Rate of return

Energy network debt data

Draft working paper

June 2020

AUSTRALIAN ENERGY REGULATOR

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1 Overview

This is the first in a series of working papers that we will produce as part of our pathway to the 2022 rate of return instrument. The outcomes from these working papers will feed in to the active phase of our 2022 rate of return instrument review. This information will assist us to develop a 2022 rate of return instrument that sets a rate of return in line with efficient financing costs, such that consumers pay no more than is necessary for the safe and reliable delivery of electricity and gas.

1.1 Why this topic?

Chairmont and the AER undertook work in 2018 to develop an understanding of the actual debt instruments issued by energy networks. This included consideration of the actual cost of debt incurred by the networks, as well as the term and credit rating. Chairmont developed a simple index of actual debt costs, labelled the Energy Infrastructure Credit Spread Index (EICSI). We used aspects of the EICSI as a 'sense check' when making the 2018 rate of return instrument. In particular it allowed us to:

- test actual cost of debt against the regulated estimate
- check if BBB+ was an appropriate benchmark for our regulated energy networks
- review the debt term set in the instrument against issued debt.

We received submissions that proposed potential improvements to the EICSI analysis but there was insufficient time to do further work. We have now reviewed those proposals in more detail and consider that there is now an opportunity to improve the robustness of the EICSI. The two aspects that we consider are the most important are extending the series and introducing a weighted average when calculating the term of debt.

Prior to this working paper, we:

- Commissioned a new report from Chairmont.[1] This report provides expert advice on some outstanding methodological questions raised in the 2018 review, including how to best measure the average term of debt for the EICSI sample.
- Collected debt data from all private sector regulated networks. All of these energy networks voluntarily provided data on their debt instruments, extending the earlier data series.

Our consideration of the latest Chairmont report, and analysis using the updated data, leads us to propose options to change how energy network debt data might be used in developing the 2022 instrument. Options we have identified are:

- Using the EICSI cost of debt more prominently to assess the overall reasonableness of our return on debt approach. The longer data series now available to us improves our confidence in the series.

1 Chairmont, *Aggregation of debt data for portfolio term to maturity*, 28 June 2019.

- Using the EICSI term of debt to inform our decision on the benchmark term. Chairmont has proposed an improved method (weighted average term to maturity) that should address concerns raised in 2018 around the use of a simple average term.
- Using the EICSI credit ratings to inform our decision on the benchmark credit rating.
- Using the EICSI cost of debt in the direct calculation of our regulated return on debt, perhaps in conjunction with other measures (such as the yield estimates provided by data providers Bloomberg, RBA and Thomson Reuters).

The latest tranche of debt data collected from networks runs through to August 2019. We propose to collect further debt information in August 2020 and 2021.

1.2 Next steps

We invite stakeholder submissions in response to this paper by Friday 14 August 2020.

Our normal practice is to hold a public forum during the submission period, where stakeholders can ask questions of the AER and interact directly to hear each other's perspectives. However, government restrictions in response to the COVID-19 pandemic make it difficult for this to be a physical meeting.

Our current intent is to hold an online-only event in the week commencing Monday 20 July. However, we are still evaluating several options for how best to facilitate this meeting. Information about the online forum will be available on our website in due course.

After consideration of submissions, we expect to conclude this working paper with the release of a position paper in October 2020.

Making a submission

Submissions should be emailed to RateOfReturn@aer.gov.au.

We prefer that all submissions be sent in an electronic format in Microsoft Word or other text-readable document form and publicly available, to facilitate an informed, transparent and robust consultation process.

Alternatively, submissions can be sent to:

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GPO Box 520
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Submissions will be treated as public documents and posted on the AER's website unless prior arrangements are made with us to treat the submission, or portions of it, as confidential. Those wishing to submit confidential information are requested to:

- clearly identify the information that is the subject of the confidentiality claim; and
- provide a non-confidential version of the submission.

2 Process background

2.1 What is the rate of return instrument?

The rate of return instrument specifies 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 specifies some inputs (fixed for the duration of the instrument) and for others specifies 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.

Estimating the rate of return is a complex task. We estimate the returns required by investors in view of the risks associated with 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.

2.2 What is our 'Pathway to 2022'?

We use the term 'Pathway to 2022' to describe the process by which we will develop the 2022 Instrument. We consulted with stakeholders about what steps should be included and what role various groups should play.[2] We issued a position paper in May 2020 setting out our high level plan.[3]

The active phase of the 2022 review will commence in mid-2021. Prior to this, our pathway to 2022 includes:

- Rate of return annual updates—to provide information on rate of return data in the years between reviews; particularly updated times series data used in the 2018 instrument (or used to inform the development of the 2018 Instrument).
- Establishing reference groups—to allow us to hear stakeholder perspectives from consumers, investors and retailers.
- Working papers—such as this paper.

Outcomes from our 2020 Inflation review will also flow into the development of the 2022 Instrument.[4]

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2 AER, *Consultation paper, Pathway to the 2022 rate of return instrument*, November 2019; see also The Brattle Group, *Stakeholder feedback on the AER's process for the 2018 rate of return instrument*, 27 June 2019.

3 AER, *Position paper, Pathway to the 2022 rate of return instrument*, 29 May 2020.

4 AER, *Initiation notice, 2020 review of inflation approach*, 7 April 2020; AER, *Discussion paper, Regulatory treatment of inflation*, 25 May 2020, p. 14.

We will consult further on the process for the active phase of the review, including lower-level details not addressed in our May 2020 position paper, as we get closer to 2022.

2.3 What is the intent of the working papers series?

Our rate of return working papers discuss issues and evidence on key rate of return topics, and allow us to hear from stakeholders in response.

On each chosen topic, we expect to release a consultation paper (usually accompanied by an expert report), before allowing a submission period. We will facilitate discussion with stakeholders within the restrictions arising from the COVID-19 pandemic, such as by hosting a virtual seminar or online meeting. We will then release a position paper with our response to submissions.

In selecting topics for working papers, we have had regard to whether topics could be constructively considered as discrete issues in advance of the active phase of the review.[5] We have also taken into account stakeholder feedback on the topics of interest or importance.[6]

We intend that all this material will feed in to the main phase of the review, providing a foundation for constructive discussion and helping alleviate time pressure in the active phase.

The topic of this paper (on industry debt data) was selected because it flowed from questions about the EICSI raised during the 2018 review. We considered that these matters could be appropriately addressed ahead of the active phase of the review.

5 AER, *Position paper, Pathway to the 2022 rate of return instrument*, 29 May 2020, pp. 9–10.

6 AER, *Position paper, Pathway to the 2022 rate of return instrument*, 29 May 2020, p. 22.

3 Actual debt costs in the 2018 instrument

3.1 Return on debt framework

We provide energy networks with an allowed return on debt to cover the efficient borrowing costs they are expected to incur funding capital investments in their network. We set the allowed return on debt by observing market data on the cost of debt. In setting the allowed return on debt, we provide efficient compensation for the risks that an investor in the service provider's debt faces.

Our framework for estimating the allowed return on debt as outlined in the 2018 rate of return instrument is based on the following key elements:[7]

- A benchmarking approach based on debt yield data from third party data providers and benchmarks of 10-years for term of debt and a BBB+ credit rating;
- A 10-year trailing average approach with an annual update; and
- A 10-year transition into the adoption of the 10-year trailing average approach.

We apply a benchmark incentive approach, where a network retains the benefit if it is able to keep costs (in this case, the interest payments on the debt it has issued) below our forecast of efficient costs.[8] Equally, the networks wears the detriment if its actual costs exceed the efficient benchmark.

3.2 Development of the energy networks debt costs index

In 2018 we obtained data on actual debt costs from privately owned (i.e. non-government owned) service providers for the period 2013–17.[9] We engaged Chairmont to assist us with the collection and analysis of this debt data, and the development of the Energy Infrastructure Credit Spread Index (EICSI). The purpose of collecting actual debt information (and the development of the EICSI) was to provide a 'sense check' of reasonableness of outcomes under our benchmark approach.

The characteristics of the EICSI are that it is:

- Based on the spread which companies pay on their debt above a market benchmark rate, interpreted as the swap rate or the floating Bank Bill Swap Rate (BBSW). This spread can be loosely considered as the credit spread or Debt Risk Premium (DRP);
- An unadjusted index, except interest rates are all re-calibrated to quarterly. EICSI does not apply weights for differences such as term to maturity, credit rating or size of debt issuance; and

7 AER, *Rate of return instrument*, December 2018, clauses 9–26, 29–31, 33–35; AER, *Rate of return instrument, Explanatory statement*, December 2018, pp. 276–280.

8 Interest costs are reset to the efficient level at each regulatory determination (usually every five years).

9 We asked for details of all outstanding debt and financial instruments held as at 1 January 2013, and then details of all debt and financial instruments issued between January 2013 and December 2017 (though some networks provided data through to February 2018). AER, *Discussion paper, Estimating the allowed return on debt*, May 2018, p. 27.

- Measured as a 12-month rolling average, meaning that the first index value calculated is January 2014, using the data from the prior 12 months.[10]

The EICSI is deliberately constructed without model adjustments, as described by Chairmont:[11]

> *It does not weight or adjust the raw data from the companies. The purpose is to produce a 'pure' unadjusted index which reflects actual debt raising costs[12] without modelling adjustments to target a theoretical benchmark.*

It is important to note that the EICSI is based on a 12-month rolling average—in simple terms, the 'current' return on debt. When we apply the 2018 Instrument we use a 10-year trailing average portfolio return on debt, built up from the historical return on debt across the previous 10 years.[13] Changes in the current return on debt each year will flow through to the trailing portfolio, but only at 10 per cent of the overall value.

3.3 Use of the EICSI

There were three key outputs of the EICSI analysis considered in the 2018 process:

- the average cost of debt (the core EICSI itself)
- the average term of debt issuance
- the average credit rating.

Cost of debt

The EICSI itself was used as a sense check when assessing our overall return on debt approach, reflecting the final outcome after consideration of benchmark characteristics (term, credit rating) and implementation decisions.[14] The EICSI cost of debt was not determinative.

In general terms, the EICSI suggested that the return on debt set under the 2018 Instrument would be slightly above the actual debt costs incurred by energy networks. However, we had regard to stakeholder submissions about the assumptions and limitations underlying the construction of the EICSI.[15] We considered that additional analysis would be necessary on several of these points. We also noted that several of these limitations could be overcome

10 Chairmont, *Aggregation of Return on Debt Data*, April 2018, p. 3.
11 Chairmont, *Aggregation of Return on Debt Data*, April 2018, p. 3.
12 In this quote, Chairmont uses the term 'debt raising costs' to refer to the ongoing costs of issued debt (effectively interest payments every year). The AER reserves the term 'debt raising costs' for one-off transactional costs incurred when debt is first raised, and uses the terms 'cost of debt' and 'return on debt' for the ongoing interest costs. The AER provides a separate debt raising costs allowance (as part of operating expenditure).
13 The full 10 year historical window is only used after the transition to the trailing average portfolio approach is complete.
14 AER, *Explanatory statement, Rate of return instrument*, December 2018, pp. 276–280.
15 AER, *Draft rate of return guidelines, Explanatory statement,* July 2018, pp. 451–459 (appendix B); AER, *Explanatory statement, Rate of return instrument*, December 2018, pp. 302–303.

with the collection of data over a longer time period. The Independent Panel also recommended that we collect additional data.[16]

This was consistent with the draft 2018 explanatory statement which described the EICSI 'sense check' in this way:[17]

> *That is, we are not undertaking a reconciliation of NSPs [network service providers] actual revenues and costs. Rather, we are reviewing the overall reasonableness of our benchmark allowance consistent with the principles of incentive regulation.*

Term of debt at issuance

The EICSI dataset also allows calculation of the average term of debt issued by the energy networks.[18]

In 2018, we calculated the average debt term at issuance across the sample period, which resulted in an average term of 7.4 years. This was a simple average of all debt instruments included in the EICSI, making no adjustments for the size or term of that debt.[19]

However, we agreed with stakeholder submissions that the simple average across instruments in the sample might understate the 'true' observed term of debt over 2013–17.[20] We also noted that the ECSI sample period was not long, and included the period where we implemented the transition to a trailing average debt approach. We considered the strength of conclusions about the benchmark term would be improved by a longer series of actual debt information in the EICSI.

Our final decision for the 2018 rate of return instrument was to maintain the current benchmark debt term of 10 years.[21] The EICSI data had little direct impact on this decision, because of the limitations noted above. We considered that it indicated the 'true' debt term was above 7.4 years, but did not indicate a more precise figure.

At the time, we considered that the ongoing collection of actual cost of debt information would allow us to develop a longer-term EICSI value-weighted portfolio which would avoid the tendency of a simple average estimate to understate the benchmark return on debt. Collection of a consistent time-series of actual debt data should allow us to form conclusions about the benchmark term which are not materially impacted by particular market circumstances.[22] This forms the basis of this working paper.

Credit rating

16 Independent Panel, *Review of the Australian Energy Regulator's draft rate of return guidelines*, 7 September 2018, p. VII.
17 AER, *Draft rate of return guidelines, Explanatory statement,* July 2018, p. 452.
18 Chairmont, *Aggregation of return on debt data*, April 2018, p. 10.
19 AER, *Explanatory statement, Rate of return instrument*, December 2018, p. 299.
20 AER, *Explanatory statement, Rate of return instrument*, December 2018, p. 299.
21 AER, *Explanatory statement, Rate of return instrument*, December 2018, pp. 278–9, 300.
22 AER, *Explanatory statement, Rate of return instrument*, December 2018, p. 300.

The EICSI dataset also allows calculation of the average credit rating from each debt instrument issued by the energy networks.[23]

Our final decision for the 2018 rate of return instrument was to maintain a benchmark credit rating of BBB+.[24] This was based on assessment of annual credit ratings (from Standard and Poor's, and Moody's) for Australian energy network businesses over the period 2007 to 2018).[25] EICSI credit rating analysis was noted, but only as a sense check on the primary approach.

The EICSI analysis also played a role in the implementation of this benchmark. We decided to implement our BBB+ benchmark through a weighted average of A rated and BBB rated fair yield curves (as no data provider publishes a BBB+ specific curve).[26] We considered this was supported by our EICSI cost of debt 'sense check', which suggested that the cost of debt set in this way would better align with actual debt costs (reducing the overestimation if the BBB-rated curve was used in isolation).[27]

23 Chairmont, *Aggregation of return on debt data*, April 2018, p. 10.
24 AER, *Explanatory statement, Rate of return instrument*, December 2018, p. 289.
25 AER, *Explanatory statement, Rate of return instrument*, December 2018, pp. 284–289.
26 Specifically, the weighted average is one-third weight on the A rated curve and two-thirds weight on the BBB-rated curve.
27 AER, *Explanatory statement, Rate of return instrument*, December 2018, p. 291.

4 The 2019 Chairmont report

When Chairmont created the EICSI in 2018, it was recognised that the index was a basis that should be built upon for future analysis. As such, the purpose of this updated report in 2019 was to:

> *- Conduct a comparative analysis between portfolio level original Term to Maturity and AER's current 10-year benchmark. This is weighted by the face value of debt to ensure that the smaller providers do not overweigh the average;*
>
> *- Calculate a simple average of the providers' Term to Maturity at issuance for each month;*
>
> *- Update the EICSI analysis to include data unavailable in 2018; and*
>
> *- Enhance the functionality of the existing debt aggregation model.* [28]

Cost of debt

Chairmont updated the core EICSI to include a small amount of additional debt data. This was from the 2013–17 period. It was not initially included in the 2018 analysis because it was not provided to us in time.

Chairmont found that the inclusion of additional data did not result in any significant changes to the average cost of debt previous report.[29] The average credit spread was now 141.3 basis points, compared to 142.4 basis points in the 2018 report.

Term of debt at issuance

In the 2019 report, Chairmont recalculated the debt term:

- using a Weighted Average Term to Maturity at Issuance analysis (WATMI). This weighted each debt instrument with regard to the value of that debt as a proportion of total debt. This is in contrast to the simple average used previously to calculate an average debt term of 7.4 years.
- with various assumptions for the drawdown of bank debt (0%, 50% and 100% drawdown scenarios).
- both on a month-to-month basis (that is, debt issued that month) and as an aggregate portfolio (that is, including all outstanding debt each month) across the sample period.

The WATMI for the industry ranged from a minimum of 7.4 years to a maximum of 10.7 year across all scenarios. When compared against our 10-year benchmark, Chairmont observed that the WATMI was on par with the benchmark for most of 2013-17.[30]

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28 Chairmont, *Aggregation of Debt Data for Portfolio Term to Maturity*, June 2019, p. 3.
29 Chairmont, *Aggregation of Debt Data for Portfolio Term to Maturity*, June 2019, p. 11.
30 Chairmont, *Aggregation of Debt Data for Portfolio Term to Maturity*, June 2019, p. 4.

Credit rating

Chairmont found that the inclusion of additional data did not result in any significant changes to the average credit rating (BBB+) in its previous report.[31]

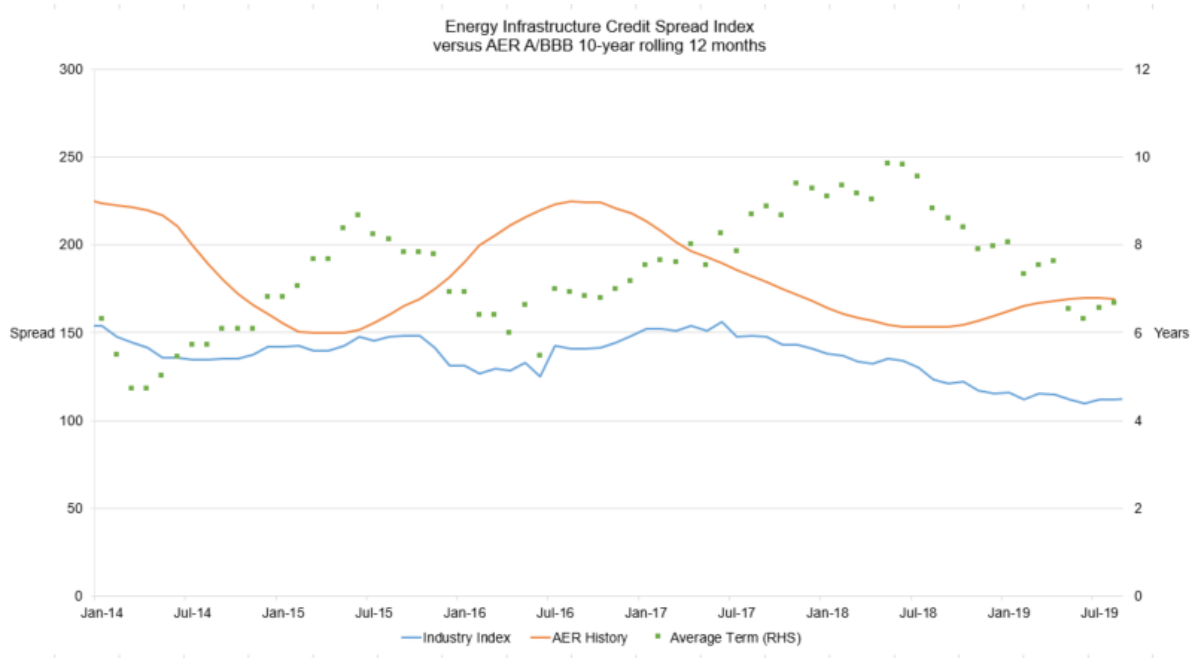
31 Chairmont, *Aggregation of Debt Data for Portfolio Term to Maturity*, June 2019, p. 11.

5 Updated debt data

In September 2019 we contacted all private sector regulated networks and asked them to provide information on any debt instruments issued since January 2018, extending the series which had previously been provided.[32] All networks voluntarily provided this information by December 2019, though we were still clarifying some aspects of the data with networks until March 2020.

We have used this data to update the EICSI through to August 2019. Figure 1 presents the key results of this analysis in a format consistent with the original 2018 Chairmont report.

Figure 1 Energy Infrastructure Credit Spread Index versus AER A/BBB 10 year rolling 12 month and average term



Source: AER analysis, based on method in Chairmont, *Aggregation of return on debt data*, April 2018.

In Figure 1 the blue line labelled 'Industry index' is the EICSI cost of debt, noting that this is expressed as a spread over the swap rate (left hand axis, expressed in basis points). The orange line labelled 'AER History' reflects the equivalent measure (spread to swap) for the allowed cost of debt if the 2018 Instrument was applied to the entire period from 2013 to 2019.[33] This means it applies a weighted average of A-rated (one-third weight) and BBB-rated (two-thirds weight) benchmark yield curves from Bloomberg, RBA and Thomson

32 At the same time, we asked for information on financial instruments and the transaction costs incurred when raising debt back to 2013. This allowed us to attempt a matched assessment of the ongoing debt interest costs paid to the lenders of capital (which we refer to as the cost of debt or return on debt) and the transaction costs paid to other entities (which we refer to as debt raising costs).

33 More specifically, the spread to swap is calculated as the nominal return on debt calculated as per the 2018 Instrument less the AUD swap rate with a 10 year maturity.

Reuters data.[34] Both the EICSI and AER cost of debt figures are calculated using rolling 12 month windows.

The average term of debt issuance is presented as a green dot each month. This is the simple average term across all debt instruments issued in the previous year.

The overall pattern is consistent with that observed in the 2018 Chairmont report:

- The EICSI is relatively stable across time, and sits below our regulated return on debt. The margin between the EICSI and AER cost of debt varies across time.
- The (simple) average term varies across time, and is negatively correlated with our regulated return on debt. This suggests that when there are higher (lower) credit spreads in the market, networks issue shorter (longer) term debt, so that their overall spreads stay relatively constant.

We explore these findings further below.

5.1 Cost of debt

The EICSI has gradually decreased since early 2017 before beginning to level out in 2019 between 110-120 basis points. This is the lowest we have seen the index and it compares to highs of over 150 basis points seen in 2017 and early 2014.

Our debt allowance, now using the A/BBB weighted average, cycles over time. Prior to January 2018 we had seen peaks around 225 basis points and lows just above 150 basis points, with the data taking around 18 months to 2 years to move between highs and lows. With the data now updated to mid-2019, the allowance appears to have levelled off around 165 basis points in the first eight months of 2019.

The EICSI has remained below the AER's cost of debt for the entirety of the series. On average the gap has been 46 basis points, but has been as high as 95 basis points in June 2016 and as low as 4 basis points in June 2015. Since July 2018 the gap has remained between 30 and 60 basis points.

5.2 Term of debt issuance

The average term at issuance has continued to change in negative correlation with our cost of debt calculation. Most recently there has been a decline from an average term at issuance of 10 years in April 2018 down to around 6.5 years in mid-2019.

[34] In the original 2018 report, the 'AER History' line is calculated using the BBB-rated yield curve published by Bloomberg and RBA (but not Thomson Reuters). Our May 2018 discussion paper adjusts this graph to reflect the use of weighted average A-rated (one-third weight) and BBB-rated (two-thirds weight) curves. Our June 2018 draft explanatory statement further adjusts the figure to incorporate the RBA's restatement of some historical data. Chairmont, *Aggregation of return on debt data*, April 2018, p. 10. AER, Discussion paper, *Estimating the allowed return on debt*, May 2018, p. 39; AER, *Draft rate of return guidelines, Explanatory statement,* July 2018, p. 61.

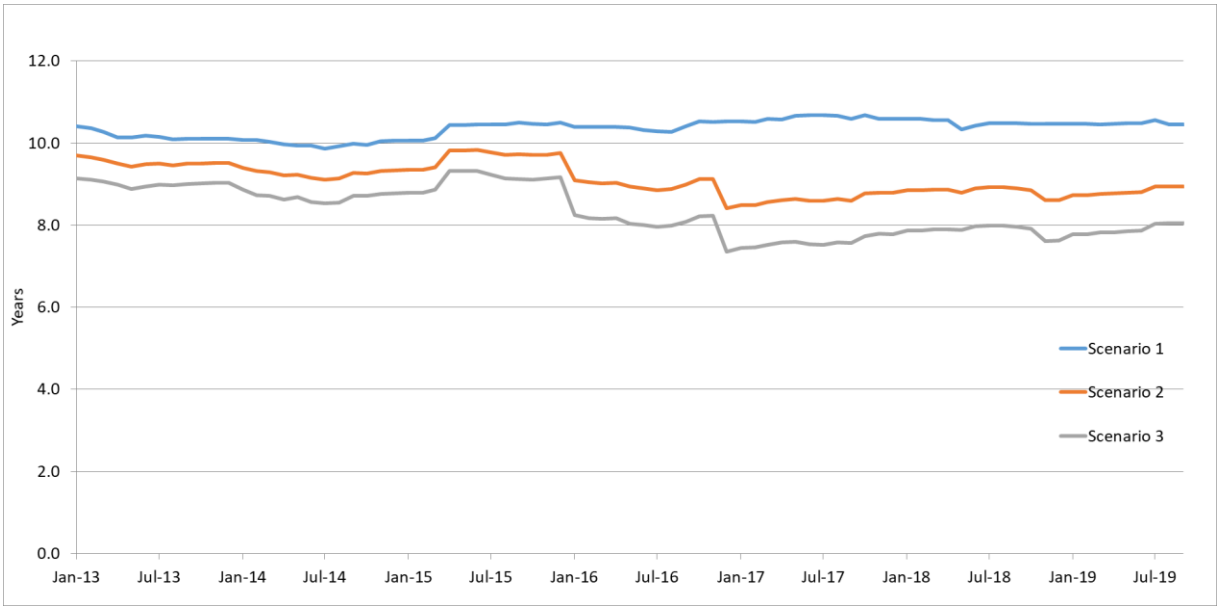
Table 1 Comparison of term at issuance (unweighted average) before and after 1 Jan 2018

	Overall	2013–17	2018– Aug 2019
Mean	7.53	7.44	7.71
Median	7.01	7.01	7.01
Standard Deviation	4.22	4.09	4.53
Range	24.52	16.01	24.52

The mean and median term in the post January 2018 period remain equivalent to the term in the original dataset (2013–17).

However, these figures are calculated as simple averages and the 2019 Chairmont report provides an alternative method to calculate the average term, using weighted average term to maturity at issuance (WATMI). This is presented in Figure 2, updated with data through to August 2019.

Figure 2 Weighted average term to maturity at issuance for the EICSI dataset – comparison of drawdown sensitivities



Source: AER analysis, based on method in Chairmont, *Aggregation of Debt Data for Portfolio Term to Maturity*, June 2019.

In Figure 2, scenario 1 (blue line) reflects 0 per cent drawdown of bank debt (that is, funds are not drawn for any of the bank debt reported by the energy networks). Scenario 2 (orange line) reflects 50 per cent drawdown of bank debt, and scenario 3 reflects 100 per cent draw down (that is, all bank facilities are fully utilised). When bank facilities are used, the weighted average term drops because the bank facilities used by the energy networks have shorter term than other debt instruments (i.e. bond issuance).

The 0 per cent drawdown scenario results in the weighted average debt term at issuance being relatively stable between 10 and 11 years. The 50 per cent and 100 per cent drawdown scenarios show lower average terms, and some evidence of decline in the period from January 2016 on. The 100 per cent drawdown scenario is around 8 years for the period from January 2016 to August 2019.

The different scenarios presented here reflect the maximum possible range for the impact of undrawn debt on the WATMI. We have not requested details on drawdown percentages from networks. This would require networks to record and report a time series of drawdown amounts for every debt facility.[35] This would be a substantial increase compared to the current information gathering approach, which only requires networks to report the characteristics of each debt instrument when first issued (once per instrument). Further, networks may not have historical records of drawdown amounts for the debt instruments in the EICSI.

Several networks were able to provide us some information on their use of drawdown instruments. From the information provided to us, we know that some bank debt is fully drawn at issuance (i.e. on a firm basis) and remains fully drawn until maturity. We also know that some bank facilities are used to manage liquidity risk and remain undrawn in most circumstances. Hence, scenario 1 (with 0 per cent drawdown) and scenario 3 (with 100 per cent drawdown) are conservative upper and lower bounds.

However, we consider that overall drawdown likely sits between scenario 2 and 3, and potentially closer to scenario 3. This is based on the proportion of drawn and undrawn debt observed in information provided to us, noting the important limitation that this has not been systematically provided by all networks. It also aligns with information from external sources, such as credit rating reports.

5.3 Debt Credit Rating

With this data we are also able to analyse the credit ratings given to issued debt and whether this changes over time. We used a numerical rating with BBB- as a 1 and an A rating as a 5, with each integer representing a step in the rating system. This way we can track ratings through time and assess whether the A/BBB rating used to estimate the return on debt is a fair rating to assign in our Instrument.

Table 2 Comparison of rating of issued debt before and after 1 Jan 2018

	Overall	2013–17	2018–Aug 2019
Mean	3.14	3.01	3.44
Median	3 [BBB+]	3 [BBB+]	4 [A-]
Standard Deviation	0.90	0.86	0.93
Range	3.5	2.5	3.5

[35] We understand that in some cases there is significant intra-month variation in drawdown amounts, which means the observation frequency would need to be weekly or daily.

The mean credit rating in the post January 2018 period (3.44) has increased relative to the rating in the original dataset (3.01 for 2013–17), and the median rating has increased one notch (to A-).

6 Use in the 2022 Rate of Return Review

The collection of additional actual debt data and extension of the EICSI provides evidence for us to consider when developing the 2022 Instrument. It provides a relevant real-world test of whether our regulated return on debt reflects actual debt costs incurred by networks. When interpreting this evidence, we will have appropriate regard to the limitations of the approach.

When we first introduced the EICSI we acknowledged that a number of factors might impact our analysis, and could potentially explain the difference between our regulated return on debt and the EICSI. This includes:

- The reported debt is for businesses with differing compositions of regulated and unregulated assets. We set our return for regulated assets only.
- The reported cost of debt might also reflect upstream ownership (parental support) of some network entities, which also is not reflected in our regulated return.
- Debt raised overseas may have different characteristics to domestic debt. Data obtained from Bloomberg, Thomson Reuters and the RBA does not necessarily match the makeup of debt instruments raised by regulated networks.
- Not all entities raised the same amount of debt or issued the same number of instruments, which may alter the industry average.
- The benchmark credit rating used to derive our regulated return on debt (BBB+) might not reflect the risk of investment in energy networks, either because these networks have less risk than a typical BBB+ business or because credit rating bands are crude indicators of the cost of debt.
- The term of debt issued by networks is below the benchmark term (10 years) used in our regulated return on debt, and shorter term debt has a lower cost.

Nevertheless, relative to the 2018 process, there are two key reasons why we might place greater reliance on this information in the 2022 process:

- A longer data series. This allows us to draw firmer conclusions from the EICSI data (particularly for debt spreads and term, which show variation across time) and addresses the concern that looking at limited window of data might miss relevant debt outcomes on a broader timescale.[36]
    - The longer series now available to us also helps address another issue noted in the 2018 review, which was our transition to a trailing average portfolio approach. In the original 2013-17 sample period, a substantial portion of the debt in the dataset was issued under the on-the-day approach.[37] The extended data series means more of the data is issued under the trailing average approach.

[36] We have also slightly improved the breadth of coverage, i.e. including debt instruments for the earlier 2013-17 period that were not able to be included previously.

[37] The on-the-day approach might have provided different incentives for the term of debt issued (to align with the commencement of the regulatory period).

- An improved method for calculating the weighted average term to maturity at issuance. This helps address the limitations of the simple average term approach, as noted in our 2018 explanatory statement.

We propose to continue to collect additional debt data from the regulated networks and further update the EICSI in order to inform the 2022 instrument. We propose to collect further debt information in August 2020 and 2021, though we note that the August 2020 request will fall on networks affected by the COVID-19 pandemic. We invite views on this point. We are also considering whether we might place greater reliance on the EICSI analysis and welcome views on whether this would be appropriate and how we might do so.

6.1 Possible options for EICSI use

First, we propose that the EICSI should at least be used to assess the overall reasonableness of our approach to estimating the return on debt, after consideration of both benchmark characteristics (such as term and credit rating) and implementation decisions (such as the selection of data providers).

This proposed reasonableness assessment is similar to the 'sense check' conducted in 2018. We will consistently compare the two on a spread-to-swap basis. If there is a material difference between the two, we will seek to understand why this is the case (including where the difference arises).

Second, as in 2018, the EICSI may also assist us to assess the impact of possible changes to aspects our return on debt approach, and whether they will lead to closer alignment between the regulated return on debt and actual debt costs. As in 2018, this could include implementation questions (such as changing the weighting applied to A-rated and BBB-rated fair value curves).

Third, we are interested to hear views on whether the EICSI could be used in the direct calculation of the regulated return on debt.[38] There are a number of potential ways this might be done. For example, we might:

- Use the analysis to inform the term of debt. We propose to calculate the average term using the WATMI method proposed by Chairmont. The WATMI could be considered alongside other factors. This might result in use of a term different to the 10 year term we currently use.
- Use the analysis to inform the credit rating. In 2018, we used a broader approach based on annual credit ratings (from Moody's, and Standard and Poor's) for a set of energy businesses. This might result in changes in the weighting of credit ratings used in calculating our return on debt, or the benchmark credit rating itself.
- Use the spread indicated in the EICSI in our estimation of the return on debt. For example, we might use the average spread over the past year as a fourth indicator alongside Bloomberg, Thomson Reuters and the RBA, taking an average (or weighted average) across the set.

38 If the instrument requires a total nominal return on debt (as currently), it would be necessary to add the swap rate to the credit spread reported by the EICSI.

- Use the spread indicated in the EICSI as the return on debt for regulatory purposes. This change would be a significant move from our current approach and would present a range of challenges. We would want to consider these challenges carefully before undertaking such a change.

We see some important advantages in placing greater reliance on the EISCSI. These include:

- 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. It might assist in narrowing the gap presented in Figure 1.
- It could streamline the current process whereby we observe network debt 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.
- 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 beta.[39] Extending this to debt would help us to assess an efficient and consistent estimate of the overall rate of return.

We also see a range of challenges in placing greater reliance on the EICSI. We would want to consider carefully how these may affect the options we have set out above. This will be part of assuring ourselves that any change we make has net benefits and provides a better estimate of the benchmark cost of debt for the utilities we regulate than the current approach:

- Debt is not raised evenly amongst networks, so when using the EICSI as a benchmark it could be weighted towards one or two networks, especially over small time samples.
- The EICSI uses a 12 month rolling window. Currently networks specify averaging periods between 10 days and 12 months long.[40] Using the EICSI as a benchmark would require us to consider how to handle shorter debt averaging periods. Options include:

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39 We have also collected information on debt raising costs (that is, transaction costs associated with raising debt) at the same time as collecting information on the cost of debt (interest costs). This then will be used to inform our assessment of benchmark debt raising costs as part of operating expenditure (i.e. separately to the return on capital). This should allow us to assess the overall efficient costs of providing regulated energy services.

40 The shorter averaging periods may be used by networks to align the regulated return on debt estimation with their issuance of debt.

- Combining the longer term EICSI cost of debt with other estimates (from data providers) observed in the period.
- Using the EICSI spread from the prior 12 months with the swap rate observed in the shorter period.
- Using a shorter EICSI rolling window (though this reduces data informing the benchmark).
- Estimating the EICSI more frequently (e.g. quarterly or 6-monthly)

- We currently propose to estimate the EICSI annually. The regulated return on debt needs to be calculated closely following the end of the nominated debt averaging period so that it can be used in pricing determinations.[41] Use of the EICSI as a benchmark might mean:
  - Ongoing data collection (networks reporting debt instruments to the AER as they are issued).
  - Using placeholder figures that are trued up in the following year.
- Many networks are held in consolidated groups where debt is centrally raised and finances both regulated and unregulated activities. Using the EICSI as a benchmark would require guidance around the allocation of debt costs and so which debt costs are reported as relevant to the regulated return on debt.
- To the extent that greater weight is placed on the EICSI in decision-making we may require a more formal reporting regime with audit and assurance requirements.

It would be important to preserve internal consistency with other areas of the rate of return calculation, so that the overall assessment appropriately reflects efficient costs. We invite feedback on the potential use of the EICSI when we estimate the regulated return on debt, including stakeholder views on the matters above.

6.2 Further EICSI development

In addition to the two improvements we have implemented (additional data and the weighted average term), there were a number of other alterations to the EICSI suggested in the 2018 review. Our current assessment, based on the 2018 analysis, is that these changes would be unlikely to improve the accuracy of the EICSI and may add complexity. Nevertheless, we would like to hear views on whether we should adopt any of the following:

- Inclusion of callable or subordinated debt[42]
- Inclusion of more fees associated with spread estimates[43]
- Exclusion of debt instruments which have previously been deemed 'upward outliers' by consultants.[44]

41 In practice, currently debt calculations are complete by the middle of the month following the end of the nominated averaging period.

42 AER, *Draft rate of return guidelines, Explanatory statement,* July 2018, pp. 455–456.

43 AER, *Draft rate of return guidelines*, *Explanatory statement,* July 2018, pp. 456–458.

44 AER, *Draft rate of return guidelines*, *Explanatory statement,* July 2018, pp. 458–459.

7 Glossary

Below are accessible explanations of the more specialised financial terms used in this draft working paper.

- **Bank Debt (or bank facility)** - A type of debt issuance where a bank (or group of banks) lends money to the borrower (the network) at an agreed interest rate. This is broadly similar to a conventional bank loan for a house or car.
- **Basis Points** - This is a common unit of measurement when discussing interest rates, and a single basis point is equal to one hundredth of a percent.
- **Bond** - A type of a debt issuance where an investor (or investors) lend money to the borrower (the network) at an agreed interest rate. The borrower is said to 'issue' the bond; the lender is said to 'buy' the bond. A bond can be traded on the secondary market.
- **Credit Rating** - A value assigned by ratings providers (S&P, Fitch, Moody's) that groups businesses into similar risk bandings. Commonly it takes the form of a letter rating (AAA, A, BBB etc.) with AAA denoting lower risk and CCC the highest risk of default. The plus '+' and minus '-' symbols are also used, so the progression around the AER's current benchmark goes (higher risk) BBB-, BBB, BBB+, A-, A, A+ (lower risk).
- **Credit Spread** - This is a measure of the gap between the agreed interest rate of the debt instrument and the base swap rate available. In this working paper we use the BBSW (Bank Bill Swap rate) provided by Thomson Reuters.
- **Debt Instrument** - A general term for all types of borrowing i.e. bonds, bank facilities or other types of debt.
- **Drawdown** - At issuance it is possible that an entity lending money may not want to lend the entire amount at once, or the borrower will not want access to all the funds immediately. Debt drawdown is the act of subsequently releasing the funds (from the lender's perspective) or obtaining the funds (from the borrower's perspective) after the date the debt facility was first established, to manage risk for the lender or liquidity costs for the borrower. The full interest rate is only paid on funds once they are drawn. The debt balance might move up and down as funds are drawn and then repaid across the life of the debt instrument.
- **Debt Risk Premium** - This is a measure of the gap between the allowed return on debt and the risk free rate. It can be described in percentage terms or raw basis points.
- **EICSI** - The Energy Infrastructure Credit Spread Index was created in joint work between Chairmont and the AER in 2018. It reports unadjusted actual debt costs (as a spread over the swap rate) from networks using a 12 month rolling window. The EICSI dataset also allows calculation of debt term and credit rating.
- **Interest** - Denoted in basis points or percentages, the interest is the proportion extra that must be paid back on a loan in addition to the initial amount borrowed (the principal). This can be denoted as a fixed number, or a certain spread above an index rate, such as the swap rate (referred to as floating).

- **Rate of Return (or weighted average cost of capital)** - The rate of return on capital is a forecast of the additional return (above the initial investment amount) required to induce investment in its network. It is a combination of the return on debt and return on equity, weighted according to the proportions of debt and equity investment. From the lender's perspective it is the return on the funds invested, but from the borrower's perspective this is the cost of obtaining the funds.
- **Rate of Return Instrument** - The Instrument is a binding document which sets out the way the AER will calculate the rate of return in regulatory determinations. The current instrument was published in December 2018 and its replacement is scheduled for December 2022.
- **Return on Debt** - The return on debt is the AER's forecast of the interest costs of maintaining a benchmark efficient debt portfolio for a regulated energy network.
- **Term to maturity** - When debt instruments are issued they have a date by which they must be paid off. This is the maturity date. The term to maturity is the length of time between the current date and the maturity date. After the debt is issued, the term to maturity decreases with time until the debt is repaid.
- **Term to maturity at issuance** - This is the duration between the issuance date and the maturity date. It is set when the debt is issued and does not change.
- **Trailing Average** - we use a 10 year trailing average approach to estimate the cost of a debt portfolio for regulated networks. Each year an estimate of debt cost is taken and added to the networks estimate, with the estimate from 11 years ago removed. Currently all networks are in transition to this approach, as no networks have yet been regulated under this approach for 10 years. In this case, the first year is given larger weighting to make the overall data equivalent to 10 years.
- **Weighted Average Cost of Capital (or rate of return)** - The weighted average cost of capital, or WACC, is the combination of return on debt and return on equity on a percentage basis. In the current instrument, we estimate a make-up of 60% debt and 40% equity, and as such the WACC is formed of 60% return on debt and 40% return on equity. From the borrower's perspective this is the cost of obtaining the funds - but from the lender's perspective it is the return on the funds invested.