# Rate of Return

## Draft Debt Omnibus Paper

July 2021

AUSTRALIAN ENERGY REGULATOR

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# Shortened forms

| Shortened form | Extended form |
|---|---|
| AEMC | Australian Energy Market Commission |
| AEMO | Australian Energy Market Operator |
| AER | Australian Energy Regulator |
| ATO | Australian Tax Office |
| Augex | augmentation expenditure |
| CAM | cost allocation method |
| Capex | capital expenditure |
| CCP | Consumer Challenge Panel |
| CCP 17 | Consumer Challenge Panel, sub-panel 17 |
| CESS | capital expenditure sharing scheme |
| CoS | classification of service |
| CPI | consumer price index |
| DRP | debt risk premium |
| DMIAM | demand management innovation allowance mechanism |
| DMIS | demand management incentive scheme |
| Distributor | distribution network service provider |
| DSO | distribution system operator |
| DUoS | distribution use of system |
| EBSS | efficiency benefit sharing scheme |
| ECA | Energy Consumers Australia |
| EICSI | Energy Infrastructure Credit Spread Index |
| ERP | equity risk premium |
| F&A | framework and approach |
| MRP | market risk premium |
| NEL | National Electricity Law |

| Shortened form | Extended form |
|---|---|
| NEM | National Electricity Market |
| NEO | National Electricity Objective |
| NER | National Electricity Rules |
| NSP | network service provider |
| opex | operating expenditure |
| PPI | partial performance indicators |
| Pricing Order | electricity pricing order |
| PTRM | post-tax revenue model |
| RAB | regulatory asset base |
| RBA | Reserve Bank of Australia |
| repex | replacement expenditure |
| RFM | roll forward model |
| RIN | regulatory information notice |
| RPP | revenue and pricing principles |
| SAIDI | system average interruption duration index |
| SAIFI | system average interruption frequency index |
| SLCAPM | Sharpe-Lintner capital asset pricing model |
| STPIS | service target performance incentive scheme |
| WACC | weighted average cost of capital |

# 1 Introduction

## 1.1 Aims and Objectives

This paper, and the other omnibus papers, will progress the work and positions of the more focused working papers, such as the *Term of the Rate of Return* and *Energy Network Debt Data* papers, which have been published in the last 18 months. Work and findings from these papers are considered here in the broader context of estimating the cost of debt in a manner consistent with the National Electricity Law (NEL) and National Gas Law (NGL).

The paper will lay out our previous positions, work we have undertaken since the 2018 Instrument and our current thinking on the topics. By doing so, stakeholders will be able to submit their views and relevant evidence in full knowledge of what we have considered so far.

The Overall Rate of Return Omnibus paper contains a more in depth discussion of the process of the rate of return instrument formation and a discussion of our assessment criteria, which are summarised in Appendix A and B of this document.

## 1.2 What is the rate of return instrument?

The rate of return instrument sets out how we determine the allowed rate of return on capital in regulatory determinations for energy networks. It specifies the mathematical formulae we will use to calculate the rate of return, and how we will obtain inputs for those formulae. It defines some inputs (fixed for the duration of the instrument) and for others states the process by which we will measure market data and use it as an input at the time of a decision.

The current rate of return instrument was published on 17 December 2018 (the 2018 Instrument). In December 2022 we will publish the next rate of return instrument (the 2022 Instrument). This binding instrument will determine the allowed rate of return on capital for the following four-year period.

We estimate the returns required by investors in view of the risks associated with regulated energy network companies compared to their other investment opportunities. We make this judgement by examining a broad range of evidence including financial market data, models of financial returns, the latest investment knowledge and the views of all stakeholders.

## 1.3 Why does the rate of return matter?

Investors in any business expect to receive an additional return above their initial investment (or capital). We use the phrase 'rate of return on capital'—or just 'rate of return'—to refer to this additional amount when expressed as a percentage of the initial investment.

We estimate the rate of return for regulated energy businesses by combining the returns of two sources of funds for investment: equity and debt. The rate of return provides the business funds to service the interest on its loans and give a return to shareholders.

In our view, the best possible estimate of the expected rate of return—neither upwardly biased nor downwardly biased—will promote efficient investment in, and efficient operation and use of, energy network services. While the capital market transaction is between investors and networks/pipelines, the ultimate effects will flow through to consumers.

If the rate of return is upwardly biased:

- Investors will be over compensated for the risk involved in supplying capital to networks, so will show increased willingness to invest in regulatory assets in comparison with other investments in the economy.
- Networks will have an incentive to over-invest in regulated assets over the longer term, increasing the regulatory asset base above the efficient level.
- Energy consumers will pay inefficiently higher prices, which will distort energy consumption decisions, and downstream investment decisions. This will result in efficiency losses where consumers use less energy network services than otherwise and non-monetary impacts such as disconnection of vulnerable consumers.

If the rate of return is downwardly biased:

- Investors will be under compensated for the risk involved in supplying capital to networks, so will show reduced willingness to invest in regulatory assets in comparison with other investments in the economy.
- Networks will not be able to attract sufficient funds to be able to make the required investments in the network. Over the longer term there will be declines in quality, reliability, safety and/or security of supply of electricity or gas.
- Consumers of energy will pay lower prices, at least in the short term; but will wear the risk of adverse outcomes for quality, reliability, safety and/or security of supply of energy services. Lower prices will also distort energy consumption and downstream investment decisions (though in the opposite direction to the previous case). This new level of downstream investment will be inefficient for the Australian economy.

Hence, an unbiased estimate of the expected efficient return, consistent with the relevant risks involved in providing regulated network services, is necessary to promote efficient prices in the long term interests of consumers.[1] We consider that the

[1] AER, *Rate of return and assessing the long term interests of consumers,* May 2021, pg. 1.

NEO, NGO and the long term interests of consumers are best served through this guiding principle.

## 1.4 AER's Cost of Debt Estimation

Our decision in the 2018 Instrument was a methodology for estimating the return on debt comprised the following key elements:

- A benchmarking approach based on debt yield data from third-party data providers and benchmarks for term of debt and credit rating.
- A 10-year trailing average approach with an annual update.
- The annual update based on a nominated averaging period
- A 10-year transition into the adoption of the 10-year trailing average approach. Where we had commenced a transition in a previous determination, we continued that transition.

We consider our current approach to estimating the cost of debt remains broadly appropriate for our regulatory objective. As such, we are not proposing significant changes to the key elements. We are however, exploring whether refinements could be made to improve outcomes for consumers.

### 1.4.1 Benchmark Approach

Our benchmark approach is applied to all networks, forming a debt estimate from three external data providers based on:

- A benchmark term of 10 years
- A benchmark credit rating of BBB+ (estimated with 1/3 A and 2/3 BBB)
- Data from three external data providers (Bloomberg, RBA, Thomson Reuters), given equal weighting.

### 1.4.2 Averaging Periods

We estimate a service provider's debt over provider-nominated averaging periods. These averaging periods must:

- Be in the future
- Be between 10 business days and 1 year in length
- Start no earlier than 16 months prior to start of regulatory year
- Finish no later than 4 months prior to the start of regulatory year
- Not overlap with any other nominated debt averaging period.

### 1.4.3 Trailing Average

The 10-year trailing average gives each new annual update 10 percent weighting. All previous annual updates within 10 years are also given 10 percent weighting, except

for the year before the transition started. This initial year is given (100-10x) percent weight where x is the number of years into the transition the business is, so that overall there is 100 percent weighting across the calculation.

Table 1 provides an example of how the trailing average would be calculated in the third year after the transition commenced.

### Table 1 Trailing Average Example

| Year | Annual debt update |
|---|---|
| Year 0 (transition) | 5.5% |
| Year 1 | 5.1% |
| Year 2 | 5.3% |
| Year 3 | 4.1% |
| **Trailing Average**<br>= (70% × 5.5%) + (10% × 5.1%) + (10% × 5.3%) + (10% × 4.1%)<br>= 5.3% | |

## 1.4.4 Methodology

Once the instrument has fixed the necessary elements, there are steps for calculating the debt update.

(a) The Networks Service Provider (NSP) submits their proposed averaging periods as part of their initial submission.

(b) If the averaging periods meet the criteria stated above, we accept them as part of our draft decision. If not, the NSP is given a chance to re-submit prior to the publication of our final decision. If the revised averaging periods remain inconsistent, they are prescribed based on averaging periods as set out in the Instrument.

(c) Once the averaging period has passed, we download the necessary data on the 11th of the following month (or first day of publication after the 11th)

(d) Using this data, we calculate the annual estimate of the cost of debt over the averaging period as prescribed in the instrument (1/3*A and 2/3*BBB rated debt, with equal weighting on each provider in the 2018 Instrument)

(e) The NSP's portfolio result is updated using this annual estimate, as per the trailing average.

(f) We then use this annual and portfolio estimate to calculate the updated x-factor which forms part of the Post Tax Revenue Model (PTRM)

(g) Once confirmed, the NSP is provided with an official letter notifying of this update

## 1.5 What changes are we considering?

We are considering the merits of a small number of enhancements to our cost of debt estimation methodology:

- Using the EICSI to inform our benchmark and calculation methodology to better reflect the debt costs incurred by networks
- Weighting the trailing average by forecast capex spending
- Bringing forward the timing of averaging periods to reduce time pressure on both AER and service provider processes.

## 1.6 How to make a submission

Interested parties are invited to make submissions on this consultation paper by **27 August 2021**.

From section 3 onwards, we have set out some preliminary views on potential process steps for consideration. These may guide your submission. However we encourage you to address any other matters of relevance.

We prefer that all submissions are in Microsoft Word or another text readable document format. Submissions on our issues paper should be sent to: rateofreturn@aer.gov.au.

Alternatively, submissions can be sent to:

Mr Warwick Anderson
General Manager
Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

We prefer that all submissions be publicly available to facilitate an informed and transparent consultative process. Submissions will be treated as public documents unless otherwise requested. Parties wishing to submit confidential information should:

- clearly identify the information that is the subject of the confidentiality claim
- Provide a non-confidential version of the submission in a form suitable for publication.

All non-confidential submissions will be placed on our website. For further information regarding our use and disclosure of information provided to us, see the ACCC/AER Information Policy (October 2008), which is available on our website.

## 1.7 Stakeholder Forum

As part of our stakeholder engagement timetable in our preparation of the 2022 Rate of Return Instrument, we will be holding an online stakeholder forum on Monday 9 August to discuss the topics presented in this Debt omnibus paper.

The forum will allow stakeholders to present to the AER and other stakeholders on what they consider to be most relevant to discussion and highlighting their points of view. We will engage stakeholder groups who have been involved in previous forums and welcome interest from other groups who wish to present.

Those interested in presenting should contact us at rateofreturn@aer.gov.au

# 2 The use of the EICSI

The Energy Infrastructure Credit Spread Index (EICSI) was developed by the AER in 2018 with assistance from Chairmont using actual debt data obtained from the networks.

The EICSI provides an indication of the cost of network-issued debt to compare with our estimate of the cost of debt. In this context, the EICSI allows us to monitor the performance of our benchmark return on debt.

Since its introduction, we have sought to improve and refine the EICSI to obtain the best value from the information as part of our estimation methodology.

## 2.1 2018 Instrument

In the 2018 Instrument, we did not rely on the EICSI or an alternative historical index directly to estimate the return on debt. We took this approach because:

- We considered the analysis was best used as a 'sense check' on our benchmark characteristics and how we implemented them because the dataset was relatively new. This approach allowed us to monitor changes over time before we placed any more weight on the index.
- The use of third-party data series was considered appropriate and a relatively transparent and testable way to estimate the return on debt. By checking our approach against the actual data, our view was that we could refine our selection of third-party data sources over time to better reflect observed practices, while retaining the benefits of using third-party data series.
- We also considered the evidence suggested that spreads on issued debt appeared to be less volatile than our approach. We stated our intent to continue collecting data in line with our request for debt data so that in future reviews we could evaluate whether this was a consistent outcome over time and how we could use the EICSI in our methodology.

## 2.2 Developments since 2018

In November 2020 we released the *Energy Network Debt Data* final working paper. This paper:

- evaluated options for how our EICSI could be used in estimating the regulated return on debt, credit rating and term
- considered and responded to stakeholder submissions made on our initial draft working paper[2]

[2] AER, *Energy Network Debt Data* - Draft working paper, 26 June 2020

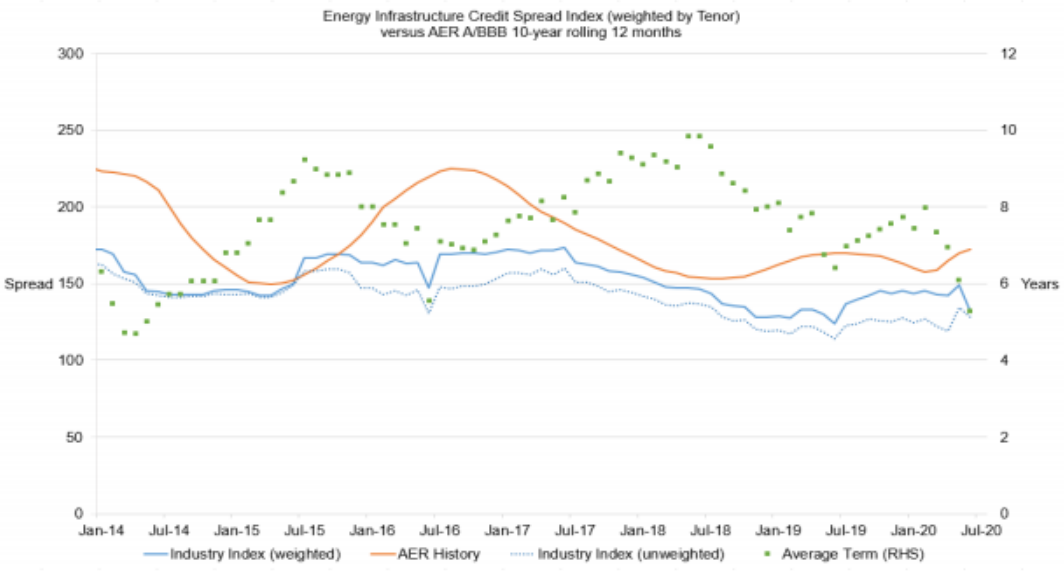
- proposed changes as to how we calculate the EICSI
- Identified a preferred option for how the EICSI might be used in the 2022 Rate of Return Instrument.

In the paper we stepped out why it could be advantageous to place greater reliance on the EICSI:

- It could more accurately reflect the cost of debt for regulated networks, directly addressing the difference between our historic estimation of return on debt and the observed cost of debt incurred by networks. Correct use of the EICSI could help to narrow the gap displayed in Figure 1.
- It could streamline the current process whereby we observe network debt practices to inform our decision on debt benchmark characteristics (i.e. 10 year, BBB+ rating) then determine the cost of debt that is consistent with those benchmarks. Instead, we could move more directly to the observed benchmark cost of debt for the utilities we regulate. This would be more reflective of an active debt management strategy.
- A regulated return on debt set using the EICSI (in whole or in part) would still be a benchmark approach, because the EICSI reflects costs across all networks rather than any network individually.
- A firm would have no incentive to issue debt at higher than efficient costs if the resulting upward shift in the EICSI was insufficient to compensate for the higher costs directly incurred by that network.
- The desirable properties of the incentive regime are preserved. That is, networks have an incentive to pursue efficiency gains across time, and consumers benefit in the long term when these efficient costs are revealed.
- We currently use actual industry data for other relevant parameters such as gearing and beta. Extending this to the benchmark return on debt would help us to assess an efficient and consistent estimate of the overall rate of return.

Figure 1, which was published as part of the 2020 annual rate of return update, illustrates that the EICSI has been consistently below the benchmark allowance set by the AER.

## Figure 1 EICSI (weighted by tenor) against the AER's benchmark estimate



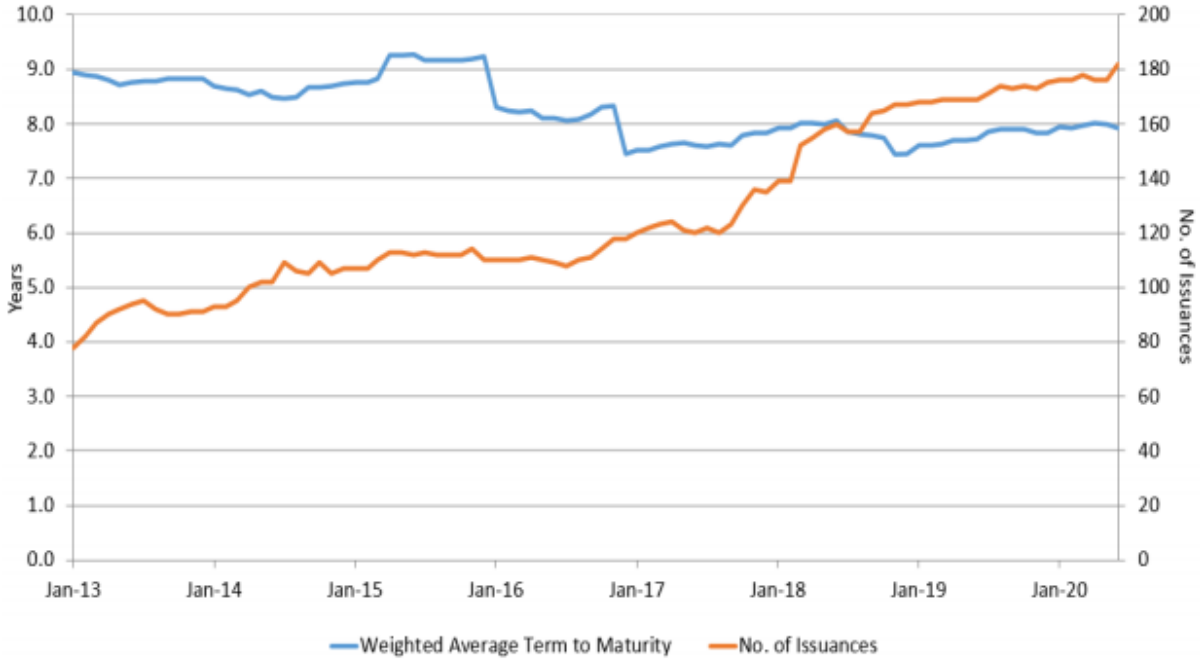

Notes: Spread is reported in basis points above the variable 3-month bank bill swap rate.

Source: AER analysis; Chairmont, *Aggregation of debt data for portfolio term to maturity*, 28 June 2019.

In Figure 1, it is also possible to see the change in (unweighted) average term of debt issued, likely reflecting active debt management by the service providers. This behaviour is representative of efficient debt management, but is not captured by our fixed benchmark term.

Figure 2 indicates that the general trend in the term of issued debt is shorter over the time horizon, moving away from our benchmark estimate of 10 years with lows around 7.5 years in Jan 2017 and December 2018.

## Figure 2 Weighted Average Term to Maturity at Issuance and number of debt instruments issued




Source: AER analysis; Chairmont, *Aggregation of debt data for portfolio term to maturity*, 28 June 2019.

In the final 2020 working paper, we indicated a number of alternative methods for using the EICSI in our instrument:[3]

- Maintaining the same use of the EICSI as we had in 2018
- Using the EICSI as a 4th curve in the estimation of the benchmark
- Using the EICSI to directly set the return on debt
- Not using the EICSI at all.

However, a number of these methods were ruled out for technical and practical reasons.

We proposed that our preferred approach was to use the EICSI to directly determine the benchmark blend of A and BBB bonds. We method has a number of advantages:

- Leaves our current methodology for estimating the return on debt unchanged, preserving its familiarity and systems
- We could maintain our transition to the 10-year trailing average
- It gives a clear role for the valuable information in the EICSI
- It would not require continuous disclosure from the service providers

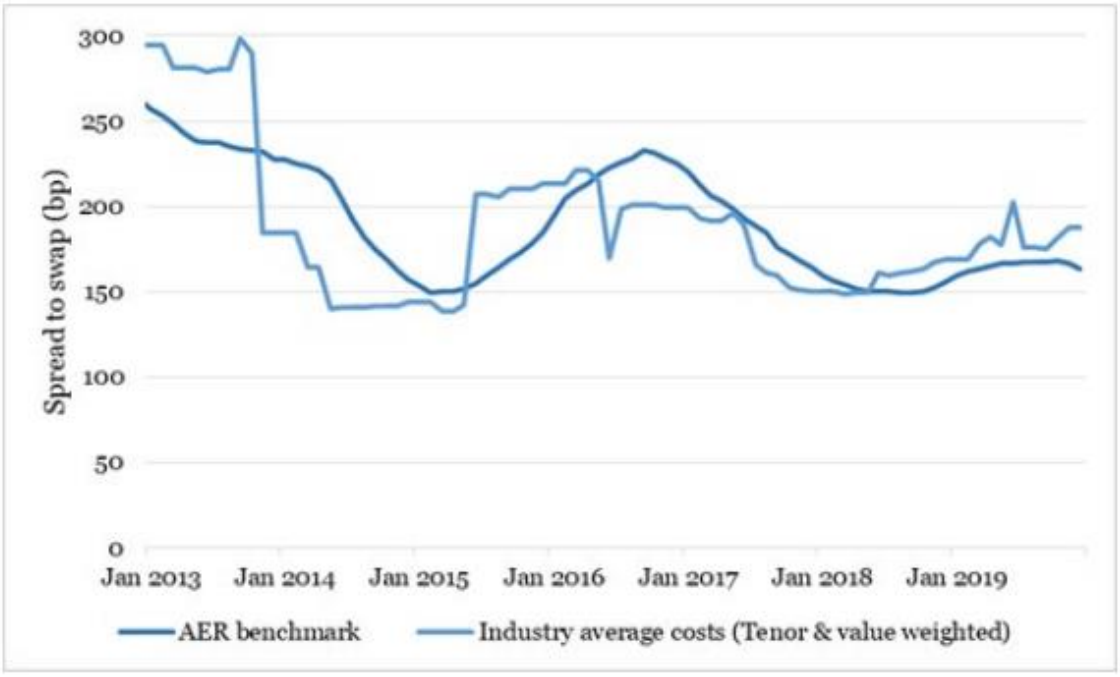
[3] AER, *Energy Network Debt Data*, November 2020, pp33-34

- We would be able to exercise judgement and discretion at the time of the instrument.

In a response to our final working paper, the ENA submitted a memo,[4] opposing the use of the EICSI to adjust the benchmark blend. In particular, the ENA considered:

- The industry data confirmed that the current approach for determining the benchmark efficient cost of debt remained fit for purpose. Figure 3, reproduced below, shows that issued debt with roughly benchmark characteristics matches the AER's benchmark
- Implementation issues would be significant
- The risk of deviating from the benchmark debt lies with the issuing service provider and, as a result, the reward and penalty should do so as well. Altering the blend would remove this link and punish those issuing benchmark debt
- Altering the benchmark blend is an inappropriate response to correct what is a predominantly term generated disparity.

### Figure 3 CEG graph showing Industry costs of BBB to A- rated debt with tenors close to 10 years against the AER benchmark




*Source: CEG analysis of industry data.*

[4] ENA, Effective regard to network debt data - response to AER's *Energy Network Debt Data* Draft Working Paper, August 2020

## 2.3 Proposed approach for the 2022 Instrument

We still consider the analysis undertaken in 2020 remains appropriate:

- The EICSI shows issued debt costs are below those of the benchmark set out in the 2018 Instrument
- The WATMI and average term at issuance show a declining term, as well as active management of debt instruments.

We recognise the points set out by the ENA and CEG. However there are a number of issues to consider in response:

- Whilst the risk and rewards/penalties are currently taken on by the NSPs, our data appears to reflect a higher reward than risk. Ensuring that this is accounted for in our regulatory judgement is something we are now able to do with the formation and extension of the EICSI
- Whilst the term of the debt issued is the area being actively managed by the NSPs, it is the most difficult part of the benchmark to change in the instrument. If we adjust the term, we may also need to adjust the trailing average calculation
- The benchmark was set with the efficiency of managing the relevant debt portfolio in mind. If there is evidence that there is a more efficient strategy for an NSP, then regulation should reflect that efficiency. Otherwise, consumers would never benefit from the more efficient practices that are observed.
- As part of our regulatory approach, simplicity is important. Adjusting the blend is clear and transparent ahead of time, can be replicated during the instrument and can be adjusted from instrument to instrument without significant adjustment or impact on the networks' debt raising strategy.

As part of the work on recent working papers, we received a consultant report from Dr Martin Lally which included comments on our construction and proposed use of the EICSI.[5] Dr Lally noted:

- To determine how suitable the proposed adjustment would be, we should look to decompose the observed outperformance into three factors to judge which is the most significant:
    - Term
    - Rating
    - Residual

[5] Dr Martin Lally (Capital Financial Consultants), *The appropriate term for the allowed cost of capital, April 2021, p.48*

- Altering the term whilst on a trailing average approach would create practical alteration issues in adjusting the transition process or a strategy that is impossible to match
- There are concerns around whether the EICSI is a long enough dataset on which to base alterations
- The evidence provided by the EICSI suggests that term is largely responsible for the observed gap between the EICSI and the AER benchmark
- If the observed term at issuance is falling, this is a significant consideration for the proposed benchmark term adopted by the AER, and is not completely overruled by the efficiency argument put forward by the ENA.

As proposed by Dr Lally, we have commenced the work to break down the impact of term and rating on the difference between the EICSI and the AER's benchmark estimate. The average credit rating for debt issued in the last four years of data was between a BBB+ and an A- rating, whilst the weighted average term is between 8 and 10 years, depending on drawdown assumptions. We will present our findings in the Final Debt Omnibus Paper.

If the additional work confirms our initial finding that our current approach is overstating the return on debt then we think it would be in consumers' interests to make an adjustment. In our previous working paper, we proposed a preferred alternative of adjusting the blend of A and BBB bonds used in our estimate. We think this approach is better than the alternatives but we would like to hear suggestions about other approaches that might be superior.

In particular, we are concerned that altering the term at this point could create issues for implementation. For example, we would need to consider potential transitions within the trailing average and preservation of the NPV=0 condition.

Adjusting the blend would allow us to observe the effects with minimal disruption to the current process, whilst making an adjustment that would be equivalent to adjusting the term. It also preserves the option for networks to employ strategies to match our benchmark allowance.

# 3 Capex weighting of the trailing average

Under our trailing average approach for our return on debt estimation, each year is given equal weighting. However, in the light of changing circumstances and previous stakeholder submissions, we want to reconsider using differential weightings in the return on debt estimation. In particular, the integrated system plan (ISP) developed by the Australian Energy Market Operator (AEMO) has raised the prospect of large projects being undertaken in the near future. These projects could result in the Regulatory Asset Bases (RABs) increasing significantly over a short period. As a result, there could be large debt raising requirements in some years beyond the 10 per cent level built into our current trailing average return on debt. This in turn could create a mismatch between our return on debt and the capital requirements of the firms we regulate.

## 3.1 2018 Instrument

Currently the return on debt is estimated with the trailing average portfolio approach where the return on debt is calculated as the 10 year simple average of the 10 year annual prevailing return on debt.[6] Under the current trailing average approach we assume that the benchmark efficient entity refinances an equal share of debt each year. For a benchmark term of debt of 10 years, our approach assume refinancing of 10 per cent of total debt each year with new 10 years fixed rate debt. This results in us applying a weight of 1/10 for each year in the trailing average.[7] Our approach is appropriate if the benchmark NSP has a stable RAB that is growing by inflation. I.e. the capital expenditure (capex) is only used to replace asset that have depreciated.

The trailing average approach (post transition) is defined by the following formula:

$$k_t^d = \frac{1}{10}\sum_{j=t-9}^{t} R_j$$

Where:

$k_t^d$ = The allowed return on debt for the regulatory year t

$R_j$ = The on-the-day rate of return on debt in any regulatory year in the series j

$j$ = Indexes a series of regulatory years for summation

The benefits of the trailing average approach is that is provides NSPs with a regulatory benchmark that they can more readily match each regulatory control period. As such, this provides a benchmark efficient entity with an enhanced opportunity to minimise

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6 This is assuming the return on debt approach has fully transitioned from the on-the-day approach to trailing average approach.

7 A slight variation on this was employed for our recent Victorian electricity distribution determinations due to the change to financial year regulatory years.

any mismatch between actual costs and regulated revenues. All else being equal, this reduced risk and the reduced need to enter hedging arrangements might lower the efficient cost of financing for a benchmark efficient entity and increase productive efficiency. A trailing average is likely to provide for a smoother price path than the on-the-day approach.[8]

The on-the-day approach to estimating the allowed return on debt applied before 2014. Under this approach the allowed return on debt is constant throughout regulatory control period and is equal to the prevailing 10 year return on debt at the commencement of the regulatory control period.

## 3.2 Developments since 2018

The Integrated System Plan (ISP) was first developed by AEMO in 2018. The roll-out of projects under the plan in recent years has identified questions for further consideration. In particular, whether our approach remains appropriate in cases where there are large increments of capex beyond 10 per cent of the regulatory asset base.

### 3.2.1 Limitations of our current approach

The trailing average return on debt does not reflect the forward looking opportunity costs at any given point in time. This is because it is not forward looking. Currently, most (if not all) trailing average debt allowances are above forward looking efficient debt costs because interest rates have decreased over the past few years. However, under our current approach one tenth of the debt allowance is set on a forward looking basis in any particular year. That is, with stable RAB and capital expenditure just high enough to offset depreciation, new investment receives the allowance equal to the efficient debt cost.[9] In addition, where NSPs (on average) raise debt in a manner consistent with the underlying trailing average approach, they ought to be compensated correctly in NPV terms over the life of the RAB. We explained the rational for this in some detail in our 2015-16 determinations for the Victorian electricity distribution businesses.[10]

Where a benchmark NSP has a materially increasing (or decreasing) debt balance, using the simple 10 year trailing average set out in the 2018 RORI might result in a mismatch between its actual cost of debt and the regulatory return on debt allowance. This mismatch might distort investment decisions and lead to an inefficient outcome. This also means NSPs may be incorrectly compensated in NPV terms over the life of their investments.

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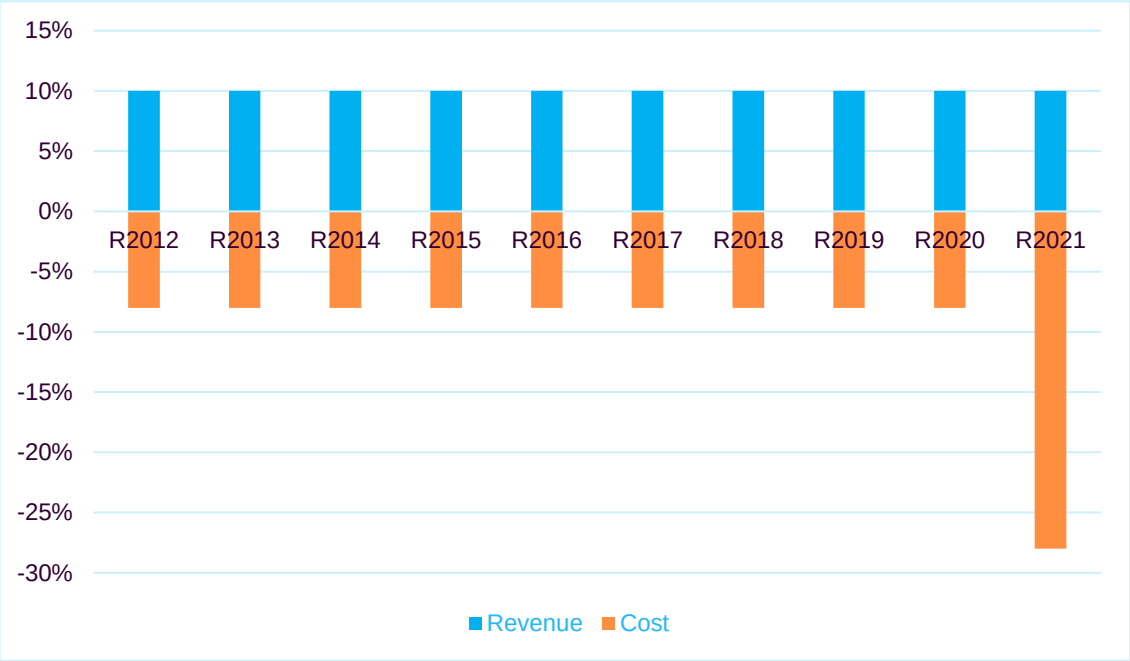
8 AusNet, *Final decision distribution determination 2016 to 2020 - Attachment 3 - Rate of Return,* May 2016, pp. 91-101.

9 If a benchmark NSP finances it annual capex with prevailing 10 year debt and refinances all its maturing debt with new 10 year debt, then the benchmark NSP actual return on debt would resemble the simple trailing approach, assuming benchmark capex is constant over time.

10 AusNet, *Final decision distribution determination 2016 to 2020 - Attachment 3 - Rate of Return,* May 2016, Appendix H.

To illustrate, **Error! Reference source not found.** below demonstrates the return on d ebt allowed revenue and actual cost misalignment for an NSP that historically refinanced 10 per cent of its debt annually and in the last year undertook a large capex spend equivalent to 25 per cent of its RAB. As is evident, in these circumstances using a simple trailing average approach to estimate return on debt results in the historical debt being over represented in the revenue allowance and the prevailing return on debt being under represented. If the NSP undertakes this capex program it will result in a positive (negative) NPV outcome for that program if the return on debt is estimated using a simple trailing average approach to the extent the prevailing return on debt is lower (higher) than the 10 year average. This effect may distort the NSP's investment decisions.

### Figure 4 Return on debt weighting misalignment during large capex spend under a simple trailing average approach




Where the trailing average is materially above the current return on debt, all else equal, there may be an incentive to over-invest relative to efficient levels. Equally, there may be an incentive to under-invest if the trailing average is below the current return on debt.

Up until recently, capex profiles have tended to be relatively even since we introduced the trailing average. However, with large investments being undertaken as part of the ISP it could be that there are material departures from efficient forward-looking debt costs.

When an NSP undertakes relatively large capex in some years, an NSP may be exposed to interest rate 'mismatch' risk. There may be an incentive to delay or bring forward investment which is driven by two factors: (1) the size of the capex and (2) the size of the difference between the return on debt allowance and the prevailing return on debt.

In practice, new investments are financed with current (forward looking) debt/equity. Considered in this light, the return on debt for relatively large new investments could initially be set using the on-the-day approach and then transitioned to the trailing average approach. This could effectively be achieved by altering the weights used in the trailing average. A weighted average approach is more complex than the current simple average approach but it may result in a more accurate return on debt allowance for the benchmark NSP as it is more reflective of the benchmark debt practices. It will also ensure new investments satisfy the NPV=0 condition (see section 3.2.4).

### 3.2.2 Altering the weighting of the trailing average

When non constant weights are used in the trailing average approach (post transition) the return on debt is defined by the following formula:

$$k_t^d = \sum_{j=t-9}^{t} w_j * R_j$$

Where:

$w_j =$ The weight applied to on-the-day rate of return on debt in regulatory year in the series j

$\sum_{j=t-9}^{t} w_j = 1$

Stakeholders in the 2013 rate of return guideline proposed three alternatives to using a simple average in the trailing average, which included:

- weights based on the actual debt issuance data
- weights based on the actual changes in RAB, adjusted by the benchmark gearing
- weights based on the debt issuance assumptions in the PTRM.[11]

In the 2013 final rate of return guideline we adopted a simple trailing average rather than the three alternative weighting schemes proposed by stakeholders for the following reasons:

All three of the alternative approaches implied that the weights used in a trailing average would be different for each individual NSP. We did not consider that differences in investment profiles of individual NSPs justified adopting a different benchmark definitions. Since we proposed to use a single definition of the benchmark efficient entity, we considered there should be a single weighting scheme.[12]

Weighting schemes based on actual data may not provide an NSP with incentives to review the efficient timing of investment in response to the cost and availability of finance. In addition, these approaches would need to be implemented via a

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[11] AER, *Rate of Return guidelines – Explanatory Statement,* December 2013, p. 115.

[12] AER, *Rate of Return guidelines – Explanatory Statement,* December 2013, pp. 115-116.

retrospective true up, since such weights can only be computed after the parameters they are based on have been observed.[13]

NSPs may not (and indeed, often do not) follow their forecast PTRM profile. We consider the relative complexity of the PRTM–based weighting scheme, and forecast imprecision outweigh potential benefits of the approach.[14]

These three concerns are still applicable. However, in the 2013 rate of return guideline we did note that an unweighted average would be 'problematic' when interest rates are volatile to the extent that the efficient investment profile of the benchmark efficient entity leads to increasing debt balances/increasing RAB over time.[15] Further we considered that in the case of an increasing RAB, the potential mismatch between the benchmark efficient entity's efficient debt financing costs and the equally–weighted return on debt allowance would be larger the shorter the benchmark term of debt.[16]

We consider it is appropriate to review our current approach to weights used in the trailing average return on debt approach in light of large RAB growth due to the actionable ISP and the possible reduction in the term of debt.

We emphasise that the on-the-day approach is a particular weighting scheme where for all years of the access arrangement 100 per cent weight is applied to the prevailing cost of debt at the start of the access arrangement.

### 3.2.3 Considerations

When determining what weighting scheme should apply to the return on debt we consider the net present value (NPV) = 0 condition, actual versus forecast data and transition arrangements should be considered. These are discussed individually below.

### 3.2.4 NPV = 0

We consider the return on debt should satisfy the net present value (NPV) condition, which is described as follows:[17]

The zero NPV investment criterion has two important properties. First, a zero NPV investment means that the ex-ante expectation is that over the life of the investment the expected cash flow from the investment meets all the operating expenditure and corporate taxes, repays the capital invested and there is just enough cash flow left over to cover investors' required return on the capital invested. Second, by definition a zero NPV investment is expected to generate no economic rents. Thus, ex-ante no

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13 AER, *Rate of Return guidelines – Explanatory Statement,* December 2013, p. 116.

14 AER, *Rate of Return guidelines – Explanatory Statement,* December 2013, p. 116.

15 AER, *Rate of Return guidelines – Explanatory Statement,* December 2013, p. 116.

16 AER, *Rate of Return guidelines – Explanatory Statement,* December 2013, p. 118.

17 Partington, G., Satchell, S., *Report to the AER: Discussion of the allowed cost of debt*, 5 May 2016, p. 14. We note that Partington and Satchell supported a prevailing (that is, an on-the-day) approach for the return on debt which differs from our trailing average return on debt.

economic rents are expected to be extracted as a consequence of market power. The incentive for investment is just right, encouraging neither too much investment, nor too little.

Further, investments achieve NPV of zero if the present value of the stream of future cash-flows is equal to the initial investment: [18]

By definition, a stream of expected cash flows that allows the current required return on the book value of capital invested, recovers the capital invested and covers other costs, will have a discounted present value that ex-ante is equal to the book value of the investment. Allowing this cash flow for a regulated business, the book value of the RAB will be equal to the market value of the RAB. To put it another way this cash flow gives rise to a zero NPV investment.

We consider employing the rate of return that is commensurate with the prevailing market cost of capital is consistent with the zero NPV investment condition. A return on debt that better reflects prevailing market cost of debt more closely imitates the outcomes of a competitive market. [19] The on-the-day approach (which is particular type of weighting scheme with all weight applied to the first year return on debt) and the simple trailing average with transition both satisfy the NPV=0 condition over the remaining asset life of the RAB. However, only the on-the-day approach will meet the NPV=0 condition over each regulatory control period.

Unlike the on-the-day approach, the trailing average approach can result in the market value of the total assets deviating from the RAB at the commencement of the regulatory control period.[20] This is caused by the trailing average not being a forward looking estimate of the current opportunity cost of debt.

For example, if at the commencement of the regulatory control period the prevailing return on debt is less than the 10 year average return on debt, the market value of future regulatory cash flows will exceed the value of the RAB. An investor will be able to purchase the asset for a market value that is in excess of the RAB, as the investment can be financed at a cheaper rate than what is implied in the return on capital building block. In this scenario the regulated price would be higher than the prices that would prevail in a workably competitive market.

For a new capex program, using a simple trailing average implies that the capex program can financed with historical debt. However, new investment can only be financed with forward looking debt. If the prevailing return on debt is lower (higher) than the historical 10 year average return on debt, this new capex program will result in

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[18] Partington, G., Satchell, S., *Report to the AER: Discussion of the allowed cost of debt*, 5 May 2016, p. 17.

[19] AusNet, *Final decision distribution determination 2016 to 2020 - Attachment 3 - Rate of Return,* May 2016, p. 296.

[20] This is based on the assumption that there is no outperformance (forecast equal actuals) and the weighted average cost of capital is estimated correctly. In this situation there are no abnormal returns and the market value should equal the RAB.

a positive (negative) NPV outcome if the return on debt is estimate using the simple trailing average.

We are seeking stakeholder views on whether the NPV=0 condition is sufficiently satisfied for the simple trailing average approach, particularly in the case of large investment programs. To the extent the NPV=0 condition is not, or may not be, sufficiently satisfied using our current simple trailing average return on debt approach, should we adopt a weighted average trailing average to the return on debt?

### 3.2.5 Actual vs forecast weight

To the extent we move from a simple trailing average approach to weighted trailing average approach for the return on debt, there is a question of how the weights within the formula should be determined. Two methods for weighting are using forecast capex or using actual capex.

The benefit of using forecast data when determining the weights is that the weights can be determined in advance. However, the actual debt practices of an NSP might deviate from debt practice of the benchmark NSP. For example, if the NSP submits that it will undertake a large capex in year 2 of the regulatory control period and subsequently delays that capex, the NSP will be overcompensated (undercompensated) for the next 10 years if the return on debt was relatively high (low) as compared to the historical average. Therefore, the use of forecast capex in the return on debt weighting may give an incentive to NSPs to change investment timing in an inefficient way compared to what they submitted in their regulatory proposals. It may also incentivise NSPs to forecast inefficiently high (low) amounts of capex when interest rates are higher (lower) than the historical trailing average.

Alternatively, the actual data, such as actual debt issuance or actual capex multiplied by the benchmark gearing, could be used to determine the weightings applied in the trailing average return on debt. The downside of using actual data is that it is not known until after the investment is made (i.e. ex-post). Hence, the trailing average return on debt would have to be estimated and then adjusted for actual expenditure after this is known.

Our initial view is that it would be better to use weights based on forecast capex so the weights can be set in advance. We seek stakeholder's views on how the weights in the weighted average return on debt might be estimated.

#### Transitional arrangement

If we determine it is appropriate to change our current trailing average approach for setting the return on debt, transitional arrangement may be required. These might be to smooth lumpiness in trailing average debt tranche weights over time if we moved to a capex-weighted approach, or for other reasons. We are interested in stakeholders view on whether any transitional arrangement are likely to be required assuming different changes of approach, and what these might be.

## 3.3 Proposed approach for the 2022 Instrument

We are considering whether our trailing average calculation should be weighted by capex spending. This would allow for the capex program to be initially funded only with forward looking debt which better aligns the NPV=0 condition.

We are also considering what form this will take in the 2022 Instrument. We welcome stakeholder feedback on the issues set out above, the potential solutions and if these are considered sufficiently material to warrant a change.

# 4 Averaging Period Timing

To mitigate the volatility of market rates, our established approach has been to estimate the return on debt over a specified averaging period. Service providers are able to nominate their proposed debt averaging periods for each regulatory year prior to the commencement of the regulatory control period.

We require sufficient time after the end of an averaging period, and prior to the start of a regulatory year, to calculate the updated return on debt and communicate the results to service providers. Service providers then need time to consider these results and incorporate them into their annual pricing for that regulatory year. Retailers then require time to adjust their pricing.

## 4.1 2018 Instrument

In the 2018 Instrument, the nominated averaging periods must:

- be over a period of 10 or more consecutive business days, up to a maximum of 12 months;
- start no earlier than 16 months prior to the commencement of a regulatory year; and
- Finish no later than 4 months prior to the commencement of a regulatory year.

We chose these parameters to allow networks to raise debt in the most efficient manner whilst also being representative of the regulatory years to which they are set for. These timings also made provision for any unexpected delays in the process.

## 4.2 Proposed approach for the 2022 Instrument

Since establishing the averaging period criteria in 2018, we have found that a change to the publication schedule of the RBA (one of the data providers used for the updates) in conjunction with our own internal processes are resulting in relatively short turnaround times for the updates. This increases pressure on NSPs, retailers and customers.

Accordingly, we propose a change to the criteria such that the averaging period is to finish no less than five months prior to the commencement of a regulatory year. This will provide more time for the price adjustment process to operate to the benefit of all. We recognise this change will have a one-off impact of reducing the nomination period for service providers in the first year of the regulatory period following the commencement of the 2022 Instrument.

We welcome stakeholder comment on this preliminary position.

# 5 Debt Data Providers

The yield curve data we use to estimate the return on debt is sourced from a number of independent third-party providers.

## 5.1 2018 Instrument

In the 2013 Guideline, we relied on yield curve data from two data providers, RBA and Bloomberg. In the 2018 Instrument, we added a third data provider, Thomson Reuters. At that time, a fourth provider, S&P Global was also considered but not included.

We added this provider to enhance the robustness of our data and reduce the chance of missing observations in our estimation of the cost of debt.

We considered that the inclusion of Thomson Reuters would not sufficiently complicate our methodology, and that the data it provided would be suitable for inclusion.

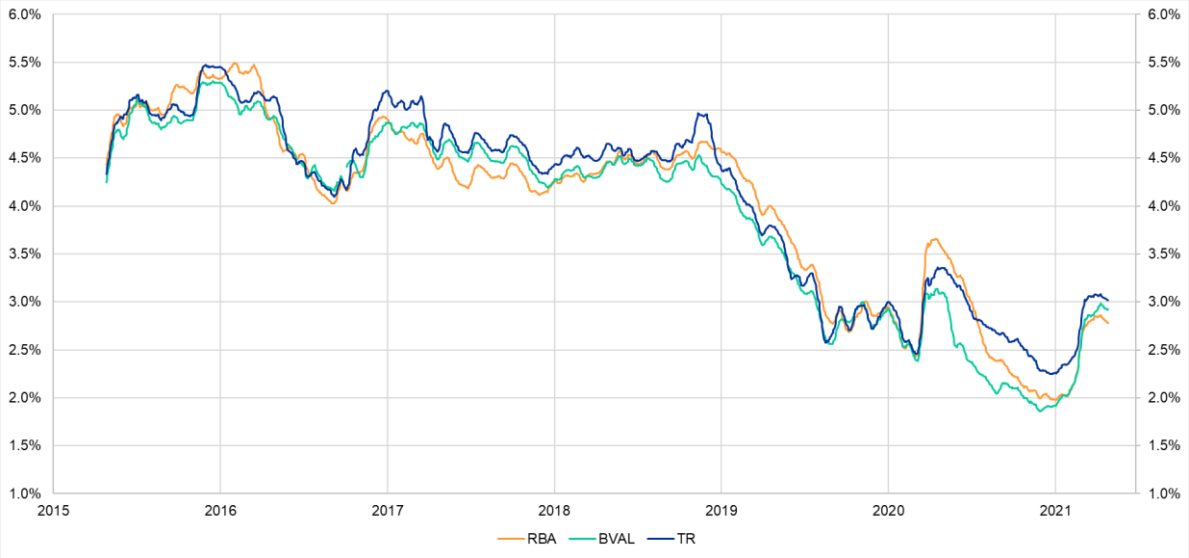
## 5.2 Proposed approach for the 2022 Instrument

In the 2018 Instrument we used a blend between A and BBB rated debt curves from three data providers, shifting the weightings from those used previously to give A data 1/3 weigh and BBB data 2/3 weight to match our benchmark credit rating of BBB+.

More recently, as illustrated in Figure 5**Error! Reference source not found.**, we have observed deviations in the BBB+ yield curves of each of the three data providers. From 2015 to early 2020, each of the curves moved in a similar pattern. However, from around March 2020 and throughout the rest of 2020, there has been a visible difference in reported yields.

These differences appear to have lessened in 2021.

**Figure 5 BBB+ debt yield curves for RBA, Bloomberg & Thomson Reuters (April 2015 to April 2021)**



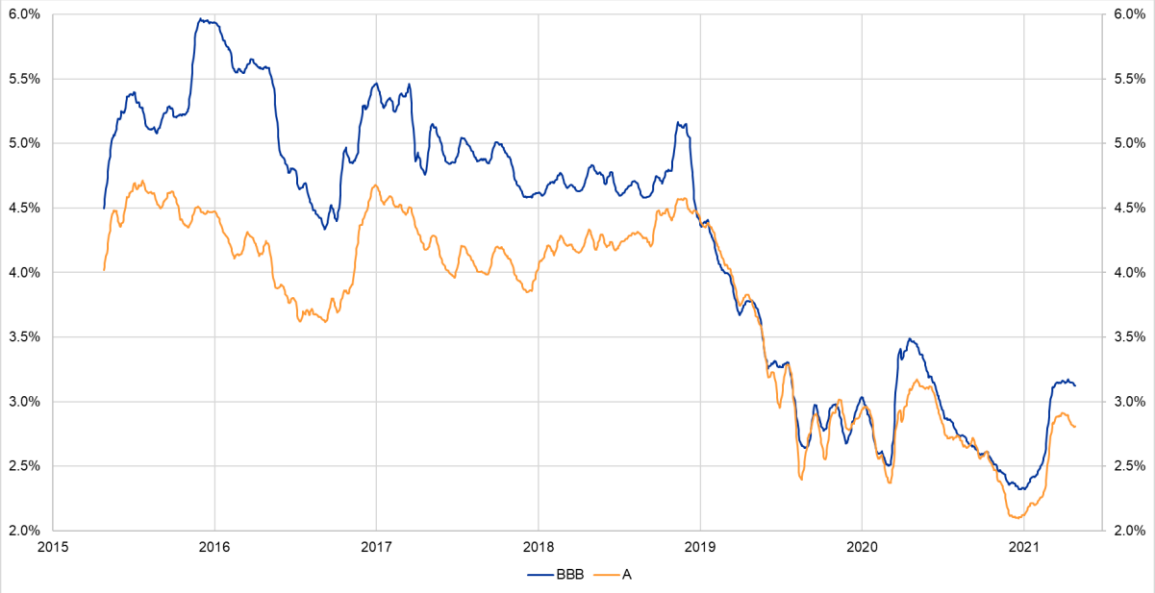
Source: RBA, Bloomberg, Thomson Reuters, AER Analysis

Notes: Yields are shown as effective annualised rates and have been calculated according to the 2018 Instrument.[21] Yield have been averaged over a 10-day period.

While differences in reported yields among the data providers in itself is not cause for concern, we believe it important to assess the appropriateness of the yield curves themselves.

For example, we note that, as shown by Figure 6**Error! Reference source not found.**, there have been instances where the yield of the A-rated curve for Thomson Reuters has exceeded the yields on its BBB-rated curve.

## Figure 6 Thomson Reuters BBB and A yield curves (April 2015 to April 2021)




Source: Thomson Reuters, AER Analysis

Notes: Yields are shown as effective annualised rates and have been calculated according to the 2018 Instrument.[22] Yields have been averaged over a 10-day period.

We also recognise that the RBA has revised its data on several occasions.

We will examine each of the current curves and their history to ensure they are appropriate for regulatory use.

At this time, our preference is to continue to use data from multiple providers if possible. Using multiple yield curves has important advantages:

[21] AER, *Rate of return instrument,* December 2018, pp. 7-17.
[22] AER, *Rate of return instrument,* December 2018, pp. 7-17.

- It averages out deviations in individual curves, reducing the impact of individual curve daily errors or variance
- It provides contingency for those occasions that one provider does not publish data on certain days.

We do not intend to undertake a detailed assessment of the individual curves beyond ensuring the methodology is suitable for use in a regulatory setting. We are interested to hear views on adding other providers as another curve, or the removal of one of the existing providers.

We welcome comment from stakeholders in relation to the continued appropriateness of the existing curves. We are also interested in stakeholders' views on any alternative curves from different data providers that they consider might be used.

# 6 Instrument selection for use in the EICSI

Not all debt issued by networks is included in the EICSI.

## 6.1 2018 Instrument

When creating the EICSI in 2018, Chairmont decided which instruments would be included. It indicated its approach to inclusion and exclusion was based on broad criteria and the exercise of professional judgement.

We did not formalise a criteria at this point as

## 6.2 Proposed approach for the 2022 Instrument

Having resolved to make greater use of the EICSI in determining the benchmark cost of debt, we considered it important to develop refined criteria to guide our decisions as to which debt instruments should be included.

Criteria will promote transparency and replicability, but we recognise the application of the criteria may also require the exercise judgment. In our 2020 paper on *Energy Network Debt Data*, we set out criteria by which we would include and exclude debt instruments from the Index.

For inclusion, there was a single overarching criteria:

- We will include any instrument that has the purpose of financing the RAB, has the characteristics of debt and does not meet one of the exclusion criteria. Types of instruments that are included are simple bond issuances, bank loans, USPP (US private placement) or MTN (Medium Term Note).

We will exclude instruments that do not have simple debt characteristics or are issued for other purposes. These include:

- Commercial papers, non-convertible subordinated notes, hybrids and short term capex facilities
- Bridges, working capital and overdrafts
- Anything with a term under 12 months.

In the context of calculating a weighted average cost of capital, we employ separate return on debt and a return on equity estimates. Considering debt with equity or non-debt characteristics could lead us to incorrectly assess the realised cost of debt.

We intend to apply these criteria when we next estimate the EICSI.

# 7 Benchmark Credit Rating

As part of our return on debt methodology, we use a benchmark credit rating in our estimate of the cost of debt.

## 7.1 2018 Instrument

In the 2018 Instrument, we adopted a benchmark credit rating of BBB+ based on the observed credit ratings of Australian energy network businesses.[23]

When calculating our estimate, we express this with a 2/3 weighting on BBB data and 1/3 weighting on A-rated data.

## 7.2 Proposed approach for the 2022 Instrument

In our 2020 Rate of Return annual update, we identified that the median benchmark credit rating remained at BBB+.

### Figure 7 Median Credit Rating (2010 to 2020)

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Industry Median | BBB+ | BBB | BBB | BBB+ | BBB+ | BBB+ | BBB+ | BBB+ | BBB+ | BBB+ | BBB+ |

Comparator: Table 25 (page 284) of the 2018 explanatory statement.

Source: Bloomberg, Standard & Poor's, Moody's. All other data is the same as published with the explanatory statement.

However, we are now considering an implementation method of the EICSI by which we would adjust the weights of A and BBB data to match network cost of debt over the past four years. More discussion of this can be found in section 2.3.

In this instance, credit rating data from the market would act as a cross-check for suitability, and not be used directly to inform the chosen blend.

[23] AER, Rate of Return Instrument - Explanatory Statement, December 2018, p. 284

# 8 Instrument Contingencies

The rate of return instrument is to apply automatically and involves the use of an annually-updating return on debt approach.

Our decision on how to apply third-party data series must be fully specified upfront in each determination and in our final rate of return instrument, and be capable of automatically applying over the regulatory period without the use of subsequent judgement or discretion.

For this reason, we need to establish contingencies that set out how we will react to potential events that could occur over the life of the rate of return instrument.

## 8.1 2018 Instrument

In clause 26 of the 2018 Instrument, we set out a number of contingencies, which apply to the daily band Y ten-year YTM estimates for curve providers.[24]

For simplicity, these contingencies are paraphrased below.

- If the data from one of the providers is not available on any particular day then our estimation process will use the remaining providers' data only on this day.
- If no data is available on a particular day, for either A or BBB data, then a historical spread to swap estimate is used to estimate the curve based off of the ADSWAP daily data.
- If a debt provider changes its methodology then the new methodology is used in estimating our debt curve moving forwards.
- Once a return on debt estimate has been finalised, it should not be reviewed if updated debt estimates are issued by the data providers for previous dates.
- If the RBA replaces their monthly data with daily data, then the current process of converting to a daily series will be unnecessary and as such will not be used.
- If Bloomberg or Thomson Reuters stop publishing a daily series and move to a longer period such as weekly or monthly, then they must be converted into daily series in the same fashion the RBA data currently is.

For greater precision, the reader should refer to the clause 26 of the 2018 Instrument.

## 8.2 Proposed approach for the 2022 Instrument

Contingencies are very important for ensuring that a fair and unbiased estimate can be calculated without the need for input or judgement by the AER at the time of the decision.

[24] AER, Rate of Return Instrument - Explanatory Statement, December 2018.

We previously developed contingencies clauses based on number of principles, including:

- Be clear and unambiguous to easily enable the automatic application of the return on debt formula
- Use curves in a form as close as possible to their published form
- Where necessary, rely on the independent expert judgement of the RBA, Bloomberg and Thomson Reuters
- Preserve the use of as many data sources as possible
- Favour up to date data.

We are currently reviewing the contingencies in the 2018 Instrument, and the extrapolation and interpolation methodologies.

In this context, we welcome submissions on improvements or changes that could be implemented.

# 9 Debt Raising Costs

Debt raising costs are the transaction costs incurred each time debt is raised or refinanced, in addition to the costs associated with maintaining the debt facility. NSPs are provided with a fixed allowance for these costs as part of their regulated operating expenditure.

## 9.1 2018 Instrument

As debt raising costs do not contribute to a network's rate of return, they were not explicitly incorporated with the 2018 Instrument.

## 9.2 Proposed approach for the 2022 Instrument

For similar reasons, we do not propose to reflect these costs in the 2022 Instrument.

In our *Energy Network Debt Data* working paper, networks indicated that many ongoing costs were not factored into our debt raising cost allowance. Without consideration of these extra costs, networks were of the view that they would be undercompensated.

In the past, we have collected data on debt raising costs from networks, but been unable to reconcile this data, given various cost categories adopted by different networks.

Each network employs a unique approach to cost categorisation and the allocation of debt raising costs. As such we are concerned that the data provided to date may lead to double counting, or costs being incorrectly allocated.

In developing a consistent approach to debt raising costs, we will shortly issue a Regulatory Information Notice to collect additional debt raising cost data to help facilitate this.

# A Assessment criteria[25]

Information criteria

In the 2013 Guidelines, we developed a set of transparent criteria to inform our regulatory judgement on rate of return matters when evaluating material put before us.[26]

At that time, we considered that decisions on the rate of return were more likely to achieve the allowed rate of return objective if they used estimation methods, financial models, market data and other evidence that were:

1. where applicable, reflective of economic and finance principles and market information
   (a) estimation methods and financial models are consistent with well-accepted economic and finance principles, and informed by sound empirical analysis and robust data
2. fit for purpose
   (a) the use of estimation methods, financial models, market data and other evidence should be consistent with the original purpose for which it was compiled and have regard to the limitations of that purpose
   (b) promote simple over complex approaches where appropriate
3. implemented in accordance with good practice
   (a) supported by robust, transparent and replicable analysis that is derived from available credible datasets
4. where models of the return on equity and debt are used these are
   (a) based on quantitative modelling that is sufficiently robust as to not be unduly sensitive to errors in inputs estimation
   (b) based on quantitative modelling which avoids arbitrary filtering or adjustment of data, which does not have a sound rationale
5. where market data and other information is used, this information is
   (a) credible and verifiable
   (b) comparable and timely
   (c) clearly sourced
6. sufficiently flexible as to allow changing market conditions and new information to be reflected in regulatory outcomes, as appropriate.[27]

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[25] AER, *Overall Rate of Return, Draft working paper*, July 2021, section 4.

[26] AER, *Better regulation Explanatory Statement Rate of Return Guideline*, December 2013, p. 23.

These criteria were subordinate to the law, the rules and the allowed rate of return objective.[28] They provided a framework through which we were able to exercise our regulatory judgment in respect of evidence before us, while allowing sufficient flexibility to make decisions in changing market circumstances.

In developing the 2018 instrument, stakeholders indicated that they valued certainty and predictability.[29] Accordingly, we adopted the same criteria in our assessment of information when making the 2018 Instrument.[30]

In the interests of maintaining continuity and stability, we will again adopt this suite of criteria to assess the merits of new evidence that has become available since 2018.

However, in order to establish a high bar for change has been met, for the 2022 review we will also have regard to:

1. the materiality of any proposed change, and
2. the longevity or sustainability of new arrangements.

These additional criteria ensure that change is not to be adopted lightly in the absence of compelling evidence. Importantly, any case for change must demonstrate there to be a clear improvement or a benefit to be realised.

In the long-term interest of consumers

We consider that enhancing the long-term interests of consumers should be an overarching objective of any change to the rate of return framework. *Accordingly, having successfully met the threshold criteria for making a change, its impact needs to be considered in this context.*

*Having consulted with* CRG and Energy Networks Australia (ENA) during 2021, we resolved not to make a decision with a conscious bias toward a higher or lower expected rate of return. Rather, we undertook to aim for the best possible estimate in an environment of uncertainty, given the best available information.

To this end, in our position paper *Rate of return and assessing the long-term interests of consumers,*[31] we established a guiding principle that we would seek to determine an unbiased estimate of the expected efficient return, consistent with the relevant risks involved in providing regulated network services.

On the basis that this principle best serves the long-term interests of end users, any change to the 2018 Instrument will need to pass this final test.

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[27] AER, *Better regulation Explanatory Statement Rate of Return Guideline*, December 2013, pp. 23-4.

[28] AER, *Better regulation Explanatory Statement Rate of Return Guideline*, December 2013, p. 23.

[29] AER, *Draft rate of return guidelines explanatory statement*, July 2018, p. 25.

[30] See for example AER, *Draft rate of return guidelines explanatory statement*, July 2018, pp. 216, 282.

[31] AER, *Rate of return and the long term interest of consumers*, Position paper, May 2021.

# B Elements of the Pathway to 2022