Rate of Return Instrument

Review discussion paper

August 2025

AUSTRALIAN ENERGY REGULATOR

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1 Introduction

The AER exists to ensure energy consumers are better off, now and in the future. Consumers are at the heart of our work, and we focus on ensuring a secure, reliable and affordable energy future for Australia as it transitions to net zero emissions.

This discussion paper commences the AER's 2026 Rate of Return Instrument (RORI) review. Under the National Electricity Law (NEL) and National Gas Law (NGL), the AER is required to review the RORI every four years. The RORI specifies how the AER will determine the allowed rate of return on capital invested in regulated electricity and gas networks which commence their regulatory period during the four-year period following its release. It specifies the way to calculate the rate of return on capital and value of imputation credits, expressed as mathematical formulae, and how we will obtain inputs for those formulae. The return on capital influences network revenues and, ultimately, the prices paid by consumers.

In February 2023, we made the 2022 RORI following an extensive stakeholder consultation and engagement process.[1] The 2022 RORI evolved from the 2018 RORI which was similarly engagement intensive. In the 2022 RORI review, we made decisions on a range of important issues following extensive consultation, modelling and expert review. In that review, we identified six key topics where stakeholder views and expert opinions differed. These topics, as listed below, were identified as the most significant and contested issues in the review, both in terms of stakeholder interest and their potential impact on the overall rate of return:

- term of the return on equity
- market risk premium
- use of our industry debt index
- cross-checks of the overall rate of return
- equity beta
- weighted trailing average return on debt.

We settled on a position for each of these topics in the 2022 RORI.[2] Based on the evidence available at the time, we considered most of these topics to be largely settled. For the 2026 RORI review, we are not proposing to revisit all of these topics given extensive past research and analysis. Instead, we propose to continue targeted work on two of these topics: equity beta and the potential use of a weighted trailing average for the return on debt. This reflects the recommendations of the 2022 Independent Panel, past stakeholder feedback, and our own view that further consideration is warranted in light of evolving market conditions.[3]

These two topics form the focus of this discussion paper, which marks the commencement of our 2026 RORI review. It forms part of our initial engagement for the 2026 RORI review,

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1 AER, *AER delays 2022 Rate of Return Instrument until February 2023*, 14 November 2022.

2 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023.

3 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 19 and p. 23; AER, *Rate of Return Instrument – 2026 Review process paper*, 28 March 2025, pp. 6-7 and p. 10.

building on previous RORI reviews and stakeholder engagement. We invite stakeholder input on the proposed areas of focus and our approach to further analysis.

The RORI has matured over successive review cycles. This provides a stable foundation for a more targeted and efficient approach in the development of the 2026 RORI. This approach aims to deliver a less onerous, but more efficient and effective, process for all interested parties.

In addition to the above two issues, we also intend to consider reintroducing the Reserve Bank of Australia's (RBA) yield curve using alternative swap data, as its use was discontinued after the 2022 RORI was implemented.

We are interested in stakeholder views on these topics, and any other issues that may warrant further analysis, as part of the 2026 RORI review, particularly where new theoretical or empirical evidence has emerged.

The remainder of this paper is structured as follows. Chapter 2 outlines the legislative requirements for RORI reviews under the NEL and NGL. Chapter 3 sets out our decision-making framework. Chapter 4 recaps the decisions we made on the six key topics identified in the 2022 RORI review. Chapter 5 presents detailed information on the key topics we have identified where further work is underway and outlines potential directions for analysis and engagement to support the making of a robust and evidence-based 2026 RORI.

1.1 Invitation for submissions

Interested stakeholders are invited to make a submission on this discussion paper by 5pm **28 November 2025**.

We will also hold an online public forum on the discussion paper on **26 August 2025**. Interested stakeholders can register their attendance here.

Submissions on the discussion paper should be sent to RateOfReturn@aer.gov.au and addressed to Gavin Fox, General Manager Network Pricing. Alternatively, you can mail submissions to GPO Box 3131, Canberra ACT 2601.

Submissions should be in Microsoft Word or another text readable document format.

We prefer that all submissions be publicly available to facilitate an informed and transparent consultative process. We will treat submissions as public documents unless otherwise requested.

Parties wishing to submit confidential information should:

1. Clearly identify the information that is the subject of the confidential claim.

2. Provide a non-confidential version of the submission in a form suitable for publication.

All non-confidential submission will be published on our website

1.2 Review timeline

Key milestones and indicative dates for the 2026 RORI review are presented in Table 1.

Table 1: Key milestone and indicative dates for the 2026 RORI review

Key milestone	Indicative date
2026 RORI review process paper – published (for information)	28 March 2025
2026 RORI discussion paper – published (submissions invited)	4 August 2025
Public forum on AER discussion paper	26 August 2025
Eligible Experts' report – publish (submissions invited)	Late-October 2025
Submissions close on AER discussion paper and Eligible Experts' report	28 November 2025
Draft 2026 RORI & Explanatory Statement – publish (submissions invited)	**April 2026**
Public forum on draft 2026 RORI	April 2026
Independent Panel's report – publish (for information)	June 2026
Submissions close on draft 2026 RORI & Explanatory Statement	June 2026
Final 2026 RORI & Explanatory Statement – publish	**December 2026**

2 Legislative requirements

The RORI is made under the NEL and NGL, which provide the legal framework that the AER must follow in each RORI review.[4]

The RORI is legally binding on the AER when performing its economic regulatory functions and applies to regulated electricity and gas networks when the AER makes regulatory determinations.[5]

Under the NEL and NGL, the AER must include in the RORI:

- how the return on capital is to be calculated
- the value of imputation credits (or the way to calculate the value).

The AER may only make a RORI if satisfied that it will, or is most likely to, contribute to achieving the National Electricity Objective (NEO) or National Gas Objective (NGO) to the greatest degree.

The NEO and NGO (respectively) aim to promote efficient investment in, and operation and use of, energy services for the long-term interests of consumers, with respect to:

(a) Price, quality, safety, reliability and security of supply of electricity or covered gas;
(b) The reliability, safety and security of the national electricity system; and
(c) The achievement of targets set by a participating jurisdiction –
    (i) For reducing Australia's greenhouse gas emissions; or
    (ii) That are likely to contribute to reducing Australia's greenhouse gas emissions.

As such, the NEO and NGO promote the efficient use of, and investment in, infrastructure.

In making the RORI, the AER must have regard to the revenue and pricing principles (RPPs),[6] which include ensuring service providers have a reasonable opportunity to recover efficient costs, and that pricing promotes efficient use of, and investment in, infrastructure. The AER must also have regard to:

(a) Advice, recommendations or submissions given by a Consumer Reference Group (CRG);
(b) Submissions made in response to initial consultation, and the report on the outcomes of seeking expert opinions or advice;
(c) Submissions made in response to the draft instrument; and
(d) The report given by the Independent Panel.

4 NEL, Division 1B, s. 18F-18Y; NGL, Division 1A, s. 30A-30T.

5 NEL, s. 18H; NGL, s. 30C.

6 NEL, s. 18I(5)(a); NGL, s. 30D(5)(a).

The legislation sets out a structured consultation process for each RORI review, including:

- establishing a CRG to support consumer participation and publication of this discussion paper as a part of the required initial notice;[7]
- a call for nominations of Eligible Experts;[8]
- publication of a draft RORI and explanatory information at least six months before the final instrument is made, including inviting and publishing stakeholder submissions;[9]
- establishment of an Independent Panel to review the draft RORI and publish its report.[10]

The final RORI must be published with explanatory information and applies to all determinations made after its commencement. A new RORI must be made every four years.[11]

7 NEL, s. 18M; NGL, s. 30H.

8 NEL, s. 18M; NGL, s. 30H.

9 NEL, s. 18O; NGL, s. 30J.

10 NEL, s. 18P; NGL, s. 30K.

11 NEL, s. 18Q, s. 18T s. 18U, s. 18V; NGL, s. 30L, s. 30O, s. 30Q, s. 30P.

3 Our decision-making framework

Our approach to setting the rate of return is guided by the NEO and NGO, to promote the long-term interests of consumers with respect to price, quality, safety, reliability and security of supply, as well as the achievement of targets set for reducing greenhouse gas emissions. We also consider the RPPs, which emphasise the importance of efficient cost recovery, incentives for efficiency, and maintaining a balance between the interests of consumers and service providers.

Setting the rate of return is a complex task that involves exercising judgement in the face of uncertainty. The NEL, NGL, National Electricity Rules (NER) and National Gas Rules (NGR) do not prescribe a single correct outcome for the overall rate or its components. Instead, we must weigh competing evidence, models and stakeholder views to reach a balanced, evidence-based decision. This includes making judgements about the quality of data and modelling, and the weight given to different inputs and perspectives.

In doing so, we must consider the long-term interests of consumers, not only in the prices they pay, but also in the services they receive and the risks they bear. This requires an approach that balances technical analysis with stakeholder engagement, and applies careful judgement about what the evidence supports.

To support our decision-making on the RORI as a whole, we will also have regard to the following factors. These are not binding rules, but help inform our judgement and ensure our approach is transparent, consistent with economic and financial principles and suited to the regulatory context:

- alignment with sound economic and finance principles and market information
- fitness for purpose, given the regulatory task
- consistency with good practice in implementation
- use of quantitative modelling that is robust and free from arbitrary filtering
- reliance on market data that is credible, verifiable, comparable, timely and clearly sourced
- flexibility to adapt to changing market conditions and new information
- the materiality of any proposed change from the previous RORI
- the sustainability and longevity of new arrangements over time.

In making these decisions, we are mindful that some regulators have adopted a different approach to setting a rate of return. For example, some have used higher estimates of the rate of return to support investment in an uncertain environment. We consider these perspectives carefully.[12] Our objective is to promote efficient investment in, and efficient operation and use of, energy services in the long-term interests of consumers.[13] To support

[12] AER, *Rate of return and assessing the long-term interests of consumers - Position paper,* 21 May 2021, p. 10.

[13] NEL, s. 7; NGL, s. 23.

this, we aim to determine a rate of return that is consistent with market conditions and investment risk and avoids outcomes which are systematically in favour of either service providers or consumers.[14]

The 2022 RORI, which evolved from the 2018 RORI, was developed through an extensive consultative process. We examined each parameter in detail and also considered how the overall rate of return performed as a whole. This ensured that our decisions reflected both the evidence on individual inputs and the coherence of the overall outcome. The process included detailed modelling, advice from independent experts, input from the CRG and broad stakeholder engagement. The CRG's involvement provided an important consumer perspective that helped inform how we interpreted and weighed the evidence.

Overall, we consider the 2022 RORI is performing well and continues to support the long-term interest of consumers, based on the following observations:

- implementation – the RORI has been implemented without difficulty across network determinations and has been applied consistently
- broad stakeholder confidence – stakeholders have generally accepted the RORI outcomes, with limited calls for changes to the framework
- strong development process – the RORI was developed through a transparent and evidence-based process, drawing on detailed modelling, expert advice and broad consultation
- regulatory certainty – the RORI provides a stable and predictable basis for investment, which supports long-term planning by network businesses and investors
- balanced outcome – the overall rate of return reflects a balanced assessment of data, modelling and stakeholder views, and avoids outcomes that favour either service providers or consumers
- investment outcomes – we have observed no lack of capital expenditure being proposed by network businesses in their regulatory proposals since the making of the 2022 RORI. We have also seen network businesses propose innovation fund allowances in their regulatory proposals and spend the majority of their demand management innovation allowances during this period – capital expenditure that is discretionary.

Overall, the 2022 RORI remains broadly fit for purpose and provides a balanced and stable foundation for estimating the rate of return. We have seen no evidence that it has deterred investment since its making, with network businesses continuing to propose capital expenditure and innovation allowance projects.

The 2022 RORI review examined six key topics that were the subject of significant consultation and analysis. Based on the evidence available at the time, we considered most of these topics to be largely settled. For the 2026 RORI review, we propose to continue targeted work on two of these topics: equity beta and the potential use of a weighted trailing average for the return on debt. This reflects the recommendations of the 2022 Independent

[14] The NEO contains an additional objective of the reliability, safety and security of network system: see NEL s.7.

Panel, past stakeholder feedback, and our own view that further consideration is warranted in light of evolving market conditions. These areas are discussed further in Section 5.

In addition to equity beta and the weighted trailing average, we are also proposing to consider whether to reintroduce the use of the third-party yield curve from the RBA. We are interested in stakeholder views on these topics and welcome suggestions on whether there are any other issues that warrant further analysis as part of the 2026 RORI review, particularly where new theoretical or empirical evidence has emerged.

4 Key topics from the 2022 RORI review

As part of the 2022 RORI review, we examined a broad range of parameters that influence the overall return on capital. Through extensive consultation, expert input and detailed analysis, we identified six key topics where stakeholder views and expert opinions diverged, and where decisions were likely to have a material impact on the final rate of return:

- term of the return on equity
- market risk premium
- use of our industry debt index
- cross-checks of the overall rate of return
- equity beta
- weighted trailing average return on debt.

These topics were the focus of the majority of our analytical effort during the 2022 RORI review and the key areas of interest for stakeholders and the 2022 Independent Panel. A summary of the decisions made on each issue is provided below.

4.1 Term of the return on equity

The term of the return on equity refers to the expected time horizon over which investors hold their equity investment. It determines how we estimate both the risk-free rate and the market risk premium.

There are typically two choices for the term of the return on equity:

- match to the length of the regulatory period (typically five years)
- match to the underlying assets lives (typically 10 years, as this is considered to better reflect long asset lives).

In the 2022 RORI review, we decided to maintain the approach adopted in the 2018 RORI of using a 10-year benchmark term for the return on equity. The key reasons for this choice were: it promoted regulatory stability; a change would be of modest materiality; we were broadly satisfied with how the 2018 RORI had been performing (which used a 10-year term for the risk-free proxy); there had been a trend amongst Australian regulators to adopt a 10-year term; we had adopted a 10-year term in the past with reference to the long-lived nature of regulatory assets; and there had been acknowledgement that from an investor perspective, a zero net present value (NPV) is achieved by matching investor practice in applying the capital asset pricing model (CAPM) (typically using a 10-year term).[15]

We also considered the argument in favour of a five-year term. The key consideration was that matching the equity term to the regulatory period reflects our practice of resetting the

[15] AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 107-108.

allowed return at each network revenue determination. This affects the risk profile of regulatory cash flows and, in turn, influences the expected return required by investors.[16]

After extensive consultation, our view was that the term of return on equity must be settled through the exercise of regulatory judgement. While strong arguments were presented on both sides, we were not satisfied that a compelling case had been made to depart from the 10-year term used in the 2018 RORI.[17]

4.2 Market risk premium

The risk premium used in the CAPM is the product of the market risk premium (MRP) and the equity beta (i.e. a measure of the systematic or non-diversifiable risk of the investment). The MRP is the return above the risk-free return investors expect to receive for investing in a fully diversified Australian market portfolio.

In making the 2022 RORI, we reviewed all relevant evidence available to us, including evidence from historical excess return (HER) data and other methods for estimating a conditional MRP, such as the dividend growth model. A conditional MRP is an MRP that varies through time, for example due to changes in interest rates. We concluded an unconditional MRP is the most appropriate as it remains stable through time and is not affected by market shocks. We placed more emphasis on HER data because of our past reliance on this method to estimate a forwarding-looking unconditional MRP. It also provides stable and predictable investment signals overtime. In contrast, we placed less emphasis on other evidence due to concerns over measurement reliability and differing views on the value of the dividend growth models or other evidence-based estimates. We also considered a conditional MRP cannot be modelled accurately over time.[18]

4.3 The use of industry debt index

The Energy Infrastructure Credit Spread Index (EICSI) serves as an indicator of the cost of debt issued by network service providers (NSPs), allowing comparison with our benchmark debt cost estimate. Developed in 2018, with support from Chairmont Consulting, it reports a rolling 12-month historical average of credit spreads across all new debt instruments issued by privately-owned NSPs. We obtain debt data from NSPs every year through a Regulatory Information Notice (RIN).

In the 2022 RORI review, and consistent with the 2018 RORI, we decided to only use the EICSI as a "sense check" on our benchmark return on debt.[19] The key reason for this choice was that the EICSI model only reflects the cost of newly issued debt and debt practices from different NSPs. As a result, its limited dataset and variability make it unsuitable as a primary benchmark. In addition, after undertaking further analysis using updated data and reviewing each of our debt models, we were satisfied that our current approach of using third-party yield curve data gave an unbiased outcome. Thus, there was insufficient evidence to support the use of the EICSI as the primary source of data relating to credit spreads.

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16 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 113-114.

17 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 107-108.

18 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 130-133.

19 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 205-209.

4.4 Overall rate of return cross-checks

Cross-checks involve comparing estimates of the rate of return against other relevant information sources. They may provide a "sense check" on whether the calculated estimates appear reasonable and consistent with other sources of information. They can also provide additional information in situations where regulatory judgement may be required.

In the 2022 RORI review, we used cross-checks as a sense check on our overall allowed rate of return and to assist in identifying potential issues. We considered a range of cross-checks and looked for insights that could be drawn from each. Some cross-checks encouraged us to investigate further than others. This was the case when we considered regulatory asset base (RAB) multiples, financeability tests and scenario testing.[20] We considered additional cross-checks, such as historical profitability, investment trends, other regulators' rates of return and analysts' discount rates, and found that these did not prompt us to carry out further analysis to inform our assessment of the overall rate of return.

By employing various methods to validate the calculated rate of return, the cross-checks used helped to ensure that the estimate is not only theoretically sound, but also consistent with real-world market conditions and investor expectations. This comprehensive approach helped mitigate the risk of bias and enhanced the credibility of the rate of return determination.

There is no available evidence to support elevating any of the cross-checks to a higher status or indicate they should be used in a formulaic role. This position was supported by all stakeholders and the 2022 Independent Panel.

4.5 Equity Beta

Equity beta is a key parameter within the Sharpe-Lintner CAPM (SL CAPM) that we use to estimate the return on equity. It reflects a firm's exposure to systematic risk (i.e. the portion of risk that cannot be diversified away).

To date, our approach to estimating equity beta has been primarily informed by estimates derived from a comparator set of nine Australian energy firms. We place the greatest weight on estimates over the longest available data period, while also being informed by estimates based on the most recent five years of data. After considering the available data and its strengths and weaknesses, we considered there was no compelling case to change the equity beta in the 2022 RORI review and retained a value of 0.6 as per the 2018 RORI.[21]

A continuing challenge is the declining number of publicly listed Australian energy NSPs which fell from three at the time of the 2018 RORI review to one at the time of the 2022 RORI review due to stock market de-listings. Some stakeholders suggested using stock market data from international energy firms, but we found differences in the scope of their activities and corresponding risk profiles made it challenging to adjust the data reliably. As such, we considered the existing Australian comparator set more appropriate for the 2022 RORI.[22]

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20 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 251.

21 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 171.

22 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 178-183.

4.6 Weighted trailing average return on debt

In the 2022 RORI review, we considered implementing a weighted trailing average approach to estimating the return on debt. The key reason for considering this was that firms with very large investment programs scheduled over a short period of time could be incorrectly compensated under the simple trailing average approach. If this occurs, it could distort investment decisions. At the time, we decided to retain the 10-year simple trailing average approach to estimating the return on debt. We found that the potential benefits of the weighted trailing average were limited under typical financing conditions and outweighed by additional complexity.[23]

We noted in the 2022 RORI review that a weighted approach may better align with the NPV=0 principle in scenarios where a business raises a large volume of debt above the standard 10% refinancing assumption and finances its investment in line with benchmark gearing.[24] However, we considered it is unlikely that a benchmark business would follow this pattern in practice. We also identified implementation challenges, including how to determine debt weights and the interaction with existing expenditure incentive schemes.

While there was some stakeholder interest in further exploring a weighted approach, the majority supported retaining the simple trailing average approach at that time. We concluded that, on balance, the current simple trailing average approach remained appropriate under typical conditions.

4.7 Topics for further consideration in the 2026 RORI review

The decisions we made on the six key topics in the 2022 RORI review, as summarised above, were designed to promote efficient investment while avoiding outcomes that are systematically in favour of either service providers or consumers. Based on the evidence available at the time, we considered most of these issues were largely settled in the 2022 RORI review.

As part of the 2026 RORI review, we propose to continue targeted work on two of these topics: equity beta (discussed in Section 5.1), and the potential use of a weighted trailing average for return on debt (discussed in Section 5.2). These topics were identified during the 2022 RORI review as requiring further consideration. This reflects the recommendations of the 2022 Independent Panel, past stakeholder feedback, and our own view that further consideration is warranted in light of evolving market conditions.

In addition to the above two issues, we have also identified one minor adjustment that may warrant further consideration. In the 2022 RORI, we estimated the return on debt by using independent third-party yield curves constructed from data published by the RBA, Bloomberg and Refinitiv. During implementation of the 2022 RORI, we were required to discontinue the use of the RBA's F3 statistical table as a yield curve data source, as the RBA ceased publishing spread to swap data that the Instrument relied upon for using the RBA yield curve

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23 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 234-236.

24 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 234.

data. In the 2026 RORI review, we intend to consider reintroducing the RBA yield curve data using alternative swap data. This matter is discussed further in Section 5.3 of this paper.

4.7.1 Consultation questions

We invite stakeholder feedback on what we consider are the priority issues for consideration in the 2026 RORI review.

Table 2: Consultation questions – overall priority for assessment

#	Questions
1.	Are there other issues, beyond the weighted trailing average, equity beta and third-party yield curves stakeholders wish to raise? If yes, what are these and why do you consider they warrant consideration during the review?

5 Further analysis

5.1 Equity Beta

5.1.1 Overview

Equity beta is a key parameter within the SL CAPM that we use to estimate the return on equity. It measures a firm's exposure to systematic risk compared with that of the market. Specifically, the equity beta measures the standardised correlation between the returns on an individual asset or firm with that of the overall market.[25]

Investors are generally able to diversify away non-systematic risk and do not require compensation for business-specific risk.[26] Therefore, equity beta only compensates investors for bearing systematic risk.[27]

A firm's sensitivity or exposure to systematic risk will depend on its business activities and its level of financial leverage.[28] For firms the AER regulates, this reflects the systematic risk in providing Australian regulated energy network services.[29]

Our approach from the 2022 RORI to estimating equity beta is to use regression analyses of the returns of a set of comparator firms against the return of the overall Australian market. Specifically, this includes:[30]

- use the ordinary least squares (OLS) estimator
- use weekly return intervals
- measure over multiple estimation periods, with the most weight given to the longest period estimates and less weight given to the most recent five-year estimates
- use a comparator set of nine Australian energy firms that provide Australian regulated energy network services
- use international energy firms as a cross-check
- use the Brealey-Myers formula to de-lever and re-lever raw estimates to a benchmark gearing of 60%
- setting a single equity beta value for regulated electricity and gas networks
- not making an adjustment for low beta bias

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25 R. Brealey, S. Myers, G. Partington and D. Robinson, *Principles of corporate finance*, McGraw–Hill: First Australian edition, 2000, pp. 186–188.

26 G. Pierson, R. Brown, S. Easton and P. Howard, *Business Finance*, 8th Edition, p. 214.

27 Non-systematic risks are considered separately in the cash flows that are discounted by the rate of return, for example, in depreciation.

28 M. McKenzie and G. Partington, *Report to the AER: Estimation of the equity beta (conceptual and econometric issues) for a gas regulatory process in 2012*, 3 April 2012, p. 5.

29 NER 6.5.2(c), 6A.6.2(c) and NGR 87(3).

30 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, pp. 171-192.

- not using other regulators' decisions on equity beta values to directly inform our estimates.

We consider that the core aspects of our approach remain appropriate, and we have not seen any compelling new evidence to suggest that we should fundamentally shift our methodology. However, a potential exception is the issue of our diminishing comparator set, which we discuss below.

5.1.2 What is the issue?

Our existing domestic comparator set consists of nine Australian regulated energy network firms that have been trading at various periods from 1990 to the present. With the de-listing of Spark Infrastructure (SKI) and AusNet Services (AST), APA Group (APA) is now the only one of the nine firms that is still listed. But APA is not an optimal comparator because over 90% of its revenue is unregulated.

Since our methodology was first developed in 2009, we have relied primarily on our domestic comparator set in successive rate of return reviews and RORIs. In the 2022 RORI review, we considered our comparator set appropriate at the time. While the comparator set had reduced since the 2018 RORI review, it still included the above three firms with at least four years of data out of the preceding five years. The 2022 Independent Panel also agreed with our choice of comparator set.[31]

We consider the equity beta of regulated energy networks is likely to be stable over the long term. Therefore, we give the most weight to the longest period estimates, with data for some firms going back to the 1990s. A diminishing sample could mean that we may not have sufficient data to reliably estimate equity beta going forward. While this would affect short-term estimates, it may or may not have a significant impact on the longest period estimates at this time.

We have reviewed the approach of other energy regulators around the world. Of those with a limited number of suitable domestic comparator firms, some have included international energy firms as comparators (such as the Economic Regulation Authority Western Australia (ERAWA), Queensland Competition Authority (QCA) and New Zealand Commerce Commission (NZCC)). A few others, however, have continued to use their limited domestic comparator set. For example, UK Ofgem has given greater weight to a single firm (National Grid) even though it is an imperfect comparator as it has significant overseas operations in the USA.[32]

Throughout the process of developing the 2022 RORI, several expert consultants commented on the issue of our diminishing domestic comparator set in their reports, including Brattle, Partington & Satchell, Economic Insight, Sapere, and CEG.[33] These expert

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31 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 179.

32 Ofgem, *RIIO-2 Final Determinations – Finance Annex (REVISED)*, 3 February 2021, pp. 41-42.

33 Brattle, *A Review of International Approaches to Regulated Rates of Return*, June 2020; Partington & Satchell, *Report to the AER: Alternative Asset Pricing Models*, 30 June 2020; Economic Insight, *Methodological issues in estimating the equity beta for Australian network energy businesses*, June 2021; Sapere, *Systematic risk and the role and measurement of equity beta*, June 2021; CEG, *Asset beta for gas transport businesses*, September 2021; CEG, *Use of foreign asset beta comparators*, March 2022.

consultants had diverse and sometimes conflicting views and proposals. For example, Sapere preferred relying primarily on domestic firms where possible, CEG suggested giving more consideration to international firms, while Partington & Satchell recommended estimating accounting betas to examine if they could be used.

Based on these expert views, as well as our own additional analyses, we considered several potential alternatives to relying solely on domestic firms, including:

- International energy firms – This would offer a larger sample of firms and appears to be the most viable option. It is adopted by several other regulators, such as ERAWA, QCA and NZCC. However, there are challenges in pursing this option, as discussed below.
- Domestic non-energy infrastructure firms – Non-energy infrastructure firms (such as Aurizon, Transurban and Atlas Arteria) do not provide an essential service and are likely to be exposed to higher systematic risks relative to regulated energy networks. Non-energy infrastructure firms' equity beta estimates also tend to be significantly higher than that of regulated energy networks and do not correlate well with that of energy networks over time.
- Other domestic firms – As with non-energy infrastructure firms, we have not found any other listed domestic firms with similar exposure to systematic risks as regulated energy networks.
- Estimating accounting equity beta for the non-listed energy networks we regulate – This involves undertaking regression analysis of the returns of a firm's accounting information (e.g. profit or cash flow) against that of a broader market (e.g. gross national product or a market index). However, there are several theoretical problems and practical challenges with this approach. Accounting information reflects the present and recent past, whereas share price information reflects expectations about the future. Accounting information also tends to be smoothed out, dampening the underlying effects of changes in business conditions. In addition, accounting information is only available on a quarterly basis, which means that there may not be sufficient data to produce reliable statistical estimates.

Of the above potential alternatives, only international energy firms appear to be potentially viable. That said, even if we were to potentially expand the range of data points that we use to inform the estimate for equity beta, this would not eliminate the need for the application of regulatory judgement by the AER in determining the final estimate for equity beta. Below we set out some of the challenges with adopting international energy firms.

5.1.2.1 Challenge 1: Fundamental differences between international energy firms and Australian energy networks

International energy firms operate in a different environment to that of Australian firms, with differences in regulatory frameworks, markets, business cycles, geography and other factors. International energy firms also tend to be vertically integrated, engaging in energy generation, wholesale and retail supply of energy. Many also engage in other non-energy operations.

It is difficult to fully examine to what extent each of the above factors can influence equity beta estimates. However, we have observed empirically that using our current methodology, international energy firms' long-term equity beta estimates tend to be higher than that of

Australian energy networks. Over the short-term, the equity beta estimates of international energy firms can also diverge significantly from that of Australian energy networks.

Other regulators that have adopted international comparators have applied filters to select for firms that are adequately comparable. Following the approaches of these regulators, we propose the following practical steps to develop a potentially suitable sample of international energy firms for consideration and to adjust for differences between them and Australian energy networks. We would select international firms that:

- operate in developed economies
- operate in energy-related sectors and industries
- derive most of their revenue from electricity and/or gas networks
- have been listed for at least a specific number of years
- have a market capitalisation that exceeds a certain threshold
- have a bid-ask spread that is below a certain threshold.

Applying these filters to international energy firms are likely to make their beta estimates more comparable to that of Australian energy networks. However, they do not correct for every difference between the two sets of firms.

We have undertaken preliminary work in developing a draft sample of international firms by reviewing historical annual report financial information of candidate firms and applying the above filters. Our preliminary results suggest that the de-levered (asset) betas of a filtered list of international energy firms are still higher than that of Australian energy networks. The asset betas of the filtered international firms also do not correlate well with that of Australian energy networks over time. For example, over the COVID-19 period in 2020 and 2021, the equity betas of international energy firms increased significantly, while the equity betas of Australian energy networks decreased.

5.1.2.2 Challenge 2: Gearing difference between international energy firms and Australian energy networks

We also observe that the average gearing ratios of international energy firms tend to be lower than our current benchmark gearing ratio, which is based on Australian energy networks. This means that if we de-lever and re-lever the equity beta estimates of international firms to our benchmark gearing ratio using the Brealey-Myers formula, it would likely result in an upward bias in the estimates of equity beta and overall weighted average cost of capital (WACC). This is known as the “leverage anomaly”.

We considered two potential approaches to rectify this:

1. Use a positive debt beta in the de-lever/re-lever formula and continue to set our benchmark gearing ratio based on Australian energy networks – This approach is adopted by Ofgem, Ofwat and QCA. However, there are practical difficulties in this approach, because empirically estimating debt beta requires pooling together information from multiple debt instruments that are often thinly traded. Moreover, some of the network businesses’ debt may be in the form of bank loans that are not publicly traded at all. The lack of good quality data means that debt beta estimates can be inherently imprecise and involve a significant degree of judgement. The UK regulators largely rely

on regulatory precedents as well as third-party estimates. Most other regulators have regard for the difficulties of estimating debt beta and do not use debt beta.

2. Change our benchmark gearing to the overall sample average gearing across all domestic and international firms – This is the approach adopted by NZCC. The combined sample would likely be dominated by international firms, especially US firms. Adopting this approach would also affect the overall WACC calculations and require us to revisit other aspects of the RORI. This is because the benchmark gearing also determines the relative weights we give to the cost of equity and the cost of debt, respectively, within the overall WACC. Changing the benchmark gearing would also impact the trailing average return on debt. Therefore, this approach is likely to introduce significant additional complexity.

We consider the leverage anomaly to be a complex issue, and neither of the above approaches offer a simple solution.

5.1.2.3 Challenge 3: Difference in home market indices between international energy firms and Australian energy networks

The equity beta estimates of international firms are measured with respect to the market portfolio of their home markets, which do not have the same industry sector composition as that of the Australian market. Again, this could mean that international firms' equity beta estimates would not reflect those of Australian energy networks.

One potential remedy to this is to adopt an international CAPM, which includes using a global market index in place of domestic market index that would be used for a domestic CAPM. This may remove the difference in risk between the underlying index used to estimate equity beta for domestic and international firms.

However, we observe that individual firms' returns tend to correlate less with a world index than they do with their domestic indices. This suggests that economies and markets may not be sufficiently integrated globally for us to be able to make use of an international index. Therefore, using a world index may lead to biased equity beta estimates.

In addition, there are further difficulties with adopting an international CAPM, because it would also require us to "internationalise" other rate of return parameters, such as the risk-free rate and the MRP, which would introduce significant additional complexity to our approach to estimating the rate of return.

5.1.3 Proposed options

Our diminishing comparator set of Australian energy networks presents a challenge in terms of how best to estimate the equity beta going forward. To this end, we propose the following two options for further investigation in the 2026 RORI review and invite stakeholder views:

1. Continue to give primary weight to our domestic comparator set of nine Australian energy networks – At present, we consider these firms are still the best estimators of equity beta for the networks that we regulate. However, given that eight of the nine firms are de-listed, ongoing use of this option may require the application of regulatory judgement going forward, as a diminishing sample could mean that we may not have sufficient data to reliably estimate equity beta going forward.

2. Determine a point estimate of equity beta based on a range of estimates using both our current Australian comparator set and a newly developed sample of international energy firms. Developing estimates for international firms may involve:
    a. Starting with a long list of firms that operate in the electricity and gas sector around the world (excluding Australia).
    b. Applying the filters and adjustments set out in section 5.1.2.1 to produce a short list of firms for further analysis.
    c. Producing a range of equity beta estimates using different assumptions for gearing and debt beta. We may test the options outlined in section 5.1.2.2, each with their shortcomings, including:
        i. Using our existing approach of re-levering international asset beta estimates using our benchmark gearing ratio of 60%, without considering debt beta. This is likely to be an over-estimate, but we could consider using it as an upper bound for our point estimate.
        ii. Using a positive debt beta in the de-lever/re-lever formula and maintain our benchmark gearing ratio of 60%. There are major challenges with estimating debt beta, but we may undertake an additional literature review of debt beta estimates by other experts in an Australian context to refine our estimates.
        iii. Using the sample average gearing ratio in the de-lever/re-lever formula. This would affect the overall WACC calculations and require a review of other aspects of the RORI. This would introduce significant additional complexity if implemented.

5.1.4 Consultation questions

We invite stakeholder feedback on the equity beta issues raised in this paper.

Table 3: Consultation questions – equity beta

#	Questions
1.	Do you agree with our preliminary options, as outlined in section 5.1.3? If not, why not? Are there any other potential options that you would like us to consider?
2.	How could we use the equity beta estimates of international energy firms to inform our decision on equity beta?
3.	What other filters and/or adjustments should we make to international energy firms and their equity beta estimates to make them more comparable to the equity beta estimates of Australian regulated energy networks, as outlined in section 5.1.2.1?
4.	Do you have any suggestions on how best to address the leverage anomaly, as outlined in section 5.1.2.2?
5.	Do you have any suggestions on how best to address the issue of different domestic indices between Australian and international firms, as outlined in section 5.1.2.3?
6.	Other than the comparator set, do you have any comments on any other aspects of our approach to estimating equity beta?

5.2 Weighted Trailing Average

5.2.1 Overview

The AER currently applies a simple trailing average approach to determine the return on debt allowance for regulated energy network businesses. This approach applies a 10-year trailing average portfolio return on debt, rolled forward annually. Under this approach, the return on debt is calculated by weighting the most recent year's market data at 10%, with the remaining 90% derived from historical data over the preceding nine years.

The simple trailing average was first adopted in December 2013, replacing the on-the-day approach.[34] A trailing average was adopted because: it would reduce the difference between the return on debt and the return on debt of a benchmark efficient entity; it provided service providers with incentives to engage in efficient debt financing practices, which would support efficient investment; and it gave service providers a reasonable opportunity to recover at least their respective efficient debt financing costs.[35]

In addition, we considered that the simple trailing average would: smooth movements in the return on debt, leading to lower price volatility for consumers and more stable returns to investors (than the on-the-day approach); minimise the impact of a single measurement error; and better reflect how non-regulated businesses manage their debt. For these reasons, it was considered more likely to represent efficient financing practices.[36]

At the time we adopted the simple trailing average, we also recognised that while there would likely be a difference between the return on debt allowances and the actual cost of debt at any particular time, the simple trailing average, under certain assumptions, should still provide efficient compensation for debt capital.[37]

These assumptions were re-examined as part of the 2022 RORI review. At that time, we did not see a compelling case for changing from the simple trailing average approach.[38] We also noted that both Energy Networks Australia (ENA) and the CRG supported retaining the simple trailing average approach as they considered it helped smooth changes in return on debt allowances over time, delivering benefits to both networks and consumers.[39]

While the simple trailing average delivers stable outcomes under typical financing conditions, its effectiveness relies on certain assumptions about how networks raise debt and how interest rates behave over time. In particular, it provides a reasonable estimate of actual debt costs when either of the following two conditions hold:

- NSPs raise debt broadly in line with the 10% annual refinancing profile; or
- the trailing average is approximately equal to the prevailing cost of debt over time (i.e. interest rates are relatively stable and not trending strongly up or down).

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34 AER, *AER Explanatory statement – Rate of return guideline*, 17 December 2013, p. 126.

35 AER, *Explanatory Statement – Draft rate of return* guideline, 30 August 2013, p. 84.

36 AER, *Explanatory Statement – Draft rate of return* guideline, 30 August 2013, p. 84.

37 AER, *AER Explanatory statement – Rate of return guideline*, 17 December 2013, pp. 109-115.

38 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 195.

39 AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 237.

However, it is important to acknowledge that these conditions may not hold under all circumstances. For example, large capital programs, such as those associated with the Integrated System Plan (ISP), can result in debt being raised in amounts and timings that differ materially from the 10% annual refinancing assumption. At the same time, current interest rates could differ materially from the simple trailing average.

In such cases, the simple trailing average may not reflect an appropriate benchmark for the actual debt financing costs incurred by the regulated business. Where interest rates are materially above the return on debt from the simple trailing average, this could result in required essential projects being delayed or not proceeding. In the alternative, where interest rates are materially below the return on debt from the simple trailing average, it could incentivise inefficient over-investment on large projects. Accordingly, the possible implementation of weighted trailing average approach to the return on debt may have some merit.

The sections below summarise our previous considerations of this issue during the 2022 RORI review, and outline how we have further developed the weighted trailing average approach for possible implementation. We invite stakeholder views on how this approach could be applied in practice, were it to be applied, and whether any refinements are needed.

5.2.2 Past consideration of the issue

Major transmission projects being delivered under the Australian Energy Market Operator's (AEMO) ISP are driving large, lumpy capital programs for several NSPs.[40] These investments often require significant volumes of debt to be raised over short time periods, rather than following the simple trailing average assumption that around 10% of debt is financed each year at prevailing interest rates.

When interest rates move materially over time, this mismatch in timing can result in over- or under-compensation. In these cases, the simple trailing average may no longer provide an efficient or accurate estimate of the return on debt for new investment.

To address this issue, we considered the weighted trailing average approach during the 2022 RORI review. Queensland Treasury Corporation (QTC) and Marinus Link advocated for a weighted trailing average approach that would better reflect the actual debt raising profile associated with large capital expenditure.[41] While we recognised that a weighted trailing average might better align with the NPV=0 conditions and reduce the mismatch between allowed and actual financing costs, we ultimately retained the simple trailing average approach.

In the 2022 RORI review, we considered that a NSP would generally refinance around 10% of debt each year. We also noted that using forecast capital expenditure to set debt weights would introduce uncertainty, while using actual capital expenditure would require a true-up and add complexity. Our modelling indicated that material differences between the simple and weighted trailing average approaches were only likely in scenarios involving both large

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40 AEMO, *2024 Integrated System Plan*, 26 June 2024.

41 QTC, *Submission - Debt*, 3 September 2021; Marinus Link, *Rate of return submission*, 2 September 2022.

capital investment and significant changes in interest rates. Furthermore, most stakeholders submitted they supported continuing the use of the simple trailing average approach.

However, expert views from the 2022 RORI review evidence session were mixed. Some experts, such as Boyle and Lally, highlighted the potential for inefficiencies and incentive distortions under a weighted trailing average or threshold scheme. Others, including Hird and Kumareswaran, saw merit in using a weighted approach in specific circumstances, such as aligning with actual financing tasks or when capital expenditure is large. Hancock noted simplification benefits, while Partington favoured the on-the-day rate from a finance theory perspective. These views are summarised in Table 4.

Table 4 Views of experts from 2022 RORI review evidence session

Expert	Views
Lally	Introducing a threshold could create incentives for firms to stay just under it, which may result in progressively lowering the threshold over time.
Boyle	Any scheme involving a threshold or trailing average might unintentionally encourage firms to delay or accelerate investment, potentially leading to inefficient outcomes.
Partington	Finance theory supports the use of the on-the-day approach.
Hird	A weighted trailing average better reflects the financing needs of a network service provider as it maintains its business.
Hancock	A trailing average simplifies refinancing by allowing firms to plan around expected market changes and reduces pressure to respond to short-term market volatility.
Kumareswaran	If future capital expenditure becomes large enough, separate RABs may better align the regulatory allowance with actual financing costs and improve compliance with the NPV-zero principle.

Source: AER, *Concurrent evidence session 2 - Proofed transcript*, 10 February 2022, pp. 47, 64, 65, 74, 76, 82.

Consistent with the Independent Panel's recommendation to the AER in the 2022 RORI review, we have undertaken further work to explore how a weighted trailing average approach could operate in the future, were it to be implemented.

5.2.3 Possible approach

5.2.3.1 Form of regulation and features of the alternative trailing average approach

Incentive-based regulation is central to the AER's approach to regulating energy network businesses. It rewards regulated businesses for improving consumer outcomes by realising efficiency gains, reducing costs and improving service outcomes.

The AER regulates network businesses under an incentive-based regulatory framework. The framework largely achieves this through our network incentive schemes by setting ex-ante allowances (or performance targets) based on benchmarks that provide opportunities for regulated businesses to outperform in return for financial benefits (or penalties). Where a regulated business outperforms the benchmark ex-ante regulated allowance (or performance

targets), they generally keep some of the outperformance which is shared with network users (consumers); underperforming (or not meeting performance targets) may result in a financial penalty that is paid by the regulated business. Through operating this way, the regulatory framework incentivises regulated firms to become more efficient over time to the long-term benefit of consumers.

However, different components of the regulatory allowance may use different amounts of business-specific information to inform the regulated allowance (or performance target) that is set for a network business. As you use more business-specific information and rely less on benchmarked inputs into the cost allowance, you may move further along the spectrum from incentive-based regulation towards cost-of-service regulation. Even some of the most high-powered incentive-based regulatory frameworks have some element of a cost-of-service regime. For example, the provision of cost pass-throughs, which allows for some ex-post recovery of those costs considered beyond the control of a network business. At the extreme, under cost-of-service regulation, network businesses would simply receive the costs they incur for providing network services – there is little incentive to become more efficient in the delivery of network services over time as the network business does not have the opportunity to receive additional financial rewards for doing so.

The allowed rate of return currently provides a relatively high-powered incentive on regulated firms. As an ex-ante benchmark allowance, all else equal it provides regulated firms with an incentive to minimise their expected cost of capital.

In relation to the trailing average return on debt, the current simple trailing average sets a highly benchmarked return on debt. Other than choosing the averaging periods (or business days) the annual cost of debt is estimated over, all other inputs are generic across network businesses (including the yield data that is used and how it is combined to obtain an estimate and the annual weights in the trailing average).

Going to a weighted trailing average – of any form – may move the regulated allowance further along the spectrum towards cost-of-service regulation. This is because the weighted trailing average return on debt is now based partially on the individual firm's capital raising forecasts (as opposed to assuming one-tenth of the required debt is raised each year). In addition, while the model presented below uses aggregate capital expenditure forecasts, to the extent that more disaggregated capital expenditure forecasts are used, this may move the model even further towards cost-of-service regulation. The use of a true-up to effectively adjust the weighted trailing average return on debt to use actual capital expenditure could move the model even further towards cost-of-service regulation.

5.2.3.2 AER developed approach set out in Appendix A

To address the limitations of the simple trailing average in the context of large, lumpy capital investments, we have developed a possible weighted trailing average approach to elicit stakeholder views at this early stage of the 2026 RORI review.

This model is designed to better reflect the timing and size of new capital expenditure, align the return on debt allowance more closely with efficient financing costs, and maintain consistency with RORI requirements under the NEL and NGL. It attempts to limit the situations where materially incorrect compensation may be provided under the simple trailing average approach to estimating the return on debt. We note the model presented is only one

example of how a weighted trailing average could work, and there may be other variations that stakeholders have views on.

Under the modelled approach, the return on debt continues to be calculated using a 10-year trailing average, but the weights applied to each year's debt are adjusted to reflect the yearly timing and amount of new debt raised, rather than assuming a fixed 10% refinancing profile. This is particularly important in scenarios where large volumes of debt are raised over a short time period, such as can be the case with large ISP-related investments.

New debt is assumed to be raised at prevailing market rates, consistent with the existing benchmark approach. These rates are then gradually phased into the trailing average over time. The model could also use a true-up to adjust for differences between forecast and actual capital expenditure. If applied, this would reduce the risk that businesses are either over- or under-compensated due to capital expenditure forecasting inaccuracies. However, as noted earlier, the use of a true-up in this way would move the allowance further towards cost-of-service regulation.

If applied, we would use this model to calculate the allowed return on debt for NSPs, based on a benchmark 10-year term to maturity (noting the transitional debt tranches in the model have a shorter term to maturity than 10-years).

To smooth the impact of large changes in the debt proportion of the RAB, the model includes a transitional mechanism. When a network raises a substantial amount of new debt in excess of the 10% assumed to be refinanced, the model splits this new amount into 10 equal tranches. One tranche, representing 10% of the new debt, is calculated as 10-year maturity debt. The remaining nine tranches are assumed to have maturities from one to nine years. These can be considered transitional tranches of debt.

Each year, one transitional tranche is assumed to mature and is replaced by new 10-year debt at that year's prevailing 10-year maturity benchmark interest rate. By year 11, the full amount of the original borrowing is reflected in the model as 10-year maturity debt. The model also applies a similar transitional mechanism where less than 10% of debt needs to be raised in a given year.

This approach smooths the effect of large new borrowings (or reduced borrowings) in the future, relative to assuming a weighed trailing average without some form of transition/reversion mechanism and should also help reduce future price fluctuations for consumers. Importantly, this results in the size and maturity profile of the assumed debt portfolio constantly reverting back to one-tenth debt being raised each year with a 10-year term to maturity.

It is important to note that the one to nine year transitional tranches of debt are not necessarily the actual debt instruments issued by businesses. They are a modelling structure used to phase in new borrowing over time, in a way that aligns with the trailing average framework and should correctly compensate regulated businesses for their benchmark debt costs. As with our current approach, the regulated businesses are free to raise debt as they see fit and consider most efficient in their circumstances.

In developing this approach, we had regard to stakeholder submissions received during the 2022 RORI review process, including those from QTC and Transgrid, as summarised below.[42]

The approach we have developed, which we have set out in an Excel illustrative example accompanying this discussion paper to demonstrate its potential application, builds on previous stakeholder views and is intended to facilitate further discussion on how a weighted trailing average approach could be implemented, if desired.

We also note that the model we've presented uses overall changes in the debt proportion of the RAB from year-to-year. This uses aggregate capital raised (net of aggregate depreciation).

An alternative approach to setting a weighed trailing average

An alternative approach to the weighted trailing average example presented would be to use a more detailed RAB roll-forward model (RFM) data that does not assume reversion to a benchmark of an equally weighted 10-year trailing average and that enforces a true-up reconciliation.

The use of more detailed RAB RFM data would mean the weights are determined by roll-forward inputs at the asset class level. While this might better reflect the exact capital needs of the individual regulated business, the detail required makes this approach complex. However, because this approach does not assume a reversion to an equally weighted 10-year trailing average, it avoids the complex modelling that is required for reversion to occur.

This alternative approach is closer to a cost-of-service (as opposed to a benchmark) return on debt allowance compared to the model presented above. This is because the weights of the alternative approach are not determined by a reversion to benchmark equal weights, but are calculated from the NSP's detailed and outturn expenditures.

We are interested in stakeholder views on whether an alternative approach to implementing a weighted trailing average would be preferable; and if yes, what that approach might involve.

5.2.3.3 Queensland Treasury Corporation approach

QTC suggested using weights that reflect how much debt is expected to be raised in each year, instead of assuming a fixed 10% under the simple trailing average. QTC's approach employs old debt and new debt of the preceding year as weights to calculate a weighted trailing average allowance for the current year.[43]

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42 AER, *Draft 2022 Rate of Return Instrument – Explanatory Statement,* 16 June 2022 pp. 317-319; AER, *Explanatory Statement – Rate of Return Instrument*, 24 February 2023, p. 326.

43 QTC, *Submission - AER Rate of Return information paper and final working papers*, 11 March 2022, p. 32; QTC, *Submission attachment - PTRM-weighted trailing average cost of debt example*, 11 March 2022.

Their approach splits a network's total debt into two components:

- old debt – which is debt raised/refinanced during years before the preceding year and earns historical rates of return (rates of return observed both during and before the preceding year); and
- new debt – which reflects new debt raising and/or refinancing of the preceding year and earns the prevailing rate of return on debt.

The weighted trailing average rate of return on debt is calculated by assigning a different rate of return to each debt component, where the debt component is calculated as a weight:

- the prevailing rate of return is assigned to the new debt weight – where the new debt weight is the change in post-tax revenue model (PTRM) debt of the preceding year divided by the closing debt of the preceding year
- the historical rates of return are assigned to the old debt weight – where the old debt weight is the opening PTRM debt of the preceding year divided by the closing debt of the preceding year.

Any new debt raised up to nine years prior to the preceding year earn a transitional rate of return on debt (10 years post implementation of this approach). This way, the rate of return on new debt raised prior to the preceding year will eventually transition to a simple trailing average.

The QTC proposal is a weighted trailing average of the simple trailing average rate of return, transitional rates of return on any new debt raised up to nine years prior to the preceding year and the prevailing rate of return on any new debt raised during the preceding year. The result is a single, weighted trailing average return on debt allowance applied to the closing debt of the preceding year.

Benefits

- Better alignment with actual financing needs – Assigns prevailing and transitional rates to new debt raised in the preceding year and years prior to the preceding year, which better reflects the timing and cost of capital expenditure financing.
- Blended return on debt – Combines simple trailing average, transitional and prevailing rates of return into a single weighted trailing average rate of return, simplifying outputs while still being responsive to financing needs.
- Alignment with RORI logic – Transitional rates of return for new debt mirrors the 2022 RORI approach: starts at 100% on-the-day rate and gradually transitions to the simple trailing average rate over 10 years.
- Increased cost reflectivity – By assigning a prevailing rate of return to all new debt (i.e. including debt in excess of 10%) of the preceding year, the rate of return on debt may more closely reflect a NSP's actual cost of finance over time.

Risks

- Modelling complexity:
  - The model is more complex than the simple trailing average due to more rates of return and different weights.

  - To the extent weights are based on the present value of capital expenditure, a half-year WACC adjustment may be desirable for accuracy, further increasing complexity.
- May depend on RFM updates – If the implemented model is updated throughout the regulatory period, as opposed to being based on forecasts at the start of the regulatory period, the calculation of new debt and old debt for each preceding year would require RFM information, including: capital expenditure, RAB, inflation indexation and asset disposals for each NSP.
- Inaccuracy due to the use of historical forecast information – The weighted trailing average allowance for the current year is based on the debt weights of the preceding year.
- Incentive misalignment risk – As with any weighted model absent a true-up, the weighted rate of return may materially differ to the marginal cost of debt funds, thereby creating incorrect investment signals. This could distort investment incentives and result in inefficient investment.
- Capital Expenditure Sharing Scheme (CESS) interaction – The different rates of return in the weighted trailing average approach are not currently covered by the CESS. To the extent this is material, it may be desirable to make adjustments to the CESS to maintain consistency and to achieve the desired sharing ration and investment incentives.

Trade-offs

- Accuracy versus simplicity – Improves accuracy in aligning the cost of debt with actual financing but adds complexity to the modelling and process.
- Transparency versus manageability – While the structure is logical, the approach adds some complexity.
- Cost reflectivity versus stability – May provide a better reflection of financing cost changes but could introduce volatility in allowed returns.
- Administrative burden – Depending on its application, it could require custom RFM input for each NSP for the calculation of the weighted trailing average, increasing workload for both businesses and the AER.
- Output simplicity versus internal logic – Single rate output is user-friendly, but internal weighting system is relatively more complex.

5.2.3.4 Transgrid's position on the weighted trailing average

During the 2022 RORI review, Transgrid considered the potential application of a weighted trailing average approach. It stated that, even if the approach did better match the allowed and required return on debt, it was a second-order consideration. The key issue for major transmission projects, in its view, was the impact on credit ratings during the early years of construction, when significant volumes of debt must be raised in a short time period. Transgrid indicated that it is difficult to maintain a BBB+ credit rating under the current

regulatory arrangements, and that this issue cannot be addressed by altering the weighting scheme on the return on debt.[44]

Transgrid subsequently indicated to the AER that a concern around the weighted trailing average approach was the weights applied to each year would be based on forecast capital expenditure rather than actual expenditure. It considered for large ISP type projects, where significant delays and/or changes occur, this could result in material differences between actual debt and assumed regulatory debt. Further considerations on how this can be mitigated could include a true-up mechanism for weights being applied based on actual rather than forecast capital expenditure.

5.2.3.5 Features of the approach developed by the AER

The approach we have developed builds on previous stakeholder feedback and maintains consistency with the NEL and NGL. Key features include:

- The return on debt in the trailing average is weighted based on the year in which the capital expenditure occurs, rather than assuming a fixed 10% refinancing of the debt portfolio each year. This should better reflect financing costs in years with large new investment.
- A single weighted average return on debt continues to apply across the full RAB (as required under the NEL and NGL). We note that we would ensure that any final approach adopted to implement a weighted trailing average, were it to be adopted, would be compliant with national energy laws and rules.
- Benchmark interest rates are used, not actual debt costs for each business. However, if a true-up mechanism is adopted, actual capital expenditure is effectively used to calculate the updated weighting applied to benchmark interest rates.
- The weighted trailing average could apply in two ways (in a way that automatically applies the same methodology to all regulated NSPs):
  - Option 1 – To all NSPs by default; or
  - Option 2 – Only when a threshold of forecast capital expenditure is exceeded, such as for large ISP-related projects (Section 5.2.4.3 below discusses triggers).
- A true-up is not essential for the model to function, but may be desirable to adjust for differences between forecast and actual capital expenditure. In this regard:
  - without a true-up, businesses may face material risk if the return on debt allowance that is based on forecast capital expenditure differs substantially relative to the return on debt that is based on actual capital expenditure. This is most likely to be the case for NSPs with very large projects with uncertain capital expenditure costs and timing, such as large ISP projects. However, we note that a true-up would add complexity and is unlikely to perfectly correct for this.
  - if a true-up is used, consideration would need to be given to how it interacts with the CESS to ensure businesses are appropriately compensated and incentivised under

[44] Transgrid, *AER Rate of Return final Omnibus paper – Submission,* 11 March 2022, pp. 2-5.

the scheme. This may require additional guidance, but is not expected to require structural changes to the CESS.

Further detail on how this approach could be implemented is set out in Section 5.2.4.

5.2.4 Implementation of a weighted trailing average approach

We have provided an Excel illustrative example with this discussion paper to show one example for how a weighted trailing average approach could work. Appendix A: Weighted trailing average illustrative examplesteps through the illustrative example, including the inputs required, the calculation process and the outputs derived.

The overarching objectives of the model are:

- debt raised (used to calculate the weighted trailing average, and its weights on its return components) equals the funding requirement from year-to-year
- through time, the weighted trailing average consistently transitions to a smooth 10-year trailing average
- the weighted trailing averaging should provide compensation in line with the assumed debt funding profile in the model (and transitional tranches of debt for increases or decreases in the debt proportion of the RAB).

5.2.4.1 Additional consideration – Handling increases/decreases in new debt

A key feature of the transitional weighted trailing average model is that it can accommodate both increases and decreases in new debt requirements from year-to-year.

When additional debt is required (e.g. due to RAB growth), the model phases the increase into the trailing average over time using transitional tranches. Conversely, if less debt is required, the model reduces the volume of new 10-year debt and uses transitional tranches accordingly.

This flexibility ensures the model maintains a smooth and consistent trailing average, regardless of changes in the funding profile. It should also support NPV neutrality, as the return on debt should reflect benchmark efficient financing costs where the debt proportion of the RAB is either growing or contracting.

5.2.4.2 Model complexity

While the transitional weighted trailing average model is conceptually simple, its implementation requires the incorporation of a significant number of overlapping debt tranches over time.

Each year, the changes in debt is notionally split into 10 equal tranches:

- one tranche (10%) is included in the trailing average immediately; and
- the remaining nine are transitional tranches, gradually rolled into the 10-year maturity trailing average over the next nine years.

Because transitional tranches from multiple prior years may still be phasing-in, the model can include a large number of individual debt traches at any given point in time. For example, in year 10 of continuous new debt issuance, the model may include:

- 10 fully phased-in 10-year debt tranches; and
- up to 45 transitional debt tranches still rolling in from the past nine years.

This means up to 55 separate debt tranches may be active in the model at any one time (i.e. being used in the calculation of the weighted trailing average return on debt). Each with its own weight and benchmark interest rate.

5.2.4.3 When the weighted trailing average could apply

Below we present two possible options for when the weighted trailing average could apply:

- Option 1 – Application to all NSPs, regardless of the size or timing of their debt raising; or
- Option 2 – Application to all NSPs that meet a certain trigger, such as a large increase in forecast debt funding needs. NSPs that do not meet this trigger would stay on the simple trailing average.

Option 1 provides a simple and uniform approach. It avoids the need for threshold testing and any incentives for NSPs to structure projects or capital forecasts to avoid or meet the trigger. However, it may impose unnecessary complexity and cost on NSPs with relatively stable debt profiles.

Option 2 targets the weighted trailing average approach only to situations where it is most relevant. That is, where there is a material change in debt raising. For example, the weighted trailing average could be applied where a NSP's forecast debt raising in a single year exceeds:

- 15% of its total existing debt (i.e. the NSP raises more than 5% of debt over the base rollover funding requirement of 10% of debt in the year); or
- An absolute threshold of new debt raised, such as more than $250 million in a single year.

It is also open to use a combination of thresholds. For example, if either of the above two triggers were met, then the weighted trailing average would apply.

Any thresholds used would aim to ensure that the weighted trailing average is used only where the simple trailing average materially departs from the efficient cost of financing due to large step-changes in debt. We consider this approach could strike an appropriate balance between target application and minimising unnecessary costs and/or complexity.

5.2.4.4 Rolling true-up to correct for forecast and actual capital expenditure differences

A true-up to correct for differences between forecast and actual capital expenditure differences may be appropriate, particularly where the weighted trailing average is applied based on forecast debt raising.

This would allow the return on debt allowance to better reflect actual financing costs. For example, where a business forecasts a material increase in debt, but actual investment is delayed or reduced, the future return on debt allowance could be adjusted to correct for any under- or over-compensation due to the capital expenditure forecasting error.

A true-up could be implemented in one of two ways:

- as a rolling adjustment, applied as part of the annual return on debt update; or
- as a true-up at the time of the RAB roll forward, which aligns with the existing network revenue determination process.

In our view, any true-up does not need to be perfect, as long as it is not biased and materially reduces the risk from the allowed return on debt being incorrect due to a material mismatch between forecast and actual capital expenditure.

If implemented, any true-up mechanism would be implemented automatically in the RORI.

5.2.4.5 Interaction with the Capital Expenditure Sharing Scheme (CESS)

Any true-up mechanism may interact with the operation of the CESS, which shares the benefits or costs of capital expenditure out-performance or under-performance between NSPs and consumers.

In particular, a true-up that adjusts for financing impacts of capital expenditure differences may reduce or duplicate the incentives provided by the CESS.

While we do not expect this interaction to be significant, we would need to review it further to ensure that both the CESS and any return on debt true-up operate as intended.

5.2.5 Analysis of our proposed approach

Benefits

- Improved cost recovery – Should better reflect benchmark interest costs incurred for any given NSP during large, lumpy capital expenditure by aligning debt allowances with financing timing and size.
- Maintains NPV neutrality – Should reduce the mismatch between actual financing costs and the return on debt allowance, supporting efficient investment signals.
- Smooths price impacts – Phases-in large borrowings over time via the transitional debt tranches, contributing to smoother return on debt outcomes and prices for consumers.
- Supports either increases or decreases in debt – The model adjusts for RAB growth or shrinkage by flexibly increasing or decreasing new/reduced debt and associated transitional debt tranches.
- Structured consistency with the 2022 RORI – Mirrors the RORI transition logic, ensuring alignment across regulatory treatments.
- Continuity for existing debt – Maintains the simple trailing average treatment for the steady state debt portion of the debt portfolio, preserving stability.

Risks

- High modelling complexity – Requires the use of up to 55 debt tranches: 10 new debt tranches per year and up to 45 transitional tranches from prior years.
- Data and forecast reliance – If a true-up is used, the appropriate adjustment depends on the quality of forecast versus actual capital expenditure numbers.
- Trigger-based consistency challenges – If a trigger is used, the selective application (i.e. only when a trigger is met) creates a dual-track system across NSPs, risking perceived unfairness or inconsistency. It also may create an incentive to meet (or not meet) a trigger if this is beneficial (or not beneficial) to a given NSP.
- True-up interaction with the CESS – A true-up that adjusts for financing cost differences could overlap with, or reduce, the incentive effects of the CESS, requiring consideration of CESS design generally and/or at each revenue determination.

Trade-offs

- Accuracy versus administrative burden – Gains in cost recovery precision and economic clarity come with higher implementation and modelling effort and cost.
- Tailored recovery versus transparency – Allows nuanced alignment with investment-driven debt patterns, but the internal logic is harder to follow than the simple trailing average.
- Uniform versus targeted application – Applying a weighted trailing average to all NSPs ensures consistency, but may impose unnecessary complexity for businesses with relatively stable debt portfolios. Triggered application may reduce this burden, but may raise concerns about incentive impacts and fairness between NSPs (i.e. when comparing NSPs that are on the weighted trailing average to those that are not).
- Simple outputs, complex mechanics – The final return on debt is a single, blended number, but this hides a relatively more complex underlying structure.

5.2.6 Conclusion

Major transmission projects being delivered under AEMO's ISP are driving large, lumpy capital programs for several NSPs, often requiring significant volumes of debt to be raised over short time periods. When interest rates move materially over time, the simple trailing average approach may no longer provide an efficient or accurate estimate of the return on debt – an issue particularly relevant for large new investments.

The weighted trailing average approach provides a targeted way to improve the alignment between the return on debt allowance and benchmark financing costs for individual businesses, particularly where a business raises a large volume of new debt in a short period of time.

The weighted trailing average approach we have developed for illustrative purposes in this paper builds on the simple trailing average method, but introduces a mechanism to phase-in changes in debt over time. This can provide a better match with benchmark efficient financing costs, improve cost recovery, and support NPV neutrality when applied in appropriate circumstances.

However, these benefits come with increased complexity. The method requires using up to 55 overlapping debt tranches at any one time, each with its own benchmark rate of return and weight. This materially expands the size and logic of the return on debt model. If a true-up mechanism is adopted, it introduces a further layer of data input and adjustment.

Implementing this illustrative approach may require updates to the AER's internal models and the information we collect through RINs, particularly if a true-up is used. The complexity is not expected to be trivial and would need to be carefully managed through the 2026 RORI and supporting templates, if implemented.

NSPs would also need to consider the operational requirements and impacts on their respective businesses from initially implementing and then managing such an approach over time.

5.2.7 Consultation questions

We invite stakeholder feedback on the weighted trailing average approach to the return on debt we have set out in this paper, noting there may be other variations that stakeholders have views on.

We request stakeholders to provide sufficient detail in their submissions to this paper to help us understand why they have answered the questions the way they have, and to facilitate us taking any concerns into account in developing options for implementing a weighted trailing average.

We would also be interested in meeting with individual stakeholders prior to them lodging their submissions to clarify any issues and to receive early feedback on this paper.

Table 5: Consultation questions – weighted trailing average

#	Questions
1.	Introduction of a weighted trailing average approach: (a) Do you in principle support the introduction of some form of weighted trailing average (qualified by your answers to the later questions in this section)? Please include reasons.
2.	Application of the weighted trailing average approach: (a) Should it apply to all NSPs by default, or only when forecast capital expenditure exceeds a certain threshold? Please include reasons. (b) If a threshold is preferred, what kind of threshold would work best (e.g. a percentage of RAB and/or a fixed dollar amount or some other measure/s), and what level would be appropriate for your suggested trigger/s? Please include reasons.
3.	How the true-up mechanism should work: (a) Do you support using a true-up to reduce the risk from capital expenditure forecasts? If you do or do not, please explain why. (b) What do you consider a preferred method of applying a true-up? Would it be through adjustments to the rate of return during the regulatory period (i.e. some form of rolling true-up), or through an adjustment to the rate of return in the next regulatory period (potentially at the time of the RAB roll forward calculations)? Why?

#	Questions
	(c) If a rolling return based true-up with a two-year lag were adopted, are there specific implementation risks or modelling issues we should consider? Why?
4.	Interaction with the CESS: (a) Could financing benefits or losses be double-counted under both a true-up and the CESS? Why? (b) If so, should the CESS be amended after the Rate of Return Instrument is made to ensure it operates as intended?
5.	Reporting: (a) Are there any concerns with changes that might be needed to Regulatory Information Notices, the Roll-Forward Model, or the RORI?
6.	Costs: (a) Are there likely to be material incremental costs imposed on network businesses from applying a weighed trailing average to them (e.g. additional hedging or other financial transaction costs). If yes: what would these costs relate to (e.g. additional financial transactions of a given type); how large would you expect these to be; are these costs one-off or transitional; and what scheme design elements might reduce any incremental costs?
7.	Transition: (a) What transitional arrangements or lead times would be necessary to help NSPs prepare for a change to a weighted trailing average?
8.	Overall design: (a) Does the proposed approach strike the right balance between incentive-based benchmark regulation and greater use of firm-specific cost information that may move the trailing average approach closer to cost-of-service regulation? (b) Does the proposed approach strike the right balance between accuracy, simplicity and regulatory consistency? Why? (c) Would the use of a weighted trailing average add material regulatory burden and/or cost for NSPs to which it would apply? If yes, what are these likely to be? (d) Are there any other ideas or refinements we should consider? If yes, what are these?

5.3 Third-party yield curves data

5.3.1 Proposed approach

In the 2022 RORI, we estimated the return on debt using independent third-party yield curves constructed from data published by three providers: the RBA, Bloomberg and Refinitiv. This approach was supported by our EICSI analysis, which showed that all three sources performed well with no material outperformance once term differences were accounted for. Using multiple data providers helped reduce volatility and supported robust return on debt estimates.[45]

In November 2023, the RBA announced that it would discontinue publishing spread to swap data in its F3 Statistical Table. While the RBA continues to publish a monthly corporate bond yield curve, it no longer provides the spread to swap rate data needed to interpolate and construct a daily swap adjusted yield. This adjustment was a key input to our previous return on debt estimates. As a result, we advised that RBA F3 data would no longer be used under the 2022 RORI[46] and we implemented the Instrument's contingency mechanism by relying solely on Bloomberg and Refinitiv data.[47]

In our view, using an average of three providers reduces the impact of volatility or data shocks from any single source. This supports better achievement of the NEO and NGO. On this basis, we consider the reintroduction of RBA yield data appropriate.

To enable this in the 2026 RORI, we propose amending the relevant clauses of the 2022 RORI. Specifically, we propose continuing to use the RBA's monthly corporate bond yield data and calculating swap-adjusted yields using swap rate data from either Bloomberg or Refinitiv, depending on availability. This approach would very closely approximate the RBA swap-adjusted yield curve used previously and support consistent, reliable return on debt estimates.

5.3.2 Consultation questions

We invite stakeholder feedback on our proposed approach to reintroduce using the RBA debt curves for estimating the return on debt in the 2026 RORI.

Table 6: Consultation questions – third-party yield curves data

#	Questions
1.	Do you support the reintroduction of the use of RBA yield curve data combined with Bloomberg or Refinitiv swap data? If no, why not?
2	Are there any concerns with the proposed method of calculating the return on debt in the absence of RBA spread to swap data (i.e. using swap rate data from another source)?

45 AER, *Explanatory Statement - Rate of Return Instrument*, 24 February 2023, pp. 225-227.

46 AER, *Use of Reserve Bank data in Rate of Return calculations*, 11 December 2023.

47 AER, *2022 Rate of Return Instrument (Version 1.2)*, 2 August 2023, cl. 26(a).

Appendix A: Weighted trailing average illustrative example

This Appendix outlines how a weighted trailing average approach could work, and how it would interact with existing frameworks. It is to be read in conjunction with the Excel illustrative example that has been released with this discussion paper.

Inputs

The model requires the following key inputs to simulate the application of the transitional weighted trailing average approach.

1. Debt raised over prior years:
    - *Input location*: Sheet 1, Cell L6.
    - This represents the total base amount of debt carried forward from the previous years. One-tenth of the debt is assumed to have been raised in each prior year and needs to be refinanced 10 years after it was raised (unless total debt decreases).
2. Change in annual debt funding requirement:
    - *Input location*: Sheet 1, Cells N6 to AF6.
    - This reflects the increase or decrease in debt needed in the current year relative to the previous year (e.g. +$40 million or -$40 million).
3. Interest rates:
    - *Input location*: Entered in Sheet 2.
    - These rates are applied to existing 10-year debt already in the trailing average, newly issued 10-year debt, and transitional tranches as they roll into new 10-year debt.

Process

1. Calculate total debt funding requirement for the year:
    - The model adds the prior year's total debt (Cell L6) to the change in debt funding requirement (Cell N6) to determine the total funding need for the current year (Cell N8).
2. Split the new debt into 10 equal notional tranches:
    - For example, a $40 million increase would be split into 10 x $4 million tranches.
3. Include one tranche (10%) as new 10-year debt:
    - One tranche is immediately treated as new 10-year debt and entered into the trailing average in Cell N12.
4. Include rollover of maturing 10-year debt:
    - Cell N12 also includes any 10-year debt maturing from the simple trailing average portfolio (e.g. $100 million rolling over from Cell M12).

- This ensures both new and rolled-over 10-year debt are reflected in the trailing average.

5. Classify remaining nine tranches as transitional debt:
   - These are assigned notional maturities from one to nine years and entered in Cells N24 to N32.
   - Transitional tranches, while part of the overall weighted trailing average, are not part of the 10-year maturity trailing average until they mature (and are rolled over).
6. Roll transitional tranches into the 10-year maturity trailing average as they mature:
   - Each year, one transitional tranche matures and is replaced with a new 10-year debt instrument at the market rate for that year.
   - These rollovers are reflected in Cells O13 to X12.
7. Tranche-by-tranche weighting:
   - The model calculates the weight applied to each debt tranche (existing, new, and transitional debt).
   - These weights are calculated in Rows 407 through 766 and form the basis for the final trailing average.

Outputs

1. Weighted trailing average return on debt:
   - The overall weighted trailing average is calculated as a weighted average of the return on each tranche of debt (based on their assigned weights).
   - This is the key output for determining the allowed return on debt.
   - It is calculated in Row 770.
2. Simple trailing average (for comparison):
   - A simple trailing average (which assumes all debt is issued as 10-year debt and held for 10 years) is calculated separately for benchmarking. This value is found in Row 771.
   - The difference between the weighted and simple trailing averages is shown in Row 772.
3. Cashflows and difference analysis:
   - The model shows the allowed return on debt the cashflows associated with both the weighted and simple trailing average approaches. It highlights any differences in outcomes.
   - These comparisons are displayed in Rows 774 to 777.

Appendix B: Consolidated list of questions for consultation

Consultation questions – overall priority issues for assessment

#	Questions
1.	Are there other issues, beyond the weighted trailing average, equity beta and third-party yield curves stakeholders wish to raise? If yes, what are these and why do you consider they warrant consideration during the review?

Consultation questions – equity beta

#	Questions
1.	Do you agree with our preliminary options, as outlined in section 5.1.3? If no, why not? Are there any other potential options that you would like us to consider?
2.	How could we use the equity beta estimates of international energy firms to inform our decision on equity beta?
3.	What other filters and/or adjustments should we make to international energy firms and their equity beta estimates to make them more comparable to the equity beta estimates of Australian regulated energy networks, as outlined in section 5.1.2.1?
4.	Do you have any suggestions on how best to address the leverage anomaly, as outlined in section 5.1.2.2?
5.	Do you have any suggestions on how best to address the issue of different domestic indices between Australian and international firms, as outlined in section 5.1.2.3?
6.	Other than the comparator set, do you have any comments on any other aspects of our approach to estimating equity beta?

Consultation questions – weighted trailing average

#	Questions
1.	Introduction of a weighted trailing average approach: (a) Do you in principle support the introduction of some form of weighted trailing average (qualified by your answers to the later questions in this section)? Please include reasons.
2.	Application of the weighted trailing average approach: (a) Should it apply to all network businesses by default, or only when forecast capital expenditure exceeds a certain threshold? Please include reasons. (b) If a threshold is preferred, what kind of threshold would work best (e.g. a percentage of RAB and/or a fixed dollar amount or some other measure/s), and what level would be appropriate for your suggested trigger/s? Please include reasons.

#	Questions
3.	How the true-up mechanism should work: (a) Do you support using a true-up to reduce the risk from capital expenditure forecasts? If you do or do not, please explain why. (b) What do you consider a preferred method of applying a true-up? Would it be through adjustments to the rate of return during the regulatory period (i.e. some form of rolling true-up), or through an adjustment to the rate of return in the next regulatory period (potentially at the time of the RAB roll forward calculations)? Why? (c) If a rolling return based true-up with a two-year lag were adopted, are there specific implementation risks or modelling issues we should consider? Why?
4.	Interaction with the CESS: (a) Could financing benefits or losses be double-counted under both a true-up and the CESS? Why? (b) If so, should the CESS be amended after the Rate of Return Instrument is made to ensure it operates as intended?
5.	Reporting: (a) Are there any concerns with changes that might be needed to Regulatory Information Notices, the Roll-Forward Model, or the RORI?
6.	Costs: (a) Are there likely to be material incremental costs imposed on network businesses from applying a weighed trailing average to them (e.g. additional hedging or other financial transaction costs). If yes: what would these costs relate to (e.g. additional financial transactions of a given type); how large would you expect these to be; are these costs one-off or transitional; and what scheme design elements might reduce any incremental costs?
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Consultation questions – third-party yield curves data

#	Questions
1.	Do you support the reintroduction of the use of RBA yield curve data combined with Bloomberg or Refinitiv swap data? If no, why not?
2	Are there any concerns with the proposed method of calculating the return on debt in the absence of RBA spread to swap data (i.e. using swap rate data from another source)?

Glossary

Term	Definition
ABS	Australian Bureau of Statistics
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ATO	Australian Tax Office
CAPM	Capital Asset Pricing Model
CGS	Commonwealth Government Securities
CRG	Consumer Reference Group
EICSI	Energy Infrastructure Credit Spread Index
ENA	Energy Networks Australia
ERAWA	Economic Regulation Authority Western Australia
Instrument (or RORI)	Rate of Return Instrument
ISP	Integrated System Plan
NEL	National Electricity Law
NEO	National Energy Objective
NER	National Electricity Rules
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net Present Value
NSP	Network service provider
NZCC	New Zealand Commerce Commission
PTRM	Post-tax revenue model
QCA	Queensland Competition Authority
QTC	Queensland Treasury Corporation
RAB	Regulatory asset base
RBA	Reserve Bank of Australia
RFM	Roll-Forward Model

Term	Definition
RIN	Regulatory Information Notice
RORI (or Instrument)	Rate of Return Instrument
RPP	Revenue and pricing principles
STA	Simple trailing average
SL CAPM	Sharpe Lintner Capital Asset Pricing Model
WACC	Weighted average cost of capital
WTA	Weighted trailing average