year.
(2) The values and calculation are shown in Attachment 6-2 and are sourced from CEG.[133]

228. If a hybrid transition were adopted, this calculation would change as follows:

- The base rate would be re-estimated as the average of the 1 to 10 year swap rates, plus an allowance for swap transaction costs,[134] and
- The return on debt for the first year would be re-estimated as a weighted average of the trailing average return on debt (7.62% in semi-annual terms) and the sum of the re-estimated base rate and the historical

132 Estimates for the prior nine years are based on a simple average of the Bloomberg and RBA estimates for those years.

133 CEG, *Memo– September 2015 cost of debt and inflation forecasts*, 5 January 2016.

134 As explained in our April 2015, if a hybrid transition is to be adopted, an allowance needs to be made for the cost of entering into swap transactions. We do not agree with the AER's rationale for rejecting the swap transactions cost allowance in the preliminary decision. The AER's rationale is that under the previous on-the-day approach, the cost of swap transactions was likely to be offset by the savings associated with converting 10 year debt into 5 year debt (preliminary decision, pp 3-576 – 3-577). This rationale does not apply under a hybrid transition, since businesses would only compensated for the rates on swaps that they would need to enter into, and hence there would be no 'saving' to offset the transactions cost. This issue is addressed by CEG in the supporting expert report (CEG, *Critique of the AER's approach to transition*, January 2016, section 6.2). Our proposed allowance for swap transaction costs under the hybrid transition is based on expert advice from CEG (CEG, *Memo– September 2015 cost of debt and inflation forecasts*, 5 January 2016).

average DRP (5.11% in semi-annual terms), with weights to reflect the portion of the return on debt that was assumed to be hedged under the on-the-day approach.

229. As noted above, empirical analysis by CEG demonstrates a hedging ratio of approximately one third would have minimised interest rate risk under the on-the-day approach.[135] This implies that if the hybrid transition were adopted, the return on debt for the first year of the regulatory period would be 6.90% (once converted to annual terms).[136]

2.5.3.2 Update for JEN's actual averaging period

230. JEN will provide the AER with updated estimates of the prevailing return on debt and the year one return on debt once the data for JEN's actual averaging period has been analysed.

231. In estimating the prevailing return on debt for the actual averaging period, JEN will use the data source selection method set out in section 2.5.1 above, with some modification. For the purposes of estimating the prevailing return on debt for the first year, JEN will seek the best estimate of the prevailing return on debt, regardless of whether the available data sources diverge by more than 60 basis points. JEN intends to seek expert advice as to the best estimate for the actual averaging period, with this advice to draw on the results the data source selection method set out in section 2.5.1 above (not constrained by the 60 basis point divergence threshold) and any other factors the expert considers relevant for that period.

232. For the first year estimate, we do not consider it necessary to impose the divergence threshold or to adopt a simple average of available data sources as the starting point, since the best performing data source can be identified as part of the AER's broader consideration of return on debt issues in its distribution determination (i.e. the assessment for year one is not subject to any constraints that may be seen to apply to the annual update process).

2.6 ANNUAL UPDATING OF THE RETURN ON DEBT

2.6.1 ESTIMATION OF THE PREVAILING RETURN ON DEBT FOR YEARS 2–5

233. Under any of the available transition methods, estimates of the prevailing return on debt for years 2–5 of the 2016 regulatory period are required.

234. For years 2–5 of that period, the prevailing return on debt will be estimated for the averaging period nominated and agreed for that year (see below). In the relevant averaging period, the prevailing return on debt will be estimated using the data source (or combination of data sources) selected based on the method set out in section 2.5.1 above.

2.6.2 AVERAGING PERIODS FOR YEARS 2–5

235. JEN maintains its position on selection of averaging periods for years 2–5 of the regulatory period from its April 2015 proposal.

236. We again adopt the following process for selection of averaging periods for years 2–5 of the regulatory period:

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135 CEG, *Efficient Use of Interest Rate Swaps to Manage Interest Rate Risk*, June 2015; CEG, *Critique of the AER's approach to transition*, December 2015, section 5.

136 This is calculated by applying two thirds weight to the trailing average return on debt (7.77%) and one third weight to the sum of the re-estimated base rate and the historical average DRP (5.17%).

1. We will submit an averaging period notice to the AER for the purposes of calculating the annual return on debt observation for each calendar year of the 2016 regulatory period, other than the 2016 calendar year
2. The averaging period notice must nominate the averaging period to be used for calculating the annual return on debt observation for the relevant calendar year
3. The averaging period notice must be lodged with the AER at least 50 business days prior to the start of the calendar year in which the nominated averaging period occurs
4. The averaging period must:
   a) Be a period of at least 10 consecutive business days, and
   b) Fall entirely within the calendar year immediately prior to the calendar year for which it is to be used to calculate the annual return on debt observation
5. Within 20 business days of us submitting an averaging period notice to the AER, the AER must notify us of its determination as to whether it agrees to the nominated averaging period, and
6. The AER must agree to the proposed averaging period unless it concludes that the proposed averaging period cannot achieve the ARORO.

237. We consider that this is superior to the approach adopted in the preliminary decision, in terms of contributing to the achievement of the ARORO. That latter approach is to pre-determine averaging periods for years 2–5 of the regulatory period as part of the final decision.

238. Our proposed approach to nominate averaging periods is principally directed at minimising any difference between the allowed return on debt and the return on debt of a BEE referred to in the allowed rate of return objective. We are concerned that under the preliminary decision approach there is a greater risk of a difference arising because the gap in timing between the averaging period being determined by the AER and when occurs is much larger.

239. The greater the timing gap, the less information the service provider has available to it when nominating the averaging period over which it is supposed to finance or refinance its debt (or hedge it). For instance, the service provider will have less information/certainty about relevant market conditions, debt instruments available, its spending requirements etc. This increases the risk of mismatch between the allowed return on debt and the return on debt of a BEE referred to in the ARORO and does not facilitate efficient financing practices. A likely outcome is that the service provider either ends up raising the debt at a cost greater than the efficient cost and/or not raising debt during the averaging period, thus giving rise to a risk of mismatch.

240. We, therefore, maintain our proposal for nominating averaging periods for years 2–5.

2.6.3 UPDATE FORMULAE

241. Clause 6.5.2(l) of the NER requires that if the return on debt allowance is to differ from one year to the next, then a resulting change to the distribution network service provider's (**DNSP**'s) annual revenue requirement must be effected through the automatic application of a formula that is specified in the distribution determination.

242. Box 2–3 sets out the formula proposed by JEN for updating the annual revenue requirement following an update of the return on debt.

Box 2–3: Formula for updating the annual revenue requirement

For each of the four years 2017–2020, the annual revenue requirement will be updated by adjusting the return on capital building block for that year as follows:

$$\Delta\text{RocBlock}_t = \Delta kd_t \times 60\% \times \text{oRAB}_t$$

where:

- $\Delta\text{RocBlock}_t$ is the adjustment to the return on capital building block in regulatory year t
- Δcod is the change in the trailing average return on debt in regulatory year t determined in accordance with the formula set out in Box 2–4 below relative to the return on debt for that year applied by the AER in making its distribution determination, and
- oRAB_t is the opening RAB in year t set out in the distribution determination.

Note: The 60% represents the gearing ratio assumed for the BEE.

243. Box 2–4 sets out the formula for updating the trailing average return on debt for each of year of the regulatory period (an input into the formula in Box 2–3 above).

244. The part of the historical average for each year that is already known is denoted H_t in the formula. This is calculated as the annualised average of the return on debt values to be included in the 10-year trailing average for the relevant year that are already known (e.g. for 2017, this is the average of the return on debt values for 2007–2015, for 2018 it is the average of the return on debt values for 2008–2015, and so on). The annual return on debt values used to calculate the H_t values are as set out in Table 2–1 above.

Box 2–4: Formula for updating the trailing average return on debt – immediate transition to the trailing average approach

The semi-annual return on debt allowance for each year of the revenue period is to be calculated as follows:

- *For year 2016:* $kd_{2016} = H_{2016}$
- *For year 2017:* $kd_{2017} = 0.9 \times H_{2017} + 0.1 \times R_{2017}$
- *For year 2018:* $kd_{2018} = 0.8 \times H_{2018} + 0.1 \times R_{2017} + 0.1 \times R_{2018}$
- *For year 2019:* $kd_{2019} = 0.7 \times H_{2019} + 0.1 \times R_{2017} + 0.1 \times R_{2018} + 0.1 \times R_{2019}$
- *For year 2020:* $kd_{2020} = 0.6 \times H_{2020} + 0.1 \times R_{2017} + 0.1 \times R_{2018} + 0.1 \times R_{2019} + 0.1 \times R_{2020}$

where:

- kd_{2016} is the semi-annual return on debt for year t of the 2016 regulatory period
- H_{2016} is 7.622%
- H_{2017} is 7.723%
- H_{2018} is 7.740%
- H_{2019} is 7.470%
- H_{2020} is 7.126%
- $\mathrm{R}_{t}$is the semi-annual return on debt observation for each year t of the 2016 regulatory period (other than 2016), calculated according to the methodology set out in section 2.5.1 above.

The semi-annual return on debt allowance for each year of the revenue period is converted to an annualised return as follows:

- *For year 2016:* $kd_{2016}^{annualised} = \left(1 + \frac{kd_{2016}}{2}\right)^2 - 1$
- *For year 2017:* $kd_{2017}^{annualised} = \left(1 + \frac{kd_{2017}}{2}\right)^2 - 1$
- *For year 2018:* $kd_{2018}^{annualised} = \left(1 + \frac{kd_{2018}}{2}\right)^2 - 1$
- *For year 2019:* $kd_{2019}^{annualised} = \left(1 + \frac{kd_{2019}}{2}\right)^2 - 1$
- *For year 2020:* $kd_{2020}^{annualised} = \left(1 + \frac{kd_{2020}}{2}\right)^2 - 1.$

For year 2016, this gives an annualised return on debt of 7.77% as shown in Table 2–1. An annualised return is needed to input to the PTRM.

245. If a hybrid transition were to be adopted, the same formula could be used but with different H_{t} values. In that case, the H_{t} values will reflect a mix of the known historical DRP and swap rates and rates for prevailing swaps that are assumed to be used to unwind existing hedging arrangements for the base rate (to the extent that it is assumed that such hedges were in place under the on-the-day approach).

246. Box 2–5 sets out the formula for updating the trailing average return on debt for each of year of the 2016 regulatory period, if a hybrid transition were to be adopted and assuming that one third of the return on debt was

hedged under the on-the-day approach. For clarity, JEN's primary position is that there should be an immediate transition to the trailing average. A hybrid transition (and hence the formula in Box 2–5) should only apply if the AER's view as to efficient financing costs is correct.

Box 2–5: Formula for updating the trailing average return on debt – hybrid transition

The semi-annual return on debt allowance for each year of the revenue period is to be calculated as follows:

- *For year 2016:* $kd_{2016} = H_{2016}$
- *For year 2017:* $kd_{2017} = 0.9 \times H_{2017} + 0.1 \times R_{2017}$
- *For year 2018:* $kd_{2018} = 0.8 \times H_{2018} + 0.1 \times R_{2017} + 0.1 \times R_{2018}$
- *For year 2019:* $kd_{2019} = 0.7 \times H_{2019} + 0.1 \times R_{2017} + 0.1 \times R_{2018} + 0.1 \times R_{2019}$
- *For year 2020:* $kd_{2020} = 0.6 \times H_{2020} + 0.1 \times R_{2017} + 0.1 \times R_{2018} + 0.1 \times R_{2019} + 0.1 \times R_{2020}$

where:

- kd_{2016} is the return on debt for year t of the 2016 EDPR period
- H_{2016} is 6.785%
- H_{2017} is 6.933%
- H_{2018} is 7.034%
- H_{2019} is 6.869%
- H_{2020} is 6.599%
- $\mathrm{R}_{\mathrm{t}}$is the annual return on debt observation for each year t of the 2016 regulatory period (other than 2016), calculated according to the methodology set out in section 2.5.1 above.

The semi-annual return on debt allowance for each year of the revenue period is converted to an annualised return as follows:

- *For year 2016:* $kd_{2016}^{annualised} = \left(1 + \frac{kd_{2016}}{2}\right)^2 - 1$
- *For year 2017:* $kd_{2017}^{annualised} = \left(1 + \frac{kd_{2017}}{2}\right)^2 - 1$
- *For year 2018:* $kd_{2018}^{annualised} = \left(1 + \frac{kd_{2018}}{2}\right)^2 - 1$
- *For year 2019:* $kd_{2019}^{annualised} = \left(1 + \frac{kd_{2019}}{2}\right)^2 - 1$
- *For year 2020:* $kd_{2020}^{annualised} = \left(1 + \frac{kd_{2020}}{2}\right)^2 - 1.$

For year 2016, this gives an annualised return on debt of 6.90%. An annualised return is needed to input to the PTRM.

247. Table 2–2 sets out the calculation of the historical averages—the H_{t} values—for the immediate and hybrid transitions.

Table 2–2: Historical averages used to update the return on debt over the 2016 regulatory period (%, semi-annual)

Year	Historical data				Historical averages (i.e. the H_t values)	
	Historical average 10 year swap rate [A]	Historical average DRP [B]	Average of prevailing 1–10 year swap rates [C]	Swap transaction costs [D]	Immediate transition [E]	Hybrid transition [F]
2016	5.18	2.45	2.55	0.12	**7.622**	**6.785**
2017	5.08	2.65	2.59	0.12	**7.723**	**6.933**
2018	4.88	2.86	2.65	0.12	**7.740**	**7.034**
2019	4.63	2.84	2.71	0.12	**7.470**	**6.869**
2020	4.47	2.66	2.77	0.12	**7.126**	**6.599**

(1) The historical average 10 year swap rate is the simple average of the 2006 to 2015 DRP values shown in Table 2–1. The historical average 10 year swap rate for 2017 is the simple average of the 2007 to 2015 DRP values and so on through to 2020.

(2) The historical average DRP for 2016 is the simple average of the 2006 to 2015 DRP values shown in Table 2–1. The historical average DRP for 2017 is the simple average of the 2007 to 2015 DRP values and so on through to 2020.

(3) The average swap rate for 2016 is the simple average of the 1–10 year swap rates prevailing during the placeholder averaging period (20 business days to 30 September 2015). The average swap rate for 2017 is the simple average of the 2–10 year swap rates and so on through to 2020.

(4) Historical averages for the immediate transition is calculated as [E] = [A] + [B]. Historical averages for the hybrid transition is calculated as [F] = [E] x 2/3 + ([B] + [C] + [D]) x 1/3.

(5) The calculations are set out in Attachment 6-2.

2.7 NEW ISSUE PREMIUM

248. As noted in our April 2015 proposal, the third party data series that are used to estimate the return on debt are based on observations in the secondary debt market. These data sources therefore do not reflect any premium required for new debt issues.

249. Our April 2015 proposal and the supporting expert report from CEG set out the economic rationale and empirical evidence for a new issue premium. CEG's analysis indicates that the best estimate of the new issue premium that is relevant to a benchmark debt management strategy of issuing 10 year BBB rated debt is 27 basis points.[137]

250. The preliminary decision states that 'the empirical evidence on the new issue premium is inconclusive' and that 'there does not appear to be a consensus among experts on how the new issue premium should be measured'.[138] The AER also states that it has some specific concerns with CEG's methodology.

We do not agree with the concerns expressed by the AER in relation to CEG's methodology, which is addressed directly by a recent report from CEG.[139] We consider that CEG's analysis provides clear evidence of a positive and significant new issue premium. At a minimum, this evidence demonstrates that making no allowance for a new issue premium (as JEN does) is highly conservative, in the sense that it is likely to lead to under-estimation of the efficient financing costs of a BEE.

137 CEG, *New Issue Premium*, October 2014, p. 54.

138 Preliminary decision, p 3-206.

139 CEG, *Critique of AER analysis of New Issue Premium*, December 2015.

3. RETURN ON EQUITY

3.1 INTRODUCTION

251. The preliminary decision on the return on equity is based on the following reasoning:

1. The preliminary decision considers that the SLCAPM should be used as the foundation model to estimate the return on equity. We understand that the reasons for adopting this approach are as follows:
   a) The SLCAPM model is the current standard asset pricing model of modern finance both in theory and in practice[140]
   b) The SLCAPM is superior to all other models considered in the preliminary decision, in terms of estimating the return on equity of the BEE[141]
   c) Use of the SLCAPM as the foundation model, at least as applied in the preliminary decision, will not result in a downward biased estimate of the return on equity capital,[142] and
   d) Use of alternative models will not lead to an outcome which better achieves the ARORO[143]—the preliminary decision expresses a number of concerns in relation to these alternative models.
2. An equity beta of 0.7, when applied in the SLCAPM, will deliver a return on equity that contributes to achievement of the ARORO. The preliminary decision concludes that:[144]
   a) A reasonable range for the equity beta based on evidence from samples of domestic energy network businesses is 0.4 to 0.7, and
   b) Additional information taken into account in that decision—specifically empirical estimates for international energy networks and the theoretical principles underpinning the Black CAPM—indicate that an equity beta at the top of this range is appropriate.
3. An MRP of 6.5% reflects prevailing market conditions and contributes to achievement of the ARORO.[145]
4. The preliminary decision adopts a 'baseline' estimate of the MRP of 6.0% based on historical data, and then uses DGM analysis and other evidence to determine whether its estimate should be above or below that baseline—the preliminary decision considered that DGM evidence could justify a point estimate above the 6.0% baseline, but did not support a point estimate above the top of the range implied by historical excess returns (6.5%).
5. The preliminary decision adopts a different interpretation of some of the empirical evidence to JEN, including:
   a) The decision adopts a different interpretation of the historical excess returns data

140 Preliminary decision, p 3-32.
141 Preliminary decision, p 3-32.
142 Preliminary decision, p 3-62.
143 Preliminary decision, pp 3-32 – 3-33.
144 Preliminary decision, pp 3-36 – 3-37.
145 Preliminary decision, pp 3-34 – 3-35.

b) The decision does not agree that the Wright approach should be used to estimate the MRP—this is because the AER considers that the Wright approach is an alternative implementation of the CAPM, designed to produce information at the return on equity level

c) The decision does not agree that independent valuation reports should inform MRP estimation (only the overall return on equity), and

d) The decision does not agree with SFG's construction of the DGM.

6. The return on equity estimate from the SLCAPM is broadly supported by:[146]

a) Estimates using the Wright approach

b) Estimates from other market participants, including practitioners and regulators, particularly estimates used in Grant Samuel's recent report for Envestra

c) The fact that it is above the prevailing return on debt, and

d) The fact that the regulatory regime to date has been supportive of investment.

252. This reasoning is based on a number of errors of fact and logic, which are described in detail below. As a consequence of these errors, the return on equity in the preliminary decision will not contribute to the achievement of the ARORO and does not reflect prevailing conditions in the market for equity funds. For reasons discussed below, the return on equity derived from the preliminary decision approach will be below what is required to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers.

253. We continue to believe that the ARORO is best achieved through an approach that properly has regard to estimates from all relevant return on equity models. In our April 2015 proposal, we proposed that each of the SLCAPM, the Black CAPM, the FFM and DGM be estimated, and that these estimates each be given equal weight in deriving a return on equity estimate. We maintain our view that this approach would best achieve the ARORO. This approach leads to an estimate of the prevailing return on equity of 9.8%.[147]

254. However, if the AER proposes to continue relying solely on the SLCAPM to estimate the return on equity, it must change the way it implements this model. The way in which the SLCAPM is applied in the preliminary decision leads to a return on equity that is not consistent with the ARORO and does not reflect prevailing market conditions. The preliminary decision does not properly recognise the weaknesses of the SLCAPM, nor does it account for these weaknesses in its application of the model. Further, the AER's practice of applying an effectively fixed risk premium to a variable risk-free rate is not appropriate in current market conditions, since it leads to the return on equity moving in lock-step with changes in the risk-free rate.

255. This submission outlines an alternative approach that involves properly adjusting SLCAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:

- Making a transparent and empirically based adjustment to the equity beta estimate to account for the known shortcomings of the SLCAPM, particularly low beta bias and book-to market bias, and
- Deriving the MRP in a way that gives appropriate weight to measures of the prevailing (current) MRP.

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146 Preliminary decision, pp 3-39 – 3-40.

147 This estimate (9.82%) is calculated using a sample averaging period of the 20 business days to 30 September.

256. This leads to an estimate of the prevailing return on equity of 9.9%.[148]

3.2 THE PRELIMINARY DECISION RETURN ON EQUITY ESTIMATE IS BELOW WHAT IS REQUIRED BY THE MARKET

257. The preliminary decision does not point to any genuine consideration of whether the AER's estimate of the return on equity of 7.3% contributes to the ARORO and is commensurate with prevailing market conditions. The preliminary decision rigidly applied a foundation model (the SLCAPM) without properly considering whether the output of this model is consistent with the requirements of the NER.

258. This is despite evidence—including from 'cross-checks' included in the preliminary decision—that its return on equity estimate is below the efficient equity financing costs of the BEE and not commensurate with prevailing market conditions.

259. In particular, the evidence presented in the preliminary decision indicates that the return on equity estimate in the preliminary decision:

- Is below any comparable recent estimate from market practitioners. Specifically, that estimate is:
  - Below the lower end of the range of imputation-adjusted estimates of the return on equity from independent expert reports surveyed by the AER (a range of 8.98 – 14.67%),[149] and
  - At the bottom of the range of imputation-adjusted estimates of the return on equity from recent broker reports (a range of 7.3 – 9.3%)[150]
- Is below the range indicated by the 'Wright approach'—if properly applied (i.e. with an equity beta that reflects the preliminary decision estimate of this parameter), the Wright approach indicates a range for the return on equity of 7.8 to 9.7%[151]
- Is also below that indicated by current market prices for traded equities and the AER's DGM market-wide analysis—the preliminary decision DGM-based estimates of the MRP implied a range for the market return of 10.26 to 11.36%,[152] which is significantly higher than the AER's implied estimate of the market return of 9.26%,[153] and
- Based on the AER's implementation of the SLCAPM, is below estimates from all other relevant return on equity models—Frontier Economics (**Frontier**) estimates a return on equity of 9.8% using the Black CAPM, 9.8% using the FFM and 10.2% using the DGM, and 9.2% based on its own parameters for the SLCAPM.[154]

260. The above evidence is summarised in Figure 3–1 below.

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148 This estimate (9.89%) is calculated using a sample averaging period of the 20 business days to 30 September.

149 Preliminary decision, p 3-518.

150 Preliminary decision, p 3-521.

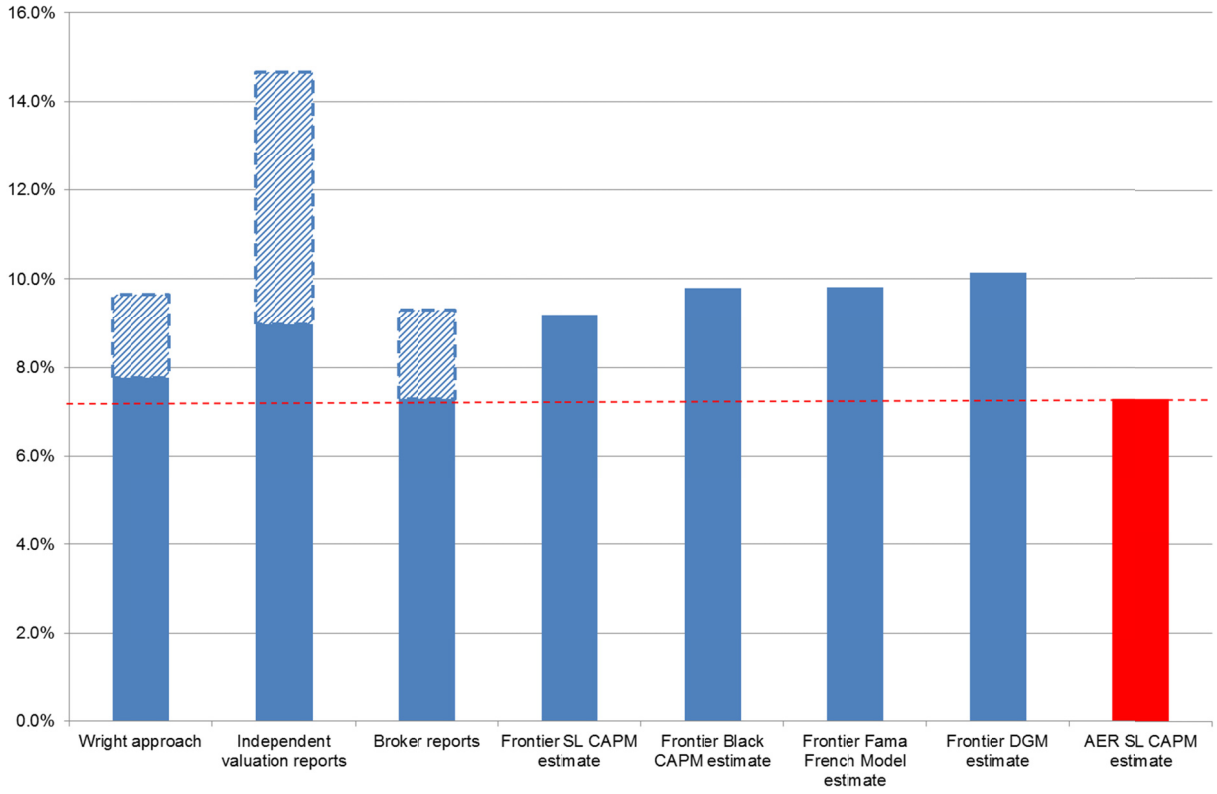
151 Preliminary decision, p 3-513.

152 The AER's DGM estimates of the MRP range from 7.5% to 8.6% (preliminary decision, p 3-362). These are added to the risk-free rate of 2.76% to derive estimates of the market return from the AER's DGM.

153 This is calculated as the sum of the risk-free rate (2.76%) and the AER's estimate of the MRP (6.5%).

154 Frontier Economics, *The required return on equity under a foundation model approach*, January 2016, p 7.

Figure 3–1: Comparison of AER return on equity estimate with other available estimates



(1) Shaded bars indicate ranges of estimates from broker reports, independent expert reports and the Wright approach.

261. This outcome is due to the preliminary decision mechanistically applying the foundation model approach (developed in the guideline), without any meaningful consideration of whether such an approach leads to an estimated return on equity that is consistent with the ARORO and commensurate with prevailing market conditions.

262. More specifically, this is the result of the preliminary decision:

- Relying solely on the output of a model that is known to produce biased estimates, without properly correcting for that bias
- Applying this model in a way that does not reflect market practice and which results in the return on equity simply tracking movements in the risk-free rate, and
- Making errors in the interpretation of key evidence.

263. Each of these errors in the preliminary decision approach is addressed in the following sections.

3.3 THE PRELIMINARY DECISION'S RELIANCE ON THE SLCAPM

264. The preliminary decision concluded that the output of its application of the SLCAPM should be used to estimate the return on equity, including because:

- The SLCAPM is the superior model

- The SLCAPM, at least as applied in the preliminary decision, does not produce biased estimates of the required return on equity, and
- Other proposed models are not fit for purpose, including because these other models are focussed on explaining historical market outcomes, rather estimating the required return on equity, consistent with the ARORO.

265. We consider that each of these critical findings is not consistent with the evidence before the AER.

3.3.1 THE PRELIMINARY DECISION ERRED IN FINDING THAT THE SLCAPM IS THE CLEARLY SUPERIOR MODEL

266. The AER remains of the view that 'the SLCAPM is the clearly superior model to use as the foundation model'.[155] However, no evidence is cited in support of this statement, and we are not aware of any evidence that supports this view.

267. The evidence before the AER in fact shows that the SLCAPM has known weaknesses. In particular, as discussed below, the SLCAPM is known to produce downwardly biased estimates of the required return on equity for low-beta stocks.

268. We note that none of the expert reports commissioned by the AER state that the SLCAPM is superior to other models. We are not aware of any expert report before the AER which expresses this view.

269. Indeed McKenzie & Partington observe:[156]

> *[T]he [SLCAPM] has its weaknesses, but these are well documented and in many cases can either be diagnosed or perhaps compensated for in empirical practice.*

270. As discussed below, it is not clear whether the preliminary decision sought to compensate for the known weaknesses of the SLCAPM, as suggested by McKenzie & Partington, or whether it has simply ignored them. To the extent that the preliminary decision has sought to compensate for these weaknesses, by taking the upper bound of its equity beta range, it cannot reasonably be satisfied it has adequately compensated for their effect, because it does not seek to analyse or quantify this effect.

271. McKenzie & Partington also state:[157]

> *The final estimate of the expected return on equity may have regard to a broad range of relevant material including a range of multifactor models such as the Fama and French (1993) and the APT of Ross (1976), inter alia. Many of these competing models nest this foundation model and so potentially make more use of available information.*

272. Certainly McKenzie and Partington do not appear to view the SLCAPM as superior to all other models. Rather, they acknowledge the weaknesses of the model and recommend that any estimate of the return on equity may take into account a wider range of models, including the FFM.

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155 Preliminary decision, p 3-533.

156 Michael McKenzie and Graham Partington, *Report to the AER – Part A: Return on Equity*, October 2014, p 9.

157 Michael McKenzie and Graham Partington, *Report to the AER – Part A: Return on Equity*, October 2014, p 9.

273. Associate Professor Handley also acknowledges the critical weakness of the SLCAPM, noting:[158]

> *An apparent weakness of the Sharpe-CAPM is the empirical finding, for example by Black, Jensen and Scholes (1972) and Fama and French (2004), that the relation between beta and average stock returns is too flat compared to what would otherwise be predicted by the Sharpe-CAPM – a result often referred to as the low beta bias.*

274. The weaknesses and limitations of the SLCAPM were identified in our April 2015 proposal and the supporting expert reports. In particular, SFG referred to the large body of empirical evidence which shows that the SLCAPM will tend to produce biased estimates of the required return on a low-beta or value stock, and may not fully capture all factors affecting stock returns.[159] SFG's reports also explained how other models such as the Black CAPM and FFM were developed specifically to overcome these known weaknesses in the SLCAPM design.

275. Some of the key empirical evidence demonstrating weakness in the SLCAPM is summarised in Table 3–1 below.

Table 3–1: Summary of key empirical evidence in relation to SLCAPM performance

Study	Key conclusions
Black, Jensen and Scholes (1972)[160]	Black, Jensen and Scholes (1972) tested the SLCAPM theory against empirical data. Their results indicated that the empirical relationship between systematic risk exposure and returns was not consistent with SLCAPM theory. The relationship in the empirical data indicated a higher intercept and flatter slope than that indicated by the SLCAPM. The authors conclude that their results appeared to be strong evidence favouring rejection of the traditional form of the asset pricing model (i.e. the SLCAPM).
Friend and Blume (1970)[161]	The empirical analysis by Friend and Blume (1970) indicates that low-beta stocks generate higher returns than the SLCAPM would suggest and high-beta stocks tend to generate lower returns than the SLCAPM predicts.
Fama and Macbeth (1973)[162]	Fama and Macbeth (1973) empirically test the SLCAPM assumption that the return on a zero-beta asset will be equal to the risk-free rate. Consistent with the earlier findings of Black, Jensen and Scholes (1972), they conclude that this assumption is not supported by the empirical data.
Rosenberg, Reid and Landstein (1985)[163]	The study by Rosenberg, Reid and Landstein, as well as other studies identified a number of SLCAPM anomalies, where stock-specific characteristics seemed related to differences in returns. In particular, the book equity value divided by the market equity value (book-to-market ratio) appeared to be related to variation in returns.

158 John C Handley, Advice on the Return on Equity: Report prepared for the Australian Energy Regulator, 16 October 2014, p 5.

159 SFG, The required return on equity for regulated gas and electricity network businesses, June 2014, [46]–[60].

160 Black, F., M.C. Jensen, and M. Scholes, 1972, "The Capital Asset Pricing Model: Some empirical tests," in *Studies in the Theory of Capital Markets*, Michael C. Jensen, ed., New York: Praeger, 79–121, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, pp 20-22.

161 Friend, I., M. Blume, 1970, "Measurement of Portfolio Performance under Uncertainty," *American Economic Review*, 60, 561–75, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, pp 22-23.

162 Fama, E.F., J.D. MacBeth, 1973, "Risk, return, and equilibrium: Empirical tests," *Journal of Political Economy*, 81, 607–636, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, pp 23-24.

163 Rosenberg, B., K. Reid, and R. Lanstein (1985), "Persuasive evidence of market inefficiency," *Journal of Portfolio Management* 11, 9-17, referred to in : SFG, *The Fama-French model: Report for Jemena Gas Networks, ActewAGL, Transend, TransGrid, and SA PowerNetworks*, 13 May 2014, p 15.

Study	Key conclusions
Fama and French (1992)[164]	Fama and French (1992) demonstrated relationships between returns and book-to-market and size factors which are not accounted for in the SLCAPM.
Brealey, Myers and Allen (2011)[165]	A recent study by Brealey, Myers and Allen confirms the findings of earlier studies, such as the study by Black, Jensen and Scholes (1972), which find that the pattern of empirical data is not consistent with what the SLCAPM would predict.
Brailsford, Gaunt and O'Brien (2012)[166]	Brailsford, Gaunt and O'Brien (2012) provide evidence, using Australian data, that value stocks tend to earn higher returns than the SLCAPM predicts should be the case and growth stocks tend to earn less than the SLCAPM predicts should be the case. The evidence that Brailsford, Gaunt and O'Brien (2012) provide indicates that the SLCAPM underestimates the returns required on value stocks and overestimates the returns to growth stocks.
NERA (2015)[167]	Based on Australian data, and using both in-sample and out-of-sample tests, NERA conclude that there is evidence of bias in the SLCAPM (as applied). NERA states that the evidence indicates that the SLCAPM significantly underestimates the returns generated by low-beta portfolios and overestimates the returns generated by high-beta portfolios. In other words, the model has a low-beta bias. The extent to which the SLCAPM underestimates the returns to low-beta portfolios is both statistically and economically significant.

276. The body of empirical literature relating to identified weaknesses in the SLCAPM, and the development of alternative models to overcome the well-recognised deficiencies in this model, is discussed at some length by the Nobel Prize Committee in the explanatory material accompanying the award of the Nobel Prize for contributions to this field.[168] The Committee observes that by the end of the 1970s, the empirical support for the SLCAPM was increasingly being questioned in a number of studies, including those referred to above.

277. In light of this evidence, the AER cannot rationally conclude that the SLCAPM is superior to all other models. The evidence clearly shows that the SLCAPM has weaknesses and that there are alternative models available, some of which have been designed to address such weaknesses.

3.3.2 THE PRELIMINARY DECISION ERRED IN FINDING THAT ITS IMPLEMENTATION OF THE SLCAPM WILL PRODUCE UNBIASED ESTIMATES

278. The preliminary decision considers the issue of potential bias in the SLCAPM, but concludes:[169]

> *We do not consider the use of the SLCAPM as the foundation model will result in a downward biased estimate of the cost of equity capital.*

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164 Fama, E.F. and K.R. French (1992), "The cross-section of expected stock returns," *Journal of Finance* 47, 427-466, referred to in : SFG, *The Fama-French model: Report for Jemena Gas Networks, ActewAGL, Transend, TransGrid, and SA PowerNetworks*, 13 May 2014.

165 Brealey, R.A., S.C. Myers, and F. Allen, 2011, *Principles of Corporate Finance*, 10th ed., McGraw-Hill Irwin, New York, NY, USA, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, p 24.

166 Brailsford, T., C. Gaunt and M. O'Brien, 'Size and book-to-market factors in Australia', *Australian Journal of Management*, 2012, pages 261-281, referred to in: NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model,* March 2015.

167 NERA, Empirical Performance of Sharpe-Lintner and Black CAPMs, February 2015.

168 Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences, Understanding Asset Prices: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2013, 14 October 2013, section 7.

169 Preliminary decision, p 3-130.

279. Elsewhere the preliminary decision states that:[170]

> *There is no compelling evidence that the return on equity estimate from the SLCAPM will be downward biased given our selection of input parameters.*

280. It is not entirely clear from these statements whether the preliminary decision found that:

1. In general, the SLCAPM will produced unbiased estimates of the required return on equity (**Finding 1**), or
2. To the extent that the SLCAPM may produce biased estimates, the selection of input parameters in that decision adequately corrects for any bias (**Finding 2**).

281. The preliminary decision must have made either Finding 1 or Finding 2 in order for it to be satisfied that its approach will deliver a return on equity which contributes to achievement of the ARORO.

3.3.2.1 Empirical evidence does not support Finding 1

282. We consider that Finding 1 would involve a critical error of fact. Empirical evidence clearly demonstrates that the SLCAPM will lead to downwardly biased estimates of the return on equity for low-beta stocks. This empirical evidence is referred to in a number of the expert reports supporting our April 2015 proposal, including:

- Expert reports from SFG—referring to the early empirical analysis of SLCAPM performance which laid the foundations for the development of alternative models such as the Black CAPM and FFM. This included the work of Black, Jensen and Scholes (1972), Friend and Blume (1970) and Fama and Macbeth (1973) referred to above,[171] and
- NERA's comprehensive review—of the empirical literature on the performance of the SLCAPM and alternative models. NERA concludes from its review of the SLCAPM literature:[172]

> *It has been known for well over 40 years that empirical versions of the SLCAPM tend to underestimate the returns to low-beta assets and overestimate the returns to high-beta assets…*
>
> *These early results have been confirmed in many, more recent studies. These studies have also shown that the SLCAPM tends to underestimate the returns to value stocks and low-cap stocks.*

283. Further evidence of bias in SLCAPM estimates of the return on equity is provided by the recent analysis of NERA, using Australian data.[173] NERA concludes that the evidence indicates that the SLCAPM significantly underestimates the returns generated by low-beta portfolios and overestimates the returns generated by high-beta portfolios. In other words, the model has a low-beta bias. The extent to which the SLCAPM underestimates the returns to low-beta portfolios is both statistically and economically significant.

284. The only response to this in the preliminary decisions was to observe that the results of NERA's analysis 'appear counterintuitive'.[174] This is not a proper basis for simply dismissing this very important piece of analysis. The fact that NERA's results were contrary to the AER's prior intuition is unsurprising, given that the AER may have expected the empirical relationship between beta and stock returns to reflect what is predicted by the SLCAPM. The fact that the empirical results were not consistent with the predictions of the SLCAPM is not a

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170 Preliminary decision, p 3-62.

171 SFG, The required return on equity for regulated gas and electricity network businesses, June 2014, [46]–[60].

172 NERA, Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model, March 2015, p iii.

173 NERA, *Empirical Performance of Sharpe-Lintner and Black CAPMs*, February 2015.

174 Preliminary decision, p 3-285.

reason to dismiss the empirical analysis. Rather, this ought to have confirmed for the AER what the previous studies had indicated—that there is a significant weakness in the SLCAPM, in terms of its performance against the empirical data—or at least put the AER on notice that further genuine investigation is needed.

285. In dismissing the NERA analysis and earlier studies, the preliminary decision also refers to advice from Partington—which it considers supports a finding that the SLCAPM will not produce downwardly biased estimates. However, the Partington advice referred to in that decision does not address the empirical evidence of *low-beta bias* in the SLCAPM (i.e. evidence that the SLCAPM underestimates the return on equity for stocks with a beta below one). Rather, in the passage referred to in the decision, Partington addresses an entirely separate issue of whether there may be a theoretical or statistical justification for adjusting equity beta estimates to account for *statistical* bias. The preliminary decision misinterpreted the advice of its expert on this point.

3.3.2.2 There is no basis for Finding 2

286. The preliminary decision did not advance any reasoned or principled basis for Finding 2 and, in any event, there can be no reasonable basis for such a finding. The preliminary decision does not quantify the effect of such bias, nor does it make any transparent adjustment to its SLCAPM parameter estimates to correct for bias.

287. The preliminary decision does make an adjustment to its equity beta estimate, from what it refers to as 'the best empirical estimate' of this parameter. However, it is not clear whether this adjustment is intended to correct for bias in the SLCAPM. In any event, given that the preliminary decision does not quantify the effect of SLCAPM bias, it cannot reasonably be satisfied that this adjustment adequately corrects for such bias.

288. Indeed, the preliminary decision appears to acknowledge that its equity beta estimate should be adjusted upwards to correct for bias in the SLCAPM, but says it cannot ascertain by how much it needs to adjust its estimate because it does not empirically estimate the Black CAPM. The preliminary decision does not calculate a specific uplift to its beta to correct for SLCAPM bias, but instead makes an arbitrary upward adjustment in the hope that this will adequately account for the issue that it has identified.

289. The preliminary decision states:[175]

> *We consider the theoretical principles underpinning the Black CAPM demonstrate that market imperfections could cause the true (unobservable) expected return on equity to vary from the SLCAPM estimate. For firms with an equity beta below 1.0, the Black CAPM may predict a higher expected return on equity than the SLCAPM. We use this theory to inform our equity beta point estimate, and consider it supports an equity beta above the best empirical estimate implied from Henry's 2014 report. However, while the direction of this effect may be known, the magnitude is much more difficult to ascertain. We do not consider this theory can be used to calculate a specific uplift to the equity beta estimate to be used in the SLCAPM. This would require an empirical implementation of the Black CAPM, and we do not give empirical evidence from the Black CAPM a role in determining the equity beta for a benchmark efficient entity.*

290. Ultimately, the preliminary decision adopts the top of its selected range for the SLCAPM equity beta—in effect, the preliminary decision makes an upward adjustment to the equity beta, from what it refers to as the 'best empirical estimate' to the upper limit of its range. However, given that the preliminary decision has not quantified the effect of SLCAPM bias, it cannot reasonably be satisfied that choosing the top of its equity beta range will adequately correct for such bias.

291. JEN considers that selecting the top of the equity beta range in the preliminary decision will not adequately correct for the bias in the SLCAPM indicated by Black CAPM theory. If the AER's parameter estimates are

[175] Preliminary decision, p 3-497.

used in the Black CAPM along with the best available estimate of the zero-beta premium,[176] the return on equity estimated by the Black CAPM is above the return on equity estimated in the preliminary decision using the SLCAPM (and adopting the upper limit of its equity beta range).

292. Table 3–2 below shows that even if the AER's lower bound beta value is used in the Black CAPM, the resulting return on equity estimate is still above the AER's SLCAPM estimate using the upper bound beta value. If the AER's 'best empirical estimate' of beta is used in the Black CAPM, the resulting return on equity estimate is significantly above the preliminary decision SLCAPM estimate. This indicates that if the AER were to properly adjust its SLCAPM beta estimate to account for the bias in the SLCAPM indicated by Black CAPM theory, then the resulting beta would need to be higher than 0.7.

Table 3–2: Comparison of SLCAPM and Black CAPM return on equity estimates[177]

Model	Return on equity estimate
SLCAPM—equity beta 0.7; MRP 6.5%	7.3%
Black CAPM—equity beta 0.4 (AER lower bound); MRP 6.5%	7.4%
Black CAPM—equity beta 0.5 (AER 'best estimate'); MRP 6.5%	7.7%
Black CAPM—equity beta 0.7 (AER upper bound); MRP 6.5%	**8.3%**

293. We agree that, if the SLCAPM is to be used alone to estimate the return on equity, some adjustment needs to be made to its input parameters to account for the known weaknesses of the model. If the SLCAPM is used without any adjustment, the empirical evidence shows that the return on equity for low-beta stocks will be significantly under-estimated.

294. Our concern is that the preliminary decision adjustment to the equity beta is not sufficient to account for the known weaknesses of the SLCAPM. As shown above, even if the AER's view as to the 'best empirical estimate' of equity beta were to be accepted—which we do not for reasons set out in section 3.4.3 below—it is clear that adjusting the equity beta upwards to 0.7 does not account for the bias in the SLCAPM.

295. In this submission, we put forward an alternative method for estimating the return on equity using the SLCAPM alone, with empirically-based adjustments to account for the known weaknesses of this model. This alternative method is explained in section 3.6 below and the accompanying expert report from Frontier.

3.3.3 THE PRELIMINARY DECISION ERRED IN ITS FINDINGS ON OTHER AVAILABLE MODELS

296. The preliminary decision raises a number of concerns with the other available return on equity models. Given these concerns, the preliminary decision gives these alternative models either no role in its determination of the return on equity, or a very limited role.

297. The key concerns raised in the preliminary decision are:

- Alternative models are sensitive to input assumptions and choices around estimation periods and methodologies
- Some alternative models are not empirically reliable
- Some alternative models are not designed to estimate ex ante returns

[176] Zero-beta premium of 3.34%, as estimated by SFG (SFG, *Cost of equity in the Black Capital Asset Pricing Model*, 22 May 2014, section 4).

[177] All calculations are based on a risk-free rate of 2.76% (as used in the preliminary decision) and a Black CAPM zero-beta premium of 3.34% (as estimated by SFG – see: SFG, *Cost of equity in the Black Capital Asset Pricing Model*, 22 May 2014, section 4).

- Some alternative models (particularly the FFM) lack theoretical foundation
- Some alternative models (particularly the Black CAPM) are not widely used by market practitioners, academics or regulators, and
- Some alternative models produce return on equity estimates that appear 'very high'.

298. For reasons discussed below, each of these concerns is unfounded. In several cases, the preliminary decision method and reasons for rejecting this other evidence (or relegating it to an indirect role) are illogical and unreasonable and/or apply equally to the SLCAPM.

3.3.3.1 Complexity and sensitivity of models to assumptions

299. A key concern raised in the preliminary decision on alternative return on equity models is that they are sensitive to inputs assumptions and methodological choices. For example the preliminary decision concludes that the DGM is highly sensitive to assumptions around the growth rate of dividends.[178] In relation to the FFM, the preliminary decision identifies a range of different methodological choices which might lead to different results.[179]

300. Simply observing that a return on equity model is sensitive to input assumptions and methodological choices does not provide a basis for rejecting that model or giving it a very limited role. All return on equity models—including the SLCAPM—are sensitive to input assumptions. This is why it is important to estimate all model parameters as accurately as possible.

301. The same concern could be expressed in relation to the SLCAPM. Clearly the results produced by the SLCAPM could vary widely depending on one's choice of input parameters and the methodologies used to estimate those parameters. Just based on the ranges for the equity beta and MRP set out in the preliminary decision (and holding the risk-free rate constant), the return on equity produced by the SLCAPM could range from 4.8% to 11.4%.[180] This wide range of values arises due to different approaches that could be taken to estimating the MRP, and different methodological and data choices that could be made when estimating the MRP or beta.

302. Grant Samuel, in its submission in response to the NSW draft decisions, expresses concern at the AER's unbalanced treatment of the DGM and SLCAPM in this regard. Grant Samuel notes:[181]

> *The DGM, in its simplest form, has only two components to estimate – current dividend yield and the long term growth rate for dividends. The current yield is a parameter that can be estimated with a reasonably high level of accuracy, particularly in industries such as infrastructure and utilities. We accept that the question of the long term dividend growth rate becomes the central issue and is subject to a much higher level of uncertainty (including potential bias from sources such as analysts) and we do not dispute the comments by Handley on page 3-61.*
>
> *However, there is no way in which the issues, uncertainties and sensitivity of outcome are any greater for the DGM than they are with the CAPM which involves two variables subject to significant measurement issues (beta and MRP).*

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178 Preliminary decision, p 3-79.

179 Preliminary decision, p 3-73.

180 That is, adopting a range for the MRP of 5.0% - 8.6% and a range for the equity beta of 0.4 – 0.7.

181 Grant Samuel, *Australian Energy Regulator – Draft Decision*, letter to the directors of TransGrid, 12 January 2015, p 3.

303. Dr Robert Malko, a regulatory expert in the United States (where the DGM is frequently used) similarly notes:[182]

> *Certainly the DGM is sensitive to its input assumptions and if it would be inappropriately implemented, it could deliver implausible results. In this regard, I see no difference between this and other models. If inappropriate inputs are used, any of the models can produce implausible results.*
>
> *It is common in United States regulatory determination processes for there to be debate between businesses, customers and the regulators concerning which inputs to use but these debates occur with a context in which expert testimony has regard to whether the inputs used deliver plausible results and decision making is guided by a body of court and regulatory precedent.*
>
> *Over-all, the wide acceptance and use of the DGM in the United States demonstrates that this model is sufficiently robust for it to be useful in economic regulatory decision making.*

304. For the reasons expressed by Dr Malko, the sensitivity of a model to input assumptions should not be a reason for dismissing it.

3.3.3.2 Reliability of empirical estimates

305. A particular concern raised in preliminary decision on the Black CAPM is that estimates of the return on equity will be unreliable, because there is no reliable method for obtaining an estimate of the zero-beta premium.

306. The preliminary decision concern appears to be that, because different estimation techniques have produced varying estimates of the zero-beta premium, it cannot rely on any empirical estimates of this parameter. The preliminary decision states:[183]

> *We consider SFG's latest estimate of the zero beta premium appears more plausible. However, we remain of the view that the large range of zero beta estimates by consultants indicates that the model is unsuitable for estimating the return on equity for the benchmark efficient entity.*

307. Besides noting that it is 'plausible', the preliminary decision did not test the robustness or reliability of SFG's proposed value for the zero-beta premium. Instead, the preliminary decision dismissed SFG's estimate on the basis that there are other differing estimates, some of which are 'implausible'.

308. This is an illogical and unreasonable approach to assessment of the proposed Black CAPM parameter values and return on equity estimate. The preliminary decision cannot reasonably conclude that *all* estimates of the zero-beta premium are unreliable, just because *some* estimates of this parameter appear implausible. The same logic could be used to dismiss just about any return on equity model (or parameter), including the SLCAPM to the extent that some estimates of the MRP or equity beta are considered unreliable.

309. This is particularly so given that there are detailed and compelling explanations as to why SFG's estimate differs from other estimates of the zero-beta premium. As explained by SFG, recent empirical studies demonstrate the significance of the book-to-market factor in explaining variation in stock returns in Australia. It is for this reason that the SFG study, unlike earlier studies of the zero-beta premium, controls for this factor when estimating the premium. SFG controls for this by forming portfolios that have approximately the same composition in terms of book-to-market ratio and other relevant firm characteristics.[184] As is clear from SFG's explanations, the difference between their estimates of the Black CAPM zero-beta premium and earlier estimates does not

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182 Statement of Dr J Robert Malko, 16 June 2015, p 5.

183 Preliminary decision, p 3-312.

184 SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [65]; SFG, *Cost of equity in the Black Capital Asset Pricing Model,* 22 May 2014, section 4.

indicate that the model is empirically unreliable—rather, it reflects a development in the methodology for estimating this parameter.

310. We proposed using SFG's estimates of the zero-beta premium and required return on equity from the Black CAPM in estimating the return on equity. If the AER is to reject this proposal, it must first consider SFG's estimates and assess whether adopting these estimates would (either alone or in combination with other models or methods) contribute to the achievement of the ARORO. The AER cannot simply reject our proposal on the basis that there are other estimates of Black CAPM parameters (which we have not sought to rely on) which the AER considers to be implausible.

311. Instead of seeking a reliable estimate of the Black CAPM zero-beta premium, the preliminary decision effectively assumed this to be zero (by relying solely on the SLCAPM to estimate the return on equity). This is an unreasonable approach in circumstances where the preliminary decision identified the Black CAPM as a relevant model. Given that the Black CAPM is clearly a relevant model, the AER should properly examine what the best estimate for the zero-beta premium is—and this value should be used unless it is so unreliable that assuming a value known to be incorrect (a zero value) is a preferable outcome.

3.3.3.3 Lack of theoretical foundation

312. The preliminary decision again raised a concern in relation to the theoretical foundation for the FFM. This concern has been addressed in our April 2015 proposal and the supporting expert reports of SFG and NERA.[185]

313. As explained by SFG, the basis for developing the FFM was in studies documenting the empirical failings of the SLCAPM.[186] These studies document that:

- When the stock market index is used as the only factor (as in the SLCAPM), the model *does not* fit the data, and
- When the additional FFM factors (size and book-to-market ratio) are included, the model *does* fit the data better.

314. These earlier findings have been confirmed by more recent analysis using Australian data. A recent study shows that while the size is not significant in the Australian data, the book-to-market factor certainly is.[187]

315. The general theoretical foundation for the FFM is the same as for the SLCAPM, in that both models posit that there is a linear relationship between the expected return of a particular stock and the expected return of a mean-variance efficient portfolio.[188] Where theory of the FFM differs from SLCAPM theory is that in the FFM, non-diversifiable risk is proxied by three factors, rather than one factor as implied by SLCAPM theory.

316. The three factors posited by FFM theory are:[189]

- The excess return to the market portfolio (measured relative only to stocks)

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185 SFG, *The Fama-French model*, 13 May 2014, pp 27-30; SFG, Using the Fama-French model to estimate the required return on equity, February 2015; NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model*, March 2015, section 2.3.

186 SFG, *The Fama-French model*, 13 May 2014, pp 27-30; SFG, *Using the Fama-French model to estimate the required return on equity,* 13 February 2015.

187 Brailsford, T., C. Gaunt, and M. O'Brien (2012), 'Size and book-to-market factors in Australia', *Australian Journal of Management*, 37, 261–281.

188 SFG, *The Fama-French model*, 13 May 2014, p 27.

189 NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model*, March 2015, p 17.

- The difference between the return to a portfolio of high book-to-market stocks and the return to a portfolio of low book-to-market stocks (**HML**), and
- The difference between the return to a portfolio of small-cap stocks and the return to a portfolio of large-cap stocks (**SMB**).

317. The theoretical and empirical foundation for the FFM is discussed at some length by the Nobel Prize Committee in the explanatory material accompanying the award of the Nobel Prize to Eugene Fama for contributions to this field.[190]

3.3.3.4 Models not designed to estimate ex ante returns

318. The AER expresses a concern in relation to the FFM that the model '*is not clearly estimating ex ante required returns*'.[191]

319. It is curious that this criticism is only levelled at the FFM, given that theoretical foundation for the FFM is the same as for other asset pricing models, including the SLCAPM and the Black CAPM. The key objective of all asset pricing models is to explain the cross section of stock returns, based on explanatory factors—such as market risk in the case of the SLCAPM—that have been observed to correlate with stock returns in the past. The basis for development of the FFM (and also the Black CAPM) was in studies documenting the failure of the SLCAPM to adequately explain variations in returns.

320. The reason for using any asset pricing model is that the historically observed relationships between returns, risk and other factors may be expected to continue in future. In this regard, the rationale for using the FFM is no different to the rationale for using the SLCAPM or Black CAPM.

321. As noted above, empirical analysis using Australian data shows that there is a statistically and economically significant relationship between returns and book-to-market ratios—and this relationship has endured over time. Given the significance of this relationship in the historical data, and thus its explanatory power, there is no reason to expect that it would not continue in future. The position on this topic in the preliminary decision is akin to saying that predicting that the sun will rise tomorrow is not an 'ex ante analysis of expected behaviour' if it is based on observations that the sun has always risen in the past. Inductive reasoning is neither weak nor, of itself, lacking in predictive power.

3.3.3.5 Models not widely used

322. The preliminary decision concern that alternative models are not widely used was also addressed in our April 2015 proposal and supporting expert reports. We observed that while some of these models are yet to gain acceptance among Australian regulators, it is clear that they are widely used by academics, market practitioners and overseas regulators and that they are market-respected.

323. Our position on this issue is further reinforced by recent evidence, including evidence of the use of models other than the SLCAPM in the United States.

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190 Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences, *Understanding Asset Prices: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2013*, 14 October 2013, section 7.

191 Preliminary decision, p 3-70.

324. Dr Robert Malko states, in relation to regulatory practice in the United States:[192]

> *I have observed that in the United States regulators and expert financial witnesses generally use multiple methods, at least two, when determining a reasonable range and reasonable point estimate for the cost of common equity for a regulated energy utility.*

325. Specifically in relation to the Black CAPM, Dr Malko states:[193]

> *[A]lthough 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.*

326. Dr Malko explains that the 'Empirical CAPM', as referred to in US practice, involves a higher intercept and flatter relationship between returns and beta than under the SLCAPM.[194] Thus, the Empirical CAPM as used in US practice is consistent with the theory of the Black CAPM.

327. This is consistent with evidence from SFG that both the Black CAPM and DGM are commonly used in rate of return regulation cases in other jurisdictions.[195] SFG also notes that the FFM, while not as widely used in regulatory practice, is widely used by market practitioners and is well recognised in academic literature.[196]

3.3.3.6 'Very high' return on equity estimates

328. A further concern raised in the preliminary decision about the DGM is that:[197]

> *The very high return on equity estimates from SFG's DGM model, equating to an equity beta of 0.94 in the SLCAPM, appear inconsistent with the results in Professor Olan Henry's 2014 report.*

329. The preliminary decision appears to suggest that, because the return on equity estimates produced by the DGM are higher than those produced by the SLCAPM (with the AER's preferred parameter values), the DGM estimates cannot be relied on.

330. This is an irrational and illogical approach to assessing the reliability of DGM estimates of the return on equity. This approach assumes that the SLCAPM estimates are accurate and reliable, and thus can be used as the benchmark to test the plausibility or reliability of estimates from other models. Adopting similar logic, one could conclude that the SLCAPM is unreliable because it produces estimates that are 'very low' when compared to the DGM and any other models that produce higher estimates.

331. Alternatively, the AER may consider that an implied equity beta of 0.94 would be 'too high', because it is above its own estimate of that parameter. However, there are two problems with such reasoning:

- **It assumes that the AER's equity beta analysis is correct**—and that any estimate which differs from its estimate of 0.7 (or falls outside its determined range of 0.4–0.7) must be incorrect. The preliminary decision appears to consider that its estimate is more likely to be correct because it accords with the assumption that energy businesses are in general 'low risk'.

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192 *Statement of Dr J Robert Malko*, 16 June 2015, p 10.

193 Statement of Dr J Robert Malko, 16 June 2015, p 8.

194 Statement of Dr J Robert Malko, 16 June 2015, p 8.

195 SFG, The required return on equity for regulated gas and electricity network businesses, 6 June 2014, p 40.

196 SFG, *The Fama-French model*, 13 May 2014, pp 17-22.

197 Preliminary decision, p 3-321.

However, simply asserting that energy businesses are generally 'low risk' does not provide a basis for preferring one equity beta estimate over another, particularly where both of these estimates are less than one. If the AER believes that energy network businesses are 'low risk', all this would indicate is that the equity beta is likely to be less than one.

In any event, we do not agree that low elasticity of demand for energy services indicates that network businesses are 'low risk'—which is the key reason in the preliminary decision for arguing that they are. It is well recognised that the relevant risks to a business include both operating and financial risks. Even if the AER considers the operating risk of energy networks to be relatively low (compared to the average firm), it must be recognised that financial risk is relatively high, due to high leverage when compared to the average firm in the market. Therefore, the preliminary decision cannot reasonably conclude that overall, energy network businesses are 'low risk'.[198] One would need to test empirically the relative importance of operating and financial risks when assessing overall risk.

- **It assumes that the SLCAPM will deliver unbiased results of the return on equity**—an implicit assumption of the model. If the SLCAPM is in fact delivering downwardly biased estimates (as indicated by the empirical evidence referred to above), then the implied equity beta needed to deliver a DGM-equivalent result must include an uplift to account for this bias. In other words, if there is a bias in the SLCAPM that is not accounted for in the AER's equity beta of 0.7, then this will contribute to a higher equity beta being needed to deliver a DGM-equivalent result.

332. The AER is required to have regard to all relevant estimation methods, financial models, market data and other evidence.[199] The AER cannot reject relevant financial models simply on the basis that the results they produce are inconsistent with the results of the AER's preferred model. Where two or more relevant models produce conflicting results, it is incumbent (on the AER) to assess each of the models on their merits and on that basis decide how their results are to be taken into account in determining the return on equity.

333. When faced with two models that produce differing results there are three possible hypotheses:

1. The model producing the lower estimate is accurate and unbiased, while the other model is upwardly biased or has been incorrectly applied
2. The model producing the higher estimate is accurate and unbiased, while the other model is downwardly biased or has been incorrectly applied, or
3. There is a degree of error or imperfection in both models and the correct outcome lies somewhere between or outside the two.

334. The preliminary decision clearly did not test these possible hypotheses. Rather, the preliminary decision appears to assume that the first hypothesis is correct—i.e. that the SLCAPM is reliable and the DGM is not—without any rational basis. This is despite other evidence that suggests that either the second or third hypothesis is more likely to be correct. As noted above, there is empirical evidence that the SLCAPM will produce downwardly biased estimates of the SLCAPM for low-beta stocks.

335. In any event, it is not clear that the DGM return on equity estimate is 'very high', when compared to the results of other relevant models and the cross-checks in the preliminary decision. When comparing the outputs of the four relevant models, the SLCAPM estimate appears 'very low' when compared to the results of the other three models (see Figure 3–1 above).

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198 This issue is discussed further in the ENA's submission to the AER equity beta issues paper (ENA, *Response to the Equity Beta Issues Paper of the Australian Energy Regulator*, 28 October 2013, pp 14-20) and in a recent report from Frontier Economics (Frontier, *Review of the AER's conceptual analysis for equity beta*, June 2015).

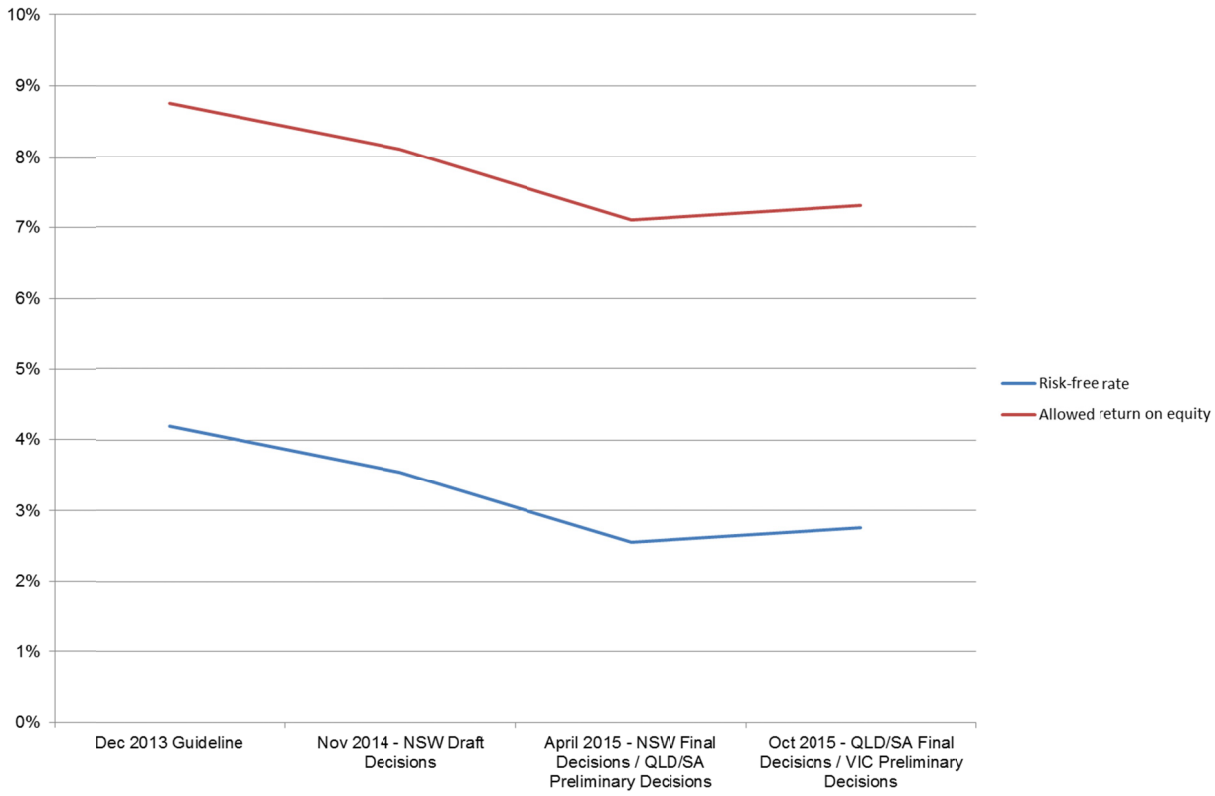
199 NER, cl 6.5.2(e)(1).

3.4 APPLICATION OF THE SLCAPM IN THE PRELIMINARY DECISION

3.4.1 MECHANISTIC APPLICATION OF THE SLCAPM

336. The AER continues to apply the SLCAPM in a largely mechanistic manner, by adding an effectively fixed ERP to a variable risk-free rate. The result is that over the past two years the AER's return on equity estimate has moved in lock-step with the risk-free rate.

Figure 3–2: Movement in the allowed return on equity under AER application of the SLCAPM



Source: AER decisions and guideline, JEN analysis.

337. This approach is at odds with evidence that the MRP has increased as the risk-free rate has fallen, including the evidence from the AER's own DGM. This evidence is discussed further below.

338. It is also at odds with how the SLCAPM is applied by market practitioners. In an expert report that was submitted with our April 2015 proposal, Incenta explained that as the risk-free rate has fallen over the past 18 months, the vast majority of independent expert reports have adjusted either the risk-free rate and/or MRP upwards.[200] The AER's approach of maintaining the same MRP estimate and combining this with a falling risk free rate is inconsistent with this observed market practice.

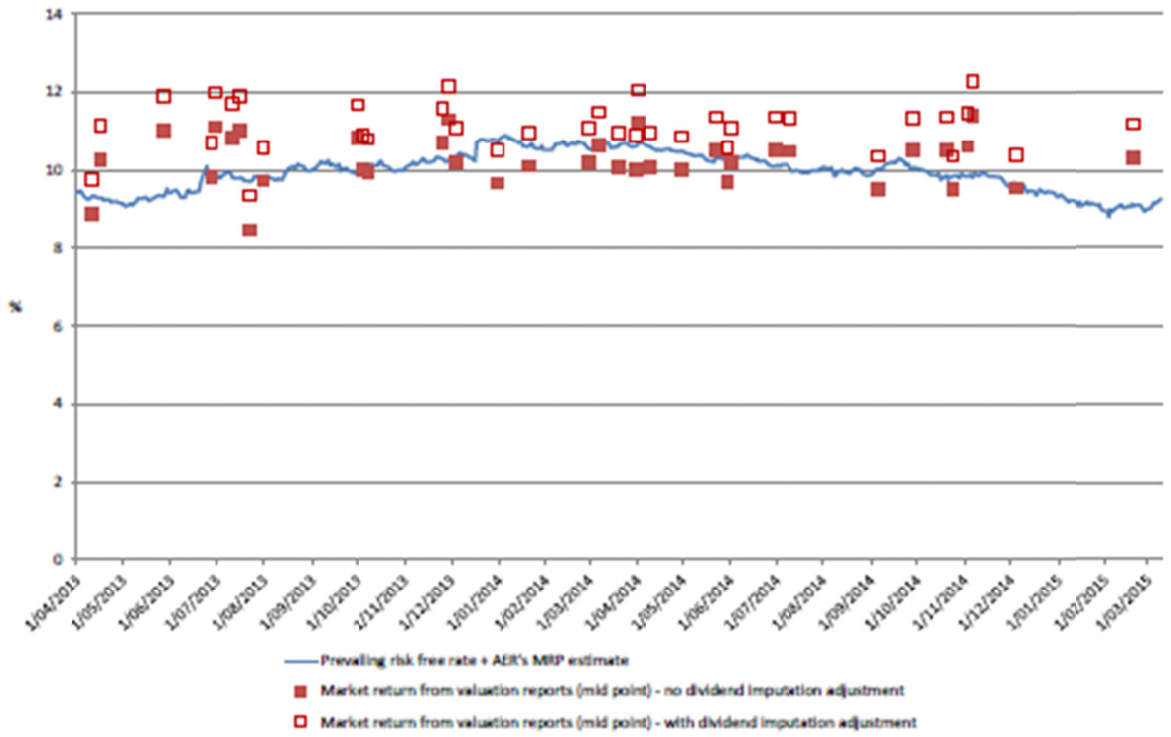
339. This market evidence is consistent with that presented in the preliminary decision.[201] The AER's analysis of independent expert reports (Figure 3-33 of the preliminary decision) indicates that as the risk-free rate has fallen over the past two years, estimates of the market return in independent expert reports have remained relatively

200 Incenta, *Further update on the required return on equity from independent expert reports*, February 2015.

201 Preliminary decision, p 3-535.

steady. This can be contrasted with the AER's assumption (as illustrated by the blue line in Figure 3-33) that over this period the market return has fallen in lock-step with the risk-free rate.

Figure 3–3: Market return from valuation reports [Figure 3-33 of preliminary decision]



Source: AER analysis of data sourced from the Thomson Reuters Connect 4 database, Figure 3-33 of preliminary decision.

340. The preliminary decision analysis also indicates that independent experts tended to increase their estimates of the ERP when the risk-free rate is low. Figure 3-32 in the preliminary decision indicates that, based on a review of independent expert reports those experts estimated:[202]

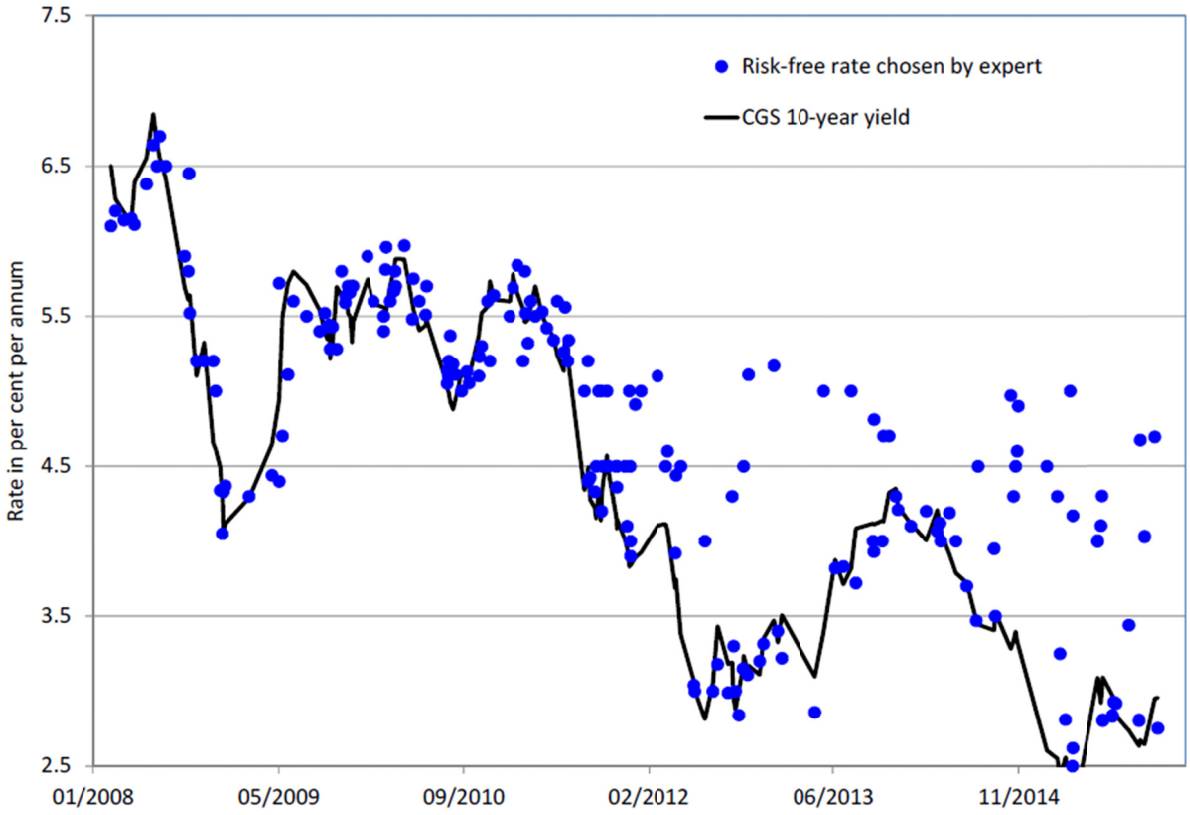
- The ERP to be in the range of 4%–6% (not adjusted for imputation credits) when the risk-free rate is in excess of 5%, and
- The ERP to be in the range of 9.5%–11.5% (not adjusted for imputation credits) when the risk-free rate below 3%.

341. The preliminary decision analysis of independent expert reports is confirmed by more recent analysis from HoustonKemp. As noted above, HoustonKemp observes that in recent times a number of independent experts have used risk-free rates above the prevailing Commonwealth Government Securities (**CGS**) yield, leading to more stability in their estimates of the prevailing market return (and implicitly higher MRP assumptions) than under the AER's approach.[203] This is shown in Figure 3–4 below. This evidence suggests that market practitioners do not believe that the return on equity has simply been moving in lock-step with the risk free rate in recent years.

202 Preliminary decision, Figure 3-32, p 3-534.

203 HoustonKemp, The Cost of Equity: Response to the AER's Draft Decisions for the Victorian Electricity Distributors, ActewAGL Distribution and Australian Gas Networks, January 2016, p 43 and Figure 7.

Figure 3–4: Risk-Free Rates chosen by independent experts and 10-year CGS Yield over time



Note: Data are from the Connect-4 database, the ASX and the RBA. The 10-year CGS yields are interpolated from the RBA files f16.xls, f16hist.xls and f16hist2013.xls.

342. Assuming that the return on equity moves in lock step with CGS yields is inappropriate in current market conditions. Further evidence provided with this submission demonstrates that the recent decline in CGS yields has been driven by factors which would not be expected to affect the return on equity to the same extent.

343. CEG points to evidence from numerous Australian and international authorities that yields on AAA rated sovereign government debt (including CGS) have been forced down in recent years by global forces, including:[204]

- Shrinking supply of AAA rated Sovereign debt globally and shrinking supply of substitutes in the form of safe private sector debt
- Heightened relative risk aversion and increased levels of perceived relative risk for equity vis-à-vis government debt, and
- Heightened demand for liquid assets post GFC—including due to changes to banking regulations.

[204] CEG, *Measuring risk free rates and expected inflation*, April 2015, p 1.

344. CEG explains that none of these factors that have been lowering CGS yields would be expected to also lower the return on equity. CEG concludes:[205]

> *None of these factors can be expected to lower the cost of equity for private corporations. Consequently, to the extent that these factors do explain, at least in part, unprecedented low government bond yields then it follows that the cost of equity will not have fallen in line with falling government bond yields. This is just another way of saying that the risk premium, measured relative to government bond yields, will have risen.*

345. Frontier Economics similarly notes that declines in CGS yields have been attributed to unprecedented monetary easing by central banks and a shortage of risk-free assets as demand for these assets has increased. Frontier notes that at least some of these factors appear to be unique to the government bond market and therefore would not be expected to affect the return on private equity—for example, tighter banking regulations have increased the demand for government bonds but not equity, and the demand from foreign investors has been much more pronounced in the government bond market than the equity market.[206]

346. Further, Frontier points to empirical evidence that the return on equity has not fallen in lockstep with the decline in government bond yields.[207]

3.4.2 DETERMINATION OF THE MRP

3.4.2.1 The AER's decision on the MRP

347. The preliminary decision adopted a three-step approach to estimating the MRP:[208]

- **In step one**—the decision adopted a 'baseline' estimate for the MRP, based on estimates of historical excess returns. The preliminary decision noted that the information on historical excess returns indicated a baseline estimate for the MRP of 6.0%. This baseline estimate was taken from a range of estimates of historical excess returns of 5.0% to 6.5%.[209]
- **In step two**—the decision had regard to DGM evidence in order to determine whether it should select an MRP point estimate above or below the baseline estimate of 6.0%. The AER's DGM estimates of the MRP ranged from 7.5% to 8.6% and its preferred three-stage estimates ranged from 7.7% to 8.6%.[210] The preliminary decision noted that this information could justify a point estimate above the 6.0% baseline, but did not support a point estimate above the top of the range implied by historical excess returns (6.5%).[211]
- **In step three**—the decision placed some reliance on survey evidence and conditioning variables. The preliminary decision noted that this information, in conjunction with DGM evidence, helps to indicate how far above or below the baseline estimate the MRP point estimate should be.

348. The effect of adopting this three-step approach is that critical evidence as to the prevailing MRP, from the AER's DGM model, has very little influence on the determination of the point estimate. This evidence is only used to indicate whether the prevailing MRP is likely to lie above or below the 'baseline' estimate of 6.0%—which reflects the AER's view of the historical average MRP. The estimates from the AER's DGM model do not appear to otherwise influence the preliminary decision on the MRP. Ultimately, the preliminary decision

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205 CEG, *Measuring risk free rates and expected inflation*, April 2015, p 2.

206 Frontier Economics, *The relationship between government bond yields and the market risk premium*, January 2016, pp 28-29.

207 Frontier Economics, *The relationship between government bond yields and the market risk premium*, January 2016, pp 30-31.

208 Preliminary decision, p 3-432.

209 Preliminary decision, p 3-430.

210 Preliminary decision, p 3-362.

211 Preliminary decision, p 3-434.

estimate of the prevailing MRP is based on historical average measures, and evidence as to the prevailing MRP is only used to determine which of the historical average measures is used.

349. We are concerned that the MRP estimate resulting from this approach will not reflect prevailing market conditions. The evidence before the AER (including from the AER's own DGM analysis) indicates that the prevailing MRP is not in line with the historical average. Despite this, the preliminary decision tied the MRP estimate to the range of historical average measures. Measures of the prevailing MRP are only used to determine which historical average measure is to be used.

350. The AER's DGM estimates do not merely indicate that the MRP is somewhere above 6.0%. Rather, the AER's DGM estimates indicate that the current MRP is somewhere in the range of 7.5% to 8.6%. This evidence in no way confirms or supports the preliminary decision estimate of 6.5%.

351. The preliminary decision incorrectly analysed the range for the historical average MRP as suggesting that the prevailing MRP could be found in this range, whereas all that this range indicates is that the MRP in *average* market conditions (i.e., the average of the market conditions over the historical period that was used) had a range of somewhere between 5.0% to 6.5%. Consequently, the preliminary decision fails to appreciate that the best estimate of the *prevailing* MRP need not fall within the statistical range of estimates for the historical average excess return—for example, if the contemporaneous market conditions differed from the historical average conditions because the risk-free rate was at unprecedented lows.

352. The preliminary decision also appears to constrain the appropriate MRP through this three-step approach. By considering historical excess return estimates in step one, the preliminary decision appears to constrain the range of possible MRP outcomes to that indicated by its range of estimates for the historical average excess returns (5.0% to 6.5%). Consequently, the evidence considered under step two (the AER's DGM estimates) could only have an effect on the MRP to the extent that it confirmed an estimate within the range determined under step one. To the extent that this evidence indicated an estimate outside this range, it was given no weight, or its role was limited to taking the AER to the top of the range defined by step one.

3.4.2.2 Rigidity of the AER's MRP estimate, despite evidence of changes in market conditions

353. The AER's estimate of the MRP has not changed since publication of its guideline, despite apparent changes in prevailing market conditions. The AER adopted an estimate for the MRP of 6.5% in its guideline (December 2013), and has maintained the same MRP estimate in the draft and final decisions for the NSW electricity businesses (November 2014 and April 2015) and in its preliminary decision (October 2015). The AER's view appears to be that there has been no change to the MRP between December 2013 and October 2015.

354. However, the evidence before the AER indicates that there has been a significant change in market conditions over the past two years. In particular:

- Forward-looking estimates are higher
- The prevailing risk-free rate is lower
- Cross-checks suggest an increase
- Market practitioners and regulators also support an increase.

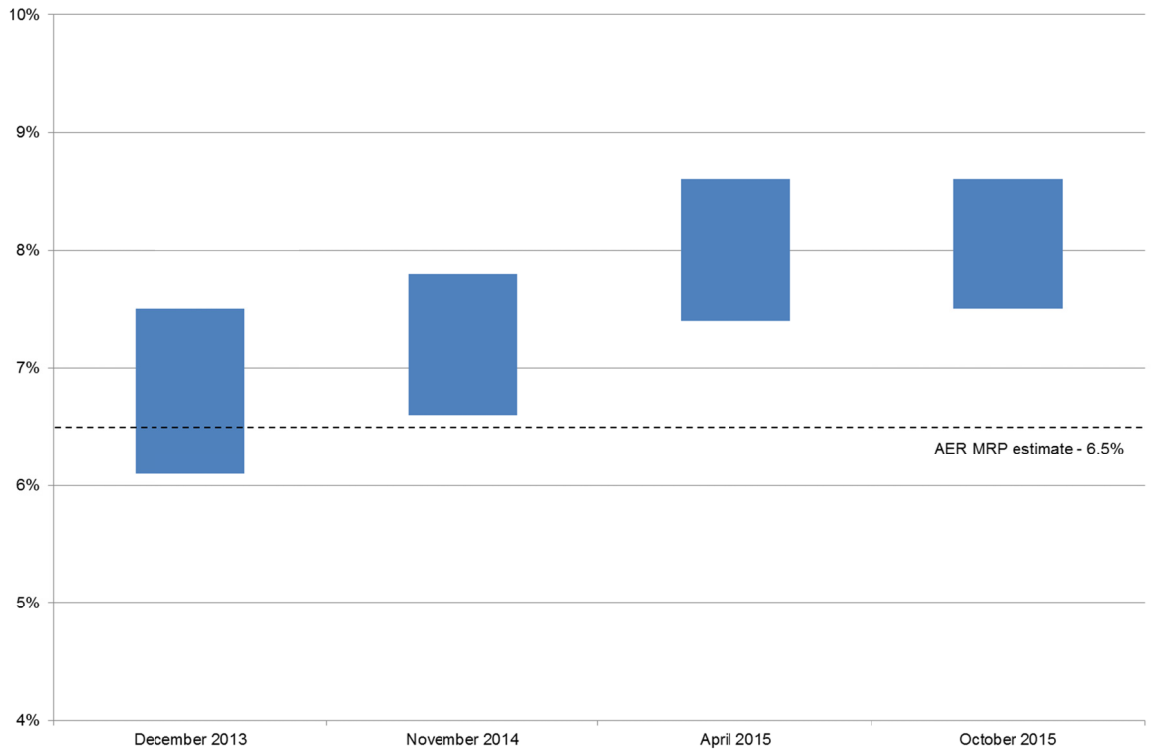
355. Each of these are discussed below.

Increase in forward-looking estimates

356. Indicators of the forward-looking MRP—including the AER's own DGM results—indicate that the MRP has increased significantly.

357. Whereas at the time of the guideline the AER's MRP estimate sat within the AER's range of DGM estimates, by the time of the preliminary decision, the AER's MRP estimate was well outside its range of DGM estimates. In December 2013 the AER estimated a range for the MRP of 6.1% to 7.5% from its DGM.[212] However, in the preliminary decision, this range is 7.5% to 8.6%.[213]

Figure 3–5: Movement in AER DGM estimates since guideline



Source: AER decisions and guideline, JEN analysis.

358. The fact that the AER's MRP has not changed despite significant increases in its DGM estimates suggests that either the AER is placing no real weight on DGM results, or the AER has placed declining weight on these results as the MRP estimate has increased. Giving either no weight or declining weight to DGM results would be unreasonable in circumstances where DGM results provide the best indicator of the *current* (prevailing) MRP.

359. This implies that the AER is giving increasing weight to historical average measures of the MRP—which will not reflect prevailing market conditions except perhaps by chance (i.e. if, by chance, current market conditions reflect historical average conditions).

Fall in prevailing risk-free rate

360. There has been a precipitous fall in the risk-free rate—from around 4.2% at the time of the guidelines, to around 2.76% at the time of the preliminary decision. By holding the MRP constant, the AER implicitly assumes that the market conditions driving this reduction in CGS yields are:

- Not affecting the MRP at all, and

212 AER, *Better regulation: explanatory statement – rate of return guideline*, December 2013, p 93.

213 Preliminary decision, p 3-362.

- Leading to a corresponding one-for-one reduction in the return on equity.

361. As noted above, the evidence does not support such an assumption. Rather, the evidence from the AER's own DGM analysis indicates that the MRP has been increasing as the risk-free rate has been falling, and that as a result, the return on equity has not fallen in lock-step with the risk-free rate.

Cross-checks support an increase

362. As discussed below (section 3.5), evidence from the AER's cross-check analysis and conditioning variables points to an increase in the MRP.

Market practitioners and regulators also support an increase

363. Market practitioners and regulatory authorities also recognise that current market conditions are not average market conditions, and that the MRP is likely deviating from a fixed range based on historical average measures.

364. For example, as noted in our April 2015 proposal, the United States Federal Energy Regulatory Commission has noted:[214]

> *Given the recent trends of near-historic low yields for long-term U.S. Treasury bond rates, the CAPM's input for the 'risk-free' rate, we find that it is a reasonable assumption that the current equity risk premium (which is added to the risk-free rate to calculate the cost of equity data point that determines the slope of the CAPM curve) exceeds the 86-year historical average used as the consultants' CAPM input. The current low treasury bond rate environment creates a need to adjust the CAPM results, consistent with the financial theory that the equity risk premium exceeds the long-term average when long-term U.S. Treasury bond rates are lower than average, and vice-versa.*

365. Similarly in the UK, Ofgem has recognised that as the risk-free has fallen to historical lows, it is not appropriate to simply add a prevailing risk-free rate measure to a fixed ERP. Ofgem has instead used a risk-free rate range above the prevailing rate, resulting in more stability in estimates of the overall return on equity. Ofgem explains its approach as follows:[215]

> *Market measures of the real risk-free rate, such as the yield on ILGs, have risen slightly since the data cut-off point for EE's December report. However, they remain near historical lows, partly due to the Bank of England's official interest rate being held at 0.5 per cent and the impact of Quantitative Easing. We, therefore, do not consider it appropriate to rely on spot rates or short-term averages to set the risk-free rate.*
>
> *Our revised range for the risk-free rate is, therefore, 1.7-2.0 per cent. The lower bound matches the 10-year average yield on 10-year ILGs, while the upper bound corresponds to regulatory precedent in the UK.*

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214 Federal Energy Regulatory Commission, *Order accepting tariff filing subject to condition and denying waiver*, Docket No. ER14-500-000, 28 January 2014, p. 36.

215 Ofgem (2011), *Decision on strategy for the next transmission and gas distribution price controls – RIIO-T1 and GD1 Financial issues*, p 33. See also: Oxera, *Agenda – Advancing economics in business - What WACC for a crisis?*, February 2013, for a review of recent UK regulatory decisions on this issue.

366. The RBA has observed that ERP appears to have risen as the risk-free has fallen in recent years. The RBA Governor observed in a recent speech:[216]

> *[A]nother 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... This seems to imply that the equity risk premium observed ex post has risen even as the risk-free rate has fallen and by about an offsetting amount.*

367. In an Australian regulatory context, the Economic Regulation Authority in WA (**ERA**) has recognised that the MRP will fluctuate over time, and that it is therefore not appropriate to fix a range for the MRP. The ERA noted in a recent decision:[217]

> *[T]he Authority has now concluded that it is not reasonable to constrain the MRP to a fixed range over time. The erratic behaviour of the risk free rate in Australia to date, and more particularly, its pronounced decline in the current economic environment, leads to a situation where the combination of a fixed range for the MRP and prevailing risk free rate may not result in an outcome which is consistent with the achievement of the average market return on equity over the long run.*
>
> *Specifically, the estimate of the upper bound for the forward looking MRP of 7.5 per cent that was based on the DGM will fluctuate in line with the risk free rate. So for example, at times when the risk free rate is low, as it currently is, the upper bound for the MRP should be higher. There will be times – such as during the GFC – when the Authority would be more likely to select a point estimate of the MRP which is close to the upper bound. The resulting required return on the market in that type of situation could possibly exceed the long run average return on equity indicated by the historical data.*
>
> *For this reason the Authority considers it appropriate to determine a range for the MRP at the time of each decision.*

368. The approach taken in our proposal to estimating the MRP recognises changes in prevailing market conditions. Each estimation method can be updated for recent data to derive a current estimate of the MRP.

369. However, we are concerned that the AER's method is not similarly responsive to changes in market conditions. This is likely to due to the fact that, as discussed below, the AER's approach fails to take into account a number of relevant estimation methodologies which will provide an indication of current market conditions, such as the Wright approach and evidence from independent expert reports.

3.4.2.3 Errors in interpretation of key evidence

370. The preliminary decision conclusion on the MRP is also affected by errors in the interpretation of key evidence.

Incorrect interpretation of historical excess returns

371. The preliminary decision refers to a range for the historical average MRP of 5.0%–6.5%, based on both geometric and arithmetic average measures.

372. There are two problems with how historical data is interpreted in the preliminary decision:

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216 Glenn Stevens, '*The World Economy and Australia*', Address to The American Australian Association luncheon, hosted by Goldman Sachs, New York, USA, 21 April 2015.

217 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems submitted by ATCO Gas Australia Pty Ltd*, 30 June 2015 (as amended on 10 September 2015), p 251.

- **First**—the preliminary decision mixed geometric average measures with arithmetic averages, in addition to mixing estimates for different time periods. Expert advice, including advice from NERA and Lally, explains why geometric averages are not an appropriate measure in this case. As explained by NERA, since estimates of the MRP are not compounded, arithmetic mean measures should be used[218]
- **Second**—the preliminary decision relied on estimates from Brailsford, Handley and Maheswaran, which rely on an historical dataset that was inappropriately adjusted for perceived deficiencies in the original dataset. These adjustments were investigated by NERA and the adjustments to the original dataset corrected. This issue was addressed at length in our April 2015 proposal, and in the accompanying expert reports from NERA. The key issue is that the adjustment originally made to the historical data appears to have no logical basis. An examination of earlier data extracted from original sources (as has been done by NERA) will almost surely lead to an adjustment that is more accurate than the one contained in the data that Brailsford, Handley and Maheswaran employ.[219]

373. If the historical data (with appropriate adjustments for imputation) is correctly interpreted, then the historical average MRP based on the longest available dataset is 6.56% (based on a theta of 0.35).[220] We note that, if the preliminary decision theta estimate of approximately 0.6 were adopted, this MRP estimate would increase slightly, to 6.65%.[221]

Incorrect use of the Wright approach

374. The preliminary decision does not take into account the Wright approach when estimating the MRP because it considers that the Wright approach should inform the overall return on equity only. The preliminary decision refers to the Wright approach as an alternative implementation of the SLCAPM designed to provide information at the return on equity level.[222]

375. This is an incorrect interpretation of Wright's work. Wright did not develop an alternative implementation of the SLCAPM. Wright simply proposed an alternative method of estimating the MRP to use in the SLCAPM—as the difference between the historical average market return and the current risk free rate—on the basis that market returns may be more stable over time than excess returns.[223]

376. Associate Professor Handley clearly describes the Wright approach as an alternative method of estimating the MRP, rather than as an alternative return on equity model. Handley describes the Wright approach as follows:[224]

> *Wright adopts an alternative non-standard approach to estimating the MRP. Rather than treating the MRP as a distinct variable he suggests estimating the return on the market – by estimating the real return on equity and combining this with a current forecast of inflation to give an estimated nominal return on equity – and the risk free rate separately.*

377. The preliminary decision sets out a formula that it says represents the Wright approach to implementing the SLCAPM (referred to as the 'Wright SLCAPM').[225] However, that formula is simply the standard SLCAPM, as

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218 NERA, *Historical Estimates of the Market Risk Premium*, February 2015, section 2.

219 NERA, *Historical Estimates of the Market Risk Premium*, February 2015; NERA, *Further Assessment of the Historical MRP: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors*, June 2015.

220 NERA, *Historical Estimates of the Market Risk Premium*, February 2015, p 42.

221 NERA, *Historical Estimates of the Market Risk Premium*, February 2015, p 43.

222 Preliminary decision, p 3-33.

223 Wright, S., *Review of Risk Free Rate and Cost of Equity Estimates: A Comparison of U.K. Approaches with the AER*, 25 October 2012.

224 John C Handley, *Advice on the Return on Equity*, 16 October 2014, p 17; preliminary decision, p 3-88.

225 Preliminary decision, pp 3-84 – 3-85.

originally specified by Sharpe and Lintner[226] The Wright approach does not involve an alternative model for estimating the overall return on equity. Rather, the Wright approach represents an alternative method for estimating the MRP parameter.

378. In fact, the Wright approach appears better aligned with the conventional SLCAPM specification because it estimates the MRP as the difference between two distinct parameters (the market return and risk-free rate). This approach contrasts to other methods that estimate the MRP as a parameter in its own right.

379. It is therefore incorrect to reject the Wright approach by claiming that it is not a measure of the MRP. The Wright approach clearly provides relevant information on the required market return and the MRP—and it would be an error for the AER to disregard it when estimating the MRP.

Incorrect use of independent valuation reports

380. The preliminary decision considers that independent valuation reports are relevant, but only to assessing the overall return on equity. Further, due to perceived limitations, the preliminary decision only places 'limited reliance' on this material and gives it a 'directional role' only.[227]

381. Ultimately, it is not clear what practical effect, if any, independent valuation reports have on the preliminary decision return on equity. By relegating these reports to an overall return on equity 'check' role, they appear to have little or no practical impact on the final estimate. The AER retains its original parameter estimates and model choice once it completes its cross-check against the results of independent expert reports.

382. Independent valuation reports provide relevant evidence of the required market return and MRP applied by market practitioners. Therefore, evidence from these reports as to the MRP applied by market practitioners should be given a direct role in estimating the MRP.

383. Incenta's February 2015 analysis of independent expert reports indicates that the market rate of return estimated by independent experts remained relatively constant in recent times, notwithstanding declines in the 'spot' risk free rate.[228] This implies that the MRP used in these reports, and/or the uplifts used by independent experts, has increased as the risk-free rate has declined.

384. This is consistent with evidence presented in the preliminary decision.[229] As noted above, the preliminary decision analysis of independent expert reports (Figure 3-33 of the preliminary decision) indicates that as the risk-free rate has fallen over the past two years, estimates of the market return in independent expert reports remained relatively steady at around 11% (adjusted for imputation). This contrasts with the preliminary decision market return estimate, which has declined to around 9%, moving in lock-step with changes in the risk-free rate.

385. These findings are supported by more recent analysis from HoustonKemp. As noted above, HoustonKemp observes that in recent times a number of independent experts used risk-free rates above the prevailing CGS yield, leading to more stable estimates of the prevailing market return (and implicitly higher MRP assumptions) than under the AER's approach.[230]

386. HoustonKemp identifies a statistically significant negative relationship between the implied MRP estimated by experts (their implied estimate of the market return, less the prevailing CGS yield) and the prevailing CGS yield.

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226 Sharpe, W., 1964, "Capital asset prices: A theory of market equilibrium under conditions of risk," *Journal of Finance*, 19, 425–442.

227 Preliminary decision, p 3-95.

228 Incenta, *Further update on the required return on equity from independent expert reports*, February 2015.

229 Preliminary decision, p 3-535.

230 HoustonKemp, *The Cost of Equity: Response to the AER's Draft Decisions for the Victorian Electricity Distributors, ActewAGL Distribution and Australian Gas Networks*, January 2016, p 43 and Figure 7.

Based on analysis of recent independent expert reports, HoustonKemp estimates an implied MRP from these reports of 7.58%.[231]

Incorrect use of DGM estimates

387. The preliminary decision adopts a different construction of the DGM to that used by SFG and Frontier, and as a result derives a wider range of estimates for the market return and MRP.

388. SFG and Frontier have clearly explained each point of difference between its approach and the AER's, and explains why they took the approaches that they did.[232] In particular, SFG and Frontier clearly explain the reasons for their choice of long term growth assumption, their estimation approach and dataset. For the reasons set out in SFG's report, the SFG and Frontier approach to implementing the DGM is clearly preferable to the AER's.

389. However, even adopting the AER's preferred construction of the DGM, it is clear that the MRP has increased significantly over the past two years. Table 3–3 shows the change in the MRP from the AER's DGM between the guideline (December 2013) and the preliminary decision (October 2015).

Table 3–3: AER dividend growth model estimates of the required return on the market

	Growth rate (%)	Two stage model (%)	Three stage model (%)
Guideline	4.0	6.1	6.7
	4.6	6.7	7.1
	5.1	7.1	7.5
Preliminary decision	4.0	7.5	7.7
	4.6	8.1	8.2
	5.1	8.5	8.6

Source: AER, *Rate of return guideline, Appendices*, p 87; preliminary decision, pp 3-362.

390. Frontier's prevailing MRP estimate (discussed below) uses the AER's DGM estimate based on its preferred three-stage model and the mid-point of its range of growth rate assumptions. This estimate is currently 8.2%, as shown in the table above.

3.4.2.4 Conclusion on the MRP

391. For the above reasons, we do not agree with the preliminary decision MRP estimate of 6.5%. This estimate does not reflect prevailing conditions in the market for equity funds and will not contribute to the achievement of the ARORO. The preliminary decision on the MRP is affected by a number of errors, as described above.

392. A preferable approach is that set out by Frontier. This approach considers all relevant evidence on the MRP and applies a transparent weighting to each estimate based on the relative strengths and weaknesses of each

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231 HoustonKemp, *The Cost of Equity: Response to the AER's Draft Decisions for the Victorian Electricity Distributors, ActewAGL Distribution and Australian Gas Networks*, January 2016, p 48. This estimate is inclusive of a value assigned to imputation credits distributed, where it is assumed that theta is 0.35. HoustonKemp notes that if a higher theta value were to be assumed, its estimate of the MRP based on this analysis would be higher (assuming theta of 0.6 leads to an estimate of 8.02%). HoustonKemp's estimate of 7.58% is exclusive of any final revisions or adjustments made by independent experts. If revisions / adjustments are included, the estimate would be higher (HoustonKemp's estimate increases to 7.94%, if these revisions / adjustments are included).

232 SFG, *Share prices, the dividend discount model and the cost of equity for the market and a benchmark energy network*, February 2015.

estimation approach. The reasons for Frontier's weighting approach are set out in an expert report by SFG submitted with our April 2015 proposal.[233]

393. Importantly, Frontier's approach gives greatest weight to measures of the prevailing (current) MRP. This is in contrast to the preliminary decision approach, which leads to an MRP estimate that reflects an historical average measure.

394. Frontier has now updated its estimate of the MRP based on current data. Frontier's revised estimate is set out in Table 3–4 below.

Table 3–4: Frontier estimates of MRP (%)[234]

Estimation method	Market return	MRP	Weighting
Historical excess returns (Ibbotson)	9.3	6.5	20
Historical real market returns (Wright)	11.4	8.6	20
Dividend discount model	11.0	8.2	50
Independent expert reports	10.3	7.6	10
Weighted average	**10.6**	**7.9**	**100**

3.4.3 EQUITY BETA ESTIMATE

395. The preliminary decision concludes that an equity beta of 0.7, when applied in the SLCAPM, will deliver a return on equity that contributes to achievement of the ARORO. The preliminary decision finds that:

- The primary range for the equity beta should be based on analysis of Australian regulated energy businesses only
- Based on analysis of this sample, a reasonable range for the equity beta is 0.4 to 0.7
- The best empirical estimate of the equity beta is 0.5, and
- Additional information considered by the AER—specifically empirical estimates for international energy networks and the theoretical principles underpinning the Black CAPM—indicate that an equity beta at the top of this range is appropriate, and will overcome any bias in the SLCAPM.

396. This section addresses each of these findings.

3.4.3.1 The preliminary decision erred in confining the sample to Australian regulated businesses

397. The AER's primary range for the equity beta is based on analysis of a very small data sample comprising listed Australian energy network businesses only. This sample includes nine businesses, of which just four are currently trading.

398. It is neither necessary nor appropriate to confine the sample used for estimating equity beta to regulated energy network businesses only. As discussed in section 1.2 above, the relevant degree of risk under the ARORO is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia. Therefore, in constructing comparator datasets for estimating a return on

233 SFG, *The required return on equity for regulated gas and electricity network businesses*, June 2014.

234 Frontier Economics, *The required return on equity under a foundation model approach*, December 2015, Table 4. The risk-free rate assumed in these calculations is a placeholder estimate, based on a September averaging period.

equity that is commensurate with efficient financing costs of a BEE, these datasets should include entities operating in workably competitive markets that face a similar degree of risk to that faced in the provision of electricity distribution services. That is, they should not be restricted to regulated entities.

399. Even if the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NER / NEL, it may remain necessary to look beyond just those businesses that supply regulated energy network services within Australia to produce sufficiently large datasets to robustly estimate risk parameters. For reasons discussed below, this is most clearly the case in relation to the equity beta.

400. A sample of nine regulated energy network businesses is very small. However, the fact that five of these businesses are no longer trading creates further problems, since the data for these non-trading businesses becomes 'stale' over time. The equity beta estimates for these non-trading businesses will reflect the risks faced by those businesses in the past, not the risks currently faced by a BEE. As noted in our April 2015 proposal, the level of risk faced in the supply of energy network services is changing, with businesses facing new operational risks arising from disruptive technologies. This change in risk profile is discussed in the accompanying expert report of Frontier.[235]

401. The expert evidence before the AER demonstrates that the sample used by the AER is too small to provide statistically reliable estimates. Analysis by SFG demonstrates that:[236]

- **Henry (2014) uses too small a sample**—Professor Henry's estimates are based exclusively on the small sample of domestic energy network businesses, which are statistically unreliable.[237] SFG and Frontier note that the estimates are imprecise with wide standard errors, the estimates span a wide range, and that the results were sensitive to the estimation method, sampling frequency and time period chosen.[238] Figure 3–6 below shows the wide confidence intervals around Professor Henry's estimates, and the wide range of individual company estimates based on just one methodology and sampling technique. Professor Henry reports some evidence of instability in his study based on Australian data only, possibly due to the small sample size.[239]
- **Increasing sample size significantly reduces the dispersion of estimates**—previous analysis by SFG (2013) and Brooks, Diamond, Gray and Hall (2013) demonstrated that increasing sample size from nine to 18 firms is likely to reduce the dispersion of risk estimates by about one-third, and increasing sample size further to 27 firms is likely to reduce this estimation error by half.[240]

235 Frontier Economics, *Review of the AER's conceptual analysis for equity beta*, June 2015, section 3.

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

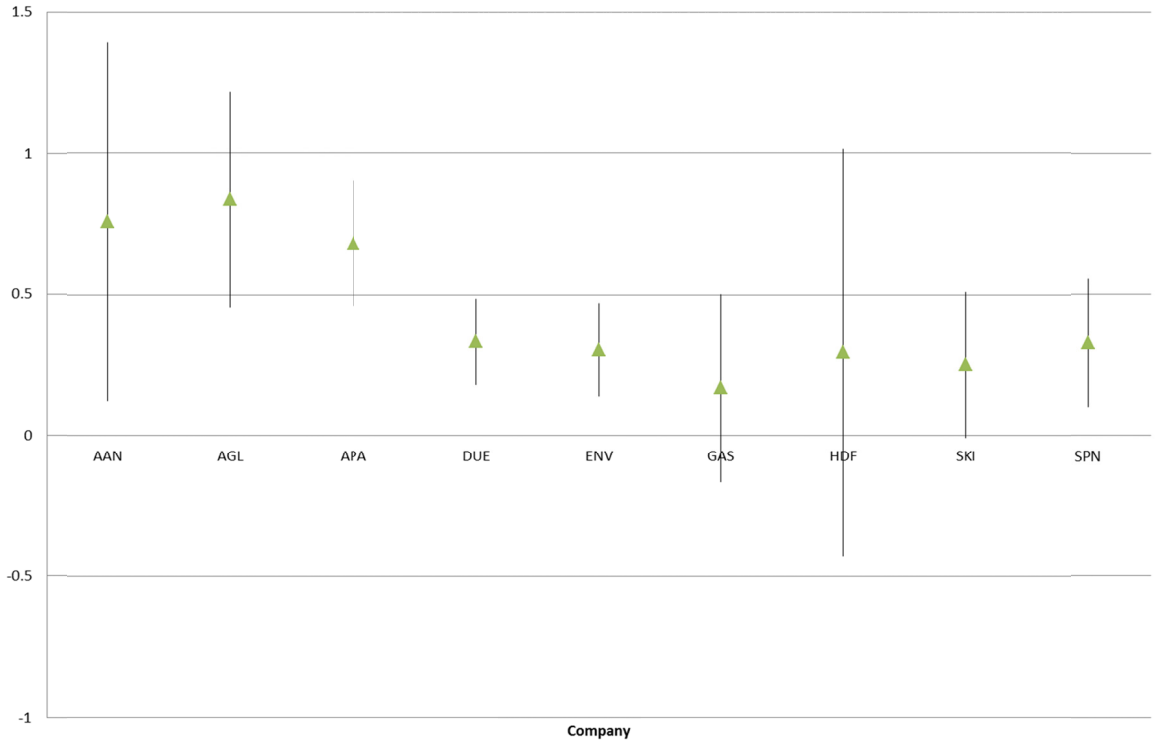
237 SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [31].

238 SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [31]. Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, pp 13-16.

239 Olan T Henry, *Estimating β: An update*, April 2014, p 62.

240 SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013, p 9; Brooks, R., N. Diamond, S. Gray and J. Hall, *Assessing the reliability of regression-based estimates of risk*, 17 June 2013.

Figure 3–6: Confidence intervals around Henry (2014) estimates



(1) The confidence internals for Henry's OLS estimates based on monthly sampling over the longest available time period.

402. There is no expert evidence recommending or supporting use of such a limited sample. Professor Henry does not recommend use of the limited sample, but rather was instructed by the AER to use it.[241] The only expert evidence on this point is that of SFG and Frontier recommending a broader sample.[242]

403. We previously urged the AER to adopt a broader sample for estimating equity beta, based on expert advice from SFG. In our April 2015 proposal, we adopted an equity beta estimate based on a sample including both Australian and US energy network businesses. In compiling this broader sample, CEG[243] (who constructed the international sample used by SFG) and SFG considered how comparable the international businesses were to the equivalent Australian businesses. SFG concluded that the businesses included in its sample are sufficiently comparable to the BEE such that they can be appropriately used as part of the dataset to estimate the equity beta range.[244]

404. Further analysis by Frontier, in a report accompanying our submission, shows that the Australian and US samples are sufficiently similar that they can be grouped together for the purposes of statistical analysis.[245] Frontier also shows that, due to the larger size of the US sample and greater stability in its composition, there is

241 Olan T Henry, *Estimating β: An update*, April 2014, p 4.

242 SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013; SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015; Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016.

243 CEG, *Information on equity beta from US companies*, June 2013.

244 SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013, p 10.

245 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 29.

greater congruency between mean and portfolio estimates from this sample, as well as lower standard errors and tighter confidence intervals.[246]

405. An additional way to expand the data sample is to include other comparable Australian businesses outside the energy network sector. The sample could include businesses operating in other sectors that face a similar degree of risk to energy network businesses, such as telecommunications and transport businesses.

406. Including businesses outside the energy sector is consistent with our interpretation of the ARORO, as set out above. Including businesses from the telecommunications and transport sectors ensures that the equity beta reflects the degree of risk faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia.

407. Such an approach is also consistent with a narrower definition of the BEE, such as that adopted in the preliminary decision. Even if the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NEL, it is clearly necessary to look beyond just those businesses that supply regulated energy network services within Australia to produce a sufficiently large dataset to robustly estimate the equity beta. Thus, it is necessary to include businesses in other sectors that face a similar degree of risk to that faced by energy network business subject to economic regulation under the NEL.

408. Frontier analyses a broader sample of listed Australian infrastructure businesses. The businesses included by Frontier include listed transport and logistics businesses (e.g. Aurizon, Asciano and Sydney Airport) and telecommunications businesses (e.g. Telstra). Frontier's statistical tests confirm that these listed infrastructure businesses are sufficiently comparable to the AER's sample of energy network businesses, such that it is appropriate to group this broader set of Australian infrastructure firms together.[247]

409. Frontier notes that expanding the sample to include other listed Australian infrastructure businesses improves the statistical properties of the resulting equity beta estimates—the estimates based on the broader domestic sample are more stable and more precise.[248] However, Frontier concludes that the expanded set of domestic firms should not be relied upon alone, given the ready availability of international comparators. It is Frontier's recommendation that the equity beta estimate be based on a broader dataset that includes both relevant domestic comparators and international businesses.[249]

410. Regulators often use samples that include businesses outside of the sector and/or country that the regulated business operates in if samples confined to that business' sector and/or country are too small. For example:

- **ACCC.** In estimating the equity beta for Telstra, the ACCC uses a sample of 22 international telecommunications businesses, including US, European and Asian businesses[250]
- **QCA.** In estimating the equity beta for rail operator Aurizon Network, the QCA relies on analysis of a sample of 70 energy and water businesses, including a large number of international businesses,[251] and
- **NZ Commerce Commission.** In estimating the equity beta for electricity distribution businesses, the Commerce Commission in New Zealand relies on a sample of firm that includes a number of international utilities.[252]

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246 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 31.

247 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, pp 23-24.

248 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 34.

249 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 34.

250 ACCC, *Public inquiry into final access determinations for fixed line services*: Final Decision, October 2015, pp 80-83.

251 QCA, *Draft Decision: Aurizon Network 2014 Draft Access Undertaking – Maximum Allowable Revenue*, September 2014, pp 248-249; Incenta, *Review of Regulatory Capital Structure and Asset / Equity Beta for Aurizon Network: Report to the Queensland Competition Authority*, 9 December 2013.

411. Given the paucity of data for Australian energy network businesses, the sample *must* be expanded to include US energy network businesses and/or other Australian infrastructure businesses. Without including these additional comparators, estimates of the equity beta for the BEE will be statistically unreliable.

3.4.3.2 The preliminary decision erred in setting the equity beta range

412. The preliminary decision considers that 'the equity beta estimates presented in Henry's empirical analysis support a range of 0.4 to 0.7' and that other empirical studies show 'an extensive pattern of support' for an equity beta within a range of 0.4 to 0.7.[253]

413. However, Professor Henry, in his report for the AER, does not recommend a range for the equity beta of 0.4 to 0.7. Rather, Professor Henry concludes—based on his analysis of Australian energy network data only, which the AER instructed he use—that the point estimate for beta is likely to lie in the range of 0.3 to 0.8.[254]

414. The preliminary decision conclusion is based on the fixed weight portfolio estimates and the average of individual firm estimates in Professor Henry's report.[255] However, relying on these measures alone is likely to mislead as to the precision of Professor Henry's estimates, including because:

- **First**—the preliminary decision conclusion from the individual firm estimates is based on a simple average of the estimates for each firm, with the preliminary decision range from this measure (0.46–0.56) simply reflecting the dispersion of average measures based on different time periods.[256] Thus, what the decision relies on is not an empirical estimate, but rather an average of estimates for individual firms. These individual firm estimates vary widely, from 0.2 to 1.0[257], and thus a simple average is largely meaningless, and
- **Second**—the preliminary decision places significant weight on Professor Henry's portfolio estimates. However, Professor Henry was not asked to provide expert advice on the rationale for preparing the portfolios, and it is not clear what the basis for formation of these portfolios was.[258]

415. Professor Henry's report, in fact, produces a very wide range of estimates for the equity beta, with some individual firm estimates in the range of 0.8 – 1.0 and confidence intervals around these estimates even wider, from -0.4 to 1.4 (at the 95% confidence level). As noted by SFG, the estimates vary widely depending on the chosen estimation method, sampling frequency and time period.[259]

416. Further, as explained above, the sample used by Professor Henry to estimate equity beta is too small to provide reliable estimates. As a result, a reliable equity beta range cannot be derived from this sample alone. Professor Henry did not (and was not asked to) consider whether his estimates were reliable enough to estimate the beta of the BEE.

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252 See, for example: Commerce Commission, *Input Methodologies (Electricity Distribution and Gas Pipeline Services): Reasons Paper*, December 2010, section 6.5 and Appendix H8.

253 Preliminary decision, pp 3-479, 3-485.

254 Olan T Henry, *Estimating β: An update*, April 2014, p 63.

255 Preliminary decision, p 3-479.

256 Preliminary decision, p 3-479.

257 Olan T Henry, *Estimating β: An update*, April 2014, Tables 2 and 5.

258 Olan T Henry, *Estimating β: An update*, April 2014, p 36.

259 SFG, Beta and the Black Capital Asset Pricing Model, February 2015, [31].

417. Evidence from wider samples supports an equity beta higher than 0.7. Evidence from Frontier Economics, SFG and CEG (based on a larger sample including international businesses) indicates an equity beta of at least 0.82.[260]

3.4.3.3 The preliminary decision 'best empirical estimate' is not supported by evidence

418. There is no evidence to support the preliminary decision conclusion that 'the best empirical estimate' of the equity beta is 0.5.

419. Professor Henry does not recommend that a value of 0.5 be adopted, nor does his report refer to 0.5 as the 'best empirical estimate'. Rather, as noted above, Professor Henry recommends a range of 0.3 to 0.8, based on his analysis of Australian data only.[261]

420. Indeed, no expert concluded that the best empirical estimate of the equity beta is 0.5. Rather, the expert evidence supported an equity beta of at least 0.8.[262]

421. As noted above, the preliminary decision conclusion on the range and 'best empirical estimate' for beta are based on analysis of the fixed weight portfolio estimates and the average of individual firm estimates in Professor Henry's report.[263] However, for reasons set out above, the analysis underpinning these conclusions is unsound.

422. The only experts asked to opine on the best estimate of the equity beta are SFG and Frontier. SFG's and Frontier's advice is that in order to arrive at a reliable estimate of the equity beta, a sample broader than that given to Professor Henry must be used. SFG and Frontier recommend an equity beta estimate of 0.82 based on a broader sample including both Australian and international businesses.[264]

3.4.3.4 The preliminary decision adjustment to the 'best empirical estimate' is arbitrary

423. The preliminary decision states that the theory of the Black CAPM points to an estimate of the SLCAPM beta that is above the best estimate indicated by Professor Henry's analysis. This appears to be the reason for the preliminary decision adjustment from the 'best empirical estimate' of 0.5 to a final point estimate of 0.7.

424. We understand that the preliminary decision adjusts the equity beta to account for the SLCAPM bias that is indicated by Black CAPM theory. That is, while Black CAPM theory does not say anything about adjusting the equity beta to account for SLCAPM bias, this parameter is used in the preliminary decision as the adjustment tool to account for this bias.

425. However, the adjustment made to the AER's 'best empirical estimate' of beta is highly arbitrary. The AER cannot reasonably be satisfied that adjusting the equity beta estimate from 0.5 to 0.7 will adequately account for bias in the SLCAPM because it does not quantify the effect of this bias.

426. We agree that, if the SLCAPM is to be used alone to estimate the return on equity, some adjustment is needed to its input parameters to account for the known weaknesses of the model. If the SLCAPM is used without any adjustment, the empirical evidence shows that the return on equity for low-beta stocks will be significantly under-estimated.

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260 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016.

261 Olan T Henry, *Estimating β: An update*, April 2014, p 63.

262 SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, section 4.

263 Preliminary decision, p 3-479.

264 Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016.

427. Our concern is that the preliminary decision adjustment to the equity beta is not sufficient to account for the shortcomings in the AER's implementation of the SLCAPM. In particular, it is clear that choosing the top of the AER's equity beta range is not sufficient to address the SLCAPM's low-beta bias, nor does it address the statistical reliability issues associated with the small sample used in the preliminary decision to estimate the equity beta. As shown in 3.3.2 above, it is clear that choosing the top of the preliminary decision equity beta range will not correct for the low-beta bias in the SLCAPM indicated by Black CAPM theory—if the preliminary decision parameter estimates are used in the Black CAPM along with the best available estimate of the zero-beta premium, the return on equity estimated by the Black CAPM is above the return on equity estimated in the preliminary decision using the SLCAPM (see Table 3–2 above).

428. Indeed the preliminary decision acknowledges that it is unclear how to adjust the equity beta estimate to account for the issues indicated by Black CAPM theory—i.e. the effects of low-beta bias in the SLCAPM. The preliminary decision notes that 'while the direction of this effect may be known, the magnitude is much more difficult to ascertain'.[265] Since the preliminary decision does not estimate the Black CAPM, it cannot make a proper adjustment.

429. The size of the preliminary decision adjustment is ultimately driven by the width of its equity beta range, rather than by an empirical analysis of the adjustment required to address the SLCAPM's weaknesses. Since the preliminary decision caps its range at 0.7, the adjustment to the equity beta can take the point estimate no higher than 0.7. Of course, if the preliminary decision instead adopted Henry's recommendation for an equity beta range of 0.3 to 0.8, its adjustment to account for Black CAPM theory and international evidence would have taken the point estimate to 0.8. Thus, the problem of arbitrariness in the preliminary decision adjustment is compounded by error in its construction of the equity beta range.

430. We put forward an alternative method for estimating the return on equity using the SLCAPM alone, with an empirically based adjustment to account for the known weaknesses of this model. This alternative method is explained in section 3.6 below and the accompanying expert report from Frontier.

3.5 REASONABLENESS OF THE OVERALL OUTCOME

3.5.1 THE PRELIMINARY DECISION CROSS-CHECK ANALYSIS

431. The preliminary decision considers that its return on equity estimate is broadly supported by:

- Estimates using the Wright approach
- Estimates of the return on equity and ERP from independent valuation reports
- The ERP range from the recent Grant Samuel valuation report for Envestra
- Estimates of the return on equity and ERP from recent broker reports, and
- Estimates from other regulators.

432. In fact, when properly interpreted, these cross-checks do not support the preliminary decision return on equity estimate. These cross-checks actually demonstrate that the preliminary decision estimate is below that required to promote efficient investment in, and efficient use of electricity services for the long-term interests of consumers.

[265] Preliminary decision, p 3-497.

3.5.1.1 Wright approach does not support the preliminary decision ERP estimate

433. As noted above, the preliminary decision misinterpreted and misapplied the work of Professor Wright. Wright did not develop an alternative implementation of the SLCAPM for checking of the overall return on equity. Rather, Wright developed an alternative method for estimating the MRP.

434. Further, the way in which the preliminary decision developed its ERP range from the Wright approach means that this 'cross-check' will almost certainly support its ERP estimate. The preliminary decision derives a wide range of estimates from the Wright approach by using an equity beta range of 0.4 to 0.7 and a market return range of 10.0% to 12.7%.[266] The preliminary decision then checks the reasonableness of its ERP estimate by confirming that it falls within the broad range of estimates derived from the Wright approach.

435. Clearly if the preliminary decision used its chosen point estimate of beta (0.70) in applying the Wright approach, this cross-check would not support the preliminary decision return on equity and ERP estimates (Table 3–5). Even if the preliminary decision lower bound value for the market return from the Wright approach were adopted, the resulting return on equity is above that allowed (7.8%, compared to 7.3% allowed in the decision). If a midpoint or upper bound value for the market return were taken from the Wright approach, the resulting return on equity and ERP is significantly higher than that allowed.

Table 3–5: Estimates of the return on equity and ERP using the Wright approach (%)[267]

Approach to estimating the ERP	ERP estimate	Return on equity estimate
AER approach (equity beta 0.7; MRP 6.5%)	4.55%	7.3%
Wright approach with lower bound R_m estimate (equity beta 0.7; R_m 10.0%)	5.07%	7.8%
Wright approach with midpoint R_m estimate (equity beta 0.7; R_m 11.34%)	6.01%	8.8%
Wright approach with upper bound R_m estimate (equity beta 0.7; R_m 12.7%)	6.96%	9.7%

3.5.1.2 Independent valuation reports

436. The preliminary decision refers to estimates of the return on equity and ERP from independent valuation reports. We agree that evidence from independent valuation reports provides an important reasonableness check on the required return on equity estimate. These reports provide market evidence of the return on equity required by investors.

437. However, for reasons set out below, the preliminary decision misinterpreted this important market evidence. When properly interpreted, this evidence demonstrates that the preliminary decision return on equity is below that required by the market to promote efficient investment.

438. Most obviously, the independent valuation reports surveyed in the preliminary decision do not support the reasonableness of the overall return on equity estimate in that decision. As noted by the AER, the range of imputation-adjusted estimates of the return on equity set out in these reports is 8.98% to 14.67%.[268] This compares to the preliminary decision estimate of 7.3%.

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266 Preliminary decision, p 3-511.

267 Estimates of the market return are the AER's estimates, as set out in Table 3-61 of the preliminary decision. All calculations are based on a risk-free rate of 2.76%.

268 Preliminary decision, p 3-518.

439. This evidence also does not support the preliminary decision ERP estimate, contrary to the conclusion in that decision. The decision states that the range of imputation-adjusted estimates for the ERP (a range of 3.72% to 11.67%) is based on the 18 independent valuation reports identified in Table 3-20 of the TransGrid draft decision.[269] However, after reviewing Table 3-20 of the TransGrid draft decision, it is unclear to JEN how the AER has arrived at its ERP range.

440. An abridged version of Table 3-20 from the TransGrid draft decision is set out as Table 3–6 below. What this shows is that:

- **Surveyed reports have large ERPs**—the imputation-adjusted ERP in all but two of the surveyed reports is at least 5%, which is well above the ERP determined by the AER (4.55%)
- **The Grant Samuel ERP is higher than reported**—the imputation-adjusted ERP from the Grant Samuel report for Envestra (discussed below) is quoted as 4.47%. However, this appears to be based on the midpoint of Grant Samuel's range of SLCAPM values, with none of the uplift used by Grant Samuel. As discussed below, a fundamental aspect of Grant Samuel's analysis was to conclude that the calculated SLCAPM return on equity was not an appropriate benchmark and understated the required rate of return on equity—and this was one reason why Grant Samuel applied an uplift to its SLCAPM-based estimates. Incenta notes that on a correct interpretation of this report, the relevant range for the ERP is 5.27% to 5.37%, exclusive of any uplift for the value of imputation credits.[270] This clearly does not support the preliminary decision ERP estimate, and
- **The only ERP less than 5% is old**—the only other report with an imputation-adjusted ERP less than 5% is more than ten years old (the 2003 Deloitte report for United Energy). The return on equity and ERP estimate in this report cannot be said to be indicative of current practitioner views as to the required return on equity or ERP.

441. Of the 20 independent valuation reports referred to in the preliminary decision published in the last decade, none of these actually used an ERP estimate below 5% (adjusted for imputation). Excluding the 2003 Deloitte report and using the correct range of estimates from the Grant Samuel Envestra report, the ERP range from this evidence is approximately 5%–5.8% (based on the reports in Table 3-20 of the TransGrid draft decision). Therefore, this market evidence clearly does not support the preliminary decision ERP estimate.

Table 3–6: Independent valuation reports surveyed by the AER

Report date	Business	Valuer	Return on equity (imputation adjusted)[271]	ERP (imputation adjusted)
20/02/1998	Allgas Energy	Ernst & Young	n/a	n/a
19/03/1999	United Energy	SG Hambros	n/a	n/a
5/04/2003	GasNet	Sumner Hall	n/a	n/a
27/05/2003	United Energy	Deloitte	9.3	4.04
26/04/2006	AGL	Grant Samuel	11.6	5.8
19/06/2006	GasNet (regulated)	Lonergan Edwards	11.14	5.29
19/06/2006	GasNet (unregulated)	Lonergan Edwards	11.14	5.29

269 Preliminary decision, p 3-517, footnote 1976.

270 Incenta, *Further update on the required return on equity from independent expert reports*, February 2015, p 25.

271 Imputation adjusted estimates are taken from Table 3-20 of the TransGrid draft decision and thus reflect the adjustments for imputation made by the AER.

Report date	Business	Valuer	Return on equity (imputation adjusted)[271]	ERP (imputation adjusted)
25/08/2006	Alinta Ltd	Grant Samuel	11.6	5.8
15/11/2006	Alinta Infrastructure Holdings	Grant Samuel	11.39	5.79
29/06/2007	Alinta Ltd (gas transmission)	Grant Samuel	11.74	5.74
29/06/2007	Alinta Ltd (gas and electricity distribution)	Grant Samuel	11.74	5.74
5/11/2007	SP AusNet (gas transmission)	Grant Samuel	11.78	5.68
5/11/2007	SP AusNet (gas and electricity distribution)	Grant Samuel	11.78	5.68
9/10/2009	Babcock & Brown Infrastructure Group (WA Gas Networks)	Grant Samuel	n/a	n/a
9/10/2009	Babcock & Brown Infrastructure Group (Tas Gas Pipeline)	Grant Samuel	n/a	n/a
9/10/2009	Babcock & Brown Infrastructure Group (WestNet Energy)	Grant Samuel	n/a	n/a
9/10/2009	Babcock & Brown Infrastructure Group (TasGas)	Grant Samuel	n/a	n/a
22/09/2010	Spark Infrastructure Group	Lonergan Edwards	n/a	n/a
24/09/2010	Prime Infrastructure Group (TasGas)	Grant Samuel	10	5
13/04/2011	Spark Infrastructure Group	Lonergan Edwards	10.9	5.4
3/08/2012	Hastings Diversified Utilities Fund	Grant Samuel	8.52	5.52
3/10/2012	DUET Group	Grant Samuel	8.54	5.54
31/05/2013	DUET Group	Grant Samuel	n/a	n/a
4/03/2014	Envestra	Grant Samuel	8.67	4.47

3.5.1.3 Grant Samuel analysis

442. The preliminary decision made significant errors in interpreting the Grant Samuel report for Envestra. When these errors are accounted for, it is clear that this evidence does not support the ERP and return on equity estimate adopted in the preliminary decision.

443. The preliminary decision presents a wide ERP range from the Grant Samuel report for Envestra—a range of 4.3% to 6.2%—and on this basis concludes that its ERP estimate of 4.55% is consistent with the range adopted by Grant Samuel.[272] However, this range of ERP estimates referred to in the preliminary decision encompasses:[273]

- A lower bound that *does not* include any adjustment for imputation and does not allocate any of Grant Samuel's uplift to the ERP, and

[272] Preliminary decision, p 3-520.

[273] Preliminary decision, p 3-520, footnote 1983.

- An upper bound that *does* include an adjustment for imputation and allocates all of Grant Samuel's uplift to the ERP.

444. The preliminary decision mixes 'apples and oranges' by mixing imputation-adjusted estimates with unadjusted estimates from the Grant Samuel report. Such an approach is illogical—particularly in circumstances where Grant Samuel has made clear that its estimates make no allowance for imputation credits.[274] Given that no allowance is made for imputation in Grant Samuel's estimates, one is needed if it is compared with the preliminary decision ERP estimate. The unadjusted estimates from the Grant Samuel report are simply not comparable with the preliminary decision ERP estimates. This is made clear in Grant Samuel's letter in response to the NSW draft decisions, where it states:[275]

> *It is abundantly clear in our reports that we make no adjustment in our valuations for dividend imputation. Accordingly, a dividend imputation adjustment would be required to ensure comparability with the AER basis of calculation.*

445. Further, the Grant Samuel report and its letter in response to the NSW draft decisions make clear that the uplift is to account for factors likely to be affecting the return on equity (not the return on debt). The factors taken into account by Grant Samuel in making the uplift include:

- Repricing of risk by equity investors since the GFC
- Alternative models, such as the Gordon growth model (a version of the DGM), currently indicating higher returns on equity than the SLCAPM, and
- Evidence that brokers are currently adopting return on equity estimates that are higher than indicated by the SLCAPM.[276]

446. A fundamental aspect of Grant Samuel's analysis was to conclude that the calculated SLCAPM return on equity was not an appropriate benchmark and understated the realistic required rate of return on equity—and this was one reason why Grant Samuel applied an uplift to its SLCAPM estimates. Therefore it is not appropriate to use Grant Samuel's 'lower bound' SLCAPM estimate of the return on equity with no uplift.

447. Finally, Grant Samuel adopted a WACC estimate at the lower end of its range (6.5%–7.0%) when valuing Envestra's assets to ensure that the fairness assessment for the APA proposal was robust.[277] That is, Grant Samuel erred towards the lower end of its WACC range to ensure that its NPV valuation of the Envestra assets was conservative on the high side. This same tendency is not required to satisfy and is inconsistent with the NEO or the ARORO because these objectives seek to determine the return on equity that is sufficient to attract efficient investment in our network.

448. Correctly interpreting the Grant Samuel report for Envestra makes clear that it does not support the preliminary decision return on equity or ERP estimate. Incenta notes that the range for the return on equity implied by Grant Samuel's uplift factor was from 9.47% to 9.57%, with a respective ERP range of 5.27% to 5.37%, exclusive of any uplift for the value of imputation credits.[278] These Grant Samuel ranges compare with the preliminary decision return on equity of 7.3% and ERP of 4.55%.

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274 Grant Samuel, Financial Services Guide and Independent Expert's Report to the Independent Board Sub-committee in relation to the Proposal by APA Group, 3 March 2014, Appendix 3, pp 8-9.

275 Grant Samuel, *Australian Energy Regulator – Draft Decision*, letter to the directors of TransGrid, 12 January 2015, p 7.

276 Grant Samuel, Financial Services Guide and Independent Expert's Report to the Independent Board Sub-committee in relation to the Proposal by APA Group, 3 March 2014, Appendix 3, pp 8-9.

277 Grant Samuel, *Australian Energy Regulator – Draft Decision*, letter to the directors of TransGrid, 12 January 2015, p 4.

278 Incenta, Further update on the required return on equity from independent expert reports, February 2015, p 25.

3.5.1.4 Broker reports

449. The information from broker reports referred to in the preliminary decision does not support the AER's return on equity estimate.

450. The preliminary decision only refers to estimates from recent broker reports, being reports published over the past year. These reports therefore provide good information as to current market expectations of the required return on equity. These reports also indicate how market practitioners have estimated the return on equity in the current low risk-free rate environment.

451. Given that these reports are current, it is not appropriate to focus just on the ERP in these reports, as the preliminary decision appears to do.[279] The evidence from these reports should also be used as a cross-check on the overall rate of return.

452. The relevant estimates for both the return on equity and ERP are the imputation-adjusted estimates. Estimates without an imputation adjustment cannot be compared to the preliminary decision estimates of the ERP and return on equity. The preliminary decision reports a range for the imputation-adjusted return on equity in recent broker reports of 7.3% to 9.3%.[280] The preliminary decision estimate of the return on equity is at the very bottom of this range.

3.5.1.5 ERP estimates from 'other market participants', including practitioners and regulators

453. The preliminary decision also refers to ERP and return on equity estimates from other regulators, as part of the other information it takes into account in step 5 of its foundation model approach.

454. We consider that past decisions of the AER and other regulators should not be used as direct evidence of the required return on equity. These decisions are, at best, secondary evidence of the prevailing return on equity at previous points in time. However, the return on equity in these decisions:

- Will not reflect prevailing market conditions—rather, they will reflect market conditions at the time the decision was made, and
- May not be consistent with the ARORO to the extent that they have been determined under different regulatory frameworks with different objectives.

455. Using such decisions will also be circular and self-perpetuating where it is based on previous decisions the same regulator has made in relation to the return on equity.

456. For these reasons, JEN does not propose a role for other regulators' decisions in determining the return on equity for the BEE.

3.5.2 CONDITIONING VARIABLES

457. The preliminary decision refers to a number of conditioning variables, which are said to provide directional information, particularly on the MRP.

458. The evidence from these conditioning variables does not support the preliminary decision approach to estimating the return on equity. In particular, this evidence is inconsistent with assuming that, as the risk-free rate falls, the MRP has remained constant—meaning that the return on equity has fallen in lock-step with the risk-free rate.

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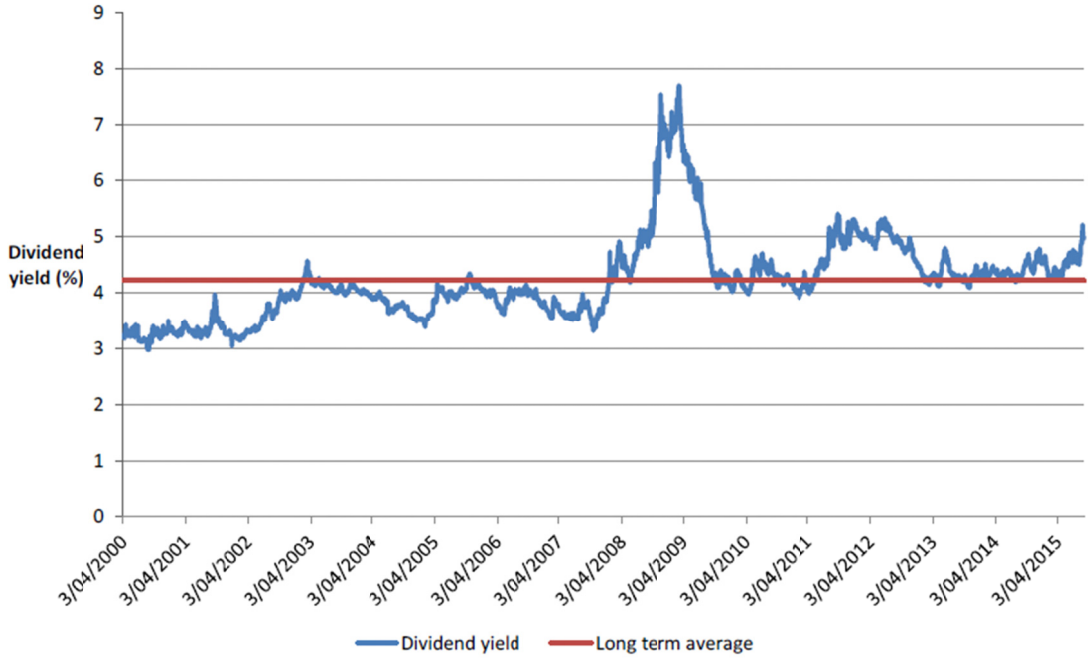
279 Preliminary decision, p 3-521.

280 Preliminary decision, p 3-521.

3.5.2.1 Dividend yields

459. As shown Figure 3-21 of the preliminary decision (reproduced below as Figure 3–7), dividend yields have increased significantly in recent months and are now well above pre-GFC levels.[281]

Figure 3–7: Divided yields [Figure 3-21 of preliminary decision]



Source: Bloomberg, AER analysis, Figure 3-21 of preliminary decision.

460. As explained by CEG, given that the risk-free rate has been lower in the post-GFC period (and is now near historic lows), this implies that the MRP has risen by more than an offsetting amount.[282] Certainly, this evidence is not consistent with the AER's view that the return on equity has been falling in lock-step with the risk-free rate.

461. The preliminary decision misinterpreted this evidence by treating it as merely an indicator of whether the MRP is above or below historical average levels. The preliminary decision dismisses this evidence on the basis that:[283]

> *It is unclear whether the recent increase in dividend yields is evidence of a sharp and sustained move away from their long term average. This short term movement does not provide a clear signal that the MRP should not be close to its historical average level.*

462. However, movements in the dividend yield are not just an indicator of changes in the risk premium required by investors. Rather, changes in dividend yield indicate movements in the overall required return on equity. Therefore, rising dividend yields that are now well above pre-GFC levels indicates that, as the risk-free rate has fallen post-GFC, the ERP has increased.

463. This evidence certainly does not support assuming that the return on equity has been falling in lock-step with the risk-free rate.

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281 Preliminary decision, p 3-395.

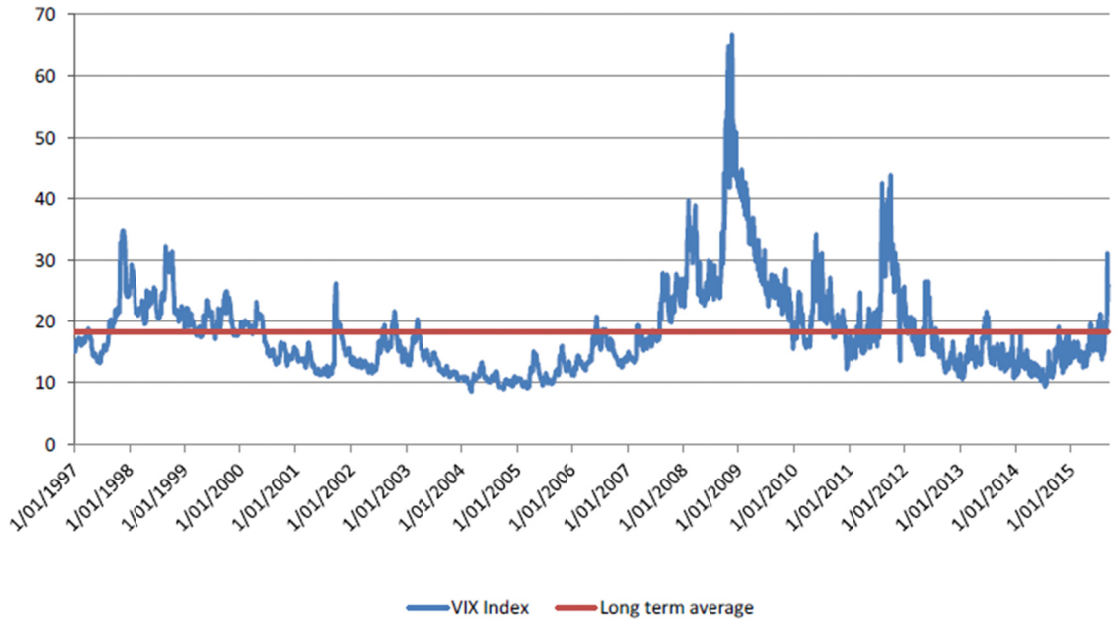
282 CEG, *Estimating the cost of equity, equity beta and MRP*, January 2015, p 27.

283 Preliminary decision, p 3-394.

3.5.2.2 Implied volatility

464. As shown in Figure 3-21 of the preliminary decision (reproduced below), the ASX200 implied volatility index has increased significantly in recent months and is now well above its 20-year average.[284]

Figure 3–8: Implied volatility (VIX) over time [Figure 3-24 of preliminary decision]



Source: ASX2000 VIX volatility index, sourced via Bloomberg cost AS51VIX from 2/1/2008 and CITJAVIX prior to 2/1/2008, Figure 3-24 of preliminary decision.

465. Whereas in previous decisions the AER has considered a relatively stable volatility index to be evidence of a steady MRP, the preliminary decision does not appear use the recent increase in this measure as evidence of a higher MRP.

466. Rather, like the evidence of higher dividend yields, the preliminary decision dismisses this evidence on the basis that it 'does not provide a clear signal'. The preliminary decision states:[285]

> *In the month of August, implied volatility has increased relative to its steady pattern of being below its long run average since 2012. This short term movement does not provide a clear signal that the MRP should not be close to its historical average level.*

467. We consider that the evidence for a higher MRP could not be any clearer. The AER's DGM analysis indicates that the MRP has increased as the risk-free rate has fallen, and that the MRP is now well above its historical average. The evidence from dividend yields and implied volatility measures further support this.

468. On the other hand, there is no clear evidence to support the AER's view that the MRP has not changed as the risk-free rate has fallen or that the return on equity has fallen in lock-step with the risk-free rate—or even that current market conditions are consistent with average market conditions.

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284 Preliminary decision, p 3-398.

285 Preliminary decision, p 3-398.

3.6 AN ALTERNATIVE IMPLEMENTATION OF THE FOUNDATION MODEL APPROACH

469. Our preferred approach to estimating the return on equity is as set out in our April 2015 proposal.

470. This approach has regard to all relevant models and evidence, and uses this material for its proper purpose. Each of the relevant return on equity models is independently used to derive an estimate of the required return on equity, while other relevant evidence is used to determine the best estimate of each parameter within these models. The outputs from each relevant model are then weighted to arrive at a return on equity estimate. Based on updated data to reflect the prevailing market conditions, this approach leads to an estimate of prevailing return on equity of 9.8% (or 9.7%, depending on which weighting is used).[286]

471. However, if the final decision continues relying solely on the SLCAPM to estimate the return on equity, then the AER must change the way it implements this model. It is clear from the evidence referred to above that the way in which the SLCAPM is applied in the preliminary decision leads to a return on equity that is not consistent with the ARORO and does not reflect prevailing market conditions:

- That decision does not properly recognise the weaknesses of the SLCAPM, nor does it account for these weaknesses in its application of the model
- Further, applying an effectively fixed risk premium to a variable risk-free rate is not appropriate in current market conditions since it leads to the return on equity moving in lock-step with changes in the risk-free rate.

472. The result is that the preliminary decision return on equity is below the level of return required by the market, as indicated by the AER's cross-checks and other relevant evidence.

473. The accompanying expert report of Frontier outlines an alternative approach that involves properly adjusting SLCAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:[287]

- **Estimating the risk-free rate**—using a current measure of the risk-free rate (i.e. the prevailing yield on 10-year CGS). Over the 20 business days to 30 September 2015 this produces a risk-free rate of 2.75%.
- **Deriving the MRP**—in a way that gives appropriate weight to measures of the prevailing (current) MRP. Frontier recommends that 50% weight be given to estimates of the prevailing MRP from the DGM, 40% weight to historical measures and 10% weight to evidence from independent expert reports (i.e. evidence of market practitioner estimates of the MRP). Of the 40% weight that is assigned to historical measures equal weight (i.e. 20% each) is given to estimates of historical excess returns and estimates using the Wright approach. Over the 20 business days to 30 September 2015, this produces an MRP of 7.9%.
- **Estimating a 'starting point' equity beta**—using a sufficiently large dataset. Frontier recommends including both US and Australian energy network businesses to ensure that the dataset is large enough to produce robust estimates, with twice as much weight given to the Australian data. This produces a 'starting point' equity beta of 0.82.

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286 This value (9.82%) is estimated using prevailing data from the 20 business days to 30 September 2015.

287 Frontier, *The required return on equity under a foundation model approach*, January 2016.

- **Making two transparent and empirically based adjustments to this 'starting point'**—to account for the known shortcomings of the SLCAPM:
  - *Low-beta bias*—the first of these adjustments is to account for low beta bias and draws on empirical evidence from the Black CAPM. Frontier recommends giving 75% weight to this adjustment, recognising the strong and consistent evidence of low-beta bias in the empirical literature (i.e. the adjustment is 75% of the full adjustment that would need to be made to account for low-beta bias). This results in an adjustment from the starting point beta of 0.82 to a beta of 0.88.
  - *Book-to-market bias*—the second adjustment is to account for book-to-market bias (i.e. the failure of the SLCAPM to account for the effect of book-to-market ratio on stock returns). Frontier recommends giving less weight to this adjustment (25% weight), recognising that the evidence in relation to this bias is more recent. This results in a further adjustment to get a final equity beta of 0.91.

474. This leads to a prevailing return on equity estimate of 9.9% in the placeholder averaging period (20 business days to 30 September).

475. Frontier observes that this estimate from the 'adjusted SLCAPM' is close to their estimate using the DGM, a model that is not affected by low-beta or book-to-market bias. Thus, the evidence from the DGM corroborates Frontier's adjusted SLCAPM estimate.

4. GAMMA

4.1 INTRODUCTION

476. The preliminary decision adopts a similar approach to estimating gamma as in recent decisions. This involves:

1. **Conceptualising gamma**—as the before-personal-tax and before-personal-costs value of imputation credits. In line with this conceptual approach, the preliminary decision estimates gamma as the product of the distribution rate and the utilisation value to investors in the market per dollar of imputation credits distributed (referred to as the 'utilisation rate').[288]
2. **Deriving estimates of the distribution rate and theta**—for each of 'all equity' and 'listed equity'.[289] For theta, the preliminary decision derives a number of different estimates, based on three different estimation methods:
   a) The equity ownership approach—which uses Australian Bureau of Statistics (**ABS**) data to estimate the proportion of equity in Australian companies held by domestic investors
   b) Tax statistics—which indicate the proportion of distributed imputation credits that are redeemed by investors, and
   c) Market value studies.
3. **Calculating gamma values**—based on pairing:
   a) its estimate of the distribution rate for *all equity* with its estimates of theta for *all equity* based on the equity ownership approach and tax statistics, and
   b) its estimate of the distribution rate for *listed equity* with its estimates of theta for *listed equity* based on the equity ownership approach and market value studies.
4. **Determining a range for gamma**—based on 'the overlap of evidence from the equity ownership' approach (i.e. the overlap between the gamma ranges calculated in the preliminary decision based on the equity ownership approach for each of 'all equity' and 'listed equity').[290] The decision considered that the overlap of evidence from the equity ownership approach suggests a value for gamma between 0.40 and 0.42.
5. **Selecting a point within the range defined by step 4**—by reference to evidence from tax statistics and market value studies. The preliminary decision observed that both tax statistics and SFG's market value study suggest a value for gamma lower than 0.4. On this basis, the preliminary decision adopted a value for gamma at the lower end of the range suggested by the overlap of the evidence from the equity ownership approach (that is, 0.4).[291]

477. The preliminary decision made errors at each of these steps in its reasoning. For reasons set out below, we maintain our position that the best estimate of gamma is 0.25. This estimate reflects a proper interpretation of the NER and the best empirical evidence in relation to the value of imputation credits.

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288 Preliminary decision, p 4-16.

289 Preliminary decision, p 4-18.

290 Preliminary decision, p 4-19.

291 Preliminary decision, p 4-19.

4.2 CONCEPTUAL APPROACH TO ESTIMATING GAMMA

478. The AER's conceptual approach to estimating gamma appears to have evolved since it published the guideline in December 2013.

479. In the guideline, the AER approached gamma as a measure of the proportion of imputation credits that can be utilised. The AER defined theta as 'the extent to which investors can use the imputation credits they receive to reduce their tax (or receive a refund)'.[292] Thus, in the guideline, the AER appeared to treat gamma as a measure of the utilisation, or eligibility to utilise / potential for utilisation of imputation credits.

480. The preliminary decision seeks to estimate gamma as the 'before-personal-tax and before-personal-costs' value of imputation credits. The preliminary decision appears to acknowledge that gamma is a measure of the value of imputation credits to investors[293], not simply their utilisation, or potential for utilisation. However, the decision states that this value must be measured on a 'before-personal-tax and before-personal-costs basis'.[294] Consistent with this, the decision estimates the utilisation rate (theta) as 'the before-personal-tax and before-personal-costs utilisation value to investors in the market per dollar of imputation credits distributed'.[295]

481. Thus, between the guideline and the preliminary decision, the AER appears to have shifted from treating gamma as a 'utilisation' (or potential utilisation / eligibility for utilisation) concept to treating it as a 'value' concept.

482. However, because the preliminary decision seeks to estimate value on a before-personal-tax and before-personal-costs basis, its approach is in fact unchanged. Since the preliminary decision ignores the effect of any factors that might reduce the value of imputation credits that are redeemed, its approach to estimating value is effectively equivalent to estimating the rate of imputation credit utilisation (or potential for utilisation) or to assuming that those factors have no affect—which it has not tested nor has any evidence to support.

483. The preliminary decision explains this as follows:[296]

> *In the Guideline, we also defined the utilisation rate as the extent to which investors can use the imputation credits they receive to reduce their tax (or receive a refund). In this decision, consistent with Handley's advice, we consider the utilisation rate is the utilisation value to investors in the market per dollar of imputation credits distributed. However, we consider that our views in the Guideline and in this decision are broadly equivalent; that is, our definition of the utilisation rate in this preliminary decision still reflects the extent to which investors in the market can use the imputation credits they receive. This is because, as discussed above and in sections A.5, A.7 and A.8.1, to be consistent with the Officer framework (and therefore the building block framework in the NER/NGR) the utilisation rate should reflect the before-personal-tax and before-personal-costs value of imputation credits to investors. On a before-personal-tax and before-personal-costs basis, an investor that is eligible to fully utilise imputation credits should value each dollar of imputation credits received at one dollar (that is, have a utilisation rate of 1).'*

484. In effect, the AER continues to interpret gamma as a measure of the utilisation of imputation credits, or a measure of investors' eligibility to utilise those credits. As explained in our April 2015 proposal, this approach is contrary to the requirements of the NER and represents a significant departure from conventional and previous regulatory practice.

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292 AER, *Rate of return guideline, Explanatory statement*, December 2013, p 159.

293 Preliminary decision, pp 4-16.

294 Preliminary decision, pp 4-16.

295 Preliminary decision, pp 4-33.

296 Preliminary decision, pp 4-53 – 4-54.

485. It is clear from the language of clause 6.5.3 of the NER that the AER is required to estimate the value of imputation credits, not the utilisation of imputation credits, or a measure of investors' eligibility to utilise those credits. Clause 6.5.3 refers to the 'value of imputation credits', not utilisation. Indeed, the NER were recently amended to change the definition of gamma from 'the assumed utilisation of imputation credits' to 'the value of imputation credits'.

486. Further, a value-based approach to estimating gamma (and theta) will best promote the NEO, as it provides for overall returns which promote efficient investment. As noted by Professor Gray:[297]

> *Under the building block approach, the regulator makes an estimate of gamma and then reduces the return that is available to investors from dividends and capital gains from the firm accordingly. In my view, it is clear that this is consistent with a value interpretation. If the value of foregone dividends and capital gains is greater than the value of received imputation credits, the investors will be left under-compensated, and vice versa.*

487. If gamma is treated as merely a measure of utilisation, or if the value of imputation credits is assessed before personal costs and taxation (i.e. ignoring these costs to investors), the overall return to equity-holders will be less than what is required to promote efficient investment. Quite simply, there will be certain costs incurred by investors—such as transactions costs involved in redeeming credits—which are not accounted for.

488. The value of imputation credits to investors will necessarily reflect (and will be net of) any transactions costs or other personal costs incurred in redeeming credits. Such costs cannot simply be assumed away. If such costs are assumed away, then the resulting estimate of theta (and therefore gamma) will overstate the true value of imputation credits to investors.

489. Therefore, we maintain our position that the estimate of theta must simply reflect the value of imputation credits to investors. It would be an error to estimate theta as a hypothetical before-personal-tax and before-personal-costs value.

4.3 ESTIMATES OF THE DISTRIBUTION RATE

4.3.1 THE APPROPRIATE MEASURE OF THE DISTRIBUTION RATE

490. The preliminary decision refers to a distribution rate for 'all equity' and for 'listed equity' only. The 'all equity' figure is based on analysis of the cumulative payout ratio across all Australian companies, using ATO data. The 'listed equity' figure is also based on ATO data, but with an allocation of total tax paid between public and private companies.[298]

491. It is neither necessary nor appropriate to separately identify a distribution rate for a limited set of listed businesses only. This is because the distribution rate for all equity is likely to be a reasonable proxy for that of the BEE. On the other hand, for reasons discussed below, the distribution rate for a limited set of listed businesses is likely to be a poor proxy for that of the BEE.

492. Whereas the AER's definition of the BEE is assumed to operate solely within Australia[299], the distribution rate for listed equity is likely to be skewed by the practices of multinational firms with significant foreign earnings. Almost two thirds of the value of listed entities comprises the top 20 firms—which tend to be large multinational

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297 SFG, *Estimating gamma for regulatory purposes*, February 2015, [12].

298 NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, section 3.3.

299 The AER's definition of the BEE is a pure play, regulated energy network business *operating within Australia*: AER, *Rate of return guideline*, p 7; AER, *Explanatory Statement, Rate of return guideline*, pp 32-35, see in particular the discussion of 'Operating within Australia' on p 35.

firms with significant foreign earnings. The presence of material foreign earnings can have a significant impact on a firm's distribution rate because imputation credits are only created when tax is paid on Australian earnings, but may be distributed with any dividend (whether distributing Australian earnings or foreign earnings). This means that for a given dividend payout ratio (i.e., the proportion of profits that are distributed as dividends), the imputation credit distribution rate will be higher (as a proportion of total credits created) for an entity with more foreign profits.

493. This is illustrated by way of example by Professor Gray.[300] Professor Gray compares two hypothetical firms with the same dividend payout ratio (i.e., the proportion of profits that are distributed as dividends), but with different levels of foreign earnings. His example shows that the existence of foreign earnings leads to a materially higher distribution rate, even where the dividend payout ratio is the same.

494. The effect of foreign earnings on the distribution rate can also be seen in the empirical estimates of the distribution rate for different company types. As may be expected, the distribution rate for top-20 ASX listed companies (many of which will have material foreign earnings) is significantly higher than the average distribution rate across all companies (0.84 compared to 0.68). When top-20 ASX listed companies are removed from the public company set, the distribution rate for public companies falls to around the rate across all companies (0.69).

Table 4–1: Distribution rate by company type[301]

Firm type	Distribution rate
Top-20 ASX listed	0.840
Public but not top-20 ASX listed	0.693
All publicly listed	0.755
Private	0.505
All	**0.676**

495. Given that the BEE, by definition, is a business with no foreign profits, it would be inappropriate to use a measure of the distribution rate that is skewed by businesses with material foreign earnings.

496. The preliminary decision suggests that, although the listed equity distribution rate may be unrepresentative of the distribution rate for the BEE, it may nonetheless be necessary to use a listed equity distribution rate for 'internal consistency'.[302] The AER considers that where an estimate of theta is based on the value of imputation credits to a particular set of investors, the distribution rate that is combined with that theta estimate must be for the same set of investors. On this reasoning, the preliminary decision concludes that if an estimate of theta based on listed equity data is used, this must be combined with a listed equity distribution rate.

497. For reasons discussed in section 4.5 below, we do not agree that estimates of theta based on listed equity data must be paired with a listed equity distribution rate. The distribution rate and theta are separate parameters and need not be estimated using the same dataset. Whereas the distribution rate is a measure of the credit distribution practices of the BEE, theta is a measure of the value of credits to investors (or potential investors). In each case one must consider which approach provides the best estimate for the BEE—and there is no reason why this ought to be the same across all parameters. For reasons discussed above, the distribution rate for the BEE is best proxied by the distribution rate across all companies.

300 SFG, Estimating gamma for regulatory purposes, 6 February 2015, p 45.

301 NERA, Estimating Distribution and Redemption Rates from Taxation Statistics, March 2015, p 23.

302 Preliminary decision, p 4-87.

498. On the other hand, for reasons set out below—to the extent that the rate of equity ownership is relevant to theta—the most informative measure is that for listed equity. Put another way, the BEE is an entity with solely Australian earnings, but as likely to be foreign owned as any listed entity.

499. This position is supported by Frontier in its expert report accompanying this submission.[303] Frontier notes that whether the BEE is defined narrowly (as the firms that the AER regulates) or more broadly, for the purposes of estimating the distribution rate it would not include firms that have foreign-sourced profits to assist in the distribution of imputation credits. Thus, the distribution rate should not be estimated with reference to the top 20 ASX-listed firms, or with reference to any estimate that is materially affected by the top 20 firms.

500. For this reason, Frontier recommends excluding the influence of the top 20 firms from any estimate of the distribution rate for the BEE. Frontier notes that, but for the top 20 listed firms, the distribution rate estimate for listed equity is 70%—which is in line with the distribution rate for all equity.

4.3.2 DISTRIBUTION RATE FOR ALL EQUITY

501. We agree with the preliminary decision conclusion that the best estimate of the distribution rate across all equity is 0.7. Recent analysis by NERA (referred to in Table 4–1 above) indicates that the distribution rate across all equity is now slightly below 0.7, at around 0.68.[304] This is also confirmed by more recent analysis by Frontier.[305]

502. Therefore 0.7 represents a reasonable and conservative estimate.

4.4 ESTIMATES OF THE VALUE OF DISTRIBUTED CREDITS (THETA)

4.4.1 TYPES OF EVIDENCE RELIED ON IN THE PRELIMINARY DECISION TO ESTIMATE THETA

503. There are three types of evidence on theta referred to in the preliminary decision. These are, in order of weight given in that decision:

- Equity ownership rates (i.e. the share of Australian equity held by domestic investors)
- Redemption rates from tax statistics, and
- Market value studies.

504. This section addresses the relevance of each when estimating the value of imputation credits to investors.

4.4.1.1 Equity ownership rates

505. The AER continues to rely on the equity ownership approach as direct evidence of the value of distributed imputation credits. The preliminary decision states that its estimate of the value of distributed imputation credits 'primarily reflects' the evidence from the equity ownership approach.[306]

506. The preliminary decision estimates of the equity ownership rate provide a binding constraint on its estimates of theta and gamma. As noted above, the preliminary decision adopts a range for gamma based on 'the overlap of

303 Frontier, *The appropriate use of tax statistics when estimating gamma*, January 2016, [8]–[11].

304 NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, p 23.

305 Frontier, *The appropriate use of tax statistics when estimating gamma*, January 2016, [64].

306 Preliminary decision, p 4-17.

evidence from the equity ownership' approach.[307] Other evidence is then only used to determine where in this range the point estimate of gamma should lie. Since other evidence indicates a gamma that is below the range from the equity ownership approach, this other evidence is effectively disregarded in the preliminary decision. It is only the preliminary decision estimates of the equity ownership rate that are consistent with its estimates of theta and gamma.

507. In relying on equity ownership rates as direct evidence of the value of distributed imputation credits, the preliminary decision at least implicitly assumes that:

- All domestic investors are eligible to utilise imputation credits, while foreign investors are not (**Assumption 1**), and
- Eligible investors (i.e. domestic investors) value imputation credits at their full face value because each dollar of imputation credits received can be fully returned to them in the form of a reduction in tax payable (**Assumption 2**).

508. Both of these assumptions are incorrect.

Assumption 1

509. Assumption 1 is known to be incorrect due to certain tax rules that prevent credits being redeemed by domestic investors in some circumstances. In particular, not all domestic investors are eligible to utilise imputation credits, for example due to the 45-day holding rule[308] or because they are in a tax loss position.

510. The preliminary decision acknowledges the 45-day rule, but considers that it can be assumed to have a negligible effect.[309] However, the analysis underpinning this conclusion is based on data that is known to be unreliable.

511. The preliminary decision relies on analysis of the ATO dividend data presented in an expert report by Dr Neville Hathaway dated September 2013.[310] However, that report explained that there 'appears to be a big problem with the data' in that a large amount of credits are not accounted for in the ATO dividend data—i.e. there is $87.5 billion in franking credits that appear in the ATO tax paid and franking account balance (FAB) data, but which are missing from the dividend data. Dr Hathaway expresses more confidence in the ATO tax paid and FAB data, and says that it is likely to be the dividend data where the problem lies.[311]

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307 Preliminary decision, p 4-19.

308 Although the 'qualified persons' rules, and the 45-day holding rule within those rules, were repealed from the *Income Tax Assessment Act 1936* (**ITAA36**) in 2002, they still have ongoing application as a result of being imported into the imputation rules by section 207-145(1)(a) of the *Income Tax Assessment Act 1997* (**ITAA97**). Section 207-145(1)(a) of the ITAA97 provides that the amount of the franking credit on a distribution is not included in the assessable income of an entity or allowed as a credit where the entity is not a 'qualified person' in relation to the distribution. A 'qualified person' for the purposes of this 'section' (per section 160APHO(2)) is, broadly, a taxpayer who has held shares or an interest in shares on which a dividend has been paid, 'at risk' for a continuous period of not less than 45 days. To work out whether the shares are 'at risk', a taxpayer is required to first work out their 'net position', which is determined under the rules contained in the repealed section 160APHJ of the ITAA36.

309 Preliminary decision, p 4-72

310 Preliminary decision, p 4-72. Table 4-6 refers to the following report as its data source: Dr Neville Hathaway, *Imputation Credit Redemption ATO data 1988-2011 – Where have all the credits gone?*, September 2013. It appears that the data in Table 4-6 is drawn from Figure 4 of Dr Hathaway's report, which (as explained in paragraphs 51 and 52 of that report) relies on the ATO dividend data.

311 Dr Neville Hathaway, *Imputation Credit Redemption ATO data 1988-2011 – Where have all the credits gone?*, September 2013, paragraph 50.

512. The preliminary decision analysis on the effect of the 45-day rule appears entirely based on the ATO dividend data, despite Dr Hathaway's warnings regarding the reliability of this data. The decision does not appear to:

- Take into account the point made by Dr Hathaway that the dividend data appears to grossly underestimate the amount of imputation credits distributed, or
- Assess whether this data is reliable enough to analyse the impact of the 45-day rule.[312]

513. The ATO tax paid and FAB data (which Dr Hathaway considers to be more reliable) indicate that the redemption rate for imputation credits is materially below the domestic equity ownership rate across all equity, suggesting that equity ownership figures do overstate the level of actual utilisation. The preliminary decision (correctly) observes that the current redemption rate is 0.45—which is significantly below the domestic equity ownership rate across all equity (currently 0.6).[313]

514. This indicates that factors such as the 45-day rule or tax losses are in fact preventing or deterring the redemption of imputation credits by some domestic investors.

Assumption 2

515. As for Assumption 2, our April 2015 proposal identified a number of reasons why even eligible investors will not value imputation credits at their full face value. These include transaction costs associated with the redemption of imputation credits and portfolio effects (discussed below).

Conclusion

516. Given that neither assumption holds, equity ownership rates cannot be used as direct evidence of the value of distributed imputation credits.

517. Equity ownership rates will only indicate the maximum set of investors who ***may*** be eligible to redeem imputation credits and who may therefore place ***some*** value on imputation credits. Certainly theta cannot be higher than the domestic equity ownership rate, since foreign investors cannot place any value on imputation credits and it would be irrational to place more value on a redeemed credit than the dollar value of tax that can be offset by it.

518. However the domestic equity ownership rate cannot be used as direct evidence of the value of imputation credits, because it does not account for the fact that:

- Some domestic investors may be ineligible to redeem imputation credits, and
- Even eligible investors will not value imputation credits at their full face value.

519. Therefore, the preliminary decision errs by concluding that equity ownership rates are direct evidence of the value of imputation credits (or evidence from which a value can be inferred) and in giving these measures the primary role in the determination of a point estimate for theta.

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312 The figures in Table 4-6 on page 4-72 of the preliminary decision appear to be taken from Figure 4 on page 18 of Dr Hathaway's report, which is based on the ATO dividend data.

313 Preliminary decision, p 18.

4.4.1.2 Tax statistics

520. The preliminary decision also appears to rely on redemption rates from tax statistics as direct evidence of the value of distributed imputation credits. The decision states that it places 'some reliance' on tax statistics in estimating theta, but less reliance than is placed on equity ownership rates.[314]

521. Redemption rates from tax statistics will be closer to the true value of imputation credits than domestic equity ownership rates. This is because redemption rates account for certain factors that impact the value of imputation credits and are not accounted for in the domestic equity ownership rate—for example, redemption rates will reflect the fact that some domestic investors are not eligible to redeem credits due to the 45-day holding rule, and that some investors face costs and other barriers that deter them from utilising imputation credits.

522. However, redemption rates from tax statistics also cannot be used as direct evidence of the value of distributed imputation credits because redemption rates do not recognise that investors may value redeemed credits at less than their full face value. As noted above, our April 2015 proposal identified a number of reasons why investors will not value imputation credits at their full face value, including:

- **Transaction costs**. Transaction costs associated with the redemption of credits may include requirements to keep records and follow administrative processes. This contrasts with cash dividends, which are paid directly into bank accounts. The transaction costs associated with redeeming imputation credits will tend to reduce their value to investors—meaning that the value of credits redeemed will be less than their face value—and may also dissuade some investors from redeeming them—thus reducing the redemption rate
- **Time value of money**. There will typically be a significant delay (which can be years) between credit distribution and the investor obtaining a tax credit. This may be a period of several years in some cases, for example where credits are distributed through other companies or trusts, or where the ultimate investor is initially in a tax loss position. Over this period, the value of the imputation credit to the investor may expect to diminish due to the time value of money
- **Portfolio effects**. Portfolio effects refer to the impact of shifting an investor's portfolio away from the optimal construction (including overseas investments) in order to take advantage of imputation. An investor who would otherwise invest overseas (to get a better return from the overall portfolio) might choose instead to make that investment in Australia to obtain the benefit of an imputation credit. This reallocation of portfolio investment would tend to continue with the relevant imputation credit having less and less marginal value until equilibrium is reached with the credit having no additional value—that is, on average, the value of the imputation credits will be less than the face value. To the extent that an investor reduces the value of their overall portfolio simply to increase the extent to which they can redeem imputation credits, this lost value will be reflected in a lower valuation of the imputation credits. These portfolio effects are further explained in the expert report of Professor Stephen Gray which accompanied our April 2015 proposal.

523. Redemption rates from tax statistics can only indicate the upper bound for theta. Theta clearly cannot be higher than the proportion of credits that are redeemed by investors since credits that will never be redeemed have no value. However, theta may be—and for reasons referred to above, is likely to be—less than the redemption rate.

524. Therefore, the preliminary decision errs by: (a) giving redemption rates a direct role when determining a point estimate for theta and (b) failing to recognise that redemption rates are an upper bound for theta.

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[314] Preliminary decision, p 4-25.

4.4.1.3 Market value studies

525. The preliminary decision places least weight on market value studies as it considers that these studies have a number of limitations, including that:[315]

1. These studies can produce nonsensical estimates of the utilisation rate—that is, greater than one or less than zero
2. These studies can be data intensive and employ complex and sometimes problematic estimation methods
3. The results of these studies can reflect factors, such as differential personal taxes and risk—which are not relevant to the utilisation rate
4. The results of these studies might not be reflective of the value of imputation credits to investors in the market as a whole, and
5. Only the value of the combined package of dividends and imputation credits that can be observed using dividend drop-off studies—and there is no consensus on how to separate the value of dividends from the value of imputation credits (the 'allocation problem').

526. In effect, the preliminary raises two questions in relation to market value studies:

1. Are they measuring the right thing? (reflected in the third point above)
2. How well are they measuring it? (reflected in the other four points).

Are market value studies measuring the right thing?

527. The first concern flows from the AER's conceptual definition of theta—which seeks to exclude the effects of personal taxes and personal costs. Since market values will reflect the impact of personal costs and taxation, the preliminary decision concludes that a market value approach may not be compatible with its revised definition of theta.

528. As noted above, we do not agree with that revised definition of theta (i.e. the qualified version which ignores the effects of personal costs and taxation). As explained in our April 2015 proposal, theta must reflect the value of distributed imputation credits to investors—which will necessarily reflect (and will be net of) any transaction costs or other personal costs incurred in redeeming credits.

529. If the conventional definition of theta is adopted—i.e. defining theta as the value of distributed imputation credits to investors—then use of market value studies is entirely compatible with this definition. Market value studies will reflect the value of imputation credits to investors, as reflected in market prices for traded securities.

530. Indeed, of the three approaches identified in the preliminary decision to estimate theta, an approach based on market value studies is the only approach that is entirely compatible with a definition of theta that is consistent with the NER and the NEO. As discussed above, both equity ownership rates and redemption rates from tax statistics will overstate the true value of theta since they will not reflect certain factors which affect the value of imputation credits to investors.

531. Use of market value studies—and more generally, the adoption of a market value measure—is also consistent with how other rate of return parameters are estimated.[316] Other rate of return parameters such as the MRP and DRP are estimated based on the return required by investors as reflected in market prices. The market

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315 Preliminary decision, p 4-29.

316 As noted above, the NER requires the rate of return and the value of imputation credits to be measured on a consistent basis (NER, cl 6.5.2(d)(2)).

value measures of these parameters are not adjusted to account for personal costs or other factors which may be reflected in market prices.

532. In any event, even if the AER's definition of theta were adopted, there is a relatively simple adjustment that can be made to estimates from market value studies to address this concern. As explained by Associate Professor Handley, this involves 'grossing up' the theta estimate from a market value study to reflect the effect of personal costs. Applying this adjustment raises the theta estimate from Professor Gray's dividend drop-off study only slightly from 0.35 to 0.4.[317]

533. For clarity, we do not agree with this adjustment because the AER's conceptual definition of theta is clearly wrong. However, if the AER's definition was adopted, then this does not require wholesale rejection of market value evidence since it can be adjusted to account for differences between the AER's definition and the conventional definition (that we adopt).

Do market value studies accurately measure that thing?

534. The preliminary decision lists several methodological concerns with dividend drop-off studies—several of which are not relevant to the particular study relied on by JEN.

Nonsensical results

535. In particular, the preliminary decision concern about 'nonsensical results' clearly does not apply to Professor Gray's dividend drop-off study. Professor Gray's study produces a theta estimate of 0.35, which is an entirely sensible result given that it is:

- Within the theoretical bounds for theta (i.e. it is between zero and one)
- Below the domestic equity ownership rate for both listed equity (0.46) and all equity (0.6)—as noted above, the domestic equity ownership rate indicates the maximum set of investors who ***may*** be eligible to redeem imputation credits and who may therefore place ***some*** value on imputation credits, and therefore it may be expected that the value for theta would be below this figure
- Also below the redemption rate indicated by tax statistics (0.45)—again, this may be expected given that redemption rates will indicate the upper bound for theta and do not capture certain factors affecting value, such as the time value of money, transaction costs and portfolio effects.

536. Indeed, the result of the SFG study is consistent with the other evidence and a result that is to be expected in light of that evidence.

Problematic estimation methodologies

537. Similarly, the preliminary decision concern about 'problematic estimation methodologies' may apply to ***some*** market value studies but does not apply to the particular study relied on by JEN.

538. The method used in Professor Gray's study is the product of a consultative development process involving the AER and several regulated businesses and overseen by the Tribunal in the *Energex* review. The method used in Professor Gray's study was designed specifically to overcome the methodological shortcomings of previous studies—for instance, shortcomings in the methodology employed by Beggs and Skeels (2006) that were identified by the Tribunal in the *Energex* review.

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[317] John C Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p 43.

539. In accepting the conclusions of Professor Gray's study, the Tribunal expressed confidence in those conclusions in light of the careful scrutiny to which the method was subjected and the way in which it was designed to overcome shortcomings of previous studies.[318]

540. Professor Gray notes that the dividend drop-off literature has evolved over time and that the SFG studies use current state-of-the-art techniques. Professor Gray explains:[319]

> *In relation to dividend drop-off studies, I first note that the dividend drop-off literature has evolved over time, as do all areas of scientific investigation. This evolution has seen the development of different variations of the econometric specification, different variations of regression analysis, and different types of sensitivity and stability analyses. It has also seen material growth in the available data. The SFG studies use the latest available data, and they apply a range of econometric specifications, regression analysis and sensitivity and stability analyses that have been developed in the literature. The SFG estimate of 0.35 is based on this comprehensive analysis. It is not as though the SFG studies use one of the reasonable approaches and other studies use different reasonable approaches. The SFG studies are comprehensive state-of-the-art studies.*

541. Box 4–1 below outlines the process by which the method used in Professor Gray's study was developed, and the conclusions of the Tribunal in relation to that methodology. In light of this, it cannot be said that Professor Gray's study shares the same methodological issues as previous market value studies. Rather, this study was specifically designed to overcome the shortcomings of previous studies.

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318 *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [22].

319 SFG, *Estimating gamma for regulatory purposes*, February 2015, [177].

Box 4–1: Key conclusions of the Tribunal in Energex in relation to the SFG methodology

In *Application by Energex Limited (No 2)* [2010] ACompT 7, the Tribunal had before it two market value studies that produced different estimates of theta—a study by Beggs and Skeels (2006) and a study by SFG (2010) which sought to replicate the Beggs and Skeels (2006) methodology. The Tribunal identified shortcomings in the methodology used in both studies and observed that the results of both studies should be treated with caution.

The Tribunal, therefore, sought a new 'state-of-the-art' dividend drop-off study.[320] To this end, the Tribunal directed that the AER seek a re-estimation by SFG of theta using the dividend drop-off method, but without the constraint that the study replicates the Beggs and Skeels (2006) study. The Tribunal encouraged the AER to seek expert statistical or econometric advice to review the approach prior to the estimation proceeding and to consider any possible enhancements to the dataset. It was said that the new study should employ the approach that is agreed upon by SFG and the AER as best in the circumstances.

The terms of reference for the new study were settled between the AER and the businesses involved in the Energex review (Energex, Ergon and ETSA Utilities), with oversight from the Tribunal. The AER and the businesses also had the opportunity to comment on a draft of the report, and SFG's responses to those comments are incorporated in the final report.

In submissions to the Tribunal, the AER raised eight 'compliance' issues with the final SFG (2011) study—these were perceived issues of non-compliance by SFG with the agreed terms of reference. The Tribunal was not concerned by any of these issues and considered that they raised no important or significant questions of principle. The Tribunal concluded that any departures from the agreed terms of reference were justified, or even necessary, and observed that calling them 'major compliance issues' was unnecessarily pejorative.[321]

The Tribunal was ultimately satisfied that the procedures used by SFG (2011) to select and filter the data were appropriate and did not give rise to any significant bias in the results obtained from the analysis. It was also not suggested by the AER that the data selection and filtering techniques had given rise to any bias.[322]

In relation to the model specification and estimation procedure, the Tribunal concluded:[323]

In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG's reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG's report has been subjected, and SFG's comprehensive response, gives the Tribunal confidence in those conclusions. In that context, the Tribunal notes that in commissioning such a study, it hoped that the results would provide the best possible estimates of theta and gamma from a dividend drop-off study. The terms of reference were developed with the intention of redressing the shortcomings and limitations of earlier studies as far as possible.

Ultimately, the Tribunal was satisfied that the SFG (2011) study was the best study available at that time for the purposes of estimating gamma in accordance with the NER.[324] The Tribunal did not accept the submission of the AER that either minor issues in the construction of the database or econometric issues would justify giving the SFG study less weight and earlier studies some weight.

Allocation problem and reflection of investors in the market as a whole

542. The other two issues referred to by the AER—the allocation problem, and the possibility that the results of these studies might not be reflective of the value of credits to investors in the market as a whole—have previously

320 Application by Energex Limited (No 2) [2010] ACompT 7, [146]-[147].

321 Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9, [18].

322 Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9, [19].

323 Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9, [22].

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

been considered and addressed by Professor Gray. These issues are again addressed in Professor Gray's most recent report.[325]

543. As noted in our April 2015 proposal:

- **Value to investors in the market as a whole**—in relation to whether estimates reflect the value of credits to investors in the market as a whole and whether there may be some impact on the theta estimate from 'abnormal trading' around ex-dividend day, Professor Gray notes that to the extent this effect is material it would result in the dividend drop-off (and therefore the theta estimate) being higher than it otherwise would be.[326] This is because any increase in trading around ex-dividend days would be driven by a subset of investors who trade shares to capture the dividend and imputation credit and who are, therefore, likely to value imputation credits highly (i.e. higher than the average investor). These investors tend to buy shares shortly before payout of dividends (which pushes up the share price) and tend to sell shortly after (which pushes down the share price)—the overall effect of which is to increase the size of the price drop-off
- **Allocation**—in relation to the allocation issue, Professor Gray notes that empirical evidence provides a very clear and consistent view of the combined value of cash and imputation credits.[327] This evidence indicates that the combined value is one dollar. The relevant evidence includes the recent studies by SFG (2011 and 2013) and Vo et al (2013). Allocation can be made based on this clear evidence as to combined value of the cash/credit package.

Conclusion

544. In summary, the general set of 'limitations' referred to in the preliminary decision do not justify placing limited weight on the particular market value study relied on by JEN. Several of the general limitations do not apply to the SFG study that is relied on by JEN, and the other concerns have been comprehensively addressed by Professor Gray.

545. The preliminary decision approach to considering market value studies—which involves simply identifying limitations that ***may*** apply to these studies in general without considering whether those limitations apply to the particular study relied on by JEN—is illogical and unreasonable. Without considering whether these potential limitations actually apply to the SFG study, the AER cannot reasonably conclude that this study is unreliable or should be given limited weight.

546. Accordingly, the preliminary decision errs by placing only limited weight on all market value studies when estimating theta. We consider that approach is incorrect. Market value studies that are methodologically robust—and in particular the SFG study—can and should be used as direct evidence of the value of imputation credits. Market value studies are the only form of evidence that provide a point estimate of theta, rather than just an upper bound.

4.4.2 ESTIMATES RELIED ON IN THE PRELIMINARY DECISION

4.4.2.1 Range of estimates for the equity ownership rate

547. The preliminary decision concludes that a reasonable estimate of the equity ownership rate is between:[328]

- 0.56 and 0.68, if all equity is considered, and

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325 SFG, Estimating gamma for regulatory purposes, February 2015, [185].

326 SFG, An appropriate regulatory estimate of gamma, May 2014, [150]-[153].

327 SFG, An appropriate regulatory estimate of gamma, May 2014, [158]-[163].

328 Preliminary decision, p 4-100.

- 0.38 and 0.55, if only listed equity is considered.

548. The preliminary decision then combines these ranges with its estimates of the distribution rate to derive corresponding ranges for gamma. The preliminary decision gamma estimate is taken from the point of overlap between these two ranges.

549. We have three concerns with the preliminary decision approach to constructing ranges for the equity ownership rate. The preliminary decision:

1. Erroneously treated equity ownership rates as direct evidence of theta—for reasons discussed above, equity ownership rates provide at best an upper bound for theta
2. Used estimates of the 'listed equity' and 'all equity' equity ownership rate without properly considering which measure is likely to be most appropriate for the BEE, and
3. Inappropriately took a range for the equity ownership rate over a long period, rather than assessing the current equity ownership rate.

550. The first issue is addressed in section 4.4.1.1 above. The second and third issues are addressed below.

Issue one: listed equity and all equity measures

551. Given that measures of the equity ownership rate are available both for all equity and listed equity only, it is necessary to consider which of these measures is most appropriate for estimating the value of imputation credits to investors in the BEE.

552. To the extent that equity ownership rates are relevant (i.e. as an absolute upper bound on theta), the relevant measure is the listed equity measure. This is because the equity ownership rate for the BEE is best proxied by the listed equity ownership rate.

553. Businesses with the characteristics of the BEE are likely to be at least as attractive to foreign investors as listed companies. This is evident from:

- The large proportion of privately owned network businesses that are partly or wholly foreign owned (refer to Table 4–2 below), and
- The interest shown by foreign investors in recent sales of network businesses.[329]

Table 4–2: Foreign ownership of privately owned network businesses in VIC and SA

Business	Foreign Owners (incl. via holding companies)	Foreign ownership Share	Domestic owners	Domestic ownership share
AusNet Services	Singapore Power International, State Grid Corporation	51%	Various	49%[330]
Australian Gas Networks	Cheung Kong Group	100%	N/A	0%

[329] For example, short-listed bidders for TransGrid assets included consortia that included China State Grid and interests from Canada, Abu Dhabi and Kuwait.

[330] This is likely to over-state the level of domestic ownership in AusNet. Of the 49% that is not held by Singapore Power International and State Grid Corporation, it is not clear how much is held by foreign investors. For the purposes of this analysis, we assumed that none of the remaining 49% is held by foreign investors.

Business	Foreign Owners (incl. via holding companies)	Foreign ownership Share	Domestic owners	Domestic ownership share
Citipower	Cheung Kong Group	51%	Spark Infrastructure	49%
ElectraNet	State Grid Corporation, YTL Power Investments	80%	Hastings Utilities Trust	20%
JEN	Singapore Power International, State Grid Corporation	100%	N/A	0%
Powercor	Cheung Kong Group	51%	Spark Infrastructure	49%
SA Power Networks	Cheung Kong Group/Power Assets	51%	Spark Infrastructure	49%
United Energy	Singapore Power International, State Grid Corporation	34%	DUET Group	66%

554. The equity ownership rate for all equity is unlikely to be a good proxy for the equity ownership rate for a BEE since the 'all equity' group will:

- Include a very large number of small, privately-owned and family companies, and
- Therefore, include many businesses that are comparatively unattractive or inaccessible to foreign investors (e.g. the local corner store).

Issue two: time period for measuring the equity ownership rate

555. The preliminary range is derived for the equity ownership rate by considering the range for this metric over a period commencing in July 2000. The period since July 2000 was chosen on the basis that a change in the tax law occurred in July 2000, entitling domestic investors to a refund for excess credits.

556. There is no apparent basis for taking figures up to 15 years old. Rather, to the extent that domestic equity ownership is relevant, what is required is an estimate that is commensurate with the prevailing conditions in the market—and current rates of equity ownership. The current rate of domestic equity ownership will affect the ability of current investors to redeem (and therefore place some value on) imputation credits. The domestic equity ownership rate at some previous point in time is not relevant to this. The preliminary decision in this regard is entirely inconsistent with the estimate of many other parameters, such as the risk free rate. There is no reason to think that the figures for the prevailing rate of equity ownership are unreliable.

557. The domestic ownership rate (as analysed by the AER) is currently 0.45 for listed equity and 0.6 for all equity. To suggest that the current equity ownership rate could be as high as 0.55 for listed equity, or as high as 0.68 for all equity, is simply incorrect.

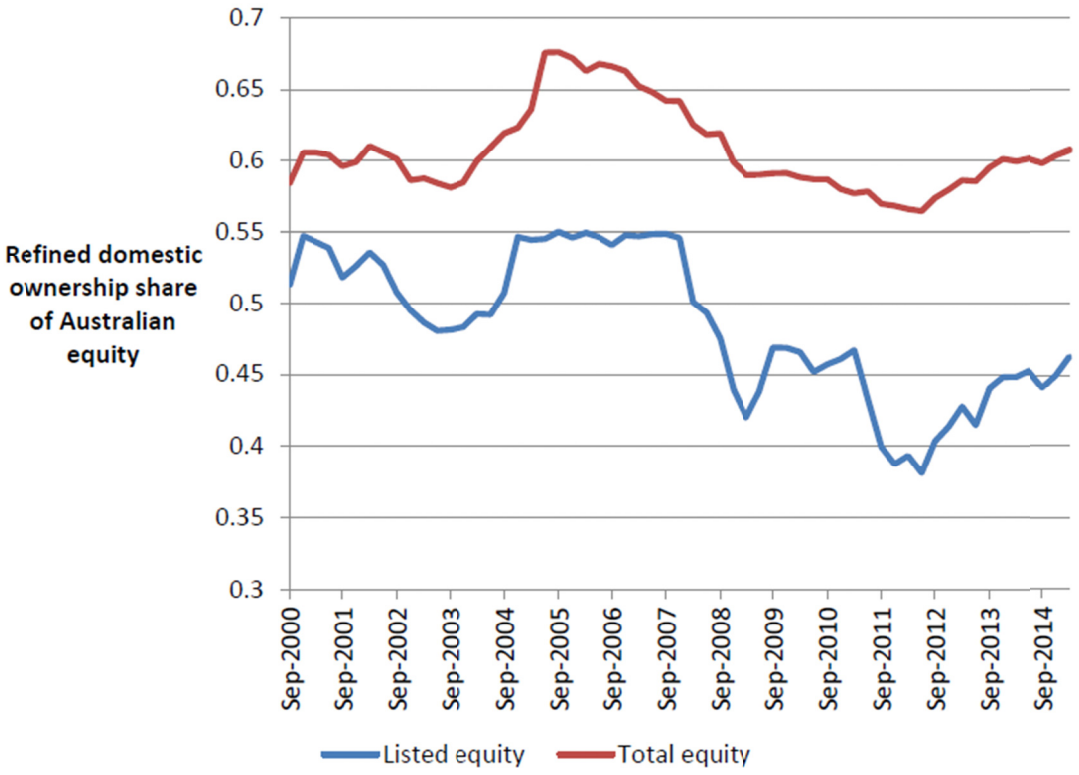
558. Even if it were appropriate to consider the equity ownership rate over some extended period, the AER's choice of period is arbitrary. As noted above, the preliminary decision justifies the choice of period on the basis that a change in the tax law occurred in July 2000, entitling domestic investors to a refund for excess credits. However, the choice of this event as the starting point for the data series is arbitrary given that there are more recent events (such as the GFC) that are likely to have caused a change in the rate of foreign ownership.

559. Figure 4-3 from preliminary decision (reproduced below) shows that the AER's choice of period is significant to its conclusion on the domestic equity ownership rate. If, for example, the AER had confined its consideration to a period after the onset of the GFC, it would have drawn very different conclusions as to the domestic equity ownership rate. Since September 2008 the domestic equity ownership share has been in a much narrower

range of 0.56–0.61, and for listed equity it has been in the range of approximately 0.38–0.47. This simple change to the period of analysis significantly alters the AER's conclusion on gamma, since:

- **Estimates do not overlap**—that is, there is no overlap between its estimates of gamma based on equity ownership for listed and all equity. Taking the more recent (post-GFC) period to measure the equity ownership rate leads to a range for gamma of 0.29–0.36 based on all equity measures and a range of 0.40–0.43 based on all equity. Since there is no overlap between these ranges, it is not clear how the AER would have derived a primary range for gamma had it used a shorter period of analysis for the equity ownership rate.
- **The listed equity estimate does not support a gamma of 0.4**—if the more recent period were adopted, the preliminary decision gamma estimate of 0.4 could not reconcile with the evidence on the equity ownership rate for listed equity. Indeed, the preliminary decision gamma estimate would be inconsistent with any of the evidence for listed equity.

Figure 4–1: Refined domestic ownership share of Australia equity [Figure 4-3 of preliminary decision]



Source: Australian National Accounts: Finance and Wealth (ABS cat. 5232.0), tables 47 and 48; Figure 4-3 of preliminary decision.

Conclusion

560. For reasons set out above, to the extent that equity ownership rates are relevant in providing an absolute upper bound for theta (which we do not agree with), the correct figure to use is the current listed equity figure.

561. The AER's analysis shows that the current listed equity ownership rate is 0.46.[331] When combined with a distribution rate of 0.7, this evidence indicates that the absolute upper bound for gamma is 0.32. Gamma can be no higher than 0.32, but it may be lower than this.

4.4.2.2 Estimate from tax statistics

562. The preliminary decision concludes that the redemption rate from tax statistics is 0.45, based on analysis by Hathaway and a recent update from NERA. This estimate is robust and provides a firm upper bound for theta. As noted by NERA, this figure is drawn from the tax statistics that are considered to be more reliable.[332]

563. Thus, tax statistics indicate that theta cannot be higher than 0.45—and therefore gamma cannot be higher than 0.32.

4.4.2.3 Range of estimates from market value studies

564. The preliminary decision concludes that market value studies support a range for the utilisation rate of between zero and one.[333]

565. Although the preliminary decision says that it had 'particular regard' to the SFG (2013) study, it is not clear from what weight (if any) this study is given.[334] The preliminary decision final estimate of gamma is clearly inconsistent with the findings of this study.

566. Besides stating that it had 'particular regard' to the SFG study, the preliminary decision does not reveal any meaningful consideration of the relative merits of the available market value studies. We have proposed to rely on a specific market value study, being the study designed to overcome the limitations of prior studies. However, instead of assessing the merits of this particular study, the preliminary decision grouped this study with a range of other studies and sought to assess the merits of this broad group of studies at a very general level only.

567. The preliminary decision did not perform any analysis of the relative merits or deficiencies of the SFG study, nor does any expert review of this particular study identify its relative merits or limitations. The only particular consideration given to the SFG study is in the AER's high level assessment of whether its set of general limitations associated with market value studies (discussed in section 4.4.1.3 above) apply to the that study.[335]

568. The preliminary decision considers that all market value studies should be given equal (or similar) weight, regardless of the:

- Time period for estimation (including whether the study relates to the period before or after changes to the tax law in 2000)
- Robustness of the methodology, and
- Quality of data and filtering techniques.

569. This is an erroneous and unreasonable approach to considering market value studies. Many of the earlier market value studies have methodological shortcomings and rely on very old data. As explained above, the

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331 Preliminary decision, p 4-100.

332 NERA, Estimating Distribution and Redemption Rates from Taxation Statistics, March 2015, p 25.

333 Preliminary decision, p 4-18.

334 Preliminary decision, p 4-32.

335 Preliminary decision, pp 4-111 – 4-115.

SFG study relied on by JEN was specifically designed to overcome the shortcomings of previous studies. In particular, the method used in the SFG study:

- Was designed, at the request of the Tribunal, to overcome shortcomings in previous studies (particularly the Beggs and Skeels (2006) study)
- Was the product of a consultative process involving the AER
- Relies on more recent data than previous studies, and
- Has been endorsed by the Tribunal.

570. In effect, the SFG study was designed to supersede previous studies, both in terms of its method and the currency of the underlying data.

571. As noted above, the SFG study was found by the Tribunal (at the time of its May 2011 decision in *Energex*) to be 'the best dividend drop-off study currently available'.[336] The Tribunal also did not accept the AER submission that either minor issues in the construction of the database or econometric issues justified giving the SFG study less weight and earlier studies—particularly the previous Beggs and Skeels (2006) study—some weight. The Tribunal observed that 'the Beggs and Skeels study, despite not being subjected to anything like the same level scrutiny [sic], is known to suffer by comparison with the SFG study on those and other grounds'.[337]

572. Unlike the Tribunal in *Energex*, the preliminary decision does not consider the relative strengths and weaknesses of the available market value studies. Rather, the preliminary decision simply grouped all market value studies together and referred to a range of estimates emerging from this broad group.

573. The preliminary decision approach is even more simplistic than the approach in the guideline. In the guideline, the AER at least excluded studies from the pre-2000 period when different tax laws were in operation. However, the preliminary decision brought back the pre-2000 studies—the effect of which is to widen the AER's range of theta estimates from 0–0.5 to 0–1.0. Again, this simple change significantly impacts the AER's conclusion on gamma. If the range were restricted to 0–0.5 based on the post-2000 studies, then this would indicate a range for gamma of 0–0.35 (based on a distribution rate of 0.7) or 0–0.39 (based on a distribution rate of 0.77)—both of which are below the AER's final point estimate.

574. We maintain that the best estimate of theta from market value studies is 0.35. This reflects the output of the best dividend drop-off study currently available.

4.4.2.4 Lally / Handley adjustment to estimates from dividend drop-off studies

575. The preliminary decision states that, as a minimum, the output of the SFG study requires an adjustment for the apparent incorrect valuation of cash dividends that would also be expected to be reflected in the estimated value of distributed imputation credits.[338] The adjustment is to address the AER's concern that dividend drop off studies (including SFG's study)—which estimate a value for cash dividends at a materially different amount to their face value—are not correctly estimating a post-tax value before personal taxes and personal transaction costs.[339]

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

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

338 Preliminary decision, p 4-32.

339 Preliminary decision, pp 4-31 – 4-32.

576. The proposed adjustment is based on advice from Handley and Lally—and involves dividing the value of imputation credits by the value of dividends from the same study.[340] Applying this adjustment to the SFG study leads to an adjustment of the output from 0.35 to 0.40.

577. The proposed adjustment is an extension of the AER's conceptual framework for estimating gamma. The preliminary decision expresses concern that market value studies are not producing estimates on a pre-personal-tax and pre-personal-costs basis, and it therefore makes an adjustment to remove the effect of these factors.

578. For reasons set out in section 4.2 above, we do not agree with the AER's conceptual framework. Specifically, we do not agree that gamma should be estimated on a pre-personal-tax and pre-person-costs basis. For the same reasons, we do not agree that the output of market value studies should be adjusted to remove the effect of personal taxes and personal transaction costs.

579. We note, however, that if the AER's view on the conceptual framework were corrected, the Handley / Lally adjustment provides a simple way of adjusting market value studies so that they could be used within this framework.[341] As noted above, if the Handley / Lally adjustment is applied to the SFG study, this leads to a theta estimate of 0.4.

580. This implies that even, if the AER's conceptual framework were adopted, a reasonable estimate of theta is likely to be around 0.4—implying a gamma of approximately 0.3.

4.5 PAIRING OF ESTIMATES FOR 'ALL EQUITY' AND 'LISTED EQUITY'

581. The preliminary decision pairs estimates of theta based on listed equity data with its distribution rate for listed equity, and similarly pairs estimates of theta based on all equity data with its distribution rate for all equity. The preliminary decision concludes that it is inappropriate to pair an estimate of theta from only listed equity with an estimate of the distribution rate from all equity (and vice versa).[342]

582. The preliminary decision does not explain why it is necessary or desirable to use the same set of companies to estimate the distribution rate and theta. Rather, the preliminary decision appears to consider that consistency of datasets is desirable in and of itself.

583. We do not agree that estimates of theta based on listed equity data can only be 'paired with' a listed equity distribution rate. The distribution rate and theta are separate parameters and need not be estimated using the same dataset. Whereas the distribution rate is a measure of the credit distribution practices of the BEE, theta is a measure of the value of credits to investors (or potential investors). In each case one must consider which dataset or empirical measure provides the best estimate for the BEE—and there is no reason why this ought to be the same across all parameters.

584. For reasons discussed above, the appropriate dataset for estimating the distribution rate may well be different to that used for estimating theta. This is because the characteristics of investors (or potential investors) in the BEE are likely to be more aligned with investors in listed entities, while the credit distribution rate of the BEE is unlikely to be aligned with that of a large listed entity. The BEE is likely to be at least as attractive to foreign

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340 Preliminary decision, p 4-30.

341 We note the AER appears to consider that this adjustment may not be sufficient to remove the effect of all factors affecting investors' valuation of imputation credits, since there may be some factors which affect investors' valuation of imputation credits only, and not dividends (preliminary decision, p 4-111). We do not agree with this reasoning. The AER has not identified what these additional factors are, or to what extent they ought to be ignored in estimating the value of imputation credits to investors. Therefore the AER cannot reasonably conclude that some further adjustment would be warranted, beyond that recommended y Lally and Handley.

342 Preliminary decision, p 4-18.

investors as a listed entity. But, unlike many large listed entities, it will not have material foreign earnings—which tend to increase the distribution rate for large listed entities.

585. Given this, we propose adopting the best estimate of each parameter based on the most representative dataset in each case, without the constraint that the datasets for each parameter must be the same.

4.6 APPROACH TO DERIVING AN ESTIMATE OF GAMMA

586. The preliminary decision assessment of empirical evidence is illogical and irrational.

587. The preliminary decision reasoning involves two steps:

1. **Determine** a range for gamma, based on the 'overlap of the evidence from the equity ownership approach' (i.e. the overlap between the ranges for listed and all equity respectively), and
2. **Select** a point in that range based on the evidence from tax statistics and market value studies.

588. The first step is arbitrary and illogical, since it involves looking for an overlap between the ranges produced by two different measures and then taking that point of overlap as a binding constraint on the gamma estimate. Since the listed and all equity measures of the equity ownership rate are based on different datasets, there is no reason to expect that the ranges produced by these two measures would necessarily overlap. Indeed, as noted above, it is only because the AER takes such a long historical period to estimate its ranges for the equity ownership rate that the two ranges do overlap.

589. More importantly, there is no reason to expect that the value for gamma would lie at the point of overlap between these two ranges. The point of overlap indicates nothing about the value of gamma. Rather, it is driven by the AER's choice of time period for estimating ranges for the equity ownership rate. The point of overlap can be made larger or smaller (or made to disappear altogether) simply by varying the time period for analysis of the equity ownership rate.

590. The second step is similarly arbitrary and illogical, in that it uses different types of evidence to indicate where in a (illogical) pre-determined range the final estimate of gamma should lie. What the preliminary decision fails to recognise is that the equity ownership rate, the redemption rate and the market value are each measuring different things. Once this is borne in mind (i.e. what these measures represent), it is obvious that the gamma estimates based on redemption rates and market value studies are both lower than the range of estimates from the equity ownership approach. Properly interpreted, the evidence from tax statistics and market value studies indicates that the value for gamma is (as it must by definition be) *below* the range from the equity ownership approach, not that it is at the lower end of that range.

591. As a result of this approach, the preliminary decision gamma estimate can only reconcile with the AER's range of estimates for the equity ownership rate. This estimate is significantly above the values indicated by tax statistics and market value studies.

4.7 THE CORRECT INTERPRETATION OF THE EMPIRICAL EVIDENCE

592. When correctly interpreted, the evidence presented in the preliminary decision demonstrates that:

- The distribution rate for the BEE is approximately 0.7
- The upper bound for theta, as indicated by equity ownership rates and tax statistics, is approximately 0.45—this implies an upper bound for gamma of 0.32

- The best estimate of the value of distributed imputation credits, *on the AER's conceptual framework* (i.e. ignoring personal costs), is 0.4—this implies a gamma of 0.28, and
- The best estimate of the value of distributed imputation credits, based on a proper application of the NER, is 0.35—this implies a gamma of 0.25.

The preliminary decision gamma estimate of 0.4 is not consistent with the evidence presented in the preliminary decision. This value is well above even the upper bound values indicated by the equity ownership approach and tax statistics.

5. FORECAST INFLATION

5.1 BACKGROUND

593. An accurate forecast of inflation is necessary to ensure that businesses have a reasonable opportunity to recover their efficient costs over the long term.

594. Under the NER, forecast inflation plays a role in determining the amount to be deducted from the annual revenue requirement to index the RAB.[343] If the forecast of inflation is too high—that is, if actual inflation turns out to be materially lower than had been forecast—this deduction will be too large. This will lead to under-recovery of costs over the long-term, since the amounts deducted from the annual revenue requirement will be larger than the amount by which the asset base is increased by inflation at the end of the regulatory period (this being based on actual inflation[344]).

595. The inflation forecast also bears an interrelationship with the allowed rate of return. The reason why there needs to be a deduction from the annual revenue requirement to index the RAB is because under the NER, a nominal rate of return is used[345] in combination with a real (inflation-adjusted) RAB.[346] Without the deduction, service providers would be compensated twice for the effects of inflation—once through the rate of return, and again through indexation of the RAB.

596. It is, therefore, important that the forecast of inflation used to calculate the revenue deduction be:

- Accurate (i.e. as close as possible to actual inflation, which is used to roll forward the RAB at the end of the regulatory period), and
- Consistent with the implied forecast of inflation in the nominal rate of return.

597. The preliminary decision adopted an inflation forecast of 2.5% for the 2016 regulatory period. This is based on the methodology that has been adopted by the AER since 2008, which involves:[347]

- For the first two years of the regulatory period, taking the mid-point of the RBA *forecast* range for consumer price index (**CPI**) inflation—for these two years, the RBA has published a forecast range of 2%–3%, with a mid-point of 2.5%,[348] and
- For the following eight years, taking the mid-point of the RBA *target* range for CPI inflation, being 2.5% (as this range is 2% to 3%).

598. As RBA forecasts are only used for the first two years of the regulatory period, the inflation forecast derived using this methodology is primarily determined by the mid-point of the RBA's target range. This approach is reasonable where investors expect monetary policy to return inflation to—and maintain it at—the mid-point of the RBA's target range.

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343 Under clause 6.4.3(a) of the NER, the annual revenue requirement for a DNSP for each regulatory year of a regulatory period must be determined using a building block approach, under which the building blocks include 'indexation of the regulatory asset base'. Pursuant to clause 6.4.4(b), the 'indexation of the regulatory asset base' building block comprises a negative adjustment equal to the amount referred to in clause S6.2.3(c)(4) for that year – i.e. the amount necessary to maintain the real value of the RAB as at the beginning of the subsequent year by adjusting that value for inflation.

344 NER cl 6.5.1(e)(3).

345 NER, cl 6.5.2(d)(2).

346 NER, cl 6.5.1(e)(3).

347 Preliminary decision, p 3-256.

348 RBA, *Statement on Monetary Policy*, November 2015, Table 6.1.

599. In our April 2015 proposal, we adopted the current AER method for forecasting inflation, as described above. However, we also foreshadowed a review of its method for estimating forecasted inflation if current market conditions persist—which, as discussed below, they have.

5.2 SHORTCOMINGS OF THE AER METHOD IN CURRENT MARKET CONDITIONS

600. Recent market evidence demonstrates that the AER's current forecasting method is currently over-estimating inflation. In particular, the most recent ABS data shows that actual CPI inflation is well below the RBA's forecasts and target range—year-end CPI inflation for the June and September quarters was 1.5% per annum, while for the March quarter it was 1.3%.

Table 5–1: Comparison of actual inflation with RBA and AER forecasts

Year ended	Actual inflation	RBA forecast (as at May of the prior year)	Forecast based on AER method (as at May of the prior year)
June 2013	2.4%	2 – 3%	2.5%
June 2014	3.0%	2 – 3%	2.5%
June 2015	1.5%	2.5 – 3.5%	2.55%

601. With RBA cash rates at record low levels and with near term rate cuts priced into financial markets, the RBA cash rate is close to the 'zero lower bound'—with the result that the potential for monetary policy to stimulate economic activity and return inflation to the RBA's target range for CPI inflation is diminished.[349]

602. The consequence of this is that:

- The AER's method is likely to result in an inflation forecast that is above market expectations of inflation over the regulatory period
- The inflation forecast used to adjust cash flows (based on the AER inflation forecast) is likely to be inconsistent with the forecast of inflation implied in the nominal rate of return (which reflects market expectations)
- The downward adjustment to depreciation cash flows is expected be too large—because the inflation forecast derived using the AER's method is expected to be higher than the actual inflation used to roll forward the RAB from 2016 to 2021—thus artificially depressing the overall return to investors, and
- Over the long-term, we will not be able to recover our capital costs.

5.3 RETURN TO A MARKET-BASED METHOD

603. We propose that an alternative forecasting method, based on market data, be adopted. This alternative method is referred to as the 'Fisher equation' or 'breakeven inflation' forecasting method. Under this method, an

[349] The 'zero lower bound' is the macroeconomic problem where monetary policy becomes less effective the closer nominal interests rates gets to zero as it is harder to lower interest rates further to stimulate economic activity.

estimate of expected inflation is derived using a simplified version of the Fisher equation, based on the difference in yields on nominal and inflation indexed CGS of the same maturity.[350]

604. The Fisher equation method was used by the AER prior to 2008. The AER only changed to its current method in 2008 as a result of market conditions at that time causing a scarcity of CGS. In its decision to move away from the Fisher equation method, the AER agreed with stakeholders that a market-based estimate of forecast inflation would be preferable, but concluded that due to market conditions at that time its market-based measure was likely to be unreliable. The AER therefore departed from the PTRM method for forecasting inflation (the Fisher equation method) and sought an alternative method that it considered would provide the best estimate of expected inflation.

605. The AER concluded:[351]

> *The AER's approach to forecasting inflation in this final decision has been in response to an acceptance that the previously ubiquitously used Fisher equation may not currently produce realistic inflation forecasts at this time, due to a bias in indexed CGS yields caused by the scarcity of these bonds. The AER considers that a market based estimate derived from a robust methodology would be preferred to any other alternative method, as the former typically results in a greater degree of certainty and objectivity, however, it is not possible to use such a method at this time…*
>
> *The AER has determined that a methodology that is likely to result in the best estimates of expected inflation is to reference the RBA's short term inflation forecasts, that currently extend out two years, and to adopt the mid-point of the RBA's target inflation band beyond that period (i.e. 2.5%).*

606. We agree with the AER that a market-based estimate of inflation is preferable to an estimate based on the RBA forecasts and target range. A market-based estimate is more likely to be consistent with expectations of inflation reflected in the nominal rate of return, and more likely to be reflective of actual inflation over the regulatory period.

607. Further, the limitations that applied to the Fisher equation method in 2008 no longer apply. Dr Hird notes that during the period from 2006 to late 2008 the indexed CGS market was much smaller than it is today, and this shortage of supply combined with high demand were pushing up indexed CGS prices and pushing down real yields, with the effect that Fisher equation estimates were overstated.[352] However, Dr Hird explains that since that time the supply of indexed CGS has increased considerably, thus alleviating concerns regarding the accuracy of the breakeven forecasting method:[353]

> *At that time the Australian Office of Financial Management was not issuing new indexed linked securities and there were doubts about its commitment to maintain a supply of these bonds into the future. However, since then the AOFM has recommenced issuance of these bonds and the stock of bonds have increased by more than 400% and the number of different maturity dates have more than doubled from 3 to 7. The AOFM has also announced the imminent issuance of a new 2040 or 2045 CPI indexed bond.*
>
> *On this basis I consider that the shortage of supply of these bonds which led to breakeven inflation overstating expected inflation prior to 2009 is no longer a material concern. In any event, to the*

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350 CEG, *Measuring expected inflation for the PTRM*, June 2015, p 10. CEG refers to this as the 'breakeven inflation' forecasting method. CEG notes that the equation it uses is a simplified version of the Fisher equation.

351 AER, *Final decision: SP AusNet transmission determination 2008-09 to 2013-14*, January 2008, pp 105-106.

352 CEG, *Measuring expected inflation for the PTRM*, June 2015, p 7.

353 CEG, *Measuring expected inflation for the PTRM*, June 2015, p 7.

extent that it this was a material concern it would imply that breakeven inflation would be overestimating expected inflation which, if true, would suggest the AER's methodology (which forecasts higher inflation than breakeven inflation currently) was overestimating by even more.

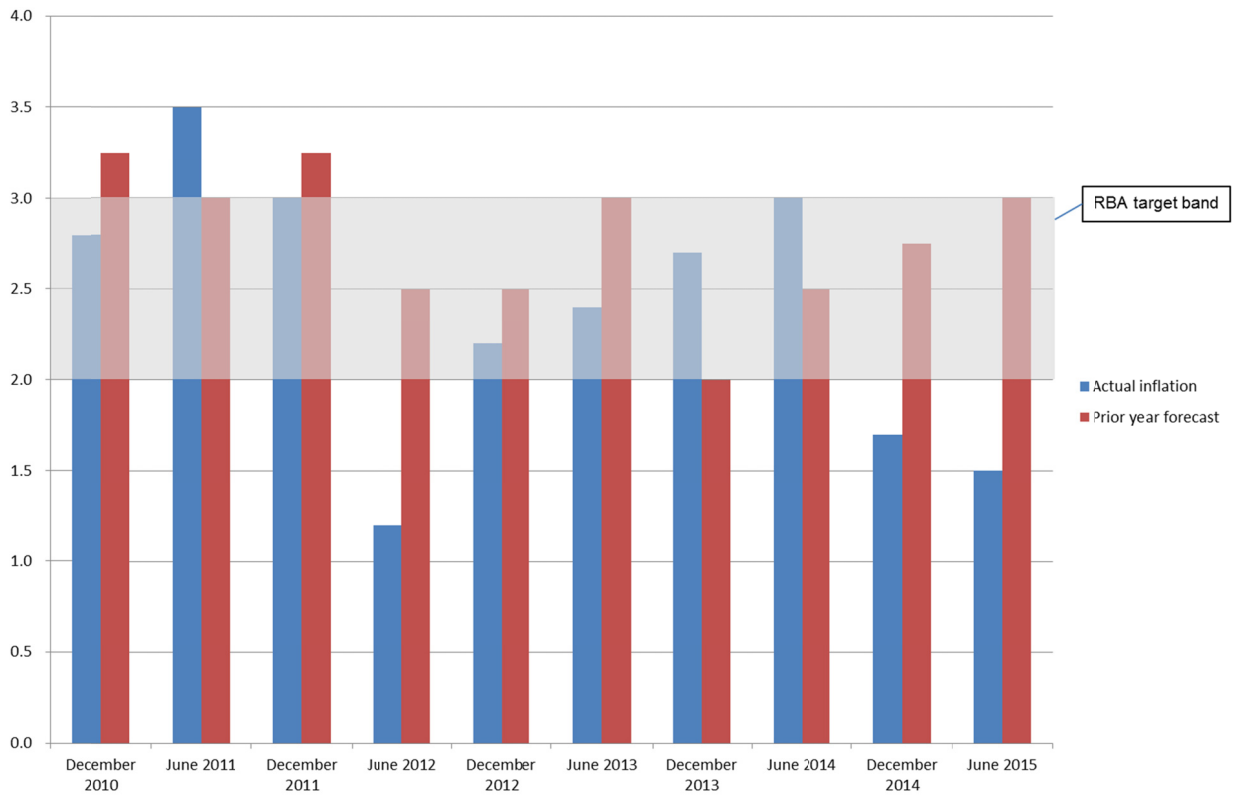
608. In recent years, the current AER method has delivered similar outcomes to the Fisher equation method, because market expectations have been broadly in line with the RBA's forecasts and target range. Therefore, until now, there has been no pressing need for the AER to change its inflation forecasting method.

609. However there is now a material divergence between the RBA forecasts / targets and market-based measures of inflation expectations. There has also been a material divergence between the RBA forecasts / targets and out-turn inflation over the past year, as shown in Table 5–1 above.

610. During the development of the 2013 guideline, forecasts produced using the Fisher equation were close to those produced by the AER's method (see Table 5–1). Therefore, at that time, it was unsurprising that stakeholders endorsed continuing to use the current approach when asked their views. The situation has since changed materially and the AER should not rely on outdated stakeholder support for its approach to satisfy itself that its approach is appropriate in the current environment. It is also worth noting that those views where never incorporated into the final guideline.

611. The evidence demonstrates that over the past year, actual inflation has been significantly lower than RBA forecasts and well below the RBA's target band (see Figure 5–1).

Figure 5–1: Actual inflation vs prior year RBA forecast and RBA target band



Source: Australian Bureau of Statistics (**ABS**) for actual inflation, RBA for prior year forecasts.[354]

[354] Actual inflation data reflect the annual change in the CPI over year to June / December (as relevant), as reported by the ABS. The prior year forecast for each December and June quarter is the RBA forecast for the relevant quarter, as set out in the RBA's Statement

612. Further, Dr Hird explains that over the medium term, it is more likely that actual inflation will be below the mid-point of the RBA's target range. Dr Hird notes that, with the RBA cash rate at record low levels, the power of monetary policy to spur economic growth and increases in the inflation rate is now more limited. Dr Hird concludes:[355]

> *In this context, it is reasonable to expect that investors perceive an asymmetry in the probability that inflation will be above/below the RBA's target, at least in the medium term. This means that, even if the 'most likely' estimate is for expected inflation to average 2.5% in the medium to long term, this is not the mean (probability weighted) estimate. That is, there is more downside than upside risk to inflation.*

613. This implies that it is no longer reasonable to expect inflation to revert to the middle of the RBA target range over the medium term. Accordingly, in current market conditions, a method that assumes medium term inflation would be at or around the mid-point of the RBA target range (as the current AER method does) is likely to over-estimate forecast inflation.

614. Therefore, it is appropriate for the AER to now revert to the Fisher equation method for forecasting inflation as the better forecasting method. Since the Fisher equation method provides a market-based estimate of inflation, using this method will:

- Promote consistency between the inflation forecast used to make adjustments to cash flows and the forecast of inflation implied in the nominal rate of return
- Provide for an inflation forecast that is more likely to be reflective of actual inflation over the regulatory period, and
- Provide businesses with a reasonable opportunity to recover their efficient costs over the long-term, since the inflation forecast used to calculate deductions from the revenue allowance will be more consistent with actual inflation, which is used to roll forward the RAB over time.

615. Applying this method using a 10 year term and data over the 20 business days to 30 September gives an inflation forecast of 2.19%.[356] We adopt this value in our submission, while recognising that it is conservative because it does not reflect two key adjustments recommended by CEG:[357]

1. **Reflect the effective terms of debt and equity.** CEG recommends estimating forecast inflation by placing 60% weight on a 5-year inflation forecast and 40% weight on a 10-year forecast, both estimated using the Fisher equation.[358] CEG explains that a 5-year forecast should be used to index the portion of the RAB that is assumed to be debt financed since the business' debt financing obligations over the 5-year regulatory period are in nominal terms. However, to index the equity-financed component of the RAB, a 10-year forecast should be used in order to effectively convert the 10-year nominal return on equity into a real return on equity.
2. **Incorporate actual inflation for the debt portion.** CEG also recommends substituting in actual inflation into the 5-year forecast used for indexation of the debt-financed portion of the RAB, where actual

on Monetary Policy for May of the prior financial year (e.g. for the December 2014 and June 2015 quarters, the prior year forecast is as set out in the RBA's Statement on Monetary Policy for May 2014).

355 CEG, *Measuring expected inflation for the PTRM*, June 2015, p 10.

356 *Memo– September 2015 cost of debt and inflation forecasts*, 5 January 2016.

357 CEG, *Measuring expected inflation for the PTRM*, June 2015.

358 CEG, *Measuring expected inflation for the PTRM*, June 2015, section 3.

observations are available.[359] For JEN, this is actual inflation to June 2015 (of 1.51%), which (as we discuss in attachment 5-4) will be used to roll-forward the RAB over 2016.

616. Applying both adjustments lowers forecast inflation from 2.19% to 1.94%, which we consider is the most accurate and internally consistent estimate of forecast inflation over the 2016 regulatory period. Table 5–2 compares the various inflation forecast estimates, including that used by the AER in the preliminary determination.

Table 5–2: Forecast inflation using different methods (%)

Forecast method	Value
AER (i.e. geometric average of two years of RBA forecasts plus eight years of 2.5%)	2.41%
Fisher equation (10 years)	2.19%
Fisher equation with adjustment 1	2.04%
Fisher equation with adjustments 1 and 2	1.94%

Source: CEG, RBA, ABS.

(1) The Fisher equation estimates are all derived using prevailing data from the 20 business days to 30 September 2015, where relevant.
(2) The AER method estimate uses data from the most recent RBA monetary policy statement (i.e. from November 2015).

5.4 AER PROPOSAL FOR SEPARATE CONSULTATION ON THE INFLATION FORECASTING METHOD

617. The preliminary decisions states that, going forward, it would consider a change to inflation forecasting in accordance with the consultation processes mandated by the NER. That decision also suggests that the next guideline review may be a suitable process for also reviewing the inflation forecasting method.[360]

618. However, it is not clear why a change to the inflation forecasting method could only be considered as part of a separate consultation process (if that is what the AER is suggesting) or why it could not be considered for the final decision.

619. The AER must consider how appropriate the inflation forecasting method is at the time of each distribution determination (including JEN's). This is because:

- The NER require that:
  - The annual revenue requirement for each regulatory year include an adjustment equal to indexing of the RAB (using inflation) in that year[361]—the AER must, therefore, forecast inflation to use as an input or value in its decision on the annual revenue requirement
  - As part of a building block determination, the AER must specify appropriate methods to index the RAB[362]
- The AER's distribution determination, then, is predicated on a decision:

359 CEG, *Measuring expected inflation for the PTRM*, June 2015, pp 24-25.

360 Preliminary decision, pp 3-256 – 3-257.

361 NER, cl 6.4.3.

362 NER, cl 6.3.2(a).

- To adjust the annual revenue requirement for each regulatory year by the amount the RAB is adjusted for inflation in that year,[363] and
- To determine appropriate amounts, values or inputs to use when determining the annual revenue requirement for each regulatory year, which necessarily includes forecast inflation for each year.[364]

620. The AER may be concerned that, since the PTRM is required to include a method for estimating inflation, the only way that the forecasting method can change is through an amendment to the PTRM.

621. If this were the AER's concern, then we consider that it would be unfounded. The NER do not require that the inflation forecast used to calculate the 'indexation of the regulatory asset base' building block be determined in accordance with the inflation forecasting method specified in the PTRM. On the contrary, the NER states that as part of a building block determination, the AER must specify appropriate methods for the indexation of the RAB.[365]

622. Further, as noted above, the AER's distribution determination is predicated on a decision on the appropriate amounts, values or inputs to use when determining the annual revenue requirement for each regulatory year—which necessarily includes forecast inflation for each year.[366] The fact that an inflation forecasting method is specified in the PTRM does not relieve the AER of its duty under the NER to determine an appropriate forecast of inflation for each regulatory year of the 2016 regulatory period.

623. The AER has not previously expressed any reservation about considering a change to the inflation forecasting method as part of a revenue determination process. On the contrary:

- **It was foreshadowed in the guideline consultation.** During the 2013 guideline process, the AER deferred consideration of the inflation forecasting method, on the basis that it would be considered in upcoming determinations. The AER stated in its explanatory statement:[367]

  As discussed with stakeholders, the final guideline does not cover our position on transactions costs or forecast inflation. These issues will need to be considered in upcoming determinations.

- **It had changed methods during previous determinations.** As noted above, the AER has previously adopted an inflation forecasting method that was different to that set out in its PTRM and applied in previous determinations. In its January 2008 determination for SP AusNet the AER did not apply the Fisher equation method, even though the Fisher equation method was applied up until that time and was the method included in the PTRM at the time SP AusNet submitted its revenue proposal.[368] The AER stated that in considering SP AusNet's revised proposal, it was guided by the principle that the appropriate approach to forecasting inflation should be a method that the AER determines is likely to result in the best estimates of expected inflation.[369]

624. Given evidence that the AER's current method is not producing accurate forecasts of inflation, the AER should review its inflation forecasting method for the JEN final decision. Doing so is consistent with the AER's message to stakeholders during the 2013 guideline process.

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363 NER, cl 6.12.1(2).

364 NER, cl 6.12.1(10).

365 NER, cl 6.3.2(a).

366 NER, cl 6.12.1(10).

367 AER, *Explanatory Statement: Rate of return guideline*, December 2013, p 21.

368 AER, *Final decision: SP AusNet transmission determination 2008-09 to 2013-14*, January 2008, pp 105-106. As noted by the AER, the first PTRM (which applied until September 2007) used the Fisher equation to estimate inflation (in the 'WACC' worksheet, cell F9).

369 AER, *Final decision: SP AusNet transmission determination 2008-09 to 2013-14*, January 2008, p 102.

6. DEBT AND EQUITY RAISING COSTS

6.1 DEBT RAISING SOSTS

625. The preliminary decision accepted JEN's method for determining debt raising transaction costs on the basis that it quantifies the efficient input costs required to achieve the opex objectives.[370] In this submission, we maintain the same method for determining debt raising transaction costs that was accepted in that decision.

626. However, the preliminary decision rejected two other forms of debt raising costs that we proposed to include in our opex allowance in our April 2015 proposal:[371]

- **Liquidity costs**—to establish and maintain bank facilities to meet Standard and Poor's **(S&P**'s) liquidity requirements to maintain an investment grade credit rating; and
- **Three month ahead financing**—to compensate for S&P's requirement that businesses refinance their debt 3 months ahead of the maturity date of their existing debt.

627. The preliminary decision rejected both of these additional costs. In rejecting these costs the preliminary decision referenced the April 2015 Transgrid decision, which stated:[372]

> *We reached this decision primarily because the PTRM's timing assumptions already provide adequate compensation for the timing of revenue compared to expenses (liquidity related costs), to the extent that these cost streams are necessary.*

628. Thus, the Transgrid decision and, in turn, the preliminary decision for JEN are premised on a belief that liquidity costs and three month ahead financing costs are already compensated for through the PTRM timing assumptions. The preliminary decision does not suggest that there is not a need for committed standby facilities on the part of a bond issuer to cover the potential liquidity requirements and three months ahead financing. Rather, that decision appears to consider that these costs are compensated for through 'favourable' PTRM timing assumptions.

629. We maintain that liquidity costs and three month ahead financing costs are part of the efficient cost of raising and financing debt to support ongoing investment in our network. This is supported by the expert advice from Incenta referred to in our April 2015 proposal.[373]

630. However, for the purposes of this submission, we have not included any allowance for liquidity costs or three month ahead financing costs in our proposed opex allowance. We accept that these costs may be partly (but not entirely) compensated for through the timing assumptions in the PTRM—which effectively provide an allowance for working capital.

631. Importantly, liquidity costs and three month ahead financing costs are not entirely compensated for through the operation of the PTRM. We accept that, as noted in the Transgrid decision, the PTRM provides some allowance for 'working capital'.[374] However, while 'working capital' requirements relate to liquidity and part of the costs in question here relate to 'liquidity', the allowance for liquidity costs and three month ahead financing costs originally proposed by JEN is not limited to a working capital allowance. JEN would require a working capital

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370 Preliminary decision, p 3-622.

371 Preliminary decision, p 3-624.

372 AER, *Final Decision: TransGrid Transmission determination 2015−16 to 2017−18*, Attachment 3 – Rate of return, April 2015, p 3-544.

373 Incenta, *Debt raising transaction costs – updated report*, February 2015.

374 AER, *Final Decision: TransGrid Transmission determination 2015−16 to 2017−18*, Attachment 3 – Rate of return, April 2015, p 3-546.

allowance regardless of whether it was a bond issuer or not. This is because working capital facilities are used to manage cashflow timing mismatches arising out of the normal operating cycle (such as the difference between when costs are paid and revenue is received). The liquidity facility described is to meet the requirements of S&P and is in addition to any working capital facilities held (or required) by JEN.

632. Therefore, excluding liquidity costs and three month ahead financing costs is highly conservative in the sense that it is likely to under-estimation the efficient operating costs from raising debt. While these costs may be partly compensated for through the PTRM design providing a working capital allowance, it is likely that at least some of these costs will not be compensated for.

633. Given the exclusion of these costs, the PTRM timing assumptions cannot be considered favourable to JEN (as otherwise suggested in the preliminary decision). Rather, these timing assumptions are required to at least partly compensate for cashflow timing mismatches arising out of the normal operating cycle and for the efficient costs of debt portfolio management.

634. In respect of debt raising transaction costs, as noted above, JEN maintains the same estimation method that was accepted in the preliminary decision. Applying this methodology with updated inputs results in a debt raising transaction costs allowance of $3.46 million ($2015) over the 2016 regulatory period.[375]

6.2 EQUITY RAISING COSTS

635. Equity raising costs are costs paid by an entity when it raises equity, either internally (via reinvested dividends) or externally from new or existing shareholders. New equity is often needed to maintain a given capital structure (i.e. 60% gearing) and credit rating, especially when capital expenditure grows faster than revenues. The costs of raising new equity include lawyers and investment banking fees.

636. The preliminary decision accepted the method proposed by JEN to estimate equity raising costs, which is based on the method set out in the AER's PTRM. The preliminary decision estimate of equity raising costs only differed from JEN's due to other aspects of the preliminary decision.

637. In this submission, JEN maintains the same method for determining equity raising costs that was accepted in the preliminary decision. Applying this methodology with updated inputs results in an equity raising cost allowance of $4.21 million ($2015), which is added to the RAB in 2016.

375 See Attachment 5-2.

7. INTERRELATIONSHIPS

638. The NER require that, in determining the allowed rate of return, regard be had to any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.[376]

639. This section addresses relevant interrelationships involving the financial parameters discussed above.

7.1 NEED FOR CONSISTENT APPLICATION OF THE ARORO

640. JEN considers that the return on equity and return on debt need to be estimated on the basis of a consistent approach to the ARORO. We also consider that it is important to use an approach that leads to the consistent application of any financial parameters that are relevant to the estimates of, and that are common to, the return on equity, the return on equity, the value of imputation credits and forecast inflation.

641. As discussed in section 1.2, we see the ARORO as having two key elements. One must:

1. **Identify** the level of risk that applies to the service provider in respect of the provision of standard control services
2. **Estimate** efficient financing costs for a BEE facing a similar degree of risk.

642. Our proposed approaches to estimating the return on equity, the return on debt, and the overall rate of return apply this framework consistently. Specifically, we propose four steps:

1. **Identify the relevant degree of risk.** The relevant degree of risk, when estimating both the return on equity and return on debt, is that faced by entities operating in a workably competitive market providing services similar to standard control services
2. **Estimate efficient financing costs.** In estimating both the return on equity and return on debt, our objective is to estimate the efficient financing costs of a BEE facing a similar degree of risk. This requires one to consider what financing practices businesses facing the relevant degree of risk operating in a workably competitive market would engage in. This is because it is ultimately competition that drives efficient behaviour. For example, our proposed approach to estimating the return on debt reflects financing practices that would be engaged in by businesses facing the relevant degree of risk, operating in a workably competitive market. Similarly, our estimates of the return on equity are benchmarked against returns required by the market for investing in businesses with a similar degree of risk, including those operating in competitive markets
3. **Use risk parameters that reflect the relevant degree of risk.** Where we are required to estimate risk parameters, we do so on the basis of samples of businesses facing a similar degree of risk to that faced by entities operating in a workably competitive market providing services similar to standard control services. The businesses included in these samples need not be providers of regulated services—but they must provide services that are sufficiently similar. For example in estimating the equity beta, our proposed sample of businesses includes businesses operating in workably competitive markets providing services. Similarly, in estimating the return on debt, yields are measured using benchmark indices for the relevant credit rating band with those indices reflecting bond yields across a wide range of businesses within that credit rating band, including businesses operating in competitive markets (i.e. a range of different businesses facing a similar degree of risk as assessed by credit rating agencies).

[376] NER cl 6.5.2(e).

4. **Use an appropriate gearing ratio.** Our assumed gearing ratio of 60% is broadly consistent with evidence of gearing ratios for businesses operating in a workably competitive market providing services similar to standard control services.[377]

643. Thus, our proposed approaches to estimating the return on equity, the return on debt, and the overall rate of return as set out in section 1.2, are both consistent with the approach to the ARORO described in section 1.2 above.

7.2 INTERRELATIONSHIP BETWEEN THE RETURN ON EQUITY AND THE VALUE OF IMPUTATION CREDITS

644. There is a well-recognised interrelationship between the return on equity and the value of imputation credits. Since the MRP needs to be grossed up for the value of imputation credits, a higher theta estimate implies a higher required return on equity. This interrelationship is explicitly recognised in the NER.[378]

645. This interrelationship is accounted for in this submission and the supporting expert report of Frontier Economics.[379] As explained by Frontier, the proposed MRP estimate of 7.9% is based on AER estimates of the MRP from historical excess returns and the DGM that assume a value for theta of 0.6.

646. However, Frontier notes that the impact on these estimates of adopting a lower theta value (e.g. a value of 0.35) is relatively small, particularly when compared to the effect of variation in the other factors that affect the estimate of the MRP. Frontier considers that the AER's estimates of the MRP from historical excess returns and the DGM are conservative in that the AER's historical returns estimate does not reflect the NERA correction for historical dividends and the AER's DGM estimates are based on ad hoc reductions to long-term GDP growth rates. Frontier notes that correcting for these effects would more than offset any adjustment needed to account a reduction in the estimate of theta from 0.6 to 0.35.

647. If the AER were to reduce its estimate of theta to 0.35 while maintaining its current approach to estimating the MRP, no adjustment to the AER's MRP estimate would be necessary. This is because the top of the AER's range of estimates of the historical average MRP (used by the AER as its MRP point estimate) would remain at 6.5%.[380]

7.3 INTERRELATIONSHIPS WITH THE INFLATION FORECAST

648. As noted above, there are interrelationships:

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377 Frontier Economics analyses average gearing ratios across a sample of listed Australian infrastructure firms, including both regulated and unregulated businesses. Frontier Notes that, while the mean gearing ratio across this sample is slightly below 60%, this is almost entirely due to the very low leverage levels of two entities—Aurizon (which began its life as a public company with very little debt and has stated its intention to increase leverage over time) and Qube (which is in the process of seeking to acquire Asciano and has maintained low leverage to preserve borrowing capacity). Refer to: Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 21.

378 NER, cl 6.5.2(d)(2).

379 Frontier Economics, The required return on equity under a foundation model approach, January 2016, pp 33-36.

380 For reasons set out in section 3.4.2, we do not agree with the preliminary decision approach to estimating the MRP. However, we note that if the AER were to maintain the same approach to estimating the MRP while lowering its estimate of theta, its estimate of the MRP would not need to change. NERA provides estimates of the historical average MRP based on theta assumptions of 0.35 and 0.6. Over the longest available time period, NERA estimates a historical average MRP of 6.65% using a theta assumption of 0.6, and 6.56% using a theta assumption of 0.35 (NERA, *Historical Estimates of the Market Risk Premium*, February 2015, pp 42-43). Thus, NERA's analysis shows that if the AER were to reduce its theta estimate from 0.6 to 0.35, the top of the range for the historical average MRP (with the AER uses as its MRP point estimate) would remain at approximately 6.5%.

- Between the method for forecasting inflation and the amount that is deducted from the annual revenue requirement for indexing the RAB, and
- Between the allowed rate of return and the method for forecasting inflation.

649. The first of these interrelationships is a direct interrelationship. If forecast inflation is too high—that is, if actual inflation turns out to be materially lower than had been forecast—the deduction from the annual revenue requirement will be too large. This will lead to under-recovery of costs over the long-term, since the amounts deducted from the annual revenue requirement will be larger than the amount by which the RAB is increased by inflation at the end of the regulatory period (this being based on *actual* inflation).[381]

650. The second of these interrelationships is more indirect. As noted above, the deduction from the annual revenue requirement for indexation is needed to avoid 'double counting' of inflation. In effect, inflation is counted twice (i.e. because under the NER, a nominal rate of return[382] in combination with a real (inflation-adjusted) RAB[383]) and deducted once. Therefore, it is important that a consistent approach to forecasting inflation is used each time it is counted or deducted.

651. Thus, the inflation forecast used to calculate the revenue deduction needs to be:

- Accurate (i.e. as close as possible to actual inflation, which is used to roll forward the RAB at the end of the regulatory period), and
- Consistent with the implied forecast of inflation in the nominal rate of return.

652. Given this, we propose adopting a market-based estimate of forecast inflation. Using a market-based method ensures consistency with how the allowed rate of return is estimated and, in current market conditions, will provide a more accurate forecast.

7.4 CLAIMED INTERRELATIONSHIP BETWEEN THE APPROACH TO THE RETURN ON DEBT AND EQUITY BETA

653. The preliminary decision suggests that there may be an interrelationship between the choice of method for estimating the return on debt (in particular, whether a trailing average method is adopted) and the equity beta. The decision suggests that, to the extent there is a degree of 'mismatch risk' due to the choice of method for estimating the return on debt (i.e. a risk that the allowed return on debt does not reflect the debt financing costs of a BEE), this ought to be accounted for when estimating equity beta.[384]

654. We do not accept that there is this interrelationship between the transition method for estimating the return on debt and the equity beta. The risk of a mismatch between the regulatory allowance for the return on debt and efficient financing costs is not a non-diversifiable systematic risk (which is all that is relevant for estimating beta).

655. Chairmont, in its report to the AER, makes this point clear:[385]

> *Interest rate risk per se is a systematic risk for all or most companies in the market. However, the form of interest rate risk applicable to NSPs in the 'on-the-day' regime was something quite specific*

381 NER cl 6.5.1(e)(3).

382 NER cl 6.5.2(d)(2).

383 NER, cl 6.5.1(e)(3).

384 Preliminary decision, p 3-176.

385 Chairmont, Financing Practices Under Regulation: Past and Transitional, 13 October 2015, p 40.

to firms under that regulatory umbrella. Most industries would have had greater total interest rate risk than regulated NSPs, as most enterprises do not have the benefit of a direct link between the interest rate impact of their revenues and their costs which NSPs do. This places NSPs in a better position than an unregulated business, as the allowance is in effect a revenue item that they can manage to, even with the uncertainties of the DRP mismatch component.

Ex-post results for the DRP mismatch would have impacted the profit results of the NSPs, which may then have caused some benefit or drag to the share price of the specific NSP. However, it may be argued that this is not a systematic risk. The variability of cashflow is specific to the industry and the individual NSP and may be diversifiable by investors. If this is so, then the required return on equity would not be affected by the DRP mismatch risk as it was a diversifiable specific risk rather than a component of market systematic risk. Therefore, the return on equity should be the same regardless of the existence of DRP mismatch risk and beta should not change because of it.

656. Any change in the AER's approach to estimating the return on debt (including any change to the transition method) will not affect the return on equity.

7.5 CONSERVATIVE APPROACH TO ESTIMATION

657. JEN notes that in a number of cases it has taken a conservative approach to estimation of rate of return parameters. This has been done to ensure that the overall allowance for the return on capital is no more than is necessary to compensate for the efficient financing costs of a BEE facing a similar degree of risk as that which applies to JEN in respect of the provision of standard control services.

658. In particular:

- **Debt raising costs**—we have not included any allowance for liquidity costs or three month ahead financing costs on the basis that these costs may be partly (but not entirely) compensated for through the timing assumptions in the PTRM. As noted above, we consider that liquidity costs and three month ahead financing costs are not entirely compensated for through the operation of the PTRM, and therefore making no explicit allowance for these costs is highly conservative.
- **New issue premium**—we have made no allowance for a new issue premium, despite evidence from CEG of a significant premium associated with issuing new debt that is not captured by data sources used to estimate the return on debt allowance.
- **Equity beta**—we consider that a 'starting point' equity beta of 0.82 is conservative, given that international evidence points to a higher value.[386] Use of an adjusted equity beta of 0.91 is similarly conservative, in that it reflects only partial adjustments for low-beta bias and book-to-market bias. Frontier notes that if 100% weight were to be given to both the low-beta bias and book-to-market bias adjustments, the result adjusted beta would be 1.03.[387]

[386] Frontier estimates a mean relevered weekly beta across its sample of international comparators of 0.88 (Frontier Economics, Estimating the equity beta for the benchmark efficient entity, January 2016, Table 9).

[387] Frontier Economics, *The required return on equity under a foundation model approach*, January 2016, p 66.

8. CONCLUSION

659. For reasons set out above, we do not agree with the approach in the preliminary decision to estimating the allowed rate of return, the value of imputation credits and forecast inflation.

660. Our position on the correct approach to estimating each parameter is set out below.

8.1 RETURN ON DEBT

661. For reasons set out in section 2, the trailing average approach to estimating the return on debt should be implemented immediately, with no transition. This is necessary to ensure that the return on debt allowance reflects the efficient financing costs of a BEE—i.e. the cost of financing a staggered portfolio of fixed-rate debt.

662. Alternatively, even if the preliminary decision is correct that it is necessary to have regard to the financing practices of a regulated BEE in response to previous regulatory methodologies and settings, the appropriate approach would be to adopt either:

1. A hybrid form of transition with the assumed level of hedging based on evidence as to the optimal hedging ratio, or
2. A hybrid form of transition with an assumption of 100% hedging of the base rate, if evidence supported this assumption.

663. Of these two alternative positions, the first is clearly preferable. If the AER is correct that efficient financing practice involves some degree of hedging of the base rate, it is then necessary to consider how much hedging is efficient. A transition can only apply to the base rate component to the extent that the BEE used hedging to match the previous on-the-day approach to setting the allowed return on debt. The evidence demonstrates that the efficient level of hedging under the previous on-the-day approach was around one third.

664. Estimates for the first year of the 2016 regulatory period for the three alternative approaches are set out below. These estimates are based on a 10 year benchmark term of debt and credit rating of BBB to BBB+, and the RBA curve extrapolated in accordance with the AER's method for the prevailing return on debt observation.

Table 8–1: Return on debt for the first year of the regulatory period

Transition method	Return on debt for first year
No transition (immediate application of trailing average method)	7.77%
Hybrid transition, assuming an optimal hedging ratio	6.90%
Hybrid transition, assuming 100% hedging	5.17%

Source: See Attachment 6-2 and CEG, *Memo– September 2015 cost of debt and inflation forecasts*, 5 January 2016.

665. For our submission, we adopt the value using no transition (7.77%) for the first year. We propose updating these values for JEN's averaging period for the first year using the method set out in section 2.5.3.2, once the data is available.

666. We also adopt placeholder values for years 2–5 of the 2016 regulatory period by rolling the trailing average forward over that period and assuming that prevailing return on debt observed for the first year stays constant

over these years (which has the effect of lowing the trailing average return on debt over time).[388] We propose that the return on debt is updated in subsequent years of the 2016 regulatory period in accordance with the method and formulae set out in sections 2.5.1 and 2.6.

667. Our proposal departs from the methods for estimating the return on debt set out in the guideline. Our reasons for departure are set out in section 2 above.

668. Table 8–2 shows the extent of mismatch if the guideline transition is applied instead of the immediate or hybrid transitions.

Table 8–2: Extent of mismatch if the guideline transition is applied

Year	Forecast return on debt			Value of mismatch relative to guideline transition	
	Immediate transition	Hybrid transition	Guideline transition	Immediate transition	Hybrid transition
2016	7.77	6.90	5.44	13.94	8.74
2017	7.63	6.89	5.44	13.10	8.69
2018	7.40	6.81	5.44	11.73	8.22
2019	6.96	6.52	5.44	9.08	6.48
2020	6.53	6.20	5.44	6.50	4.55
Total				**54.36**	**36.67**

(1) The forecast return on debt is calculated assuming that the prevailing return on debt remains constant over the 2016 regulatory period and reflect that observed during the 20 business day to 30 September 2015 averaging period.
(2) The analysis assumes a $1B ($2015) RAB, which is a conservative value for JEN's RAB over the forthcoming period, and 60% gearing.

8.2 RETURN ON EQUITY

669. Our preferred approach to estimating the return on equity is as set out in our April 2015 proposal. This approach has regard to all relevant models and evidence, and uses this material for its proper purpose. Each of the relevant return on equity models is independently used to derive an estimate of the required return on equity, while other relevant evidence is used to determine the best estimate of each parameter within these models. The outputs from each relevant model are then combined to arrive at a return on equity estimate. Based on updated data to reflect prevailing market conditions, this approach leads to an estimate of prevailing return on equity of 9.8% (or 9.7% if the model estimates are equally weighted).

670. However, if the AER proposes to continue relying solely on the SLCAPM to estimate the return on equity, then it must change the way it implements this model. The way that the SLCAPM was applied in the preliminary decision leads to a return on equity that is not consistent with the ARORO and does not reflect prevailing market conditions. The preliminary decision does not properly recognise the weaknesses of the SLCAPM, nor does it account for these weaknesses when applying the model. Further, the AER's practice of applying an effectively fixed risk premium to a variable risk-free rate is not appropriate in current market conditions, since it leads to the return on equity moving inappropriately in lock-step with changes in the risk-free rate.

[388] The placeholder return on debt values for years 1–5 are set out and calculated in Attachment 6-2, and supported by CEG, *Memo–September 2015 cost of debt and inflation forecasts*, 5 January 2016.

671. The accompanying expert report of Frontier outlines an alternative approach that involves properly adjusting SLCAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:

- Making a transparent and empirically based adjustment to the equity beta estimate to account for the known shortcomings of the SLCAPM, particularly low beta bias, and
- Deriving the MRP in a way that gives appropriate weight to measures of the prevailing (current MRP).

672. This leads to an estimate of prevailing return on equity of 9.9% for the placeholder averaging period (20 business days to 30 September). This is calculated using the SLCAPM with an equity beta of 0.91, MRP of 7.9% and a risk-free rate of 2.75%.

673. For reasons set out in section 3, we consider that either the multi-model approach or the 'adjusted SLCAPM' approach (as described above and in section 3.6) would be clearly preferable to the approach taken in the preliminary decision. For the purposes of this submission, we adopt the adjusted SLCAPM approach.

674. Either of the alternative approaches put forward by JEN depart from the methods for estimating the return on equity set out in the guideline. Our reasons for departure are set out in section 3 above.

8.3 OVERALL RATE OF RETURN

675. We maintain our proposed gearing ratio of 60%. Applying this gearing ratio and the estimates of the return on debt and return on equity set out above leads to a nominal vanilla WACC of 8.62% for the placeholder averaging period (20 business days to 30 September 2015).

8.4 GAMMA

676. As explained in section 4 above, when correctly interpreted, the evidence in relation to gamma demonstrates that:

- The distribution rate for the BEE is approximately **0.7**
- The upper bound for theta, as indicated by equity ownership rates and tax statistics, is approximately 0.45—this implies an upper bound for gamma of **0.32**
- The best estimate of the value of distributed imputation credits, *on the AER's conceptual framework* (i.e. ignoring personal costs), is 0.4—this implies a gamma of **0.28**
- The best estimate of the value of distributed imputation credits, based on a proper application of the NER, is 0.35—this implies a gamma of **0.25**.

677. For these reasons, we maintain our proposed gamma of 0.25 based on a distribution rate of 0.7 and a theta estimate of 0.35.

678. Our proposal departs from the methods for estimating gamma set out in the guideline. Our reasons for departure are set out in section 4 above.

8.5 FORECAST INFLATION

679. For reasons set out in section 5 above, we propose that an alternative forecasting method, based on market data, is adopted. The alternative method is referred to as the 'Fisher equation' method, or the 'breakeven inflation' forecasting method. Under this method, an estimate of expected inflation is derived using a simplified version of the Fisher equation based on the difference in yields on nominal and inflation indexed CGS of the same maturity.

680. Based on this alternative method, the current best estimate of forecast inflation is 1.94%. We adopt 2.19% in our submission, which is a conservative estimate in the circumstances (in that it is higher than the best estimate).

8.6 DEBT AND EQUITY RAISING COSTS

681. For the reasons set out in section 6 above, we propose adopting the method for estimating debt and equity raising costs used in the preliminary decision. Based on our forecast cashflows, this gives debt and equity raising cost allowances of $3.46 million ($2015) and $4.21 million ($2015) respectively.