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Friday, 19 December 2025

Gavin Fox
General Manager Network Pricing
Australian Energy Regulator

Lodged online: RateOfReturn@aer.gov.au

Dear Gavin,

Rate of Return Instrument – Review discussion paper

Transgrid welcomes the opportunity to respond to the Rate of Return Instrument (**RORI**)—Review Discussion Paper and we support the Australian Energy Regulator's (**AER**'s) detailed work and consultative approach.

As the primary Transmission Network Service Provider and System Strength Service Provider for NSW, Transgrid is committed to delivering outcomes that promote the long-term interests of consumers, including more predictable energy costs, enhanced reliability, and fair sharing of risks between networks and consumers. Transgrid operates the high voltage transmission network in NSW and the Australian Capital Territory, which services about four million electricity consumers.

Our response to the Discussion Paper is set out below. We propose that:

- International comparators are used when determining the equity beta so that it remains relevant today, helping to overcome limitations with the obsolete domestic sample previously used

- A simple weighted trailing average return on debt approach is adopted so that it better reflects changes in efficient debt financing costs, especially given the significant step change in investment occurring at present across the sector

- A simple return on debt true-up is adopted by amending the Capital Expenditure Sharing Mechanism (**CESS**) so that the weighted trailing average applies as intended.

Although we are not proposing changes to the RORI to address it, we are acutely aware of the additional risks posed by major greenfield projects, which are needed to realise Australia's energy transition ambitions. Our submission explores this risk and how other regulators are addressing it. We propose engaging with the AER and other stakeholders on these additional

risks so that the regulatory framework continues to support efficient and timely investment in these projects to promote the long-term interests of consumers, including through an equitable sharing of risk.

We value the constructive and insightful discussions with the AER and look forward to further dialogue on matters outlined in our attached submission. Transgrid has also been a key contributor to the Energy Networks Australia (**ENA**) submission and we support the positions included in this response.

If you or your staff require any further information or clarification on this submission, please contact Alex McPherson, General Manager of Regulation and Policy at [redacted]

Yours sincerely

[redacted]

Nadine Lennie
Chief Financial Officer

1. Response to Discussion Paper

Transgrid welcomes the constructive engagement with the AER and its staff regarding the 2026 RORI Review. The collaborative approach adopted by the AER has allowed us to understand initial AER thinking and to explore potential improvements to the RORI, which is appreciated by Transgrid.

The RORI should aim to reflect real world investment conditions and practices. The goal should be that investors are neither over or under compensated and that consumers only pay the costs required to attract sufficient investment. This supports economic efficiency and resource allocation which will benefit both investors and consumers.

We agree with many aspects of the Discussion Paper, including its focus on the equity beta and return on debt. The paper acknowledges some of the sector's challenges and reflects an openness to improving transparency to support the energy transition in the National Electricity Market. We approached the 2026 RORI Review in the context of the long-term interests of consumers and how we help deliver the energy transition as quickly and as cheaply as possible for the benefit of consumers.

Since the 2022 RORI was developed, there has been a marked step change in transmission investment requirements—both in scale and urgency. This shift, combined with projections for further increases, necessitates continued review and refinement of how risks are quantified, shared and compensated. It also calls for a fresh examination of simple trailing average cost of debt approach so that it remains fit for purpose in the context of large-scale, high-risk greenfield investments and accelerated project delivery timelines.

Key points covered in subsequent sections of our submission include the need to review the equity beta to remain relevant and credible by drawing from international comparators, particularly in light of the energy transition. We also recommend adopting the weighted trailing average approach developed by the Queensland Treasury Corporation (**QTC**), with a roll-forward mechanism (e.g., true-up) that uses actual rather than forecast capex, to better align with real world debt financing practices. These refinements to the RORI will help promote efficient investments so that NSPs like Transgrid can continue to invest in their networks in a way that supports the long-term interests of consumers. They also ensure that consumers' bills are no higher than needed to attract that investment.

We also endorse ENA's submission on the AER's Discussion Paper. We support including the Reserve Bank Australia (**RBA**) yield curve, along with those from Bloomberg and Refinitiv, to calculate return on debt observations. However, we propose extrapolating that curve to a 10 year term directly using bond yields, without the need for more complex calculations involving swap data.

The following two sections set out our detailed positions on the equity beta and return on debt, providing further analysis and supporting evidence. These sections are intended to inform the AER's ongoing review and to contribute constructively to its development of the 2026 RORI.

We also include a third section that highlights the additional risk posed by major greenfield investments, especially during construction. Although some regulators have addressed this risk when setting allowed rates of return, we propose engaging with the AER and other stakeholders (including the Transgrid Advisory Council, or **TAC**) on these additional risks so that the regulatory framework addresses these risks in a way that continues to support the long-term interests of consumers.

Appendices to this submission articulate the additional risk posed by major greenfield projects (Appendix A) and respond to the consultation questions in the Discussion Paper (Appendix B). These materials are designed to assist the AER in its deliberations.

2. Equity beta

2.1. Summary and context

Equity beta is a key input to the allowed rate of return. A robust and transparent approach to estimating beta is essential not only so that the return reflects the risks faced by the benchmark efficient entity and promotes investor confidence, but also so that consumers benefit from timely and efficient investment in electricity network infrastructure.

Given the limitations of the domestic sample and the evolving investment landscape, it is increasingly important to consider evidence from international comparators when setting the equity beta. This approach not only supports NSPs competing internationally for the funds needed to deliver the energy transition, but also safeguards consumer interests by ensuring that the allowed rate of return reflects prevailing market conditions. When the regulatory framework is responsive to changes in risk, consumers benefit from timely investment in infrastructure that delivers affordable, reliable, and sustainable energy. Although government and other measures have been introduced to help support that investment,[1] setting an allowed rate of return that reflects prevailing market conditions remains essential.

We support including international comparators when estimating the equity beta for the benchmark efficient entity, provided appropriate filtering is used. The limited domestic sample is losing its relevance and credibility at times when the energy transition progresses and significant equity capital investment is required.

The adoption of international comparators, when filtered and translated appropriately, supports the AER's objective of setting a fair and robust rate of return. This approach balances the need for statistical reliability with the imperative to maintain investor confidence and facilitate the energy transition.

2.2. The case for change

The Australian sample of listed energy network businesses is limited. There is only one currently listed, APA, and most of its revenues are derived from unregulated gas pipelines. At the same time, trading data for the now unlisted businesses included in the Australian sample is becoming outdated. It is no longer appropriate to assume that the systematic risk implied by that trading data or changes in APA's share price reflects that of the benchmark efficient entity. Relying on such historical data may mistakenly suggest that the equity beta remains stable over time, when in fact market conditions and risk exposures can and do shift materially.

[1] Measures include introducing jurisdictional cost recovery regimes (like the Electricity Infrastructure Investment Act in NSW), government underwrites, concessional financing from the Clean Energy Finance Corporation, and changes to the NER (e.g., for financeability of Integrated System Plan projects).

By incorporating international comparators, the dataset for beta estimation can be broadened and made more relevant, enhancing the reliability, robustness and timeliness of the analysis so that it picks up the evolving risk profiles faced by NSPs. When done appropriately, this recognises that many overseas energy network businesses are exposed to similar systematic risks as their Australian counterparts. International comparators provide valuable insight into the risk profile of the benchmark efficient entity, especially where domestic data is insufficient or inadequate and does not capture the full spectrum of market conditions.

Electricity transmission businesses worldwide are encountering similar systematic risks as they undertake the substantial investments required to enable the energy transition. Most jurisdictions are facing comparable challenges, including large-scale infrastructure upgrades and regulatory reform, which means that international peers provide a meaningful basis for comparison. This supports the use of international beta estimates as the risk profiles across regions are aligning given these common drivers.

Including global peers is also consistent with regulatory practice in other jurisdictions, where beta estimates from overseas businesses are routinely used to supplement local estimates. For instance, in its 2016 Input Methodologies Review, the New Zealand Commerce Commission noted that:[2]

> *We have included New Zealand, Australian, UK, and US-based electricity and gas utilities when determining our energy comparator sample. In practice, it is difficult to find a sufficient number of comparable New Zealand based businesses in most industries, so we cannot rely solely on domestic data. Therefore, we have included firms from overseas jurisdictions to ensure our sample is sufficiently large to reach a reliable estimate.*

Although there was some refinement to the sample adopted, the Commerce Commission continued to include firms from overseas jurisdictions when determining the equity beta in its more recent 2023 Input Methodologies Review.[3]

Similarly, the Queensland Competition Authority (**QCA**) recently observed in its 2024 rate of return review: [4]

> *Our task when determining a set of comparator firms is to identify a set of firms that will best enable us to choose a beta estimate that reasonably reflects the systematic risk of the regulated entity. Consistent with the domestic-style CAPM that we employ, the starting place for an appropriate set of comparators is domestically listed businesses. However, our approach in recent reviews has been to expand our*

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[2] Commerce Commission, 20 December 2016, *Input methodologies review decisions*, *Topic paper 4: Cost of capital issues*, para.279; see link.
[3] Commerce Commission, 14 June 2023, *Input methodologies review decisions*, *Topic paper 4: Cost of capital issues*; see link.
[4] QCA, September 2024, *Rate of Return Review*, Version 4, pp. 82–83; see link.

> *consideration of comparators to include relevant international businesses. This approach has allowed us to increase the sample size of comparator firms available to us, while also allowing us to use comparators from industries that are not publicly listed in Australia, such as regulated water firms.*

Particularly relevant for present purposes, the UK Office of Gas and Electricity Markets (**Ofgem**), has recently decided (at least in draft) to revise is comparator sample to include some European energy utilities. In its methodology decision, it explained its rationale:[5]

> *On balance, we provisionally see a net benefit in including European utility companies in our comparator set. While these companies operate in a different country and under a different regulatory regime, they are likely face similar challenges relating to meeting net zero targets. We see this compromise as thematically similar to the compromise involved in using GB Water comparators. In Water we have a different sector but a very similar regulatory regime. With European energy network comparators we will have the same sector but a potentially different regulatory regime.*

Ofgem retained this position in its July 2025 draft RIIO-3 decisions for electricity transmission, and gas transmission and distribution businesses.[6]

Other regulators that include firms from overseas jurisdictions include the Economic Regulatory Authority of Western Australia (**ERA**),[7] Independent Pricing and Regulatory Tribunal of NSW (**IPART**),[8] and the Essential Services Commission of Victoria (**ESC**)[9].

2.3. Appropriate filtering

Consistent with precedent, and good practice, it is important to apply objective filters when selecting international comparators so that they are relevant and comparable to the benchmark efficient entity.

As a minimum, key filters should include:

- Gearing levels consistent with the benchmark entity, perhaps falling within a range of ± 20 percentage points of the benchmark gearing adopted for the RORI (e.g. 40–80% for a 60% gearing assumption)
- Market capitalisation sufficient to ensure liquidity and trading depth

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5 Ofgem, 18 July 2024, *RIIO-3 Sector Specific Methodology Decision – Finance Annex*, para.3.197; see link.
6 Ofgem, 1 July 2025, RIIO-3 Draft Determinations - Finance Annex, para.3.58; see link.
7 ERA, 16 December 2022, *Explanatory statement for the 2022 final gas rate of return instrument*, pp. 6 and 179; see link.
8 IPART, February 2018, *Review of our WACC method*, pp. 7 and 61–64; see link.
9 See, for instance: ESC, 31 December 2021, *Inquiry into the Port of Melbourne compliance with the pricing order*, Final report, pp.64–66; see link.

- Exclusion of firms subject to major corporate transactions or restructuring, which may require some judgement or assessment of whether and how such activity has affected share price movements
- Minimum trading history of at least five years to support robust statistical analysis.

Applying these filters mitigates the risk of bias as only firms with similar risk characteristics and reliable trading data are included in the sample. This approach supports the integrity of the beta estimate and enhances investor confidence in the regulatory process.

The filters above are consistent with those adopted by other regulators. The New Zealand Commerce Commission, for instance, considered bid-ask spreads, shares available for trading, and variability in asset beta estimates across estimation methods (daily, weekly and four-weekly) when using judgement to select its comparator sample.[10] The QCA uses a market capitalisation filter (of US$150 million), and requires comparators to have a complete trading history over the chosen observation window (e.g. 5 or 10 years in its case).[11] The ERA considers the impact of any material merger and acquisition activity when selecting comparators.[12]

2.4. Other considerations

While international comparators offer a broader evidence base, there remain limitations due to potential differences in regulatory regimes, market structures, and accounting practices. These factors should be carefully considered and transparently addressed in the beta estimation process where appropriate. Sensitivity analysis and robustness checks should be used so that the final beta estimate adequately reflects the risk profile of the benchmark efficient entity in the Australian context.

When estimating beta from international comparators, observed equity betas should be translated to reflect the benchmark efficient entity's assumed gearing, including an explicit debt beta where necessary. This allows consistency in risk measurement and comparability across firms and jurisdictions. It is also consistent with past AER practice when using an Australian only sample.

Looking beyond the immediate transition, it is equally important for consumers that the regulatory framework allows the equity beta to update as the risk environment evolves. Once major investments are completed and the sector enters a lower-risk phase, maintaining a measure of risk that does not reflect prevailing market conditions may not be in the interests of consumers. Incorporating international comparators will mean that the 4-yearly resetting of

[10] Commerce Commission, 14 June 2023, *Input methodologies review decisions*, *Topic paper 4: Cost of capital issues*, para. 4.234; see link.
[11] QCA, September 2024, *Rate of Return Review*, Version 4, pp. 86–87; see link.
[12] ERA, 16 December 2022, *Explanatory statement for the 2022 final gas rate of return instrument*, pp. 183–185; see link.

the RORI can better reflect the prevailing environment and truly reflect the risk of the industry at the time of the reset. The Discussion Paper asks whether there should be any other consequential changes to the RORI if international comparators are used. Transgrid's view is that the other parameters remain appropriate. For instance, it would be inappropriate to adjust the market risk premium (**MRP**) to account for differences in risk between Australia and the jurisdictions of the international comparators. The MRP should capture the aggregate compensation investors require for bearing systematic risk in a given market; it is inherently linked to local economic conditions and investor expectations. Adjusting the MRP for international differences would undermine its role as a market-wide parameter, is not founded on sound market practices, adds unnecessary complexity and introduces inconsistency with the version of the capital asset pricing model (**CAPM**) adopted by the AER.

Instead, the focus should remain on reflecting systematic risk through the beta estimate, with the MRP set according to local market conditions. Although beta estimates for international comparators can help inform the systematic risk of the benchmark efficient entity operating in the local market, their use does not justify changes to the assumed market that the CAPM is being applied to.

Not adjusting the MRP is entirely consistent with how other economic regulators use international comparators.[13] The New Zealand Commerce Commission has previously observed that it is not necessary to adjust for differences in systematic risk due to regulatory differences across jurisdictions.[14]

[13] None of the New Zealand Commerce Commission, the QCA, Ofgem, IPART, or the ERA adjust the MRP that they use to account for differences in risk between the domestic and overseas jurisdictions that they select comparators from.

[14] Commerce Commission, December 2010, *Input Methodologies (Electricity distribution and gas pipeline services) – Reasons paper*, pp. 540–542; see link.

3. Return on debt

3.1. Summary and context

Debt financing plays a pivotal role in enabling the significant investment required to support Australia's energy transition. As the sector moves towards cleaner, more resilient infrastructure, NSPs like Transgrid must access substantial capital to meet that need.

To help attract that capital, it is critical that the allowed return on debt aligns with efficient debt financing practices where practicable. Doing so helps encourage the necessary investment and avoid inefficient financing and transaction costs. For consumers, this reduces the risk that essential projects are delayed or forgone, or inefficient investment is made, either of which can undermine reliability and affordability.

The 2022 RORI uses the simple trailing average approach to determine the allowed return on debt. Although that approach can be appropriate where investment is stable over time or under a stable interest rate environment, it does not work well when debt raising requirements materially depart from the 10% implied by that approach—which can lead to material mismatches between the return on debt allowance and real-world debt financing costs.

The AER Discussion Paper considers moving to a weighted trailing average approach to address this potential mismatch and includes an illustrative example of how that approach could apply. Transgrid supports moving to a weighted trailing average approach for the return on debt; however, it needs to be simple and practical. Rather than the illustrative example, Transgrid supports the ENA's proposal to adopt the QTC approach referred to in the Discussion Paper. That approach caters for commercial application, is simple, is easy to apply uniformly across all NSPs, is replicable, and is efficient (i.e. supports lower transaction and transition costs).

If adopted, we also propose introducing a roll forward mechanism to account for any differences between actual and forecast debt weights. As explained in section 3.4, this could be achieved by making simple changes to the CESS model. The subsections below explain our concerns with the simple trailing average approach and our support for a weighted trailing average approach with a true-up.

3.2. Concerns with a simple trailing average

The 2022 RORI determines the allowed return on debt using a simple 10 year trailing average approach. This approach is appropriate where an NSP issues around 10% of its debt each year or under a stable interest rate environment.

However, where an NSP issues noticeably more or less than 10% of its debt in a year, it can lead to mismatches between the return on debt allowance and real-world debt financing costs. This occurs because new debt is issued by an NSP at prevailing rates to fund new capex that is compensated based on a simple trailing average of historical bond yields. The 6% of the

RAB that is assumed to be funded at the prevailing rate (i.e. 10% of the 60% gearing) may not align with the value of that new debt, which leads to the potential mismatch.

This mismatch risk is heightened as investment needs rise or face greater variability from one year to the next—as they do today for many NSPs. For these NSPs, mismatches are now much more likely, where the return on debt allowance could be either too high or too low. The potential for such mismatches undermines efficient investment and can lead to consumer bills that are higher or lower than needed to support that essential investment.

Moving to a methodology that better aligns regulatory allowances with actual financing practices is essential. Doing so will help protect consumer interests and support efficient investment as the sector evolves.

3.3. Weighted trailing average

We support adopting the weighted trailing average approach for the return on debt developed by the QTC (the QTC approach).

As investment in major projects accelerates, it is critical that the regulatory framework keeps pace with these changes and continues to support efficient investment. The QTC approach provides a practical, transparent, and defensible means of achieving this goal, ultimately benefiting both investors and consumers through improved accuracy of cost recovery and regulatory certainty.

If adopted, the QTC approach would represent a substantial improvement over the simple trailing average approach included in the 2022 RORI, as it allows for the actual debt portfolio weights to be reflected in the calculation of the return on debt. Aligning the regulatory framework with the real-world financing practices of NSPs benefits consumers; it is easier to attract debt financing for vital investments while reducing the risk that consumer bills are higher or lower than necessary.

Such an approach is also particularly important in the current environment, where NSPs like Transgrid are undertaking significant investments in major projects to support Australia's energy transition. These investments often require large and varied debt issuances raised at prevailing rates, which can result in significant mismatch against the return of debt under a simple historical 10 year trailing average. The QTC approach accounts for the timing and scale of debt raisings, thereby mitigating the risk that networks are either over- or under-compensated due to shifting market conditions; it helps the allowed return on debt to better reflect the efficient financing practices of NSPs over time and to promote efficient investments. This benefits consumers by attracting needed investment and reducing the risk that bills are higher or lower than they should be.

We were encouraged to see the AER consider and consult on its own version of the weighted trailing average approach. Our feedback concludes that, as proposed, the approach is too complex to apply and does not reflect real-world efficient debt financing practices.[15]

As well as being a challenging approach to apply,[16] it does not align with real world debt financing practices and would impose meaningful transaction costs on any NSPs that attempt to mimic it. For instance:

- Corporate treasuries will typically not raise 10 tranches of financing in a year across 1 to 10 year tenors—constraints in bonds markets around minimum issuance sizes make this impractical to execute
- It is also impractical to issue more than 2 tranches of debt at once—this means that multiple tranches will be issued at a time other than the averaging period used to determine the return on debt allowance, causing cash flow timing mismatches
- Corporate treasuries typically target staggered issuances at standard market liquid tenors with average terms of close to 10 years[17]—the QTC weighted trailing average approach (which assumes 10 year terms) more broadly aligns with these real world financing practice as compares to the AER illustrative approach, which assumes 10 tranches of debt across 1 to 10 year tenors.
- Corporate treasuries do not typically issue in the bond market for tenors less than 5 years—this creates issues around investor appetite and available reliable observable benchmark costs of what NSPs can issue in the market[18]
- Multiple issuances across smaller volumes and lower tenors will likely lead to higher transaction costs than would otherwise be the case—the ENA submission explores this further.

The QTC approach overcomes these challenges. It caters for commercial application, simplicity, replicability and efficiency (from a transaction and transition costs standpoint). The simplicity of the QTC approach would support uniform adoption across the NSPs, removing the need and complexity of determining trigger levels or materiality thresholds. Furthermore, under the QTC approach it is proposed that the weighted trailing average would be updated at the start of every regulatory period to reflect actual weightings up to that point in time.

[15] For instance, if adopted, there would likely need to be a corresponding increase to the debt raising cost benchmark adopted by the AER given that the return on debt allowance would imply that there were at least 10 debt issues every year even if debt raising needs were small.

[16] The illustrative model published with the Discussion Paper is complex. There are also issues sourcing reliable, robust, and observable bond yield benchmarks for all tenors from 1 to 10 years.

[17] Refer to CEG report as part of ENA submission that provides further analysis on this.

[18] The multiple smaller benchmark size issuance, along with 'off tenor' issuances will likely result in new issue concession (i.e. higher premium) on actual issuances

ENA's submission further justifies why the QTC approach is preferrable to that published with the Discussion Paper. The next subsection explains why that approach should be paired with a roll-forward mechanism (i.e., a true up)

3.4. Roll-forward mechanism (i.e., true-up)

An essential component of both the QTC and AER approaches is that the weighted trailing average is updated over time to reflect actual debt portfolio weights. This means, for instance, that the allowed return on debt adopted for the start of a regulatory period will reflect actual weights up to that point in time.

What this misses, however, is that there may be a mismatch between the forecast weights used to determine the allowed return on debt over that period and the actual weights that are realised after the fact. And this is where a true-up, or roll-forward mechanism should be considered.

In our view, if a weighted trailing average approach is adopted—as we propose—then a roll-forward mechanism should also be adopted so that the weighted trailing average approach could operate as intended to provide better alignment of cashflows based on actual capex rather than forecast capex. Such a true-up would adjust for any differences between the forecast debt portfolio weights used in the AER's regulatory determination(s) for a given regulatory period and the actual portfolio weights observed during the regulatory period once actual capex is known. This adjustment is essential in a dynamic investment environment, where the scale and timing of debt raisings can diverge materially from forecasts as major projects progress. It helps align cashflows and promote efficient investment, which the weighted trailing average approach is designed to fix. It is also consistent with an incentive-based framework whereby the return of debt allowance is based on the cost of debt for a benchmark efficient entity.

Although different approaches could be used, we propose that the adjustment is built into the AER's CESS model, including by updating the financing benefit or cost calculation to recognise the difference between forecast and actual weights. The updates would be simple to implement without undermining the incentive objective underpinning the CESS. The guiding principle behind the updates is to build upon the existing true-up calculation already present in the CESS, rather than introducing a separate mechanism. This approach maintains simplicity and consistency for stakeholders, limiting the need for additional administrative processes or unfamiliar calculations. If actual weights matched the forecast weights reflected in the weighted trailing average, then the CESS outcome would be the same as if no changes were made to the CESS model.

Critically, they would also mean that there is no need for a separate revenue adjustment to be derived, as the true-up would be incorporated into any CESS payments, minimising administrative complexity. Adopting such a roll forward mechanism helps the regulatory framework to more closely align allowed returns with the efficient financing costs .

Doing so will help provide investors and consumers with greater certainty that the return on debt will reflect genuine financing outcomes over the period. It will strengthen the incentives for efficient financing practices so that the regulatory regime remains fit for purpose as the industry continues to evolve and undertake substantial investment in support of Australia's energy transition.

Incorporating that mechanism within the CESS model helps preserve incentives by avoiding any overlap in rewards or penalties. NSPs continue to be incentivised to underspend and are penalised for overspends at the established sharing ratio (or ratios). The only difference is that the calculation now references the NPV of the under or overspend using WACCs adjusted for actual weights.

Further detail on the proposed amendments to the CESS model is provided in the ENA submission. Mindful that alternative approaches could achieve the desired outcomes, we welcome ongoing dialogue with the AER and other stakeholders to further refine and develop the proposed true-up mechanism.

4. Risks posed by major greenfield projects

Significant investments in major greenfield projects is both essential to support Australia's energy transition and exposes investors in such projects to additional risks, especially during the construction phase. Although some of these additional risks are accommodated or can be managed within the regulatory framework, there are gaps that, if left unaddressed, may undermine the timely delivery of such projects which could delay the delivery of benefits to consumers.

We propose working with the AER and other stakeholders (including the TAC) to address these risks so that these projects can be delivered as quickly, cheaply and efficiently as possible to maximise benefits for consumers. We also recognise that some regulators have sought to do so by adjusting the allowed rates of return that they adopt for major projects, which is why we are raising this now in response to the Discussion Paper.

The subsections below explore the risks further along with examples of what other regulators have considered to maintain a balanced risk-return framework.

4.1. Why risk is often higher for these projects during construction

Greenfield investments, by their nature, involve the development and construction of entirely new infrastructure, often in locations where there is limited existing asset base or operational history. This exposes investors and consumers to a range of risks that are either not present or are materially lower in brownfield or smaller projects.

As set out in Appendix A, these risks include, but are not limited to, construction cost overruns, unforeseen delays, resourcing constraints, supply chain disruptions, planning approvals, land access and permitting challenges, and heightened interface risks with contractors and third parties. The scale, complexity and overlap of these projects amplify the probability and potential impact of such events, which are often correlated with broader macroeconomic factors, thus contributing to the systematic risk that the equity beta is intended to capture.

In contrast, brownfield projects—those involving expansion or refurbishment of existing assets—typically benefit from established site access, proven demand, and known regulatory and community environments. While all infrastructure projects face some degree of risk, the incremental risks associated with greenfield construction are both greater in magnitude and more difficult to mitigate, justifying a higher investment risk premium.

While the regulatory framework offers certain risk mitigation tools for NSPs —such as risk cost allowances (where accepted by the AER), cost pass-through provisions, and capex reopeners—by design these mechanisms do not remove all risk for NSPs or consumers. Mechanisms such as the CESS and ex post review processes mean that NSPs continue to bear significant construction and project risks, particularly where these lead to actual costs exceeding forecast allowances. This risk exposure underscores the necessity for targeted compensation for greenfield construction risk.

The scale and complexity of today's major greenfield projects are unprecedented in the Australian context. Unlike historical undertakings, these projects are being delivered in a rapidly evolving regulatory, legislative, and stakeholder landscape, with shifting community expectations and operational challenges that are not easily anticipated or addressed by drawing on past experience. Many of the residual risks faced by NSPs are fundamentally outside their control and are not adequately reflected in either the allowed rate of return[19] or risk cost allowances[20].

As well as heightened construction risk, another key concern for investors in major greenfield projects is the extended period between when construction starts and when positive cash flows are realised. The regulatory framework, by design, often means that returns are deferred until well after project commissioning, increasing both the scale and duration of the financial commitment required from investors.

These risk profiles are heightened not only due to the scale and complexity of individual projects, but also because many projects overlap in approval, financing, and construction phases. The cumulative impact of these overlapping activities is not linear and can amplify risks for both investors and consumers alike.

While these concerns may appear to be confined to the investment community, it rapidly becomes a matter of significant consequence for consumers as well. If the regulatory settings make it unduly difficult to attract the necessary capital—particularly from global investors seeking opportunities that balance risk and return—there is a real risk that the delivery of critical infrastructure could be delayed or even derailed. This in turn could jeopardise timely progress on the energy transition and constrain the growth of electricity networks needed to support it, ultimately impacting reliability, affordability, and Australia's ability to meet its decarbonisation goals.

There is an obvious balance to be struck. While mechanisms like the CESS and ex post review allocate risks to investors, consumers remain exposed to risk of cost overruns—a risk that is especially pronounced for greenfield projects. Uncertainty around construction costs, materials, and labour can result in capex overruns that adversely impact consumer bills.

Seeking a regulatory framework that is sufficiently robust and adaptive to attract ongoing investment while targeting an equitable sharing of risk between investors and consumers is therefore not only in the interests of investors but is essential for delivering long-term benefits to consumers and the broader economy.

[19] For instance, the comparator sample used previously to estimate the equity beta does not capture the scale or frequency of such projects.

[20] In practice, these risk allowances often struggle to capture the full extent of unquantifiable or emerging risks, particularly given that the P50 approach commonly used represents a median estimate in situations where the distribution of potential outcomes is highly skewed to the downside, exposing investors to significant long-tail risks that are not being effectively mitigated or remunerated under current settings.

4.2. What other regulators do

Faced with similar challenges, there is clear precedent in other regulatory regimes for recognising and compensating for the additional systematic risk of greenfield construction. Notably, the US Federal Energy Regulatory Commission (**FERC**) has approved higher allowed returns for transmission projects that involve significant greenfield development, explicitly citing the elevated construction and completion risks faced by investors.

In 2006, FERC established its framework for incentivising transmission investment,[21] which allowed it to determine a higher return on equity (referred to as an incentive-based ROE) for new investments in transmission facilities that benefit consumers by ensuring reliability or reducing the cost of delivered power by reducing transmission congestion. The framework remains in place today. FERC justified this mechanism as follows:[22]

> *Public utilities making investments in transmission infrastructure have made clear, both in their applications for new projects and in their comments on this Rule, that the ROE incentives encourage investment. We expect that an incentive ROE will make transmission projects more attractive, and therefore more likely, when transmission projects must compete for capital in vertically integrated utilities as well as in transmission and delivery utilities.*

FERC explained that it would determine the incentive-based ROE by adopting a value at the upper end of the 'zone of reasonableness for transmission investments' (i.e., the range of reasonable ROEs).

FERC went on to distinguish between transmission projects that warranted an incentive-based ROE and those that did not: [23]

> *In many instances, an incentive based ROE is appropriate because our traditional policies are not sufficient to encourage new investment. For example, a large new interstate transmission project that reduces congestion or increases reliability can face substantial risks that the ordinary transmission investment does not. Further, such projects will often be undertaken only at the election of investors, given that no single entity is "required" to undertake them, and thus an incentive-based ROE is appropriate to encourage proactive behavior. Other projects also may present special risks or considerations that merit an incentive-based ROE. By contrast, there are certain projects that may not merit such an incentive. For example, routine investments made to comply with existing reliability standards may not always qualify for an incentive-based ROE. These are the types of investments that have, as a general matter, been adequately addressed through traditional ratemaking because there is an obligation to construct them and high assurance of recovery of the related costs. For these and*

[21] See: FERC, 26 July 2006, *Promoting Transmission Investment through Pricing Reform*, Order No. 679; see link.
[22] FERC, 26 July 2006, *Promoting Transmission Investment through Pricing Reform*, Order No. 679, para.91.
[23] FERC, 26 July 2006, *Promoting Transmission Investment through Pricing Reform*, Order No. 679, para.94.

other reasons, traditional ROE determinations may continue to be appropriate for these investments.

FERC has applied this mechanism to many large greenfield transmission projects in the US in recent years, including the Propel NY Transmission Project in New York in 2023[24] and the Mid-Atlantic Offshore Development Project in New Jersey in 2024[25].

Although not entirely analogous to the circumstances facing major greenfield projects in Australia, the logic for needing to incentivise investment in such projects due to higher risk remains the same. FERC's framework for incentivising transmission investment goes beyond just incentive-based ROEs to include other measures that help reduce risks and increase realised returns.[26]

Other regulators internationally have also adopted approaches to address the elevated risk of greenfield infrastructure investment. For instance, Ofgem introduced the 'Competition Proxy' model and the 'Special Purpose Vehicle' model for certain transmission projects, such as the Hinkley-Seabank electricity transmission project (**HSB**).[27] Under these models, Ofgem can allow a higher return on equity to reflect the increased risks borne by investors before project commissioning.

Ofgem explained its approach to determining the equity beta (Eβ) to apply for HSB as follows:

Eβ is a measure of how much the specific assets under consideration are expected to vary from the TMR [total market return]. In the case of HSB, the low end of the range is derived from the Eβ benchmark used in the setting of the cost of capital for SHE Transmission's RIIO-T1 price control determination. The high end of the Eβ range is derived from analysis of how construction companies, as a comparator to the delivery of construction projects such as HSB, compare to the expected return in the FTSE All-share index.

These approaches provide a reference point for the AER and other stakeholders when considering whether any changes are needed to how risk is accounted for within the regulatory framework.

Some regulators also use measures other than the allowed rate of return to incentivise investment in major greenfield projects. In 2022, Ofgem introduced a package of measures

[24] See: FERC, 26 December 2023, *Order on Transmission Rate Incentives and Tariff Filing re New York Transco, LLC et al — Propel New York Energy Alternate Solution 5 Project*, Docket No. ER24-232 (Notational Order); see link.

[25] See: FERC, February 15, 2024, *Order Granting Petition for Declaratory Order: Mid-Atlantic Offshore Development, LLC*, Docket No. EL23-101-000; see link.

[26] Measures include allowing full recovery of prudently incurred construction work in progress costs, pre-operations costs, and the costs of abandoned facilities. They also include hypothetical capital structures, accumulated deferred income taxes, accelerated depreciation, and book value adjustments. See: FERC, 26 July 2006, *Promoting Transmission Investment through Pricing Reform*, Order No. 679, pp. 208–211; see link.

[27] See: Ofgem, 14 September 2018, *Update on the Competition Proxy delivery model*; see link.

with its *Accelerated Strategic Transmission Investment* regulatory framework decision that sought to speed up delivery of such projects.[28] This package included a new output delivery incentive (**ODI**) that rewards (or penalises) networks for meeting (or failing to meet) delivery timelines, as well as other measures that can streamline regulatory approvals, exempt from competition, or fund ahead of construction.

Ofgem explained the need for these measures as follows: [29]

> *given the scale and pace of the required investment, we have looked at how our regulatory framework can be adjusted to support strategic onshore electricity transmission (ET) projects being expedited to deliver the Government's 2030 ambitions.*

These measures are being applied by Ofgem. For instance, the ODI was first trialled and then adopted in the RIIO-2 price controls for transmission networks.[30] Ofgem is proposing to retain the ODI in the RIIO-3 price controls.[31]

[28] Ofgem, 15 December 2022, *Decision on accelerating onshore electricity transmission investment*; see link.
[29] Ofgem, 15 December 2022, *Decision on accelerating onshore electricity transmission investment*, p.4.
[30] Ofgem, 28 June 2023, *RIIO-2 System Operator: Transmission Owner Optimisation output delivery incentive*; see link.
[31] Ofgem, 1 July 2025, *RIIO-3 Draft Determinations – Electricity Transmission*; see link.

APPENDIX A. ARTICULATING GREENFIELD CONSTRUCTION RISK

This appendix identifies the key risks faced by transmission projects during construction. These risks are split into their systematic and non-systematic risk components and compared across large-scale greenfield and brownfield projects.

Key construction risk		Systematic versus non-systematic		Relative exposure	
Type	**Description**	**Systematic risk**	**Non-systematic risk**	**Greenfield projects**	**Brownfield projects**
Contractor default	Risk that a contractor fails to deliver due to financial distress or operational failure.	Exposure to macroeconomic downturns affecting contractor solvency.	Contractor-specific performance, relationship history, and contract terms.	Higher risk due to lower pool of capable contractors and scope complexity.	Lower risk due to reduced scope complexity.
Long lead equipment procurement	Risk of delays or cost overruns due to sourcing specialised equipment with long manufacturing or delivery times.	Global supply chain disruptions, commodity price volatility, interest rate impacts.	Project-specific design choices, procurement strategy, and logistics planning.	Greater risk due to bespoke specifications, global supply chain dependencies, and significant scale.	Lower risk with existing equipment.

Key construction risk		Systematic versus non-systematic		Relative exposure	
Type	**Description**	**Systematic risk**	**Non-systematic risk**	**Greenfield projects**	**Brownfield projects**
Resourcing constraints	Challenges in securing sufficient skilled labour, equipment, or materials required for project delivery.	Industry-wide shortages caused by broader economic or supply chain disruptions.	Constraints that are localised or due to project-specific factors, such as remote location or specialist skill requirements.	Higher for new large-scale projects requiring mobilisation of significant resources.	Lower for existing infrastructure and established supply chains.
Environmental risk	Risk of environmental harm or regulatory non-compliance during construction.	Changes in environmental regulation or policy affecting all projects. Large-scale projects have significantly greater footprints through varied environments	Site-specific flora/fauna, local opposition, and mitigation requirements.	Higher due to untouched land and biodiversity concerns.	Lower with known conditions and established access.

Key construction risk		Systematic versus non-systematic		Relative exposure	
Type	**Description**	**Systematic risk**	**Non-systematic risk**	**Greenfield projects**	**Brownfield projects**
Ground conditions	Risk of encountering unexpected soil, rock, or hydrological conditions.	National geological trends affecting multiple projects. Lower risk appetite across Contracting market.	Site-specific geotechnical anomalies and survey accuracy.	Unknown conditions and contracts for large-scale projects increasingly require Project Owner to accept greater share of risk.	Known conditions.
Health and safety	Risk of injury or fatality during construction activities.	Labour market conditions, regulatory changes in safety standards.	Site-specific hazards, training adequacy, and contractor safety culture.	Elevated as protocols are established and geographical spread.	Lower with established protocols.
Political and community engagement	Risk of delays or cost impacts due to political decisions or community opposition.	National or regional policy shifts, election cycles, and media sentiment.	Local stakeholder dynamics, landowner negotiations, and community engagement strategy.	Higher risk from land access disputes and political scrutiny.	Lower with settled community relations.

Key construction risk		Systematic versus non-systematic		Relative exposure	
Type	**Description**	**Systematic risk**	**Non-systematic risk**	**Greenfield projects**	**Brownfield projects**
Force majeure events[32]	Risk of disruption due to uncontrollable external events (e.g. natural disasters, pandemics).	Natural disasters, pandemics, and geopolitical instability.	Project-specific contingency planning and insurance coverage.	Greater exposure due to longer timelines and scope materiality.	Lower exposure due to shorter timelines and scope materiality.
Third-party Management	Risk of disruption from other infrastructure projects, landowners, or utilities.	Industry-wide infrastructure congestion or regulatory bottlenecks.	Localised land use conflicts, coordination failures, and legal disputes.	Higher risk from adjacent developments and infrastructure conflicts.	Lower with existing easements and coordination.
Design and engineering risk	Risk of errors or inefficiencies in technical design and engineering.	Technology trends and regulatory design mandates.	Project-specific design errors, integration complexity, and engineering team capability.	Higher due to bespoke layouts and integration challenges.	Lower with standardised upgrades.

[32] Some or all of risk from force majeure events may be mitigated through cost pass through, capex reopeners, or other measures available within the NER.

Key construction risk		Systematic versus non-systematic		Relative exposure	
Type	**Description**	**Systematic risk**	**Non-systematic risk**	**Greenfield projects**	**Brownfield projects**
Schedule risk	Risk of delays in project delivery due to internal or external factors.	Inflation, interest rate changes, and labour market shifts.	Project-specific planning, contractor performance, and weather impacts.	Longer timelines and complex scope increase exposure to delays.	Shorter timelines and less complex scope reduce delay risk.

APPENDIX B. RESPONSE TO CONSULTATION QUESTIONS

Overall priority issues for assessment		
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?	We believe RORI should always be considered in its entirety as a tool to benchmark return under the risk-return regulatory framework. RORI should reflect market conditions when set and the RORI input issues identified by the AER are currently the right ones to focus on. Consistent with the Discussion Paper, we consider that under current market conditions, it is sensible to retain the approaches and assumptions used when determining gearing, the term of debt, the risk-free rate, the market risk premium, and gamma. We do however note, that the significant greenfield risk being added on to NSPs as part of the energy transition is not captured under the current RORI framework and adjustments should be considered (similarly to what other regulators globally have done) to reflect this additional risk.
Equity beta		
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?	Yes, we agree with the two options outlined in section 5.1.3 of the Discussion Paper.
2	How could we use the equity beta estimates of international energy firms to inform our decision on equity beta?	Estimates of international energy firms should be included within a single comparator sample when deciding on the appropriate equity beta to adopt, provided that the firms meet the relevant filtering criteria. Doing so will improve the reliability of the comparator sample for the reasons discussed in section 2.2. We do not consider it appropriate to use international beta estimates only as cross-checks or to de-weight them relative to Australian estimates. Our concern is that the Australian estimates are based on trading data that is getting older or relies on a single comparator, APA, that faces a materially different risk profile to that of regulated transmission networks.

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?	We agree with the suggested filters outlined in section 5.1.2.1 of the Discussion Paper. As explained in section 2.3, we also propose using gearing and impact from major transactions as potential filters. Where observed gearing for a comparator is materially different from the benchmark adopted by the AER, there is a real risk that the de-levering and re-levering process could inappropriately distort measured systematic risk. Major transactions can also distort observed equity betas, and so it is appropriate to test whether this is the case (e.g., by observing trading patterns around those transactions). The ERA considered this when incorporating international beta estimates to its comparator sample for the 2022 RORI.
4	Do you have any suggestions on how best to address the leverage anomaly, as outlined in section 5.1.2.2?	If the leverage anomaly is a material concern that needs addressing, then a debt beta could potentially be considered (as per the first option in section 5.1.2.2 of the Discussion Paper) provided that it is based on observable market data. The key concern is that if a debt beta is not observable and aligned to market movement then the application of a debt beta may not be appropriate. Additionally, we do not support changing the gearing sample to include international firms. Unlike equity beta, a sufficiently large Australian sample can be maintained by: • Considering both book values and market values, as the AER has done in the 2018 and 2022 RORI reviews, or • Expanding the sample to include the book values of non-listed Australian energy networks, consistent with the sample used to determine the benchmark credit rating in those reviews. We are concerned that adjusting the sample to include international firms will inappropriately incorporate differences in gearing across jurisdictions that are caused by factors not present in Australia. For instance, differences in tax rules, bankruptcy rules, interest rates, inflation, debt market conditions, investor expectations or many other factors can all

		affect firms' capital structure decisions and observed gearing.
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?	We do not consider that there is an issue to be addressed. As discussed in section 2.4, it would also be inappropriate to adjust the MRP for differences in systematic risk between jurisdictions. Not making any adjustment is also consistent with the practice of other regulators that also include international firms in their comparator samples.
6	Other than the comparator set, do you have any comments on any other aspects of our approach to estimating equity beta?	No.
Weighted trailing average		
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.	Yes, consistent with ENA's submission, we strongly support introducing a weighted trailing average approach. As set out in section 3.3, we propose that the QTC approach is adopted. That approach is simple to apply and reflects broad financing practices without significant incremental transaction costs.
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.	The QTC approach is simple and reflects broad financing practice and should apply to all NSPs by default. No threshold is needed. However, if a threshold is applied, it should be appropriately set so that it can be met by NSPs that face significant RAB growth like Transgrid. It may also require a dual test on either percentage of RAB/capex or a minimum fixed dollar amount of debt. Finally, we also propose that once adopted, the weighted trailing average approach should continue to apply indefinitely. Although we appreciate that past RORIs cannot bind future RORIs, there should be a high hurdle before the return on debt approach is changed subsequently.
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	Yes, we agree that a true-up mechanism should be adopted. Together with adopting a weighted trailing average approach, such a mechanism will help align the allowed return on debt with real-world debt financing costs, promoting efficient investment and an equitable sharing of risk between investors and consumers.

	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?	As outlined in section 3.4, we propose that the true-up should be applied by amending the financing benefit calculation within the CESS model. This approach: • Is simple to implement without any significant changes to existing processes • Does not require changes to the allowed WACCs for a given regulatory period, either within period or retrospectively • Does not undermine the incentive objective underpinning the CESS. The true-up is separate to, but complements, the recalculation of the weighted trailing average for the start of each regulatory period. Consistent with QTC's proposal, this will mean that actual weights are incorporated to trailing average over time.
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?	No, not if the true-up occurs within the CESS model, as we propose in section 3.4. By recognising the difference between forecast and actual weights within the financing benefit calculation, the CESS model will continue provide rewards and penalties on under- and over- spends at the sharing ratio or ratios adopted by the AER. This same outcome could potentially be achieved via a separate calculation, but we have not explored this further.
5	Reporting: (a) Are there any concerns with changes that might be needed to Regulatory Information Notices, the Roll-Forward Model, or the RORI?	No, no changes are needed to Regulatory Information Notices or Orders, or the Roll-Forward Model. Changes to the RORI are manageable as the QTC approach can be expressed formulaically. Some changes to the CESS guideline and standard model will be needed to apply the true-up that we propose. As noted in the ENA submission, to be consistent, the Roll-Forward Model should be populated with the WACC updated to reflect the return on debt based on actual weights. But that does not require changes to the model itself.
6	Costs: (a) Are there likely to be material incremental costs imposed on network businesses from	No, there are unlikely to be material incremental costs if the QTC approach is adopted as all new debt is assumed to retain a

	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?	10 year term just as is the case with the simple trailing average approach. However, there *will* be material incremental costs if the AER illustrative example of trailing average approach published with the Discussion Paper is adopted. That version of the approach assumes that all new debt is issued in tranches of 1 to 10 year terms is not practically executable and would result in increased transaction costs given the increased number of issuances at smaller volumes and lower tenors (as outlined in the ENA submission).
7	Transition: (a) What transitional arrangements or lead times would be necessary to help NSPs prepare for a change to a weighted trailing average?	No transition is needed if the QTC approach is adopted. That approach starts with the simple trailing average before then updating the return on debt each year to reflect changes in the debt RAB.
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?	The QTC approach to the weighted trailing average strikes the right balance between incentives and efficient financing costs, is simple to apply and on average, more broadly aligns with real world financing practices. Section 3.3 outlines key benefits from introducing that approach. This approach is consistent with an incentive-based framework whereby the return on debt allowance is based on the cost of debt for a benchmark efficient entity. However, the version of the weighted trailing average approach published with the Discussion Paper does not. As noted in response to question 6 above and Section 3.3, that approach is likely to add significant incremental transaction costs and is not practically executable.
Third party yield curves		
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?	Yes, we support reintroducing the RBA yield curve data. Doing so helps reduce the potential impact of any errors or inconsistencies present in any one of the three yield curves.
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.	Consistent with the ENA submission, we propose the RBA curve should be extrapolated to a 10 year maturity without using swap rate data. This will simplify the

using swap rate data from another source)?	calculation and produce more accurate results. If the swap spread approach is to be used (which we do not recommend), then those spreads must be tenor-adjusted (i.e., to match the tenor of the yields to which they are applied) to avoid embedding error in the estimates.