

Best-practice framework for setting the allowed return on equity

**Response to AER's Pathway to 2022 Rate of
Return Instrument: Return on Equity
Working Papers**

9 October 2020

Contents

1	Overview	3
2	Background and context for the 2022 Rate of Return Instrument	6
3	The regulatory task: What are we trying to do?	15
4	The 2022 RoRI must be robust to changing market conditions	30
5	Building a better approach to setting the allowed return on equity	40
6	Next steps	47
7	Appendix: Expected future investment task	49

1 Overview

Energy Networks Australia (ENA) strongly endorses the Australian Energy Regulator's (AER) approach to commencing consultation on the 2022 Rate of Return Instrument (2022 RoRI) at this early stage. This approach provides an opportunity for thorough stakeholder engagement and proper analysis of approaches and evidence. ENA welcomes the opportunities provided to engage with the AER and other stakeholders throughout this process.

The 2022 RoRI will decisively impact regulatory allowances over a period where substantial network investment is required to support critical transitions in Australia's energy sector.

It is being developed during a period of extraordinary conditions in financial markets which were unforeseen by any in the formation of the previous instrument. Since 2018, financial and capital markets have been exhibiting a range of conditions never previously experienced, which have placed aspects of traditional regulatory approaches and models under intense pressure.

These include historically low inflation, tipping into temporary deflation at times, historically low bond rates, including effective reaching of the 'zero bound' for key risk-free proxies, and the potential for debt market disruption higher than at any period since 2009. Many of these extraordinary conditions emerged well prior to significant global economic impacts related to COVID-19, which has served to compound their effect and potential duration.

These conditions were understandably completely outside of the reasonable contemplation or control of any economic regulator making decisions in 2018. They do raise, however, a range of issues around the sustainability of applying strictly 'business as usual' approaches and reinforce the need to ensure the Instrument is robust to a wider set of plausible of scenarios.

The 2022 RoRI will determine the allowed returns for some networks through to 2031. In this changed and challenging capital market environment, developing a RoRI that is robust to potential changes in conditions, and which supports efficient investment over the next decade, is the critical and challenging task.

The RoRI is not a determination of an allowed rate of return but is an instrument that creates allowed rates of return across four years of later dates. It is therefore not enough for the RoRI to reflect the efficient cost of capital at the time it is made; it must be capable of producing outcomes that reflect efficient costs and support efficient investment for all of the determinations that are made during its term. This is a much more complex task than a standard regulatory determination – particularly in current unprecedented financial market conditions.

This aspect of the framework reinforces that there is also a role for forward-looking financeability analysis to ensure that, under these plausible scenarios, businesses will remain financeable consistent with the benchmark credit rating set in the RoRI.

The reports commissioned by the AER, the working papers prepared by the AER, and the engagement among stakeholders have already provided useful guidance for the 2022 RoRI process.

ENA considers that it is important that this process of early engagement produces concrete outcomes. Clear outcomes and guidance from the AER will assist stakeholders in targeting future submissions on evidence and issues that are most relevant to the AER's decision-making process.

In this regard, ENA submits that all stakeholders and the AER would benefit if the following outcomes could be achieved from this stage of the review process:

- » **A clearly-defined common goal** in respect of the task of estimating the required return on equity in a way that best promotes the National Electricity Objective (NEO) and National Gas Objective (NGO).

ENA agrees with the AER that:

- the NEO and NGO are best promoted by setting the allowed return in each regulatory period to be commensurate with the efficient financing costs of a benchmark efficient NSP; and
 - the allowed return should reflect "rates in the market for capital finance" rather than a theoretical construct.
- » An approach to setting the allowed return on equity that:
 - is **robust to a range of wider range of plausible future market conditions** and unforeseen changes that may occur during the term of the 2022 RoRI; and
 - which makes **fuller use of an appropriately broad set of information**.
 - » Identification – through further AER Working Papers – of a set of viable, meaningful return on **equity cross-checks** which can assist in ensuring that the allowed return on equity is commensurate with efficient financing costs in the real world. **In ENA's view these should be complemented by forward-looking financeability tests applying to the RoRI and determination processes** to ensure confidence in the capacity for the benchmark firm to access efficiently priced financing to support delivery of customer outcomes.
 - » A clear **principles-based framework for assessing relevant evidence**. This should ensure consistent application of evidence and promote common stakeholder understanding of the meaning and application of each piece of evidence.

The AER has invited stakeholder comment on its approach to the allowed return on equity. Section 5 of the AER's working paper on *CAPM and alternative return on equity models* identifies a number of specific issues on which the AER is seeking comment. ENA's preliminary responses to these issues is as follows:

1. The **CAPM should be used when setting the allowed return on equity;**
2. **Forward-looking information, particularly DGM evidence, should be used when estimating the MRP;**
3. The 2022 RoRI must consider the **relationship between the MRP and risk-free rate during the term of that Instrument;**

4. **Beta should be estimated using a range of methods;** and
5. **International evidence should be used** when estimating beta.

ENA's reasons for these conclusions are set out in Section 5.2 of this submission.

2 Background and context for the 2022 Rate of Return Instrument

Key messages

- » The 2022 RoRI is being developed at a time when significant investment in network infrastructure is required to support the transition in Australia’s energy sector.
- » At the same time, current investment in network infrastructure is close to the lowest point of any time in the previous decade.
- » Raising the equity capital required to support this new investment is challenging in an environment where the allowed return on equity in the AER’s most recent decisions:
 - Is at an all-time low. The allowed real return on equity is now 2.35%, having been reduced by 24% in the 2018 RoRI and by a *further* 36% due to subsequent falls in government bond yields; and
 - Is lower than that adopted by other comparable regulators. By way of one example, Brattle reports that the closest allowance for the real return on equity made by a comparable regulator is nearly double the allowance in the AER’s most recent decisions.¹ This is a material difference, that has implications for the allocation of investment capital across jurisdictions, even having regard to caveats about timing and regulatory differences.
- » Moreover, the approach to the return on equity adopted in the 2018 RoRI combined with extraordinarily low bond yield and other current regulatory settings currently results in benchmark efficient NSPs incurring losses in every regulatory year. Sapere, in a report commissioned by the AER, has identified that a regulatory allowance that forces networks into a loss-making position is potentially evidence of an “underlying inconsistency” that “would not be consistent with the efficient investment and efficient operation of an NSP.”
- » ENA members have already made the AER aware of significant investment projects that the AER has identified as being in the long-term interests of consumers, but which currently cannot proceed because they are not economically viable under current regulatory arrangements.

¹ Brattle reports that Ofwat’s real return on equity allowance is 4.19% and Ofgem’s allowance is 4.80%. The AER reports that the change in the approach to estimating regulatory inflation in its recent draft decision will increase the real allowed return on equity by 35 basis points to 2.70%, still materially below that allowed by other comparable regulators.

2.1 The future network investment task

Australia is in the process of mapping out its energy future. The goal of this process is to ensure that Australians have access to safe, reliable, clean and affordable energy over the next several decades. Implementing this energy transition will require substantial capital investment. A material portion of this required investment is in transmission and distribution assets.

This investment task is materially greater than at any time since the 2009 Statement of Regulatory Intent due to a number of factors, including:

- » Required new investments identified in the AEMO Integrated System Plan to facilitate the connection and sharing of variable renewable resources totalling 12.5 billion;
- » A once in a generation challenge of integrating diverse distributed energy resources into the electricity distribution grid;
- » Delivering supporting investments for the Federal Governments' National Gas Infrastructure Plan, Gas Statement of Opportunities and Hydrogen Enablement Plan; and
- » Ensuring longer-term sustainability in asset replacement across mature gas and electricity networks to maintain service and reliability levels.

A rate of return estimation process that leads to inadequate levels of investment to meet these investment tasks will not promote the long-term interests of customers.

The appendix to this report expands upon these requirements for significant investment.

ENA notes that the 2022 RoRI is being developed at a time when significant investment in network infrastructure is required to support a major transition in Australia's energy sector.

However, in recent years, network investment has fallen to close to its lowest level in over a decade. In particular, the AER's *State of the Energy Market 2020* report shows that augmentation investment (as opposed to investment in maintaining existing network assets and investment in safety-related assets) has plummeted.²

ENA notes that there are varied reasons for each network reducing investment, particularly augmentation investment, and does not suggest that the decline in investment has been directly caused by the reductions in allowed returns that have occurred over the last decade.

However, the decline in investment is inconsistent with any suggestion that allowed returns have been overly generous during this period. To the extent that allowed returns are above the efficient cost of capital, there is an incentive for networks to over-invest. The observed pattern and levels of network investment is starkly inconsistent with such a scenario.

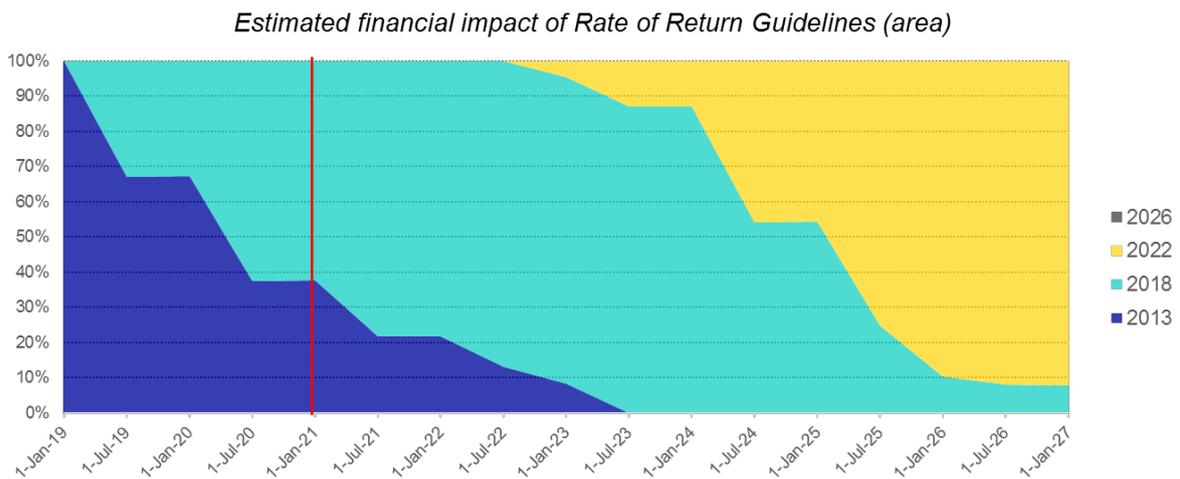
² AER State of the Energy Market 2020, Figure 3.16, p. 142.

Moreover, ENA notes that the 2018 RoRI, which lowers returns compared to the 2013 Guideline, is yet to work its way through regulatory determinations for all NSPs.

The means that the current levels of investment represent a mix of decisions made by some networks under the 2013 Guideline and by others under the 2018 RoRI.

As an indication of this point, around 40% of the networks – by RAB value – are operating today under the 2013 guideline as illustrated in Figure 1 below.

Figure 1: Application of RoRI decisions to regulatory determinations – by RAB



Source: ENA calculations based on NSP RAB values.

2.2 The allowed return on equity has declined materially

Parameter changes have been compounded by historic falls in government bond yields

The 2022 RoRI is being developed at a time when the 2018 Instrument is – due to unprecedented global financial conditions emerging since 2019 – delivering an allowed return on equity that is the lowest on record in both real and nominal terms.

The 2018 Instrument provides the lowest risk premium ever allowed to regulated networks and this is added to a government bond yield that is also now at unprecedented historical lows. Specifically, the 2018 RoRI reduced the nominal allowed return on equity by 16%³ and subsequent declines in government bond yields have since reduced the nominal allowed return on equity by a *further* 25%.⁴ The reduction in the allowed real return on equity, relative to the return allowed under the 2013 Guideline, has been even more pronounced – it has been reduced by more than

³ The 2018 RoRI reduced the allowed return on equity from 7.23% to 6.09% as at December 2018.

⁴ Changes in government bond yields have reduced the allowed return on equity from 6.09% as at December 2018 to 4.55% in September 2020.

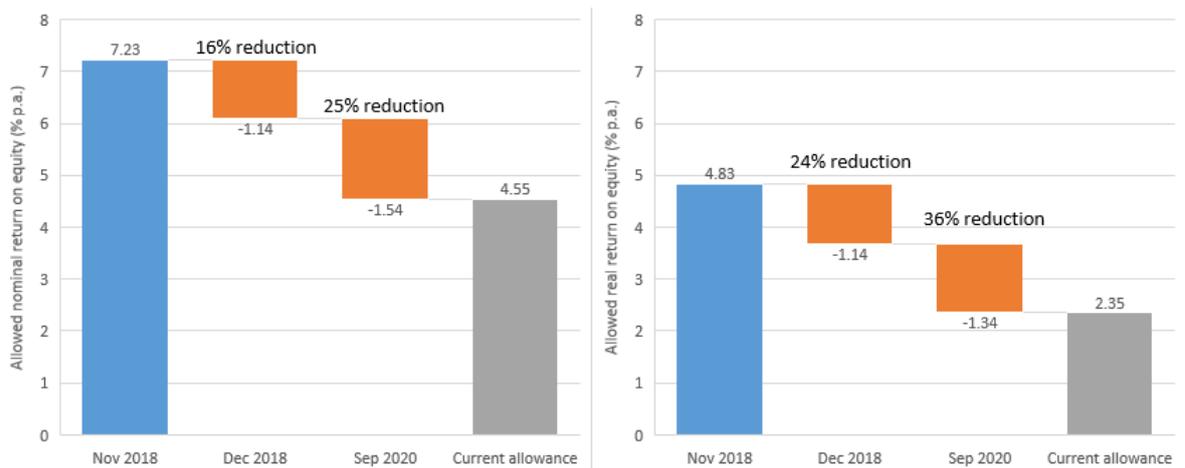
half by the 2018 RoRI and subsequent decline in government bond yields to century lows.

These reductions, which are summarised in Figure 2 below, are due to a combination of the approach to setting the allowed return on equity in the 2018 RoRI and the fact that the binding nature of that instrument prevents a revision to reflect the new and sharply altered financial market conditions.

Note that:

- » For the allowed **nominal** return on equity, the 2018 RoRI resulted in a reduction of 16% and the subsequent decline in government bond yields has resulted in a further reduction of 25%; and
- » For the allowed **real** return on equity, the 2018 RoRI resulted in a reduction of 24% and the subsequent decline in government bond yields has resulted in a further reduction of 36%.

Figure 2: AER allowed return on equity



Source: AER decisions, RBA 10-year government bond yield data.

Moreover, the material reductions in the allowed return on equity in, and since, the 2018 RoRI come on top of material reductions since 2008. In particular, the AER changed its parameter estimates to reduce the allowed equity risk premium in its 2009, 2013 and 2018 WACC reviews.

Over that time, and since the 2018 review, government bond yields have fallen materially and are now at historically low levels. The result is that the allowed return on equity is currently at an all-time low – as illustrated in Figure 3 below. Since 2008, the nominal allowed return on equity has declined from over 12% p.a. to approximately 4.5% p.a.

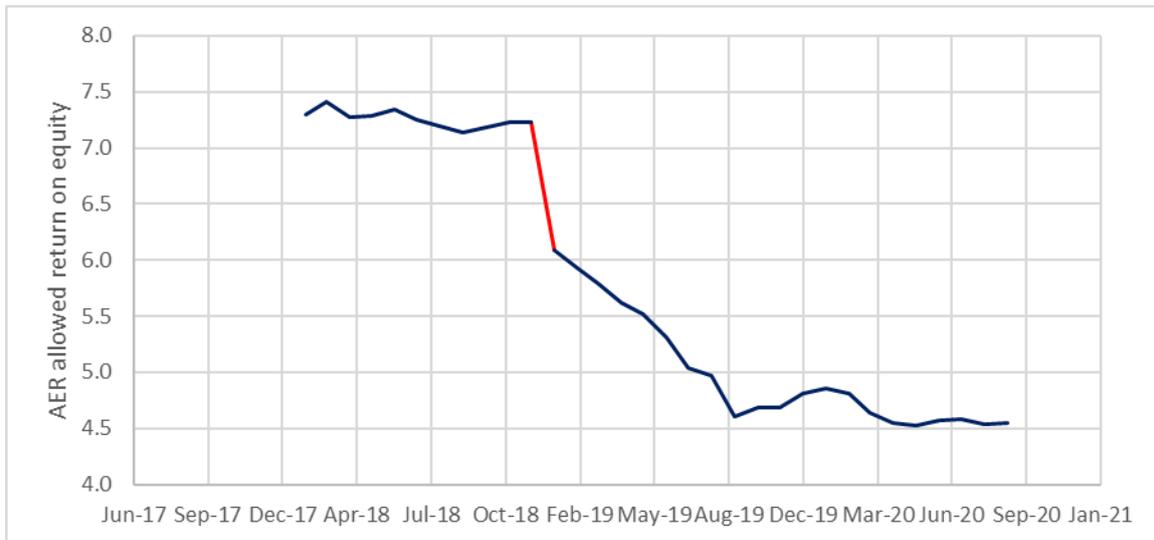
Figure 3: AER allowed nominal return on equity



Source: AER decisions, RBA 10-year government bond yield data.

The compounding effect of changes in AER parameter estimates and the fall in government bond yields has been most dramatic over the last few years. In particular, in its 2018 RoRI the AER made its largest ever cut to the allowed equity risk premium, and since that time government bond yields have reduced to the lowest levels on this historical record. Between December 2018 and July 2020, allowed returns on equity under AER approaches have fallen more sharply than in any equivalent period since 2006. This is illustrated in Figure 4 below, where the 2018 RoRI is illustrated in red.

Figure 4: AER allowed nominal return on equity since 2018



Source: AER decisions, RBA 10-year government bond yield data.

ENA notes that the 2022 RoRI is being developed at a time when the allowed return on equity is currently at an all-time low, in both nominal and real terms.

The AER's allowed return on equity is currently producing unsustainable outcomes

In discussions with the AER since 2019 and its recent submission to the AER's inflation review, ENA has observed that the AER's current approach to setting the allowed real return on equity, combined with existing regulatory inflation approaches and current unprecedented global capital market and monetary conditions, is producing outcomes that are unsustainable.⁵ For example, the AER's approach, including its existing approach to estimating expected inflation, currently produces regulatory allowances that will put benchmark efficient networks in a systematic loss-making position over coming years.

ENA notes that the Sapere report commissioned by the AER⁶ reached a similar conclusion. Sapere identified that a negative cash flow return on equity would not be consistent with the efficient investment and efficient operation of an NSP and might indicate an underlying inconsistency in the AER's regulatory process. Sapere recommended that the AER should consider whether the nominal cost of equity might be under-estimated.⁷

⁵ ENA, July 2020, A hybrid approach that has regard to market data.

⁶ Sapere, June 2020, Target return and inflation.

⁷ Sapere report, paragraphs 10-11

2.3 The AER's allowed return on equity is currently low by world standards

Earwaker (2018) demonstrated that the AER's allowed return on equity is lower than the allowance of other comparable regulators

During the 2018 RoRI process, ENA commissioned a report by UK economist John Earwaker to compare the AER's allowed return on equity with that of other comparable regulators.⁸ After comparing the rate of return determinations of several international regulators to the AER's Draft Guideline, Earwaker made the following observations:

*The picture that emerges from the above discussion is one in which **the AER is repeatedly taking extreme positions in its draft WACC guidelines**. I am always very hesitant to say that one approach to WACC estimation is definitively 'right' and another approach is definitively 'wrong' and it is not my intention to take any such position in this paper. However, I do think it is important for regulators to be 'in the pack' with expert opinion, and yet **it appears that the AER's draft guidelines on the cost of equity, taken as a package, are pushing right to the very boundary of what until now could have been regarded as mainstream regulatory thinking.***

*In this regard, the contrast between the 2018 draft guidelines and the previous 2013 guidelines is quite stark. In the space of five years, there has not been a huge shift in the evidence base – if anything, the data is pointing towards there having been a small increase in the cost of equity capital relative to the return on riskless assets. I would therefore characterise the move from a 455 basis point premium over the risk-free rate to a premium of only 360 basis points as **a switch from a middle-of-the-road reading of the evidence to a very stretching, possibly overstretched, take on the cost of equity.***⁹

Brattle confirms that the AER's allowed return on equity is lower than the allowance of other comparable regulators

The AER has recently commissioned a study by the Brattle Group in relation to the approaches that various regulators adopt when setting the allowed return on equity.¹⁰ Brattle compared the AER's approach to the allowed return on equity with that adopted by other comparable regulators operating under broadly similar regulatory regimes.

Brattle has noted that comparisons need to be drawn carefully to ensure that allowed returns are considered on a like-with-like basis. Brattle also notes that the comparisons are not made at precisely the same point in time. Bearing these caveats in mind, Brattle has reported to the AER that:

⁸ Earwaker, J., September 2018, The AER's draft WACC Guideline: An international perspective.

⁹ Earwaker, September 2018, p. 12, emphasis added.

¹⁰ Brattle Group, June 2020, A review of international approaches to regulated rates of return.

- » The AER's allowed nominal return on equity is lower than that adopted by every other regulator for which a comparison could be made;¹¹
- » The AER's allowed real return on equity is lower than that adopted by every other regulator for which a comparison could be made. The closest allowed real return on equity is almost double the AER's allowance;¹²
- » The AER's allowed nominal equity risk premium is lower than that adopted by every other regulator for which a comparison could be made. (This does not account for other regulators that set the allowed risk-free rate above the prevailing government bond yield.);¹³ and
- » The AER's allowed real equity risk premium is lower than that adopted by every other regulator for which a comparison could be made. (This also does not account for other regulators that set the allowed risk-free rate above the prevailing government bond yield.)¹⁴

Since Brattle completed its report in June 2020, Ofgem has published a draft determination for transmission and gas distribution businesses (July 2020), and the UK's Competition & Markets Authority has published provisional findings on appeals against Ofwat's 2019 determinations sought by several water companies (September 2020). The findings summarised above would remain unchanged, even if Brattle had had the benefit of these more recent decisions when preparing its report to the AER. That is, although government bond yields have also fallen to historically low levels in other jurisdictions, the allowed return on equity in those jurisdictions has not fallen by nearly as much as the AER's allowance under the 2018 RoRI. This is particularly the case for the real return on equity.

ENA notes that Brattle have demonstrated that, by every relevant metric, the allowed return on equity under the AER's 2018 approach is lower than that adopted by every other regulator for which a comparison could be made.

2.4 Networks are facing a real dilemma in relation to discretionary CAPEX

A high proportion of network capital expenditure is non-discretionary as it is required to ensure the safety and reliability of the existing network. By contrast, the type of additional capital expenditure that is described in Section 2.1 is often discretionary.

A network does not have an obligation to undertake discretionary capital expenditure and will do so only if the particular project is perceived as economically viable over the project's life – which requires that the allowed return is at least commensurate with the NSP's assessment of its cost of capital.

We understand that ENA members have made the AER aware of significant transmission investment projects that the AER has identified as being in the long-term

¹¹ Brattle, 2020, Table 4, Row 3, p. 49.

¹² Brattle, 2020, Table 4, Row 9, p. 49. 2.42% vs. 4.19%.

¹³ Brattle, 2020, Table 5, Row 4, p. 50.

¹⁴ Brattle, 2020, Table 5, Row 9, p. 50.

interests of consumers, but which cannot currently proceed because they are not economically viable under current regulatory arrangements. Whilst large single transmission projects that require significant upfront capital outlays as a proportion of existing regulatory asset bases undertaken by network face specific financing challenges under current approaches, the overall sufficiency of regulatory returns on equity form a contributing element to this financing challenge.

Equity capital is mobile, being provided by global investors. When the AER's allowed return on equity is at an all-time low, and lower than that provided in other comparable regulatory regimes, there is an incentive to prefer investment in other jurisdictions.

This has clear implications for the ability of Australian NSPs to acquire the new equity capital that is required to fund the sorts of projects identified in Section 2.1 above, for example, the \$100 million, 15,000 customer Mt Barker gas network extension in South Australia. This was approved by the AER but is now under review internally as allowed returns make it unviable. For this project, a circa 2% marginal nominal return on equity on capital expenditure, potentially rising to around 3% with any AER change on regulatory inflation, is far below the cost of capital. It compares with circa 7% marginal nominal return on equity at the time of last review in 2017.

3 The regulatory task: What are we trying to do?

Key messages

- » ENA agrees with the AER that the NEO and NGO are best promoted by setting the allowed return in each regulatory period to be commensurate with the efficient financing costs of a benchmark efficient NSP.
- » ENA agrees with the AER that the allowed return should reflect “rates in the market for capital finance” rather than a theoretical construct. In relation to the allowed return on equity, ENA supports the use of the CAPM for the 2022 RoRI. In this context, the CAPM should be used as a tool for estimating the return that is required by real-world investors.
- » The allowed return on equity should not be ‘adjusted’ in relation to speculation about the potential future outcomes of incentive mechanisms. ENA agrees with the Brattle advice and the recent UK Competition and Markets Authority ruling that allowed returns should be set in accordance with its purpose and role in the regulatory process and the same applies to incentive mechanisms.
- » It is important that all evidence is assessed in a balanced way in accordance with consistently applied principles.

3.1 The NEO and NGO are best promoted by setting the allowed return in each year to be commensurate with the efficient financing costs of a benchmark efficient NSP

ENA agrees with the AER’s position on the objective of the regulatory task

ENA agrees that the NEO and NGO are best promoted by setting the allowed return for each regulatory period to be commensurate with the efficient financing costs of a benchmark efficient NSP.

ENA considers that setting the regulatory allowance equal to the efficient financing costs provides the correct incentives for efficient investment in, and efficient utilisation of, regulated assets.

ENA also considers that the efficient cost of capital is best estimated by reference to market data that reflects the required returns of real-world investors.

All of these positions are consistent with the conclusions set out by the AER in its 2018 Guideline materials.

AER views documented in the 2018 Guideline process

The AER's Final Decision in the 2018 RoRI process describes the relevant legislative objectives and how the AER has gone about best achieving those objectives. The remainder of this subsection documents those views and explains why ENA endorses the AER's conclusions.

In its 2018 Guideline materials, the AER began by noting that its core task is to develop a RoRI that best achieves the NEO and NGO, where the long-term interests of consumers are central:

The National Electricity Objective (NEO) and the National Gas Objective (NGO) establish the ultimate objective of our decision-making. In each case, the objective is to promote efficient investment in, and efficient operation and use of, the relevant electricity or gas services, for the long term interests of consumers with respect to the price, quality, safety, reliability and security of supply.

We may make an instrument only if satisfied the instrument will, or is most likely to, contribute to the achievement of the national electricity and gas objectives to the greatest degree.¹⁵

The AER also noted the importance of the Revenue and Pricing Principles (RPP) in guiding how to best achieve the NEO and NGO:

In support of the national gas and electricity objectives, the National Electricity Law and National Gas Law set out Revenue and Pricing Principles. These principles underlie the achievement of the national gas and electricity objectives and we have had particular regard to these principles in making our decision.

The revenue and pricing principles are expressed in essentially similar terms for both electricity and gas. In summary, those principles are:

- *A service provider should be provided with a **reasonable opportunity to recover at least the efficient costs the service provider incurs** in—*
 - *providing regulated services; and*
 - *complying with a regulatory obligation or requirement or making a regulatory payment.*
- *A service provider should be provided with effective incentives in order to promote economic efficiency with respect to the regulated services they provide. The economic efficiency that should be promoted includes—*
 - *efficient investment [in] the network with which the service provider provides regulated services; and*

¹⁵ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, p. 29.

- *the efficient provision of regulated services; and*
- *the efficient use of the system with which the service provider provides regulated services.*
- *Regard should be had to the regulatory asset base adopted in any previous determination or arrangement, or in the Rules.*
- *A price or charge for the provision of a regulated service should allow for a return commensurate with the regulatory and commercial risks involved in providing the service.*
- *Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated service provider in the relevant system.*
- *Regard should be had to the economic costs and risks of the potential for under and over utilisation of the relevant system.*¹⁶

The AER went on to note that one of the key roles of the regulator, when developing the RoRI, is to balance some of the potentially competing principles in the RPP. In particular, the AER noted that:

- » Setting the allowed return too low would lead to inefficient underinvestment and would deny NSPs from recovering efficient costs; and
- » Setting the allowed return too high would create an incentive for inefficient overinvestment and may lead to inefficient underutilisation of regulated assets:

*Each of these principles has an important guiding role when determining an appropriate way to calculate the rate of return in order to achieve the national gas and electricity objectives. For example, **if the rate of return is set at a rate that is too low to promote efficient investment in infrastructure, it will lead to underinvestment.** It may not allow a provider a reasonable opportunity to recover at least its efficient costs in providing services or complying with regulatory obligations. It will not provide effective incentives for efficient investment in, or provision for, or use of services. It will not be a rate that provides for a return that is likely to be commensurate with the commercial and regulatory risks. It may lead to various economic costs and risks that might arise from under-investment in the network system. All of these factors would compromise the realisation of the national gas and electricity objectives.*

*Similarly, **if the rate of return is set too high, it will provide an incentive to over-invest in network infrastructure.** It will not reflect a return that is commensurate with the regulatory and commercial risks. It will not promote efficient investment in the network system and it is likely to lead to underutilised investment in regulated assets.*¹⁷

¹⁶ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, p. 30, emphasis added.

¹⁷ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, pp. 30-31, emphasis added.

The AER concluded that market data has a core role in balancing the principles set out in the RPP as a means of best promoting the NEO and NGO. Market data is particularly important because it provides insights into the actual returns that real-world investors require from capital invested in NSPs. Thus, market data is important in determining whether a particular regulatory allowance is likely to incentivise over- or under-investment and utilisation of regulated assets:

*Because the market for capital finance is competitive, an efficient service provider is expected to face competitive prices in the market for funds. Therefore, **we consider efficient financing costs are reflected in the prevailing market cost of capital** (or WACC) for an investment with a similar degree of risk as that which applies to a service provider in respect of the provision of regulated services. As Alfred Kahn stated, 'since the regulated company must go to the open capital market and sell its securities in competition with every other would-be issuer, there is clearly a market price (a rate of interest on borrowed funds, an expected return on equity) that it must be permitted and enabled to pay for the capital it requires'.*

*We consider employing a rate of return that is commensurate with the prevailing market cost of capital (or WACC) is consistent with the zero NPV investment condition (see above). **We also consider economic efficiency more generally is advanced by employing a rate of return that reflects rates in the market for capital finance.** Similarly, Partington and Satchell interpret efficient financing costs as the opportunity cost of capital, which is a market rate of return for assets with a given level of risk.¹⁸*

The Independent Panel in the 2018 review process drew the AER's attention to the fact that the RPP includes reference to the efficient level of investment in regulated assets, but also to the efficient level of utilisation of regulated assets.

In response to this observation, the AER noted that efficient investment and efficient utilisation are essentially opposite sides of the same coin:

- » If the allowed return is set too high, there is an incentive for over-investment in networks and prices would be higher than the efficient cost such that networks will tend to be under-utilised; and
- » If the allowed return is set too low, there is an incentive for under-investment in networks and prices would be lower than the efficient cost such that networks will tend to be over-utilised:

We agree with the Independent Panel that achieving the legislative objectives requires more than just efficient investment in energy networks, but also requires efficient use of energy network services. An allowed rate of return that is too high (low) will, all else equal, contribute to prices that are too high (low). This effect on prices may discourage (encourage too much) use of network services. It may also encourage consumers to

¹⁸ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, p. 33, emphasis added.

overinvest (underinvest) in downstream investments, such as upgrading to more energy efficient appliances. It may also encourage (discourage) disconnection from the grid and investment in stand-alone power systems. For business consumers, the effect on energy network prices may be passed through to the prices of other goods and services, creating further distortions to efficiency in downstream markets.¹⁹

This led the AER to conclude that the RPP and NEO and NGO are best promoted by setting the allowed return to be commensurate with the efficient cost of capital – the return that real-world market investors require from an investment in regulated assets:

In this context, for the allowed rate of return to contribute to the achievement of the legislative objectives it should reflect the efficient cost of capital. If it does, then it will (all else equal) promote both efficient investment in, and efficient use of, energy network services.

An allowed rate of return that reflects the efficient market cost of capital will promote both investment and consumption efficiency.²⁰

ENA notes that the RPP provides that networks must be provided with an opportunity to recover *at least* the efficient cost. This implies that, where the WACC estimation process involves some uncertainty, the regulator is required to exercise judgment to ensure that the allowed return is *at least* sufficient to cover the efficient cost – the regulator should take steps to ensure that the allowed return is not set below the efficient cost.

Efficient utilisation is achieved by setting price to reflect the efficient cost of providing the service

During the AER's Stakeholder Forum of 16 September 2020, there was some discussion about how the goal of efficient utilisation of regulated assets might be best achieved.

ENA submits that efficient utilisation is achieved by setting prices to reflect the efficient cost of providing the regulated service.

By definition, setting the price of any good or service below the efficient cost will lead to over-consumption. Symmetrically, setting price above the efficient cost will lead to less than the efficient level of consumption.²¹ We note above that the AER has reached the same conclusion.

¹⁹ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, pp. 39-40.

²⁰ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, p. 40, emphasis added.

²¹ When prices are set below the efficient cost, the resulting over-consumption is inefficient in that price signals are distorted such that energy delivered by networks crowds out more efficient alternatives such as distributed energy resources and energy efficiency improvements. When prices are set above the efficient cost, the resulting under-consumption is symmetrically inefficient as price signals are distorted in the opposite direction.

ENA submits that the NEO and NGO are best promoted by setting the allowed return for each regulatory period to be commensurate with the efficient financing costs of a benchmark efficient NSP.

The NEO and NGO require the allowed return to be commensurate with efficient financing costs – the pursuit of other objectives does not promote the NEO and NGO

For the reasons set out above, ENA agrees with the AER’s assessment that the NEO and NGO are best promoted by setting the allowed return to be commensurate with the efficient financing costs of a benchmark efficient NSP.

If the current allowed return is above the efficient financing cost, it should be reduced. Symmetrically, if the current allowed return is below the efficient financing cost, it should be increased.

Once the AER has estimated the efficient financing costs, the allowed return should be set accordingly. Otherwise, the incentive for efficient investment in, and utilisation of, regulated networks is broken. Such a break in efficient incentives does not promote the NEO or NGO.

In its recent *Draft Position Paper on the Regulatory Treatment of Inflation*, the AER has confirmed that efficient investment in, and efficient use of, energy networks always requires the best possible estimates to be adopted:

Having reached the draft position that there is likely to be a better way of estimating expected inflation, we consider that it is necessary to implement that approach. Not doing so, would not promote efficient investment or use of the energy networks. If we did not adopt a better approach, there would be consequences and distortions – over and under investment and inefficient use of energy networks – that would not easily be corrected given the long lives of network assets.²²

Some examples of other potential approaches are:

- » Progressively reducing future allowed returns until there is evidence of some form of financial distress among NSPs;
- » Setting allowed returns below the best estimate of the efficient cost of capital in order to ‘even out’ perceptions of periods of historical over-compensation;
- » Setting allowed returns on the basis of theoretical and untestable assessments of consumers’ willingness to pay; or
- » Setting allowed returns to create an incentive for efficient consumption rather than efficient investment.

These alternative approaches should be rejected. The regulatory task is clear – the allowed return must be commensurate with the efficient cost of capital of a benchmark efficient NSP and networks must be provided with an opportunity to recover at least the efficient cost of providing the service.

²² AER, September 2020, *Draft Position Paper on the Regulatory Treatment of Inflation*, p. 83.

This is not to say that a consumer's ability to pay the efficient cost is unimportant. Rather, the inability of some consumers to pay the efficient cost is best dealt with directly via hardship programs and direct government transfer programs with accountability through Parliamentary avenues, rather than by any actions that would compromise critical incentives for efficient investment throughout the whole energy service delivery chain, and therefore broadly impact outcomes for all consumers.

That is, the inability of some consumers to pay the efficient cost of the service that is provided to them is best addressed by targeting relief to *those* consumers – not by reducing prices below the efficient cost for *all* consumers. In this regard, networks have been at the forefront in their targeted consumer-focused response to the COVID-19 crisis and further AER rule changes relating to network tariff deferral have been recently finalised.

Moreover, it is axiomatic that, in general, consumers have a capacity and willingness to pay that exceeds the efficient cost of the service that is provided to them. This general case applies with particular force in the case of monopoly services. That is precisely why monopoly regulation is needed and applied. In the absence of a regulator setting allowed revenues on the basis of efficient costs, a monopoly provider would have the capacity to extract monopoly rents from consumers. If consumers generally had no capacity or willingness to pay more than the efficient cost, there would be no need for regulation.

Setting the allowed return below the efficient cost has implications for the long-term interests of consumers, as summarised in Table 1 below. ENA submits that none of these alternative approaches appear to be capable of promoting the NEO/NGO or consistent with the Revenue and Pricing Principles.

Table 1: Assessment of alternative approaches for setting allowed returns

Alternative approach	Impact on long-term interests of consumers
<p>Progressively reducing future allowed returns until there is evidence of some form of financial distress among NSPs.</p>	<p>Exposes future consumers to a higher risk of service and reliability failures, due to the lagged effect of under-investment.</p> <p>Exposes future consumers to the costs of higher regulatory risk and financing premiums.</p> <p>ENA does not support this approach.</p>
<p>Reducing allowed returns to 'even out' perceptions of past historical returns.</p>	<p>Higher regulatory risk premiums arising from demonstration of lack of regulatory commitment to a consistent ex ante framework of cost recovery.</p> <p>Dynamic efficiency and equity impacts as current and future network users face distorted investment and utilisation signals through time.</p> <p>ENA does not support this approach.</p>
<p>Apply a 'willingness/capacity of consumers to pay' test on rate of return estimation issues.</p>	<p>Capacity to pay is best addressed via targeted assistance.</p> <p>A broad/comprehensive survey would inevitably find a <u>high</u> willingness to pay – that is the basis for requiring monopoly regulation.</p> <p>Setting allowed returns below efficient costs for current consumers is unsustainable, reduces service quality, and increases risk for future consumers.</p> <p>ENA does not support this approach.</p>
<p>Create incentive for efficient consumption rather than efficient investment.</p>	<p>There is no tension between the objectives of efficient consumption and efficient investment. Both require that the allowed return be set on the basis of the efficient cost of providing the service to consumers.</p> <p>Setting allowed returns below efficient costs for current consumers is unsustainable, reduces service quality, and increases risk for future consumers.</p> <p>ENA does not support this approach.</p>

Expected incentive payments are not part of the allowed return

The AER's regulatory framework incorporates a number of incentive mechanisms that are designed to encourage networks to improve efficiency and service standards. In every material case, these mechanisms are designed and operated to be symmetrical on an ex ante basis. That is, there is a system of benefits and penalties that arise depending on whether a network beats or falls short of an efficiency target. Moreover, when a network beats an efficiency target, consumers receive a greater benefit than does the network. This scheme is entirely separate from the regulatory objective in relation to the allowed return.

ENA considers that:

- » The allowed return should be set to be commensurate with efficient financing costs. As demonstrated above, equating the allowed return with the efficient costs creates the appropriate incentives for efficient investment in, and utilisation of, regulated networks. This approach best promotes the NEO and NGO.
- » An entirely separate question is the design of various incentive mechanisms. A regulator should design those mechanisms to best achieve the objectives of *that* aspect of the regulatory framework. ENA considers the optimal design of incentive mechanisms to be outside the scope of the RoRI process.

Brattle (2020) has recently advised the AER along similar lines. Brattle recommends that the allowed return should be set appropriately for *its* purpose, and that incentive mechanisms should be designed appropriately for *their* purpose. Brattle specifically recommend against using an inappropriate allowed return as a means of correcting for a perceived problem with the design of the incentive mechanisms:

*It is strange for the regulator to under-estimate one building block and over-estimate another. It would be simpler and more transparent simply to use unbiased estimates for all of the building blocks.*²³

The approach the AER currently applies is consistent with Brattle's recommendation. Brattle specifically recommends against the approach of adjusting the allowed return to 'correct' for perceived expected outperformance of incentive mechanisms. Rather, the better approach is to set an appropriate allowed return (i.e., commensurate with efficient financing costs) and to ensure that the incentive mechanisms are designed appropriately to meet *their* objectives:

We are not aware of any regulator that has explicitly set the authorised rate of return above or below the estimate of the cost of capital in order to "correct" for an over- or under-estimate of one of the other building blocks of the revenue requirement. However, as we describe below, Ofgem is currently proposing to set its authorized return on equity 0.5% below its estimate of the cost of equity in an upcoming determination because of anticipated "out performance" in other areas of the revenue requirement determination. We would regard any incentive mechanism that gave rise to "anticipated out performance" as being asymmetrical, and we would

²³ Brattle, 2020, paragraph 25.

recommend adjusting the incentive scheme rather than the rate of return. In our analysis below we remove Ofgem's proposed adjustment to the authorized return on equity (i.e., we focus on Ofgem's estimate of the cost of equity).

The UK Competition and Market Authority recently reached a position consistent with Brattle's findings in a provisional assessment of proposed decisions by the UK water regulator Ofwat.

ENA agrees with Brattle's recommendation on this point and endorses the AER's current practice of separating its approach to setting the allowed return from its approach to various incentive mechanisms.

ENA submits that the allowed return should continue to reflect the efficient market cost of capital. It should not be 'adjusted' in relation to speculation about the potential outcomes of incentive mechanisms. Brattle has advised the AER that the allowed return should be set in accordance with its purpose and role in the regulatory process and the same applies to incentive mechanisms.

3.2 There is an important role for evidence of real-world required returns

The theory of the CAPM provides no useful guidance on parameter estimation

At the outset, it is important to note that the theory of the CAPM provides no useful guidance about how its parameters should be estimated in practice. For example, the CAPM requires an estimate of the expected return on the market portfolio over the forthcoming period. The theory of the CAPM does not suggest that historical stock returns should be used for this purpose. Indeed, according to the theory of the CAPM there is no historical period – the CAPM being a single-period model. If one contemplates multiple periods, the derivation of the simple CAPM breaks down.

Similarly, the theory of the CAPM also provides no useful guidance about beta estimation. The CAPM requires an estimate of the relationship between stock and market returns over the forthcoming single period. The CAPM provides no guidance as to how many comparators should be used, whether adjustments are required for international estimates, whether monthly or weekly data should be preferred, and so on.

That is, there is no such thing as a 'pure' or 'theoretically correct' implementation of the CAPM. Every implementation of the CAPM is inherently inconsistent with the (unrealistic) theory of the CAPM – the assumptions of the CAPM do not apply in the real world. The debate, therefore is around how the parameters used in a particular implementation of the CAPM are derived; even if the CAPM is the right model, the mere fact that it is being used is insufficient guarantee of appropriate outcomes, which depend rather on *how* it is being used.

The CAPM is a tool for estimating the return required by real-world investors

ENA considers that it is important to recognise, throughout the 2022 RoRI process, that the CAPM is a tool for estimating the required return of real-world investors. It is those real-world investors who are required to provide real capital to fund investment in Australia's energy networks.

Thus, the key task is to consider how the CAPM can be best used, as a practical tool, to estimate the return that is required by real-world investors.

The focus must be on real-world evidence

In its 2018 Guideline materials, the AER highlighted the important role of real-world market data:

We consider efficient financing costs are reflected in the prevailing market cost of capital (or WACC) for an investment with a similar degree of risk as that which applies to a service provider in respect of the provision of regulated services.

*We consider employing a rate of return that is commensurate with the prevailing market cost of capital (or WACC) is consistent with the zero NPV investment condition (see above). We also consider **economic efficiency more generally is advanced by employing a rate of return that reflects rates in the market for capital finance.**²⁴*

The reason that market data is central to the analysis is that it provides insights into the returns that real-world investors require from their investment into network assets.

In order to create the appropriate incentives for efficient levels and types of investment, it is important that the allowed return is commensurate with the return required by the real-world investors who would be actually financing that investment. That is, efficient investment is a real-world concept that will only occur if real-world investors are provided with the appropriate incentives.

An alternative approach involves estimating the return that would be required by a set of theoretical investors according to a particular set of theoretical assumptions. Suppose, for example, that such an approach produced an estimate that differed from the return actually required by real-world investors. If that approach was then used to set allowed returns it would incentivise inefficient investment because the allowed return would not be commensurate with the efficient cost of capital facing the real-world investors who are required to finance that investment.

Examples relating to real-world implementation of the CAPM

One example of the importance of evidence of real-world required returns arises when implementing the CAPM.

ENA agrees that, in the 2022 RoRI, the CAPM will be used to estimate the required return on equity. However, there are different ways of implementing the CAPM in practice. For the RoRI, the appropriate task is to use the CAPM to produce the best possible estimate of the required return of real-world investors.

Consider, as an illustrative example, the Morgan Stanley approach that was described in the AER's Stakeholder Forum on 16 September 2020. That involved an implementation of the CAPM where the MRP was set at 6% and the risk-free rate was set at 3.2%. This indicates a market cost of equity of 9.2%.

There are two ways to obtain that same market cost of equity of 9.2%. Morgan Stanley adopt an historical average MRP of 6% and use a risk-free rate of 3.2%, materially above the prevailing government bond yield of 0.9%. The same market cost of equity could be obtained by using the prevailing government bond yield of 0.9% and using a

²⁴ AER, 2018, Rate of Return Instrument, Final Decision, Explanatory Statement, p. 33, emphasis added.

prevailing (forward-looking) MRP of 8.3%. Both approaches end up with the same market cost of equity.

In this case, it is important that consistent estimates of the two parameters are used. For example, pairing the contemporaneous government bond yield (0.9%) with an historical MRP (6%) would produce a market cost of equity of 6.9%, which is materially different from the figure that the market practitioner is using in this case.

As another example, the real-world implementation of the CAPM was also recently considered by the UK Competition and Markets Authority (CMA). The CMA noted that the CAPM assumes that all investors can borrow and lend as much as they like at the risk-free rate, but that is not possible for real-world investors. This led the CMA to adopt a risk-free rate above the prevailing government bond yield to better recognise real-world market conditions:

Based on the evidence analysis discussed above we believe that the ILG yield remains a useful and relevant input into the RFR calculation. However, we note that the yields on these instruments demonstrate that the UK government can borrow at rates significantly lower than other market participants.

It is our assessment that ILGs closely but imperfectly match the key requirements of the RFR within the CAPM model. They are very low risk but their yields demonstrate that the government can borrow at rates substantially lower than even higher-rated non-government market participants. As such, the yield on ILGs is likely to sit below the 'true' estimate of the theoretical RFR, if the RFR is expressed as the yield on a 'zero beta' asset. Given this, we use the 20-year maturity ILG as a lower bound for our estimate of the RFR, but we expect that the returns on low beta assets are likely to be higher than implied by a CAPM model which uses this rate as the RFR.²⁵

ENA submits that the allowed return should reflect “rates in the market for capital finance.” In relation to the allowed return on equity, ENA agrees that the CAPM will be used for the 2022 RoRI. In this context, the CAPM should be used as a tool for estimating the return that is required by real-world investors.

3.3 Evidence should be evaluated in a balanced manner, having regard to its context

A principles-based approach to the evaluation of evidence

ENA considers that, when evaluating evidence, regard should be given to the following principles

- » **Materiality** – When a particular piece of evidence is highly influential it should be subjected to relatively more scrutiny. For example, if a piece of evidence had a

²⁵ Competition and Markets Authority, 29 September 2020, Provisional Findings Report, p. 533. https://assets.publishing.service.gov.uk/media/5f72f3d2e90e0740cf4eb0a9/Water_provisional_determinations_report_all_-_September_2020_---_web_.pdf.

material effect on the approach the AER adopted to estimate beta or MRP, it would be subject to close scrutiny; and

- » **Preponderance of evidence** – When a new piece of evidence is presented that is inconsistent with the preponderance of existing evidence, it would be subject to relatively more scrutiny. This would apply more so if the existing evidence was of high quality and had been documented over a longer period and if the new evidence had not been corroborated by other evidence. Of course, this does not mean that the AER should remain wedded to decisions that it has made in past reviews regardless of new evidence. It simply means that new evidence should be evaluated on its merits; and
- » **Regulatory consistency** – When a piece of evidence would result in the AER adopting an approach that differs from the approach adopted in practice or by other regulators, it would be subject to relatively more scrutiny.

ENA submits that close scrutiny of a piece of evidence would involve the AER undertaking steps to thoroughly understand that evidence and its implications for the regulatory process. This would include documenting the strengths and weaknesses of that evidence, assessed against the strengths and weaknesses of competing evidence.

For example, in the Stakeholder Forum of 16 September 2020, the paper Gilbert et al (2014) was cited as providing evidence that low-beta bias disappears when longer holding periods are used to estimate beta. Similarly, Partington and Satchell advise the AER that “*The evidence of Gilbert is that low beta bias shrinks to insignificance with longer holding periods.*”²⁶

However, Gilbert et al (2014) contains no reference to low-beta bias or the Black CAPM. That paper is not about low-beta bias and it does not claim to have any implications for low-beta bias. The paper contains no Fama-MacBeth regressions²⁷ and it cites none of the many papers that have documented low-beta bias. The empirical analysis using real-world data does not consider the relationship between stock returns and beta estimates at all. Low-beta bias is then expressly assumed away for the theoretical analysis.

In these circumstances, it would be quite unbalanced to overturn decades of evidence of low-beta bias, published in top-ranked finance and economic journals by authors that include Nobel laureates on the basis of a single paper that is not about low-beta bias. That would not represent a principles-led approach to the evaluation of evidence. Additionally, where significant claims form a key part of a proposed regulatory approach, and these claims are inconsistent with well-established bodies of financial theory and evidence, there is critical requirement on a regulatory decision-maker to carefully check and verify these claims

A balanced assessment of that evidence would consider the fact that this advice is inconsistent with the standard regulatory and commercial approach of considering beta estimates using a range of different frequencies. Again, overturning this

²⁶ Partington and Satchell, 2020, p. 22.

²⁷ The methodology that is used to document low-beta bias.

accepted practice on the basis of a single paper would not represent a principles-based approach to the evaluation of evidence.

Estimation issues should be weighed up in a balanced way

ENA recognises that there are issues that must be addressed with every estimation exercise. When balancing the strengths and weaknesses of different approaches, a balanced assessment would involve:

- » A weighing up of the favoured model or approach and the alternatives;
- » An examination of whether potential estimation issues do in fact arise. Evidence from a particular model or approach should not be disregarded on the basis of speculation that it *might* be affected by a particular issue; and
- » An attempt to address or correct any estimation issues that do arise.

By contrast, it is important that stakeholders do not:

- » Raise some potential estimation issues relating to one model or approach and use that as the basis for disregarding entirely all evidence that is contributed by that model or approach;
- » Raise some potential estimation issues relating to one model or approach, while ignoring a larger set of estimation issues relating to another (favoured) model or approach;
- » Raise some potential estimation issues without testing whether those potential issues do in fact arise in the relevant data; or
- » Raise some potential estimation issues without considering how those issues might be addressed or corrected.

That is, it would not be a reasonable or balanced method to adopt a favoured model or approach and to then reject alternative models and approaches by asserting that there are potential estimation issues relating to those other models or approaches.

ENA submits that it is important that all evidence is assessed in principled and balanced way that reflects the context and proposed use of that evidence.

4 The 2022 RoRI must be robust to changing market conditions

Key messages

- » The development of a binding instrument is a much more complex task than a standard regulatory determination. It is not a point-in-time determination, but a framework for ensuring that future point-in-time determinations properly reflect the efficient cost of capital and provide incentive for efficient investment when they are made.
- » Moreover, it is not enough for the RoRI to promote the NEO and NGO at the time it is made; due to its irrevocable status it must be capable of doing so throughout its term even as financial market conditions and circumstances change.
- » The 2018 RoRI has encountered a set of extraordinary changes in market conditions since it was made. No stakeholder could not have reasonably anticipated what has happened since 2018 (even before the COVID crisis)
- » Thus, a RoRI must be robust in that it produces reasonable estimates of efficient financing costs under a plausible range of different financial market conditions.
- » ENA submits that stakeholders should work with the AER to develop a range of potential future scenarios. When developing the 2022 RoRI, the AER should consider whether its proposed approach to the allowed return on equity is likely to produce outcomes that are consistent with the NEO and NGO in each scenario.
- » ENA submits that the approach to setting the allowed return on equity can be made more robust to changes in financial market conditions by ensuring that:
 - The return on equity is estimated in a such a way through the life of the Instrument that it delivers results that reflect the financial market conditions at that time; and
 - The estimate of the required return on equity is subjected to a number of reasonableness checks (or cross checks) to ensure that it is consistent with the market cost of capital at the time.
- » ENA submits that the 2018 AER's approach of setting the allowed return on equity to vary one-for-one with changes in government bond yields is inconsistent with approaches adopted by Australian companies, independent expert valuation reports, and other comparable regulators.

4.1 The 2022 RoRI will govern allowed returns through to 2031

The 2022 RoRI will critically affect regulatory allowances and investment incentives over a period where substantial network investment is required to support the transition in Australia's energy sector and during a time of extraordinary conditions in financial markets. It will determine the allowed returns for some networks through to 2031. Developing a RoRI that is robust to potential changes in market conditions, and which supports efficient investment over the next decade, is an important and challenging task.

It is not enough for the RoRI to reflect the efficient cost of capital at the time it is made; it must be capable of reflecting efficient costs and supporting efficient investment for all of the determinations that are made during its term.

Similarly, it is not enough for the RoRI to promote the NEO and NGO at the time it is made; it must be capable of doing so throughout its full effective term, even as financial market conditions and circumstances change.

The development of a binding instrument is a much more complex task than a standard regulatory determination. It is not a point-in-time determination, but a framework for ensuring that future point-in-time determinations properly reflect the efficient cost of capital and provide incentive for efficient investment when they are made. Thus, the RoRI must be robust to changes in market conditions in a way that is not required of a standard regulatory determination.

4.2 The 2018 RoRI has been challenged by changes in market conditions

In the 2018 RoRI, the approach taken to the allowed return on equity was to fix an allowed risk premium to be added to the prevailing 10-year government bond yield. Due to the binding nature of the Instrument, this approach must be adopted in every determination made prior to the 2022 RoRI.

Section 2.1 of this submission establishes that, since 2018, the prevailing government bond yield has declined markedly and is currently at historical lows.

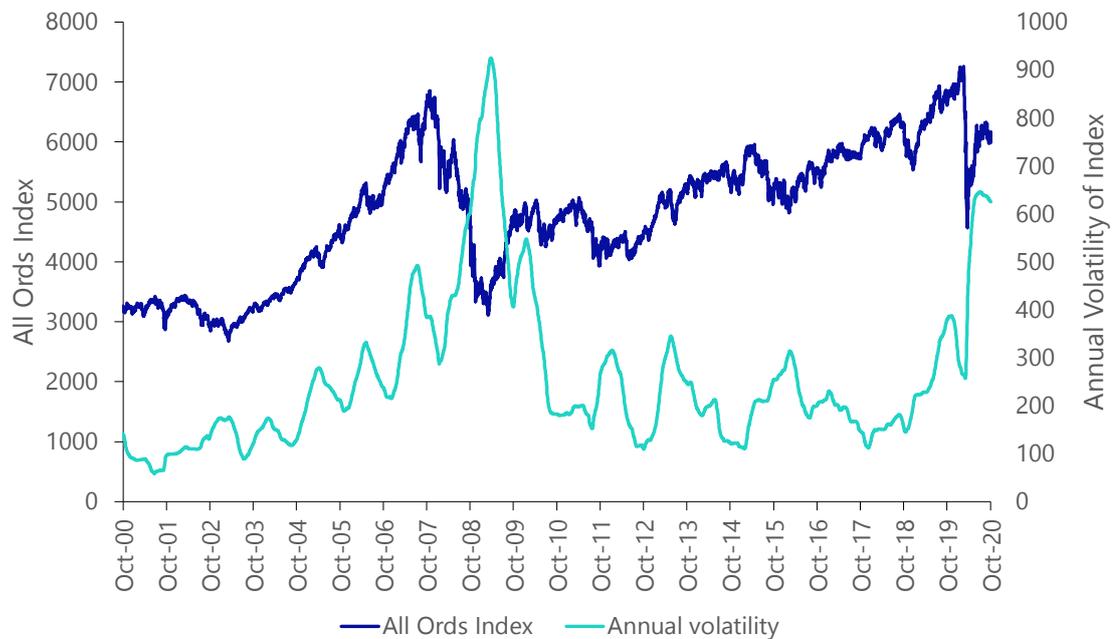
In fact, there have been a range of dramatic macroeconomic developments in Australia and elsewhere that indicate that current market conditions are highly unusual. For instance:

- » The RBA's official cash rate target is at the lowest level ever recorded;
- » Australian government bond yields have never been as low as the current levels. This phenomenon has not been restricted to Australia. British consol bond yields are lower than at any time since the 1700s, and interest rates in many other development economies are also currently at historic lows;
- » For the first time ever, the RBA has had to engage in yield curve targeting and a series of further extraordinary monetary policy initiatives to drive interest rates to the present record lows. Central banks around the world have resorted to such

unconventional monetary policy responses (for example, quantitative easing) only in very unusual market circumstances;

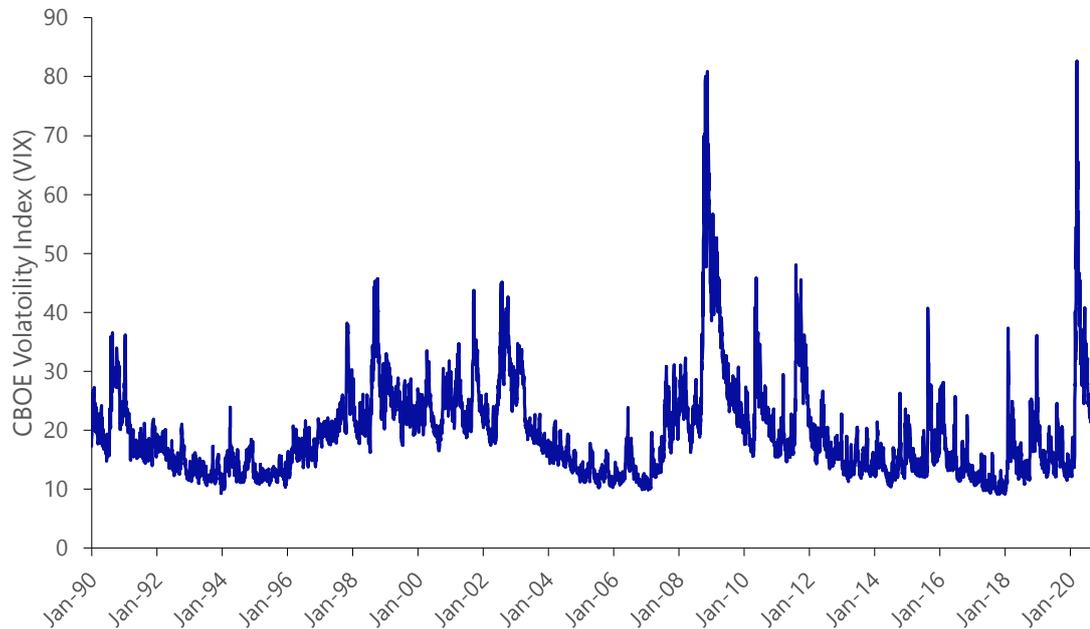
- » Inflation-protected bonds issued by the Australian government are now, for the first time ever, yielding negative returns;
- » In 2020, Australia experienced negative headline inflation for the first time since the 1960s;
- » In 2020, the global price of oil fell to negative levels for the first time in history;
- » The annual volatility of the Australian stock market in 2020 rose to levels that have been exceeded only once during the past two decades—namely, during the peak of the GFC (see Figure 5); and
- » In 2020, investors' expectations of market volatility peaked at levels only seen during the height of the GFC (see Figure 6).

Figure 5: All Ords Index and annual volatility of All Ords Index



Source: Thomson Reuters data.

Figure 6: Chicago Board Options Exchange (CBOE) volatility index



Source: Thomson Reuters data.

None of these events could have been predicted in 2019, let alone in 2018 when the AER established the RoRI. ENA does not suggest that these recent events should have been anticipated by the AER. Rather, what the recent episode highlights is that financial market conditions can be extremely volatile and unpredictable. This becomes problematic given the binding nature of the RoRI, and the inability to adjust the allowed rate of return in response to extreme and unanticipated global financial market conditions. The RoRI will govern regulatory determinations for several years, and the events since 2018 highlight the importance of ensuring that the RoRI is robust to a wider set of potential change that can occur over such a period.

In the Australian regulatory context, the decline in government bond yields has caused the allowed real return on equity to fall by 36% since the 2018 RoRI was delivered – from 3.69 to 2.35 per cent. Such a decline was not anticipated in 2018, but its occurrence has resulted in current allowed returns that, in the ENA’s view, are well below efficient financing costs.

This outcome arises largely because the risk premium was fixed to reflect market conditions in 2018 and the risk-free rate reflects the very different current market conditions. This highlights the importance of ensuring that the 2022 RoRI is more robust to changes in financial market conditions.

ENA submits that the events since 2018 have indicated that the 2018 RoRI has not been robust to the changes in market conditions that have since occurred. In our view, it is important that careful consideration is given to how the 2022 RoRI can be made

more robust to the range of potential changes in market conditions that might occur during the currency of that Instrument.

An Instrument is robust if it produces reasonable estimates of efficient financing costs under a plausible range of different financial market conditions. It is not enough that the Instrument might produce a reasonable estimate of efficient financing costs as at the date of making that Instrument.

4.3 The AER's approach to setting the allowed return on equity must be able to accommodate changing market conditions

It may well be that if the AER was to issue a new RoRI today, it would consider the dramatic fall in government bond yields when setting the allowed return on equity. That is, an allowed return on equity set today would reflect all of the relevant evidence available today.

However, the combination of the AER approach to setting the allowed return on equity (i.e., adopting a fixed risk premium) and the binding nature of the RoRI under the relevant legislation means that, until the next RoRI is issued in December 2022, the allowed return on equity in every regulatory determination will be based on:

- » An equity risk premium that reflects the relevant evidence that existed in 2018; and
- » A prevailing government bond yield that reflects the market conditions at the time of the relevant regulatory determination, where those conditions have changed materially since 2018.

It is the combination of this risk premium (fixed in 2018) and the prevailing government bond yield (which has fallen by 64% since 2018) that produces the current record low allowed return on equity, and which is also lower than that allowed by comparable international regulators. Under the binding instrument framework, nothing can be done about this until determinations are made in 2023 and beyond.

Because there is a real risk that financial market conditions will change substantially during the currency of a RoRI, and the regulatory determinations made under it, it is important that the approach to setting the allowed return on equity must be robust to a range of plausible market scenarios. The binding nature of the RoRI, and the fact that it determines allowed returns for up to nine years hence, means that there is a real risk of regulatory return allowances failing to adequately reflect market conditions changing through time, unless it is carefully designed.

ENA suggests that stakeholders should work with the AER to develop a range of potential future scenarios. When developing the 2022 RoRI, the AER should consider whether its proposed approach to the allowed return on equity is likely to produce outcomes that are consistent with the NEO and NGO in each scenario.

4.4 How do market participants and other regulators ensure that their estimates reflect changing market conditions?

Overview

Market participants and other regulators use a range of approaches to ensure that their estimates of the required return on equity reflect changes in financial market conditions. What is common among these approaches is that:

- » The return on equity is estimated such that all parameters are estimated at the same point in time reflecting the financial market conditions at that time; and
- » The estimate of the required return on equity is subjected to a number of reasonableness checks (or cross checks) to ensure that it is consistent with the market cost of capital at the time.

Brattle recommends that a robust estimate of the required return on equity must ensure that all parameters reflect the same market conditions

Brattle recommend that all return on equity parameters should be estimated at the same point in time so that they all reflect the same financial market conditions at that time:

We think that if capital market conditions change enough to cause a significant movement in the risk free rate, the cost of equity as a whole should be redetermined, not just the risk free rate component.²⁸

Brattle consider that it is unsafe to update one return on equity parameter and not others:

*There are important interactions between the CAPM cost of equity parameters, such that it may create inconsistencies—and thus an inaccurate result—if some parameters are updated but others are not. When estimating a forward-looking MRP, the measured MRP commonly increases as the risk-free rate declines and vice versa. Similarly, because the equity beta is estimated using market data, the beta estimate will typically be affected by changes in market conditions. **We therefore think that it is problematic to change one of the CAPM inputs without updating the cost of equity estimate as a whole.**²⁹*

Brattle conclude that a key problem with the approach adopted in the 2018 RoRI is the exclusive focus on the backward-looking historical MRP to the exclusion of forward-looking evidence:

*The CAPM using a historical MRP relies on backward-looking information, while the Dividend Growth Model (DGM) uses forward-looking information. **During periods of changes in financial markets, it becomes important to***

²⁸ Brattle, 2020, p. 61.

²⁹ Brattle, 2020, p. 60, emphasis added.

*consider both historical (stable) and forward-looking (contemporaneous) information.*³⁰

Brattle's recommendation on this issue is that all return on equity parameters should be estimated at the same time. This avoids the potential for inaccurate results that arise when some parameters are updated and others are not:

*Taken together, therefore, we think these observations suggest that the AER's current practice of determining the rate of return separate from the revenue determination is beneficial, but that in three areas the practice of other regulators has advantages: first, the period between the AER's rate of return determinations is too long (particularly given that new parameters do not influence revenues until after the next revenue determination); second, **it would be better to determine all of the cost of equity parameters in the same rate of return proceeding, including the risk free rate, with no updating of any rate of return parameters in a separate revenue determination**; and third, it would be better to reflect the new cost of equity results in revenues immediately, without waiting for the start of the next revenue determination.*³¹

Evidence from the AER stakeholder forum

During the recent stakeholder forum, the AER was provided with evidence that real-world investors do not reduce required returns in line with changes in government bond yields. Rather, the return on equity that real-world investors require is relatively more stable than government bond yields. ENA suggests that this evidence is particularly relevant to the design of an approach to setting the allowed return on equity that is robust to changes in government bond yields.

The relevant evidence presented at the Stakeholder Forum included:

- » Evidence from the Investor Reference Group (IRG) presentation that Australian firms have not reduced their required return on equity in line with recent falls in government bond yields. Evidence was presented from the RBA, TabCorp, EnergyAustralia, Stockland, Challenger, KPMG and Leadenhall; and
- » Evidence from the Morgan Stanley presentation that the approach that some practitioners adopt is to set the risk-free rate as a blend of the prevailing spot rate and the long-run average government bond yield. This results in the estimate of the required return on equity being partially 'immunised' against changes in government bond yields.

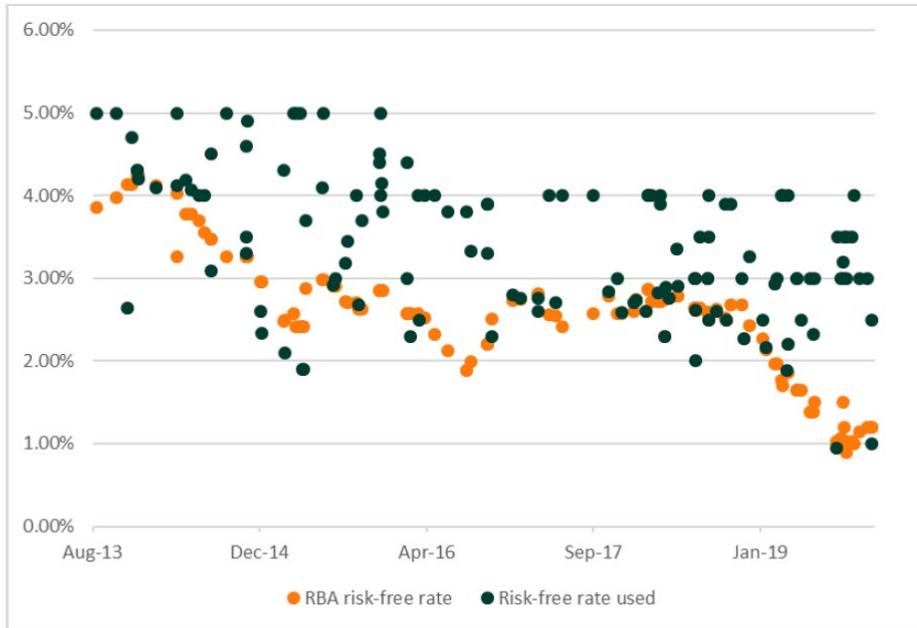
Evidence from independent expert valuation reports

In a recent report, Synergies compares the risk-free rate adopted in independent expert valuation reports with the prevailing 10-year government bond yield at the time of the report. They show that the vast majority of such reports have set the risk-free rate above the prevailing government bond yield, as shown in Figure 7 below.

³⁰ Brattle, 2020, p. 35, emphasis added.

³¹ Brattle, 2020, p. 61, emphasis added.

Figure 7: Comparison of risk-free rate adopted in independent expert valuation reports and prevailing 10-year government bond yields

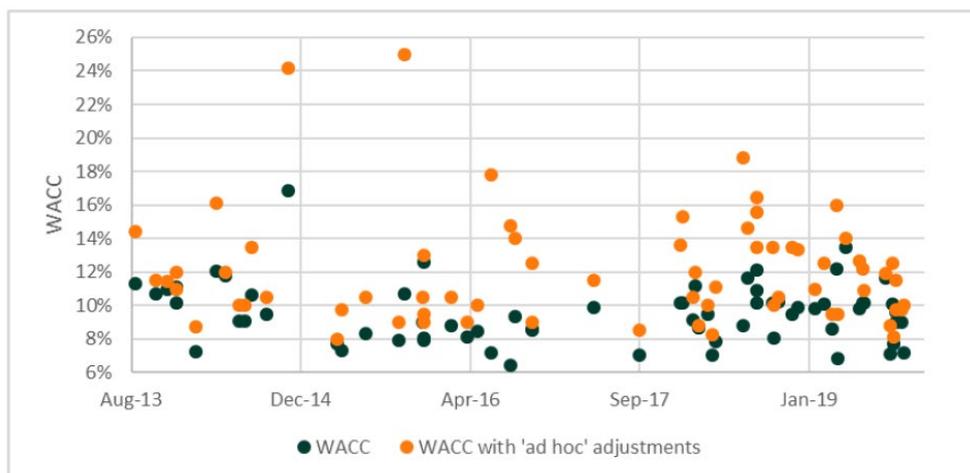


Data source: RBA, Connect 4, Synergies calculations

Source: Synergies, May 2020, *Determining a WACC estimate for Port of Melbourne*, Figure 2, p. 87.

Synergies also documents a tendency for independent expert valuation reports to make ad hoc adjustments to mechanical CAPM-WACC estimates in order to obtain a final discount rate that the expert considers to best represent the return that would be required by real-world investors. These ad hoc adjustments are shown in Figure 8 below.

Figure 8: Comparison of WACC estimates before and after ad hoc adjustments



Source: Synergies, May 2020, *Determining a WACC estimate for Port of Melbourne*, figure 3, p. 88.

That is, the approach adopted by independent expert valuation professionals is that the estimate of the required return on equity does not vary one-for-one with changes in the risk-free rate. It follows that an approach to setting the allowed return on equity that *does* vary one-for-one with changes in the risk-free rate will not be robust – it will not properly reflect the market cost of capital in changed financial market conditions.

The approach of other regulators

The Brattle report documents that a number of regulators also adopt approaches such that the allowed return on equity does not vary one-for-one with changes in government bond yields.

For example, Brattle note that FERC explicitly quantifies the relationship between risk-free rates and MRP. The result is an allowed return on equity that is relatively more stable as falls in risk-free rates are partially offset by increases in MRP, and vice versa:

*The FERC has recognized that there is a statistically significant relationship between historical movements in interest rates and equity risk premiums (defined as the authorised return on equity for electric transmission utilities over and above utility bond rates). When interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen.*³²

Brattle also note that a number of regulators adopt a “total market return” (TMR) approach to setting the allowed return on equity, whereby:

*The assumption underlying the TMR methodology is that the expected total return to equity is relatively stable in real terms, and that the expected MRP adjusts over time to reflect changes in the real risk free rate.*³³

Brattle specifically identifies Ofgem as a proponent of the TMR methodology:

*Ofgem calculates the MRP based on a Total Market Return (TMR) methodology, which measures the MRP as the difference between the historical real TMR and the current or forward-looking real risk free rate. The focus is on the realized market return instead of on the MRP. The assumption underlying the TMR methodology is that the relationship between the real risk-free rate and the real MRP is perfectly negatively correlated. The expected total return to equity is relatively stable in real terms, and that the expected MRP adjusts over time to reflect changes in the real risk free rate.*³⁴

The Brattle report also notes that the regulatory approach of setting a relatively stable allowed return on equity (i.e. by increasing the allowed MRP when government bond yields fall materially) is consistent with the approach adopted in commercial practice.

³² Brattle, 2020, p. 93.

³³ Brattle, 2020, p. 109.

³⁴ Brattle, 2020, p. 124.

Specifically, Brattle notes that the Bloomberg commercial data service provides MRP estimates that are inversely related to government bond yields:

*For example, Bloomberg’s estimate of the MRP for Australia and the Australian 10-year bond yields are inversely related since 2015, so that the MRP increases when the risk-free rate declines and vice versa.*³⁵

Having reviewed the approaches adopted by a range of regulators and commercial data providers, Brattle warns against implementing the CAPM in a way where a fixed constant MRP (estimated at one point in time) is added to the prevailing government bond yield (estimated at a different point in time):

*All in all, the CAPM is a well-founded and commonly used model that relies primarily on readily available information. However, it can be overly variable (or unstable)—i.e., produce results which are sensitive to exactly when the estimates are done—because changes in interest rates affect the risk-free rate and market volatility affects the beta estimates. Thus, it is not clear that the MRP or beta remains constant as the risk-free rate changes. Instead, Bloomberg’s analyses of the forward-looking MRP show that **the MRP increases as the risk-free rate declines, so that the resulting market return moves less than the risk-free rate.***³⁶

An important role for cross checks

The role of cross checks is to provide information about whether a particular allowed return on equity properly reflects the market cost of equity in the financial market conditions at the time. Thus, cross checks have an important role to play in assessing the robustness of a particular approach to setting the allowed return on equity. Specifically, cross checks would be applied when testing the allowed return on equity produced in each of a range of future scenarios.

The following section of this submission provides more detail on the important role of cross checks, and recommends a consultation process dedicated to the development of an appropriate framework for cross checks.

ENA submits that the approach to setting the allowed return on equity can be made more robust to changes in financial market conditions by allowing for:

- (a) A degree of flexibility in parameter estimation such that the interactions between different parameters can reasonably be reflected in subsequent regulatory determinations rather than most parameters being fixed and only the risk-free rate changing which, by design, removes any ability for the approach to reflect parameter interactions; and
- (b) The estimate of the required return on equity is subjected to a number of reasonableness checks (or cross checks) to ensure that it is consistent with the market cost of capital at the time.

³⁵ Brattle, 2020, p. 37.

³⁶ Brattle, 2020, p. 37, emphasis added.

5 Building a better approach to setting the allowed return on equity

Key messages

- » The 2022 RoRI requires an approach for setting the allowed return on equity that best promotes the NEO and NGO. That is achieved by ensuring that the allowed return for each year is commensurate with the efficient financing costs of a benchmark efficient NSP.
- » An important part of the 2022 RoRI process will be to ensure that the approach to the allowed return on equity is robust to plausible changes in financial market conditions during the full effective life of the RoRI and the determinations made under it.
- » The CAPM must be implemented in a way that provides the best possible estimate of the return on equity that is required by real-world investors.
- » The implementation of the CAPM can be brought more into line with commercial and other regulatory approaches by:
 - Having appropriate regard to:
 - » a wider range of evidence.
 - » forward-looking evidence.
 - » international evidence, particularly where the domestic evidence is clearly inadequate.
 - Ensuring that where feasible return on equity parameters are estimated contemporaneously in an internally consistent way, and that the interactions between them are picked up in estimations of the allowed return on equity in subsequent regulatory determinations.
 - Applying a series of cross checks and financeability tests.

5.1 Core features of the 2022 RoRI process

ENA considers that the reports commissioned by the AER, the working papers prepared by the AER, and the engagement among stakeholders have already provided useful guidance for the 2022 RoRI process.

In particular, ENA submits that the key learnings from the process thus far are:

Learnings from the 2018 RoRI and legislative constraints

- » No change can be made to these outcomes due to the binding nature of the RoRI. Consequently, these outcomes will affect the investment incentives of some networks with critical consumer impacts until 2026.

- » An important part of the 2022 RoRI process will be to ensure that the approach to the allowed return on equity is robust to plausible changes in financial market conditions during the currency of the RoRI and the determinations made under it.

Objectives and general approach

- » The 2022 RoRI requires an approach for setting the allowed return on equity that best promotes the NEO and NGO. That is achieved by ensuring that the allowed return for each year is commensurate with the efficient financing costs of a benchmark efficient NSP.
- » Efficient financing costs must be estimated with reference to real-world investors.
- » There is general support amongst stakeholders, including the ENA, that the CAPM framework will be used to estimate the required return on equity.
- » It follows that the CAPM must be implemented in a way that provides the best possible estimate of the return on equity that is required by real-world investors.

Implementation of the CAPM

- » The AER's consultation process has already produced a considerable amount of useful evidence concerning the implementation of the CAPM in a way that provides the best possible estimate of the return on equity that is required by real-world investors. In particular, Brattle has made a number of recommendations based on its experience and on its review of the approaches of other comparable regulators:
 - When estimating CAPM parameters, the general approach should be to have regard to all relevant evidence. There is no basis for selecting a favoured subset of the relevant evidence and then disregarding other relevant evidence.
 - It is important to have regard to forward-looking evidence where relevant because the task is to estimate a forward-looking required return.
 - In relation to the use of international evidence, it is important to consider:
 - » *The extent of domestic evidence.* The importance of international evidence depends on the extent to which the domestic evidence is sufficient to produce a reliable estimate; and
 - » *The way in which international evidence is used by market practitioners and other regulators.* This is because the task is to estimate the return that is required by real-world investors (rather than a group of hypothetical investors who might behave in accordance with a particular set of theoretical assumptions) and because Australian firms have to bid for capital in a global context.
 - Return on equity parameters should where feasible be estimated in a way which accommodates the interactions between the different parameters. The RoRI should provide for its application to reflect market conditions whenever it is applied, and be designed in such a way to recognise that it is unsafe to

update one parameter to reflect prevailing market conditions while holding another fixed to reflect historical market conditions.

The important role of cross checks

- » The role of cross checks was discussed at the Stakeholder Forum on 16 September 2020. There appeared to be general agreement that it is important to identify the cross checks that will be used, and the way in which they will be used, well in advance of the process for setting the allowed return on equity. Otherwise there is a danger that cross checks will be selected and interpreted as a way of defending a position rather than informing a position.
- » In addition to cross checks there is a strong argument for a requirement for a financeability assessment at the Instrument level, and subsequent determination stage. For the purposes of the RORI this analysis would be designed to ensure that the RoRI, when applied to a benchmark NSP, will generate a set of financial metrics that is consistent with the assumptions that underpin the allowed return.
- » Ensuring that the benchmark NSP remains financeable in a range of potential financial market conditions is an important element of any assessment of the robustness of the approach to setting the allowed return on equity.
- » The following section proposes that an engagement process centred around cross checks would be beneficial to stakeholders and the AER. It is noted that the AER has already indicated an examination of financiability issues is planned, and ENA supports this occurring as soon as possible.

5.2 ENA response to the AER's 'straw man' questions

The AER has invited stakeholder comment on its approach to the allowed return on equity. Section 5 of the AER's working paper on *CAPM and alternative return on equity models* identifies a number of specific issues on which the AER is seeking comment. ENA's preliminary responses to these issues are as follows:

1. The CAPM is to be used when setting the allowed return on equity

ENA agrees that the CAPM will be used when determining the allowed return on equity in the 2022 RoRI. ENA does not propose to submit that any sort of multi-model approach should be used.

As noted throughout this submission, ENA considers that the CAPM should be used as a pragmatic tool for estimating the return on equity that is required by real-world investors, and that a clear focus be put on how the parameters which form inputs to the CAPM are estimated as this, in ENA's view, is the key consideration. The AER should not, in other words, assume that using the CAPM means that any way of implementing the CAPM is acceptable.

2. Forward-looking information, particularly DGM evidence, should be used when estimating the MRP

ENA considers that forward-looking information should be used when estimating the MRP at the time of the RoRI. What is required is an estimate of the forward-looking MRP that reflects financial market conditions at that time.

Proper estimation of the forward-looking MRP requires that some regard be given to forward-looking evidence.

ENA agrees with the AER that the historical excess returns (HER) data has an important role to play and that the premiums that investors have earned on past investments will be relevant to the premiums that investors might require from future investments.

However, ENA considers that it would be an extreme and unbalanced position to posit that this is the *only* evidence that is relevant to the forward-looking returns that are required by real-world investors.

Necessarily and by its nature, ENA considers that the HER approach *is* backward-looking in that it uses historical data only. Thus, this approach can (logically) only provide information about the premiums that have been earned in the specific financial market conditions that have occurred in the past.

Again, ENA does not suggest that this data is irrelevant to the returns that investors might require in the future. What the backward-looking data cannot do, however, is to provide any indication at all about the extent to which the MRP in the *prevailing* market conditions might vary from the MRP that has been generated in *historical* market conditions. This is crucially important for the 2022 RoRI, which is being determined in historically unique financial market conditions.

For these reasons, ENA considers that there is an important role for forward-looking evidence in relation to MRP, to be used alongside consideration of the historical evidence.

The most obvious form of forward-looking evidence comes from the DGM approach. DGM evidence is commonly used in the commercial and regulatory setting. ENA agrees with Brattle's recommendation that the DGM evidence is relevant and can usefully inform an estimate of the forward-looking MRP.

ENA recognises that there are different ways of specifying and implementing the DGM. More detail about such methodological choices will presumably be discussed as part of the AER's engagement in relation to the MRP parameter. ENA's preliminary views are that consideration might be given to:

- Using a range of well-accepted approaches to the DGM such that no one specification has a determinative impact. ENA notes that IPART adopts such an approach;
- Using specifications of the DGM that produce estimates of the MRP that equate to the HER estimate on average; and
- At a minimum, having regard to evidence about whether the prevailing MRP is above or below its long-run average.

ENA considers that regard should be given to the Wright approach when estimating the MRP at the time of the 2022 RoRI. ENA agrees with the AER that it is implausible that the required real return in equity remains constant in all market conditions. However, the assumption that the MRP remains constant

in all market conditions is equally (probably more so) implausible. To be clear, it is not argued that there is a perfect negative correlation between the MRP and the risk-free rate, which appeared to be the implicit basis of some previous considerations and discussions around the Wright approach. Consequently, the ENA agrees with the AER that the MRP should not be set on the basis of the Wright approach alone.

Recent evidence suggests that market returns are less volatile than risk-free rates, and therefore that adding a constant premium to a risk-free rate will produce more volatility than investors expect.³⁷ This is in line with the basic proposition of the Wright model

ENA considers that the HER and Wright approaches both provide relevant information that should be used to inform the estimate of the MRP at a point in time. ENA considers that it would be unbalanced to eliminate the Wright approach on the basis of the implausibility of its assumption about the relationship between the MRP and risk-free rate, while not subjecting the HER approach to the same test. This is particularly so in light of the acceptance of the Wright approach in other regulatory jurisdictions.

ENA does not consider that surveys have any direct role to play when estimating the MRP. The quality of the survey data that is available is extremely poor.

ENA does not consider that there is a major role for conditioning variables, so long as regard is had to the DGM evidence.

3. The 2022 RoRI must consider the relationship between the MRP and risk-free rate during the term of that Instrument

The AER's first task in relation to the MRP is to adopt an estimate at the time of making the RoRI. The second task is then to consider how the MRP might vary over the term of the RoRI.

That is, the NEO and NGO require the best possible estimate of the required return on equity at the time of each determination. The legislative framework, however, effectively constrains the AER from doing that. This is because the best estimate at the time of a determination would be based on all of the evidence available at that time. Under a binding Instrument, however, the AER is required to set out an approach in the RoRI that will then determine how the allowed return on equity will be set in every determination for the next four years.

As we have seen in relation to the 2018 RoRI, the binding nature of the Instrument can cause problems when financial market conditions change.

Having considered the approaches adopted by other regulators, Brattle recommends that all return on equity parameters should be estimated at the

³⁷ Jorda et al (May 2019), NBER Working Paper *The Rate of Return on Everything, 1870-2015*, see <http://www.nber.org/papers/w24112>

same point in time to reflect the market conditions at that time. That is not permitted or feasible under the current Australian legislation.

Brattle specifically warn against the approach of fixing some parameters at one point in time (reflecting the market conditions at that time) while subsequently updating other parameters (reflecting market conditions at a different point in time).

ENA considers that based on this Brattle work, logical options which are worthwhile forming the basis for future development work in this area under the binding RoRI are:

- Fix the allowed return on equity for the duration of the RoRI, recognising that it will be stale by up to four years in future determinations; or
- Adopt a formulaic approach whereby the MRP is mechanically updated to reflect any change in the risk-free rate (e.g., using a FERC-like approach); or
- Adopt a formulaic approach whereby the MRP is mechanically updated to reflect any change in other market evidence such as particular DGM estimates.

ENA notes that these issues were not able to be fully considered in detail in the 2018 review, because it occurred simultaneously with finalisation and movement to the new binding framework. Consequently, ENA considers that this issue will be a key part of the engagement in relation to MRP estimation.

4. Beta should be estimated using a range of methods

ENA notes that the theory of the CAPM provides no specific guidance about how beta should be estimated in practice. Practitioners, independent experts, and regulators tend to adopt a range of approaches including using different historical periods, different return frequencies, different reference days, and so on.

ENA agrees with Brattle's recommendation that the additional data that underpins longer-term beta estimates is not a substitute for ensuring that a reasonable number of firms is included in the comparator set. Re-computing estimate after estimate for the same firm is no substitute for having a reasonable number of comparator firms.

5. International evidence should be used when estimating beta

The AER's set of domestic comparator firms is now down to three 'live' firms. By any objective measure, that is clearly insufficient to provide a reliable statistical estimate of beta. For this reason, ENA considers that international evidence is relevant and should be used to inform the AER's estimate of beta.

One form of international evidence is the equity beta estimates adopted by other comparable regulators. Brattle shows that the AER's beta is materially below that adopted by all other comparable regulators (even including those regulators who adopt lower gearing than the AER).

Another form of international evidence is the beta estimates for comparable firms outside Australia. Partington and Satchell (PS) have suggested that international beta estimates might require some form of adjustment for use in the Australian context. ENA disagrees with that suggestion and notes that no such adjustment is made by comparable regulators, independent expert valuation reports, or in market practice. The reason that no adjustment is made is that the CAPM is used as a pragmatic tool to estimate the return that is required by real-world investors.

Beta estimates from other developed equity markets provide useful and relevant evidence about the relationship between NSP returns and the returns of a broadly diversified market index. Comparable regulators, independent experts and market practitioners use international equity beta estimates in that way. They do not make adjustments to reflect differences in the composition or phase of market indexes, nor do they abandon the domestic CAPM in favour of an international model. Again, ENA notes that the CAPM should be used as a tool to estimate the return that real-world investors require.

In this regard, ENA notes that the AER would have no evidence at all if it restricted itself to data that was consistent with a 'pure' domestic CAPM. For example, the international investors who own half the shares in the Australian market and have a very material effect on Australian stock returns and government bond yields would not exist under a 'pure' domestic CAPM. Understandably rather than eliminate that data, the AER takes a pragmatic approach and draws what it can from that data. The same logic applies to international equity beta estimates.

Moreover, the question of whether to have regard to international equity beta estimates should be considered in the relevant context. The AER has three 'live' domestic comparators, which is clearly too small a sample for the purposes of deriving a statistically reliable estimate of beta. Thus, a balanced weighing up of either using international data or relying on an inadequate set of domestic data suggests that some regard must be given to the international data.

ENA suggests that more detailed engagement of how to best incorporate the international evidence in relation to beta will be an important element of the more detailed engagement on the equity beta parameter.

6 Next steps

Key messages

- » It is very important that this process of early engagement produces concrete outcomes. Clear decisions and guidance from the AER will assist stakeholders in targeting their submissions on evidence and issues that are most relevant to the AER's decision-making process.
- » At this stage of the process, ENA suggests that stakeholders would benefit from a clear confirmation from the AER that:
 - the NEO and NGO are best promoted by setting the allowed return for each regulatory period to be commensurate with the efficient financing costs of a benchmark efficient NSP; and that
 - the CAPM should be used as a tool for the purpose of estimating the return on equity required by real-world investors.
- » ENA submits that a consultation process on the role of cross checks would be useful at this early stage of the process.

6.1 The importance of concrete outcomes from early stage engagement

ENA strongly endorses the AER's approach to commencing consultation on the 2022 RoRI at this early stage. This approach provides an opportunity for thorough stakeholder engagement and proper analysis of approaches and evidence. ENA welcomes the opportunity to engage constructively throughout this process.

ENA submits that one of the core benefits of this early engagement is that:

- » Some issues can be 'locked away' prior to the formal 2022 RoRI process; and
- » The AER is able to provide guidance to stakeholders about its views during the process, not just at the end of it.

This will be beneficial to the 2022 RoRI process as it will focus engagement on issues that are both important and relevant.

To this end, it is important that this process of early engagement produces concrete outcomes that are sustained over time. Clear outcomes and guidance from the AER will assist stakeholders in targeting future submissions on evidence and issues that are most relevant to the AER's decision-making process.

In this regard, ENA submits that all stakeholders and the AER would benefit if the following outcomes could be achieved from this stage of the review process:

- » **A clearly-defined common goal** in respect of the task of estimating the required return on equity in a way that best promotes the National Electricity Objective (NEO) and National Gas Objective (NGO).

ENA agrees with the AER that:

- the NEO and NGO are best promoted by setting the allowed return in each regulatory period to be commensurate with the efficient financing costs of a benchmark efficient NSP; and
- the allowed return should reflect “rates in the market for capital finance” rather than a theoretical construct.
- » An approach to setting the allowed return on equity that:
 - is **robust to a range of wider range of plausible future market conditions** and unforeseen changes that may occur during the term of the 2022 RoRI; and
 - which makes **fuller use of an appropriately broad set of information.**
- » Identification – through further AER Working Papers - of a set of viable, meaningful return on **equity cross-checks** which can assist in ensuring that the allowed return on equity is commensurate with efficient financing costs in the real world. **In ENA’s view these should be complemented by forward-looking financeability tests applying to the RoRI and determination processes** to ensure confidence in the capacity for the benchmark firm to access efficiently priced financing to support delivery of customer outcomes.
- » A clear **principles-based framework for assessing relevant evidence.** This should ensure consistent application of evidence and promote common stakeholder understanding of the meaning and application of each piece of evidence.

7 Appendix: Expected future investment task

This appendix summarises the key elements of the future investments that will be required of NSPs over coming years.

7.1 Investment required to support the Integrated System Plan

The 2020 Integrated System Plan (ISP) set out four major integrated transmission investments required across the period 2021-26 to support an efficient, stable and reliable national transmission architecture. Table A1 below outlines the actionable ISP projects included in the 2020 ISP.

Table A1: Four major actionable ISP projects (\$million)

Actionable ISP Project	Final ISP – Lower Limit	Final ISP – Upper Limit
Project EnergyConnect	1,393	2,587
HumeLink	1,470	2,730
VNI West	1,211	3,133
Marinus Link	1,292	4,102
Total	5,366	12,552

Source: AEMO Final 2020 ISP Transmission Outlook

A significant common feature of these projects is that they will:

- » support private capital infrastructure expenditure during a period of extremely low expected capital expenditure across Australia;
- » be likely, if commenced, to be capable of being financed at a lower whole of lifecycle cost to customers than any previous comparable transmission infrastructure investments;
- » support and generate significant employment outcomes through the design and construction phases; and
- » deliver sustainably lower electricity wholesale prices through enhancing competition and market access for new generators, further supporting employment and economic growth.

These investments have been identified as high priority and energy agencies and Ministers have put in place a series of reforms to make the integrated system plan ‘actionable’. Each proposed investment will be subject to streamlined regulatory arrangements aimed at promoting timely investment outcomes, and ensuring positive net market benefit from their commissioning and operation.

Clearly identified projects, revised regulatory assessment processes and amended rules provide a foundation for private investment decisions for individual projects, but do not automatically mean that the projects proceed.

In each case, it is anticipated that new or existing private sector equity providers will be sought to underpin a positive investment case. Significant regulatory reform and system planning steps will represent a net cost to energy consumers and the community should the investment framework for these projects prove to be inadequate in practice. The net market benefits identified in the relevant proposals and Regulatory Investment Test processes will also be deferred or foregone.

This highlights that the RoRI will need to provide a sufficient allowed rate of return to ensure that the required new investments are economically viable for networks and their investors.

To the extent that such investments are only made economically viable by amending the regulatory framework or after the provision of government underwriting or support, there would be a clear indication that current allowed return settings are inadequate.

7.2 Integration of Distributed Energy Resources

Distributed energy resources (DER), including solar, battery and advanced demand management technologies, are expected to continue to grow substantially with over 10.4 Gigawatts of new capacity expected to be added by 2030.

This expansion brings substantial customer benefits in terms of customer choice and control, greater grid resilience, downward pressure on wholesale energy prices, and a capacity for avoiding investment in both large-scale generation and some network expansions.

Effective integration of DER also brings with it some investment requirements, such as enhanced distribution level visibility and monitoring investments. These enable the maximisation of the efficient use of current and expected future DER investments made by network customers. Rapid expansion of DER at the distribution level can also result in declines in minimum demand levels, contributing to issues with managing voltage, system strength, and inertia. Areas in distribution networks across South Australia and Queensland are experiencing record low minimum demand at the substation level as DER penetration continues to grow.

Integration of some levels of DER can frequently occur with limited associated network costs. Yet the decade ahead, through which the 2022 Instrument will directly operate, is likely to require increasing investment to enable the optimum realisation of the value of DER investments. This represents a transformational step in the movement from the electricity distribution grid as primarily a one-direction transportation network to a market enabling platform routinely featuring two-way flows and increased interaction with the wholesale NEM.

Underpinning this transformation is the confidence of network owners and investors to deploy new capital to meet network customer and community level expectations on the evolving role of the distribution grid. This capital is often required to be deployed in a rapidly evolving technology environment featuring uncertainty and asset lives that are shorter than traditional grid infrastructure. In some cases, removal of network bottlenecks or enablement of greater export opportunities from deployed DER will also require discretionary capital investments in network capacity expansions. In other cases, these investment requirements may flow from government policy initiatives, such as the Solar Homes program in Victoria.

A range of relevant policy initiatives have the capacity to further impact on these investment requirements. Current rule change processes on distribution access and pricing issues have the potential to lead to a redefinition of a range of standard regulated networks services which will be required to be provided. These rule changes will also require the development of integrated DER planning activities to support the delivery of these new services. This means that electricity networks, under the life of the 2022 Instrument, may be required to deliver a new set of DER export services with accompanying mandatory service and investment requirements.

This highlights that the 2022 Instrument will not be undertaken in the 'steady state' environment of past rate of return guidelines. Rather, the 2022 Instrument will need to be capable of supporting new capital deployment in the delivery of enhanced grid functionality and access to owners of current and future distributed resources.

7.3 Expanding gas and hydrogen infrastructure

Commonwealth and State governments have developed a range of policy initiatives on expanding gas infrastructure availability to support market operation and on the expanded use of hydrogen. For example, the Federal Government has recently announced a National Hydrogen Strategy, and a National Gas Infrastructure Plan. These initiatives will also require material investment from networks.

Key investment requirements emerging in this area are likely to be:

- » ongoing gas network expansion to meet expected new demand and customer growth;
- » targeted gas infrastructure investment to promote the development of wholesale market 'hubs'; and
- » enabling investment to trial and implement the blending of hydrogen and natural gas.

These developments will require the commitment of equity capital. The Federal Government has indicated that it is committed to ensure those targeted gas infrastructure investments identified as necessary to underpin the emergence of expanded wholesale gas market hubs occur, including committing supporting funding should private capital providers not be found.

These developments are unlikely to be funded or financed entirely within the average total gas distribution capital expenditure of between \$600-700 million each year of

the past decade, or the close to decade low capital expenditures of gas transmission businesses. Instead, gas network businesses will be required to source additional capital to deliver these investment requirements.

As noted above, if such investments are only made economically viable by amending the regulatory framework or after the provision of government underwriting or support, there would be a clear indication that current allowed return settings are inadequate.

7.4 Ensuring sustainability in asset replacement to maintain service levels

A further critical investment task for networks is the maintenance of service levels to customers. This requires appropriate signals for efficient asset replacement.

Poor investment signals which lead to the deferral of asset replacement can have the effect of shifting costs from current customers to future customers, and increasing the overall level of cost, particularly if asset failure occurs as a result of inefficient deferral of expenditure.

One illustrative measure to inform considerations of the efficiency of the current level of investment in existing network assets is identifying the replacement rate of current network assets. That is, at the current average level of network replacement, how many years would it take to replace the network that exists currently? We refer to this as the implied replacement period.

ENA has reviewed the relevant average network replacement expenditure, asset quantities and asset values data published in AER Category Analysis Regulatory Information Notices from 2015 to 2018 collated by an external party.³⁸ This analysis shows that:

- » current replacement expenditure across Australian electricity distribution networks implies that distribution networks are currently investing in their existing networks at an average rate of 0.6% per annum. This demonstrates that, if current replacement expenditure continues, existing networks will be replaced, on average, every 166 years before accounting for any network growth, and
- » investment directed towards the replacement of existing assets for each state ranges from 0.73% of the current cost to replace network assets (137 year implied replacement period) to less than 0.25% of the current cost to replace network assets (400 year implied replacement period), as shown in **Table A2** below.

These results contrast with the expected electricity distribution network asset life of 40 to 60 years.

³⁸ This Regulatory Information Notice (RIN) data has been collated by Dynamic Analysis and can be found publicly at https://dynamicanalysis.shinyapps.io/dabase_app/. ENA has not formally reviewed the RIN sources of the collated data.

Table A2: Implied replacement rates and replacement periods (electricity distribution networks by jurisdiction)

Jurisdiction	Replacement rate	Implied replacement period (years)
Northern Territory	0.73%	137
Victoria	0.72%	139
New South Wales	0.70%	143
Queensland	0.67%	149
Australian Capital Territory	0.50%	202
Tasmania	0.41%	246
South Australia	0.25%	407
National	0.60%	166

Notwithstanding advances in technology that could drive future efficiencies in network replacement, this analysis indicates that the 2022 RoRI has an important role to play in ensuring that networks are provided with an appropriate incentive to undertake efficient investment.