AER Review of the Rate of Return Guideline

Response to Discussion Papers and Concurrent Expert Evidence Sessions

4 May 2018

Energy Networks Australia

Contents

Energy Networks Australia www.energynetworks.com.au
Unit 4, 110 Giles St, Kingston ACT 2604
P: +61 2 6272 1555 E: info@energynetworks.com.au
Energy Networks Association T/A Energy Networks Australia
ABN: 75 106 735 406

1 Overview

Key messages

- Network businesses understand that energy prices are a concern to consumers and we are contributing to establishing a Guideline that needs to deliver outcomes that are in the long-term interests of consumers. This includes ensuring that network businesses are able to achieve a reasonable, predictable and sustainable return on investment
- Significant reductions were made to the allowed return on equity in the 2013 Guideline.
- Since the 2013 Guideline, there have been further material reductions in the allowed return on equity through reductions in the nominal risk-free rate. Consequently, maintaining the return on equity parameters from the 2013 Guideline would result in a lower allowed return on equity.
- Evidence suggests that current returns, which were significantly lowered in the 2013 Guideline, are starting to impact investment levels. This is evidenced by lower actual expenditure levels relative to approved allowances.
- This submission is consistent with the AER's objective of an incremental review and developing a guideline which is capable of being accepted by stakeholders. It adopts the AER's current approaches to gearing, tax, the trailing average return on debt, the Sharpe-Lintner CAPM Foundation Model for the return on equity, and a 'utilisation' interpretation of gamma.
- In relation to the return on equity, a balanced review of the evidence does not support any reduction to either equity beta or the market risk premium (MRP). Rather, if the AER is minded to change either of these parameters, the evidence would support an increase.
- A balanced review of the evidence does not support an increase in gamma from 0.4. Rather, if the AER is minded to change this parameter, the evidence would support a lower value. There has not been a proper examination of the implementation of the AER's approach to estimating its 'cash flow' interpretation of gamma and this should occur as part of the current review. The evidence to support any change in the gamma allowance is materially weaker than the evidence in relation to beta and MRP.

Energy Networks Australia (ENA) welcomes the opportunity to provide this submission to the AER's Rate of Return Guideline Review.

ENA's participation in this review is aimed at supporting outcomes that are acceptable to all stakeholders, including the AER, while delivering sustainable business outcomes for networks that are a precondition for the long-term investment in energy infrastructure that is vital for Australia's growing energy needs.

1.1 Engagement in development of positions

ENA's submission has been informed by five months of ongoing engagement with consumers through the AER's Consumer Reference Group (CRG), input from broader member stakeholders through 'business as usual' panels and forums, and through the experts who participated in the AER's concurrent expert sessions.

While consumers raised concerns about high electricity prices and rates of return, engagement with the AER's CRG over the last five months has resulted in agreement being reached between ENA and many members of the CRG on a number of matters including the important role of transparency in the AER's exercise of discretion in determining the rate of return and the need for further work beyond the Rate of Return Guideline on several issues. Those areas of consensus are reflected in this submission.

In particular, ENA and CRG have engaged in detail on a proposal to provide for the potential for network businesses to opt to extend the current cost of equity averaging period from the current 20 business days, to a longer period of between 20-60 business days. This proposal is outlined in the AER *Market Risk Premium Discussion Paper*, and is supported by both ENA and CRG.

A high level summary of feedback heard in preparation of this submission is included in Attachment A. ENA will continue to engage with the CRG as well as other business stakeholders to seek to further understand their perspectives and concerns.

ENA has also participated in the AER's broader consultation process which includes ongoing dialogue with stakeholders as well as the concurrent expert sessions. ENA notes that through the AER's expert evidence process, the experts were able to reach a number of areas of consensus. These areas of agreement between experts are highlighted throughout this submission.

As a result of the consultation process led by the AER, as well as our own engagement with the CRG and other stakeholders, ENA considers we have developed a more rounded submission which takes into account views of our stakeholders in regard to the safe, secure reliable and efficient delivery of network services.

1.2 Basis of approach to outstanding issues

In some areas, ENA and consumers have not reached a consensus view, and in some areas the experts were unable to reach a unanimous view. In these areas, the approach that underpins the ENA approach is as follows:

- **Consistent with the AER's current framework**. All of the positions in this document are consistent with the AER's current framework, in accordance with the AER's stated intention for this to be an incremental review. ENA has adopted the AER's current trailing average approach to the return on debt, the AER's current Foundation Model approach to the return on equity, and the AER's current 'utilisation' interpretation of the value of imputation credits.
- **Contributes to the achievement of the National Electricity Objective (NEO) and National Gas Objective (NGO)**. The positions in this document are focused

on the long-term interests of consumers as set out in the NEO and NGO. ENA considers this objective to be best met by obtaining the best possible estimate of the required return based on the available evidence.

- **Incremental to the current Guideline**. All of the positions in this document begin by accepting the framework and outcomes of the 2013 Guideline[1] and consider how the evidence has moved since then.
- **Based on robust evidence**. All of the positions in this document are supported by robust empirical evidence. On each point, ENA has documented the relevant empirical evidence and explained the significance of that evidence. All evidence is based on standard, well-accepted methods. We have tried hard to avoid taking positions that are based on conjecture or supposition about matters that 'might' have an effect, or descriptions of alternative frameworks that 'might' be contemplated as we consider this to be of limited practical value to the AER.
- **Seeking the best estimate**. All of the positions in this document are designed to produce the best possible estimate of the relevant parameter based on the proper consideration of all of the relevant evidence.
- **Detailed and specific**. All of the positions in this document set out the specific role of each piece of relevant evidence and how we think it should be interpreted and used in the process.

1.3 A Guideline that is capable of acceptance

ENA advocates the goal of producing a Guideline that is capable of acceptance by all stakeholders. ENA considers that the characteristics of such a Guideline include:

- Based on robust evidence
- Transparent
- Internally consistent – the same standard of evidence should be applied to all parameters
- Consistent over time – parameter estimates should only change if there is evidence to support that change
- Based on broad consultation
- Produces stable and predictable outcomes

ENA considers that the overriding objective of the Guideline process is to provide an allowed rate of return that is the best possible estimate of the required return of investors as that best contributes to the achievement of the NEO and NGO. For every

[1] As explained below, during the previous review ENA and member firms submitted that the AER's 2013 Guideline delivered an unreasonably low allowed return on equity and PIAC submitted that it delivered an unreasonably high allowed return on equity via an overstated equity beta. This resulted in litigation from both groups, wherein the Tribunal ruled that neither appellant had made out their case. Consequently, ENA does not seek to re-litigate this issue and accepts the 2013 Guideline as being an appropriate starting point.

component of the allowed return, the central question is "What is the best estimate possible in the circumstances, based on the available evidence?".

In this regard, we note that one of the propositions that all Experts appeared to agree with is that:

> *The Guideline should set the allowed return on equity equal to the best estimate of the required return on equity.* [2]

The majority of experts also agreed with the proposition that:

> *As the ARORO is consistent with the NEO/NGO, it would be helpful for the Binding RORG to confirm that the ARORO remains the working objective of the guideline.* [3]

1.4 The effects of the 2013 Guideline

The material reductions in the allowed return in the 2013 Guideline have already had a very significant effect on network service providers (NSPs), network revenues, prices and ongoing investment:

- Every element of the allowed return was reduced in the 2013 Guideline.
- Since the 2013 Guideline, the allowed return on equity has reduced materially due to the decline in the risk-free rate.
- The 2013 Guideline has materially reduced the return to NSP shareholders relative to each dollar of investment – by more than 30% on average.
- Since the 2013 Guideline, RAB growth has been muted.
- Since the 2013 Guideline, NSPs have systematically underspent AER-approved capital expenditure allowances.

ENA accepts that the 2013 Guideline should be adopted as the starting point for the current Guideline, consistent with the AER's stated intention of this being an incremental review.

In this context, it is important to note that the reductions that are embedded in the 2013 Guideline starting point have already had a highly material impact on NSPs, network revenues, prices and ongoing investment.

In addition, the allowed return on equity has reduced materially even after the 2013 Guideline as a constant risk premium has been added to the prevailing government bond yield. Whereas the allowed return on equity was 8.55% at the time of the 2013 Guideline, it was set to 7.3% in the AER's most recent decision.[4] Thus, even if the

---

[2] Joint Experts' Report, Proposition 2.03, p. 14.
[3] Joint Experts' Report, Proposition 2.05, p. 15. Graham Partington preferred a "principles based" approach, but did not indicate what the principles would be or how that approach would be implemented. David Johnstone objected to the reference to a "benchmark entity" and to the use of market data but did not indicate what alternative approach should be adopted, other than that it would involve an analysis of efficiency in "an engineering sense."
[4] AER, November 2017, APA VTS Final Decision, Attachment 3, p. 3-11.

AER's current return on equity parameters are maintained, the result is a material reduction in the allowed return on equity relative to the 2013 Guideline.

1.5 Compensation for risk

In relation to the assessment of risk, ENA makes the following points:

- The Guideline should identify all of the risks that are relevant to the allowed return and explain how each risk has been addressed.
- The Guideline should note that the return on equity derived from the Foundation Model approach is an *expected* return on equity such that the allowed revenues must be sufficient to provide that return to the providers of equity capital *on average*.
- Any change in the systematic risk profile of NSPs is likely to occur gradually over time. Such changes will be reflected in more recent equity beta estimates, based on data from more recent periods. Consequently, equity beta estimates over recent periods (e.g., over the last 5 years) will provide an indication of the direction of change in systematic risk.

1.6 Benchmark gearing

ENA supports the approach taken by the AER in the 2013 Guideline to determining a benchmark level of gearing—namely, to consider the average historical level of gearing of a sample of comparator firms. ENA strongly considers that the AER should retain this approach.

ENA considers that gearing should be estimated on a market value basis to be consistent with other WACC parameters that are estimated on a market value basis. This approach is supported by finance theory, is widespread practice and was endorsed almost unanimously by the Experts participating in the concurrent sessions.

ENA notes that the AER's updated analysis of gearing continues to support a benchmark level of gearing of 60% and considers that that figure should be maintained in the current Guideline.[5]

These positions set out are consistent with the consensus view documented in the Joint Experts' Report.[6]

1.7 Return on debt

In relation to the return on debt, ENA:

- Notes that the AER has proposed to conduct a separate consultation process in relation to the allowed return on debt and looks forward to contributing more detailed submissions through that process.

[5] AER, February 2018 Discussion Paper, pp. 15-16.
[6] Joint Experts' Report, Section 3, pp. 26-32.

- Supports the continued use of the trailing average approach to the return on debt, as it is consistent with efficient financing practices and promotes price stability.
- Supports the continuation of the current transition arrangements. NSPs have constructed debt portfolios and hedging arrangements in accordance with current transition arrangements. It would be difficult and costly to unwind these arrangements part way through the transition.
- Supports the continued use of a 10-year term of debt, being consistent with the AER's conceptual analysis, empirical evidence and trailing average approach to the return on debt allowance.
- Supports the continued use of independent third-party estimates of the return on debt.

1.8 Return on equity

Foundation model approach

- Consistent with the AER's stated intention of the current review being focused on incremental improvements to the current Guideline, ENA accepts that the AER's current Foundation Model approach will be maintained and that the relevant financial models will continue to have the same role. ENA agrees with the AER that there have been no advances in finance theory to warrant a change in the use of the various relevant financial models.
- When estimating the key beta and MRP parameters, ENA considers that the best approach is to jointly consider all evidence that is relevant to a parameter, having regard to the relative strengths and weaknesses of each piece of evidence. ENA takes the firm view that this approach is a more reliable and transparent approach of implementing the Foundation Model than an approach of assigning different roles to different subsets of the data. For example, ENA does not see how a subset of evidence relegated to the role of 'cross check' can have any useful input into the analysis.

General approach to setting key parameters

- ENA proposes that the appropriate approach to the updating of the key return on equity parameters is as follows:
    1. The starting point is the parameter that was adopted by the AER in its last review. This reflects the AER's assessment of the best estimate of that parameter to use in its Foundation Model approach – based on all of the relevant evidence at the time of its last review.
    2. The next step is to consider the new evidence that has become available since the last review.
    3. The final step is to determine whether the updated evidence reaches the threshold required to make a change to the prevailing parameter estimate.
- ENA agrees with the propositions in the Joint Experts' Report that:

- Stability and predictability are important principles in the regulatory context that benefit all stakeholders. In the current context, this implies that changes to parameter estimates should only be made in response to strong evidence.[7]
- The final parameter estimates should be transparent, in the sense that all stakeholders are able to understand the reasons for the adoption of every parameter estimate and how the AER gets from input data to final parameter estimate.[8]
- The assessment of the updated evidence must be applied consistently and symmetrically throughout the review.[9]

Equity beta

In relation to the estimation of equity beta, ENA considers that:

» The AER should only make use of equity betas that are re-levered to a common, benchmark level of gearing (e.g. 60%). Equity betas that are not re-levered in this way cannot be compared on a like-for-like basis.

» The domestic evidence indicates an increase in equity beta since the 2013 Guideline. In its *Equity Beta Discussion Paper*, the AER reports an increase in equity beta estimates for all existing domestic comparators and for all portfolios of existing comparators.

» The evidence of low-beta bias (i.e. the evidence that returns on low-beta stocks are systematically higher than the Sharpe-Lintner CAPM predicts) is one of the most significant, consistent and well-accepted pieces of evidence in the empirical asset pricing literature, and there has been no diminution of it since 2013. The AER should continue to have regard to this evidence to inform the equity beta used in its Foundation Model approach.

» Since 2013, the AER's sample of domestic comparators has further reduced and now numbers only three. Logically, as the sample of close domestic comparators reduces, relatively more weight must be given to the other relevant evidence.

» Evidence on RAB multiples and profitability metrics have no useful role to play in the estimation of equity beta.

ENA concludes that, if the AER is to consider a change the allowed equity beta warranted, there is strong evidence to support an increase in the equity beta from the 0.7 figure adopted in the 2013 Guideline in that:

» The AER's updated equity beta estimates indicate an increase in all of the beta estimates for domestic comparators.

» There is no evidence to support a diminution of low beta bias or the role of the Black CAPM within the Foundation Model approach – especially in the context of an incremental review.

---

[7] Joint Experts' Report, Proposition 2.01, p. 14.
[8] Joint Experts' Report, Proposition 2.01, p. 14 and 5.19, pp. 51-52.
[9] Joint Experts' Report, Proposition 2.01, p. 14.

- The international evidence considered by the AER all indicates an equity beta above 0.7.
- Evidence from other domestic infrastructure firms all indicates an equity beta above 0.7.
- The only evidence that supports maintenance of the same equity beta as in 2013 is the evidence from delisted firms, whose beta estimates are frozen in time forever.

The consistency between these submissions and the majority view of experts is set out in detail below.

Market risk premium

ENA concludes that, if the AER is to consider a change the allowed MRP warranted, there is strong evidence to support an increase in the market risk premium from the 6.5% figure adopted in the 2013 Guideline in that:

- The preponderance of empirical evidence suggests that the MRP has increased since 2013.
- No regulator in Australia that sets a current, forward-looking MRP allowance has, within the past 12 months, adopted an allowance lower than 7.0%.
- The Dividend Growth Model (DGM) provides useful evidence on the current MRP and should be given explicit and material weight by the AER. There is no evidence to support a weakening of the role of the DGM since the 2013 Guideline.
- Evidence from the Wright approach should be given equivalent weight to mean historical excess returns evidence.
- Geometric average excess returns should be given no weight by the AER when estimating the MRP because in no place is the AER's return ever compounded and the geometric return is only mathematically appropriate when compounding occurs.
- Any assessment of historical returns should make use of at least 50 years of data.

The consistency between these submissions and the majority view of experts is set out in detail below.

1.9 Value of dividend imputation tax credits (gamma)

In the context of the AER's stated objective of an incremental review, ENA accepts that the AER's 'utilisation' or 'cash flow' interpretation of gamma will be used.

The AER's cash flow interpretation of gamma is that "the value of imputation credits within the building block revenue framework is an estimate of the expected proportion of company tax which is returned to investors through utilisation of imputation credits."

This implies that the goal is to determine the proportion of company tax paid by the benchmark efficient entity (BEE) that is returned to investors in the BEE through utilisation of imputation credits, which in turn requires:

- An estimate of the distribution rate for the BEE:

- ENA considers that the Lally 20-firms approach is not appropriate because:
  - The firms in question are not representative of either of the relevant characteristics of the BEE, being that it is a highly-levered, capital intensive firm providing access to its infrastructure assets operating wholly within Australia.[10]
  - The approach is affected by the general problem of the difficulty of estimating the distribution rate for an individual firm.[11]
  - A number of issues and inconsistencies relating to the Lally estimates have been identified and not yet resolved.
- An estimate of the extent to which BEE shareholders are able to redeem the credits that they receive, which will depend on the assumption about the composition of the shareholder base of the BEE. This work is yet to be performed.

The proportion of company tax paid by the average firm that is returned to *its* investors through utilisation of imputation credits might be estimated as a relevant reference point. This quantity can be estimated in two ways:

- ATO tax statistics provide a direct estimate of this quantity (the ratio of credits redeemed to credits created). ENA suggests that the items in the ATO data base that are required for this calculation are reliable. The fact that it is difficult to extract from the ATO data an estimate of a quantity that is *not* required to estimate the redemption rate (i.e., credits distributed) is not relevant to the AER's task. The current estimate from this approach is 0.34.[12]
- The alternative is to take the product of:
  - The distribution rate for the average firm, which can only be narrowed down to a range of 50% to 70% in the ATO data.
  - The equity ownership proportion, which is problematic for many reasons including:
    - It does not account for the 45-day Rule or any other reason why a credit distributed to a resident investor might not be redeemed, so overstates the quantum of credits redeemed.
    - It is based on survey data collected by the ABS which requires filtering and adjustment to "clean" the data.
    - It is the subject of express data quality warnings by the ABS.
    - The recent update of the data conducted by the ABS increases the level of concern in relation to this estimate because:
      - The method for compiling the data has not changed. There is still the same reliance on survey responses, there is still the same

[10] The Experts generally agreed that the current Lally 20-firms estimate does not appropriately reflect the BEE. Some experts considered that the approach has no useful role. ML considered that it may have a role if adjusted by deleting firms with substantial foreign income. Joint Experts' Report, Proposition 7.09, pp. 76-78.
[11] Joint Experts' Report, Proposition 7.09, pp. 76-78, Stephen Gray comments.
[12] Joint Experts' Report, Proposition 7.07, pp. 73-74

mis-match between components of the data, and there are still the same problems with estimating the market value of equity for some sectors.

- The historical estimates for some sectors have changed materially in the update. The fact that an historical number can be materially changed almost 20 years after the event is clearly troubling. This is especially so when the change is not based on new data, but rather the application of different assumptions for how the same data should be processed into an estimate.
- The revision to the estimates is based on a 'backcasting' exercise whereby estimated splits between domestic and foreign equity from recent data is 'backcast' to the historical data, replacing the estimates that were made at the time the historical data was collected.
- The revised estimates result in very little volatility in the estimates for listed equity and more volatility in the estimates for all equity, when the reverse would be expected ex ante.
- The plausible impact of the GFC that was evident in the 2014 data has now been removed in the 2017 revision. That is the GFC impact has now been removed from the historical record.

ENA considers that the best available estimate of the company tax paid by the average firm that is returned to its investors through utilisation of imputation credits is the ATO estimate of 0.34. ENA considers the reliability of that direct estimate to be materially higher than the indirect upper bound estimate compiled as the product of a distribution rate and equity ownership proportion.

ENA considers that the best available estimate of the company tax paid by the BEE that is returned to *its* investors through utilisation of imputation credits will depend on the assumption about the composition of the shareholder base of the BEE. As noted, this work is yet to be performed.

ENA submits that the evidence to support any change in the gamma allowance is materially weaker than the evidence in relation to beta and MRP.

1.10 Role of RAB multiples, profitability metrics and financeability analysis

- ENA considers that RAB multiples have no useful role to play in estimating any rate of return parameter.[13] This is primarily because:

[13] The difficulties in disentangling the reasons behind a particular RAB multiple are set out in Biggar, D., February 2018, *Understanding the role of RAB multiples in regulatory processes* and Gray, S., October 2017, *Why do regulated assets sell for more than the RAB*?, https://www.ipart.nsw.gov.au/Home/About-IPART/IPART-25-Year-Conference.

- It is impossible to extract reliable information about required returns from any RAB multiple.
- Even if information about required returns could be extracted from RAB multiples, that information would reflect the buyer's view about the allowed return over the long life of the asset, not just the remaining time in the current regulatory period.
- Asset sales occur very infrequently and only reflect information available at the time of the transaction.
- Every asset has unique characteristics, so it would be unreliable to extrapolate information from a single transaction across the entire industry.

» ENA considers that profitability metrics have no useful role to play in estimating any rate of return parameter. This is primarily because:

- There is no clear link between historical profitability metrics and any rate of return parameter.
- Historical profitability metrics are not relevant in the context of making individual regulatory decisions under a forward-looking incentive regime.
- Any consideration of profitability metrics must be performed on a like-with-like basis. A large number of factors can affect the measured profitability of firms. Comparisons across firms can be misleading if these factors differ materially between businesses.
- A number of profitability measures have significant weaknesses. The consideration of profitability measures should recognise and reflect these limitations.

» ENA considers that RAB multiples and profitability metrics have no useful role in the estimation of any rate of return parameter. However, ENA notes that the AER is undertaking a parallel process to determine what profitability information might be collected and what broader role it may be able to play. ENA would be pleased to contribute to this process for determining any broader role of profitability metrics and other measures, including through the joint ENA-AER Consumer Reference Group, with a view to making future recommendations to the AER.

In this regard, ENA notes that all but one of the experts agreed with the proposition that:

> *Ex post firm-specific profitability data contains no information that assists in estimating the rate of return required by the market.* [14]

The majority of experts also agreed with the proposition that:

[14] Joint Experts' Report, Proposition 4.01, p. 35. David Johnstone considered that such information could be used as the basis for the adoption of "a different and possibly simpler and more transparent framework (e.g. CPI increases only" or for a re-setting of WACC parameters "to achieve a realistic level of 'good' regulation."

It is not practicable for observations of EV/RAV multiples to be decomposed in order to draw inferences as to the rate of return required by the market and used by the AER in the process of setting the ROR. [15]

» ENA suggests that the potential use of financeability assessments should be considered as part of the Rate of Return Guideline process. Their role would be to ensure that the allowed return is sufficient to support the credit rating that was assumed in deriving that allowed return.

[15] Joint Experts' Report, Proposition 4.02, pp. 35-36. Graham Partington disagreed with the statement, but provided no explanation as to why. David Johnstone considered the list of factors that affect RAB multiples to be "esoteric reasons/excuses for why RAB multiples 'should be' greater than one."

2 Reaching a Guideline 'capable of acceptance'

Summary

» ENA advocates the goal of producing a Guideline that is capable of acceptance by all stakeholders. ENA considers that the characteristics of such a Guideline include:

1. Based on robust evidence
2. Transparent
3. Internally consistent – the same standard of evidence should be applied to all parameters
4. Consistent over time – parameter estimates should only change if there is new evidence to support that change
5. Based on broad consultation
6. Produces stable and predictable outcomes

» ENA submits that the overriding objective of the Guideline process is to provide an allowed rate of return that is the best possible estimate of the required return of investors. For every component of the allowed return, the central question is "What is the best estimate based on the available evidence?"

2.1 Characteristics of a Guideline that is capable of acceptance

Throughout the current Guideline process, including consultations with the AER and the AER Consumer Reference Group, ENA has advocated that the collective goal of the current process should be a Guideline that is "capable of acceptance" by all stakeholders. ENA considers that a Guideline would be most capable of acceptance if it demonstrates the following features:

» **Based on robust evidence**. All estimates should be based on robust evidence with a focus on evidence from traded market prices. Submissions on a particular point should only receive weight if they are based on robust evidence and they should receive no weight if they are based on speculation or conjecture about things that might possibly have had an effect on past data or might possibly have an effect on future data.

» **Transparent**. The Guideline should be transparent in explaining how each parameter estimate has been determined. ENA accepts that the AER will necessarily have to exercise judgment in some places, but that exercise of judgment should be explained so that stakeholders are able to understand how the final estimate was derived from the relevant evidence.

- **Internally consistent**. The assessment of evidence should be applied consistently throughout the Guideline. For example, the AER may consider that a particular piece of evidence does not meet the threshold required to change its current estimate of a particular parameter. In this case, no parameter should be changed on the basis of any weaker evidence. Similarly, the same threshold should be applied when considering whether to increase or decrease a parameter estimate.
- **Consistent over time.** Parameter estimates should only change if there is new evidence to support that change. The same evidence should not lead to different conclusions over time.
- **Based on broad consultation**. All stakeholders should have an adequate opportunity to be heard and the reasoning supporting the Guideline should properly address all submissions. The Guideline and its supporting materials should also seek to explain the reasons why each submission was accepted or rejected.
- **Produces stable and predictable outcomes**. ENA supports the general agreement in the Joint Experts' Report in support of a Guideline that produces stable and predictable outcomes.[16] All stakeholders benefit from stable and predictable outcomes. This implies that the AER should set a high bar when deciding whether to change approach or parameter estimates. A change should only be made when there is strong evidence to support it.

2.2 Overriding objective

ENA considers that the overriding objective of the Guideline should be to produce an allowed return that is commensurate with the required return of investors, consistent with the allowed rate of return objective (ARORO) in the NER and NGR and contributing to the achievement of the NEO/NGO. The ARORO states that:

> *…the rate of return for a [Network Service Provider] is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the [Network Service Provider] in respect of the provision of [standard control services].*[17]

The ARORO was developed by the AEMC as a mechanism for best achieving the NEO/NGO, which, for electricity, is:

> *…to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:*
>
> - *Price, quality, safety and reliability and security of supply of electricity; and*

[16] Joint Experts' Report, Item 2.01, p. 14.
[17] NER 6.5.2(c).

- *The reliability, safety and security of the national electricity system.*[18]

The NER/NGR and the ARORO were developed by the AEMC to best contribute to the NEO/NGO. In its 2012 Final Decision, the AEMC stated that:

> *…the new rules allow the regulator (and the appeal body) to focus on whether the overall rate of return meets the allowed rate of return objective, which is intended to be consistent with the NEO, the NGO and the RPP.*[19]

The AEMC also explained that:

> *Efficient outcomes in terms of investment, operation and use of network services are most likely to be obtained when the best estimate of the rate of return is obtained. Achievement of the overall allowed rate of return objective will promote effective incentives as the rate of return determined should be commensurate with benchmark efficient financing costs.*[20]

The AEMC concluded that a full consideration of all relevant evidence is most likely to produce the best possible estimate of the required return, which will in turn be consistent with the ARORO and consequently best contribute to the NEO/NGO:

> *The final rule provides the regulator with sufficient discretion on the methodology for estimating the required return on equity and debt components but also requires the consideration of a range of estimation methods, financial models, market data and other information so that the best estimate of the rate of return can be obtained overall that achieves the allowed rate of return objective.*[21]

The AEMC also considered the ARORO to be consistent with the relevant Revenue and Pricing Principles in the NEL and NGL, including that:

> *A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.*[22]

ENA agrees that the NEO/NGO will be best met by a Guideline that is consistent with the current NER/NGR. Importantly, this requires an allowed return that is consistent with the ARORO – the long-term interests of consumers are best served by setting the allowed return to be consistent with the efficient return that is required by investors.

In this regard, we note that one of the propositions that all Experts appeared to agree with is that:

---

[18] NEL, s 7 and relevantly the same for gas in NGL s 23.
[19] AEMC, 29 November 2012, Final Rule Change Determination, pp. 23-24.
[20] AEMC, 29 November 2012, Final Rule Change Determination, p. 13.
[21] AEMC, 29 November 2012, Final Rule Change Determination, p. 8.
[22] NEL s 7A(5); NGL s 24(5).

The Guideline should set the allowed return on equity equal to the best estimate of the required return on equity. [23]

The majority of experts also agreed with the proposition that:

As the ARORO is consistent with the NEO/NGO, it would be helpful for the Binding RORG to confirm that the ARORO remains the working objective of the guideline. [24]

In this regard, ENA considers that the current Guideline should be consistent with all relevant aspects of the current NER/NGR, which were developed in furtherance of the NEO/NGO under the NEL/NGL. ENA considers this to be consistent with the stated objective of an incremental review for the draft and final Guidelines.

In summary, ENA consider that the overriding objective of the Guideline process is to provide an allowed rate of return that is the best possible estimate of the required return of investors and which contributes to the NEO/NGO to the greatest degree. ENA suggests that it is important that stakeholders are not distracted from this central task. For every component of the allowed return, the central question is "What is the best possible estimate based on the available evidence?".

2.3 An incremental review

ENA's understanding of an incremental review

ENA agrees with the position outlined in the AER Issues Paper that the Guideline process should not seek to 'reinvent the wheel' for setting the rate of return. As the AER has noted:

…we consider this review should seek to build on the current Guideline rather than start afresh. There are a number of aspects of the current approach that are reliant on market data and empirical analysis, and this material would clearly need to be updated. However, there are a number of aspects of the current approach that are driven by finance theory and available academic literature. We not aware of any significant new developments in this area that might warrant us taking a new approach.[25]

ENA agrees that the focus should be on incremental improvements rather than a blank slate approach, and that the relevant empirical evidence should be updated.

ENA understands that under an incremental review, the framework that was adopted in the 2013 Guideline will be maintained, the approaches for determining the allowed

---

[23] Joint Experts' Report, Proposition 2.03, p. 14.
[24] Joint Experts' Report, Proposition 2.05, p. 15. Graham Partington preferred a "principles based" approach, but did not indicate what the principles would be or how that approach would be implemented. David Johnstone objected to the reference to a "benchmark entity" and to the use of market data but did not indicate what alternative approach should be adopted, other than that it would involve an analysis of efficiency in "an engineering sense."
[25] AER Issues Paper, Review of Rate of Return Guideline, October 2017, p. 8.

return on equity and debt will be maintained, any new evidence since 2013 will be considered within the AER's existing framework and approaches.

Implications for the allowed return on debt

The AER and stakeholders generally agreed in the 2013 Guideline process that the trailing average approach was an efficient approach that would contribute to the achievement of the ARORO and the NEO/NGO.[26] The commonly held view by the AER and stakeholders is that the trailing average approach reflects an efficient debt management practice. The key area of disagreement between the AER and networks since 2013 has only related to the AER's application of a transition from its previous 'on-the-day' approach to the full trailing average approach.

Many networks are now part way through the transition to a 10-year trailing average and have structured their financing arrangements accordingly. As addressed further below, a change in approach mid-way through the transition would require networks to put in place new financing and hedging arrangements, and would give rise to regulatory risk and uncertainty, undermining the achievement of the NEO/NGO and Revenue and Pricing Principles.

The ENA submits that an incremental review would maintain the trailing average approach to the allowed return on debt such that NSPs are able to complete the transition that most are now part way through.

Implications for the allowed return on equity

Based on the current review being focused on incremental improvements to the current Guideline, ENA accepts that the AER's current Foundation Model approach to the allowed return on equity will be maintained and that the relevant financial models that are a part of that approach will continue to have the same role.

For clarity, ENA's view is that an approach to the return on equity that gives no role to the DGM or to the Black CAPM / low-beta bias evidence, would represent an abandonment of the Foundation Model approach and would amount to a fundamental blank-slate revision of the approach to the allowed return on equity. Indeed, this would represent a reversion to the mechanistic SL-CAPM approach that the 2012 rule amendments were considered had the potential to exclude relevant market data, models and other evidence. ENA submits that such an approach would be problematic for the following reasons:

- There have been no changes to finance theory since 2013 to warrant the AER changing its approach.
- Abandoning the current Foundation Model approach is inconsistent with the stated intention of an incremental review.
- Abandoning the current Foundation Model approach in favour of a reversion to a mechanistic SL-CAPM approach would mean disregarding relevant evidence that currently has an important role in the process for determining the allowed return

[26] For example, see the AER's Explanatory Statement at page 109.

on equity. Such an approach would therefore be inconsistent with the NER/NGR, which have been developed to ensure that regulatory determinations best contribute to the NEO/NGO.

» A regulatory approach in which a whole decision-making framework is developed in one Guideline and then abandoned four years later is inconsistent with the principles of stability and predictability, and increases the assessment of regulatory risk.

In this regard, we note that one of the propositions that all Experts appeared to agree with is that:

> *Given the context of the AER's stated objective of making incremental changes to the RORG, the Foundation Model framework should be retained. This gives primacy to the Sharpe-Lintner CAPM, with evidence from other relevant models to inform estimates of individual CAPM parameters as per the 2013 Guideline.*[27]

Implications for estimating the value of imputation credits

In its 2013 Guideline, and subsequent decisions, the AER has departed from the previous 'market value' interpretation of gamma in favour of a 'utilisation' interpretation. ENA accepts that under an incremental review, the utilisation interpretation of gamma will be maintained.

2.4 Appropriate level of transparency

ENA proposes that the current Guideline should seek a higher level of transparency than was achieved in the 2013 Guideline. This involves an explanation of what information was considered, why it was considered to be relevant and how the information was used to set the rate of return. It should be possible for a stakeholder to understand how the AER's reasoning process, applied to the relevant evidence, produced the final outcome. The issue of transparency and parties being able to understand how the AER has exercised its discretion was the specific subject of a joint principle developed by the ENA-AER Consumer Reference Group and communicated to the AER in March (See Attachment A).

Importantly, network business do not consider this means purely mechanistic approaches should be used. Regulatory judgement and discretion remain important tools, and qualitative assessments remain a legitimate approach when quantitative precision is not possible. In these cases, networks consider that any judgement exercised should be explained sufficiently so that a stakeholder can understand and may arrive at the same (or similar) answer independently of the AER, by following the AER's reasoning process.

---

[27] Joint Experts' Report, Proposition 2.12, p. 18. David Johnstone "accepts that the AER should use the foundation model as it provides a frame of reference for discussion" but added comments on other matters the AER might consider, including "the consequences of its previous decisions."

Where there are differing views among experts the AER should explain why it has adopted one view and rejected the other. This decision requirement goes beyond noting that there is some element of expert support for the view that has been adopted.

By way of example, all Experts appeared to agree with the proposition that:

> *In choosing a point estimate for beta, the AER should set out all relevant evidence and explain the reasons for the weighting it gives to each source of evidence.*[28]

[28] Joint Experts' Report, Proposition 5.19, pp. 51-52.

3 The effects of the 2013 Guideline

Summary

- The material reductions in the allowed return in the 2013 Guideline have already had a substantial effect on NSPs, network revenues, prices and ongoing investment:
  1. Every element of the allowed return was reduced in the 2013 Guideline.
  2. Since the 2013 Guideline, the allowed return on equity has reduced materially due to the decline in the risk-free rate.
  3. The 2013 Guideline has materially reduced the return to NSP shareholders relative to each dollar of investment – by more than 30% on average.
  4. Since the 2013 Guideline, RAB growth has been muted.
  5. Since the 2013 Guideline, NSPs have systematically underspent AER-approved CAPEX allowances.
- ENA accepts that the 2013 Guideline should be adopted as the starting point for the current Guideline, consistent with the AER's stated intention of this being an incremental review.
- In this context, it is important to note that the reductions that are embedded in the 2013 Guideline starting point have already had a highly material impact on NSPs.

3.1 The return on equity allowance has fallen materially in decisions since 2013

Following the 2013 Guideline, there have been material reductions in allowed returns to network service providers. Figure 1 below shows that the AER's allowed return on equity has fallen in line with the reduction in government bond yields. Thus, even if the AER's current return on equity parameters are maintained, the result is a material reduction in the allowed return on equity relative to the 2013 Guideline.

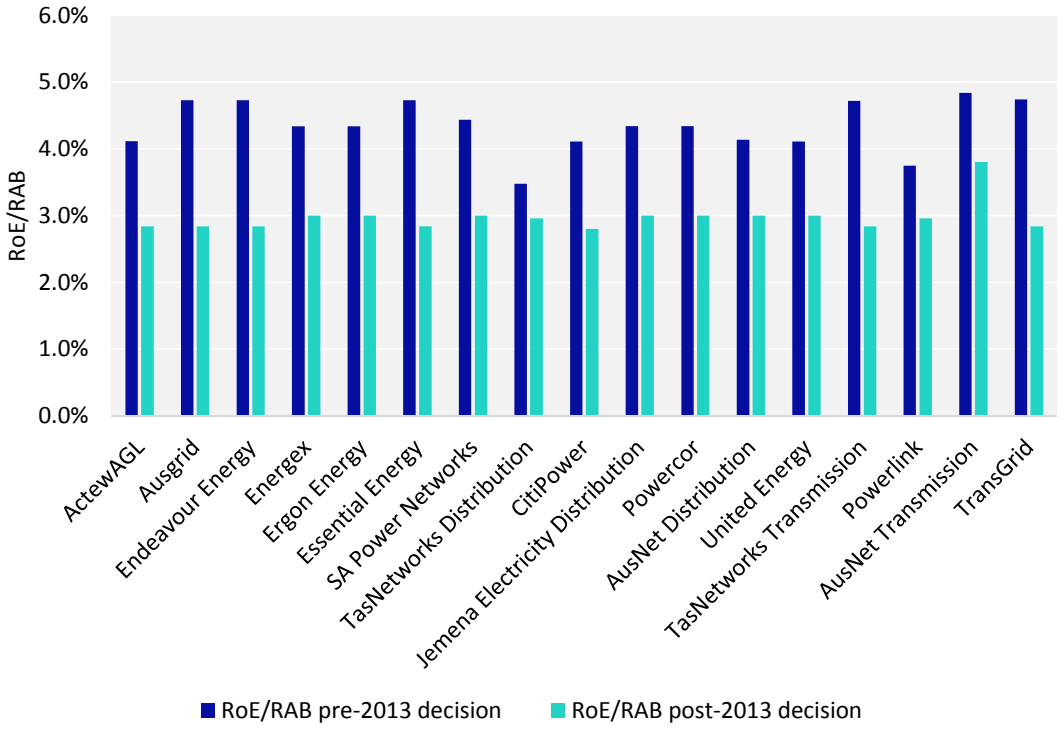
Figure 1: Allowed return on equity since the 2013 Guideline

Source: AER determinations; RBA.

The allowed return on equity, as a proportion of the regulatory asset base has also fallen dramatically, representing a shift in the returns earned by owners of networks. This can be seen from Figure below, which presents the return on equity as a fraction of opening RAB for individual electricity networks, comparing the final year of the most recently-completed regulatory control periods under the previous Guideline, to the first year of the first regulatory control periods under the 2013 Guideline.[29] Both return on equity and opening RAB are taken from the post-tax revenue models.

[29] ElectraNet is not presented as a final decision under the 2013 Guideline has not been made for this network service provider.

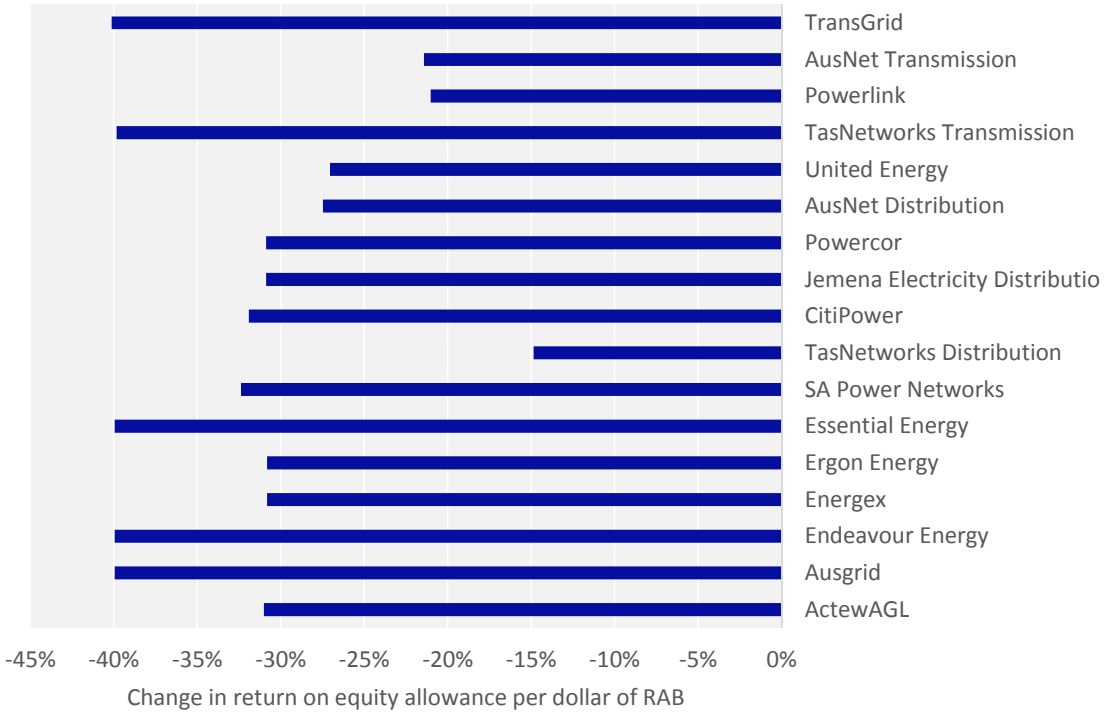
Figure 2: Return on equity as a percentage of RAB, for decisions before and after the 2013 Guideline



Source: AER determinations.

The AER's determinations under the 2013 Guideline yielded substantially lower returns relative to RAB for all network service providers. This can be seen from Figure below, which presents the change in the return on equity allowance per dollar of RAB between the last regulatory period before the 2013 Guideline and the first regulatory period under the 2013 Guideline. On average, there was a highly material 31% reduction in the allowed return on equity, relative to RAB.

Figure 3: Change in return on equity allowance per dollar of RAB in decisions made since 2013



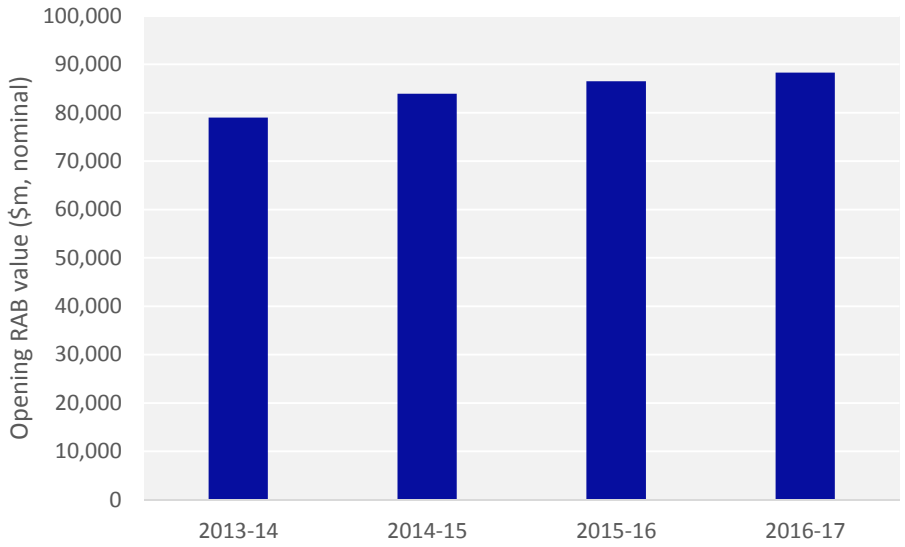
Source: AER determinations.

3.2 RAB growth since the 2013 Guideline has been modest

At the same time, growth in the RAB has been modest since FY2014.[30] Figure , which plots the total opening RAB (expressed in nominal terms) of electricity networks across the NEM over time shows that there has been little growth in RAB since the 2013 Guideline.[31] The average nominal increase between 2013-14 and 2016-17 was under 3.8% per annum. Some of this RAB growth represents indexation for outturn CPI inflation. Over the same period, the average rate of CPI inflation was just under 1.9% per annum.[32] Therefore, the average real rate of growth in RAB between 2013-14 and 2016-17 was approximately 1.9% per annum – a modest rate of increase.

[30] The year to June 2014, except for Victorian DNSPs: the year to December 2014.
[31] RAB data collected from RFMs published by the AER as part of determinations for individual network service providers, and from annual Economic Benchmarking RIN responses.
[32] Outturn inflation data were obtained from the Australian Bureau of Statistics.

Figure 4: Growth in RAB since 2013



Source: AER Roll-forward Models published with AER determinations for individual network service providers and Economic Benchmarking RIN responses
Note: Victorian NSP data reported on a calendar year basis, and non-Victorian NSP data reported on a financial year basis

3.3 NSPs have tended to underspend CAPEX allowances

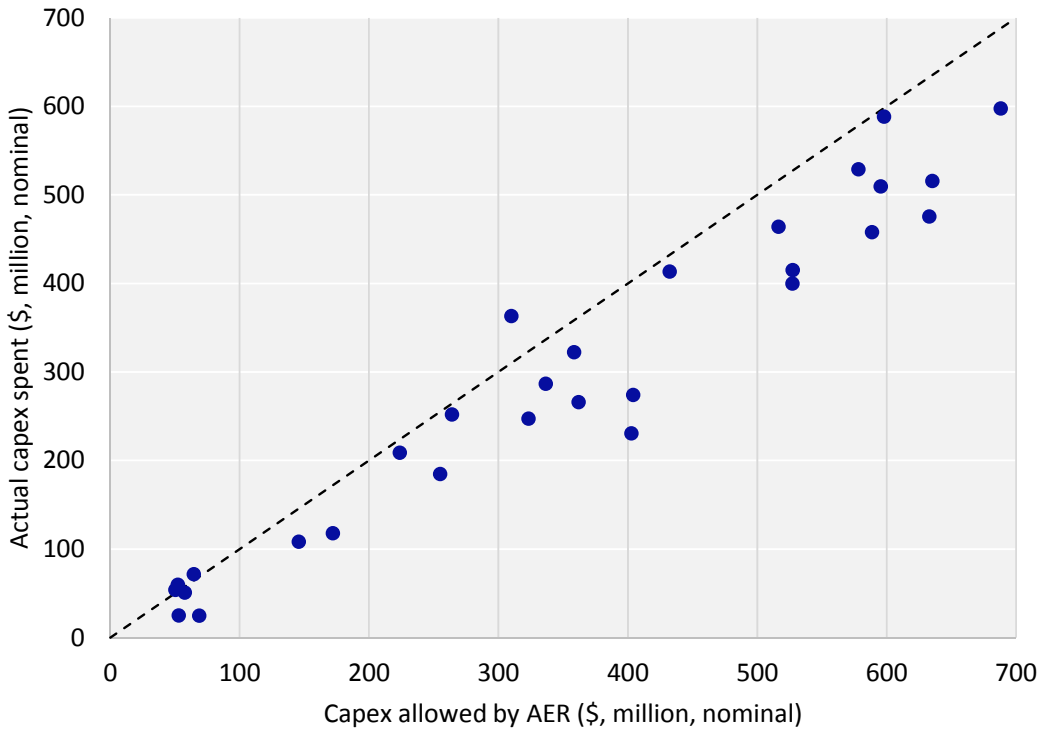
Moreover, for all decisions made by the AER under the 2013 Guideline, network service providers have overwhelmingly tended to underspend the amount of capex allowed by the AER. This can be seen in Figure , which presents a pairwise plot of capex allowed (as reported in the Post-tax Revenue Model for individual network service providers) against capex actually spent (as reported in individual network service providers' Annual Reporting RIN responses) in each year by individual network service providers.

Figure shows that the vast majority of the NSP/year observations fall below the 45 degree line, indicating that the actual capex was lower than that allowed by the AER.

This implies that RAB growth has actually been lower than that allowed by the AER under determinations made since the 2013 Guideline (all else remaining equal).

The widespread trend of network service providers underspending their capex allowances is inconsistent with the proposition that networks ongoing capital investments demonstrate an incentive to increase their RABs to take advantage of overly-generous rate of return allowances. Rather, systematic underspending against allowances is more consistent with the reverse hypothesis that network owners do not consider discretionary capital investments to be adequately compensated in risk-adjusted terms, or that other factors are driving capital investment behaviour.

Figure 5: Allowed versus actual capex under the 2013 Guideline



Source: AER determinations and Annual Reporting RIN responses.

The evidence set out above establishes that the material reductions in the allowed return in the 2013 Guideline have already had a highly material effect on NSPs:

- Every element of the allowed return was reduced in the 2013 Guideline.
- Since the 2013 Guideline, the allowed return on equity has reduced materially due to the decline in the risk-free rate.
- The 2013 Guideline has materially reduced the return to NSP shareholders relative to each dollar of investment – by more than 30% on average.
- Since the 2013 Guideline, RAB growth has been muted.
- Since the 2013 Guideline, NSPs have systematically underspent AER-approved CAPEX allowances.

All of this evidence indicates that the 2013 Guideline has already had a material impact on NSPs, materially reducing allowed returns and the incentive to invest.

During the 2013 Guideline review process, ENA and member firms submitted that the AER's 2013 Guideline had gone too far – delivering an unreasonably low allowed return on equity. However, the Tribunal ruled that the AER's approach to the allowed return on equity was open to it. Consequently, ENA does not seek to re-litigate this issue and accepts the 2013 Guideline as being an appropriate starting point.

3.4 International comparisons of equity risk premium

The AER has allowed an equity risk premium of 4.55% in every regulatory decision since 2013.[33] Table 1 shows that this equity risk premium is materially lower than the equity risk premium allowed by a number of regulators overseas, including Ofgem (Great Britain), the Commerce Commission (New Zealand) and the Federal Energy Regulatory Commission (United States).

Table 1: Comparison of allowed equity risk premium across jurisdictions

	Allowed equity risk premium	Source
AER	4.55%	AER decisions
Commerce Commission (New Zealand)	5.51%	Cost of capital determination for disclosure year 2019 (Electricity distribution businesses and Wellington International Airport), April 2018
Ofgem (Great Britain)	5.83%	RIIO-2 Framework Consultation document, March 2018, Table 4; accompanying CEPA papers
Federal Energy Regulatory Commission (United States)	8.07%	*Emera Maine v. Federal Energy Regulatory Commission*, Case No. 15-1118, 14 April 2017; *US government bond yield data obtained from the US Department of the Treasury*

Notes: Equity beta used to calculate equity risk premiums allowed by Ofgem and New Zealand Commerce Commission have been re-levered using gearing of 60% to allow comparability; The real allowed return set by Ofgem was converted into nominal rates using an expected inflation rate of 3.2% recommended by Ofgem's advisers, CEPA; the equity risk premium allowed by FERC was calculated by subtracting from the prevailing return on equity allowance permitted by FERC the average nominal yield on 30-year US Treasury bonds (since FERC's practice is to use a 30-year term for the risk-free rate) over April 2018; the FERC return on equity decision is currently under review following an successful appeal (April 2017) by regulated businesses that overturned FERC's decision to lower the allowed return on equity from 11.14% to 10.57%.

[33] The equity risk premium is calculated by multiplying the MRP by the equity beta.

4 Compensation for risk

Summary

- In relation to the assessment of risk, ENA makes the following points:
  1. The Guideline should identify all of the risks that are relevant to the allowed return and explain how each risk has been addressed.
  2. The Guideline should note that the return on equity derived from the Foundation Model approach is an *expected* return on equity such that the allowed revenues must be sufficient to provide that return to the providers of equity capital *on average*.
  3. Any change in the systematic risk profile of NSPs is likely to occur gradually over time. Such changes will be reflected in more recent equity beta estimates, based on data from more recent periods. Consequently, equity beta estimates over recent periods (e.g., over the last 5 years) will provide an indication of the direction of change in systematic risk.

Investors in regulated network assets are exposed to a range of risks. The overriding objective of setting the allowed return equal to the efficient return required by investors implies that each investor must be properly compensated for the risk that they bear in relation to their investment of capital. Proper compensation for risk creates the correct incentives for efficient investment and is equivalent to setting the allowed return equal to the efficient financing costs of the benchmark efficient entity.

Under the AER's Foundation Model approach, the risks borne by the providers of equity capital are addressed in different ways depending on whether they are systematic (relating to the extent that equity returns in the BEE vary as a result of movements in the broad market) or diversifiable (independent of movements in the broad market):

- Systematic risk is quantified in terms of the equity beta. Under the SL-CAPM, this systematic (beta) risk is compensated via the estimate of the required return on equity – the providers of equity capital are considered to require higher returns if they are required to bear a higher amount of systematic risk.
- Diversifiable risk is addressed in one of three ways:
  1. Some diversifiable risks can be managed via insurance, in which case the efficient cost of the insurance premium is included as an operating cost allowance (e.g., the cost of insuring motor vehicles is included as an operating cost allowance). Similarly, efficient risk mitigation costs are included in the operating cost allowance (e.g., vegetation management costs).
  2. Some diversifiable risks are the subject of pass-through mechanisms such that the relevant cost can be recovered
  3. Under the SL-CAPM Foundation Model approach, any residual risk exposure that remains after mitigation and insurance (e.g., even after vegetation

management and the available insurance, there remains a residual risk from natural disaster events such as storms and bushfires) is addressed by setting the *allowed* return above the CAPM estimate of the *required* return.

In particular, the return on equity that the AER estimates using the SL-CAPM is an *expected* return that investors must expect to receive *on average*. Suppose the required return on equity (commensurate with the firm's systematic risk) is estimated to be 10%, but there is an uninsurable diversifiable risk that would result in a material loss if it were to occur. The *allowed return* on equity would then have to be set above 10% in order that the *expected return* is equal to the 10% required return. That is, in years when the risk does not crystallize, equity holders receive a return above 10%, and in years when the risk does crystallize equity holders receive a return less than 10%, such that the average/expected return is 10%, as required.

The amount by which the allowed return would have to exceed the AER's estimate of the required return depends on the size of the particular risk and on its probability of occurring, which would have to be assessed on a case by case basis.

ENA notes that the risk profile of network businesses is changing over time in a number of ways including the following:

- Many networks are already planning for increased storm and bushfire risk.
- The role of networks is changing, and is expected to change further over time. Networks must now cater for two-way flows, the pattern of flow during each day has changed materially, as has the ratio of peak to average utilisation. The future role of solar PV, battery storage and electric vehicles remains highly uncertain.
- Networks have expressed concerns about the risk of an exogenously imposed RAB write-down.

Whereas it is difficult to itemise all of the evolving risk factors, let alone accurately quantify them, there is certainly no compelling evidence that NSP businesses have become any *less* risky since the 2013 Guideline.

In relation to the assessment of risk, ENA makes the following submissions:

- The Guideline should identify all of the risks that are relevant to the allowed return and explain how each risk has been addressed.
- The Guideline should note that the return on equity derived from the Foundation Model approach is an *expected* return on equity such that the allowed revenues must be sufficient to provide that return to the providers of equity capital *on average*.
- Any change in the systematic risk profile of NSPs is likely to occur gradually over time. Such changes will be reflected in more recent equity beta estimates, based on data from more recent periods. Consequently, equity beta estimates over recent periods (e.g., over the last 5 years) will provide an indication of the direction of change in systematic risk. ENA recognises that beta estimates based on longer data sets provide more statistically precise estimates and submits (below) that such long data sets should be given material weight when estimating

beta. However, estimates from more recent periods provide some information about the current direction of change in systematic risk.

» Since there is no need to provide compensation for any risks that NSPs do not face, the Guideline should be explicit about its treatment of the risk of stranding risk. In past decisions the AER has stated that it does not consider that NSPs bear any risk of stranding (including by ex post RAB write-downs) and that the allowed return has been derived accordingly. Consistent with the incremental basis of the review, networks assume from the Discussion Papers that the AER intends to maintain its approach in this regard.

In relation to risk, all Experts appeared to agree with the proposition that:

> *All risks – both systematic and non-systematic – must be accounted for within the framework. The AER should elaborate on the implicit classification of risks within the regulatory framework and identify where the allowance for each relevant risk is accounted for in the framework.*[34]

All Experts also appeared to agree with the proposition that:

> *Cash flows reflected in the building blocks approach to which the allowed rate of return is applied must be expected cash flows for a Benchmark Efficient Entity. Thus the regulatory allowance must be set so that the expected return is equal to the WACC.*[35]

[34] Joint Experts' Report, Proposition 2.21, pp. 24-25.
[35] Joint Experts' Report, Proposition 2.21, pp. 24-25.

5 Benchmark gearing

Summary

- ENA supports the approach taken by the AER in the 2013 Guideline to determining a benchmark level of gearing—namely, to consider the average historical level of gearing of a sample of comparator firms. ENA submits that the AER should retain this approach.
- ENA considers that gearing should be estimated on a market value basis to be consistent with other WACC parameters that are estimated on a market value basis. This approach is supported by finance theory, is widespread practice, and was endorsed almost unanimously by the experts in the concurrent expert sessions.
- ENA notes that the AER's updated analysis of gearing continues to support a benchmark level of gearing of 60% and submits that that figure should be maintained in the current Guideline.
- ENA also notes that the above positions are consistent with the consensus view documented in the Joint Experts Report.

5.1 Continued support for the 2013 Guideline approach to determining benchmark gearing

In our response to the Issues Paper, ENA noted that the assumed gearing of the benchmark efficient entity has been the most stable and least controversial parameter since regulation by the AER, with gearing set to 60% in every decision since its inception.

ENA endorsed in its response to the AER *Issues Paper* the approach taken by the AER in the 2013 Guideline to determining a benchmark level of gearing—namely, to consider the average historical level of gearing of a sample of comparator firms.

ENA continues to support this approach and considers that a similar approach should continue to be used in the 2018 Guideline.

5.2 Market value gearing is more appropriate than book value gearing or net debt to RAB

ENA continues to hold the view that gearing should be estimated on a market value basis to be consistent with other Weighted Average Cost of Capital (WACC) parameters that are estimated on a market value basis. The cost of equity capital (debt or equity) represents the market-clearing price of capital.

We noted in our response to the *Issues Paper* that, for the purposes of estimating WACC, the standard approach in commercial practice is to estimate gearing using the market value of equity (because it is easily available for listed firms) and the book

value of debt (because market values are not readily available and the book value is likely to be a reasonable proxy for the market value of debt).

The use of a market value gearing estimate is the standard approach used in commercial and regulatory practice and is consistent with finance theory.

In our response to the Issues Paper we provided two examples from the finance literature that set out clearly the rationale for using market value gearing. These examples bear repeating:

Example 1

> *Using market values rather than book values to weight expected returns follows directly from the formula's algebraic derivation (see Appendix B for a derivation of free cash flow and WACC). But consider a more intuitive explanation: the WACC represents the expected return on a different investment with identical risk. Rather than invest in the company, management could return capital to investors, who could reinvest elsewhere. To return capital without changing the capital structure, management can repay debt and repurchase shares, but must do so at their market value. Conversely, book value represents a sunk cost, so it is no longer relevant.*
>
> Koller, T., M. Goedhart and D. Wessels, 2015, *Measuring and managing the value of companies*, McKinsey and Company, pp. 308-309.

Example 2

> *[After presenting a book value balance sheet for an example company called Geothermal]…Why did we show the book value balance sheet? Only so you could draw a big X through it. Do so now. We hope this will help you remember that book values are not relevant to estimating the cost of capital. When estimating the weighted average cost of capital, you are not interested in past investments but in current values and expectations for the future. Geothermal's true debt ratio is not 50 per cent, the book ratio, but 40 per cent [the market value ratio].*
>
> Brealey, R., S. Myers, G. Partington and D. Robinson, 2000, *Principles of corporate finance*, McGraw-Hill Australia, p. 566.

There was almost unanimous support amongst the concurrent session experts that benchmark gearing should be estimated on a market value (rather than book value) basis. Nearly all of the experts agreed that: [36]

- Market-based estimates are the only appropriate measure of gearing. They should be used both for re-gearing beta and for the calculation of required revenue in price controls.
- Derivation of these re-gearing formulae start with the rate of return which embodies market values by definition, and in using a formula one must use

[36] Joint Experts' Report, Section 3, pp. 26-32.

definitions for parameters within that formula that arise in the course of the derivation.

» As market gearing is considered to be the only relevant data, only data from listed entities is considered to be relevant as reliable information on market value of equity for unlisted entities is not generally available.

In addition, ENA reiterates its view that the measurement of gearing in terms of net debt to RAB has the problem of requiring an allocation of debt across assets. Most regulated firms own a number of assets that are outside the RAB, in which case debt must be allocated between "regulated" and "unregulated" assets. Further impediments could also arise from circumstances in which businesses own more than one regulated asset.

For all of the reasons set out above, and based on there being no relevant changes to applicable finance theory, ENA considers that the AER should determine benchmark gearing on a market value basis.

5.3 The latest empirical evidence continues to support a benchmark gearing estimate of 60%

» In the AER's Discussion Paper on gearing, the AER presented updated empirical evidence on the listed domestic comparators it uses to estimate gearing. The AER's estimates (based on market values) are reproduced below in

Table 2.

Table 2: AER gearing estimates based on market values

	ENV	APA	DUE	AST	SKI	AVE
2007	65%	59%	67%	55%	61%	61%
2008	77%	73%	76%	59%	72%	71%
2009	75%	68%	80%	70%	72%	73%
2010	74%	61%	80%	64%	67%	69%
2011	66%	53%	79%	64%	64%	65%
2012	63%	47%	72%	59%	61%	60%
2013	53%	46%	71%	57%	64%	58%
2014	47%	45%	64%	58%	57%	54%
2015	N/A	50%	62%	59%	58%	57%
2016	N/A	49%	51%	57%	N/A	52%
5 year average	54%	48%	64%	58%	60%	57%
10 year average	65%	55%	70%	60%	64%	63%

Source: AER Discussion Paper on Gearing, February 2018, Table 3, p. 15

The AER's analysis indicates that the average level of gearing for these comparators over the 10 years to 2016 is 63%, and 57% over the five years to 2016. This evidence continues to support a benchmark level of gearing of 60%.

6 Return on debt

Summary

- ENA notes that the AER has proposed to conduct a separate consultation process in relation to the allowed return on debt and looks forward to contributing more detailed submissions through that process.
- ENA supports the continued use of the trailing average approach to the return on debt, as it is consistent with efficient financing practices and promotes price stability.
- ENA supports the continuation of the current transition arrangements. NSPs have constructed debt portfolios and hedging arrangements in accordance with current transition arrangements. It would be difficult and costly to unwind these arrangements part way through the transition.
- ENA supports the continued use of a 10-year term of debt, being consistent with the AER's conceptual analysis, empirical evidence and trailing average approach to the return on debt allowance.
- ENA supports the continued use of independent third-party estimates of the return on debt.

6.1 Term of debt

In its 2013 Rate of Return Guideline review, the AER adopted a benchmark term of debt of 10 years, based on three considerations:

- **Conceptual analysis**: The AER's conceptual analysis indicated that long-term debt would be appropriate for a regulated energy sector given that its assets are long-lived and depreciated over as much as 60 years, and that the use of a long-term debt benchmark would reduce volatility in the allowed return on debt:

  A significant proportion of regulated energy assets are long-lived. We observe that electricity transmission lines and gas pipelines are depreciated for regulatory purposes over as long as 60 years. Accordingly, we consider that the entity will seek to fund the long-lived energy assets with longer debt tenors in order to manage refinancing and interest rate risk. By issuing longer term debt the entity reduces the frequency with which it must approach the market, thereby reducing the risk associated with not being able to secure funding at the time when it is required, or at rates that are higher or lower than those it currently pays. In approaching the market less frequently there is less risk associated with changing interest rates, which reduces the volatility in debt servicing costs and the likelihood of mismatch between the business' cash flows and its debt servicing obligations.[37]

[37] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 136.

- **Empirical evidence**: The AER also undertook a review of the term of debt issued by a set of comparator firms and noted that bonds were issued with an average term of 10 years, supplemented by some shorter-term bank debt.[38]
- **Consistency of term for debt and trailing average**: The AER also noted that the term of debt would need to be set to match the 10-year trailing average approach to the return on debt allowance.

  …in moving to a trailing average approach we consider that we are committing to a debt term for the period nominated. To change the benchmark debt term in response to updated debt portfolio information would not be conducive to regulatory stability. In light of this, in order to ensure that the benchmark efficient entity is able to recover its efficient financing costs consistent with the allowed rate of return objective, we propose to use a 10 year debt term for the purposes of estimating the return on debt and for setting the period of the trailing average.[39]

Most businesses are now part-way through a transition to the 10-year trailing average approach. This has involved progressively locking in 10-year debt finance in accordance with the approach set out in the 2013 Guideline.

Changing the term of debt at this point would render the 10-year debt that has been issued by the businesses on the basis that it replicates the regulatory benchmark as no longer optimal. Such a change would require a further set of transition arrangements for firms to move from their 10-year debt transition to a new regulatory benchmark. Such a change would affect all businesses differently depending on their current position within the 10-year transition arrangements set out in the last Guideline. It would also be inconsistent with the principle of regulatory stability.

In addition to the difficulties that would arise from a change in the term of debt at this time, ENA considers that the AER's conceptual analysis summarised above, and the empirical evidence over the relevant recent historical period, continues to support a 10-year term of debt.

For all of the reasons set out above, ENA considers that the benchmark term of debt should be maintained at 10 years.

6.2 Continuation of transition arrangements

ENA notes that most networks are now part-way through a transition to the 10-year trailing average approach. This has involved progressively locking in 10-year debt finance in accordance with the approach set out in the 2013 Guideline.

Changing the transition mechanism at this stage would be very difficult for firms to manage, and some firms would need to unwind hedging arrangements that have been put in place to be consistent with the AER's transition approach. This could impose a significant cost on networks and consumers. Moreover, any change would have to be individually tailored for each business to begin with the current stage of transition for that business.

---

[38] AER, 2013, Rate of Return Guideline, Explanatory Statement, Table 8.2, p. 143.
[39] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 137.

It would also be inconsistent with the principle of regulatory stability if the AER were to make such a change even before the transition set out in its previous Guideline was complete and would be inconsistent with the achievement of the NEO and NGO by discouraging rather than promoting efficient investment in the long-term interests of consumers.

Consequently, ENA submits that no change to the return on debt transition arrangements should be made in the current Guideline.

6.3 Return on debt estimation

ENA considers that the AER's general approach to deriving the allowed return on debt from the available data sources is appropriate and requires no change.

Consequently, and consistent with the AER's desire to make incremental improvements to the existing approach, ENA agrees with the AER's proposal to consider only whether additional data sources should be added to the set that are currently used.

ENA is of the view that the criteria used to assess the appropriateness of any proposed new data sources should include the following:

- The source is derived from a dataset that appropriately **matches the characteristics of debt** issued by a benchmark efficient entity.
- The source is derived from a **sufficiently large data set,** which provides confidence that the result is not unduly influenced by a small number of observations in the data set.
- The source is **published regularly by an independent reputable organisation**—independent in the sense that the source is beyond the direct influence of any stakeholders.
- A **sufficiently long history** of estimates is available to determine whether the source provides reasonable estimates over a range of market conditions.

ENA submits that the scope of any review of the data sources used to estimate the return on debt allowance should be limited to consideration of whether additional data sources should be included and proposes that additional data sources should be assessed in accordance with the criteria set out above. This would ensure that the return on debt is estimated using a sufficiently large set of data sources that are reputable, independent and which match the characteristics of debt issued by a benchmark efficient entity.

7 Return on equity

Summary

- Consistent with the AER's stated intention of the current review being focused on incremental improvements to the current Guideline, ENA accepts that the AER's current Foundation Model approach will be maintained and that the relevant financial models will continue to have the same role. The ENA notes that there have been no advances in finance theory to warrant a change in the use of the various relevant financial models.
- When estimating the key beta and MRP parameters, ENA considers that the best approach is to jointly consider all evidence that is relevant to a parameter, having regard to the relative strengths and weaknesses of each piece of evidence. ENA submits that this approach is a more reliable and transparent approach of implementing the Foundation Model than an approach of assigning different roles to different subsets of the data. For example, ENA does not see how a subset of evidence relegated to the role of 'cross check' can have any practical input into the analysis.
- ENA submits that the appropriate approach to the updating of the key return on equity parameters is as follows:
  - The starting point is the parameter that was adopted by the AER in its last review. This reflects the AER's assessment of the best estimate of that parameter to use in its Foundation Model approach – based on all of the relevant evidence at the time of its last review.
  - The next step is to consider the new evidence that has become available since the last review.
  - The final step is to determine whether the updated evidence reaches the threshold required to make a change to the prevailing parameter estimate.
- ENA agrees with the statements in the Joint Experts' Report that:
  - Stability and predictability are important principles in the regulatory context that benefit all stakeholders. In the current context, this implies that changes to parameter estimates should only be made in response to strong evidence. [40]
  - The final parameter estimates should be transparent, in the sense that all stakeholders are able to understand the reasons for the adoption of each parameter estimate.[41]
  - The assessment of the updated evidence must be applied consistently and symmetrically throughout the review. [42]

[40] Joint Experts' Report, Proposition 2.01, p. 14.
[41] Joint Experts' Report, Proposition 5.19, pp. 51-52.
[42] Joint Experts' Report, Proposition 2.01, p. 14.

- In relation to the estimation of equity beta, ENA submits that:
  - The AER should only make use of equity betas that are re-levered to a common, benchmark level of gearing (e.g., 60%). Equity betas that are not re-levered in this way cannot be compared on a like-for-like basis.
  - The domestic evidence indicates an increase in equity beta since the 2013 Guideline. In its Equity Beta Issues Paper, the AER reports an increase in equity beta estimates for all existing domestic comparators and for all portfolios of existing comparators.
  - The evidence of low-beta bias (i.e., the evidence that returns on low-beta stocks are systematically higher than the SL-CAPM predicts) is one of the most significant, consistent and well-accepted pieces of evidence in the empirical asset pricing literature, and there has been no diminution of it since 2013. The AER should continue to have regard to this evidence to inform the equity beta used in its Foundation Model approach.
  - Since 2013, the AER's sample of domestic comparators has further reduced and now numbers only three. Logically, as the sample of close domestic comparators reduces, relatively more weight must be given to the other relevant evidence.
  - Evidence on RAB multiples and profitability metrics have no useful role to play in the estimation of equity beta.
- ENA concludes that there is strong evidence to support an increase in the equity beta from the 0.7 figure adopted in the 2013 Guideline in that:
  - The AER's updated equity beta estimates indicate an increase in all of the beta estimates for domestic comparators.
  - There is no evidence to support a diminution of low beta bias or the role of the Black CAPM within the Foundation Model approach – especially in the context of an incremental review.
  - The international evidence considered by the AER all indicates an equity beta above 0.7.
  - Evidence from other domestic infrastructure firms all indicates an equity beta above 0.7.
  - The only evidence that supports maintenance of the same equity beta as in 2013 is the evidence from delisted firms, whose beta estimates are frozen in time forever.
- In relation to the Market Risk Premium (MRP):
  - The empirical evidence suggests that the MRP has increased since 2013.
  - No regulator in Australia that sets a current, forward-looking MRP allowance has, within the past 12 months, set an allowance lower than 7.0%.
  - The Dividend Growth Model (DGM) provides useful evidence on the current MRP and should be given explicit and material weight by the AER. There is no evidence to support a weakening of the role of the DGM since the 2013 Guideline.

- Evidence from the Wright approach should be given equivalent weight to mean historical excess returns evidence.
- Geometric average excess returns should be given no weight by the AER when estimating the MRP because in no place is the AER's return ever compounded and the geometric return is only mathematically appropriate when compounding occurs.
- Any assessment of historical returns should make use of at least 50 years of data.

7.1 Foundation Model approach

In its 2013 Guideline, the AER developed what it called a "Foundation Model" approach for setting the allowed return on equity. The AER has determined that there are three "relevant financial models" that it should have regard to, with each model having a specific role in the process:

» The Sharpe-Lintner CAPM (SL-CAPM) is used as the foundation model. Ultimately, the SL-CAPM parameters are estimated and inserted into the SL-CAPM formula.

» Evidence from the Black CAPM is used to inform the equity beta that is used in the SL-CAPM formula. This step is designed to address evidence of the systematic bias in SL-CAPM estimates (whereby actual returns of low-beta stocks are systematically higher than SL-CAPM predictions).

» Evidence from the Dividend Growth Model (DGM) is used to inform the market risk premium (MRP) that is used in the SL-CAPM formula. This step is designed to ensure that proper regard is given to the evidence of forward-looking required equity returns that is embedded in traded market prices.

Thus, the AER's Foundation Model approach consists of a combination of what the AER has deemed to be the three relevant financial models – each with a specific role to play in the process of determining the allowed return on equity.

The AER has stated that the Foundation Model approach that it has developed:

> *…draws on the key elements from a number of models, but recognises that all models are incomplete and that some approaches provide greater insight than others*[43]

and that:

> *…we consider this approach will deliver a robust estimate of the expected return on equity that will maximise the likelihood of our overall rate of return achieving the allowed rate of return objective.*[44]

[43] AER, 2013, Rate of Return Guideline: Explanatory Statement, p. 55.
[44] AER, 2013, Rate of Return Guideline: Explanatory Statement, p. 55.

In its 2013 Guideline, the AER concluded that the use of a single financial model, having no regard to the evidence from the other relevant financial models, would be "transparent, replicable and simple to implement,"[45] but that it should be rejected as such an approach "may be too prescriptive".[46]

In relation to the Foundation Model approach that the AER has developed, ENA notes that:

- The NER and NGR require that regard must be given to all relevant financial models and that a mechanistic implementation of one single model to the exclusion of all other evidence would not contribute to the achievement of the ARORO or the NEO/NGO to the greatest degree. A better estimate will be arrived at if the allowed return on equity is informed by all relevant financial models and evidence.
- In its 2013 Guideline process, the AER gave detailed consideration to the determination of the set of "relevant financial models" and the appropriate role of each model within the regulatory process. This included the assessment of each proposed financial model against a set of criteria that the AER developed for that purpose.
- The *PIAC-Ausgrid* Tribunal held that it was open to the AER to have regard to all relevant financial models by assigning those models the role that each plays within the AER's Foundation Model approach. The Tribunal rejected the submission that no regard should be given to the Black CAPM and that a lesser role should be given to the DGM.
- The AER has consistently adopted its Foundation Model approach, with the three relevant financial models each taking the role set out in the 2013 Guideline, in all of its decisions since 2013.
- ENA is unaware of any new evidence that is relevant to the role of any financial model within the Foundation Model approach. In its 2013 Guideline, the AER recognised that every financial model has different strengths and weaknesses. In its 2013 Guideline process, the AER carefully considered the relative strengths and weaknesses of the various models and assigned each financial model a specific role in the Foundation Model approach in accordance with its particular strengths and weaknesses. ENA is unaware of any new revelations of strengths or weaknesses that have not already been considered when the Foundation Model approach was developed.

Of particular relevance to the operation of the Foundation Model approach is the PIAC-Ausgrid Tribunal's consideration of that point. The Tribunal notes that the Foundation Model approach involves a package of models in which:

> *the SL CAPM was to be used as the foundation model, the Black CAPM was to be used to inform the parameter estimate of the equity beta for use in the SL CAPM, dividend*

[45] AER, 2013, Rate of Return Guideline: Explanatory Statement, p. 55.
[46] AER, 2013, Rate of Return Guideline: Explanatory Statement, p. 55.

> *growth models (DGMs) were to be used to inform the parameter estimate of the market risk premium (MRP) for use in the SL CAPM.* [47]

The Tribunal highlighted that the AER had not made the error of relying exclusively on one model, but simply used that model as a starting point, to be informed by the other relevant financial models:

> *As its Final Decisions disclose, it was well alive to the SL CAPM providing a starting point only. Whilst it used the SL CAPM as its foundation model, the AER did not then adopt its outcome without careful consideration of other sources of information. As noted, expert advice supported that as a starting point. The AER's approach in this regard does not lead to the view that it assumed the SL CAPM does not have strengths or weaknesses, or that other models do not have strengths or weaknesses. Its subsequent analysis shows that it was not "locked in" to one model, relied on to the exclusion of all others.* [48]

In the spirit of the current review being focused on incremental improvements to the current Guideline, ENA accepts that the AER's current Foundation Model approach will be maintained and that the relevant financial models will continue to have the same role. In this regard, ENA agrees with the general view of the concurrent session experts that an incremental review of the Guideline should take the current Foundation Model approach as given, and focus on the updating of parameter estimates in light of new evidence since 2013.[49]

An approach to the return on equity that gives no role to the DGM or to the Black CAPM / low-beta bias evidence, would represent an abandonment of the Foundation Model approach. Indeed, this would represent a reversion to the mechanistic SL-CAPM approach that the 2012 rule amendments were considered had the potential to exclude relevant market data, models and other evidence. ENA submits that such an approach would be problematic for the following reasons:

- Abandoning the current Foundation Model approach is inconsistent with the stated intention of an incremental review.
- Abandoning the current Foundation Model approach in favour of a mechanistic SL-CAPM approach would mean disregarding relevant evidence. Such an approach would therefore be inconsistent with the NER/NGR, which have been developed to ensure that regulatory determinations best contribute to the NEO/NGO. It would also be inconsistent with the analysis of the PIAC-Ausgrid Tribunal as noted above.[50]

---

[47] *PIAC-Ausgrid*, [2016] ACompT 1, Paragraph 654.
[48] *PIAC-Ausgrid*, [2016] ACompT 1, Paragraphs 719-720.
[49] Joint Experts' Report, Proposition 2.12, p. 18. David Johnstone "accepts that the AER should use the foundation model as it provides a frame of reference for discussion" but added comments on other matters the AER might consider, including "the consequences of its previous decisions."
[50] A move away from the current Foundation Model approach would open a whole range of issues including the best way to estimate beta and MRP under the new approach, whether beta should be estimated mechanistically from a large sample of firms as in the NZCC implementation, whether MRP should be estimated by assigning specific weights to individual estimates as in the QCA implementation, and so on.

» A regulatory approach in which a whole framework is developed in one Guideline and then abandoned four years later is inconsistent with the principles of stability and predictability, and increases the assessment of regulatory risk.

In this regard, we note that one of the propositions that all concurrent expert session participants appeared to agree with is that:

> *Given the context of the AER's stated objective of making incremental changes to the RORG, the Foundation Model framework should be retained. This gives primacy to the Sharpe-Lintner CAPM, with evidence from other relevant models to inform estimates of individual CAPM parameters as per the 2013 Guideline.*[51]

7.2 General approach to setting key parameters

In the context of an incremental review, ENA submits that the appropriate approach to the updating of the key return on equity parameters is as follows:

1. **Starting point** - The starting point is the parameter that was adopted by the AER in its last review. This reflects the AER's assessment of the best estimate of that parameter to use in its Foundation Model approach – based on all of the relevant evidence at the time of its last review. In its 2013 Guideline, the AER determined that the relevant evidence at the time supported a best estimate of 0.7 for equity beta and 6.5% for the MRP.
2. **Review new evidence** - The next step is to consider the new evidence that has become available since the last review. This involves setting out all of the evidence that informed the estimate at the time of the last review and documenting how each component of the relevant evidence has evolved since then.
3. **Determine if threshold met** - The final step is to determine whether the updated evidence reaches the threshold required to make a change to the prevailing parameter estimate. This would depend upon the consistency of the evidence (i.e., has the preponderance of evidence moved in one direction) and on the materiality of any movement in the evidence.

ENA agrees with the statements in the Joint Experts Report that:

» Stability and predictability are important principles in the regulatory context that benefit all stakeholders. In the current context, this implies that changes to parameter estimates should only be made in response to strong evidence.[52]

» All parameter estimates should be transparent, in the sense that all stakeholders are able to understand the reasons for the adoption of each parameter estimate. ENA accepts that a regulator will have to exercise judgment in some areas, but

---

[51] Joint Experts' Report, Proposition 2.12, p. 18. David Johnstone "accepts that the AER should use the foundation model as it provides a frame of reference for discussion" but added comments on other matters the AER might consider, including "the consequences of its previous decisions."

[52] Joint Experts' Report, Proposition 2.01, p. 14.

that does not absolve the regulator from explaining how that judgment was exercised.[53]

» The assessment of the updated evidence must be applied consistently and symmetrically throughout the review. For example, it would be inconsistent to maintain one parameter estimate in the face of strong evidence for change, but to alter another parameter on the basis of weaker evidence. Similarly, the same threshold should be applied for parameter increases and decreases.[54]

7.3 Equity beta

7.3.1 Key issues

ENA makes four primary points in relation to equity beta:

» All equity beta estimates must be re-levered to be consistent with the leverage that is used in the WACC formula. If the AER uses 60% gearing in the WACC formula, it must estimate all equity betas on the basis of 60% gearing. Otherwise there is an obvious internal inconsistency that will lead to an error in the arithmetic calculation of the allowed return.

» When performing the re-levering process:

1. The Miles-Ezzell formula based on a constant proportion of debt financing should be used — to be consistent with the assumption of constant leverage that is adopted in the AER's WACC estimate and in the PTRM; and
2. It is appropriate to adopt a debt beta of 0 because of practical issues relating to its measurement and also the range of reasonable debt beta estimates has no material impact on the final equity beta estimate.

» ENA considers that the AER's standard approach to estimating equity beta from domestic comparators is appropriate and should be continued as this approach uses the appropriate re-levering formula (consistent with constant gearing) and a debt beta of 0. Internal consistency requires that this same approach should be used for all equity beta estimates. This is also consistent with the approach adopted by other regulators.

» The domestic evidence indicates an increase in equity beta since the 2013 Guideline. In its Equity Beta Discussion Paper, the AER reports an increase in equity beta estimates for all existing domestic comparators and for all portfolios of existing comparators.

» The evidence of low-beta bias (i.e., the evidence that returns on low-beta stocks are systematically higher than the SL-CAPM predicts) is one of the most significant, consistent and well-accepted pieces of evidence in the empirical asset pricing literature, and there has been no diminution of it since 2013. The AER should continue to have regard to this evidence to inform the equity beta used in its Foundation Model approach.

---

[53] Joint Experts' Report, Proposition 2.01, p. 14 and 5.19, pp. 51-52.
[54] Joint Experts' Report, Proposition 2.01, p. 14.

- Since 2013, the AER's sample of domestic comparators has further reduced and now numbers only three. ENA submits that a balance must be struck between comparability (having a sample of firms that is as close as possible to the BEE) and statistical reliability (having a large enough sample to reduce the effects of random estimation error). This will involve giving some weight to the small sample of the closest domestic comparators, and some weight to other evidence including international network firms and other domestic infrastructure firms. Logically, as the sample of close domestic comparators reduces, relatively more weight must be given to the other relevant evidence. ENA notes that the equity beta estimates from international network firms and other domestic infrastructure firms all supports an equity beta above the AER's current allowance of 0.7.

The remainder of this subsection sets out the reasoning for each of these positions in turn.

7.3.2 Key outcomes from expert conferences

- There is quite broad agreement that it is appropriate for the AER to de-lever and re-lever in the way that it does, and to continue to assume that debt betas are zero because their likely values are too small to make a substantial difference.[55]
- There is broad agreement that market data are the appropriate data to use to estimate beta.[56]
- There is agreement that the SL-CAPM has systematically understated the observed returns of low-beta stocks. However, there was not agreement on how the AER should incorporate that evidence into its decisions.
- There is agreement that the remaining set of firms is small and the small number of comparators is a problem, but that recently de-listed firms, international energy firms and other domestic infrastructure firms (in that order of preference) can provide relevant information. By contrast, beta estimates from other regulators and industry portfolios (such as those in the recent AER study) are of limited relevance.[57]
- There is agreement that where international energy firms or other domestic infrastructure firms are considered, considerable care needs to be taken to ensure that the information is relevant to the systematic risk profile of the benchmark efficient entity.[58]

[55] Joint Experts' Report, pp. 39-41. Partington and Satchell provide the main dissent, but they do not expand upon their views, noting only a series of problems which may or may not exist and, in respect of debt betas, note only that they (at least Partington) has seen debt betas higher than 0.1, without giving any references, sources or evidence to suggest that this is material in the context of the particular benchmark efficient entity the AER assumes.
[56] Joint Experts' Report, p. 42. We note the support of Johnston for cash flow betas (p. 48).
[57] Joint Experts' Report, April 2018, pp. 43-48.
[58] Joint Experts' Report, pp. 43-48.

» There is agreement that longer data series are preferable from the perspective of precision, but this needs to be considered in the context of market data changing, which may be better revealed by shorter time periods.[59]

7.3.3 Re-levering to 60 per cent

The need to re-lever

The AER has consistently, and correctly, identified that there are two components of the systematic risk of equity: business risk and the financial risk arising from the fact that the firm's debt financing ranks ahead of equity. In relation to the second component, the AER has stated that:

> *Financial risk relates to the additional systematic risk exposure that arises from the debt holdings of the firm. The underlying principle is that since payments to debt holders take precedence over payments to equity holders, the systematic risk exposure for equity holders (i.e. the equity beta) increases as more debt is issued.*[60]

That is, the greater the amount of prior-ranking debt, the greater will be the risk of the residual equity. The Facilitator's Note for Concurrent Evidence Session 2[61] contains a short worked example that illustrates the effect that leverage has on equity beta.[62] It shows that leverage has an effect simply due to debt ranking ahead of equity. ENA notes that the effect that leverage has on equity beta has nothing at all to do with the "financial risks" that are considered in the AER's Equity Beta Discussion Paper.[63] The stability of earnings and a staggered debt profile is not at all relevant to the relationship between leverage and equity beta. For the same reason, refinancing risk, interest rate risk, and insolvency risk are all irrelevant to the relationship between leverage and beta. Leverage increases equity beta simply because debt ranks ahead of equity. This is clearly illustrated in the worked example, where interest rates are fixed and there is zero risk of default.

As each comparator business will have gearing that differs from the 60% figure that the AER adopts for the BEE,[64] beta estimates must be re-levered to reflect the effect of the benchmark gearing. In relation to the approach to re-levering equity beta estimates to be consistent with 60% gearing, ENA notes that:

---

[59] Joint Experts' Report, April 2018, p. 50.
[60] AER, 2013, Equity beta issues paper, October 2013, p. 16.
[61] https://www.aer.gov.au/system/files/AER-%20Concurrent%20Evidence%20Session%202%20-%20Facilitator%27s%20Note%20-%204%20April%202018.pdf.
[62] Annex C, pp. 66-68.
[63] At pp. 21-22.
[64] Or whatever figure the AER deems to best reflect the gearing of the BEE.

- Every major textbook[65] explains (a) why equity betas must be re-levered to reflect the assumed gearing of the relevant firm and (b) how that re-levering should be performed.[66]
- The equity beta estimates in the Henry (2014) report commissioned by the AER was re-levered to 60% using the standard approach.

ENA submits that all equity beta estimates must be re-levered – to be consistent with the assumption that the BEE would maintain constant gearing of 60%.[67] Both components of equity beta: the asset beta (business risk) and leverage must match the BEE. Business risk is matched by selecting comparable firms and leverage is matched via the re-levering process.

More specifically, the AER will determine a gearing estimate for the BEE, which is assumed to be 60% for the purpose of this explanation. The AER will then consider a range of beta estimates. Those estimates will either be correctly re-levered to be consistent with the 60% gearing that has been adopted, or they will reflect a different level of gearing. If they reflect a different level of gearing, they will not be consistent with the BEE because they do not reflect the leverage of the BEE, which is one of the two components of equity beta.

The majority of concurrent session experts agreed with the proposition that:

> *AER should only compare equity β estimates that have been relevered to the same level of gearing. Leverage has an effect on equity beta because debt ranks ahead of equity. This has nothing to do with 'interest-rate risk' or 'refinancing risk' or 'insolvency risk'.* [68]

The experts explained that:

> *The alternative approach that has been suggested involves estimating a WACC that is inconsistent with the AER's assumed gearing. Once a gearing level has been adopted, all equity beta estimates must be consistent with that gearing level.* [69]

Partington and Satchell were the only experts to disagree with that proposition. Partington preferred an approach to estimating WACC directly without the need to separately estimate beta or gearing and Satchell did not provide any reasons.

---

[65] One example (of many) is Brealey, R., S. Myers, G. Partington and D. Robinson (2000), Principles of Corporate Finance, McGraw Hill, p. 499.
[66] The AER has previously noted that there are a large number of different formulas for de-levering and re-levering betas, and that there is uncertainty over which approach is most appropriate. The AER has then concluded that this uncertainty means it should compare un-levered equity betas (as well as de-levered asset betas) in its decisions. Energy Networks Australia notes that, whilst there are a large number of different formulas for de-levering and re-levering, if the same formula is used consistently for both de-levering and re-levering, the final re-levered equity beta estimates are very insensitive to the formula selected. Therefore, uncertainty over the appropriate de-levering/re-levering formula is not a sound reason to not make adjustments for differences in gearing.
[67] Or whatever figure the AER deems to best reflect the gearing of the BEE.
[68] Joint Experts' Report, Proposition 5.02, pp. 39-40.
[69] Joint Experts' Report, Proposition 5.02, pp. 39-40.

ENA notes that during the concurrent evidence sessions there was a short discussion about the possibility of an approach whereby the AER would not specify gearing or beta parameters, but would simply adopt an overall WACC. ENA submits that such an approach would represent a material departure from the Australian regulatory framework, in the absence of consultation. ENA anticipates that the AER *will* specify a gearing level for the BEE, and in that case all equity beta estimates must be re-levered to be consistent with it.

The appropriate approach to re-levering

In the corporate finance literature, two broad sets of re-levering formulas have been developed, depending on the assumed debt management approach. One set is for a firm that maintains a constant dollar *amount* of debt and the other set is for a firm that maintains a constant target *proportion* of debt finance. The latter class are known as the Miles-Ezzell formulas.

ENA submits that re-levering should be performed on the basis of a constant proportion of debt finance in accordance with the Miles-Ezzell formulas. This is because the BEE is assumed to have a constant proportion of debt finance and the PTRM also embeds that assumption. ENA notes that the AER has used the Miles-Ezzel formula in all decisions since its inception.

Most concurrent session experts agreed with the statement that the Miles Ezzell formula must be used and none preferred any alternate formula.[70]

One of the inputs to the Miles-Ezzell re-levering formula is the debt beta. In practice it is common to use a debt beta of zero because (a) debt beta estimates tend to be very small, and (b) for the reasonable range of debt beta estimates, the impact on the final equity beta estimate is negligible. In this regard, the leading textbook of Berk and DeMarzo[71] provides information in relation to debt betas as set out in Figure below.

[70] Joint Experts' Report, Proposition 5.03, pp. 40-41.
[71] Berk, J. and P. DeMarzo, Corporate Finance: 4th Global edition, p. 451.

Figure 6: Empirical estimates of debt beta

TABLE 12.3 Average Debt Betas by Rating and Maturity*

By Rating	*A and above*	*BBB*	*BB*	*B*	*CCC*
Avg. Beta	< 0.05	0.10	0.17	0.26	0.31
By Maturity	(BBB and above)	*1–5 Year*	*5–10 Year*	*10–15 Year*	> 15 *Year*
Avg. Beta		0.01	0.06	0.07	0.14

Source: S. Schaefer and I. Strebulaev, "Risk in Capital Structure Arbitrage," Stanford GSB working paper, 2009.

*Note that these are average debt betas across industries. We would expect debt betas to be lower (higher) for industries that are less (more) exposed to market risk. One simple way to approximate this difference is to scale the debt betas in Table 12.3 by the relative asset beta for the industry (see Figure 12.4 on page 457).

Source:Berk, J. and P. DeMarzo, Corporate Finance: 4th Global edition, p. 451.

Figure indicates that:

- The average debt beta is 0.10 for BBB debt (so lower for BBB+).
- The average debt beta is in the range of 0.06 to 0.07 for 10-year investment grade debt.
- The figures presented here are averages across all industries. The recommendation is that these figures be scaled downward proportionally for low-beta industries.

This evidence would seem to support a debt beta of less than 0.1 for a network business.

The Facilitator's Note for Concurrent Evidence Session 2,[72] contains a set of calculations to show the materiality of different debt beta assumptions. This information, which is reproduced in Table 3 below shows the degree to which the true re-levered equity beta would be mis-estimated by assuming a debt beta of 0. For example, the figure in the top right corner indicates that, if the true debt beta is 0.10 and the comparator in question has 45% gearing, re-levering to 60% with a debt beta of 0 will introduce estimation error of only 0.04, which is well within the confidence interval of any beta estimate. The deviations are even smaller for lower debt betas (which seems more reasonable in light of the evidence above) and when the comparator's gearing is closer to 60%.

[72] https://www.aer.gov.au/system/files/AER-%20Concurrent%20Evidence%20Session%202%20-%20Facilitator%27s%20Note%20-%204%20April%202018.pdf.

Table 3: Impact on final estimate of equity beta from using debt beta of zero

Comparator gearing		True debt beta				
		0.00	0.03	0.05	0.08	0.10
	45%	0.00	0.01	0.02	0.03	0.04
	50%	0.00	0.01	0.01	0.02	0.03
	55%	0.00	0.00	0.01	0.01	0.01
	60%	0.00	0.00	0.00	0.00	0.00
	65%	0.00	0.00	-0.01	-0.01	-0.01
	70%	0.00	-0.01	-0.01	-0.02	-0.03
	75%	0.00	-0.01	-0.02	-0.03	-0.04

Source: Facilitator's Note – Expert Session 2.

For the reasons set out above, ENA submits that the Miles-Ezzell re-levering approach should be adopted, and that it is appropriate to adopt a debt beta of zero. This is the approach that the AER, and all other Australian infrastructure regulators, have always applied to all of its domestic beta estimates.

Most Experts agreed with the proposition that:

> *In principle debt β is a component of the equity β calculation. Reasonable estimates of debt β are small enough that their inclusion has no material impact on calculations. Therefore debt β may be omitted from calculations.* [73]

7.3.4 Increase in domestic beta estimates since 2013

In its 2018 *Equity Beta Discussion Paper*,[74] the AER sets out updated beta estimates for the set of domestic comparators that informed its 2013 beta estimate. For companies that were delisted prior to 2013, the estimates have obviously not changed – those estimates are frozen in time. Consequently, to examine how the evidence has evolved since 2013, the only firms that are relevant are those that have remained listed.

Figure below summarises the equity beta estimates for individual firms in Henry (2014)[75] and in AER (2018).[76] Both reports present beta estimates for the longest available period, the longest available period ex-GFC, and the most recent 5 years.

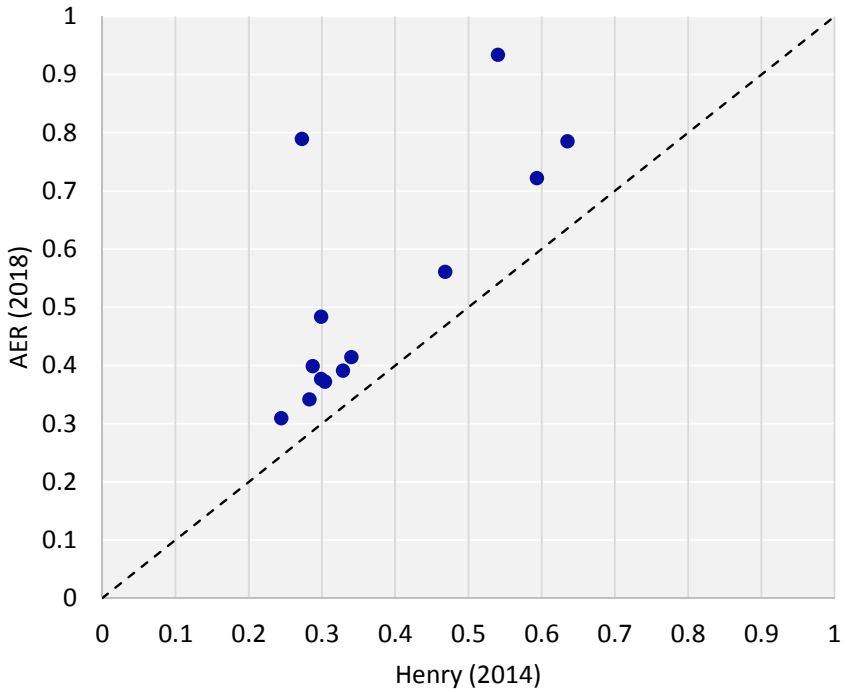
---

[73] Joint Experts' Report, Proposition 5.04, p. 41. Graham Partington indicates that debt beta may be higher than 0.1, but provided no reference. SS dissented, but supplied no reasons for doing so. Jim Hancock cites a beta for funds investing in corporate debt, which other experts consider to be an inappropriate comparison.
[74] AER, March 2018, *Discussion Paper: Equity Beta*.
[75] Henry, O., 2014, *Equity beta update*.
[76] AER, March 2018, *Discussion Paper: Equity Beta*.

The figure compares estimates for the same firm over the same period. For example, the AER's 'longest period' estimate uses the same data as Henry used, but has been updated to reflect data through to 2017. Thus, the two estimates share many years of the same data – the difference being that the AER estimates add the data that has become available since 2013.

In this figure, the blue line is a 45-degree line that represents the point of equality between the Henry (2014) and AER (2018) estimates. Any point above the blue line indicates that the AER (2018) estimate is above the corresponding Henry (2014) estimate. Symmetrically, any point below the blue line indicates that the AER (2018) estimate is lower than the corresponding Henry (2014) estimate. For all of the individual firm estimates, the addition of the more recent data results in an increase in the beta estimate – all points on the graph lie above the 45-degree line.

Figure 7: Movement in firm equity beta estimates since 2013 Guideline



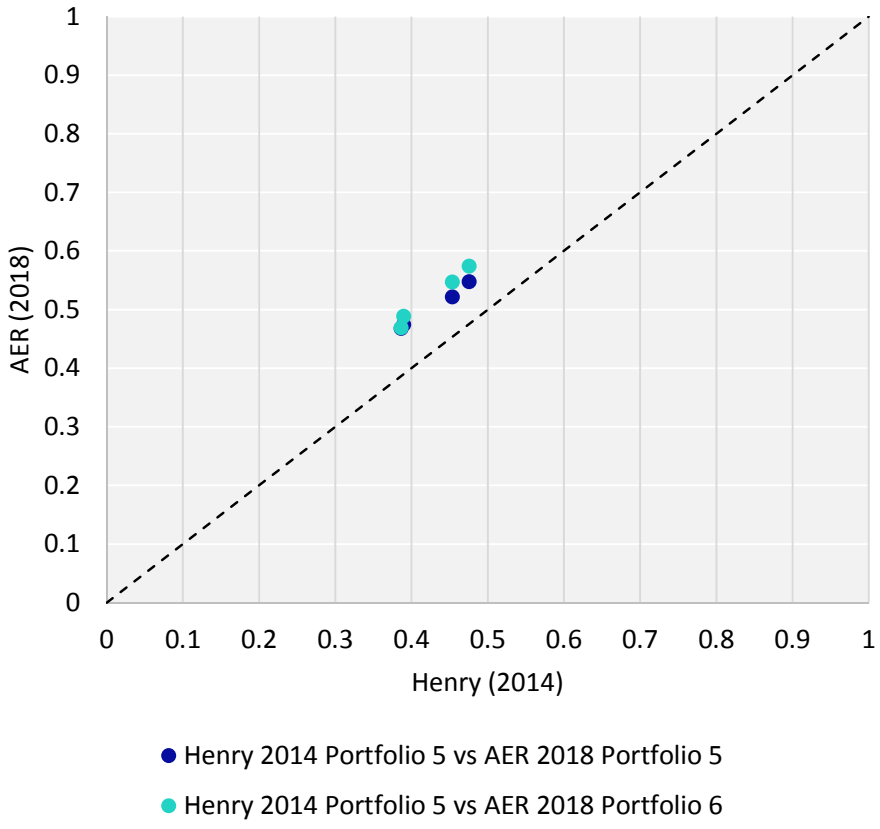
Source: Data from AER equity beta discussion paper, March 2018, and Henry (2014).
Notes: The estimates presented in this Figure are for APA Group, DUET, Envestra, Spark Infrastructure and AusNet, for three time periods: The longest period of data available for each firm (Scenario 1); the longest period of data for each firm after the tech boom and excluding the GFC (Scenario 2); and the most recent 5-year period (Scenario 3).

Figure below summarises the changes in the portfolio equity beta estimates derived the firms that remained listed after 2013.

- The dark blue dots compare the Portfolio 5 estimates presented in Henry (2014) against the Portfolio 5 estimates presented in the AER's Equity Beta Discussion Paper.[77]
- The light blue dots compare the Portfolio 5 estimates presented in Henry (2014) against the Portfolio 6 estimates presented in AER's *Equity Beta Discussion Paper*—and therefore represents a comparison of estimates for portfolios containing only listed firms.[78]

Again, all points on the graph lie above the 45-degree line indicating that all estimates have increased since the AER adopted its current equity beta allowance.

Figure 8: Movement in equity beta estimates of surviving comparators since 2013 Guideline

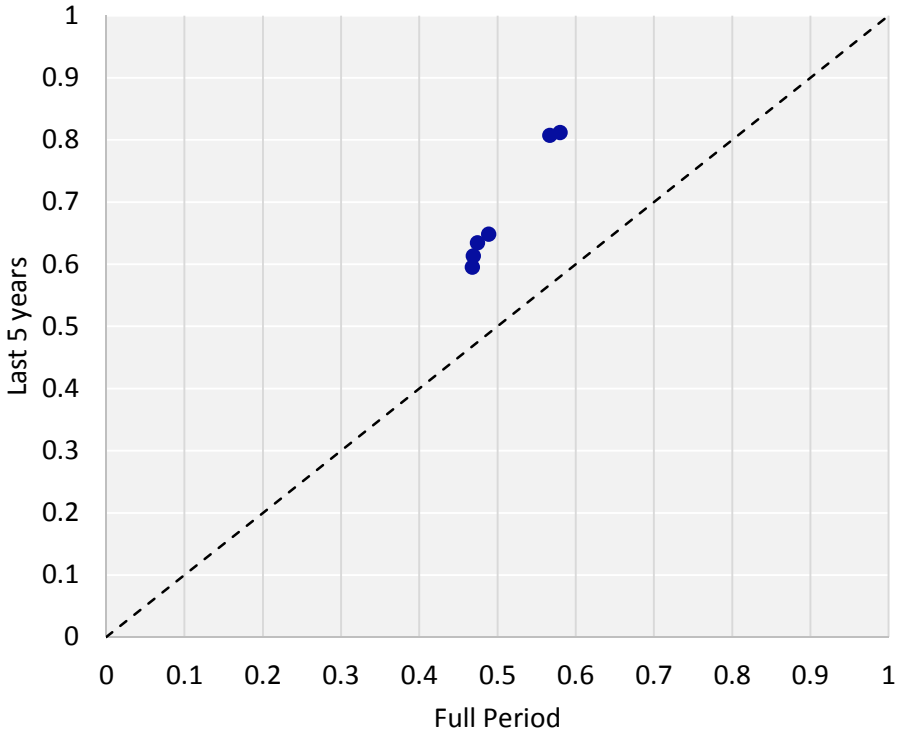


Source: Data from AER equity beta discussion paper, March 2018 and Henry (2014).

Figure below summarises the 'full sample' beta estimates with the 'last 5 years' beta estimates as set out in the AER's *Equity Beta Discussion Paper*. In all cases, the estimate for the most recent period exceeds the full-sample estimate.

[77] Portfolio 5 contains the following comparators: APA Group, DUET, Envestra, Spark Infrastructure and AusNet.
[78] Portfolio 6 contains all of the comparators in Portfolio 5, except Envestra. Envestra delisted in late 2014.

Figure 9: Comparison of full-sample portfolio estimates against last 5 years



Source: Data from AER equity beta discussion paper, March 2018.

ENA notes that all of the AER's updated equity beta estimates demonstrate an increase since 2013. The change in equity beta estimates is not uncertain or mixed – they have all increased. Consequently, in the context of an incremental review that updates to reflect the most recent evidence, the only change that could be made to the equity beta allowance is an increase.

7.3.5 Low-beta bias

The evidence of low-beta bias

It is well-known that the observed stock return data across decades and across all developed markets do not accord with the predictions of the SL-CAPM.

The most well-accepted, long-standing and consistent empirical failure of the SL-CAPM is a systematic bias in understating the returns on low-beta stocks.[79] There is consistent evidence documented in a long series of studies since the 1970s that the returns on low-beta stocks are systematically higher than the SL-CAPM predicts. This evidence, which has become known as 'low-beta bias,' is one of the most significant, consistent and well-accepted pieces of evidence in the empirical asset pricing literature.

[79] That is, stocks with a beta estimate less than 1.

The empirical evidence documenting the SL-CAPM's low-beta bias over time and across different markets (including Australia) is well-known in the regulatory setting[80] and the existence of the empirical evidence of the SL-CAPM understating the observed return on low-beta stocks was generally accepted by experts at the AER's concurrent evidence sessions.[81] Consequently, we do not restate that evidence in full in this submission.

However, we do note that the evidence of low-beta bias is also well-accepted, to the extent of being documented in standard textbooks, including Australian textbooks. For example, Brealey, Myers and Allen (2011)[82] present the information in Figure below showing that the actual returns (blue dots) of low-beta stocks are consistently above the SL-CAPM prediction (red line).

Figure 10: Documentation of low-beta bias in Brealey, Myers, and Allen (2011)

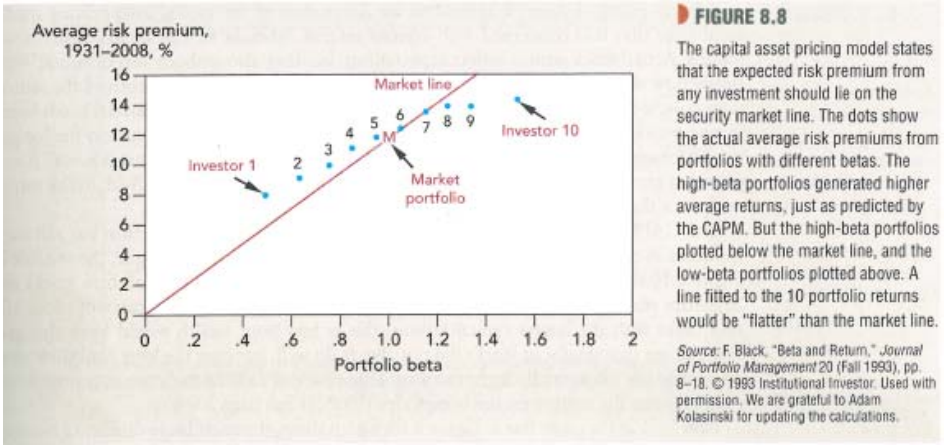


FIGURE 8.8

The capital asset pricing model states that the expected risk premium from any investment should lie on the security market line. The dots show the actual average risk premiums from portfolios with different betas. The high-beta portfolios generated higher average returns, just as predicted by the CAPM. But the high-beta portfolios plotted below the market line, and the low-beta portfolios plotted above. A line fitted to the 10 portfolio returns would be "flatter" than the market line.

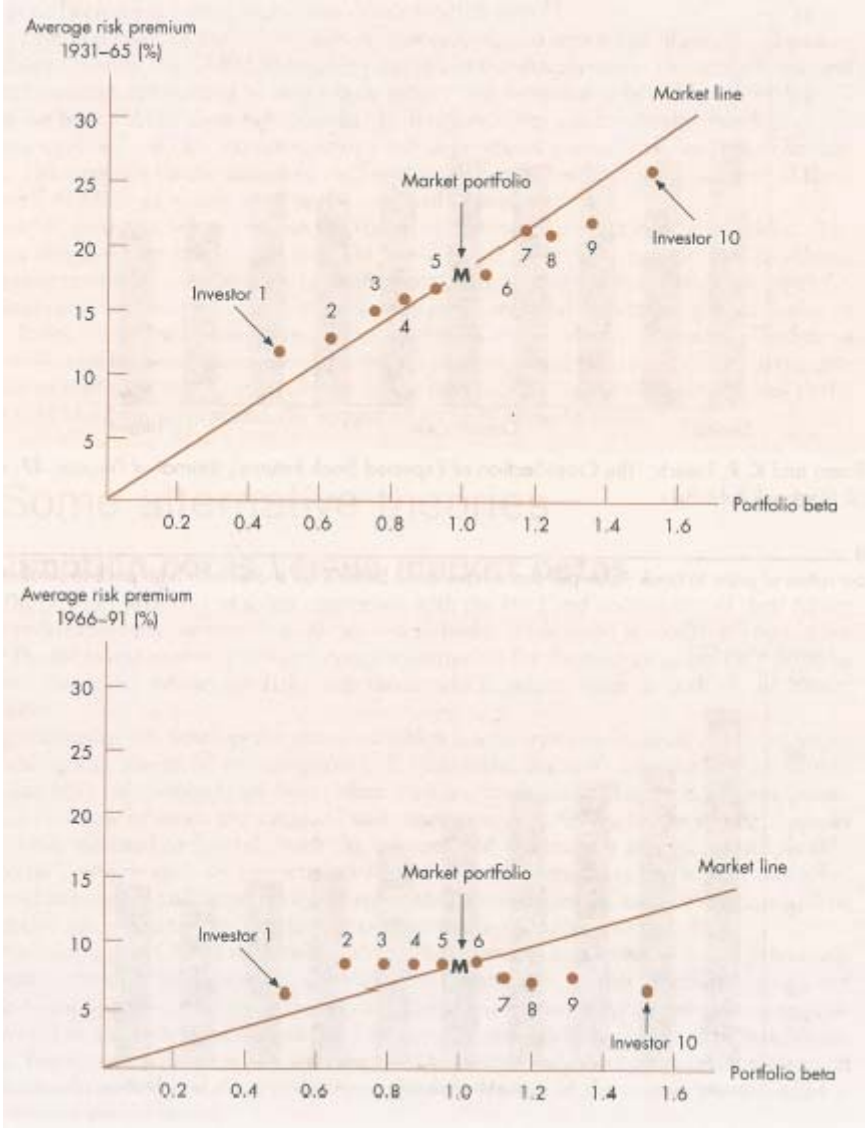
Source: F. Black, "Beta and Return," *Journal of Portfolio Management* 20 (Fall 1993), pp. 8–18. © 1993 Institutional Investor. Used with permission. We are grateful to Adam Kolasinski for updating the calculations.

Source: Brealey, R.A., S.C. Myers, and F. Allen, 2011, Principles of Corporate Finance, *10th ed., McGraw-Hill Irwin, p. 197.*

Partington et al (2000)[83] note that the effect has become more material in the more recent data, as summarised in Figure 2 below.

[80] See, for example, the Frontier Economics (2017) report, available at https://www.aer.gov.au/system/files/Evoenergy%20-%20Rate%20of%20return%20-%20Appendix%208.3%20-%20Frontier%20-%20Low-beta%20bias%20-%20December%202017_Public.pdf.
[81] Joint Experts' Report, Proposition 5.21, pp. 53-54.
[82] Brealey, R.A., S.C. Myers, and F. Allen, 2011, *Principles of Corporate Finance,* 10th ed., McGraw-Hill Irwin, p. 197.
[83] Partington, G., D. Robinson, R. Brealey and S. Myers, 2000, Principles of Corporate Finance: Australian Edition, p. 211.

Figure 2: Documentation of low-beta bias in Partington et al (2000)



Source: Partington, G., D. Robinson, R. Brealey and S. Myers, 2000, Principles of Corporate Finance: Australian Edition, p. 211.

ENA submits that there should be no contention about the existence of the empirical evidence of low-beta bias, or about the conclusion that the evidence has been demonstrated over time and across markets and that it is well-accepted.

Most concurrent session experts agreed with the proposition that:

> *There is sound evidence that low-beta stocks have exhibited higher returns than the S-L CAPM predicts.* [84]

[84] Joint Experts' Report, Proposition 5.21, p. 52. No experts disputed the existence of the empirical evidence, but instead stated that the size of the bias is difficult to reliably quantify.

Interpretation of the evidence of low-beta bias

In the concurrent evidence sessions, four ways of interpreting the evidence of low-beta bias were considered as follows:[85]

- ***Observed data can be used to estimate required returns***. One possibility is that real-world investors price low-beta stocks to earn expected returns that are higher than the SL-CAPM predicts, and that is reflected in the data. That is, the observed market data reflects the returns that investors actually require. This interpretation would seem to be consistent with the AER's reliance on observed market data to estimate required returns throughout its estimation process.
- ***Statistical problems with the econometric tests***. A second possibility is that the low-beta bias is only documented due to statistical problems with the econometric tests that have been applied. This explanation seems highly unlikely given the quality of the researchers involved (Black, Jensen, Scholes, Fama, MacBeth, etc.), the fact that the evidence has been documented in papers spanning several decades, and the fact that the result is so well-accepted that it appears in standard textbooks.
- ***Random chance***. A third possibility is that real-world investors actually require a return in accordance with the SL-CAPM and price assets to yield that return in expectation, but that the actual returns have been higher than expected due to random chance. That is, investors in low-beta stocks require a SL-CAPM return, but have received a higher return due to random chance. This explanation also seems highly unlikely given the persistence of the evidence over many decades and many different markets.
- ***Things might be different in the future***. The final possibility that has been discussed is that, while the effect in the historical data is real, that effect might not persist into the future. That is, whereas the SL-CAPM has consistently understated the returns on low-beta stocks in the past, future returns may be in accordance with the SL-CAPM. In other words, investors did not use the SL-CAPM to price stocks in the past, but may begin using it in the future. This explanation also appears to be highly unlikely given the persistence of the empirical evidence over many decades and the lack of any evidence of the effect diminishing over time.

ENA submits that proper regard should be given to the empirical evidence of low-beta bias. As this evidence is so consistent, pervasive and well-accepted, it should be interpreted as being informative about the returns that real-world investors require. Evidence that has been consistently documented by leading researchers (including multiple Nobel prize recipients) in the very top journals should not be disregarded on the basis that there could possibly be some (unspecified) statistical problems that have not yet been identified, that the evidence might be the result of random chance, or that the bias that has been consistently documented in the past might disappear in the future.

---

[85] See also Joint Experts' Report, Proposition 5.22, pp. 53-54.

ENA considers the evidence of low-beta bias to be one of the most significant, consistent and well-accepted pieces of evidence in the empirical asset pricing literature. Strong market-based evidence should not be disregarded on the basis of speculation.

ENA also notes that there is no evidence of any diminution of the low-beta bias effect since the AER had regard to it in the 2013 Guideline.

Consequently, ENA submits that the AER should continue to have regard to the evidence of low-beta bias to inform the equity beta used in its Foundation Model approach.

The adjustment for low-beta bias

The 2013 Guideline notes that a revised version of the CAPM was developed by Black (1972) in response to the empirical evidence of low-beta bias. Black relaxes the SL-CAPM assumption that investors can borrow unlimited amounts at the risk-free rate, and develops a modified version of the SL-CAPM that has a lower slope that is more consistent with the empirical data.

In its 2013 Guideline materials, the AER noted that:

> *A key outworking of the Black CAPM is that the Sharpe–Lintner CAPM may underestimate the return on equity for firms with equity betas less than one.*[86]

The AER goes on to state that it will not estimate the Black CAPM, but rather that it will have regard to the evidence of low-beta bias and the Black CAPM when selecting a beta estimate to insert into its SL-CAPM formula:

> *…using the Black CAPM theory to inform our equity beta estimate may mitigate possible low beta bias…we consider this represents a pragmatic approach.*[87]

That is, the AER has recognised the existence of low-beta bias and has stated that it will use the Black CAPM to inform the equity beta estimate so as to "mitigate possible low beta bias."[88]

In the AER's Foundation Model approach, the evidence in relation to the Black CAPM is used to inform the estimate of the equity beta. In its 2013 Guideline materials, the AER demonstrated how the SL-CAPM beta can be adjusted to produce an estimate of the required return on equity that is consistent with a lower slope, as would be the case under the Black CAPM.[89]

---

[86] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendix A, p. 18.
[87] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendix A, p. 12.
[88] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendix A, p. 12.
[89] The mechanics of this procedure are straightforward and well-known. See, for example, the Frontier Economics (2017) report, available at https://www.aer.gov.au/system/files/Evoenergy%20-%20Rate%20of%20return%20-%20Appendix%208.3%20-%20Frontier%20-%20Low-beta%20bias%20-%20December%202017_Public.pdf.

To date, the AER has not specified what adjustment it has made in relation to the Black CAPM evidence, nor what slope it considers to be reasonable. In the 2013 Guideline materials, the AER stated that it considered the 'best statistical estimate' of equity beta from domestic comparators to be 0.5 and that its final allowed beta of 0.7 reflected its consideration of international evidence (the preponderance of which supported a higher beta estimate) and its consideration of the Black CAPM evidence.[90]

That is, the 2013 Guideline materials do not specify any particular adjustment in relation to the Black CAPM evidence, but simply demonstrate how such an adjustment would be performed within the context of its Foundation Model. Using the process set out in the 2013 Guideline, the adjusted betas that would be derived from various starting point beta estimates and various estimates of the true slope (being flatter than the 6.5% SL-CAPM slope) are summarised in Table 4 below. For example, a starting point equity beta of 0.5 would, within the context of the Foundation Model approach, be increased to 0.69 to reflect a true slope of 4.0%. This would be broadly consistent with the outcomes of the 2013 Guideline.

Table 4: Beta adjustment under the Foundation Model approach

		Raw beta		
		0.5	0.6	0.7
True slope	3.0%	0.77	0.82	0.86
	3.5%	0.73	0.78	0.84
	4.0%	0.69	0.75	0.82
	4.5%	0.65	0.72	0.79

Source: Calculations consistent with AER Foundation Model approach, as set out in 2013 Guideline materials.

Table 4 above also indicates that if the same adjustment was made to a starting point beta estimate above 0.5, the final beta allowance would be above 0.7.

ENA submits that there is no new evidence since 2013 to support any diminution in the evidence of low-beta bias. Consequently, there is no basis for reducing the quantum of any allowance in relation to it. It then follows that if the starting point beta estimate is above 0.5, and if the Black CAPM and other evidence plays the same role as in the 2013 Foundation Model, the resulting equity beta allowance would be above 0.7.

[90] These two pieces of evidence raise different issues. The evidence of low-beta bias indicates that there is a systematic problem with the SL-CAPM that needs to be corrected. The international evidence indicates that the very small sample of domestic comparators tended to produce statistical estimates of beta materially below the much larger sample of international comparators.

7.3.6 Expanding the set of comparators

Since 2013, the AER's sample of domestic comparators has further reduced and now numbers only three. ENA submits that a balance must be struck between comparability (having a sample of firms that is as close as possible to the BEE) and statistical reliability (having a large enough sample to reduce the effects of random estimation error). This will involve giving some weight to the small sample of the closest domestic comparators, and some weight to other evidence including international network firms and other domestic infrastructure firms. Logically, as the sample of close domestic comparators reduces, relatively more weight must be given to the other relevant evidence. ENA notes that the equity beta estimates from international network firms and other domestic infrastructure firms all supports an equity beta above the AER's current allowance of 0.7.

All experts expressed concern about the AER's shrinking sample of domestic comparators.[91]

In its 2013 Guideline, and in its subsequent decisions, the AER has had regard to evidence from international comparator firms. In its most recent decisions, the AER has set out nine estimates based on international comparators, which reflect 60% gearing to be consistent with the AER's estimates. All nine estimates are above 0.7, seven of the nine are above 0.8 and the mean across the nine estimates is 0.88, as summarised in Table 5.

Table 5: International evidence to which the AER has regard

Source	Estimate	Notes
Frontier Economics, January 2016	0.88	Weekly estimates
	0.77	Monthly estimates
SFG/CEG, June 2013	0.88	Individual firm estimates
	0.91	Portfolio estimates
Damodaran, March 2016	1.09	Mean individual firm estimate
PwC, March 2015	0.88	Estimates for NZ DBs
Brattle Group, March 2013	0.71	European firms estimate
	1.01	US firms estimate
	0.80	European + US firms estimate

Source: AER, November 2017, APA VTS Final Decision, Attachment 3, Table 3-30, p. 3-260.

[91] Joint Experts' Report, Proposition 5.09, pp. 43-45.

ENA considers that:

- Proper regard should be given to the evidence from overseas comparators. Some regulators, such as the New Zealand Commerce Commission, have regard to a much larger sample of comparators (i.e., over 70 listed companies, most of which are not New Zealand firms) than does the AER.[92] Such an approach would result in more stable and statistically-reliable estimates.
- The overseas evidence should have a greater role than simply informing the selection of a point estimate from within a range drawn from the small available amount of domestic evidence.
- This is particularly so in circumstances where the available domestic evidence is as scant as it currently is.

When having regard to evidence from international comparators, it is necessary to weigh up the high statistical reliability of that evidence (because the sample size is so much larger than the three domestic comparators) against the fact that the evidence is not as directly applicable to the BEE, which operates exclusively in the Australian market.

That is, the international comparators have the benefit of being energy network businesses and providing an energy network service, but the disadvantage of operating in a different market. This leads to another set of comparators – other domestic infrastructure firms. These firms operate in the Australian market in an industry that is close to, but not exactly equivalent to, the provision of energy network services. The AER has received a number of submissions that demonstrate that the equity beta estimates for ASX-listed infrastructure firms are materially higher than 0.7.[93]

In relation to the use of an expanded set of comparators ENA:

- accepts that the best available evidence is from domestic NSPs and that this evidence should receive material weight.
- notes that the sample of domestic NSPs has been reduced to three. As the number of firms reduces, so does the reliability of estimates based on that sample. Logically, it follows that relatively less weight should be placed on the domestic evidence as the domestic sample shrinks and the estimates become more imprecise.
- views placing weight on delisted firms as problematic in that those estimates are frozen in time and cease to reflect the prevailing market conditions. The problem becomes more severe as the time since delisting increases, which is relevant in determining the weight applied to them. The evidence presented in the AER's Equity Beta Discussion Paper is that the beta estimates for all live firms have

---

[92] New Zealand Commerce Commission *Input Methodologies – Final reasons papers*, December 2016, Topic 4 paper, Attachment A, p. 219.
[93] See, for example, the estimates submitted by TransGrid available at https://www.aer.gov.au/system/files/TransGrid-Frontier%20Economics-Appendix%20F%20Review%20of%20the%20MTFP%20and%20MPFP%20analysis%20in%20the%20AERs%202016%20annual%20benchmarking%20report-0117.zip.

increased since 2013, but (of course) the beta estimates for the delisted firms have remained frozen. When both sets are included in the sample, the 'dead' firms dampen the increase that the AER has documented for the 'live' firms.

- considers that the obvious means of expanding the sample is to consider international NSPs and other domestic infrastructure firms. Both sources of evidence support an equity beta above 0.7.

7.3.7 No role for RAB multiples or profitability analysis

The equity beta is a measure of the relationship between the returns of an individual stock and the returns on the broad market portfolio. The standard approach for estimating beta is via an ordinary least squares regression of stock returns on market returns – consistent with the definition of beta. ENA submits that evidence from RAB multiples and profitability metrics have no useful role to play in the estimation of equity beta because they provide no information about the statistical relationship between stock returns and market returns.

In this regard, ENA notes that all but one of the experts agreed with the proposition that:

> *Ex post firm-specific profitability data contains no information that assists in estimating the rate of return required by the market.* [94]

The majority of experts also agreed with the proposition that:

> *It is not practicable for observations of EV/RAV multiples to be decomposed in order to draw inferences as to the rate of return required by the market and used by the AER in the process of setting the ROR.* [95]

7.3.8 Conclusion on equity beta

ENA concludes that there is strong evidence to support an increase in the equity beta from the 0.7 figure adopted in the 2013 Guideline in that:

- The AER's updated equity beta estimates indicate an increase in all of the beta estimates for domestic comparators.
- There is no evidence to support a diminution of low beta bias or the role of the Black CAPM within the Foundation Model approach – especially in the context of an incremental review.
- The international evidence considered by the AER all indicates an equity beta above 0.7.

---

[94] Joint Experts' Report, Proposition 4.01, p. 35. David Johnstone considered that such information could be used as the basis for the adoption of "a different and possibly simpler and more transparent framework (e.g. CPI increases only" or for a re-setting of WACC parameters "to achieve a realistic level of 'good' regulation."

[95] Joint Experts' Report, Proposition 4.02, pp. 35-36. Graham Partington disagreed with the statement, but provided no explanation as to why. David Johnstone considered the list of factors that affect RAB multiples to be "esoteric reasons/excuses for why RAB multiples 'should be' greater than one."

- Evidence from other domestic infrastructure firms all indicates an equity beta above 0.7.
- The only evidence that supports maintenance of the same equity beta as in 2013 is the evidence from delisted firms, whose beta estimates are frozen in time forever.

ENA submits that if this strong evidence is deemed to be insufficient to warrant an increase to the equity beta, internal consistency requires that the same threshold should be applied to all parameters.

7.4 Market risk premium

7.4.1 Key outcomes from concurrent expert sessions

- Experts agreed that neither constant market returns nor a constant market risk premium is correct; the truth lies somewhere in the middle.[96]
- Experts agreed that historical returns (which are backward looking) and the dividend growth model (which is forward-looking) both play a role.[97]
- Experts appear to agree that historical returns should use long time periods and that the AER's recent addition of a 17-year time horizon reflecting recent data is much too short.[98]
- Experts appear to agree that the NERA work on historical returns is more robust than the BHM work the AER has previously used.[99]
- There does not appear to be any concern with the AER's form of the DGM, and the debate centres on one aspect of the DGM; long-term dividend growth rates.[100]
- Experts appear to agree that the MRP could be fixed for the duration of the guideline, if it is subject to re-openers to deal with crisis events, and the Guideline should describe in some detail the circumstances which would warrant a re-opener.[101]

7.4.2 Empirical evidence suggests that the MRP has increased since 2013

In its 2013 Guideline materials, the AER concluded that:

> *Evidence suggests the MRP may vary over time. In their advice to the AER, Professor Lally and Professor Mackenzie and Associate Professor Partington have expressed the view that the MRP likely varies over time.*[102]

---

[96] Joint Experts' Report, April 2018, p. 61.
[97] Joint Experts' Report, April 2018, p. 57.
[98] Joint Experts' Report, April 2018, pp. 58-60.
[99] Joint Experts' Report, April 2018, p. 59.
[100] Joint Experts' Report, April 2018, p. 60 and pp. 62-63.
[101] Joint Experts' Report, April 2018, p. 64.
[102] AER, 2013, Rate of Return Guideline: Explanatory Statement, p. 91.

None of the RORG experts disagreed with this proposition, and none considered that the MRP should be treated by the AER as fixed as market conditions change.

In our response to the Issues Paper, ENA also agreed with the conclusion that the MRP varies over time, and we submitted that the regulatory task is to estimate a forward-looking MRP that is commensurate with the prevailing conditions in the market.[103]

The AER currently has regard to a range of evidence when determining the MRP. Table 6 below compares evidence presented by the AER in its 2013 Guideline materials and in its November 2017 *Final Decision for the APA Victorian Gas Transmission System* (the latest available decision for which the AER has presented analysis of the rate of return). The Table shows that, nearly every piece of evidence that the AER currently has regard to suggests that the MRP has increased (materially) since 2013.

Table 6: Change in AER's MRP estimates since 2013 Guideline

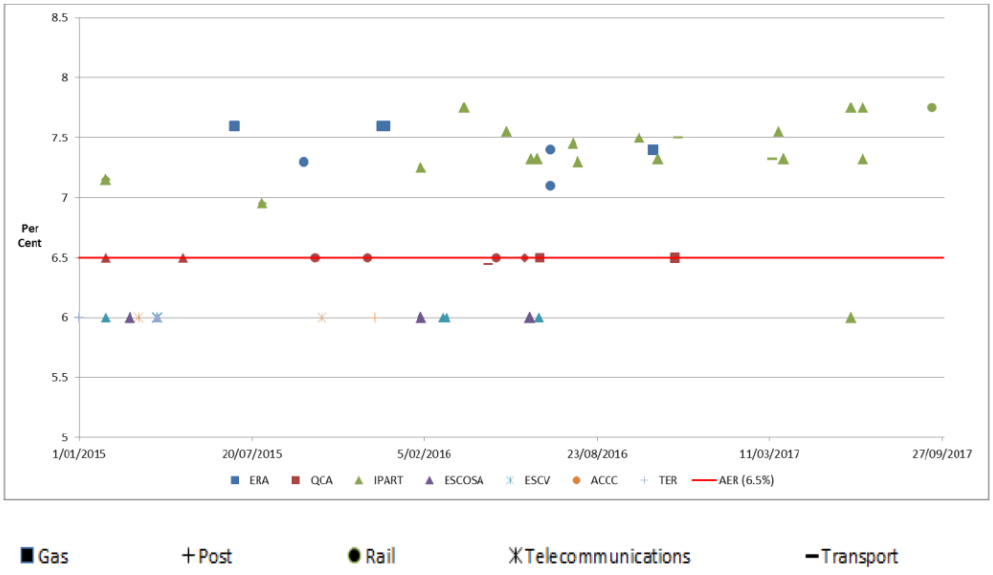
Estimation method	AER 2013 Guideline estimate (%)	Estimate in AER'S November 2017 Decisions (%)
Historical excess returns	Point estimate: 6.0	5.1 to 6.4[1]
Dividend growth model	6.1 to 7.5[1]	6.24 to 8.7[1]
Surveys	Supportive of 6.0	7.3 to 7.6[2]
Conditioning variables	Qualitative consideration	Qualitative consideration
Regulatory determinations	Supportive of 6.5	7.2 to 7.7[3]
Wright approach (used by AER as "cross-check")	5.8 to 8.7	7.2 to 9.8[4]

Source: AER 2013 Rate of Return Guideline Materials, AER APA Final Decision
Notes: [1] Full range reported in AER decision; [2] Obtained from 2017 survey by Fernandez et al.; [3] Reflects regulatory decisions over the 12 months to November 2017; [4] Total Wright CAPM and risk-free rate estimates obtained from AER decision, assumes equity beta of 0.7 per point estimate in AER decisions.

It is also noteworthy that no regulator in Australia that sets a forward-looking, current MRP allowance has, within the past 12 months, examined the same evidence considered by the AER and concluded that an appropriate allowance is as low as 6.5%. This can be seen in Figure 3 (reproduced from the AER's November 2017 Final Decision for APA).

[103] ENA Submission to Issues Paper, p. 5.

Figure 3: Recent regulatory decisions on the MRP



Source: AER APA Final Decision, November 2017, Figure 3-16.

Indeed, the Figure shows that since August 2016, only one regulator apart from the AER has set a MRP as low as 6.5%;[104] every other regulator has, over that period, determined a MRP allowance between 7.2% and 7.7%. In its most recent decisions, the QCA too has set a MRP above 6.5%. In November 2017 the QCA determined a MRP allowance of 7% for Seqwater, and in December 2017 it determined a MRP allowance of 7.0% for Aurizon Networks.

Further, not included in the AER's Figure above are the following regulatory decisions:

- The ERA determined a MRP allowance of 7.2% in its October 2017 Final Decision for WA rail networks;[105] and
- IPART determined a MRP allowance of 7.6% in its February 2018 Biannual WACC update.[106]

The empirical evidence (including recent decisions by other economic regulators in Australia) points overwhelmingly to an increase in the MRP since 2013.

[104] IPART's June 2017 decision of 6.0% for WaterNSW in relation to bulk water services supplied in the Murray-Darling Basin valleys should be disregarded as it does not represent IPART's forward-looking, current MRP as IPART was required by legislation to use this figure, which was published in the ACCC Water Charge Infrastructure Rules.
[105] ERA, Determination on the 2017 Weighted Average Cost of Capital for the Freight and Urban Railway
Networks, and for Pilbara railways, 6 October 2017, p. 4.
[106] IPART, WACC Biannual update, February 2018, p. 2.

7.4.3 The role of the DGM

The 2013 Guideline approach

In its 2013 Guideline materials, the AER states that the DGM:

- has a strong theoretical basis;
- provides an estimate of the forward-looking MRP, commensurate with the prevailing conditions in financial markets (in contrast to a long-run historical average); and
- is appropriate for use in the regulatory setting, being already commonly used by other regulators.

The 2013 Guideline materials state that:

> *DGMs are recognised financial models that are commonly used in practice*[107]

and that:

> *DGM estimates have strong theoretical grounding and are more likely to reflect prevailing market conditions than other approaches*[108]

and that:

> *DGMs are suited to the estimation of the rate of return from current market information, as demonstrated by US regulators using them for this purpose.*[109]

Consequently, in the 2013 Guideline review, the AER considered the evidence in relation to the DGM in considerable detail. The AER noted the benefits of DGM evidence (summarised above) but also identified a number of "issues in applying the models."[110] For example, the AER stated that:

> *...the outcomes are sensitive to the model assumptions, especially the assumed long term growth in dividends and the transition from current dividends to the long term growth path.*[111]

This led the AER to weigh up the strengths and weaknesses of the various different DGM specifications and to develop its own preferred specification that it considered to be robust enough to receive more weight:

> *In the past our starting point for DGM estimates of the MRP has been the specifications presented to us by the regulated businesses. Of which, there have been various specifications over time. These specifications have differed from decision to decision. In conducting our analysis, our approach*

---

[107] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.
[108] AER, 2013, Rate of Return Guideline: Explanatory Statement, Appendices, p. 85.
[109] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.
[110] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.
[111] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.

> *has been to adjust these estimates to reflect our consideration of the evidence.*
>
> *In this guideline process we have taken a different, bottom-up approach. We have considered the available evidence on the DGM and proposed our preferred construction of the model. We have consulted with stakeholders on our preferred construction and engaged consultants to review our proposal. As a result, in this explanatory statement we propose our preferred DGM estimates. Consequently, we have greater confidence in the symmetry of this information through time and give these estimates greater consideration than we have in the past.*[112]

The 2013 Guideline materials note that the AER's approach will be to give:

> *significant consideration to DGM estimates of the MRP* [113]

and that:

> *the most significant development in this area is our proposal of a preferred construction of the DGM.*[114]

In the 2013 Guideline, the role given to the DGM is to:

- Construct DGM estimates of the MRP using the preferred specification developed by the AER; and
- Add the range of DGM estimates to the range of historical excess returns estimates to produce a combined range of MRP estimates, from within which a final point estimate would be selected.

The 2013 Guideline states that:

> *The AER proposes to estimate a range for the MRP, and then select a point estimate from within that range.* [115]

The AER then constructed a range of 5.0% to 7.5% being a combination of the ranges from the historical excess returns estimates and the DGM estimates.[116] The top of the combined range was identified as being the top of the DGM range:

> *The DGM currently provides the highest estimate of the MRP at about 7.5 per cent. We consider this an appropriate upper bound for the range.*[117]

All experts other than Partington and Satchell agreed with the proposition that:

> *The DGM provides a useful source of evidence on the MRP that should be considered alongside other sources of evidence.* [118]

---

[112] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.
[113] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 97.
[114] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 89.
[115] AER, 2013, Rate of Return Guideline, p. 16.
[116] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 93.
[117] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 93.
[118] Joint Experts' Report, Proposition 6.06, pp. 60-61. SS states that DGM may have some limited use. Graham Partington notes that the DGM is used in practice and that there are a number of implementation issues to be considered.

The role of the DGM in an incremental review

In the 2013 Guideline review, ENA submitted that the DGM should have a larger role than that given to it by the AER and that an alternative specification of the DGM should be adopted.

However, in the context of the AER's stated goal of an incremental review ENA accepts:

- that the AER's preferred specification of the DGM is to be adopted; and
- that the DGM will play the same role within the Foundation Model approach as in the 2013 Guideline – the range of DGM estimates will be used in constructing the "range for the MRP," [119] from which the final point estimate is selected, and will also inform the selection of that point estimate.

In its most recent decisions, the AER states that:

> *The AER has not changed its view on the DGM and how useful the information it provides is in forming a point estimate of the market risk premium.* [120]

This is also consistent with the DGM evidence having the same role and receiving the same weight as in the 2013 Guideline.

The AER's recent decisions also reiterate the limitations of the DGM including that:[121]

- DGM estimates can be sensitive to input assumptions (primarily, to the long-run growth rate and the time taken to reach the long-run growth rate);
- The DGM may produce upward-biased estimates in current market conditions because dividends are more stable than earnings, analyst forecasts may be optimistic, dividends may be financed by the issuance of new shares,[122] and there may be a term structure for the required return on equity;[123] and
- The DGM may not accurately track changes in the required return on equity for the market.

All of these concerns were well known by the AER at the time of the 2013 Guideline and none are based on new evidence to have emerged since 2013. All of these issues were considered by the AER during the development of the 2013 Guideline. They are reflected in the AER's development of its preferred specification of the DGM and in the role given to the DGM in the 2013 Guideline. Having undertaken a significant

---

[119] AER, 2013, Rate of Return Guideline, p. 16.
[120] AER, November 2017, APA VTS Final Decision, Attachment 3, p. 3-80. Prior to the 2013 Guideline, during the 2013 Guideline review process, and in subsequent decisions, the AER has received a number of reports from McKenzie and Partington and from Partington and Satchell that point out the known weaknesses of the DGM approach. In its most recent decision, the AER has stated that it has not changed its view on the DGM since the 2013 Guideline.
[121] For instance, APA Final Decision, November 2017, Attachment 3, p. 76 and Appendix D.4.
[122] Although the AER already makes a downward adjustment in the long-term growth rate to account for this, and McKenzie and Partington (2014, p.29) conclude on this point that "it may be less of a problem at the level of the market."
[123] Although the AER specifically considered this point in the 2013 Guideline review and rejected it as being "non-standard." See AER *Rate of Return Guideline: Explanatory Statement*, Appendices, p. 115.

program of work to develop its own DGMs, the AER stated in the 2013 Guideline materials that:

- Whilst it had some concerns about the implementation of the DGM, some of these concerns could (and had been) addressed by a consistent application of the DGM;[124]
- It had identified "robust data" with which to estimate the inputs to its preferred specifications of the DGM;[125] and
- It places "emphasis on DGMs for estimating the MRP",[126] and that it would give "significant consideration to DGM estimates of the MRP."[127]

The AER concluded that:

> *Notwithstanding our concerns about the reliability of certain input assumptions, we consider DGM estimates to have strong theoretical grounding, and that DGM estimates are more likely to reflect prevailing market conditions than other approaches.*[128]

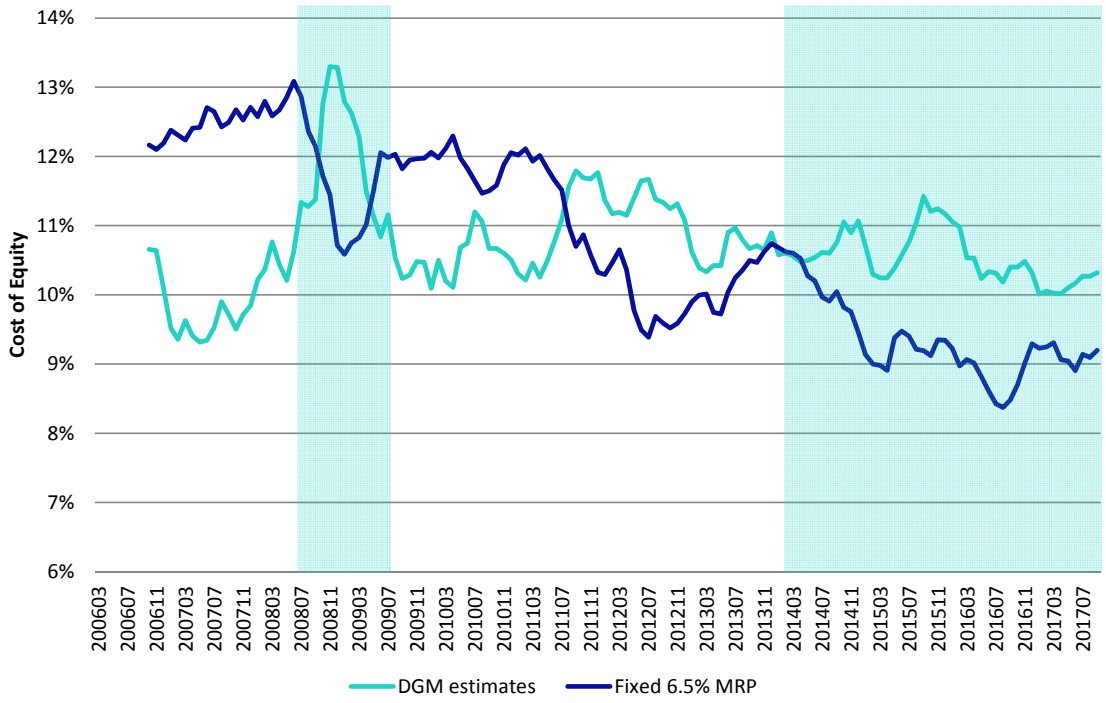
For all of the reasons set out above, ENA submits that the DGM should play the same role in the Foundation Model approach as in the 2013 Guideline.

The evolution of the AER's DGM estimates

The Facilitator Note for Concurrent Evidence Session 2 included a summary of the AER's DGM estimates of the required return on the market, which is shown as Figure 4 below.

[124] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.
[125] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendices, p. 15.
[126] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 96.
[127] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendices, p. 15.
[128] AER, 2013, Rate of Return Guideline: Explanatory Statement, Appendices, p. 85.

Figure 4: AER market cost of equity estimates



Source: Application of AER mid-point two-stage DGM estimates and sum of fixed 6.5% MRP and prevailing 10-year government bond yield.

Figure 43 shows that the AER's DGM estimate of the required return on the market increased during the peak of the global financial crisis (the first shaded region) and has remained relatively stable since the 2013 Guideline (the second shaded area). Indeed, the estimate of the total market return has essentially remained within the 10-11% range since 2013. ENA submits that these estimates are reasonable and plausible.

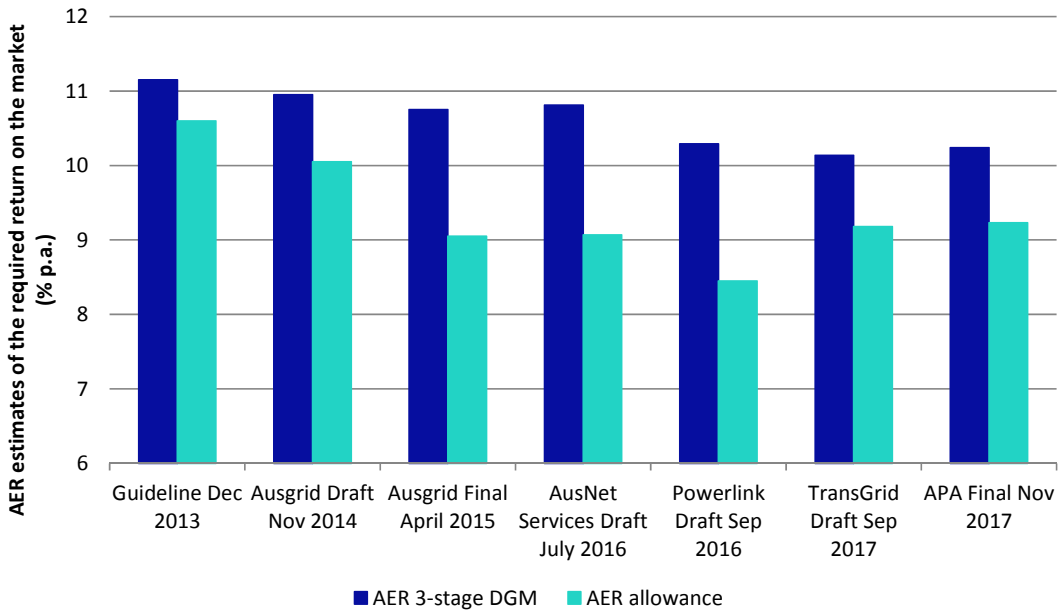
ENA submits that the stable and plausible estimates that have been produced by the AER's DGM approach since the 2013 Guideline provide more support for their continued role in informing the MRP to be used in the Foundation Model approach.

By contrast, the estimates of the total market return that are obtained by adding 6.5% to the prevailing government bond yield are implausible. These estimates suggest that the required return on equity *fell* dramatically during the peak of the GFC, rose as the GFC dissipated, and have continued to fall one-for-one with every change in government bond yields since. The experts have agreed that this is implausible.

Figure 5 below shows that since the 2013 Guideline, the AER's DGM approach has produced more stable estimates of the allowed return on equity than has its approach of applying a fixed MRP of 6.5% to the prevailing risk-free rate. Specifically, between December 2013 and November 2017, the return on equity allowance implied by the AER's three-stage DGM estimates declined by approximately 90 basis points. By contrast, over the same period, the estimated return on equity derived by adding 6.5% to the prevailing risk-free rate fell by around 140 basis points. This is because under the DGM approach, the changes in the risk-free rate tend to be offset partially by an

increase in the MRP estimate. However, under the approach of applying a fixed MRP to the prevailing risk-free rate, the allowed return on equity moves in lock-step with the risk-free rate, all else remaining equal. Thus, the application of material weight to the DGM (at least at the time of each Guideline) results in a more stable allowed return on equity. In the 2013 Guideline materials, the AER recognised that the DGM approach "is expected to lead to more stable estimates of the return on equity than under our previous approach."[129]

Figure 5: Evolution of DGM estimates of the total required return on the market



Source: 2013 Guideline Explanatory Statement Appendices and various AER regulatory decisions.

ENA considers that the DGM approach continues to produce relevant evidence and should have a direct role (along with other evidence currently considered by the AER) in determining the overall MRP estimate. This involves DGM estimates being given material weight in the estimation process, such that historical excess returns evidence does not impose an immutable upper bound on the MRP allowance. Application of such an approach would (as shown in Figure 4 and Figure 5) result in more stable return on equity allowances than the approach of applying a fixed MRP to the prevailing risk-free rate, which tends to be volatile over time. This, in turn, would result in more stable prices for consumers and more stable returns for networks.

ENA reiterates its view that the DGM provides important relevant evidence in relation to the MRP. Nearly all of the concurrent session experts agreed with this view.[130]

[129] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 66.
[130] Joint Experts' Report, Proposition 6.06, pp. 60-61.

ENA also submits that the DGM should be used in a symmetric way over time, consistent with the AER's intention in the 2013 Guideline.[131]

Estimating the long-run growth rate

One of the key parameters in the DGM is the long-run dividend growth rate. This was the subject of detailed consideration by the AER during the 2013 Guideline process and the AER's reconciliation of this issue led to more weight being placed on DGM estimates than in previous AER decisions.

The AER's preferred specification of the DGM for use in its Foundation Model is to begin with an estimate of long-run GDP growth, which is taken to be 5.6% based on long-run real GDP growth of 3% and long-run expected inflation of 2.5%. There appears to be a consensus about the reasonableness of this figure.

The AER's next step is to note that the corporate sector is likely to grow at approximately the same rate as the broader economy. A materially higher growth rate would imply that the corporate sector 'takes over' the economy and a materially lower growth rate implies that the corporate sector vanishes over time. Thus, long-run dividend growth must be linked to the long-run GDP growth rate.

Based on advice from Lally (2013),[132] the AER applied a mid-point deduction of 1% (within a range of 0.5% to 1.5%) to account for "the net creation of shares through (i) new share issuance and (ii) the emergence of new companies."[133] This deduction is said to be based on empirical evidence from Bernstein and Arnott (2003)[134] that the growth of dividends in existing companies is lower than the growth of GDP.[135]

In its 2013 Guideline, the AER rejected the approach of Fitzgerald et al (2013)[136] in which the long-run dividend growth is estimated simultaneously with the required return on equity. This approach has been peer-reviewed and published in a highly-ranked journal. However, it was rejected as being too complex and less common than the approach of separately estimating the long-run growth rate relative to GDP.[137]

The AER's *Market Risk Premium Discussion Paper* mentions a number of alternative approaches to estimating the long-run growth rate.[138] First, the AER notes that some other regulators (e.g., IPART) make no deduction at all from the GDP growth rate. IPART considers five different specifications of the DGM from various sources, none of which make any downward adjustment.

The AER also cites estimates from 'Fenebris,' which is a German web site that provides mechanistic MRP estimates by applying a proprietary model to data from a

---

[131] AER, 2013, Rate of Return Guideline: Explanatory Statement, p. 92.
[132] Lally, M., 2013, *The dividend growth model*, 4 March.
[133] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendices, p. 117.
[134] Bernstein, W. and R. Arnott, 2003, "Earnings growth: The two percent dilution," Financial Analysts Journal, September/October, pp. 47-55.
[135] AER, 2013, Rate of Return Guideline, Explanatory Statement, Appendices, p. 117.
[136] Fitzgerald, T., S. Gray, J. Hall and R. Jeyaraj, 2013. "Unconstrained estimates of the equity risk premium," *Review of Accounting Studies,* 18, on-line release 8 May 2013.
[137] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 70.
[138] AER, 2018, Market Risk Premium Discussion Paper, p. 19.

range of national markets.[139] This work is unpublished and has not been peer reviewed. The Fenebris model produces the MRP estimates set out in Table below, which are clearly implausible. Consequently, ENA submits that the Fenebris estimates should receive no weight.

Table 7: Fenebris MRP estimates

Country	Fenebris MRP estimate
Mexico	1.70%
Brazil	1.80%
South Africa	2.50%
India	1.60%
Indonesia	2.40%

Source: market-risk-premia.com, accessed April 2018.

The *Market Risk Premium Discussion Paper* also refers to an approach that is set out in a set of Powerpoint slides produced by Aswath Damodaran titled "Closure in valuation: The big enchilada" in which the long-run nominal GDP growth rate is set to the 10-year government bond yield. These slides are undated, unpublished and have not been peer reviewed. They also show that, but for a brief period in the 1980s and 1990s when 10-year yields were very high, the actual GDP growth in the US has been *materially higher* than the 10-year government bond yield.[140] ENA submits that this approach should receive no weight for the reasons set out above.

Aside from producing implausible estimates of the MRP and being inconsistent with the observed data, the Fenebris and Damodaran are not appropriate for estimating the long-run growth rate in a multi-stage DGM. This is because they produce long-run growth estimates that vary according to prevailing market conditions. However, in a multi-stage DGM, such as the AER uses, the consensus analyst dividend forecasts capture the information about the prevailing market conditions. The long-run growth parameter is exactly that – the growth in dividends that is expected to occur from some future point in time (10 years from now in the AER's three-stage DGM) into perpetuity. This long-run growth rate – beginning at some point in the future and continuing in perpetuity – is not likely to vary materially with prevailing market conditions. Thus, in a multi-stage DGM the long-run growth rate would be expected to be essentially constant.

In this respect, the long-run dividend growth rate is similar to expected inflation. Short-term forecasts provide information about the prevailing market conditions and expectations over the next 2-3 years, but in the long-run the AER adopts a constant 2.5% mid-point estimate. The long-run (perpetuity) estimate of inflation remains constant even as the short-term prevailing market conditions vary.

[139] Estimates are provided free of charge and the web site has a link to accept donations.
[140] Damodaran, A., Undated, "Closure in valuation: The big enchilada," Slide 5.

The *Market Risk Premium Discussion Paper* also refers to Partington (2015),[141] stating that since the 2013 Guideline:

> *There have been reports which stated that our growth rate may have been above what should be considered suitable for Australia, in the context of long-term growth.*[142]

However, there is no new evidence presented in Partington (2015). Indeed the relevant section notes that:

> *The problems of the dividend growth model have been amply covered in our prior work*[143]

and the discussion then again summarises the reasons for making a deduction to the long-run GDP growth rate.

Finally, the Market Risk Premium Discussion Paper notes that Frontier Economics (2016)[144] examine the basis for the deduction to the GDP growth rate in the Australian context. They note that the evidence to support the deduction from the GDP growth rate is based on analysis of US data that showed that dividend and earnings growth was lower than GDP growth in a sample period form several decades ago. Frontier (2016) summarise more recent evidence from Australia, which shows that corporate earnings growth in Australia has *exceeded* GDP growth for the last three decades.[145] Thus, the reason for the deduction from the GDP growth rate is not present in the recent Australian data.

ENA submits that the Fenebris and Damodaran materials have no useful role to play in the current Guideline process and that the evidence showing that Australian earnings growth has exceeded GDP growth for the last 30 years is relevant evidence when determining the long-run dividend growth rate.

The relative weight to apply to the DGM evidence

In its Market Risk Premium Discussion Paper, the AER notes that DGM approaches indicate that the required return on the market has been relatively stable over recent years even as government bond yields have varied. The Discussion Paper notes that this is inconsistent with a constant market risk premium being applied to the risk-free rate, and implies that this is a problem.[146] However, ENA submits that:

- Far from being a problem, it is a great *strength* of the DGM approach that it *does* produce estimates of the MRP that are not fixed, but which vary over time. During the concurrent evidence session, all experts expressed the view that the MRP *does* vary over time.

---

[141] Partington,. G., 2015, Report to the AER, April.
[142] AER, 2018, Market Risk Premium Discussion Paper, p. 19.
[143] Partington (2015), p. 26.018, Market Risk Premium Discussion Paper, p. 19.
[144] Frontier Economics, 2016, The market risk premium, September.
[145] Frontier Economics, 2016, The market risk premium, September, p. 66.
[146] AER, 2018, Market Risk Premium Discussion Paper, p. 20.

- The whole point of the DGM is to provide evidence of whether the required MRP at the time of a decision differs from the constant long-run historical MRP.
- The *Market Risk Premium Discussion Paper* implies that the DGM evidence might be down-weighted for the reason that it produces MRP estimates that vary over time, or that it should be 'modified' via the Fenebris/Damodaran approach so that it *does* produce a more constant MRP.[147] Aside from the problems with the Fenebris/Damodaran approach set out above, such an adjustment makes no logical sense. If the goal is to only accept evidence that supports a relatively constant MRP, the DGM evidence should just be disregarded in favour of approaches that are known to produce relatively constant MRP estimates.
- The fact that the DGM produces relatively more stable estimates of the required return on equity, that do not vary one-for-one with changes in the risk-free rate, was already well known at the time of the 2013 Guideline and was one of the considerations in the development of the AER's preferred specification. It was also touted as a major *benefit* of the AER's Foundation Model approach to the required return on equity.[148]

The *Market Risk Premium Discussion Paper* also sets out potential reasons for now reducing the weight applied to the AER's DGM estimates.[149] This list consists of:

- Evidence that was before the AER at the time of the 2013 Guideline.[150]
- A term structure approach that the AER has considered and rejected.[151]
- A misinterpretation of a study by Duarte and Rosa (2015), which is explained in some detail in Frontier Economics (2018).[152] Correct interpretation of that study leads to relatively more weight being applied to DGM evidence and relatively less weight being applied to a constant MRP estimate.
- A statement of opinion from Partington and Satchell (2017) that contains no indication of why DGM evidence has become less relevant since 2013:

> *Our sympathies lie with the view that the tendency has been for the market risk premium to fall over time as diversification and risk management has got easier and cheaper, as individuals and populations have got wealthier and as volatility in equity markets has tended to be lower (although there have been relatively short periods of extreme volatility) and this is*

---

[147] AER, 2018, Market Risk Premium Discussion Paper, p. 21.
[148] AER, 2013, Rate of Return Guideline, Explanatory Statement, p. 66.
[149] AER, 2018, Market Risk Premium Discussion Paper, p. 24.
[150] Lally, M., 2013, Review of the AER's proposed dividend growth model.
[151] AER Rate of Return Guideline, Explanatory Statement, Appendices, p. 115. Based on advice from McKenzie and Partington (2014, pp. 36-37) the AER concluded that "…we do not incorporate a term structure into our model because it is non-standard."
[152] See, for example, the Frontier Economics (2017, pp. 94-99) report, available at https://www.aer.gov.au/system/files/Evoenergy%20-%20Rate%20of%20return%20-%20Appendix%208.3%20-%20Frontier%20-%20Low-beta%20bias%20-%20December%202017_Public.pdf.

consistent with lower average realised risk premiums in equity markets from the 1970's onwards.[153]

ENA submits that the only relevant evidence in this list is the Duarte and Rosa (2015) study, which supports *increased* weight being applied to the DGM evidence.

ENA also notes that the US regulator – the Federal Energy Regulatory Commission (FERC) has considered the relevant merits of historical excess returns evidence and DGM evidence (which is referred to as discounted cash flow or DCF analysis in the US setting). FERC notes that:

> *The market risk premium, which is where most CAPM studies diverge, can be estimated either using a backward-looking approach, a forward-looking approach, or a survey of academics and investment professionals. A CAPM analysis is backward-looking if its market risk premium component is determined based on historical, realized returns. A CAPM analysis is forward-looking if its market risk premium component is based on a DCF study of a large segment of the market. In a forward-looking CAPM analysis, the market risk premium is calculated by subtracting the risk-free rate from the result produced by the DCF study.* [154]

FERC accepted an approach that used the DGM approach alone in estimating the MRP and rejected an approach that included some reliance on historical excess returns.[155]

In a subsequent decision, FERC rejected a proposal that did not use the DGM approach to estimate the MRP:

> *The Presiding Judge noted, for instance, that this analysis did not use forward-looking data for its risk premium.* [156]

FERC also noted that:

> *As the Commission found in Opinion No. 531, investors' required risk premiums expand with low interest rates and shrink at higher interest rates. The link between interest rates and risk premiums provides a helpful indicator of how investors' required returns on equity have been impacted by the interest rate environment.* [157]

7.4.4 Wright estimates of the MRP

As we noted in our response to the AER *Issues Paper*:

- The Wright approach is used as a method for estimating the MRP by other regulators including the ERA, QCA, many regulators in the UK (including Ofgem) and the New Zealand Commerce Commission. The Wright approach is not a model, it is an approach to estimating the MRP for use in the CAPM. The

[153] Partington and Satchell, 2017, Report to the AER: Discussion of estimates of the return on equity, April, pp. 18-19.
[154] FERC Opinion 531B, Paragraph 108.
[155] FERC Opinion 531B, Paragraph 118.
[156] FERC Opinion 551, Paragraph 143.
[157] FERC Opinion 551, Paragraph 173.

regulators listed above all use the Wright approach to inform their estimate of the MRP for use in the CAPM formula.

» One of the AER's advisers, Dr Lally, has recommended that the Wright estimate of the MRP should be used to inform the regulatory allowance for MRP.

By contrast, in decisions since the 2013 Guideline, the AER has used the Wright evidence only as a cross-check of the overall return on equity estimate, and has not used the Wright evidence to inform its MRP estimate.

The AER's main objection to using the Wright approach is that it implies a perfect inverse relationship between the risk-free rate and the MRP (provided that the required return on the market remains unchanged). The AER considers this to be an unrealistic assumption.

Whilst a perfect negative relationship between the risk-free rate and the MRP is unrealistic, it is no more unrealistic than the AER's approach since 2013, which has been to apply a perfectly fixed MRP of 6.5% to the prevailing risk-free rate. As noted above, such an approach guarantees that the return on equity allowance will move one-for-one with the risk-free rate. Such an approach produced implausible and unreasonably low estimates of the required return on equity during the GFC, when government bond yields fell sharply.

The AER's approach and the Wright approach are really extreme opposite ends of the same spectrum, in the following sense:

» It is unlikely that movements in the MRP will always offset perfectly movements in the risk-free rate, as implied by the Wright approach.

» However, it is equally unlikely that the MRP remains fixed, regardless of market conditions. Most of the RORG experts agreed with this view.

» The MRP is very likely to change as market conditions change—as the AER and its advisers have acknowledged in the past. Such movements in the MRP are likely to *partially* offset movements in the risk-free rate.

» The resulting return on equity is likely to be less stable than implied by the Wright approach, but more stable than implied by the AER's approach since 2013.

Partington was the only expert to disagree with the proposition that:

> *Experts believe that neither (a) the MRP is constant through time; nor (b) the mean real return to the market is constant, implying that changes in the risk-free precisely offset changes in the MRP. The truth likely likes somewhere in between.* [158]

One practical way of ensuring that the return on equity allowances set by the AER reflect these considerations would be to give equal weight to MRP estimates derived from the Wright approach and from mean historical excess returns. For the avoidance

[158] Joint Experts' Report, Proposition 6.07, p. 61. Graham Partington introduces a distinction between "equilibrium return expectations and returns expected." He also disagrees with placing 100% weight on a total market return estimate, but that is consistent with the proposition.

of doubt, ENA does not submit that the true MRP is a precise weighted average between a Wright estimate and the AER's fixed estimate of 6.5%. However, a point estimate between these two extremes is more likely to be closer to the truth than either extreme is on its own.

In this regard, ENA reiterates the following views set out in our response to the Issues Paper:

- The Wright estimate of the MRP should be used (in combination with estimates derived using other methods) to estimate the MRP, in the same way that it is used by other regulators. This would permit the Wright evidence to have the effect of producing a more stable allowed return on equity, as foreshadowed in the 2013 Guideline – which would be to the benefit of consumers and regulated networks.
- Combining the Wright MRP estimate with an equity beta of 0.4 (to support the conclusion that the allowed return on equity is consistent with the Wright evidence) is neither a fair nor reasonable cross-check.

7.4.5 Geometric means should not be used when assessing historical returns

The AER states in all of its recent decisions that it has regard to both arithmetic means and geometric means, when it evaluates historical excess returns evidence.[159] Geometric means are always lower than arithmetic means over the same dataset.

Dr Lally has considered whether an arithmetic or geometric average should be applied to the historical data. He evaluates whether each form of average is consistent with the NPV=0 principle and concludes that:

> *The geometric mean fails this test whilst the arithmetic mean will satisfy it if annual returns are independent and drawn from the same distribution. So, if historical average returns are used, they should be arithmetic rather than geometric.*[160]

In its recent decisions, the AER has concluded that there may be a bias in the geometric averages.[161]

ENA reiterates the view we expressed in our response to the *Issues Paper* that the geometric average is inappropriate for the purposes of estimating the expected excess return (for the purposes of determining an estimate of the expected return on

---

[159] It is not entirely transparent how the AER makes use of geometric means. In the 2013 Guideline, and in some subsequent decisions, the AER set the lower bound of the MRP range derived using historical excess returns 20 basis points above the highest geometric mean evaluated over five different averaging periods. However, in some other decisions the AER has set the lower bound of this MRP range either equal to, or below, the highest geometric mean. Furthermore, there have been instances in which the lower bound of the range has differed between regulatory decisions, even when the underlying data has not changed. For further discussion on this issue, see Frontier Economics, The market risk premium, December 2017, section 6.3.

[160] Lally (2012 MRP), p. 40.

[161] APA Final Decision, November 2017, Attachment 3, p. 76.

equity), that the geometric average should not be used, and that only the arithmetic average should be used for the purpose of setting an allowed return on equity.

ENA agrees with the view expressed by a number of experts that geometric means have no role unless a return is compounded in some way.[162] Since the return is never compounded in the AER's process or in the PTRM, it would be mathematically inappropriate to place any weight on geometric means.

7.4.6 Minimum length of averaging period for historical excess returns

When assessing historical average returns, the AER's practice has been to examine averages over relatively long historical periods (130 years or more) and relatively short historical periods (from 1988 onwards). An example of this can be seen in Table below, which shows the different averaging periods the AER considered when assessing historical excess returns evidence. The AER seems to give equal consideration to long averaging periods and to short averaging periods when forming its view on the range for the MRP derived using historical excess returns. The AER takes a similar approach when assessing total market returns.

Table 8: Examples of different historical averaging periods considered by the AER in recent decisions

Sampling period	Arithmetic average	Geometric average
1883–2016	6.3	4.9
1937–2016	5.9	4.1
1958–2016	6.4	4.1
1980–2016	6.3	4.1
1988–2016	5.8	4.3

Source: APA Final Decision, November 2017, Attachment 3, Table 3-19

In preparation for the concurrent expert sessions, the AER released a series of discussion papers. The paper that dealt with MRP issues presented the Table below, which adds to the five sub-periods typically considered by the AER the latest 17-year period (i.e., 2000 to 2017).

[162] Joint Experts' Report, Proposition 6.02, pp. 57-58.

Table 7: Examples of different historical averaging periods considered by the AER in recent decisions

Sampling period	Arithmetic average	Geometric average
1883–2017	6.2	4.9
1937–2017	5.9	4.1
1958–2017	6.4	4.1
1980–2017	6.3	4.1
1988–2017	5.8	4.3
2000–2017	5.7	4.0

Source: AER, Market Risk Premium, risk free rate averaging period and automatic application of the rate of return, Discussion paper, March 2018, Table 2.

ENA submits that the AER should use the longest possible averaging periods when assessing historical returns. This is consistent with the most well-known studies that estimate the MRP using historical returns, including:

- Dimson, Marsh and Staunton (DMS), who use returns data from 1900 (118 years, so far) to estimate the MRP for 23 economies;[163]
- Ibbotson and Sinquefield, who used returns data from 1926 to 1974 (48 years) to estimate the MRP for the US. This study was published in 1976, so the authors had used the longest history of data available to them at that time. Presumably, had the study been published later, they would have used even longer historical series;[164] and
- Brailsford, Handley and Maheswaran (BHM), who use returns data from 1883 to 2010 (128 years) to estimate the MRP for Australia.[165] The AER has extended the BHM dataset and uses these data in its assessment of historical returns.

The first two studies use the longest history of data available to estimate the MRP. These studies do not segment the dataset into sub-periods (giving each equal consideration) as the AER does. BHM do segment their full sample into five sub-periods. However, BHM do not "recommend" these as appropriate sub-periods for the purposes of estimating the MRP. In fact, BHM are explicit that they do not seek to claim that their analysis of historical returns (including over different sub-periods) represents a good estimate of the forward-looking MRP:

> *Given the fundamental nature of the ex-ante equity risk premium and the direct relevance it has to practice, our purpose is not to debate the various alternative*

[163] See, for example: Dimson, Marsh and Staunton (2002), *Triumph of the optimists: 101 years of global investment returns*, Princeton University Press; Credit Suisse Global Investment Returns Yearbook 2018.
[164] Ibbotson and Sinquefield (1976), Stocks, bonds, bills and inflation: year-by-year historical returns (1926-1974), The Journal of Business 49(1), pp. 11-47.
[165] Brailsford, Handley and Maheswaran (2012), The historical equity risk premium in Australia: Post-GFC and 128 years of data, Accounting and Finance 52(1), pp. 237-247.

approaches to estimation or whether ex-post historical measures can represent ex-ante expectations, but rather to simply document the historical record.[166]

The key reason for using the longest possible history of returns when estimating this MRP is because such an estimate has a very particular interpretation: it represents the average risk premium an equity investor can expect to earn by buying and holding the market portfolio for a long period of time. In order to obtain a good estimate of this risk premium, it is important that the historical returns series span as many different states of the world as possible. This, in turn means that the returns series should be as long as possible. In other words, the statistical precision of this expected risk premium will increase as the size of the dataset (i.e., the length of the historical series) used to derive the estimate increases.

In addition, when using relatively short averaging periods, individual anomalous years of data (e.g., when sharp increases or reductions in excess returns occurred but were short-lived) become more influential in determining the MRP estimate. An example of such anomalies include the GFC years. The effect of such periods on the MRP estimate are dampened and made less distortionary when the relatively long averaging periods are employed. For the avoidance of doubt, ENA does not advocate that apparently anomalous periods should be deleted from the historical record because:

- It can be difficult to gain agreement between different stakeholders about whether particular periods are in fact anomalous; and
- An investor that buys and holds the market portfolio over the long-run can expect to face such events. In other words, there is no guarantee that similar events will not recur over the relevant investment horizon.

Rather, the appropriate way to deal with such periods is to use the longest possible averaging period. Such an approach would put any anomalous periods in the proper historical context.

Most of the concurrent session experts agreed that any assessment of historical excess returns should only employ historical periods of 50 years or more, because shorter periods do not provide sufficient evidence to make a reliable assessment of the MRP.[167]

ENA endorses the view of the majority of the RORG experts that the AER should use a minimum of 50 years of historical returns to derive estimates of the MRP. Shorter averaging periods are unlikely to produce reliable estimates, and therefore should not be used by the AER.

[166] Brailsford, Handley and Maheswaran (2012), The historical equity risk premium in Australia: Post-GFC and 128 years of data, Accounting and Finance 52(1), p. 238.
[167] Joint Experts' Report, Proposition 6.05, pp. 59-60.

8 The value of imputation tax credits

Summary

- In the context of the AER's stated objective of an incremental review, ENA accepts that the AER's 'utilisation' or 'cash flow' interpretation of gamma will be used.
- The AER's cash flow interpretation of gamma is that "the value of imputation credits within the building block revenue framework is an estimate of the expected proportion of company tax which is returned to investors through utilisation of imputation credits."
- This implies that the goal is to determine the proportion of company tax paid by the BEE that is returned to investors in the BEE through utilisation of imputation credits, which in turn requires:
  - An estimate of the distribution rate for the BEE:
    - ENA submits that the Lally 20-firms approach is not appropriate because:
      - The firms in question are not representative of either of the relevant characteristics of the BEE, being that it is a highly-levered, capital intensive firm providing access to its infrastructure assets operating wholly within Australia.
      - The approach is affected by the general problem of the difficulty of estimating the distribution rate for an individual firm.
      - A number of issues and inconsistencies relating to the Lally estimates have been identified and are not yet resolved.
  - An estimate of the extent to which BEE shareholders are able to redeem the credits that they receive. This would require an assessment of the assumed composition of the shareholder base of the BEE, which work is yet to be performed.
- The proportion of company tax paid by the *average firm* that is returned to *its* investors through utilisation of imputation credits might be estimated as a relevant reference point. This quantity can be estimated in two ways:
  - ATO tax statistics provide a direct estimate of this quantity. ENA submits that the items in the ATO data base that are required for this calculation are reliable. The current estimate from this approach is 0.34.
  - The alternative is to take the product of:
    - The distribution rate for the average firm, which can only be narrowed down to a range of 50% to 70% in the ATO data.
    - The equity ownership proportion, which is problematic for many reasons including:

- It does not account for the 45-day Rule or any other reason why a credit distributed to a resident investor might not be redeemed, so overstates the quantum of credits redeemed.
- It is based on survey data collected by the ABS which requires filtering and adjustment to "clean" the data.
- It is the subject of express data quality warnings by the ABS.
- The recent update of the data conducted by the ABS increases the level of concern in relation to this estimate because:
  - The method for compiling the data has not changed. There is still the same reliance on survey responses, there is still the same mis-match between components of the data, and there are still the same problems with estimating the market value of equity for some sectors.
  - The historical estimates for some sectors have changed materially in the update. The fact that an historical number can be materially changed almost 20 years after the event is clearly troubling. This is especially so when the change is not based on new data, but rather the application of different assumptions for how the same data should be processed into an estimate.
  - The revision to the estimates is based on a 'backcasting' exercise whereby estimated splits between domestic and foreign equity from recent data is 'backcasted' to the historical data, replacing the estimates that were made at the time the historical data was collected.
  - The revised estimates result in very little volatility in the estimates for listed equity and more volatility in the estimates for all equity, when the reverse would be expected ex ante.
  - The plausible impact of the GFC that was evident in the 2014 data has now been removed in the 2017 revision. That is the GFC impact has now been removed from the historical record.

- ENA submits that the best available estimate of the company tax paid by the average firm that is returned to its investors through the utilisation of imputation credits is the ATO estimate of 0.34. ENA considers the reliability of that direct estimate to be materially higher than the indirect upper bound estimate compiled as the product of a distribution rate and equity ownership proportion.
- ENA submits that the best available estimate of the company tax paid by the BEE that is returned to *its* investors through the utilisation of imputation credits will depend on the assumption about the composition of the shareholder base of the BEE, which work is yet to be performed.

8.1 The interpretation of the "value" of imputation credits

In the 2013 Rate of Return Guideline process, ENA submitted that the value of imputation credits (gamma) should be interpreted as the market value of imputation credits – the amount that investors would be prepared to pay for credits if they could be traded in a separate market.

In the context of the AER's stated objective of an incremental review, ENA accepts that the AER's 'utilisation' interpretation of gamma will be used. In this regard, in the 2013 Guideline materials, the AER stated that:

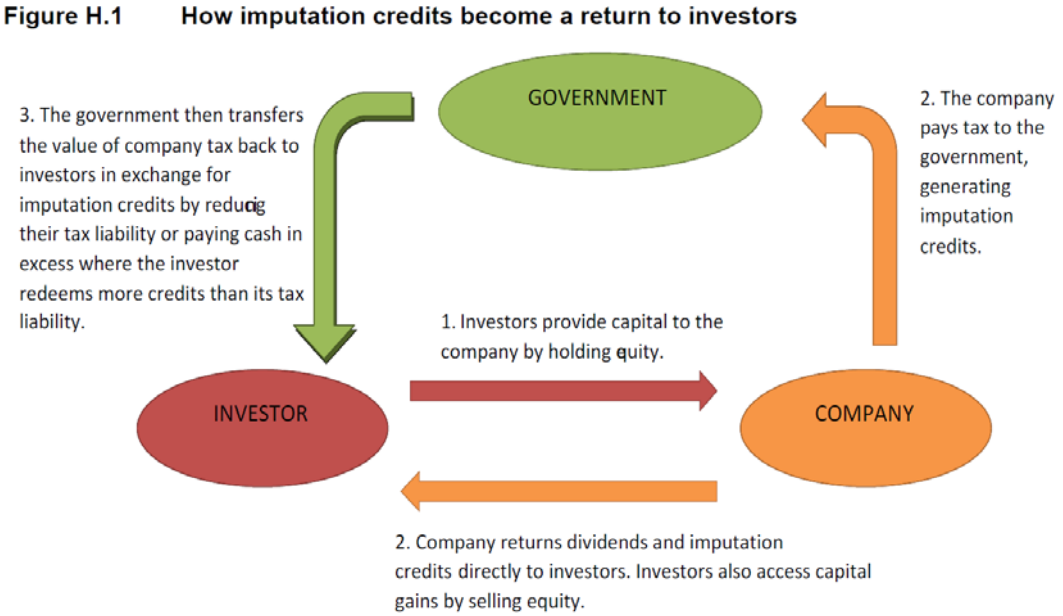
> *We propose that the value of imputation credits within the building block revenue framework is an estimate of the expected proportion of company tax which is returned to investors through utilisation of imputation credits.*[168]

In the AER's recent concurrent evidence sessions, the experts agreed that the AER's approach to gamma is not consistent with any equilibrium asset pricing model.[169] Consequently, there is no model or theory to guide the estimation. Rather, gamma is simply defined to be the proportion of company tax which is returned to investors through the utilisation of imputation credits.

The AER's definition of gamma, and the basis for it, seems to imply that what is relevant is the proportion of company tax paid by the BEE that will be redeemed against the personal tax obligations of investors in the BEE. Indeed the AER documents this 'cash flow' interpretation of gamma in the 2013 Guideline, as shown in Figure 6 below. The AER demonstrates that it is the ability of investors in the BEE to redeem credits that underpins its new definition of gamma.

[168] Brailsford, Handley and Maheswaran (2012), The historical equity risk premium in Australia: Post-GFC and 128 years of data, Accounting and Finance 52(1), p. 238.
[169] Joint Experts' Report, Proposition 7.02, pp. 69-70. Jim Hancock states that the AER's approach is consistent with "a model in which those who redeem credits fully value them and those who don't place zero value on them." However, this is just a restatement of the AER's approach. There is no model that produces such an outcome in equilibrium.

Figure 6: AER 'cash flow' interpretation of gamma



Source: AER, December 2013, Rate of Return Guideline, Explanatory Statement Appendices, Figure H.1, p. 143.

In this case, the 'utilisation' interpretation of gamma would require information about the equity ownership structure of the BEE. This issue has not yet been addressed by the AER, so could be considered as part of a small separate process.

8.2 The framework for estimating gamma under the 2013 Guideline definition

ENA submits that gamma should be estimated in a way that is consistent with its interpretation/definition. When gamma was defined to be the market value of credits, it was straightforward to estimate it using market prices (in the same way that all other WACC parameters are estimated). However, gamma must now be estimated in a way that is consistent with its new definition of being the proportion of company tax paid by the BEE that is returned to investors by utilisation of imputation credits.

ENA submits that the following process should be followed to ensure that the estimate of gamma is consistent with the new 'cash flow' interpretation:

Step 1: Determine whether and explain why:

i. Gamma is based on a market-clearing weighted-average utilisation rate, as would be the case under an equilibrium asset pricing model; or

ii. Gamma is the proportion of company tax paid by the BEE that is returned to investors by utilisation of imputation credits.

Step 2: If (in Step 1) the Guideline determines that gamma *is* derived from an equilibrium asset pricing model, the relevant model should be

identified in order to determine how the weighted-average utilisation calculation should be performed in the estimation of gamma.

However, if (in Step 1) the Guideline determines that its interpretation of gamma is *not* consistent with any equilibrium asset pricing model, the concept of the weighted-average utilisation rate is irrelevant.

Step 3: If (in Step 1) gamma is considered to be the proportion of company tax paid by the BEE that is returned to investors by utilisation of imputation credits, the Guideline should determine whether and explain why:

iii. It seeks to estimate the proportion of company tax paid by the BEE that can be used by the shareholders of the BEE to reduce their personal taxes; or

iv. It seeks to estimate the proportion of tax paid by the average Australian firm that can be used to reduce personal taxes for the average Australian investor.

Step 4: If (in Step 3) the Guideline determines that it seeks an estimate of the proportion of tax paid by the average Australian firm that can be used to reduce personal taxes, the best estimate is the 34% figure from the ATO data. That data directly estimates the ratio of credits redeemed to credits created for the average Australian firm (see below).

Step 5: If (in Step 3) the Guideline determines that it seeks an estimate of the proportion of company tax paid by the BEE that can be used by the shareholders of the BEE to reduce their personal taxes, it would need to make an assumption about the structure of the shareholder base of the BEE, which work is yet to be performed.

Under the AER's 'cash flow' interpretation of gamma there would appear to be no basis for multiplying (a) the quantum of credits distributed by the BEE to shareholders of the BEE, and (b) the proportion of credits that can be redeemed by some *other* group of shareholders.

8.3 Approaches for estimating 'the proportion of tax paid by the *BEE* that is returned to investors via the utilisation of imputation credits'

The proportion of company tax paid by the BEE that ends up being returned to investors via their redemption of imputation credits is computed via the product of:

- The proportion of credits created by the BEE that are distributed to shareholders of the BEE (the BEE distribution rate); and
- The proportion of those distributed credits that are redeemed (the BEE utilisation rate).

The BEE distribution rate

The concurrent session experts have agreed that it is very difficult to reliably estimate the distribution rate for the BEE for two reasons:

- There are very few firms that have the relevant characteristics of the BEE:
  - A highly-levered, capital intensive firm providing access to its infrastructure assets; and
  - Operating wholly within Australia; and
- Even after identifying the relevant firms, it is very difficult to reliably estimate the distribution rate for any firm due to the need to control for the individual circumstances. For example, the estimated distribution rate for AMP is materially affected by a tax ruling in relation to an historical tax payment and the estimate for BHP Ltd is materially affected by its dividend equalization scheme in relation to BHP Plc.

One approach that has been proposed for estimating the distribution rate for the BEE is the Lally 20-firms approach. However, there are a number of problems with this approach:

- The firms in question are not representative or have the relevant characteristics of the BEE.
- The approach is affected by the general problem of the difficulty of estimating the distribution rate for an individual firm, as set out above.
- A number of issues relating to the Lally estimates have been identified including:
  - The inability to reconcile the estimates of dividends paid.
  - The inconsistent use of group and parent figures.
  - No explanation of exchange rate conversions.
  - Material change in company structure over time not accounted for.
  - Some figures inconsistent with annual reports.

ENA submits that the 20-firms approach does not provide an estimate of the distribution rate for the BEE and should not be used for any purpose until its apparent shortcomings can be properly assessed.

All experts agreed with the proposition that:

> *The distribution rate (which is a firm-specific parameter) should be set by defining a BEE and then estimating the distribution rates of firms that accord or approximately accord with that definition.*[170]

The BEE utilisation rate

As noted above, the BEE utilisation rate requires an assumption about the structure of the shareholder base of the BEE, which work is yet to be performed.

---

[170] Joint Experts' Report, Proposition 7.04, p. 71.

8.4 Approaches for estimating 'the proportion of tax paid by the *average firm* that is returned to investors via the utilisation of imputation credits'

The ATO tax statistics approach

The proportion of tax paid by the average firm that is returned to investors via the utilisation of imputation credits can be estimated directly using the ATO tax statistics approach. This approach uses aggregate tax statistics data published by the ATO to calculate the proportion of tax paid that is returned to investors as the ratio of *credits redeemed* to *credits created* over the Australian market. Under this approach:

$$\gamma = \frac{Credits\ Redeemed}{Credits\ Created}$$

where the numerator is the total amount of credits redeemed against personal tax obligations and the denominator is total corporate tax paid over the relevant period.

The ATO has previously raised concerns about using the ATO tax data to estimate "Credits Distributed,' but that figure is not required to estimate a 'utilisation' gamma, as set out above. The AER's concerns in this regard are said to stem from earlier work by Hathaway (2013).[171] However, Hathaway has since noted that, because the estimate of gamma does not require a separate estimate of Credits Distributed, he considers it to be perfectly reliable:

> *The Company Tax item is the total company tax collected by the ATO during the relevant period and the Credits Redeemed item is the total amount of credits redeemed via the filing of personal tax returns. These two data items are 100% reliable as they are figures that relate directly to ATO tax collections. There is no reason to question the ATO's records of the amount of corporate and personal tax it has collected.*[172]

Hathaway (2017) goes on to conclude that the ATO tax statistics can "clearly"[173] be used to provide a reliable utilisation estimate of gamma.

The AER has recently published a note summarising some discussions that the AER has had with ATO staff in relation to the reliability of ATO tax statistics.[174] This note raises a number of points, all but one of which relate to explanations for why the 'FAB' and 'dividend' methods provide different estimates for 'Credits Distributed.' That is, they relate to the one element of the tax statistics that is not needed to estimate gamma. These points simply confirm that the reason it is difficult to estimate 'Credits Distributed' from the ATO data is that the ATO has no need for that item. 'Credits

---

[171] Hathaway, N., 2013, "Franking credit redemption ATO data 1988 to 2011," Capital Research, September.
[172] Hathaway (2017), p. 1.
[173] Hathaway (2017), p. 2.
[174] https://www.aer.gov.au/system/files/AER%20-%20Staff%20note%20on%20tax%20data%20-%20 March%202018.pdf.

Distributed' is an "informational" field that is not needed for any tax calculation. In this respect, the AER's note adds no new information – it was already well known that:

» There are issues with estimating the distribution rate from ATO data – the estimate can only be narrowed down to a range of 50 to 70%; and

» The distribution rate is not needed to estimate gamma from the ATO data.

The only item in the AER's note that *could* affect the estimation of gamma is Point 4 in that note, which notes that the estimate of gamma could be affected by non-resident companies paying tax in Australia which do not generate franking credits. However, this effect is stated to be "small." Common sense provides an explanation why the effect would be small – any non-resident company paying a material amount of company tax in Australia could simply establish a domestic subsidiary, pay the same amount of tax, but obtain the benefits of imputation credits.

For the reasons set out above, ENA submits that the ATO tax statistics approach provides a reliable and direct estimate of the proportion of company tax paid by the average Australian firm that will be returned to investors via the utilisation of imputation credits. ENA notes that the most recently available ATO estimate is 0.34.

The 'equity ownership' approach

The proportion of tax paid by the average firm that is returned to investors via the utilisation of imputation credits can also be estimated as the product of:

» The distribution rate for the average firm; and

» The AER's equity ownership estimate of the proportion of distributed credits that are available to be redeemed.

$$\gamma = \frac{Credits\ Distributed}{Credits\ Created} \times \frac{Equity\ owned\ by\ residents}{Total\ equity}$$

$$= Distribution\ rate \times Domestic\ equity\ proportion$$

There are two problems with this approach:

» The distribution rate is difficult to estimate (the great advantage of the ATO approach being that there was no need to separately estimate this quantity). The ATO data can only be used to narrow down the range to 50% to 70%.

» There are material questions about the reliability of the equity ownership estimate, including:

1. The equity ownership approach does not factor in the operation of the 45-day Rule or any other reason why a credit distributed to a resident investor might not be redeemed, so is overstated to that extent.
2. The equity ownership estimates are based on survey data collected by the ABS which requires filtering and adjustment to "clean" the data. It is the subject of express data quality warnings by the ABS. Since the ABS data are collected through surveys of samples of taxpayers, the equity ownership estimates are subject to sampling error and, unlike the ATO tax statistics estimates, represent very indirect estimates of gamma under a utilisation rate interpretation.

3. In its *Gamma Discussion Paper*, the AER has noted that the ABS has revised the figures on which the AER's equity ownership estimates are based. The problems that are evident, even in the updated data, include:
    - The method for compiling the data has not changed. There is still the same reliance on survey responses, there is still the same mis-match between components of the data, and there are still the same problems with estimating the market value of equity for some sectors.
    - The historical estimates for some sectors have changed materially in the update. The fact that an historical number can be materially changed almost 20 years after the event is clearly troubling. This is especially so when the change is not based on new data, but rather the application of different assumptions for how the same data should be processed into an estimate.
    - The revision to the estimates is based on a 'backcasting' exercise whereby estimated splits between domestic and foreign equity from recent data is 'backcasted' to the historical data, replacing the estimates that were made at the time the historical data was collected.
    - The revised estimates result in very little volatility in the estimates for listed equity and more volatility in the estimates for all equity, when the reverse would be expected *ex ante*.
    - The plausible impact of the GFC that was evident in the 2014 data has now been removed in the 2017 revision. That is the GFC impact has now been removed from the historical record.

ENA submits that the recent information released by the ABS raises more questions about the reliability of the equity ownership estimates than were apparent at the time of the 2013 Guideline. Accordingly, ENA submits that this data should receive relatively less weight.

8.5 Conclusions on the estimate of gamma

ENA submits that the best available estimate of the company tax paid by the average firm that is returned to its investors through utilisation of imputation credits is the ATO estimate of 0.34. ENA considers the reliability of that direct estimate to be materially higher than the indirect upper bound estimate compiled as the product of a distribution rate and equity ownership proportion.

ENA submits that the best available estimate of the company tax paid by the BEE that is returned to *its* investors through utilisation of imputation credits will depend on the assumption about the composition of the shareholder base of the BEE, which work is yet to be performed.

9 RAB multiples and financial performance measures

Summary

» ENA submits that RAB multiples have no useful role to play in estimating any rate of return parameter. This is primarily because:
  - It is impossible to extract reliable information about required returns from any RAB multiple.
  - Even if information about required returns could be extracted from RAB multiples, that information would reflect the buyer's view about the allowed return over the long life of the asset, not just the remaining time in the current regulatory control period.
  - Asset sales occur very infrequently and only reflect information available at the time of the transaction.
  - Every asset has unique characteristics, so it would be unreliable to extrapolate information from a single transaction across the entire industry.
» ENA submits that profitability metrics have no useful role to play in estimating any rate of return parameter. This is primarily because:
  - There is no clear link between historical profitability metrics and any rate of return parameter.
  - Historical profitability metrics are not relevant in the context of a forward-looking incentive regime.
  - Any consideration of profitability metrics must be performed on a like-with-like basis. A large number of factors can affect the measured profitability of firms. Comparisons across firms can be misleading if these factors differ materially between businesses.
  - A number of profitability measures have significant weaknesses. The consideration of profitability measures should recognise and reflect these limitations.
» ENA submits that RAB multiples and profitability metrics have no useful role in the Rate of Return Guideline process.
» ENA submits that the potential use of financeability assessments should be considered as part of the Rate of Return Guideline process. Their role would be to ensure that the allowed return is sufficient to support the credit rating that was assumed in deriving that allowed return.

9.1 The role of RAB multiples

ENA considers that RAB multiples, derived from transactions involving NSPs, have no useful role to play in estimating any rate of return parameter because:

- There are myriad reasons why a transaction may occur at a RAB multiple other than 1, as identified in Biggar (2018).
- It is impossible to separately quantify the effect of every element that is relevant to the price that was paid for the transaction. Consequently, it is impossible to reliably reverse-engineer the effect of the allowed return on equity.
- Even if it was possible to isolate the impact of the allowed return on equity, the assets in question have very long lives. Consequently, the return that investors expect to receive in future years has a much greater impact than the return that investors will receive over the remainder of the current regulatory control period.
- Relevant transactions occur very infrequently. A transaction that occurred several years earlier would, at best, provide information relevant at that time and would not be relevant to current market conditions.
- Every transaction is unique, so it would be wrong to extrapolate from one particular transaction across the entire industry. For example, a particular transaction may involve a high RAB multiple because the company in question has relatively high opportunities for unregulated investment or efficiency improvements. It would be wrong to reduce the allowed return for all firms in the industry as a result of the inappropriate extrapolation of this evidence.

The majority of concurrent expert session participants agreed with the proposition that:

> *It is not practicable for observations of EV/RAV multiples to be decomposed in order to draw inferences as to the rate of return required by the market and used by the AER in the process of setting the ROR.* [175]

9.2 Role of historical profitability metrics

ENA submits that historical profitability metrics have no useful role to play in estimating any rate of return parameter because:

- There is no clear link between historical profitability metrics and any rate of return parameter.
- Historical profitability metrics are not relevant in the context of individual determinations under the current regulatory framework. The National Electricity and Gas Laws are based on a forward-looking incentive regime, which requires forward-looking estimates of efficient forward costs.
- Any consideration of profitability metrics must be performed on a like-with-like basis. A large number of factors can affect the measured profitability of firms. Comparisons across firms can be misleading if these factors differ materially between businesses.

[175] Joint Experts' Report, Proposition 4.02, pp. 35-36. Graham Partington disagreed with the statement, but provided no explanation as to why. David Johnstone considered the list of factors that affect RAB multiples to be "esoteric reasons/excuses for why RAB multiples 'should be' greater than one."

» A number of profitability measures have significant weaknesses. The consideration of profitability measures should recognise and reflect these limitations.[176]

ENA notes that the AER is already conducting a separate process in relation to profitability metrics. Since they have no role in the estimation of any rate of return parameter, they should not be considered as part of the Rate of Return Guideline, but rather through the separate network profitability process.

ENA would be pleased to consider the proper role of RAB multiples and other measures through the joint ENA-CRG committee, with a view to making subsequent recommendations to the AER.

In this regard, ENA notes that all but one of the concurrent session experts agreed with the proposition that:

> *Ex post firm-specific profitability data contains no information that assists in estimating the rate of return required by the market.* [177]

9.3 Role of financeability assessments

ENA submits that the potential use of financeability assessments should be considered as part of the Rate of Return Guideline process:

» Financeability assessments involve testing whether the regulator's proposed revenue allowances would, or would likely, result in a material and sustained deterioration in the creditworthiness of an efficient benchmark business. In practice this would entail using the cash flows implied by the proposed revenue allowance to compute standard credit metrics (which are used by rating agencies and financiers to assess credit performance) for the network in question, and then comparing those metrics to a set of benchmark metrics for businesses of the target credit rating.[178]

» Financeability assessments are used routinely by a number of regulators in the UK (e.g., Ofgem and Ofwat) and some regulators in Australia (e.g. IPART and ESC) as a cross-check of their regulatory decisions.

» Evidence of a sustained deterioration in credit quality/financeability could result in networks being unable to refinance or raise new debt on reasonable terms. This, in turn, would undermine the business's ability to attract the capital required to make efficient investments. At the present time, the AER has no way of detecting such potential problems.

---

[176] As a general principle, the further below the level at which interest and tax are deducted, the more the measures must rely upon arbitrary assumptions about cost and revenue allocation from corporate accounts to the regulated asset level, and the less reflective they are of the actual returns to the relevant stakeholders.

[177] Joint Experts' Report, Proposition 4.01, p. 35. David Johnstone considered that such information could be used as the basis for the adoption of "a different and possibly simpler and more transparent framework (e.g. CPI increases only" or for a re-setting of WACC parameters "to achieve a realistic level of 'good' regulation."

[178] Examples of these metrics include (amongst others): the interest cover ratio; funds from operations (FFO) interest cover; FFO to net debt; debt service coverage ratio.

- The solution to a financeability problem is not necessarily an increase in the allowed rate of return. Regulators in other jurisdictions have typically addressed financeability problems by re-profiling regulated cash flows from future periods. However, the identification of a financeability problem could also indicate that certain components of the network's revenue allowance have been set too low (i.e., if the cash flows generated are too low to comfortably meet the business's debt obligations).

Attachment A – Stakeholder feedback summary

Following are key themes and comments received during engagement since the AER *Issues Paper* by Energy Networks Australia and its members that are relevant to the Rate of Return Guideline review. This particularly draws on perspectives offered in the ongoing engagement with the AER Consumer Reference Group.

Themes	What we heard?	ENA Response
Electricity prices	Electricity prices are too high and consumers feel like they are suffering as a result.	Networks have sought through participation in the review process to ensure energy prices are no more than necessary. In particular we have sought to ensure our approach supports a rate of return that is no more than necessary to attract and retain necessary investment, and provides sustainable returns for the networks.
Consumer risks	Rate of return decisions and network proposals need to take account of consumer risks of volatility and price impacts	As above. See also 'reducing avoidable volatility' below. ENA is proposing an incremental review and retaining the current trailing average cost of debt approach, supporting reduced price volatility and price impacts (see for example Section 1.7).
Rate of Return	Regulated rates of return are too high and do not seem to be justified.	Rates of return have fallen significantly since the last guideline. Decisions on future rates of return will need to draw on relevant available evidence, which ENA discusses in Section 3. ENA and the AER Consumer Reference Group also plan to undertake further joint work to provide further evidence to the AER and stakeholders on this question.

Exercise of regulatory discretion	Where the AER has exercised its discretion on rate of return issues in the past, this has tended to be exercised in favour of promoting investment	ENA's approach seeks an outcome consistent with the long-term interests of consumers, and transparency in how the AER exercises its discretion and undertakes its rate of return task. This goal is best met by the AER targeting the best estimate taking into account all relevant evidence. ENA's submission to the COAG Energy Council on the binding rate of return guideline legislation also put forward this position.
Reducing avoidable volatility	Where consistent with consumer outcomes, volatility in the rate of return should be minimised	Agree. ENA and the AER Consumer Reference Group jointly support the AER's proposals in this regard around the cost of equity averaging period (See Section 1.1)
Transparency	Consumers are seeking transparency in data used and methodologies for selecting values from available data	Agree. ENA and the AER Consumer Reference Group have provided agreed joint guidance in this regard to the AER.
Information for consumers and all stakeholders in future reviews	There are strong benefits in ensuring consumers and all stakeholders are in a stronger informational position to be able to judge the consistency of outcomes with the long-term interests of consumers (e.g. profitability, reliability, network pricing outcomes).	Agree. For this reason Energy Networks Australia has supported the development of the AER's proposed network profitability reports, and performance reporting more broadly. ENA and the AER Consumer Reference Group have also discussed potential future work to build a suite of such metrics.

Information for consumers	Information needs to be clear and concise and made more accessible for broader (non-technical) stakeholders. Suggest Energy Networks Australia develops a brief 2-page document that summarises the key highlights of its submission in clear, plain English language. Development of the following documents would also be useful for broader stakeholders: - A brief (2-page) consumer overview of the rate of return - A brief consumers' guide to the rate of return	Documents are in preparation. The Consumers' Guide to the rate of return may be a longer document (about 10 pages) which identifies the key issues relevant to each input parameter to the rate of return.
Engaging with consumers and other stakeholders	Continue to engage stakeholders on submissions. This is an important part of the process.	ENA has and will continue to engage with its stakeholders, consistent with its Stakeholder Engagement Approach for the Rate of Return Review.