Rate of Return Instrument Amendment

Explanatory note

August 2023

AUSTRALIAN ENERGY REGULATOR

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1 Background

The Rate of Return Instrument (**RORI** or **Instrument**) sets out the approach by which we will estimate the allowed rate of return for network businesses and includes the methodology for calculating the return on debt and the return on equity. We are required to publish a new Instrument every 4 years that will bind all regulatory determinations made over the subsequent 4 years. On 24 February 2023 we published the latest RORI (2022 RORI).[1] Our next Instrument is expected to be published in December 2026.

In estimating the rate of return we utilise market data obtained from several different data sources. The RORI prescribes which data sources we use and outlines several contingencies in the event certain data is unavailable. One of the data sources prescribed in the RORI is the Reserve Bank of Australia's (**RBA**)'s F16 data series, "Indicative Mid Rates of Australian Government Securities". The F16 data series contained daily yields for all Commonwealth Government Securities (**CGS**).

We use CGS as a proxy for a 'riskless asset', which we require to estimate a risk-free rate of return. In turn, the risk-free rate of return is used directly in our estimation of return on equity (calculated as the risk-free rate + an equity risk premium) and in our estimation of the return on debt.[2]

On 31 March 2023 the RBA ceased publishing new F16 data and removed all historic data from its website. The data published in F16 was obtained through a data subscription service from the firm Yieldbroker and we understand, from RBA correspondence, that the RBA ceased publishing due to commercial reasons. As F16 is no longer available, we currently have no way of providing return on equity estimates for network resets or calculating yearly return on debt updates using a method that is stated in the current RORI.

Clause 32 of the RORI version 1.0 as published in February 2023 (version 1.0) states that 'data for calculating daily 10-year CGS yields must be sourced from the RBA's published statistical data, "Indicative Mid Rates of Australian Government Securities – F16".' There are no alternative data sources or contingencies set out in version 1.0 of the RORI in the event this series is unavailable. Clause 29 of version 1.0 sets out the ordering of clauses and does provide contingencies for obtaining a 10-year yield using a 100-day historical average if neither interpolation (clause 29b) or extrapolation (clause 29c) is possible due to a lack of data in the F16 table. However, these contingencies in version 1.0 assume that the F16 table is still published and do not envisage a situation where the whole data series is unavailable. In this circumstance, all historical F16 data has been removed from the RBA data publication. Therefore, we do not consider the use of a 100-day historical average in clause 29 of version 1.0 was triggered in the current situation. It would also lead to an absurd, or illogical, outcome that the AER would be required to use the same 100-day average up until the end of the RORI.

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1 The Instrument was originally scheduled for 2022 but was delayed to February 2023 due to unanticipated further stakeholder engagement on important advice from the Australian Government Treasury advice.

2 AER*, Rate of Return Instrument*, February 2023, cl. 4,5, 16, 17 & 18.

On 14 June 2023, we published our proposed amendment to the RORI and a discussion note for a short targeted stakeholder consultation. Submissions on our proposed amendment closed on 30 June 2023. We received 3 submissions from Queensland CANEGROWERS Organisation (CANEGROWERS), Australian Pipeline & Gas Association (APGA) and Energy Networks Australia (ENA).[3]

1.1 Legal power to amend

The National Electricity Legislation (**NEL**) and the National Gas Legislation (**NGL**) provide the AER the power to make the RORI. The NEL and NGL are clear that the AER must apply the RORI that it has published, and that the AER has no discretion around its application. In particular, the NEL and the NGL state:

- the RORI has the force of law[4]
- the RORI is binding on the AER and NSPs[5]
- the methodology in the RORI must apply automatically without the exercise of any discretion by the AER[6]
- the RORI applies for the purpose of any AER economic regulatory decision, including distribution and transmission determinations.[7]

The RORI, which is binding, directs the NSPs and us on how to calculate the rate of return for each business. However, the decision by the RBA to cease publishing the F16 data series means certain elements of the rate of return calculation cannot be completed as directed in the 2022 RORI. As set out above, the legislation also specifically states that the RORI must be capable of applying automatically without exercising discretion. Therefore, it would be inconsistent with the legislation for us to use our discretion to source data for calculating daily 10-year CGS yields from somewhere other than as directed by the RORI.

In the above circumstances, compliance with the 2022 RORI to determine the rate of return is now no longer possible.

Neither the NEL nor NGL specifically provide the power to amend the RORI once it has been made. However, both provide a general power to amend or repeal instruments and decisions. Section 20 of Schedule 2 to the NEL (and section 20 of Schedule 2 to the NGL) states that where the NEL (or NGL) provides the power to make an instrument, decision or determination, the power includes power to amend or repeal the instrument, decision or determination. We have referred to this power as the ‘revisiting provision’.

Section 41 of schedule 2 to the NEL (Clause 51 of schedule 2 to the NGL) makes clear that schedule 2 to the NEL (and NGL) would apply to the rate of return instrument. It was

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3 CANEGROWERS, *Proposed amendments to the 2022 Rate of Return Instrument,* 29, June 2023, APGA, *Submission: AER June 2022 proposed amendment to the 2022 Rate of Return Instrument,* 30 June 2023, ENA, *2022 AER Rate of Return Instrument Amendment – Response to consultation paper*, 30 June 2023.

4 NEL, s.18G and NGL, s. 30B

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

6 NEL, s.18J(2)(b) and NGL, s. 30E(2)(b)

7 NEL, s.18V and NGL, s. 30Q

introduced to the NEL at the same time the binding rate of return was introduced to the NEL. It notes that schedule 2 of the NEL (and NGL) applies to "statutory instruments". It then provides a definition of "statutory instrument" which specifically includes the "rate of return instrument".

The present scenario is unique. This is not a typographical error or a clerical error. It does not arise from the provision of inaccurate or misleading information. Further, the Instrument accurately reflects the decision that the AER intended to make at the time of making the decision. The present problem arises because of an unforeseen event, the RBA ceasing to publish a particular data series, which makes the instrument unworkable.

Given the current unique circumstances, we consider the revisiting provision allows for amending the Instrument as it has become unworkable and incapable of achieving its purpose.

In considering the amendment process under the revisiting clause, we note that the inclusion of the RBA's F16 data series as the source for CGS yields was not a contested/controversial issue during the consultation process in developing the 2022 RORI and this amendment is driven by unique circumstances. Hence, we do not consider a comprehensive process is necessary but acknowledge the importance of having a targeted consultation.

The ENA submitted that the AER should consider developing guiding principles around future use of the revisiting power available in legislation. They noted that this will provide stability and predictability, leading to continued access to cheaper cost of capital.[8] The APGA also recognised the need to change the 2022 RORI and agreed with the ENA's call for guidance from us on the future use of the revisiting power.[9]

We acknowledge the importance stakeholders place on predictability and stability. However, we are undertaking limited consultation given the RBA's F16 data series as the source for CGS yields was not a contested/controversial issue during the consultation process in developing the 2022 RORI. Therefore, we consider that this current process is not suited for developing guiding principles around future use of the revisiting power.

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8 ENA, *2022 AER Rate of Return Instrument Amendment – Response to consultation paper*, 30 June 2023, pp.2-3

9 APGA, *Submission: AER June 2022 proposed amendment to the 2022 Rate of Return Instrument,* 30 June 2023, p.1.

1.2 Amendment to the Rate of Return Instrument

We are amending Clause 32 of the RORI by adding 2 contingencies if F16 is unavailable. We are electing to add contingencies instead of removing F16 if the RBA begins publishing the series again. The contingencies in the order they will be triggered are:

- RBA's F2 data series will be the first contingency as it is largely consistent with our current approach and is publicly available.
- Yieldbroker data (either directly from Yieldbroker or through another source such as Bloomberg) is our second contingency as it is also largely consistent with our current approach.

We note that in the future the daily indicative mid rates of Australian Government Securities could be made publicly available by either the RBA as F16 or another data series, or by another Commonwealth Government agency. This possibility has been captured in our proposed amendment in the first option in Clause 32. We describe the data as daily yields of indicative mid rates of individual Australian Government Securities and have added the Australian Commonwealth Treasury (**The Treasury**) and the Australian Office of Financial Management (**AOFM**) in addition to the RBA as potential sources of this data.

These amendments will provide us with greater certainty and continuity if daily indicative mid rates of Australian Government Securities are publicly unavailable.

All 3 submissions recognised the unique conditions that give rise to this amendment and noted support for amending the 2022 RORI. CANEGROWERS and the ENA explicitly supported the contingencies and the order in which they will be triggered as proposed by us.[10] CANEGROWERS noted that the amendment should remain closely aligned to the current methodology and outcome, as well as not negatively affecting consumers.[11] The APGA agrees that in the absence of F16 data the use of the F2 series is the best solution under the circumstances.[12]

Section 2 outlines our analysis of options and the reasons for our amendment. Published with this explanatory statement are the amended Rate of Return Instrument (version 1.1 of the rate of Rate of Return Instrument) and a 'track change' version of the Rate of Return Instrument. The track change version shows how we have amended version 1.0 of the RORI published on 24 February 2023.

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10 ENA, 2022 AER Rate of Return Instrument Amendment – Response to consultation paper, 30 June 2023

11 CANEGROWERS, *Proposed amendments to the 2022 Rate of Return Instrument,* 29, June 2023, p.1.

12 APGA, *Submission: AER June 2022 proposed amendment to the 2022 Rate of Return Instrument,* 30 June 2023, p.1.

2 Alternative data series

In making our decision, we considered four contingency options to use if F16 is unavailable. We have also considered the possibility that a government source could republish data consistent with F16. Each of these options are outlined in this section, including:

- A Commonwealth Government source republishing data consistent with F16 (daily indicative mid rates on individual Australian Government Securities)
- RBA F2 series 'Capital Market Bonds – Government – Daily'
- Yieldbroker
- Bloomberg Capital Markets Package (**BCMP**)
- RBA F17 series 'Zero-coupon Interest Rates'.

In assessing these options, we considered the following factors:

- consistency with current approach, including:
  - consistency of the data source.
  - consistency of the interpolation method with our method of linear interpolation set out in Clause 16 of the RORI.
  - materiality of any differences.
- public availability of the data.

Whilst acknowledging the above factors used by us to assess our proposed amendment contingency options, the ENA suggested that we use our formal assessment criteria (used for assessing new information in making the RORI). As an example, the ENA noted the relevancy of criterion 5 — market data is credible and verifiable, comparable and timely and clearly sourced.[13]

As noted above, the use of the revisiting power depends on the circumstances. In this instance the Instrument accurately reflects the decision that the AER intended to make, at the time of making the decision but is now unworkable due to unforeseen circumstances. Therefore, our amendment is to add contingencies that match the data source as close as possible to the data source in the original decision. We consider our formal assessment criteria, targeted at reviewing the Instrument, adds limited value where the requirement is to match the existing Instrument, as close as possible.

We did not receive any new analysis on the options discussed below which were published for consultation in our discussion note.[14]

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13 ENA, *2022 AER Rate of Return Instrument Amendment – Response to consultation paper*, 30 June 2023, p.2.

14 AER, *Rate of Return Instrument amendment – Consultation paper*, June 2023.

The ENA submitted that before the 2026 Instrument, a fuller assessment of likely relative performance of each available data series should be undertaken. This could assist in determining the best available proxy.[15] APGA agrees that the use of the F2 series is the best solution under the circumstances. But it does not explicitly support/reject the use of Yieldbroker as the second contingency and questions whether our assessment of Yieldbroker and Bloomberg data against F16 is inconsistent. [16]

We agree that it could be useful to undertake a fuller assessment of the best available data series in consultation with stakeholders for the 2026 Instrument. We do not consider our assessment of Bloomberg and Yieldbroker data against F16 is inconsistent. To the extent the objective is to identify the best available data series, then another comparison may be valid. However, in this instance, we are looking for consistency with F16. In that context, we assessed Bloomberg and Yieldbroker the same way (we rounded both to the nearest 0.005% and then compared). Yieldbroker was the same (as expected) because F16 is based on Yieldbroker.

2.1 Republishing F16

We consider that in the future it is possible that a Commonwealth Government source could republish the data that was in the RBA's F16 series. This may not necessarily be the RBA and even if it is published by the RBA the series may not be published as F16. The Treasury and AOFM are two other agencies that could publish this information in the future.

Taking this into consideration we have decided to amend the first option in Clause 32 and ordering in Clause 29 to capture the possibility of the above happening and provide continuity for the use of F16.

In considering the appropriate change we are cognisant that the outcome should be the same as, or not materially different to, the RBA's F16 data. That is, the Instrument continues to accurately reflect the decision that the AER intended to make at the time of making its decision. To achieve this, our proposed amendment is worded so that it captures changes in the naming of the data and/or the source but the data is essentially the same.

Our amendment:

- Describes the data as daily yields of indicative mid rates of selected or individual Australian Government Securities. The RBA's F16 series currently uses the words 'selected' whereas in fact the series include individual CGS data. We have therefore, adopted the words selected or individual.
- Recognises that the F16 series could be published under a new name by the RBA or published by another Commonwealth Government source. We have specified the nature of the data in the F16 series and included the Treasury and AOFM in addition to the RBA as specified sources that could publish daily yields of indicative mid rates of

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15 ENA, *2022 AER Rate of Return Instrument Amendment – Response to consultation paper*, 30 June 2023, p.2.

16 APGA, *Submission: AER June 2022 proposed amendment to the 2022 Rate of Return Instrument,* 30 June 2023, p.1.

selected or individual Australian Government Securities. We have defined these sources in the Instruments as “replacement or alternative to the F16 series”.

- We note that there is a possibility that multiple replacements or alternatives for the F16 series could be introduced and these might be introduced where the F16 data is still available. On these possibilities:
  - Firstly, the replacements or alternatives will only be used if the F16 data is not available (on a given day)
  - Secondly, where F16 data is not available and multiple replacements or alternatives are available, in this situation only 1 data source will be used, in the following order:
    - A replacement or alternative to the F16 series published by the RBA if it contains two bonds with a maturity close to 10 years, if not, then
    - A replacement or alternative to the F16 series published by The Treasury if it contains two bonds with a maturity close to 10 years, if not, then
    - A replacement or alternative to the F16 series published by AOFM if it contains two bonds with a maturity close to 10 years.

2.2 RBA F2 series ‘Capital Market Bonds – Government – Daily’

This series provides the RBA’s own linear interpolation of yields from the F16 data for maturities of 2, 3, 5 and 10 years. Given this, we compared whether the RBA’s interpolation for 10 years is the same as ours. Our interpolation as specified by Clause 16 is as follows:

$$y_i^{\emptyset} = y_a^{\emptyset} + \left(m_i^{\emptyset} - m_a^{\emptyset}\right)\frac{\left(y_b^{\emptyset} - y_a^{\emptyset}\right)}{\left(m_b^{\emptyset} - m_a^{\emptyset}\right)}, for\ \ m_a^{\emptyset} < m_i^{\emptyset} < m_b^{\emptyset}$$

Where:

a) $y_i^{\emptyset}$ refers to the daily *CGS* or *ADSWAP YTM* estimates for a target term to maturity on *business day* i, which is derived via interpolation using this clause 16.

b) $\emptyset$ refers to either *CGS* or *ADSWAP*, depending on which is being calculated in clause 16 a) above.

c) $m_i^{\emptyset}$ refers to the target term to maturity of $\emptyset$ for a specific *business day* i

d) $y_a^{\emptyset}$ refers to the un-extrapolated *CGS* or *ADSWAP YTM* for the longest published term to maturity, greater than or equal to $\left|m_i^{\emptyset} - 3\right|$ but less than $m_i^{\emptyset}$ on *business day* i, sourced in accordance with clause 32 for *CGS* calculations and sourced in accordance with clause 35 for *ADSWAP* calculations.

e) $y_b^{\emptyset}$ refers to the un-extrapolated *CGS* or *ADSWAP YTM* for the shortest published term to maturity, greater than $m_i^{\emptyset}$ on *business day* i, sourced in accordance with clause 32 for *CGS* calculations and sourced in accordance with clause 35 for *ADSWAP* calculations.

f) $\left|m_i^{\emptyset} - 3\right|$ refers to the term to maturity that is 3 years earlier than the target term to maturity.

g) $m_b^{\emptyset}$ is the term to maturity for $y_b^{\emptyset}$

h) $m_a^{\emptyset}$ is the term to maturity for $y_a^{\emptyset}$

Our comparison found that the RBA uses this same interpolation methodology with one minor difference. When entering the date 10 years in the future for a given day, the RBA multiplies by 3650 whereas we use exactly 10 years as the maturity. Because of this, the RBA doesn't account for leap years in their estimation whereas we do. From our correspondence with the RBA, we understand that it is satisfied that using 3650 days is sufficient for its purpose, and unlikely to change.

The materiality of the difference between the F2 data and our prior approach is very small. When we rounded our interpolated 10-year yield results to the nearest 0.005% (to match the rounding of the published F2 data), the F2 data was lower by 0.005% on approximately one in fourteen days over a 27-month period (and F2 was never higher). This appears to be due to a predominantly upward sloping yield curve over the period we examined and the RBA using a slightly shorter term to maturity (by two or three days due to the omission of the extra days in leap years). This equates to the NSPs we regulate in total receiving approximately $100,000 per annum less if representative of future periods. We based this on the estimated difference in returns on $40 billion in equity capital assuming a regulatory asset base of $100 billion across all the networks we regulate. Given the allowed return on equity is currently around 7%, or $2.8 billion per annum on $40 billion, we consider a difference of $100,000 per annum is immaterial.

A final point of difference is that the RBA rounds F2 data to the nearest 0.005% prior to publishing, whereas our interpolation methodology produced unrounded results. We do not consider that this rounding difference is material, and it should not create any expected difference (or bias).

The F2 series is our preferred first contingency option for F16 as it is publicly available, allowing all stakeholders to check our calculations, and is largely consistent with and not materially different to our previous approach.

2.3 Yieldbroker

As the RBA was publishing CGS yields sourced from Yieldbroker in F16, we have the option of purchasing the source data directly. We have checked a random sample of Yieldbroker data and confirmed F16 table data is consistent with raw Yieldbroker data rounded to the nearest 0.005%.

This data would also be marginally more precise than F16 data as it is given to the nearest 0.001% (we previously relied on F16 that was rounded to the nearest 0.005%). We would propose to not round the Yieldbroker data prior to interpolating, so our estimation would be slightly more precise than previously. We consider this difference is immaterial.

While using this data is consistent with our previous approach, our preference is to use publicly available information. As anyone wanting to check our calculations would also be required to purchase this data.

We are adding Yieldbroker data as a contingency if the F2 data is also ceased. Using this option means that the interpolation method outlined in Clause 16 will be required when a bond with an exact maturity of 10 years is unavailable.

Given the addition of Yieldbroker to Clause 32 of the RORI, we have included its definition by way of an amendment to the glossary.

2.4 Bloomberg Capital Markets Package

In addition to Yieldbroker, Bloomberg also provide yield data on individual CGS bonds available via its platform (BCMP). We have obtained yields from the Bloomberg Terminal for comparison purposes.

The BCMP data is a relatively close match to the F16 data, although not as close a match as either RBA F2 or Yieldbroker data. The raw closing mid yields from Bloomberg BCMP data are on average slightly above the quoted yields from the F16 table when rounded to the nearest 0.005% to match the F16 rounding. Over the sample period we examined the difference would equate to providing in the order of $700,000 more per annum to NSPs on $40 billion in equity investment.

Given the Bloomberg data is not as good a match to our prior RBA F16 data as either the RBA F2 data or Yieldbroker data, we consider this should not be used as a contingency.

We consider having Yieldbroker as a contingency if F2 ceases publication is sufficient. We do not think there is a likelihood that Yieldbroker will stop making data available. Moreover, we can revisit this issue as part of our 2026 RORI review and consider Bloomberg in more detail at that point if we required a further contingency.

2.5 RBA F17 series ‘Zero-coupon Interest Rates’

Another possible contingency option is the calculation of ten-year CGS estimates using the RBA’s F17 zero-coupon interest rate series. The F17 data has the same benefit of F2 data in being publicly available, however there are significant differences with our previous methodology.

As per the RBA F17 workbook, it provides estimated daily zero-coupon yield, forward and discount curves in quarter-year increments out to 10 years into the future. The yield and forward curves are continuously compounded. No attempt is made to adjust for any risk premia, for example term premia.

In theory, a 10-year risk-free rate could be backed out of the 10-year zero-coupon rate, but the process would be extremely complicated, and we consider is likely to be materially less accurate than the use of the F2 data. In addition, using F17 is not consistent with our previous approach and to shift to this now is a significant methodological change. It would also require complicated new formulas added to the RORI, something we have insufficient time to consult on. For these reasons we do not propose consulting on the use of this series or introducing this series as a contingency into the RORI.

3 Interaction with Rate of Return Instrument clauses

This section outlines how the amendments to Clause 29 and 32 of the RORI will interact.[17]

To obtain a daily 10-year risk-free rate, for a given business day i, from the F16 series (or alternative source) we follow the ordering of Clause 29:

- (29a) If a CGS with a maturity of exactly 10 years is observable, this yield will be used, otherwise
- (29b) we next use standard linear interpolation between the two nearest to 10-year maturity securities (Clause 16 outlines our interpolation methodology), otherwise
- (29c) we next use standard linear extrapolation, otherwise
- (29d) we use a 100-day historical average.

For the avoidance of doubt, we have outlined how each contingency option would interact with Clause 29:

- F16 and replacement or alternative to F16 – unless a bond exists with an exact maturity of 10-years, linear interpolation is **required**.
- F2 - provides a daily 10-year maturity yield, linear interpolation is **not required.**
- Yieldbroker - unless a bond exists with an exact maturity of 10-years, linear interpolation is **required**.

We also note for avoidance of doubt, that the data source contingencies set out in clause 32 and ordering of clause 29 apply to each business day i for which a 10-year yield to maturity is required. Therefore, for example:

- If the F16 series or replacement of alternative to the F16 series, was available for download on the third business day following the end of the return on equity averaging period but only contained data to calculate 17 of 20 business day's required 10 year maturity CGS yields, this data source would be used to calculate those 17 business days 10 year maturity CGS yields. Then,
- If the F2 Series was available for download on the third business day following the end of the return on equity average period but only contained the 10-year yield for 1 of the missing three days this data would be used for that missing business day. Then,
- If Yieldbroker data was available for download on the third business day following the end of the return on equity averaging period but only contained data to calculate 1 of the missing two days this data would be used for that missing day. Then,

[17] Due to the addition of new sub clauses to Cl.29 and 32, where relevant clause references have been changed.

- For the remaining business day i in the averaging period that yield data is missing, the most recent 100 business days for which data is available before that business day i will be averaged, noting for each business day i in the 100-day averaging period only one data source is used (sourced in order of preference as set out in clause 29).

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Glossary

Term	Definition
AOFM	Australian Office of Financial Management
BCMP	Bloomberg Capital Markets Package
CGS	Commonwealth Government Securities
Instrument	Rate of Return Instrument
NEL	National Electricity Legislation
NGL	National Gas Legislation
RBA	Reserve Bank of Australia
RORI	Rate of Return Instrument
The Treasury	Australian Commonwealth Treasury