



Rate of return

**International regulatory
approaches to rate of
return**

Final working paper

December 2020

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Shortened forms

Shortened form	Extended form
2018 Instrument	The rate of return instrument published on 17 December 2018
2022 Instrument	The rate of return instrument to be published in December 2022
ACM	Authority for Consumers and Markets (a Dutch regulator)
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
ARERA	Italian Regulatory Authority for Energy, Networks & the Environment
Brattle	The Brattle Group
CAPM	Capital asset pricing model (Sharpe-Lintner CAPM)
CGS	Commonwealth government securities
CMA	Competition and Markets Authority (UK)
CPI	Consumer Price Index
CPIH	Consumer Price Index including owner occupiers' housing costs
DGM	Dividend growth model
FERC	Federal Energy Regulatory Commission (a US regulator)
Instrument	Rate of return instrument
MRP	Market risk premium
NEL	National electricity law
NEO	National electricity objective
NGL	National gas law
NGO	National gas objective
NZCC	New Zealand Commerce Commission
Ofgem	Office of Gas and Electricity Markets (a UK regulator)
Ofwat	Office of Water Services (a UK regulator)
PTRM	Post-tax revenue model
RFR	Risk free rate
SL CAPM	Sharpe-Lintner capital asset pricing model (or just CAPM)

STB	Surface Transportation Board (a US regulator)
UK	United Kingdom
US	United States of America
WACC	Weighted average cost of capital

1 Overview

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

1.1 What do we want to achieve through our working papers?

The aim of this working paper series is to consider technical aspects of the rate of return ahead of the active phase. It is important for stakeholders and ourselves that we make progress toward settling positions through the working papers. Clearly we cannot bind ourselves ahead of our decision on the 2022 Instrument, but we have an opportunity now to narrow and focus the issues in play.

In this paper, we consider options for how we might determine the rate of return based on international regulatory approaches. We distinguish our preferred options from options that we do not propose to pursue, and also identify areas where further analysis is required.

1.2 Why does the rate of return matter?

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

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

An accurate rate of return—neither too high nor too low—will promote efficient investment in, and efficient operation and use of, energy network services. While the capital market transaction is between investors and networks/pipelines, the ultimate effects will flow through to consumers.

If the rate of return is set too high:

- Investors will be over compensated for the risk involved in supplying capital to networks, so will show increased willingness to invest.
- Networks will have an incentive to over-invest in regulated assets over the longer term, increasing the regulatory asset base above the efficient level.
- Consumers of energy will pay inefficiently higher prices. As energy is an essential input to all aspects of social and economic activity, this will also distort downstream investment decisions. That is, if prices are higher than necessary consumers will use less energy-consuming services and over-invest in energy efficiency and management.

If the rate of return is set too low:

- Investors will be under compensated for the risk involved in supplying capital to networks, so will show reduced willingness to invest.
- Networks will not be able to attract sufficient funds to be able to make required investments in the network. Over the longer term there will be declines in quality, reliability, safety and/or security of supply of electricity or gas.
- Consumers of energy will pay lower prices, at least in the short term; but will wear the detriment of adverse outcomes for quality, reliability, safety and/or security of supply. There will also be distortion away from efficient outcomes in downstream markets (though in the opposite direction to the previous case).

Hence, an accurate estimate of the rate of return is necessary to promote efficient prices in the long term interests of consumers. We evaluate the two sources of funds for investment--debt and equity--to determine what return is just sufficient to attract the necessary capital investment.

1.3 Why this topic?

Estimating the rate of return is difficult and contentious. It requires regulatory judgement to assess the complex and sometimes conflicting evidence; and to engage with finance theory, academic literature and market practice. There is no one 'right answer' to be found.

We are not the only regulator making this type of assessment. Regulators in many overseas jurisdictions also grapple with some of the same issues. A high-level comparison of regulatory approaches allows us to consider these international approaches, and learn from what has worked (or has not worked) overseas.

When comparing rate of return approaches or outcomes between regulators in different countries, it is important to consider the overall regulatory environment in which each operates. The rate of return approach adopted in one area may be materially affected by other rate of return decisions made elsewhere, the overall rate of return approach or the regulatory framework. To help us understand overseas regulatory regimes, we commissioned expert advice from The Brattle Group (Brattle), which was released alongside our draft working paper.¹ Brattle has a global presence and extensive experience providing economic and financial advice in many countries.

We considered international regulators when developing the 2018 rate of return Instrument (2018 Instrument). A key challenge was that we could not reliably quantify and adjust their rate of return decisions to allow suitable comparison. The draft working paper and Brattle report took a step towards understanding the similarities and differences between our regulatory environment, and the context and framework for international regulatory decisions on the rate of return.

¹ AER, *Rate of return, CAPM and alternative return on equity models, Draft working paper*, 27 August 2020; and The Brattle Group, *A review of international approaches to regulated rates of return, Prepared for the Australian Energy Regulator*, 30 June 2020.

In this paper, we explore whether we can improve our current rate of return process so that it further contributes to the achievement of the National Gas Objective (NGO) and National Electricity Objective (NEO).

1.4 What key issues were raised in our draft working paper?

Our draft working paper compared the regulatory practices adopted by international regulators. We considered the material provided by Brattle and evaluated various international methodologies to assess their suitability in the Australian context.²

The Brattle report examined seven overseas regulators, from the UK (Ofgem and Ofwat), US (STB and FERC), the Netherlands (ACM), Italy (ARERA) and New Zealand (NZCC). It summarised the key features of the regulatory framework in each case, noting that there was high level agreement on the core regulatory objectives and elements for assessing the cost of capital. Below this, the Brattle report noted a wide range of different approaches - such as differences in the choice of financial models, how models were implemented and how inputs were determined. Every regulator had some unique aspects to its rate of return approach.

Our draft working paper focused on the core suggestions made in the Brattle report. We explained the challenges of increasing the frequency of reviews and updates. However, we observed some merit in annually updating the risk free rate and examined the possibility of implementing it in our rate of return approach. We also outlined potential adjustments to the rate of return once base figures have been calculated. In particular, we considered Ofgem's adjustment for expected outperformance. Furthermore, we sought stakeholder submissions on the potential changes to our rate of return approach.

The draft working paper noted that many aspects from the Brattle report would be relevant to subsequent parts of the 2022 review, where we focused on more specific issues.

1.5 What are our proposals for the 2022 Instrument?

We have conducted further analysis and considered stakeholders' views on potential changes to the rate of return.

Some aspects of Brattle's report (and stakeholder submissions) cover topics—such as the use of particular return on equity models and the technical estimation of parameters—that overlap with the content of our companion paper, *CAPM and alternative return on equity models*.³ As in our draft working paper, we discuss this overlapping material in the companion paper to reduce duplication.

In section 6, we propose to maintain the current frequency for reviewing the instrument and the current implementation of the instrument. We do not propose to implement an annual update to the risk free rate nor any adjustments to the overall rate of return for expected outperformances on incentive schemes.

² Some of our evaluation was in our companion draft working paper on the capital asset pricing model (CAPM) and alternative return on equity models. See: AER, *Rate of return, CAPM and alternative return on equity models, Draft working paper*, 27 August 2020.

³ AER, *Rate of return, CAPM and alternative return on equity models, Final working paper*, 16 December 2020.

In section 7, we set out some proposed avenues for future work. We will:

- Further investigate the merits of cross checks in informing the 2022 Instrument
- Further consider the use of financeability tests for informing the 2022 Instrument
- Consider the evidence for a different allowed rate of return between gas pipelines and electricity networks
- Remain open to stakeholders views and objectively considering all available evidence

1.6 Next steps

1.6.1 Timelines/Process steps

This working paper marks the end of the formal process for this topic, and there will not be a round of stakeholder submissions for this paper. There are aspects of this paper that we will consult on further as we extend our analysis and approach the 2022 Rate of Return Instrument Review.

We have also published working papers on two other topics. Our debt data final working paper was published ahead of this paper. A working paper focusing on return on equity models has been released at the same time as this paper. An indicative timeline is included below.

Table 1 Topics and timeline for 2020 working papers

Topic	Energy network debt data	CAPM and alternative return on equity models	International regulatory approaches to rate of return
Draft Paper	26 June 2020	27 August 2020	27 August 2020
Stakeholder Forum	29 July 2020	16 September 2020	16 September 2020
Submissions due	14 August 2020	9 October 2020	9 October 2020
Final Paper	18 November 2020	16 December 2020	16 December 2020

We will undertake further work on the issues raised in this paper during the 2022 Instrument process. Therefore, we will not invite further submissions on this paper at this time.

2 Process background

2.1 What is the rate of return instrument?

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

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

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

2.2 What is our 'Pathway to 2022'?

We use the term 'Pathway to 2022' to describe the process by which we will develop the 2022 Instrument. We consulted with stakeholders about what steps should be included and what role various groups should play.⁴ We issued a position paper in May 2020 setting out our high level plan.⁵

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

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

Outcomes from our 2020 Inflation review will also flow into the development of the 2022 Instrument.⁶

⁴ AER, *Consultation paper, Pathway to the 2022 rate of return instrument*, 4 November 2019; see also The Brattle Group, *Stakeholder feedback on the AER's process for the 2018 rate of return instrument*, 27 June 2019.

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

⁶ AER, *Initiation notice, 2020 review of inflation approach*, 7 April 2020; AER, *Discussion paper, Regulatory treatment of inflation*, 25 May 2020, p. 14; AER, *Draft position, Regulatory treatment of inflation*, 1 October 2020, pp. 20, 46, 49.

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

2.3 What is the intent of the working papers series?

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

On each topic, we expect to release a consultation paper, before allowing a submission period. We will facilitate discussion with stakeholders within the restrictions arising from the COVID-19 pandemic, such as by hosting a virtual seminar or online meeting. We will then release a final working paper for that topic with our response to submissions. These final working papers will describe our preferred option (or options) and identify where further work is required.

In selecting topics for working papers, we have had regard to whether topics could be constructively considered as discrete issues in advance of the active phase of the review.⁷ We have also taken into account stakeholder feedback on the topics of interest or importance.⁸

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

The topic of this paper (international regulatory comparison) was selected because it encompassed a more holistic consideration of the approach to setting the rate of return and how international regulators conduct this task. Our view is that these matters could be appropriately addressed ahead of the active phase of the review and have the potential to lead to further work on aspects of our approach.

2.4 How does this interact with other working papers?

We have published the draft and final working papers on this topic at the same time as draft and final working papers on another topic, on the *Capital asset pricing model (CAPM) and alternative return on equity models*.⁹ It provides a framework for evaluating these models and assesses candidate models for their suitability for use in our regulatory framework.

We have aligned the schedules for these working papers because there are areas of overlap between the two topics. In particular, consideration of international rate of return approaches necessarily includes their method for estimating the return on equity and use of return on equity models (as well as return on debt, gearing, tax, and the overall rate of return).

To reduce duplication, we discuss overlapping material in one location only. The *CAPM and alternative return on equity models* working paper contains our primary discussion on:

- return on equity models (whether prompted by the Partington and Satchell report, the international review conducted by The Brattle Group, or stakeholder submissions).

⁷ AER, *Position paper, Pathway to the 2022 rate of return instrument*, 29 May 2020, pp. 9–10.

⁸ AER, *Position paper, Pathway to the 2022 rate of return instrument*, 29 May 2020, p. 22.

⁹ AER, *Rate of return, CAPM and alternative asset pricing models, Final working paper*, 16 December 2020.

- the technical methodology for estimating return on equity model parameters including the use of international comparators and international data.

Our first working paper topic was on the energy networks' debt data.¹⁰ It looked at evidence on actual debt costs incurred by regulated networks and discussed how this data might be used to inform the 2022 instrument. There is some overlap between this paper and that one, because this paper includes analysis of return on debt approaches used internationally. However, the overlap is relatively minimal, because the debt data working paper is focused on a particular practical question (what use can be made of the actual debt data collected from Australian networks). The final working paper on debt data was released in November 2020, and identified a preferred option for how our index of actual debt costs might inform the regulated return on debt.

¹⁰ AER, *Rate of return, Energy networks debt data, Final working paper*, 18 November 2020. The project page is <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/energy-network-debt-data-pathway-to-rate-of-return-2022>.

3 Previous work

3.1 Background to the rate of return framework

We apply a ‘building block’ model to set regulated revenues for electricity and gas network service providers. The building blocks—return on capital, return of capital, operating expenditure and tax—reflect the expected costs that would be incurred by a benchmark efficient entity operating the network. This is a form of incentive regulation, as building blocks are estimated in advance for a regulatory control period (typically five years) and the network retains any benefit (or bears any detriment) where it is able to reduce costs below the AER’s estimates. Revealed costs are then used to inform building block estimates for the following control period, so that efficiency gains are passed on to consumers. We also operate a number of incentive schemes in conjunction with the building block framework.

The return on capital building block is set by applying a rate of return on capital to the regulatory asset base each year. The AER currently estimates the allowed rate of return for regulated businesses using the approach set out in the 2018 Instrument. The rate of return instrument is binding under the National Electricity Law and National Gas Law. This means that the AER and network businesses are required to set the rate of return according to the current Instrument.

The 2018 Instrument applies the following key characteristics when estimating a businesses’ allowed rate of return:¹¹

1. It use a nominal vanilla weighted average cost of capital (WACC) formulation.¹²
2. It assumes a 40% equity and 60% debt capital structure.
3. It uses a domestic CAPM to estimate the return on equity. This is implemented as:
 - (a) The risk free rate (RFR) is estimated from the yield on 10 year to maturity Commonwealth Government Securities (CGS) over a short averaging period (20 to 60 business days) prior to the commencement of the regulatory control period.
 - (b) Equity beta of 0.6 (fixed for the life of the 2018 Instrument).
 - (c) Market risk premium of 6.1 per cent (also fixed for the life of the 2018 Instrument).
 - (d) The return on equity is therefore the risk free rate plus a fixed equity risk premium of 3.66%.¹³
4. It uses a trailing average portfolio for the allowed return on debt, updating 10 per cent of the portfolio estimate annually (i.e. a 10 year rolling window of annual debt observations).
5. The annual return on debt is based on debt costs for the benchmark BBB+ credit rating at a 10 year term, estimated by weighting A rated and BBB rated benchmark curves (from a number of providers) over an averaging period.
6. Market data for the return on debt and risk free rate is sourced from averaging periods nominated by the network businesses in advance.

¹¹ AER, *Rate of return instrument, Explanatory Statement*, 17 December 2018, pp. 13–16.

¹² Used in a post-tax revenue model, i.e. effect of the interest tax shield is considered in cashflows.

¹³ The equity risk premium is the product of beta and the market risk premium.

3.2 Draft working paper

The draft working paper compared and contrasted international approaches against our current approach. We considered the different contexts that other regulators operate within to assess the merit of their processes and approaches in setting the rate of return. We evaluated the ability of international approaches to contribute to the achievement of the NEO and NGO in our Australian context.

We also invited stakeholder feedback on international rate of return approaches that could result in an improvement to our current rate of return approach.

3.2.1 Summary of Brattle's report

Brattle applied a broad framework to compare how seven international regulators set the allowed rate of return for their respective jurisdictions. The seven international regulators determine a rate of return as part of their revenue/ price regulation and most regulate the gas and electricity distribution and transmission industries (with some regulating additional industries).¹⁴ To improve comparability, Brattle attempted adjusting the form of rate of return to be aligned between regulators.¹⁵

The Brattle report highlighted four key suggestions:¹⁶

1. Incorporate more forward looking evidence in the determination of the return on equity.
2. Use a multi-model approach for estimating the return on equity.
3. Apply an estimation window of 2–5 years using daily or weekly return data to estimate the equity beta; and to use international firms in the beta comparator set.
4. Increase the frequency of rate of return reviews and apply outcomes immediately to all businesses. In addition, update all return on equity parameters jointly (rather than one equity parameter in isolation) and apply this update immediately to all businesses.

The draft working paper discussed Brattle's fourth suggestion while the first three options were explored in our CAPM and alternative return on equity models working paper.

3.3 Possible options for the 2022 rate of return review

The draft working paper sought submissions on three explicit questions:

- Frequency of rate of return reviews and the lag before these are implemented for each network
- Annual updates to the risk free rate
- Adjustments to the rate of return

We noted the potential benefits and challenges and these are summarised below.

¹⁴ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 18.

¹⁵ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 47.

¹⁶ Brattle, *A review of international approaches to regulated rates of return*, June 2020, pp. 59–62.

3.3.1 Frequency of rate of return reviews

Brattle suggested increasing the frequency of rate of return reviews and applying the result to all networks immediately.¹⁷ It also suggested updating all parameters at the same time.¹⁸ Brattle considered that these would contribute to a return on equity that would better reflect up-to-date information and consistency across the parameters.

We agreed that Brattle's suggestions would increase consistency in the estimation of the return on equity and allow for consideration of more up-to-date information and interactions between the parameters.

However, we observed a range of challenges in the draft working paper that made both recommendations impractical and undesirable:¹⁹

- Estimating the rate of return is a complex task and increasing the frequency risks inadequate consideration of issues.
- Modifying the frequency and implementation of rate of return reviews requires legislative action and increases regulatory uncertainty.
- The current frequency and implementation was a product of extensive and broad consultation fairly recently. It is still too early to consider changing either.

3.3.2 Annual updates of the risk free rate

The draft working paper noted that rather than increasing the frequency of reviews, one option was to follow the Ofgem's proposal to annually update the risk free rate. We outlined the advantages and limitations of this option in the draft paper.²⁰ The advantage is that it would be easy to implement because the yield on government securities is readily observed over a short averaging period prior to the start of each year. The required revenues would be updated and the X factor for the upcoming year would be recalculated.

However, this option would still be inconsistent with Brattle's view that it would not be correct to update one element of the return on equity in isolation.²¹ It would also depart from the current incentive framework where all building blocks are set at the commencement of the regulatory control period.

3.3.3 Adjustments to the rate of return

We observed from Brattle's report that several overseas regulators apply adjustments to the rate of return after base figures have been calculated. Therefore, these regulators applied a different outcome to the one that was calculated from their rate of return.

¹⁷ Brattle, *A review of international approaches to regulated rates of return*, June 2020, pp. 60–61.

¹⁸ Brattle, *A review of international approaches to regulated rates of return*, June 2020, pp. 60–61.

¹⁹ AER, *Rate of return, International regulatory approaches to rate of return, Draft working paper*, August 2020, pp. 16–17.

²⁰ AER, *Rate of return, International regulatory approaches to rate of return, Draft working paper*, August 2020, p. 18.

²¹ Brattle, *A review of international approaches to regulated rates of return*, June 2020, pp. 60–61.

We also noted a particular adjustment by Ofgem where it proposed to reduce the allowed return on equity because it expected the networks to receive positive payments through outperformance on incentive schemes.²² However, we noted range of challenges with this adjustment:

- If the expected rate of return included incentive scheme outcomes, and whether the correct response should be to adjust the incentive schemes or the rate of return
- It can be difficult to calculate a fair and accurate value for the rate of return reduction.

²² Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 123.

4 What did stakeholders say about the draft paper?

Our draft paper sought stakeholder feedback on Brattle's recommendations and possible changes to the rate of return process. Stakeholders responded by providing their views on these key issues. However, stakeholders have also provided feedback on a broader range of issues. Some of these broader issues are relevant to our consideration of international approach while others are on our overall regulatory framework which is outside the initial intent of this paper.

This section summarises stakeholder views on areas that were raised in the draft paper as well as those broader issues. We have engaged with all stakeholder feedback in the following chapters.

A detailed summary of stakeholder submissions can be found in Section 8. In total 14 submissions were received from network, consumer and investor groups.

4.1 Questions raised in the draft working paper

4.1.1 Use of international regulators' approach/decision

Network submissions

Networks stated that we should genuinely consider adopting international regulators' approaches in our current rate of return framework. In particular, Endeavour Energy observed that there was a clear and obvious difference between various regulators and outcomes from the 2018 Instrument that required thorough investigation.²³

The Australian Pipelines and Gas Association (APGA) suggested the AER should remain open minded to approaches and insights from other international regulators and non-regulators.²⁴ Energy Networks Australia (ENA) also noted that there was an incentive to prefer investment in other jurisdictions because the AER's allowed return on equity was lower than that provided in other comparable regulatory regimes.²⁵

Consumer submissions

The Major Energy Users Inc (MEU) and Energy Users Association of Australia (EUAA) stated that there was the need to be cautious when applying international regulatory approaches. The MEU suggested the AER should compare the regulatory environments that

²³ Endeavour Energy, *Submission to the AER on return on equity*, 9 October 2020, p. 1.

²⁴ APGA, *APGA submission to the AER: Draft working papers on return on equity models and international approaches to the rate of return*, 9 October 2020, p. 26 (APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020).

²⁵ ENA, *Best-practice framework for setting the allowed return on equity, Response to AER's Path to 2022 Rate of Return Instrument: return on equity working papers*, 9 October 2020, p. 14 (ENA, *Best-practice framework for setting the allowed return on equity*, October 2020).

the models used by other regulators operate within, and care should be taken to consider whether international practices are applicable given the differences.²⁶

The EUAA stated that while some flexibility was important for exceptional circumstances, good regulatory practice was built on consistency and predictability.²⁷ Any changes applied to the rate of return methodology must be supported by strong reasons to ensure the change was enduring and unambiguously supports the long term interests of consumers. However, the EUAA did not think there was sufficient evidence for seeking change to the return on equity methodology.

Investor submissions

Investors did not comment on this issue.

4.1.2 Frequency of reviews/ updates

Network submissions

The networks' submissions outlined that all return on equity parameters should be estimated consistently to reflect the same market conditions when calculating the rate of return.²⁸ Three network stakeholders (Ausgrid, ENA and Endeavour Energy) noted that it was difficult to achieve this under the current laws governing the Instrument.²⁹ Endeavour Energy also cautioned against partially updating the return on equity.³⁰

Under the current legislation, the networks stated that it is worthwhile to consider:

- fixing the allowed return on equity for the entire duration of the Instrument, but ENA recognised that the estimate would be fixed by up to four years in future determinations.³¹
- designing the Instrument so that more than just the risk-free rate updates when the rate of return is actually estimated.³²
- adopting a formulaic approach whereby the MRP is mechanically updated to reflect any changes in the risk free rate or market evidence such as particular DGM estimates.³³

²⁶ MEU, *Rate of return, CAPM and alternative RoE models, International regulatory approaches to RoR, Draft working papers*, 7 October 2020, p. 6. (MEU, *Submission, CAPM and alternative models, International regulatory approaches*, October 2020).

²⁷ EUAA, *Submission CAPM and alternative return on equity models*, 9 October 2020, p. 1.

²⁸ SA Power Networks, *Submission on AER draft working paper: Rate of return CAPM and alternative return on equity models*, 7 October 2020, p. 4; Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, 9 October 2020, p. 4; TransGrid, *Re: AER's pathway to 2022 rate of return instrument: Draft return on equity working papers*, 12 October 2020, p. 3.

²⁹ Ausgrid, *Ausgrid submission- International regulatory approaches to rate of return and CAPM*, 9 October 2020, p.4; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 45; Endeavour Energy, *Submission to the AER on return on equity*, 9 October 2020, p. 2.

³⁰ Endeavour Energy, *Submission to the AER on return on equity*, 9 October 2020, p. 2.

³¹ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 45.

³² APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 21.

³³ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 45; Endeavour Energy,

- exploring all available options to best align the estimation timing of equity parameters.³⁴

Consumer submissions

In contrast, the MEU endorsed our current approach of fixing the MRP, equity beta and gearing over the duration of each rate of return review period.³⁵ Investors in network assets tend to use longer term estimates of equity returns which do not reflect short term market movements. Fixing some equity parameters will accurately reflect the expected life of the investment and the reality of networks' risk profile. Likewise, the MEU did not support updating the MRP at each reset because the outturn volatility in the MRP is inconsistent with the long term investment profile of the network assets.³⁶

Investor submissions

Investors did not comment on this issue.

4.1.3 Annual updates of the risk free rate

Network submissions

The APGA stated that the 2018 Instrument does not reflect efficient financing costs because it requires the risk free rate to be updated while the equity beta and MRP remain fixed.³⁷ It noted that annually updating the risk free rate would not address this issue unless other parameters were also updated.

Consumer submissions

The Consumer reference group (CRG) raised concerns about annually updating the risk free rate as it would result in a fundamental change to the underlying CAPM theory. This includes estimating ex-ante investor expectations through a process of annually correcting the expected return on equity for the ex- post 'realised' risk free rate.³⁸ The CRG also noted that annual updates of the risk free rate would result in additional complexity and volatility in the annual pricing process. It would also create uncertainties on how consumers would be rewarded for the transfer of risks from the networks to the consumers.³⁹ Furthermore, a transition process would be required which would introduce new risks to all parties.

The CRG also noted that the risk free rate should not be annually updated but if it were, consumers should be compensated for any risks transferred from the networks to consumers as a result of such a change.⁴⁰

Investor submissions

Submission to the AER on return on equity, 9 October 2020, p. 2.

³⁴ Ausgrid, *Ausgrid submission- International regulatory approaches to rate of return and CAPM*, 9 October 2020, p.4.

³⁵ MEU, *Submission, CAPM and alternative models, International regulatory approaches*, October 2020, p. 9.

³⁶ MEU, *Submission, CAPM and alternative models, International regulatory approaches*, October 2020, p. 9.

³⁷ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, pp. 20–21.

³⁸ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 9.

³⁹ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 10.

⁴⁰ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 31.

Investors did not comment on this issue.

4.1.4 Adjustments to the rate of return

Network submissions

The networks' submissions did not support adjusting the rate of return for expected outperformance. They stated:⁴¹

- The rate of return should be set independently from incentive schemes and applying these adjustments would result in regulatory uncertainty.
- Adjusting the rate of return for expected outperformance may undermine incentive schemes.
- Ofgem's adjustment does not align well with incentive based regulation and Ofgem's incentive mechanisms differ markedly from those applied by the AER. Therefore, there should be no presumption that the concern the Ofgem was addressing by adjusting for expected outperformance applies in Australia.
- Simply picking up elements from other regulatory regimes without replicating all aspects of those regimes is unnecessary and impractical.

The APGA also suggested redesigning or removing incentive mechanisms that are not delivering expected outcomes to customers and networks.⁴²

Consumer submissions

The CRG submitted that it is less obvious how incentive based regulation benefits consumers through the financing cost allowance in the building block model.⁴³ The CRG suggested developing and applying a broader measure for assessing the overall efficient cost of capital due to the lack of a balanced incentive regime. It considered that a well-designed mechanism would provide networks with an ongoing incentive to lower their costs of capital while ensuring consumers share in the benefits of these efforts.

The CRG also stated that the AER must avoid selecting any 'high' side values.⁴⁴ Investors' concerns with underinvestment do not adequately support the need to raise the efficient cost of capital. Furthermore, no adjustments should be made based on an excess of caution given the statistical uncertainty bands in the empirical evidence.

Investor submissions

Investors did not comment on this issue.

4.2 Items arising from stakeholder submissions

⁴¹ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 24; Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, 9 October 2020, p. 5; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, pp. 23–24.

⁴² APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 24.

⁴³ CRG, *Submission to AER, Return on equity*, 9 October 2020, pp. 16–17.

⁴⁴ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 15.

4.2.1 Investment and risk

Network submissions

ENA indicated that the 2022 Instrument must provide a sufficient allowed rate of return to ensure that the required new investments are economically viable for networks and their investors.⁴⁵ Networks' investments have declined in recent years and ENA does not suggest that it has been directly caused by the level of allowed returns during this period.⁴⁶ However, if investments are only made economically viable by amending the regulatory framework or after the provision of government support, it would indicate that the current allowed return settings are inadequate.⁴⁷ Therefore, the 2022 Instrument has an important role to play in ensuring that networks are provided with an appropriate incentive to undertake efficient investment.⁴⁸

Consumer submissions

The MEU and CRG mentioned that the risks transferred by networks to consumers requires an adequate assessment. MEU noted the continued investment in networks implies that the current allowed return on equity is sufficient.⁴⁹ However, the allowed return is determined based on the risks faced by investors in shares rather than the residual risks faced by networks which are recompensed by consumers.⁵⁰ Investors in networks assets have a longer term view on profits and face different residual risks to investors in shares. Therefore, the CRG stated that the risk is now with consumers who face paying higher prices to fund the period of overinvestment due to the flattening of peak demand growth and steady decline in energy consumption.⁵¹

Investor submissions

Investors did not comment on this issue.

4.2.2 Assessment/ Robustness

Network submissions

Network stakeholders indicated that the 2018 Instrument had not been robust to changes in market conditions and provided suggestions on the development of the 2022 Instrument.⁵²

⁴⁵ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 50.

⁴⁶ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 7.

⁴⁷ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 52.

⁴⁸ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 53.

⁴⁹ MEU, *Submission, CAPM and alternative models, International regulatory approaches*, October 2020, p. 2.

⁵⁰ MEU, *Submission, CAPM and alternative models, International regulatory approaches*, October 2020, pp. 2–3.

⁵¹ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 15.

⁵² SAPN, *Submission on AER draft working paper: Rate of return CAPM and alternative return on equity models*, 7 October 2020, p. 2; APGA, *Submission on return on equity models and international approaches to the rate of return*, 9 October 2020, p. 7; Energy Queensland, *Pathway to rate of return 2022 Instrument – Return on equity*, 9 October 2020, p. 2; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 33.

Energy Queensland stated that the price volatility and negative net profits projected in the PTRM are not in the interests of customers or electricity networks.⁵³

Networks emphasised that the 2022 Instrument must be robust to potential changes in market conditions and reflect efficient investment for all determinations made during its term.⁵⁴ Furthermore, return on equity estimates must be consistent with returns required by real-world investors.⁵⁵ This can be achieved by:

- applying a robust framework for assessing evidence that results in a proportionate level of scrutiny being applied.⁵⁶
- consulting with stakeholders to develop a range of potential future scenarios and testing whether the proposed approach is consistent with the NEO and NGO in each scenario.⁵⁷
- focusing the next working paper on robustness and reviewing what investors, academics and others do to assess robustness in their process.⁵⁸
- allowing a degree of flexibility in parameter estimation such that the interactions between different parameters can be reasonably reflected in subsequent regulatory determinations rather than fixing most parameters.⁵⁹

Consumer submissions

The CRG submitted that the AER should consider consumption efficiency and balance all risks equally. The Independent Panel in 2018 stated that the AER did not consider consumption efficiency alongside investment efficiency hence, the CRG reiterated the need for consumption efficiency to be clarified and assessed.⁶⁰ The CRG was also concerned that the current papers focused on investment efficiency without considering the interaction of pricing decisions and energy utilisation.⁶¹

The CRG recommended developing a clearer framework for assessing systematic risk which varied among different sectors of the network industry.⁶² The AER should transparently demonstrate how it has balanced equally the risks of over or under estimation and the impact on consumer decisions and behaviours.⁶³

Investor submissions

⁵³ Energy Queensland, *Pathway to rate of return 2022 Instrument – Return on equity*, 9 October 2020, p. 2.

⁵⁴ SAPN, *Submission on AER draft working paper: Rate of return CAPM and alternative return on equity models*, October 2020, p. 2; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 3; Energy Queensland, *Pathway to rate of return 2022 Instrument – Return on equity*, October 2020, p. 2.

⁵⁵ Energy Queensland, *Pathway to rate of return 2022 Instrument – Return on equity*, 9 October 2020, p. 2.

⁵⁶ Endeavour Energy, *Draft working papers: Return on equity*, 9 October 2020, p. 3.

⁵⁷ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 4; APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 7.

⁵⁸ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 7.

⁵⁹ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 39.

⁶⁰ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 13.

⁶¹ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 33.

⁶² CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 10.

⁶³ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 15.

The Network Shareholder Group (NSG) specified that information and evidence should be assessed appropriately and consistently across stakeholders.⁶⁴ Guidance on how information and outcomes are to be assessed should be established before the 'active' phase of the review commences.⁶⁵

The NSG recommended establishing an objective and transparent framework for assessing the long-term impacts on price, reliability and security of energy system resulting from the 2022 Instrument.⁶⁶ As well, an agreed facts data base should incorporate a financeability assessment which provides clarity and consistency in the treatment of material presented by stakeholders.

4.2.3 Cross checks

Network submissions

Network submissions highlighted the importance of cross checks. Implementing meaningful cross checks would improve the AER's approach and enhance the regulatory framework.⁶⁷ Networks suggested:

- identifying a set of potential cross checks and verifying these cross checks with an independent panel of experienced practitioners.⁶⁸
- establishing a clear framework for how cross checks will apply and the consequences if one was breached.⁶⁹
- implementing cross checks at both the Instrument level and subsequent determination stage.⁷⁰
- applying forward looking financeability tests to the 2022 Instrument and determination process.⁷¹
- consulting on cross checks in the next working paper and considering approaches used by international regulators.⁷²

Consumer submissions

⁶⁴ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, p. 2.

⁶⁵ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, p. 1.

⁶⁶ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, p. 1.

⁶⁷ Endeavour Energy, *Draft working papers: Return on equity*, 9 October 2020, p. 2; Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, 9 October 2020, p. 5.

⁶⁸ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 24- 25; Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, 9 October 2020, p. 4; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, pp. 4, 42.

⁶⁹ Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, October 2020, p. 4; APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, pp. 24–25.

⁷⁰ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 7; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 4.

⁷¹ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 4; TransGrid, *Re: AER's pathway to 2022 rate of return instrument: Draft return on equity working papers*, 12 October 2020, p. 2.

⁷² APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, pp. 24–25; Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, October 2020, p. 4.

Similarly, the CRG provided the AER with feedback to improve the effectiveness of cross checks in informing the rate of return. They recommended identifying useful cross checks for assessing rate of return decisions including performance measures and considering how these cross checks could be applied.⁷³ The CRG stated that it is important to provide an explanation on the relevance of these cross checks to the ex- ante estimation of the return on equity.⁷⁴

Investor submissions

The NSG indicated the need to undertake and respond to independent cross checks to ensure a reasonable allowed rate of return.⁷⁵ This need is driven by the significant decline in capital expenditure since 2012, investment below efficient levels and an unreasonably low allowed return on equity.⁷⁶ The NSG explained that internal consistency is an important cross check to ensure that regulated revenues are sufficient to support the credit metrics assumed in the estimation of returns.⁷⁷ Cross checks and market reasonableness tests should be verified by an independent panel of experienced practitioners which has equal representation selected by consumers and regulated businesses.⁷⁸

4.2.4 Financeability

Network submissions

Networks submitted that financeability tests should be used when estimating the rate of return:

- ENA considered that forward-looking financeability tests should apply to the rate of return instrument and determination process.⁷⁹ This was also supported by SA Power Networks (SAPN) and TransGrid.⁸⁰
- Ausgrid submitted that adding financeability checks would enhance the regulatory framework and help to avoid businesses being put into financial difficulty by regulatory decisions, particularly during extended periods of low inflation and low interest rates.⁸¹

Consumer submissions

The CRG considered that there was no evidence that networks had not been able to raise funds from the market.⁸²

⁷³ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 10.

⁷⁴ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 37.

⁷⁵ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, p. 2.

⁷⁶ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, pp. 2–3.

⁷⁷ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, p. 3.

⁷⁸ NSG, *Response to the 2022 Rate of return instrument working paper on return on equity*, 9 October 2020, p. 3.

⁷⁹ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 48.

⁸⁰ SAPN, *Submission on AER draft working paper: Rate of return CAPM and alternative return on equity models*, 7 October 2020, p. 3.

⁸¹ Ausgrid, *Submission International regulatory approaches to rate of return and CAPM*, 9 October 2020, p. 2.

⁸² CRG, *Submission to AER return on equity*, 9 October 2020, p. 27.

Investor submissions

Investors did not comment on this issue.

4.2.5 Other Feedback

Brattle report

Some stakeholders also provided feedback on Brattle's overall report. The APGA stated that Brattle excluded many regulators and non-regulators which had potential to provide valuable insight.⁸³ Furthermore, Brattle did not elaborate on the process that regulators went through to develop their approach. Brattle should describe how international regulators assessed the robustness of their approaches before adopting them. As well, the APGA suggested asking Brattle to look into how international regulators adopted different approaches for gas pipelines and electricity networks.⁸⁴

MEU mentioned that there had been insufficient analysis on the differences in the regulatory approaches used in each jurisdiction.⁸⁵ Hence, MEU recommended that the AER should compare the regulatory environments within which other regulators used their rate of return models.

Gas pipelines

The APGA submitted that the way allowed revenues and prices are determined does not recognise the differences between gas pipelines and electricity networks, nor the significant uncertainty now affecting gas pipelines.⁸⁶ Gas pipelines face a particularly uncertain long term future because of their unclear role in achieving renewable energy targets. However, electricity networks have a clear future with almost all renewable generation requiring some sort of electricity grid.

The APGA recommended publishing a working paper which considered whether rate of return estimates should be different between gas pipelines and electricity networks.⁸⁷ The AER should also—from an efficiency perspective—consider whether it is reasonable to compensate gas pipelines that carry higher risk and longer payback periods with the same return as electricity networks that face a shorter payback period and no real volume or redundancy risk.⁸⁸

Principles-based framework

ENA suggested assessing relevant evidence using a clear principles-based framework. This includes evaluating evidence with regard to materiality, preponderance of evidence and

⁸³ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, pp. 25–26.

⁸⁴ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 16.

⁸⁵ MEU, *Submission, CAPM and alternative models, International regulatory approaches*, October 2020, p. 5.

⁸⁶ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 11.

⁸⁷ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 4.

⁸⁸ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 14.

regulatory consistency.⁸⁹ All evidence should be assessed in a balanced way that reflects the context and proposed use of that evidence.⁹⁰ Both TransGrid and SAPN endorsed the ENA's position on a principles-based framework.⁹¹

Consumer Engagement Framework

The CRG submitted a consumer engagement framework which set out its process for implementing and reviewing consumer engagement activities and the evidence generated from them.⁹² The purpose of the consumer engagement framework was to ensure that consumers' views were accurately reflected in the AER's regulatory processes. A key challenge in achieving the engagement objective was consumers' lack of familiarity with the complex determination of the rate of return.⁹³ Therefore, the CRG stated that consumer engagement can occur at different levels and provided an explanation for implementing their proposed framework.⁹⁴

The CRG also noted that the AER risks losing consumers' trust because consumer preferences and consumption efficiency have not been sufficiently considered.⁹⁵ A lack of consumer trust will prevent the AER from meeting the NEO and NGO. Furthermore, the AER's rate of return approach was not compatible with its incentive framework because revealed costs were never used to lower the rate of return.⁹⁶

The CRG advocated for their five consumer principles to be adopted by the AER and used to assess the various options and models.⁹⁷ As well, the CRG considered itself to be distinct from other stakeholders because of its legislated role.⁹⁸

Unconscious biases

APGA outlined that the AER must make a conscious effort to avoid.⁹⁹

- Anchoring bias – a tendency to fix on the 2018 Instrument as the starting port for the 2022 Instrument and failure to adjust for subsequent information that is made available
- Confirmation bias – prioritising or giving more weight to new evidence that supports approaches adopted in the 2018 Instrument

⁸⁹ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, pp. 27–28.

⁹⁰ ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 29.

⁹¹ TransGrid, *Re: AER's pathway to 2022 rate of return instrument: Draft return on equity working papers*, October 2020, p. 3; SAPN, *Submission on AER draft working paper: Rate of return CAPM and alternative return on equity models*, 7 October 2020, p. 3.

⁹² CRG, *Submission to AER Return on equity, Appendix A, Consumer engagement framework*, 30 September 2020, p. 3.

⁹³ CRG, *Submission to AER, Return on equity, Appendix A, Consumer engagement framework*, 30 September 2020, p. 10.

⁹⁴ CRG, *Submission to AER, Return on equity, Appendix A, Consumer engagement framework*, 30 September 2020, pp. 12, 14.

⁹⁵ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 14.

⁹⁶ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 15.

⁹⁷ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 21.

⁹⁸ CRG, *Submission to AER, Return on equity, Appendix A, Consumer engagement framework*, 30 September 2020, p. 3.

⁹⁹ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 17.

- Overconfidence bias – being overly optimistic about how correct the 2018 Instrument was.

The APGA suggested starting with first principles rather than previous positions and engaging different experts than those the AER has previously relied on.¹⁰⁰ APGA also recommended making better use of joint reports from experts with different views and looking at how other regulators are adjusting the way they estimate the rate of return.

¹⁰⁰ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020, p. 18.

5 Further analysis

In its report, Brattle noted that in some cases there were more recent decisions that it had not been able to include in its assessment. Further, in recent months there have been additional decisions from regulators. In this section we update some of the Brattle analysis for these more recent decisions:

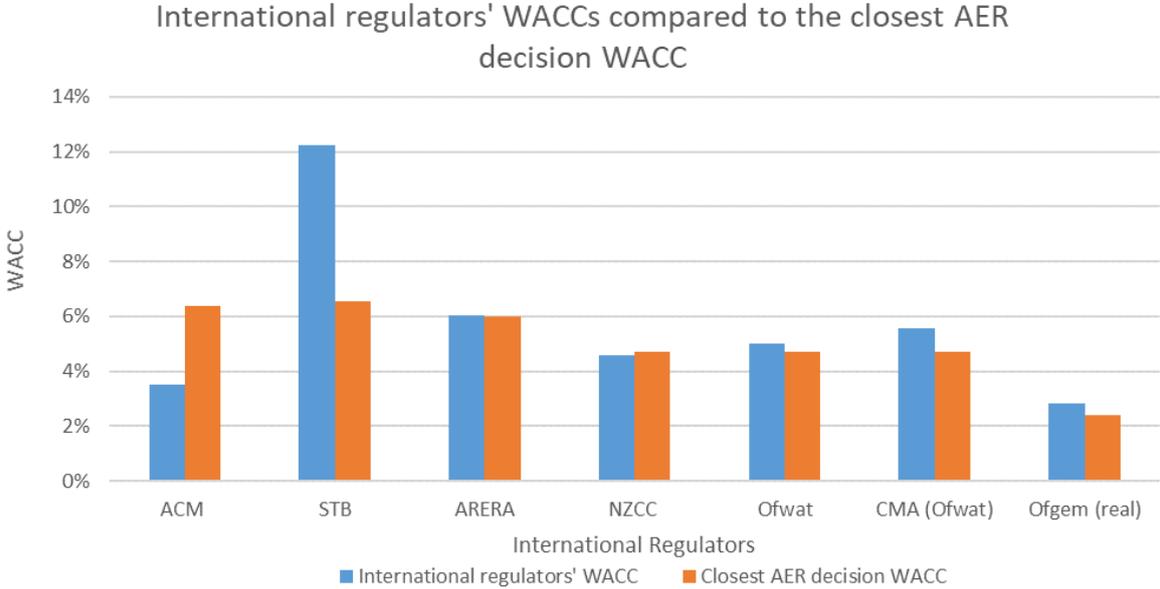
- Ofgem’s July 2020 draft determination and December 2020 final determination
- The Competition and Markets Authority’s (CMA) September 2020 provisional decision on Ofwat appeals

We also take the opportunity to rebase some of the material (estimates of equity beta and the risk free rate) in the Brattle report so it is more readily comparable.

5.1 Comparison against AER decisions across time

Figure 1 compares WACCs that are in vanilla nominal terms except for Ofgem which reported a real vanilla WACC that could not be converted as the inflation rate was not specified. Ofgem's values presented in Figure 1 relate to the values for the National Grid Electricity Transmission (NGET) and the Scottish Power Transmission (SPT). These values were released in the December 2020 Ofgem final determinations.

Figure 1 International regulators' WACCs compared to the closest AER decision WACC



Notes: The values included in the figure reflect regulators' reported values and Brattle's adjustments to the values in table 2 are not included. The Competition and Market Authority (CMA) decision was reported in real terms. These values have been converted into nominal terms using the fisher equation and CMA's CPIH inflation rate of 2%.

Source: AER, *Final decision- United Energy distribution determination 2016 to 2020, Attachment 3- Rate of return*, May 2016, p. 11; AER, *Final decision- Energex distribution determination 2020 to 2025, Attachment 3- Rate of return*, June 2020, p. 6; AER, *Final decision- TransGrid transmission determination 2018 to 2023, Overview*, May 2018, p. 22; AER, *Final decision- Energex determination 2015- 16 to 2019- 20, Attachment 3- Rate of return*, October 2015, p. 11

Table 2 to Table 4 break down international regulators' WACC into different elements to allow better comparison with the closest AER decision based on the risk free rate averaging period:

- Table 2 compares our 2020 Energex decision against the NZCC, Ofwat and CMA decisions.
- The FERC was not included as it does not provide a specific WACC estimate.¹⁰¹

We observe that:

- The difference with our allowance continues to vary across regulators. Once again this is driven by their respective methodological choices, regulatory framework and discretion.
- The ACM (2016) and STB decisions showed the largest difference compared to the AER's WACC:
 - The ACM's lower rate of return was due to the 3.43% difference in the cost of debt compared to the AER.
 - The STB's cost of equity was 6.46% higher than the AER's value and the STB had a low gearing value of 16.92%. The higher cost of equity was driven by the use of the DGM, a higher equity beta in respect of railroads and longer-term risk free rate.

Table 2 Comparison of international regulators' decision against the AER's Energex June 2020 decision in nominal terms

	AER's 2020 Energex decision	NZCC	Ofwat	CMA (Ofwat)
Return on equity	4.69%	5.87%	6.27%	7.18%
Return on debt excluding debt raising costs	4.76%	2.72%	4.08%	4.40%
Gearing	60%	42%	60%	60%
WACC	4.73%	4.57%	5.02%	5.57%

Source: Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 49; CMA, *Anglian water services limited, Bristol water plc, Northumbrian water limited and Yorkshire water services limited price determinations, Provisional findings*, September 2020, p. 674; AER, *Final decision, Energex distribution determination 2020 to 2025, Attachment 3 – Rate of return*, June 2020, p. 6; AER analysis.

Ofgem's December 2020 final determination also had a risk free rate averaging period close to the one used in Energex's 2020 decision. However, Ofgem's figures were reported in real terms hence, we have compared them against the real values of the AER's 2020 Energex decision in Table 3.

¹⁰¹ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 49.

Table 4 compares the ACM, STB and ARERA decisions against the closest AER decisions. Brattle reported ARERA's estimates in real terms hence, we have converted them into nominal values using the Fisher equation and the ARERA's expected inflation of 1.70% in Table 4.

Table 3 Comparison of Ofgem's decision against the AER's Energex June 2020 decision in real terms

	AER's 2020 Energex decision in real terms	Ofgem
Return on equity	2.37%	4.02%
Return on debt excluding debt raising costs	2.43%	1.82%
Gearing	60%	55%
WACC	2.41%	2.81%

Source: Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 71.; AER, *Final decision, Energex distribution determination 2020 to 2025, Attachment 3 – Rate of return*, June 2020, p. 6; Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 49; AER analysis.

Table 4 Comparison of international regulator decisions against closest AER decisions in nominal terms

	AER's 2018 TransGrid decision	STB	AER's 2015 Energex decision	ARERA	AER's 2016 United Energy decision	ACM
Return on equity	7.40%	13.86%	7.50%	7.57%	7.50%	5.02%
Return on debt excluding debt raising costs	5.97%	4.16%	5.01%	4.13%	5.62%	2.04%
Gearing	60%	16.92%	60%	44%	60%	50%
WACC	6.54%	12.22%	6.01%	6.04%	6.37%	3.53%

Source: Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 49; AER, *Final decision, TransGrid transmission determination 2018 to 2023, Overview*, May 2018, p. 22; AER, *Final decision, Energex determination 2016-16 to 2019-20, Overview*, October 2015, p. 23; AER, *Final decision, United Energy distribution determination 2016 to 2020, Attachment 3 – Rate of return*, May 2016, p. 11; AER analysis.

Table 5 compares the equity betas of international regulators against the closest AER decisions used in Table 2 to Table 4. International regulators use different methodologies and assumptions to estimate equity beta. To allow for a consistent comparison, we used the Brealey-Myers formula¹⁰² to calculate the adjusted equity beta for each regulator. We assume a debt beta of zero and a gearing value of 60% as inputs in the Brealey-Myers formula which aligns with the assumptions incorporated by the AER. The asset beta for each regulator is determined by dividing each regulator's original equity beta value by the gearing value used by the regulator.

Table 5 displays the adjusted equity beta calculated using the AER's approach and compares the equity beta values against the closest AER decision. The last two columns in Table 5 present the differences in equity beta values before and after we have adjusted equity beta to align with the AER's approach.

Regulators marked with an asterisk in Table 5 indicate that we have included the adjustments made by Brattle in their report.

- The original equity beta in NZCC* has been multiplied by 1.09 to account for the NZCC's uplift of the allowed rate of return to the 67th percentile.¹⁰³
- Brattle multiplies Ofgem's values by 1.01 to disregard Ofgem's 0.5% adjustment for outperformance.¹⁰⁴ However, Ofgem's latest decision reduces the outperformance adjustment from 0.5% to 0.22%. In Table 5, the original equity beta in Ofgem* is multiplied by the adjustment factor of 0.94 which has been recalculated to account for the updated outperformance adjustment.

Table 5 Further comparison of equity beta

Inter-national regulator	Original equity beta	Gearing	Adjusted equity beta	AER equity beta	Difference before adjustment	Difference after adjustment
ACM	0.74	50%	0.79	0.70	0.04	0.09
FERC	0.84	60%	0.84	0.60	0.24	0.24
STB	1.11	16.92%	1.52	0.70	0.41	0.82
ARERA	0.71	44%	0.78	0.70	0.01	0.08
NZCC	0.60	42%	0.68	0.60	0.00	0.08
NZCC*	0.65	42%	0.74	0.60	0.05	0.14
Ofgem	0.76	55%	0.78	0.60	0.16	0.18
Ofgem*	0.71	55%	0.74	0.60	0.11	0.14

¹⁰² AER, *Draft rate of return guidelines, Explanatory statement*, July 2018, p. 292.

¹⁰³ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 55.

¹⁰⁴ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 56

Ofwat	0.71	54.2%	0.74	0.60	0.11	0.14
Ofwat (CMA)	0.76	54.2%	0.79	0.60	0.16	0.19

Notes: All Ofgem values refer to the December 2020 values for the electricity transmission industry. FERC does not explicitly state a gearing value hence, we have assumed a gearing ratio of 60%. Ofwat de-levers equity beta to asset beta using an actual gearing estimate of 54.2% rather than a notional gearing value of 60%. Regulators marked with an asterisk indicate that an adjustment has been made in the Brattle report for easier comparison.

From Table 5, we observe that international regulators' original equity beta value tend to be higher than or equal to our value. In particular:

- The US regulators have the largest difference. This is likely driven by the FERC using the most recent 5 years of data and the Blume adjustment to estimate beta.¹⁰⁵ Further, the STB's equity beta reflects the railroads industry.¹⁰⁶
- The UK regulator values are around 0.1 higher than our equity beta value. We observe some methodological differences with our approach:
 - While the Ofgem and Ofwat use a relatively small comparator sample (consisting of 5 and 2 firms respectively), they are the only regulators to assign a value to debt beta. Brattle has also uplifted the equity beta value due to the Ofgem's cross-checks.¹⁰⁷
- The NZCC, ACM and ARERA set a similar equity beta value as us.
 - We note the ACM applies the Dimson and Vasicek adjustments.¹⁰⁸
 - The NZCC uses a large comparator sample (70) and re-levers to a notional gearing value of 42%
 - The ARERA selects sector-specific asset betas from the comparator group and then re-levers it using the Modigliani- Miller formula to derive equity beta values.

5.2 2020 draft and final Ofgem decisions

The Brattle report mentioned that Ofgem would publish its draft and final rate of return determinations sometime in 2020.¹⁰⁹ The draft and final decisions were released in July and December respectively, after the Brattle report was finalised.¹¹⁰

Therefore, we have compared the Ofgem's updated values against those used in the Brattle report. The Ofgem draft and final determinations assigned specific values to UK electricity transmission companies and the gas industry.

¹⁰⁵ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 43. The Blume adjustment moves the estimated equity beta towards one to correct for the tendency for equity beta to regress towards one. See: Olan T. Henry, *Econometric advice and beta estimation*, November 2008, p. 11.

¹⁰⁶ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 41

¹⁰⁷ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 56

¹⁰⁸ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 43

¹⁰⁹ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 120

¹¹⁰ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, p. 92

Table 6 lists the updated Ofgem values that apply to overall rate of return decisions. These values are expressed in consumer price index including owner occupiers' housing costs (CPIH) adjusted terms.¹¹¹

Table 6 Ofgem's draft determination overall values

Parameter	Values in Brattle report ¹¹²	July 2020 Ofgem draft values ¹¹³	December 2020 Ofgem final values ¹¹⁴
Risk free rate	-0.75%	-1.48%	-1.58%
MRP	7.25%	7.98%	8.08%
Total market return	6.50%	6.50%	6.50%
Debt beta	0.125	0.125	0.075
Asset beta	0.38	0.365	0.349
Notional equity beta	0.75	0.72	0.759
Adjustment for cross checks	0.10%	0.10%	No adjustments were applied.

The majority of updated values decreased compared to the figures in the Brattle report with the exception of the MRP which increased by 0.83% in the final decision. Equity beta decreased in the draft determination but increased to 0.759 in the final decision due to changes in debt beta.

Table 7 displays Ofgem values from the draft determination that are specific to businesses and the gas sector.¹¹⁵ The values are expressed in CPIH adjusted terms. Notional gearing for electricity transmission businesses was reduced from 60% to 55%.

Table 7 Ofgem's draft determination sector and firm specific values¹¹⁶

Parameter	SHET	NGET & SPT	GT & GD
Allowed return on debt (pre-tax)	1.47%	1.74%	1.74%
Notional gearing	55%	55%	60%

¹¹¹ CPIH stands for Consumer Price Index including owner occupiers' Housing costs.

¹¹² Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 121.

¹¹³ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, pp. 48, 65.

¹¹⁴ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 24.

¹¹⁵ The UK electricity transmission companies are the Scottish Hydro Electric Transmission (SHET), National Grid Electricity Transmission (NGET) and the Scottish Power Transmission (SPT). The gas industry includes gas transmission (GT) and gas distribution (GD).

¹¹⁶ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, p. 92.

Cost of equity (post- tax)	3.93%	3.93%	4.20%
Expected outperformance	0.22%	0.22%	0.25%
Allowed return on equity	3.70%	3.70%	3.95%
Allowed return on capital	2.47%	2.63%	2.63%

Note: The short forms included in the above table refer to:

- Scottish Hydro Electric Transmission (SHET)
- National Grid Electricity Transmission (NGET)
- Scottish Power Transmission (SPT)
- Gas transmission (GT)
- Gas distribution (GD)

We observe that the Brattle report did not state separate values for each UK electricity transmission company nor were specific values stated for the gas transmission or gas distribution sectors.¹¹⁷

Different notional gearing values were noted for specific firms and sectors:¹¹⁸

- SPT's analysis suggested that an assumption of 60% or 55% would provide a stable investment grade credit rating that aligns with regulatory precedent.
- SHET indicated that a reduction in notional gearing was required to improve cashflows and maintain their target notional company rating.
- NGET suggested that a notional gearing of 55% could lead to the network being considered financeable but also expressed concern that at these levels, financial structures are not efficient and sustainable in the long term.

The Ofgem considered return on regulatory equity (RoRE) analysis, financeability, market benchmarks, financial ratios and stress test results before proposing the notional gearing values in Table 7.¹¹⁹ The cost of equity (post tax) also differed across firms and sectors. A cost of equity of 4.30% was derived from the estimated CAPM parameters for gas transmission (GT) and distribution (GD).¹²⁰ After considering cross checks and exercising judgment, this value was lowered to 4.20%. From Table 7, we observe the remaining sectors and firms have a cost of equity (post tax) of 3.93%. This value assumes the cost of capital is identical at 60% and 55% gearing.¹²¹

Table 8 displays key Ofgem values from the final determination that are specific to relevant regulated businesses and the gas transmission sector.

¹¹⁷ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 121

¹¹⁸ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, pp. 106–107.

¹¹⁹ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, pp. 107–110.

¹²⁰ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, p. 65.

¹²¹ Ofgem, *RIO-2 Draft determinations- Finance Annex*, July 2020, p. 92.

Table 8 Ofgem's final determination, sector and firm specific values¹²²

Parameter	SHET	NGET & SPT	GT, SGN south & Cadent ¹²³	SGN scot, NGN & WWU ¹²⁴
Allowed return on debt (pre-tax)	1.59%	1.82%	1.82%	1.88%
Notional gearing	55%	55%	60%	60%
Cost of equity (post- tax)	4.25%	4.25%	4.55%	4.55%
Expected outperformance	0.22%	0.22%	0.25%	0.25%
Allowed return on equity	4.02%	4.02%	4.30%	4.30%
Allowed return on capital	2.69%	2.81%	2.81%	2.85%

Notes: Similar to the Ofgem draft decision, the cost of equity (4.25%) assumes the cost of capital is identical at 60% and 55% gearing.¹²⁵

Ofgem applies an upward adjustment to the iBoxx Utilities 10yr+ index to account for additional borrowing costs.¹²⁶ The value of this adjustment increased from 0.17% in the draft decision to 0.25% in the final decision. The adjustment in the final decision included an extra 5 basis points allowance to cover potential additional costs of CPI/CPIH new debt issuance and RPI/ CPIH embedded debt basis mitigation.

Ofgem increased the allowed return on equity in the final decision due to the changes in the risk free rate, debt beta and adjustment for cross checks:

- Ofgem's risk free rate in the final decision decreased by 0.1% compared to the draft determination.¹²⁷ Ofgem maintained its risk free rate estimation methodology from the draft decision but used October 2020 data rather than May 2020 data to determine the risk free rate in the final decision.¹²⁸
- Ofgem reduced the debt beta estimate by 0.05 to 0.075 in the final determination.¹²⁹ This decision was informed by stakeholders' views presented in the consultation period and CMA's provisional range of 0 to 0.15 assigned to debt beta in the PR 19 provisional findings for Ofwat's disputing companies.¹³⁰

¹²² Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 71.

¹²³ GT stands for gas transmission. SGN south and Cadent Gas (Cadent) are British gas distribution companies.

¹²⁴ SGN scot, Northern Gas Networks (NGN) and Wales & West Utilities (WWU) are British gas distribution companies.

¹²⁵ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 71.

¹²⁶ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, pp. 14–15.

¹²⁷ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 24.

¹²⁸ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, pp. 26–27.

¹²⁹ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 24.

¹³⁰ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 41.

- Ofgem reduced the allowed return on equity by 10 basis points due to cross checks in the draft decision.¹³¹ However, stakeholders did not support Ofgem’s market cross-checks and stated that using a lower value for the return on equity was not a justified use of regulatory discretion. In the final decision, Ofgem’s cross checks indicated a 15 basis points downward adjustment to the return on equity but Ofgem decided not to implement the adjustment.¹³²

5.3 Appeals on the Ofwat's decision

Brattle's analysis on the Ofwat's allowed rate of return was based on the regulator's PR 19 final determination made in December 2019.¹³³ However, four regulated companies disputed the Ofwat's decision.¹³⁴ They considered that Ofwat had¹³⁵:

- provided insufficient funding to deliver business plans including enhancement expenditure to improve resilience
- failed to recognise the link between costs incurred and delivering higher levels of service
- inappropriately settled on too low a cost of capital
- given insufficient weight to evidence on the views of customers
- increased levels of risk for companies and together with the other elements of the determination this had undermined financeability

Since the disputing companies raised these issues within two months of the determination, the matter was referred to the Competition and Markets Authority (CMA). The CMA published a report containing the provisional price control determinations for the four disputing companies in September 2020.¹³⁶ After analysing stakeholders' responses to the provisional determination, the CMA aims to send the final determinations to Ofwat by mid-February 2021.¹³⁷

In the provisional determination, the CMA proposed an appointee-level vanilla WACC¹³⁸ that was 0.54% higher than the Ofwat's final determination.¹³⁹ The appointee-level vanilla WACC is the cost of capital raised at the overall company level before a retail margin adjustment is

¹³¹ Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 24.

¹³² Ofgem, *RIO-2 Final determinations- Finance Annex*, December 2020, p. 55.

¹³³ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 129.

¹³⁴ CMA, *Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations – Provisional findings*, 29 September 2020; The four disputing companies were Anglian Water Services Limited (Anglian), Bristol Water plc (Bristol), Northumbrian Water Limited (Northumbrian) and Yorkshire Water Services Limited (Yorkshire).

¹³⁵ CMA, *Anglian, Bristol, Northumbrian and Yorkshire water determinations, Provisional findings*, September 2020, pp. 73–74.

¹³⁶ CMA, *Anglian, Bristol, Northumbrian and Yorkshire water determinations, Provisional findings*, September 2020.

¹³⁷ CMA, *Ofwat price determinations– Administrative timetable*, April 2020, available at <https://www.gov.uk/cma-cases/ofwat-price-determinations>.

¹³⁸ The WACC before a retail adjustment is made.

¹³⁹ CMA, *Anglian, Bristol, Northumbrian and Yorkshire water determinations, Provisional findings*, September 2020, p. 673.

applied. Ofwat distinguishes between wholesale and retail controls.¹⁴⁰ The retail margin adjustment accounts for a lower level of systematic risk in wholesale businesses.¹⁴¹

The CMA noted that estimates of the cost of equity will be subject to greater error than the cost of debt and their estimates of equity may not align with the actual cost of equity.¹⁴² Therefore, they considered it necessary to 'aim up' to the 75th percentile on cost of equity metrics to account for this uncertainty.¹⁴³

We observed that:

- the majority of the CMA's parameters are higher than the Ofwat's final decision
- the risk free rate and total market return had the largest increase in values
- there were no changes to gearing, issuance and liquidity costs and CPIH estimates

Ofwat has released a report written by Wright and Mason in October 2020 which provided an independent assessment of the CMA's parameter estimates of the cost of capital.¹⁴⁴ The report stated that both Ofwat and CMA had overestimated the WACC. Some key observations from the Wright and Mason report were:¹⁴⁵

- CMA's calculation of the 75th percentile had an unacknowledged source of upward bias.¹⁴⁶ Wright and Mason did not think that adjusting the WACC was an appropriate way to deal with concerns about asymmetry of returns created by performance incentives.
- CMA had aimed up implicitly in its approach and in setting the ranges for the components of the cost of equity which were already high.¹⁴⁷ There is no merit in any of the CMA's arguments relating to 'aiming up'.

¹⁴⁰ Brattle, *A review of international approaches to regulated rates of return*, June 2020, p. 131.

¹⁴¹ Ofwat, *PR19 final determinations, Allowed return on capital technical appendix*, December 2019, p. 15.

¹⁴² CMA, *Anglian, Bristol, Northumbrian and Yorkshire water determinations, Provisional findings, September 2020*, pp. 670–671.

¹⁴³ CMA, *Anglian, Bristol, Northumbrian and Yorkshire water determinations, Provisional findings, September 2020*, p. 677.

¹⁴⁴ Ofwat, *Reference of the PR19 final determinations: Risk and return, Response to CMA provisional findings*, October 2020, p. 4.

¹⁴⁵ Wright and Mason, *Comments prepared for Ofwat on the CMA's provisional findings Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Cost of capital considerations*, October 2020, p. 31. (Wright and Mason, *Comments for Ofwat on the CMA's provisional findings: Cost of capital*, October 2020).

¹⁴⁶ Wright and Mason, *Comments for Ofwat on the CMA's provisional findings: Cost of capital*, October 2020, p. 22.

¹⁴⁷ Wright and Mason, *Comments for Ofwat on the CMA's provisional findings: Cost of capital*, October 2020, pp. 26–27.

6 Application in the 2022 Instrument Review

In this section we set out our proposed positions on the options we raised in our draft working paper. We have advanced our thinking and formed views based on the consultation and engagement process. The options and proposed approaches are summarised in Table 9.

Table 9 Summary of options raised in our draft working paper

Options	Our proposed approach
Increasing the frequency of the rate of return reviews and updates	Maintain the current frequency and implementation of reviews and updates.
Annual updates of the risk free rate	Continue to set the risk free rate only at the beginning of each reset period.
Rate of return adjustments for incentive schemes	Do not make adjustments for expected incentive scheme outcomes.

We have not covered the full range of options in this paper. Our companion *CAPM and alternative return on equity models* paper covers those that are related to the estimation of return on equity parameters and use of equity models.¹⁴⁸

6.1 Frequency of reviews and updates

Our view is to maintain the current frequency and implementation of the rate of return reviews. This includes reviewing the rate of return instrument every four years and applying it to the subsequent resets for each regulated business.

Networks have submitted that all return on equity parameters should be estimated consistently. However, they have acknowledged that it is difficult and impractical to increase the frequency of reviews which was noted in the draft working paper and we agree.

The current review frequency (four years) was determined after consideration in 2018 by the Council of Australian Governments Energy Council. To change the frequency before the first cycle is complete would require extensive new information. The four year period is also set in the National Electricity Law (NEL) and National Gas Law (NGL). It would require legislative action (i.e. could not be changed by the Australian Energy Market Commission (AEMC) or the AER).¹⁴⁹

The complex and inter-related nature of the rate of return review requires a lengthy review process with time for stakeholder consultation. More frequent reviews would risk inadequate consideration of issues and increase the resourcing burden on stakeholders. We consider that the current four year cycle provides a good balance allowing our approach to be updated

¹⁴⁸ AER, *CAPM and alternative return on equity models—Final working paper*, December 2020.

¹⁴⁹ AER, *Rate of return instrument, Explanatory statement*, 17 December 2018, p. 23.

while providing predictability for stakeholders. It also allows those with limited resources to engage at discrete points.

Networks have raised different options for more 'automatic' or 'formulaic' updates of return on equity parameters in the instrument. These options are considered in our working paper on return on equity models and future work is identified.

We do not think it would be desirable for review outcomes to immediately flow through to all regulated networks (even those in the middle of a regulatory control period). This would lead to greater uncertainty for businesses and consumers around revenue and prices. Most international regulators also do not update their equity beta or market risk premium estimates within a regulatory period nor do they appear to adopt an automatic or formulaic approach to updating return on equity parameters.

We also observe that MEU supports our current review cycle and implementation because investors tend to use longer term estimates of equity returns.

6.1.1 Annual update to the risk free rate

Our view is to not update the risk free rate (and consequently the return on equity) annually.

In the draft working paper, we raised this option because the risk free rate can be readily observed over a short averaging period prior to the start of each year and there is general agreement on its proxy (unlike the equity beta and the market risk premium). It may also partially address Brattle's concern about applying an out-of-date rate of return and the need for more forward looking information.

From the submissions, we observe that stakeholders did not support this option. The CRG noted that this would introduce additional complexity and volatility and transfer risk to consumers. The APGA noted that this would not address its view that all return on equity parameters should be updated at the same time. Given the lack of stakeholder support, our view is to not pursue this option:

- The Brattle report noted it would not be correct to update one element of the return on equity in isolation
- We consider setting the return on equity at the beginning of each reset on an ex ante basis is consistent with other building blocks and the NPV = 0 principle.
- Annual return on debt updates are driven by interest rate risk which does not apply to the return on equity.
- Annually updating the risk free rate would increase volatility and uncertainty for regulated businesses and consumers.

6.2 Adjustments for incentive schemes

We do not intend to adjust the rate of return for expected incentive scheme outperformance.

We aim to set an efficient rate of return that is neither too high nor too low as part of our regulatory objectives which means that consumers pay no more than is necessary. This is consistent with CRG's view that we should aim to avoid selecting 'high' side values.

Incentive schemes are designed to incentivise efficient behaviour from regulated businesses. We agree with networks' view that the rate of return should be set independent of incentive schemes. Any expected outperformance would reflect those schemes' design and should be addressed through adjusting those schemes rather than the rate of return. This also has agreement from APGA.

We note CRG's submission on incentives for businesses to lower their cost of capital and sharing benefits with consumers. We will consider CRG's suggestion going forward. We use market data (along with other information) to inform our rate of return. This allows the rate of return to adjust to reflect market practice and the prevailing cost of capital over time. Depending on market movements, parameters may move up or down and the costs (or benefits) will be shared with consumers.

Our rate of return processes and incentive schemes are designed to promote the long term interests of consumers. We consider the current incentive framework provides regulated businesses with incentives to reduce their cost of capital.

We caution against focusing on just the rate of return and incentive schemes and/or reviewing these schemes purely in the context of the rate of return. The inter-relationships with other aspects of the revenue requirement in our regulatory decisions are important including the incentives for regulated businesses to outperform the benchmark.

We consider that incentive schemes should be addressed in the context of an overall review of our combined incentive package. We are currently scoping a review of incentive schemes.¹⁵⁰

¹⁵⁰ For example: AER, *Draft decision, Citipower Distribution Determination 2021 to 2026 Overview*, September 2020, p. 5.

7 Further work

This section outlines the further work we propose to undertake in response to stakeholder submissions.

As outlined in chapter 4, many of the stakeholder submissions made suggestions for changes in the AER's overarching assessment approach. These suggestions were not specific to one area, but went to the AER's overall process for assessing information and forming a position in the 2022 Instrument. In some cases stakeholders raised these issues after comparison against overseas regulatory approaches.

Table 10 below notes key points from the three larger submissions (the APGA, CRG and ENA) that relate to the AER's assessment approach. We have categorised them under two themes—trust in the assessment process, and principles for how the AER assesses evidence.¹⁵¹ Broadly similar points were raised in several other submissions.¹⁵² We have also noted two earlier submissions.

Table 10 Key themes from APGA, CRG and ENA submissions

Theme	APGA	CRG	ENA
Trust in the assessment processes (section 7.1)	<ul style="list-style-type: none"> • Rebuild stakeholder confidence following 2018 review* • Test for a robust approach under different scenarios 	<ul style="list-style-type: none"> • Importance of consumer trust • The CRG's legislated role • Assess current incentives for efficient financing and use revealed costs (or change from the incentive framework) 	<ul style="list-style-type: none"> • Enhance stakeholder confidence following 2018 review* • Test for a robust approach under different scenarios
Principles for how the AER assesses evidence (section 7.2)	<ul style="list-style-type: none"> • Avoid behavioural biases: <ul style="list-style-type: none"> - Anchoring bias - Confirmation bias - Overconfidence bias 	<ul style="list-style-type: none"> • Adopt five consumer principles: <ul style="list-style-type: none"> - Engender consumer confidence - Test consumer price impact - Test consumer service impact - Risks allocated to those who can manage risk - High bar for change • Assess consumption efficiency, not just investment efficiency 	<ul style="list-style-type: none"> • Add three principles: <ul style="list-style-type: none"> - Materiality - Preponderance of evidence - Regulatory consistency • Follow market practice over theoretical constructs

Notes: * These points were expressed in earlier submissions from the APGA and ENA. See APGA, *Submission to the AER, Pathway to 2022 rate of return instrument*, 17 January 2020, pp. 6–7; ENA, *Pathway to the 2022 Rate of return instrument, Response to consultation paper and rate of return annual update*, 20 December 2019, pp. 3–8.

¹⁵¹ APGA, *Submission on return on equity models and international approaches to the rate of return*, October 2020; ENA, *Best-practice framework for setting the allowed return on equity*, October 2020; CRG, *Submission to AER return on equity*, 9 October 2020.

¹⁵² This table is to assist the reader to understand the structure of our response, and is not intended to overlook those other submissions

The first sections of this chapter assess those submissions and explain how they might be reflected in our future work. There were also more specific suggestions for our future work program, which we have addressed towards the end of this chapter. This leads to the following structure:

- Trust in the assessment process—section 7.1
- Principles for how the AER assesses evidence—section 7.2
- Cross checks—section 7.3
- Financeability—section 7.4
- Differences between gas and electricity—section 7.5.

7.1 Trust in the assessment process

As noted in chapter 4, consumer submissions indicated they did not have a high level of trust in the AER, the regulatory framework or networks. This aligns with a number of earlier CRG submissions across the AER's regulatory processes.¹⁵³

We agree that it is vital that all stakeholders—consumers, networks, retailers, investors—have confidence in our regulatory process and the framework more broadly.

We aim to run a process that builds stakeholder trust because it is:

- **Consultative** – with multiple stages of consultation, multiple formats for engagement, and opportunity for comment on all key components of the Instrument.
- **Transparent** – both about our process for developing the instrument, and our assessment of evidence (in other words, the reasoning that leads us to the 2022 Instrument).
- **Rigorous** – reflected in the time taken, the depth of consideration and analytical examination of material, as well as scrutiny from independent panel review.
- **Evidence based** – we evaluate all information submitted to us based on the merit of that evidence, and no evidence is afforded special status or weight simply because of the stakeholder providing it.

The consultative nature of our review is critical. We want stakeholders to know that:

- They will have opportunity to speak.
- Their views will be heard and understood (by the AER, but also by other stakeholders).
- We will explain our reasoning in response to those views (even if we do not agree with the stakeholder's position).

Given the technical nature of much rate of return content, we also need to explain in accessible terms our key narratives and reasoning, so as to communicate effectively with stakeholders who do not have a technical finance/economic background.

¹⁵³ See CRG, *Submission to AER rate of return review, Debt data working paper*, 14 August 2020, p.10; CRG, *Advice to the AER on the regulatory treatment of inflation*, 6 November, 2020, p. 19.

Our key considerations are:

- We acknowledge the CRG's unique role in facilitating consumer perspectives entering the review. A key purpose of the CRG is to address the information and resource asymmetries that otherwise might restrict consumer participation in these processes. We remain committed to an even-handed assessment of material from all stakeholders in accordance with the merits of the evidence submitted.
- Stakeholder trust (from consumers, networks, investors, retailers) in our regulatory process is vital. We are open to further improvements in our processes to build trust, particularly when we are engaging with consumers about technical content.
- We have legislated objectives that guide our decision making. We are unable to elevate the CRG's consumer principles or the ENA's assessment principles to that level, but these are relevant to our objectives and overlap with our current assessment approach.
- We agree that consumption efficiency is an important part of our legislated objective and further work may be required to improve our explanation and link our rate of return assessment to consumer outcomes.
- It is difficult to assess revealed outcomes in the rate of return. However, the rate of return parameters can change (and have changed) over time to reflect our assessment, and this is compatible with a benchmark incentive framework.

7.2 Principles for how the AER assesses evidence

In chapter 4, we summarised several stakeholder suggestions for principles or criteria the AER should use when assessing evidence as part of the rate of return review.¹⁵⁴ The APGA provided a list of 'behavioural biases' that the AER should avoid. The CRG also provided a set of principles it would like to see us adopt. The ENA suggested three principles for the AER's assessment task, as well as a focus on 'real-world' outcomes.

Statutory requirements—founded on the NEO and NGO, and the Revenue and pricing principles (RPPs)—guide our decision making.

The National Electricity Objective is:

...to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- price, quality, safety and reliability and security of supply of electricity
- the reliability, safety and security of the national electricity system.

The National Gas Objective is:

to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

We assess our decisions against these key objectives. We must focus on these requirements and must not promote alternative objectives or principles above the NEO and NGO. Therefore, we are unable to elevate the CRG's consumer principles to that level.

¹⁵⁴ CRG, *Submission to AER Return on equity*, 9 October 2020, p. 4, ENA, *Best-practice framework for setting the allowed return on equity*, October 2020, p. 27–28.

However, the NEO and NGO and the revenue and pricing principles (RPPs) that support them are high level objectives that require judgement and balance in decision making. We therefore encourage stakeholder submissions to assist us apply the legislated objectives and principles in our regulatory decisions.

We see overlap between the CRG's consumer principles and the way we currently look to implement the NEO/NGO and RPPs. We will further consider whether these principles can assist us in applying the NEO/NGO going forward.

We also see that the AGPA's submission has overlap with our approach. We assess material and information based on their strengths, limitations and suitability for our regulatory task. In looking at how others adjust the rate of return, we need to be mindful of their objective and context for making those changes.

7.2.1 Consumption efficiency

A particular point of focus for the CRG submission was consumption efficiency. It noted the NEO/NGO requirement to promote 'efficient investment in, and efficient operation and use of' energy network services, and stated:¹⁵⁵

The CRG considers the AER's selection of model(s) and the approach to each parameter in the model(s) must clearly address both efficient investment and efficient consumption.

Further, we contend to date, the AER has not adequately addressed its obligation to equally consider efficient investment and efficient consumption.

We agree that consumption efficiency is an important aspect of efficiency and part of our legislated objective. We are open to improvements in how we assess consumption efficiency, and in how we explain that reasoning in our decision documents. Further work may be required to improve our explanation and link our rate of return assessment to consumer outcomes. However, we do not agree that we inadequately assessed this aspect in developing the 2018 instrument.

There appear to be three key strands to this CRG concern:

- Consumption efficiency as economic efficiency—consumers paying too much or too little for energy will make distorted consumption decisions (including downstream investment decisions), such that the most valued use of resources is not achieved.
- Consumption efficiency as a matter of consumer trust and behavioural economics—consumers won't make efficient or rational choices around their energy consumption if they don't trust the regulatory regime.
- Consumption efficiency as a reflection of consumer preferences—consumers should be allowed an informed choice about the level of return and risk they accept.

Consistent with the 2018 review, we recognise that the regulated rate of return flows through to affect consumer prices and so the delivery of productive, allocative and dynamic efficiency at that level. In this context, a reasonable starting point is that an accurate assessment of the rate of return will contribute, all else equal, to efficient consumption of energy services.

¹⁵⁵ CRG, *Submission to AER, Return on equity*, 9 October 2020, p. 13.

Downstream energy consumption decisions will be affected by the overall prices paid by consumers. In this context, we consider other components of our decision are also important especially the path we are taking on reforming tariff structures and price signals for consumers.

Consistent with the 2018 review, we see that energy has a substantial impact on all aspects of social and economic activity and consideration of these impacts will be a feature in our decision making.

7.3 Cross checks

All stakeholders outlined the importance of cross checks in estimating the rate of return. They also noted various recommendations on how to best incorporate cross checks in the 2022 Instrument. Several stakeholders (such as the APGA and ENA) suggested identifying potential cross checks and establishing a clear framework on the application of cross checks and the consequences if one was breached. The CRG highlighted the need to explain the relevance of cross checks to the ex-ante estimation of the return on equity. Various stakeholders stated that cross checks and market reasonableness tests should be verified by an independent panel of experienced practitioners.

We will conduct further work on cross checks to assess their suitability in informing the 2022 Instrument. Cross checks may provide information that indicates the suitability of our rate of return estimates. However, they also face limitations such as:

- comparability
- timeliness
- adjustments made to suit a different objective
- not necessarily indicating how much the regulatory rate of return is different to that required by investors.

7.4 Financeability

Networks submitted that financeability tests should be applied when estimating the rate of return while consumers considered that there appears to be no issue with raising funds for regulated businesses.

The 2018 Instrument did not use financeability tests to inform the rate of return.¹⁵⁶ This was because there was no clear guidance on the assumptions that should be used in any financeability assessment as a cross check on the benchmark parameters in the Sharpe-Linter CAPM that we are using in our foundation model. We were of the view the appropriateness of these parameters should be based on the evidence examined in determining these parameters.

We are open to further submissions on the possible use of financeability tests for informing the 2022 Instrument. As with our assessment of all material, this would be based on an assessment of their strengths, limitations and suitability for our regulatory task.

¹⁵⁶ AER, *Rate of return instrument – Explanatory statement*, December 2018, p. 392.

7.5 Differences between gas and electricity

The APGA submitted that gas pipelines face significant uncertainty due to their unclear role in renewable energy whereas electricity networks do not face the same risks. APGA recommended setting a rate of return for gas pipelines which reflected the higher risk in the sector compared to electricity networks. Brattle also noted that in some cases overseas regulators apply different approaches to the two sectors.

We agree that we are legislatively able to specify a rate of return that differs between regulated gas and electricity networks. In the 2018 Instrument, we implemented a consistent equity beta across both sectors after carefully considering the case for different beta estimates. Our analysis found that equity beta for regulated gas and electricity firms was likely to be similar because they are regulated natural monopolies with similar regulatory frameworks which limit systematic risk exposure.¹⁵⁷

However, we do not presume that this finding will remain unchanged. We propose to examine this issue later in the review. We will investigate the evidentiary basis for a different allowed rate of return between gas pipelines and electricity networks. In particular, we will consider the impact of the different sectors on equity beta and comparator sets.

¹⁵⁷ AER, *Rate of return instrument – Explanatory statement*, December 2018, p. 175.

8 Glossary

Below are accessible explanations of some specialised financial terms used in this paper.

- **Averaging period** – The specified days (or weeks or even months) when we observe market data to inform our estimate of specific rate of return parameters.
- **Benchmark term** – This is the term to maturity of government bonds or debt we set that is used to calculate specific rate of return parameters. The term to maturity at issuance is the time between when an instrument is issued and its maturity date.
- **Capital Asset Pricing Model (CAPM)** – The CAPM is a model that estimates the required return on equity using three parameters: the risk free rate, beta and the market risk premium. It says that the required return on an investment will be related to the systematic risk of the investment. Here 'systematic risk' means risk that cannot be diversified away (by multiple investments in different companies across the market). An investment with higher risk will have a higher required return.
- **Consumer Price Index (CPI)** – The CPI is a common measure of inflation published by the Australian Bureau of Statistics (ABS). It measures quarterly changes in the price of a 'basket' of goods and services which account for a high proportion of expenditure by the CPI population group (i.e. metropolitan households).¹⁵⁸
- **Consumer Price Index including owner occupiers' housing costs (CPIH)** – The CPIH is a measure of consumer prices and is more comprehensive than the CPI. The CPIH includes owner occupiers' housing costs and council tax, and therefore, their inclusion captures a major component of household spend.¹⁵⁹ Ofgem and Ofwat use the CPIH to determine their real rate of returns.
- **Commonwealth Government Securities (CGS)** – Bonds and notes issued by the Australian federal government to borrow money from investors.
- **Cross checks** – This can be a role assigned to piece of information or a step in the estimation process. It involves comparing estimates against other relevant information sources. It may provide assurance that the calculated estimates are reasonable and consistent with other sources of information.
- **Debt raising costs** - These costs are the transaction costs incurred each time debt is raised or refinanced. These costs may include underwriting fees, legal fees, company credit rating fees and other transaction costs.
- **Dividend Growth Model (DGM)** – The DGM is a valuation model which uses the share price, dividend (or cash flow) forecasts and the expected growth rate of the dividends to infer the required return on equity.
- **Equity beta** – This is a key parameter within the standard (Sharpe- Lintner) CAPM. It measures the 'riskiness' of a firm compared with that of the market and should only reflect the systematic risk. Systematic risk is risk that is inherent to the entire market and cannot be eliminated through holding a well-diversified portfolio (i.e. diversified away).

¹⁵⁸ Australian Bureau of Statistics, *Consumer price index, Australia methodology*, September 2020, <<https://www.abs.gov.au/methodologies/consumer-price-index-australia-methodology/sep-2020>>

¹⁵⁹ Ofgem, *RIO-2 Sector specific methodology Annex: Finance*, December 2018, p. 66

- **Financeability** – service provider's ability to achieve the benchmark credit rating applied in the estimation of the rate of return.
- **Gearing** – the proportion of debt in total financing
- **Market risk premium (MRP)** – This is the difference between the expected return on a market portfolio and the return on the risk free asset. It compensates an investor for the systematic risk of investing in the market portfolio or the 'average firm' in the market.
- **Post-tax revenue model (PTRM)** – The post-tax revenue model is a model used by the AER to estimate the annual revenue requirement for each year of a regulatory control period. It brings together the various building block costs that make up the annual revenue requirement for each regulatory year, including the rate of return on capital.
- **Rate of return (or weighted average cost of capital)** – The rate of return on capital is a forecast of the additional return (above the initial investment amount) required to induce investment in its network. It is a combination of the return on debt and return on equity, weighted according to the proportions of debt and equity investment. In the current rate of return instrument, we estimate a make-up of 60% debt and 40% equity. As such, the weighted average cost of capital is formed of 60% return on debt and 40% return on equity. From the investor's perspective it is the return on the funds invested, but from the network's perspective this is the cost of obtaining the funds.
- **Rate of return instrument** – The Instrument is a binding document which sets out the way the AER will calculate the rate of return in regulatory determinations. Neither the AER nor the regulated businesses have the ability to depart from the instrument. The current instrument was published in December 2018 and its replacement is scheduled for December 2022.
- **Reference groups** – Reference groups are appointed by the AER and consist of representatives from various stakeholders including consumers, investors and retailers. Their role is to allow stakeholders to be involved in the rate of return process and contribute to our consultation.
- **Regulated network (or entity)** – a direct control network service for the purposes of the National Electricity Law or a reference service for the purposes of the National Gas Law. Essentially energy businesses that the AER sets revenue allowances for.
- **Regulated control period** – We set the revenues regulated businesses can earn over a certain timeframe in our regulatory determinations which is typically for a 5 year period. This period is called the 'regulatory control period' under the National Electricity Rules or an 'access arrangement period' under the National Gas Rules.
- **Regulatory determinations** – Regulatory determinations are decisions published by the AER and specify the amount of allowed revenue that network businesses can recover from customers during a regulatory control period.
- **Return on debt** – The return on debt is the AER's forecast of the interest costs of maintaining a debt portfolio for a regulated energy network.
- **Return on equity** – The return on equity is the AER's forecast of the return that equity investors (e.g. shareholders) require in order to induce them to invest in a regulated energy network.

- **Risk free rate** – This is a parameter within the CAPM which is a model for estimating the return on equity. The risk free rate measures the return an investor would expect from a 'riskless' investment where there is guaranteed return on the invested capital.
- **Total market return** – The total market return is the overall return expected by investors from investing in a diversified benchmark stock market index.
- **Trailing average** – The trailing average is calculated as the simple average of values over a specified number of estimation period which is updated overtime. For example, the 10 year trailing average for the return on debt for the forthcoming year would be calculated as the simple average of the annual return on debt for that year and the annual return on debt estimates for the 9 previous years.
- **Weighted average cost of capital (WACC)** – See rate of return.

9 Table of Stakeholder submissions

This section provides additional feedback from each of the 14 submissions the AER received on the draft working paper. Refer to each submission individually for further information. Page references are supplied.

Category	Feedback	Page No.
Australian Pipelines and Gas Association (APGA)		
Adjusting for expected out-performance	There is no basis for adjusting the rate of return for expected incentive outcomes. Doing so risks undermining the incentives and result in regulatory uncertainty.	22
	Simply picking up elements from other regulatory regimes – such as reducing allowed rates of return for potential outcomes from incentive mechanism – without replicating all aspects of those regimes is unnecessary, impractical, and risks undermining the objectives of those incentive mechanisms.	23
	If there is concern that an incentive mechanism is not delivering customer benefits or that networks are expected to benefit by more than they should, then it is that mechanism that should be redesigned or removed.	24
Assessment/Robustness	<p>The 2018 Instrument is not robust to changes in market conditions. The AER needs to start by defining what is meant by 'robust' after consulting with stakeholders. In APGA's view, a robust return on equity estimation approach is one that:</p> <ul style="list-style-type: none"> • gives estimates of the required return on equity that are reasonable under a wide range of modelled conditions and scenarios • responds to changes in market conditions in a way that is consistent with how financial market participants respond (e.g. estimated rates of return reduce when investor return requirements reduce, and vice versa), and • recognises that risk perceptions and return requirements change over time (not just the risk-free rate). 	7
Cross checks	<p>The AER should consider:</p> <ul style="list-style-type: none"> • including cross-checks in the process for developing the 2022 Instrument in a way that could genuinely affect the estimated return on equity • including cross-checks in the 2022 Instrument that could apply automatically when the instrument is applied to determine the return on equity (e.g. with automated upper or lower bounds on the value). 	7

	Where possible, cross-checks should actually check the estimated rate of return, rather than using measures that have only an indirect connection with the rate of return (e.g. conditioning variables).	
	For the 2022 Instrument, the AER should:	24- 25
	<ul style="list-style-type: none"> • Broaden the range of cross-checks it considers, including by looking at the four adopted by Ofgem • Clarify how it would look to amend the approaches, parameters or estimates if cross-checks are failed • Consider whether and how cross-checks could be applied when applying the rate of return instrument (e.g. automated upper and lower bounds based on alternative return on equity estimates) • Recognise that cross-checks can be used to test whether the approaches and fixed parameters are robust to a wide range of market conditions • Consult on cross checks (along with robustness) in the next working paper 	
Frequency of update/ reviews	<p>While more frequent reviews of the rate of return instrument would be impractical, there is certainly scope to make the automatic updating process that applies when the rate of return instrument is applied to automatically reset more than just the risk-free rate parameter or to build in automatic cross-checks.</p> <p>It would be inappropriate to assume that a parameter determined at one point in time remains appropriate when resetting the rate of return up to four years later. Similarly, the Brattle Group advises that it would also be inappropriate to update one parameter but not others when estimating the rate of return.</p>	20
	Updating the risk-free rate even more frequently (e.g. annually) would not address this risk unless the other parameters were also updated. There is scope for the approaches in the rate of return instrument to be designed so that more than just the risk-free rate updates when the rate of return is actually estimated. The 2018 Instrument only required the risk free rate to be updated but not the equity beta or MRP. This leads to the real risk that the estimated rate of return does not reflect efficient financing costs when applied.	21
International comparison/ Brattle report	<p>The AER should ask the Brattle Group to update its review of international approaches to specifically consider:</p> <ul style="list-style-type: none"> • how international regulators assess the robustness of their rate of return estimates or otherwise build cross-checks into their estimation process • whether and, if so, how international regulators adopt different approaches or assumptions when estimating rates of return for gas pipelines and electricity networks. 	4

	The AER should also ask the Brattle Group to look into how international regulators assess the robustness of their rate of return estimates or otherwise build cross-checks into their estimation process.	9
	The Brattle Group also did not elaborate on the process that regulators went through to develop their approach.	26
Difference between gas and electricity	The impact of the transition in the energy sector on gas pipelines differs markedly from that facing electricity networks.	3
	The AER should – from an efficiency perspective – consider whether it is reasonable to compensate an asset (i.e. gas pipeline) that carries higher risk and longer payback periods with the same return as one (i.e. electricity network) that faces a shorter payback period and no real volume or redundancy risk. As well as risk differences inherent in the regulatory framework, gas pipelines face additional risks that their electricity network peers do not.	14
Unconscious biases	Naturally, the 2018 Instrument is a useful starting point when developing the 2022 Instrument. However, using it in that way can lead to behavioural biases that should be managed and avoided where possible, namely: anchoring, confirmation and overconfidence bias.	17
	The APGA recommended: <ul style="list-style-type: none"> starting with first principles (e.g. how should we assess whether an approach is robust or not) rather than previous positions engaging different experts than those that it has relied on previously making better use of joint reports from experts with different views looking at how others are adjusting the way they estimate the rate of return (e.g. how are practitioners or other regulators dealing with low government bond yields). 	18
Ausgrid		
Adjusting for expected out-performance	The overall sentiment seemed to be that revenue deductions were not an appropriate way to respond to information asymmetry between the regulator and the regulated business. Ausgrid agreed with this sentiment and is concerned that Ofgem's proposal does not align well with incentive-based regulation. Incentive schemes are put in place to incentivise businesses to outperform the efficient costs or service outcomes determined by the regulator. Adjustments for expected outperformance are not an appropriate change to the current framework.	5
Assessment/Robustness	It is critical that the rate of return is set a level that is robust to all economic circumstances.	2
Cross checks	The 2022 Instrument review process should establish a clear framework for how cross checks will apply and the remedy if one was breached. Ausgrid believed that the approach used by other international regulators	4

	should be considered as part of implementing cross checks in the 2022 Instrument.	
Financeability	Ausgrid believed that adding financeability checks would enhance the regulatory framework and help to avoid businesses being put into financial difficulty by regulatory decisions, particularly during extended periods of low inflation and low interest rates.	5
Frequency of reviews/ updates	Ausgrid agreed that it seems desirable for all parameters to be estimated at the same time so there is consistency at the time of estimating the model. However, Ausgrid agreed with the analysis outlined by the AER that it is difficult under the law governing the rate of return instrument to achieve this. Ausgrid considered that there is merit in fully exploring all the options available to best align the estimation timing of equity parameters.	4
Consumer Reference Group (CRG)		
Adjusting for expected out-performance	It is less obvious how incentive based regulation benefits consumers through the financing cost allowance in the building block model. The savings are not shared with the consumer. Instead, the benefits are retained by the network investors in the form of a higher than efficient return on equity. From a consumer perspective, the lack of a balanced incentive regime for the rate of return has significant consequences for consumers and for the regulator.	16
	The AER should be developing and applying a broader measure for assessing the overall efficient cost of capital. A well-designed mechanism would provide networks with an ongoing incentive to lower their costs of capital, while ensuring consumers share in the benefits of these efforts.	17
Assessment/ Robustness	The AER should develop a clearer framework for assessing systematic risk and how the systematic risk of different sectors of the network industry can be identified and applied to the rate of return instrument. The AER should also review the current incentives for efficient financing of the networks and whether these incentives can be modified to better align with the AER's overall benefit sharing incentive framework.	10
	The Independent Panel in 2018 established that the AER had not taken account of its obligation to consider consumption efficiency alongside investment efficiency. Consequently, the CRG are also concerned that the current papers focus on investment efficiency without considering the interaction of pricing decisions and energy utilisation.	13
	The AER should transparently demonstrate how it has balanced equally the risks of over or under estimation of the rate of return parameters. The AER should also consider the impact of its decision on consumer decisions and behaviours, not just those of investors. The AER must avoid selecting any 'high' side values on the basis that investors need more than the efficient cost of capital either because of a concern with	15

	under-investment or by an excess of caution given the statistical uncertainty bands in the empirical evidence.	
Consumer perspectives	Networks' proposals on rate of return parameters do not necessarily align with consumer perspectives (asymmetry of resources and information between consumers and the networks). There needs to be better understanding of the consequences of changes in any approach which gives rise to higher network prices, including the possible consumer actions that could undermine the efficient use of the network and investments.	31
Cross checks	The CRG recommended the AER to identify useful cross-checks for assessing rate of return decisions (including performance measures) and consider how to best take account of these in the return on equity decisions	10
	However, if the AER uses a cross-check to validate its return on equity estimate, it must also provide a transparent explanation as to how this cross-check is relevant to the ex-ante estimation of the return on equity for a regulated network entity. Any interpretation of these cross-checks must also consider that an ex-post observation of the return on equity is not a direct measure of the ex-ante estimation of investor expectations.	37
Financeability	There is no evidence that networks have not been able to raise funds from the market.	27
Frequency of reviews/ updates	The CRG does not believe the annual updating of risk free rate is appropriate for a number of reasons: <ul style="list-style-type: none"> • It would be a fundamental change to the underlying CAPM theory of estimating ex-ante investor expectations for a return on equity over a regulatory period; through a process of annually correcting the expected return on equity (including expectations for the risk-free rate) for the ex-post 'realised' risk-free rate. • It would introduce additional complexity and volatility into the annual pricing process • It is likely that a transition process would be required and this transition process introduces new risks for all parties • It is not clear how consumers would be rewarded for transfer of risks from the networks to consumers • The rationale given for the change does not justify 	9- 10
Investment and risk	All participants considered that investment by networks was more likely to be over five to ten years minimum (rather than a three years); they also observed that under the regulatory framework, investment by networks guaranteed returns over the longer-term, with some participants noting the life of many network assets is closer to 50 years. <p>Most participants believed consumers should get compensated for the risk of having to face additional changes to price levels year-on-year if</p>	6

the risk-free rate was annually updated, and consumers should be compensated for the transfer of any additional risks to them.

Given the flattening of peak demand growth, the steady decline in energy consumption and the excess investment and consequent excess capacity in many of the regulated networks, the risk is now with consumers who face paying higher prices for many years to fund the period of overinvestment. 15

Energy Networks Australia (ENA)

Adjusting for out-performance 25
 ENA submitted 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.

Assessment/robustness 3
 Developing a rate of return instrument that is robust to potential changes in conditions, and which supports efficient investment over the next decade, is the critical and challenging task.

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. 11

ENA submitted that the approach to setting the allowed return on equity can be made more robust to changes in financial market conditions by allowing for: 39

- 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
- 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 submitted that all stakeholders and the AER would benefit if the following outcomes could be achieved from this stage of the review process: 48

- An approach to setting the allowed return on equity that is robust to a wider range of plausible future market conditions and unforeseen changes that may occur during the term of the 2022 Instrument; and which makes fuller use of an appropriately broad set of information.
- work with stakeholders to develop a range of potential future scenarios and consider whether our proposed approach is likely to

produce outcomes consistent with the NEO and NGO in each scenario

Crosschecks	<p>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 to defending a position rather than inform a position.</p> <p>There is a strong argument for a requirement for a financeability assessment at the Instrument level, and subsequent determination stage. This analysis would be designed to ensure that the rate of return instrument, when applied to a benchmark NSP, will generate a set of financial metrics that is consistent with the assumptions that underpin the allowed return.</p>	42
	<p>Through further working papers, the AER should identify a set of viable, meaningful return on equity cross- checks.</p>	48
Financeability	<p>Forward-looking financeability tests should apply to the rate of return instrument and determination process.</p>	48
Frequency of reviews/ updates	<p>A logical option is to fix the allowed return on equity for the duration of the rate of return instrument, recognising that it will stale by up to 4 years in future determinations.</p>	45
International comparison/ Brattle report	<p>Earwaker (2018) demonstrated that the AER's allowed return on equity is lower than the allowance of other comparable regulators. Brattle also confirmed that the AER's allowed return on equity is lower than the allowance of other comparable regulators.</p>	12
	<p>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.</p>	14
Investment and risk	<p>There are varied reasons for each network reducing investment, particularly augmentation investment. ENA 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.</p>	7
	<p>The rate of return instrument 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.</p>	51
	<p>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. 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</p>	52- 53

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

Principles based framework ENA suggested a clear principles-based framework for assessing relevant evidence. This includes evaluating evidence with regard to materiality, preponderance of evidence and regulatory consistency. 27- 28

ENA submitted that it is important that all evidence is assessed in principled and balanced way that reflects the context and proposed use of that evidence. 29

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. 46

Endeavour Energy

Assessment/robustness Rather than select the available evidence to defend historical positions, a balanced assessment is required. There needs to be a robust framework for assessing evidence that results in a proportionate level of scrutiny being applied to a piece of evidence that is commensurate with the weight it is given and its position relative to orthodox financial theory and commercial practices. 1

The AER's approach would be improved by implementing meaningful cross-checks, giving weight to a broader set of evidence (particularly forward-looking information and international comparators) and acknowledging that the allowed return does not vary 1:1 with changes in government bond yields. 2

Cross checks and financeability The AER's approach would be improved by implementing meaningful cross-checks. 2

Frequency of review/ update Legislation prevents the AER from updating all equity parameters throughout a determination period (which should be reviewed if sub-optimal). 2

International comparison There are clear and obvious differences between various regulators, and outcomes from the 2018 Instrument in practice that require thorough investigation. 1

Energy Queensland

Assessment/robustness The AER's approach is not robust in changing market conditions and the pricing volatility, and negative net-profits projected in the PTRM created by the current approach, are not in the interest of electricity customers or electricity network businesses. The 2022 Instrument must be more robust to changing market conditions and provide return on equity estimates consistent with the returns required by real- world investors. 2

Major Energy Users Inc. (MEU)

Frequency of review/ updates	The AER's current approach of fixing the MRP, equity beta and gearing over each rate of return review reflects the reality of networks' risk profile.	9
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International comparison/ Brattle report	<p>There has not been sufficient analysis of the differences in the regulatory approaches used in each jurisdiction by Brattle.</p> <p>Australia's regulatory environment transfers much of the risk from network owners to consumers, so the extent of this transfer has a major impact on which models might be appropriate and the calculation of the parameters.</p> <p>It is often overlooked when making international comparisons that the Australian regulatory environment is very much based on incentive regulation which offers additional returns to networks.</p>	5
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	The AER should compare the regulatory environments that the model used by other regulators operates within and care should be taken to consider whether international practices are applicable given the differences.	6
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Investment and risk	Networks have continued investing in their networks and are continuing to do so, implying the current returns on equity set by the AER are sufficient and that investment by the networks should continue. There is little reason for any increases to the current value for the return on equity that might come from alternative assessments. The risk profile between the investor in network assets is markedly different to the risk profile that an investor in shares operates within. Investors in networks' assets have a longer-term view on profits.	2
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	There should be an assessment of the risks that have been transferred by networks to consumers through the regulatory laws and rules so that there can be identification of the residual risks faced by networks in the provision of the services they provide. These residual risks are different to those risks faced by investors in shares but the market data used by the regulator to set the input parameters for the return on equity for networks is based on the risks faced by investors in shares rather than the residual risks faced by networks directly and which are recompensed by consumers.	2- 3
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Network Shareholder Group (NSG)

Assessment/ robustness	Guidance on how information and outcomes are to be assessed should be clearly established before the 'active' phase of the review starts.	1
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	In the NSG's submission to the AER's Consultation Paper on the 2022 Instrument process, the NSG recommended the establishment of an objective and transparent framework for assessing the long-term impacts on price, reliability and security of energy system resulting from the rate of return instrument decision. The NSG also recommended establishing an agreed facts data base, incorporating a financeability assessment and	1- 2
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providing clarity and consistency in the treatment of material presented by stakeholders. This will increase the confidence of stakeholders in the AER's decisions and act as an important accountability measure particularly in the absence of any independent third-party review process.

The assessment framework should ensure the rate of return instrument achieves the National Electricity Objective (NEO) and the Revenue and Pricing Principles (RPPs) under the National Electricity Law (NEL). The NSG recommends the AER to develop a set of measures that will facilitate an assessment of its decision making on equity returns in the context of the NEO and RPPs. This should include a holistic assessment of the impact on incentives for investment, capital investment and service outcomes in response to current and expected decisions and that changes in efficient financing costs are reflected. 2

Cross checks The AER acknowledged a significant decline in capital expenditure since 2012 and that the investment was below efficient levels but did not link these outcomes to the sufficiency of returns on investment. This highlights the need to undertake and respond to independent cross checks to ensure the rate of return instrument outcome is reasonable given available information on market expectations and conditions. 2

A further important cross check is one of internal consistency. For example, the revenue to be recovered by regulated businesses is not achievable under the 2018 Instrument for an illustrative \$2 billion project of similar size to those identified in the Integrated System Plan. 2- 3

In the absence of third party or independent review, to strengthen accountability and governance, the NSG recommended that the cross-checks and market reasonableness tests be verified (with reasons given) by an independent panel of experienced practitioners. The panel should have equal representation selected by consumers and the regulated businesses. 3

SA Power Networks (SAPN)

Assessment/robustness Evidence must be assessed in a balanced way, having regard to the relevant context. The 2018 Instrument has not been robust to extraordinary changes in market conditions that have since occurred. SAPN considered it to be very important that the 2022 Instrument is robust to potential changes in financial market conditions during its term. It must be capable of producing appropriate estimates of the efficient cost of capital in every determination that is made during its term. 2

Cross checks SAPN endorsed ENA's submission that the next stage of engagement for the 2022 Instrument should include a process in relation to cross checks. 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. 3

Financeability	SAPN endorsed ENA's submission that the next stage of engagement for the 2022 Instrument should include a process in relation to financeability tests.	3
Frequency of review/ update	Avoid approaches whereby some components of the return on equity are fixed in accordance with market conditions at one point in time, and others are subsequently updated to reflect market conditions at a different point in time.	4
International comparison/ Brattle report	Brattle indicated that the closest allowance by any other comparable regulator is 73% higher than the AER return on equity.	2

TransGrid

Assessment/ robustness	<p>TransGrid endorsed the ENA's submission on the AER's Draft Working Papers on the estimation of the return on equity, which provided a detailed explanation of the broader issues and solutions in relation to the AER's approach to the estimation of the return on equity, and highlighted the following matters:</p> <ul style="list-style-type: none"> • Accommodate changing market conditions • Cross-checks return on equity reasonableness • Financeability tests 	2
	<p>TransGrid also endorsed the establishment of a principles-based framework for assessing relevant evidence. This would ensure consistent application of evidence and promote common stakeholder understanding of the meaning and application of each piece of evidence.</p>	3
Cross checks	TransGrid supported ENA's submission that the AER should identify, through further AER Working Papers, a set of potential cross-checks. TransGrid also encouraged the AER to consider establishing an independent panel of experienced practitioners to verify these cross-checks.	2
Financeability	TransGrid supported ENA's position that cross-checks should be supplemented by forward-looking financeability tests applying to the rate of return instrument, and the subsequent determination processes, to ensure the benchmark network service provider remains financeable in a range of potential financial market conditions, and can access efficiently priced finance to support the delivery of customer outcomes.	2
Frequency of reviews/ updates	Return on equity parameters should reflect the same financial market conditions and therefore be estimated at the same point in time.	3
International comparison/ Brattle report	The Brattle Group (Brattle) found that the AER's current allowed return on equity is lower than that adopted by every other comparable regulator operating under broadly similar regulatory regimes.	2