APGA Submission to the AER

Draft working papers on return on equity models and international approaches to the rate of return

9/10/2020

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1. Summary

The Australian Pipelines and Gas Association (APGA) welcomes the opportunity to comment on the Australian Energy Regulator's (AER) draft working papers on:

- international approaches to regulated rates of return,[1] and
- the CAPM and alternative return on equity models.[2]

These are useful formative papers to the review of the 2022 rate of return instrument (the 2022 RORI Review).

Our submission responds to those papers, both by providing feedback sought by the AER and more broadly by signposting three key concerns at this juncture in the review.

1.1 This review is important to us

That review will play a critical role in shaping how regulated gas pipelines can support Australia's transition to decarbonised energy supply and deliver the outcomes that our customers want. Natural gas currently provides 20 per cent of Australia's electricity generation, and most of that is peaking power that not all energy sources are suitable to deliver. The properties of natural gas mean it is recognised as having a growing and important role as a transition fuel while Australia decarbonises its energy supply.

Our gas pipelines are facing unprecedented times – we are required to play our part in supporting a secure, reliable, and affordable energy system in a low-carbon energy future. We must also do so in a world of uncertainty.[3] There are a range of foreseeable scenarios for how that energy transition may transpire. We must remain robust to high impact unforeseen scenarios such as the economic recession and pandemic that we are currently enduring, the likes of which we have not seen before. The conditions we face today differ markedly from those that applied when the 2018 RORI was finalised and they will invariably be different again in the future.

With this backdrop, we are focused on working closely with the AER and other stakeholders to get the 2022 RORI right. An instrument that sets rates of return too high will burden our customers with costs that they cannot afford and should not face. While an instrument that sets them too low will seriously undermine the investment needed to support the energy transition and deliver the services that those customers want.

We certainly appreciate the AER initiating the review of the 2022 RORI early. Our collective focus must be on using the longer review period to ensure that the issues left unresolved or inadequately addressed during the 2018 RORI review process are given sufficient attention this time around.

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1 AER, Rate of return, 27 August 2020, *International regulatory approaches to the rate of return, Draft working paper*.

2 AER, Rate of return, 27 August 2020, *CAPM and alternative return on equity models, Draft working paper*.

3 As we discuss later, the uncertainty faced by gas pipelines differs from that faced by electricity networks.

1.2 Three key concerns

At this juncture, our submission raises three key concerns:

- **First**, the return on equity estimation approach adopted in the 2018 RORI is not robust, especially to market conditions like what we face today. More needs to be done to ensure that estimation approaches are robust to a wide range of market conditions that may exist when the 2022 RORI is applied and that cross-checks play a real role in setting allowed rates of return.
- **Second**, not enough is being done to ensure that the regulatory outcomes for gas pipelines, including allowed rates of return, will actually promote the National Gas Objective by providing the right incentives for efficient investment. For too long, the process for setting allowed rates of return has treated gas pipelines the same as electricity networks. Ever apparent differences between the fuels and infrastructure types should prompt a rethink of that treatment.
- **Third**, there is a real risk that behavioural biases will undermine development of the 2022 RORI. Conscious effort is needed to recognise and manage these biases in a way that promotes the National Gas Objective.

1.3 Our recommendations

Box 1 below includes recommendations on how the AER should address these concerns during the 2022 RORI process. Appendix A contains our responses to questions raised by the AER in its two working papers, which includes further recommendations specific to the matters raised in them.

We look forward to further engaging with the AER and other stakeholders about our concerns.

Box 1: Recommendations on process

1. Broaden the next rate of return working paper from just considering low return environments to looking at how to ensure that the estimated rate of return is robust to a wide range of market conditions and genuinely informed by cross-checks.
2. Include in the future work program a working paper that considers whether rate of return estimates should be different for gas pipelines and electricity networks and to consider, more broadly, different compensation for risk.
3. Ask the Brattle Group to update its review of international approaches to specifically consider:
    a. how international regulators assess the robustness of their rate of return estimates or otherwise build cross-checks into their estimation process
    b. whether and, if so, how international regulators adopt different approaches or assumptions when estimating rates of return for gas pipelines and electricity networks.

4. Build in steps to the 2022 RORI review process to check for behaviour biases in the way that the instrument is developed, e.g. checking for confirmation, overconfidence, and anchoring bias when looking at new evidence and considering alternative estimating approaches or assumptions.

1.4 Structure of our submission

Our submission is structured as follows:

- Section 2 focuses on our concern about robustness and cross-checks
- Section 3 explains why, given the different circumstances facing gas pipelines and electricity networks, more needs to be done to reflect that in revenue and price determinations, including on rate of return
- Section 4 is a friendly reminder about the need for all participants in the 2022 RORI review, including the AER, to avoid unconscious biases
- Appendix A responses to the AER's requests for stakeholder feedback on the two consultation papers.

2. Concern 1: Robustness and cross-checks

2.1 The AER's task

Financial markets and investor return requirements are constantly evolving, including in response to shocks like the COVID-19 pandemic. This makes it particularly important to adopt rate of return estimation approaches that are robust to a wide range of market conditions.

Not only do those approaches need to work well during conditions when the RORI is published, but they also need to do so – and, in our view, more so – when the RORI is applied to determine the allowed rate of return (i.e. just prior to the start of an access arrangement (AA) period). This is a subtle, but important point. It would be very easy to focus only on prevailing conditions when an RORI is finalised. However, when conditions change – as they evidently have of late – all stakeholders should want the allowed rates of return determined at those times to reasonably reflect market conditions.

The task before the AER differs from that faced by other regulators. Ofgem, for instance, determines allowed rates of return (e.g. as part of RIIO-2) for regulated networks at the same time as the approaches used to calculate them. Unlike the AER, it does not decide on the approaches to be applied in the future, it looks at prevailing market conditions and determines approaches and parameters suited to them.[4]

In contrast, the AER must develop an instrument that *must* apply to future determinations. By design, the AER has no ability to reopen parameters and approaches when doing so even if changes to market conditions would ordinarily prompt it to (e.g. as it did in the past in response to the global financial crises where it added 50 basis points to the MRP).

2.2 What concerns us

Our concern is that the approach for estimating the return on equity included in the 2018 RORI is not robust to changes in market conditions, leading to allowed returns on equity that do not reflect efficient financing costs in many cases. Simply retaining that approach in the 2022 RORI will significantly undermine confidence in the investment environment facing gas pipelines and the energy consumers that rely on them for their energy needs.

Elaborating slightly, adding a fixed mark-up on to the risk-free rate prevailing just prior to the start of a regulatory period – as the 2018 RORI does – is unlikely to reflect the true required return on equity in *all* market conditions that might be faced when the instrument is actually used to determine allowed rates of return (e.g. for an AA period that starts up to 4 years after the instrument is finalised).

This is even more of an issue when faced with the unprecedented market conditions that we face today, whereby:

- government bond yields and interest rates are at historic lows

[4] Here we are distinguishing between approaches applied annually to, for instance, update the cost of debt and approaches used to determine the rate of return. We also recognise that as part of its RIIO-2 determination process Ofgem first develops its intended rate of return estimate approaches and parameters and then, after receiving proposals from energy networks, applies them in its final determinations.

- stock markets are extremely jittery, and swinging between highs and lows
- the Australian and global economies are facing their biggest shocks in decades,[5] and
- the significant uncertainty around the future impact of the COVID-19 pandemic is generally undermining investor confidence.

To its credit, the AER has recognised that it needs to consider how best to estimate the return on equity in a low interest rate environment. We welcome its forthcoming working paper on the rate of return and cashflows in such an environment.

However, this focus would appear to only consider one set of conditions – namely low interest rates. More fundamentally, the AER should start with the objective of developing one or more return on equity estimation approaches that are robust to *many* different market conditions.

2.3 How the AER should look at robustness

To do this, the AER should consider:

- testing its proposed return on equity approach or approaches in different market conditions using past data to see how estimated returns compare to what would likely have been expected when faced with those conditions
- including cross-checks *in the process* for developing the RORI in a way that could genuinely affect the estimated return on equity
- including cross-checks *in the RORI* 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).

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).

The AER would also need to start by defining what is meant by 'robust' after consulting with stakeholders. In our view, a robust return on equity estimation approach is one that:

- 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).

[5] RBA, 6 August 2020, *Statement on Monetary Policy*, p. 1.

2.4 Expert reports did not consider robustness

Neither the Brattle Group's review of international approaches, nor the Partington and Satchell report, directly considered how robust different return on equity estimation approaches are to different market conditions in the sense that we define it above.

The Brattle Group's review of international approaches did, however, provide some useful insights into how return on equity models can be applied to give more robust estimates:

- **Imperfection recognised.** Other regulators recognise that no one cost of equity model is perfect. Approaches and parameters are reconsidered collectively from time to time.

  Ofgem, for instance, has built into its return on equity estimation process a step where it compares its CAPM estimates against four cross checks.[6] During past reviews it has adjusted its CAPM parameters in response to checks being failed. As an alternative, the New Zealand Commerce Commission errs on the side of caution by adopting a rate of return slightly higher than its best estimate.

  Although we are not advocating for either approach at this stage, their existence reinforces why the AER should build this into the 2022 RORI review process. The AER recognises that no one model is perfect.[7] However, what we are looking for is this to actually mean something in the process and estimation approaches adopted.

- **Consistency is important.** Important interactions between CAPM parameters mean that inconsistencies and inaccuracies can arise when some parameters (such as the risk-free rate) are updated while others are not (such as the MRP and beta).[8]

  In Brattle Group's view, parameters should be estimated consistently with each other, ideally updating them at the same time.[9]

The Partington and Satchell report did not appear to provide any such insights, focusing instead on the academic theory sitting behind various return on equity models.

2.5 What we recommend

Given this, we recommend that the AER start the 2022 RORI review process with a genuine focus on ensuring that its return on equity estimates are robust to different market conditions and consistent with market evidence.

This should be done by:

- focusing the next AER rate of return working paper on how to ensure that return on equity estimates are robust, including by:

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6 Ofgem, 14 May 2019, *RIIO-2 Sector Specific Methodology Decision - Finance*, pp. 58–66.

7 AER, 27 August 2020, *CAPM and alternative return on equity models, Draft working paper*, p. 2.

8 The Brattle Group, June 2020, *A Review of International Approaches to Regulated Rates of Return*, p. 60.

9 One example raised during the AER's public forum on the two working papers was the approach to applying the CAPM used by Rob Koh and his team at Morgan Stanley. In that case, the risk-free rate parameter is based on *both* a longer-term historical average of yields on Commonwealth Government securities, as well as prevailing yields. The longer-term average aligns more closely with the way that the MRP parameter was estimated.

    - defining what is meant by ‘robust’
    - considering how to test for this, and
    - building in cross checks capable of actually affecting estimated rates of return when they are estimated for a given regulated pipeline during the term of the RORI (e.g. by actually checking the estimated rate of return)
- asking 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
- reviewing what investors, commentators, academics, and others do assess robustness or include cross-checks into their estimation processes.

3. Concern 2: Gas versus electricity

The energy sector is undergoing significant transition caused by fundamental changes in climate change policy, technology, and demand (among other drivers). However, the impact of this transition on gas pipelines differs markedly from that facing electricity networks.

In particular:

- **Gas pipelines are facing increased cost competition due to lower renewable energy generation costs** –the cost of renewable generation is reducing. As this trend continues, gas pipelines and the gas supply chain more generally will face increased competition from the electricity supply chain.
- **There is a growing interest in electrifying all energy demand** – we believe this interest is misplaced. As our Gas Vision 2050[10] sets out, there is a strong future for gaseous fuels. Nevertheless, the fact is the future role of gas pipelines is less certain than that of electricity networks.
- **Gas pipelines are expected to play a role in a future zero-carbon energy sector as transporters of hydrogen and other future fuels** – these are different economic products to natural gas, which is located where the natural resource is found and must be transported to market. Future fuels will be manufactured products that will be far more flexible in their location of production. As such, existing gas pipelines will face competition in the future in a way that electricity networks will not. A zero-carbon future for gas infrastructure is not simply a matter of different gas in the same pipeline; the economics of energy supply will change.
- **Natural gas can serve as a transition fuel** – as Government policy makes clear, natural gas has a role to play as a bridge towards a zero-carbon future. This bridge requires investment to happen, and it will not happen if the regulatory rewards are low rates of return over decades when most of those decades will be times when pipelines are facing meaningful competition from renewable generation.
- **Repurposed gas pipelines could provide the lowest cost option for all consumers in a zero-carbon economy** – however, if gas pipeline operators receive insufficient compensation for the efficient costs of financing investment to support this re-purposing, they will simply not make the investments.

These issues and the risks they present are recognised by the AER in the 2020 State of the Energy Market. In the preface, AER Chair, Clare Savage, explains that:[11]

> *The national gas industry could also undergo significant change as some jurisdictions move towards a zero carbon emissions policy. This could have significant consequences for the future of gas pipeline networks. In response, the AER recently supported the future recovery of Jemena's investment in trialling the production of hydrogen from renewable energy for injection into its Sydney network.*
>
> *If hydrogen trials such as Jemena's prove successful, the natural gas networks could be re-purposed to distribute hydrogen. If not, the economic life of the assets could be limited,*

10 See: https://www.apga.org.au/gas-vision-2050

11 AER, 1 July 2020, *State of the Energy Market 2020*, p. 2.

raising questions in price reviews about levels of investment, how quickly assets should be depreciated, and the appropriate path of network prices over time.

Importantly, these issues are also quite different from those raised and considered in the 2018 RORI review process (and earlier rate of return processes). We are not trying to re-litigate the point that gas pipelines should get a different equity beta from electricity networks just because they are different. Rather, we are saying that gas pipelines are facing unprecedented uncertainty about their future role in the energy supply chain – including from competition from renewable technologies – and so the way that regulated prices and revenues are set needs to be rethought. Although the allowed rate of return is an important component that may well play a key part of that re-thinking, other aspects of the price and revenue setting process need to as well. The 2022 RORI review provides an important and timely opportunity to consider these issues holistically.

3.1 What concerns us

We are concerned that the way that allowed revenues and prices are determined does not recognise differences between gas pipelines and electricity networks, nor the significant uncertainty now affecting gas pipelines.

This is particularly acute when we look at how the allowed rate of return is set. Since the 2009 Statement on Regulatory Intent (2009 SORI) was first published, the AER has maintained the assumption that the risks facing gas pipelines and electricity networks are sufficiently similar such that the allowed rate of return should be determined in exactly the same way.[12] There appeared to be no serious recognition that risks should, or at least could, be treated differently (e.g. with different parameter estimates or through changes to the return of capital).

The AER's first round of working papers for the 2022 RORI review does not avail our concerns – as none of them even raise this as an issue.

We recognise that the AER may intend to look at it later in the 2022 RORI process, or as part of a different process; however, without such clarification, we are raising this issue now to help guide the AER's planning for subsequent steps in the process.

3.2 Why we are concerned

This issue is important to us because gas pipelines face a particularly uncertain long-term future, with their role in helping Australian states and territories achieve their ambitious renewable energy targets unclear.

This is fundamentally a different situation to that faced by electricity networks, which have a clear future in the transition – with almost all renewable generation requiring some sort of electricity grid to get their output to those that consume it.

As shown in Figure 4.1, all states and territories either have made significant emission reduction commitments or are developing them. Even if the Australian government had no policy initiative favouring renewable power, companies developing low-cost renewable power solutions will seek

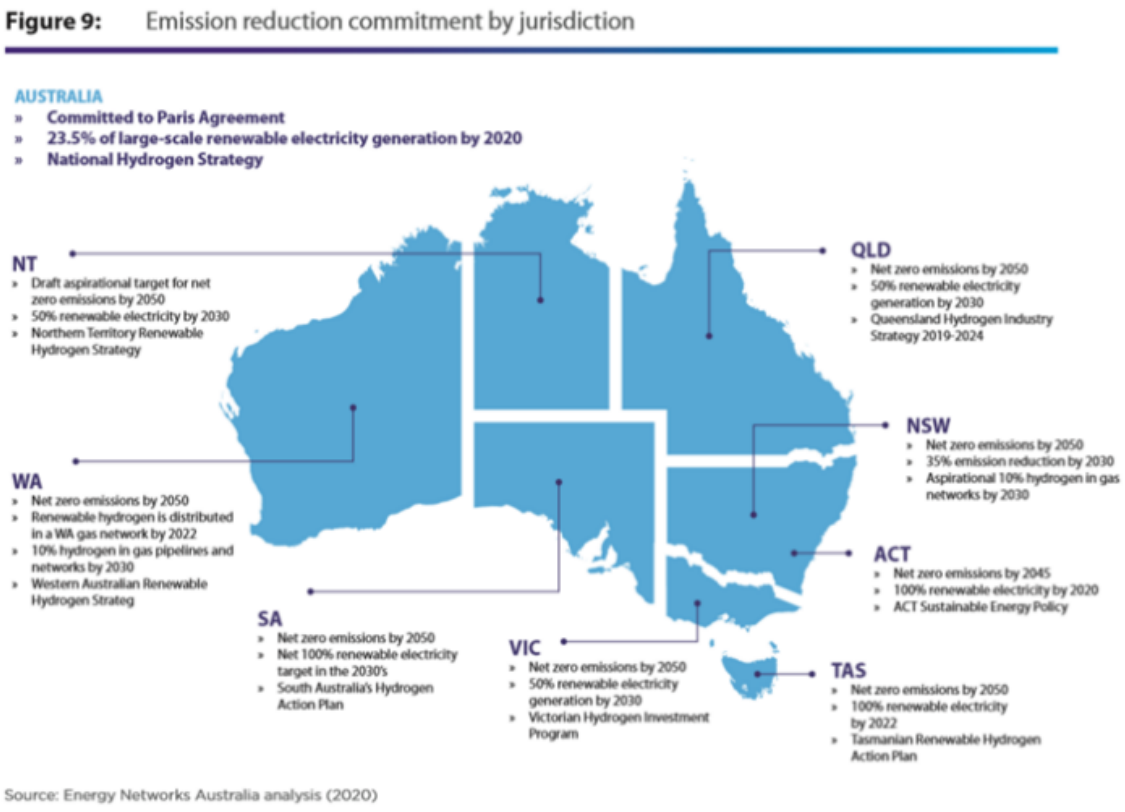
12 When adopting a common equity beta (0.8) in the 2009 SORI, the AER concluded that the *systematic* risks were sufficiently similar. Likewise, when adopting a common credit rating (BBB+), the AER effectively concluded that the credit risks (which could be systematic or unsystematic) risks were sufficiently similar.

markets in Australia. Renewable power is increasingly cost competitive with gas as an energy source, even when subsidies are ignored.

Our members see an important role for natural gas, hydrogen, and other green gases in supporting states and territories achieve those commitments, and also see the potential for these green fuels to become a viable component of the wider energy mix in the future.

Yet, the economics of the different gases varies greatly. Hydrogen gas, for instance, could be produced at various points across the interconnected gas pipeline grid (perhaps close to where it is consumed or exported from), while natural gas needs to be transported from where the resource is located. Such differences mean that the risks faced by gas pipelines depends on what fuel is ultimately being shipped and from where. In simple terms, the marketplace is competitive.

Figure 4.1: Emissions reduction commitment by jurisdiction



Source: Energy Networks Australia analysis (2020)

The role for gas pipelines in the energy transition is not without risk.

First – and perhaps more important than Australian policy initiatives – rapidly declining costs of renewable alternatives to natural gas as an energy source, particularly for electricity generation, means that gas pipelines face meaningful competition.

- **Second**, significant investment is needed by gas pipelines to support that transition.
- **Third**, some of that investment will naturally have a limited shelf life after which it will no longer be needed to support a transition to renewables, increasing its riskiness.
- **Fourth**, the current regulatory settings do not support this investment because allowed rates of return are at historic lows in Australia, assumed economic lives are very long (up to 80 years in some cases), and inflation indexation is applied to capital investment to defer capital

recovery – all of which make it unclear to an investor whether they will recover their invested capital.

These risks differ from those facing electricity networks. Yes, they face uncertainty from emission reductions initiatives, technology, and changing usage. But almost all stakeholders agree that electricity networks have an important future delivering energy and new services. Large scale renewable generation investment is increasing – and will always require a grid to deliver energy to markets and balance supply and demand within markets.

By contrast, gas pipelines are increasingly competing with local production of renewable power – and this will continue even if they carry future fuels in the long-term. If they do carry those fuels, then the pipelines could become means of chasing 'sunshine or wind arbitrage' whereby the prices that they charge reflects natural differences at the top and bottom end of a pipeline in solar and wind intensity.[13] If and when this difference becomes smaller than the regulated prices, it will be competitive markets and not regulation that sets the gas transportation prices faced by consumers.

This is a fundamental change in economic conditions facing gas pipelines. It is exercising the minds of investors right now – particularly when regulatory systems return their capital over long periods of up to 80 years. If it does not exercise the minds of regulators in some way as well, investment will suffer, and Australian energy consumers will suffer.

3.3 Regulatory framework creates different risks

The National Gas Rules and their application by the AER establish a regulatory regime with higher risk for investors in gas pipelines than the equivalent regime for electricity networks.

Specifically,

- the regulated asset base (RAB) of a gas pipeline is subject to RAB capital redundancy provisions (rule 85) that enable the AER to determine that assets are no longer required for the provision of pipeline services – there is no equivalent regulatory power for the AER for electricity networks[14]
- the AER applies a price cap form of regulation to gas pipelines requiring them to bear demand risk – which is not a risk borne by electricity network whom are all regulated under revenue caps
- the standard regulated asset lives of gas pipeline assets adopted by the AER are on average well above those for the equivalent electricity assets – and being largely based on historically

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13 Up until that point, the gas they transport needs to compete with local generation of renewable power, which is arguably a stronger pressure at the moment as solar power already has a lower marginal cost than gas-fired power at new plant.

14 The RAB roll forward of actual capital expenditure for gas pipelines enables that AER to conduct an ex post reviews and potentially disallow cost recovery of the entire amount of investment during the regulatory period. The equivalent electricity rules limit this to only investment in excess of the AER allowance for that period, and even then, only when the electricity network has overspend in aggregate over a defined five year period spanning the last two years of the prior regulatory period and the first three years of the current regulatory period.

deemed technical design lives are increasingly expected to materially overstate the likely economic lives of those assets (for reasons discussed below).

Ultimately, 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.

3.4 Inherent risk differences

As well as risk differences inherent in the regulatory framework, gas pipelines face additional risks that their electricity network peers do not.

For instance:

- as noted above, renewable electricity costs are dropping and will continue to fall – which means that gas pipelines are facing increased competition in a way that electricity networks do not
- gas pipelines face competition from other sources of gas – the future availability of gas reserves is uncertain and we are seeing strong interest in new basin development and LNG import terms, all of which affects future use of gas pipelines
- government policies are often biased towards electrification,[15] and
- in residential markets,[16] developers are increasingly committing to greater electrification of their new and existing properties,[17] and there is growing evidence that local governments – whom approve most housing and urban development plans – are also seeking to reduce use of gas.[18]

Collectively, these factors create some real challenges for gas pipelines. They also reinforce why the AER should consider this further during the 2022 RORI review.

3.5 Overseas regulators recognise differences

As a start, the AER should look at how other networks deal with differences between gas pipelines and electricity networks. By only scratching the surface, it is clear that at least some regulators

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15 Other than some elements of the National Hydrogen Strategy, state, territory, and federal policy is biased to electrification and increasing the availability and interconnectedness of renewable electricity. Any policy intervention that underwrites or partially funds electricity investments in either generation, the transmission and distribution grid, distributed energy resources such as solar PV, or storage will necessarily lower electricity's relative cost and thereby increase its competitiveness to gas.

16 Residential markets make up a relatively small share of volumes for gas *transmission* pipelines but a relatively large share of gas *distribution* pipelines.

17 Mirvac, July 2019, Planet positive: Mirvac's plan to reach net positive carbon by 2030, p.13.

18 For example, in December 2019 the Councils Beyond Gas Forum was held in Melbourne to discuss alternatives to the traditional use of gas at a municipal level. Agenda items included case studies in a municipality committing to phase out gas, and gas-free building refurbishment, along with council strategies for gas phase out.

recognise that gas pipelines and electricity networks face different risks (or have the potential to) and provide them with different compensation for it.

For instance:

- as noted by Brattle Group, the Federal Energy Regulatory Commission estimates betas for groups of companies from the *same* industry (e.g. electricity transmission, natural gas pipelines) using comparable firms for that industry[19] – which means that those betas reflect the risks relevant to those industries
- the New Zealand Commerce Commission sets the asset and equity betas for gas pipelines above that for electricity networks – and, much like the AER does when undertaking economic benchmarking, the Commission uses overseas beta estimates to augment those available in New Zealand,[20] and
- as identified in the Brattle Group report, the Italian Regulatory Authority for Energy, Networks and the Environment sets equity betas for gas pipelines that are above those for electricity networks.[21]

Yet, the Brattle Group was not asked to specifically consider whether and how overseas regulators treat gas pipelines and electricity networks. More should be done to investigate this further. For instance, the AER already relies on international data when using benchmarking to inform the operating expenditure building block – it should not be controversial for the AER to do the same, for instance, when estimating the equity beta component of the rate of return that inputs into the same building blocks allowance.

3.6 Common treatment not required

Although it may be convenient to adopt a common approach to setting the rate of return for gas pipelines and electricity networks, the regulatory framework does not require it.

Importantly, the National Gas Law:

- requires that the RORI for gas pipelines promotes the National Gas Objective – which conceivably may lead to a different rate of return than that required to promote the National Electricity Objective
- does not require that the same approaches or assumptions are used to set allowed rates of return for gas as are used for electricity networks.

This leaves the door open for the AER to really test whether the 'one-size-fits-all' approach to setting the rate of return reflected in the 2018 RORI remains appropriate. Our view is that this should not be considered the default option.

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19 See, for instance: Commerce Commission, 30 April 208, *Guidelines for WACC determinations under the cost of capital input methodologies*, p. 86.

20 See, for instance: Commerce Commission, 30 April 208, *Guidelines for WACC determinations under the cost of capital input methodologies*, p. 13.

21 See: The Brattle Group, June 2020, *A Review of International Approaches to Regulated Rates of Return* , pp. 107–8.

3.7 What we recommend

Given these significant and enduring differences in investor risk, we recommend that, as part of the 2022 RORI review, the AER genuinely considers whether the risks faced by gas pipelines should be treated differently from those faced by electricity networks when setting the allowed rate of return.

This could involve:

- asking the Brattle Group to look into whether and, if so, how international regulators adopt different approaches for gas pipelines and electricity networks
- objectively comparing the risks faced by Australian gas pipelines and electricity networks, including by considering both qualitative factors and quantitative analysis (e.g. share and bond prices, cash flow volatility, credit ratings etc), and
- assessing whether the empirical data supports the current practice of treating gas pipelines and electricity networks the same when setting allowed rates of return.

Although we are here focused on the allowed rate of return, risk is relevant to other aspects of the price and revenue setting process, including the return of capital. As raised by our members in their respective AA proposals, the AER should consider other changes needed to promote financial viability and efficient investment in their gas pipelines. This may be better addressed as part of an industry-wide discussion, rather than piecemeal in individual AA proposals.

If nothing is done to assess these risks, then the incentives are stacked against gas pipeline operators seeking ways to invest in and re-purpose their assets to create options for low cost energy (with or without carbon) in the future. As set out in Gas Vision 2050, this will raise the future costs of energy by creating a need to replace assets that could more efficiently be re-used in a way that benefits energy consumers.

4. Concern 3: Avoiding unconscious biases

When developing the 2022 RORI, the AER and stakeholders will need to consider many of the same issues that it did when developing the 2018 RORI. But that does not mean we should jump to the same conclusions or otherwise rely upon the same advisors that may well lead to the same conclusions.

On the contrary, with the passage of time, the 2022 RORI review provides a real opportunity for the AER and stakeholders to reconsider past positions and evidence by genuinely testing them, drawing from new evidence and re-testing assumptions.

4.1 Potential for unconscious bias

Naturally, the 2018 RORI is a useful starting point when developing the 2022 RORI. However, using it in that way can lead to behavioural biases that should be managed and avoided where possible, namely:

- **Anchoring bias** – where there is a tendency to fix on the 2018 RORI as the starting point for the 2022 RORI and a failure to adjust for subsequent information that is made available (e.g. new stakeholder or expert material)
- **Confirmation bias** – where new evidence that supports approaches adopted in the 2018 RORI is prioritised, or given more weight, over that which does not
- **Overconfidence bias** – where the AER is overly optimistic about how right the 2018 RORI was or its ability to determine the 'right' approaches to estimating the rate of return.

Without conscious effort on the AER's part, we are concerned that these biases may affect the 2022 RORI review in a way that harms consumers long-term interests.

4.2 What we are seeing so far

We have already seen examples of this; for instance, where the AER has engaged some of the same experts that it relied on when developing the 2018 RORI to advise on alternative cost of equity models.[22] It is unsurprising to many stakeholders that those experts largely agreed with the approaches set out in the 2018 RORI.

Similarly, the AER's draft working papers position the Sharpe-Lintner Capital Asset Pricing Model (SL CAPM) as the default return on equity model for the 2022 RORI. Other models are effectively being tested against it.

Our concern is that such confirmation (from expert opinions) and anchoring (by starting with the SL CAPM) will unnecessarily narrow the AER's focus during subsequent stages in the 2022 RORI review process. Relying on the same experts will undoubtedly also influence how stakeholders engage in that process, potentially reducing their willingness to engage constructively with new information.

22 See: Partington and Satchell, 30 June 2020, *Report to the AER: Alternative Asset Pricing Models*.

At the same time, we have seen some positive moves by the AER to bring in new perspectives. The Brattle Group's review of international approaches to setting regulated rates of return offers insights that should help the AER improve the RORI.

4.3 What we recommend

In one sense, our role as a stakeholder is to challenge the AER if and when we see evidence of such behavioural biases arising during the 2022 RORI review. However, there are also steps that the AER should actively take to avoid them, including by:

- 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,[23] and
- 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).

Ultimately, if the AER's objective is for the RORI to best promote the National Gas and Electricity Objectives, then it should work hard to avoid falling into the trap of simply dusting off past positions and evidence.

[23] Although the AER sought joint reports during the 2018 RORI review process, the AER's use of those reports was limited.

Appendix A: Response to AER requests for feedback

This appendix sets out our responses to the requests for feedback included in the two working papers. Our responses are not exhaustive and we expect to engage on many of these topics throughout the 2022 RORI review process.

Table A.1: Feedback on AER working papers

Topic	Question	Response
International regulatory approaches to rate of return		
Similarities and comparability of approaches used by international regulators	*We agree that there are shared aspects between international regulators but we seek further stakeholder input on the extent of these similarities and whether the rate of return can be meaningfully compared across them.* (p. 2) *We invite stakeholder comments on the relationship between the AER's overall approach and the international approaches presented in the Brattle report. This could also include comparison of our rate of return outcomes relative to international outcomes, noting that such a comparison needs careful consideration.* (p. 3)	• The Brattle Group report highlights some important differences between the approaches reflected in the 2018 RORI and those used by some overseas regulators, including: – genuine use of cross checks that affect rate of return estimates (e.g. by Ofgem) – different compensation for risk faced by gas pipelines and electricity networks (e.g. by ARERA) – different approaches to estimating equity beta and MRP – alternative models and a wider source of input data (e.g. to inform parameter estimates). • The Brattle Group report (at Table 4) also suggests that the rates of return allowed by the AER are lower than those allowed by the peer regulators considered. • As discussed further below, these should be investigated further through the 2022 RORI review process.

Topic	Question	Response
Frequency of rate of return reviews / updates	*The Brattle report makes a number of conclusions around the frequency of the AER's rate of return reviews and the application of those review outcomes to regulated entities. Chapter 5 describes our initial assessment of these options and some of the challenges that would need to be overcome. We welcome stakeholder submissions in response.* (p. 3) *We invite stakeholder feedback on the frequency of rate of return reviews, the lag before these are implemented for each network, the necessity for updating all return on equity parameters and the option for annually updating the risk free rate.* (p. 18)	• These are important conclusions by the Brattle Group. • Ultimately, the frequency of reviews becomes less relevant if the RORI can be designed in a way that gives reasonable rate of return estimates when applied in a wide range of market conditions. • Although more frequent RORI reviews would be impractical, there is certainly scope to make the automatic updating process that applies when the RORI is applied to automatically reset more than just the risk-free rate parameter or to build in automatic cross-checks. • The RORI is unique in that it sets in an *approach* to determining *future* allowed rates of return rather than those rates of return themselves. This means that even if the approach in the RORI gives a reasonable rate of return at the time it is decided, what really matters is whether it will when applied to determine rates of return for individual access arrangement reviews. • It would, for instance, 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. • Unfortunately, this is exactly what the approach in the 2018 RORI *does* do when it requires the risk-

Topic	Question	Response
		free rate parameter to be updated when applying the CAPM, but not the equity beta or MRP. This approach leads to the real risk that the estimated rate of return does not reflect efficient financing costs when applied. • Updating the risk-free rate even more frequently (e.g. annually) would not address this risk unless the other parameters were not also updated. • Clearly, the National Gas and Electricity Laws restrict the ability for rate of return reviews to occur more regularly. However, there is scope for the *approaches* in the RORI to be designed so that more than just the risk-free rate updates when the rate of return is actually estimated.
International approaches that could lead to improvements	*We are seeking submissions on international rate of return approaches that could lead to an improvement in our rate of return approach. This includes submissions informed by the international rate of return outcomes and how it differs from (or is similar to) our regulated rate of return.* (p. 15)	• The Brattle Group report provides some useful insights into how international regulators estimate the rate of return. • The working paper identifies many of them. For us, insights that the AER should investigate through the 2022 RORI review process include: – Estimating equity beta using more frequent share price data (e.g. weekly) and by looking at more recent data – Broadening the sample used to estimate the rate of return, including return on equity parameters like equity beta or to at least distinguish business risks faced by gas pipelines and electricity networks

Topic	Question	Response
		– Giving cross-checks a genuine role when determining the allowed rate of return – Ensuring that all parameters are estimated consistently both when publishing the RORI *and* when using it to calculate the rate of return – Incorporating information from alternative models and more forward looking evidence – Ensuring that the MRP and risk-free parameters are estimated using time-consistent assumptions (e.g. both reflecting long-term or short-term data).
Adjustments for expected outcomes from incentive mechanisms	*Several international regulators make adjustments (of various types) to the overall rate of return or return on equity or debt. These options could be discussed in stakeholder responses to this paper. We present some advantages and disadvantages of the most prominent of these (Ofgem's adjustment for expected incentive outperformance) in chapter 5.* (p. 3) *We have a range of incentive schemes in place, and they appear to share the same core elements as Ofgem's incentive schemes. As such, we are seeking stakeholder views on this area.* (p. 20)	• There is no obvious basis for adjusting the rate of return for expected incentive outcomes. Doing so risks undermining the incentives and result in regulatory uncertainty. • The AER uses a range of incentive mechanisms to encourage regulated gas pipelines and electricity networks to adopt certain behaviour along with benchmarking techniques. These mechanisms were developed after extensive consultation with the objective of delivering that behaviour. • By design those mechanisms are intended to reward and penalise good and bad behaviour and outcomes, respectively. If potential rewards are taking away (by reducing the allowed rate of return), then there is a real risk that the desired behaviours will not materialise and consumers will suffer in the longer term.

Topic	Question	Response
		• 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. • Moreover, the incentive mechanisms applied by Ofgem differ markedly from those applied by the AER. There should, therefore, be no presumption that the concern that Ofgem was addressing by adjusting the allowed rate of return applies in Australia. • Our strong preference is for incentive mechanisms, such as those applied by the AER, to be designed so that they appropriately incentivise behaviour that benefits customers. At the same time, the allowed rate of return should be set to compensate for efficient financing costs. • Adjusting the allowed rate of return based on what those mechanisms are expected to deliver is inappropriate for several reasons: – Expected outcomes will differ across networks due to factors outside of their control – Expected outcomes can be hard to determine, and could be positive, negative, or zero – It is not clear how, if at all, expected outcomes are factored into allowed rates of return at the moment – for instance, how do such outcomes affect credit rating.

Topic	Question	Response
		• Ultimately, 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. It makes little sense to contaminate the allowed rate of return in that case.
Adjustments for cross checks	*When setting the 2018 Instrument, we included consideration of a number of cross checks. In that case, consideration of this evidence did not lead to a material change in our return on equity, return on debt or the overall rate of return. We invite stakeholder submissions on any of these adjustments, and the case for applying them in the Australian context.* (p. 19)	• Cross-checks are important when determining the allowed rate of return. • Cross-checks can be applied at two different points in the process: – First, when deciding what approaches and fixed parameters to use – Second, when applying those approaches and parameters to calculate the allowed rate of return. • The cross-checks used are likely to be different at each point. • For the 2018 RORI, the AER only considered cross-checks at the first point and, in the end, these did not affect the final RORI. We remain unclear whether the AER genuinely used those cross-checks to tests its estimated rate of return, or whether they were simply included in the review of that instrument for completeness. • For the 2022 RORI, the AER should: – Broaden the range of cross-checks it considers, including by looking at the four adopted by Ofgem

Topic	Question	Response
		– Clarify *how* it would look to amend the approaches, parameters or estimates if cross-checks are failed (e.g. change estimation approaches, cap or collar on values, a fixed value adjustment if certain conditions are met, etc) – Consider whether and how cross-checks could be applied when applying the RORI (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 (see our discussion in Section 2). • We recommend that the AER consult on cross checks (along with robustness) as part of its next rate of return working paper.
Any other matters	*We invite stakeholder submissions on any element of this draft working paper. When suggesting overseas rate of return approaches that could be incorporated into our approach, we request that stakeholders engage with the regulatory context in which those overseas approaches are used, as explained in the Brattle report.* (p. 3)	• Although the Brattle Group helpfully identifies and describes the various approaches used by several international regulators, its review was not exhaustive because: – There are many more regulators that it did not consider (e.g. regulators from Ireland, Canada, other European countries, and non-English speaking countries like those in South America) – There are many non-regulators that could also provide valuable insight about international approaches (e.g. investors, central banks, the World Bank or other multilateral agencies,

Topic	Question	Response
		academics, or the OECD Network of Economic Regulators). • Brattle Group also did not elaborate on the process that regulators went through to develop their approach. For instance, it was not clear how, if at all, regulators considered robustness before adopting their approaches or whether this was introduced through a subsequent review or appeal process. • Given this, the AER should: – Remain open minded to approaches and insights from other international regulators or non-regulators that may come to light through the 2022 RORI review process – it would be unfortunate if the AER concluded that it no longer needed to actively consider international approaches during subsequent stages in that review, and – Ask Brattle Group to describe how international regulators assess the robustness of their approaches before adopting them to set allowed rates of return – as discussed in Section 2, we recommend the AER doing more to test that its approach is robust, not just when the 2022 RORI is published, but also if it were applied in a wide range of potential market conditions.

Topic	Question	Response
CAPM and alternative return on equity models		
Forward looking approaches	*One of the perspectives coming from the Brattle Group report is the suggestion we consider including an explicit forward-looking element in our construction of the return on equity. Our assessment is that our 2018 return on equity approach already included some forward-looking information. Nonetheless, we would like to hear views on whether changes are necessary or desirable and if so how it might be done.* (p. 3) *Drawing from the two reports there seem to be two categories of changes we might consider:* • *how to include a more forward-looking return on equity model (other than the CAPM).* • *how to include more forward-looking inputs when we implement the CAPM.* (p. 22)	• We agree with the Brattle Group suggestion to include an explicit forward-looking element into the rate on equity. • Relying too much on historical return information can lead to return on equity estimates that do not match financial market conditions at the time they are estimated. This should be avoided. • Below we discuss the role that the DGM could play here. • Other potential market based information sources include traded option or future prices, although these may be better suited as cross-checks.
DGM, surveys or conditioning variables	*We are interested in views on whether we could include a forward-looking perspective by using the DGM or some other approach (such as surveys) to inform our choice of market risk premium.* (p. 3) *We are interested in views on whether we could include a forward-looking perspective by using the DGM to inform our choice of market risk premium. This might include suggestions for the form of the DGM and range of inputs. We are also open to suggestions on how other forward-looking methods, such as surveys or conditioning variables, should be used in market risk premium estimation.* (p. 24)	• In our view, the DGM could be used to include a forward-looking perspective. Other approaches such as prices of options or forward contracts could also be useful, although we are less convinced about surveys. • As a minimum, DGM-based estimates of the MRP should be considered when developing the 2022 RORI. They could be used to inform an MRP parameter fixed in that instrument. • One or more specifications could also be used to automatically update the MRP when the RORI is applied at a given point in time – which could help

Topic	Question	Response
		ensure that the return on equity estimation approaches are robust to a wider range of market conditions *when applied*. • The DGM, like all models, has limitations. Future dividends are hard to forecast, just like the future equity beta is when applying the CAPM. The key is that there are techniques available to address or otherwise recognise these limitations. • The AER should ensure that such limitations are looked at consistently across the various models and approaches available. For example, if difficulties in estimating dividends are an issue for the DGM, then the impacts of this factor should be considered when estimating beta, as beta is estimated by considering both capital gains and dividend returns on a stock.
Total return / Wright approach	*We consider the total market return approach is unlikely to reflect conditions in financial markets. However, we would like to hear views on whether there is a relationship between movements in the risk free rate and market risk premium, and if so how this might be reflected in our approach.* (pp. 3–4) *Our current assessment is that the Wright approach is unlikely to reflect conditions in financial markets. The econometric evidence does not support a causal relationship of negative and perfect correlation between the risk free rate and market risk premium as posited under the Wright approach.*	• We are in the early stages of the 2022 RORI review and are still considering what the evidence says. We will engage actively engage on topics such as equity beta and MRP when they arise later in the process. • Investor perspectives can offer very useful practical insights about how the rate of return is estimated by investors that the AER should actively seek out during the review process. • By way of example, those presented at the AER public forum provide a helpful starting point. Rob Koh from Morgan Stanley presented how he and his team estimated the return on equity – which involved applying a fixed MRP to a risk-free rate

Topic	Question	Response
	However, we would like to hear views on whether there is a relationship between movements in the risk free rate and market risk premium and, if so, how this might be reflected in our approach. Where possible, we request specific alternatives that stakeholders consider preferable, as well as the rationale for such a relationship. (p. 25)	where the risk free rate was determined as the simple average of historical and current risk free rate. • Such an approach might be a useful way of addressing at least some of the issues that Brattle Group identified with updating only some parameters at a time (e.g. the risk-free rate), rather than reconsidering them all in a consistent way. • On MRP specifically, the AER should take a step back and recognise that the SL CAPM in its original form does not actually include an MRP parameter. Only by convention is one adopted – as the difference between the expected return on the market and the risk-free rate. • Although the MRP is often estimated and fixed in its own right, this is an imperfect implementation SL CAPM that introduces further limitations. The AER should be mindful of this when looking at the available evidence. • As an approach that does not use a fixed MRP convention, the Wright approach provides useful information about how the SL CAPM should be applied. Although we are not necessarily endorsing the Wright approach as the *only* relevant implementation of the SL CAPM, it does provide insight as to why it is inappropriate to assume that the difference between the expected return on the market and the risk-free rate is fixed.

Topic	Question	Response
		• We agree that it is unlikely that there is a negative and perfect correlation between the risk free rate and MRP, just like it is also unlikely that the return on equity moves one for one with the risk-free rate (as the approach in the 2018 RORI implies). • However, there are good reasons why risk premiums may increase when government bond yields (used to estimate the risk-free rate) reduce. For instance, risk perceptions can be high at times when there are concerns with the economy that a central bank responds to be lower interesting rates. • There are also good reasons why, at other times, the return on equity may increase when the risk-free rate increases. A central bank may increase interest rates to abate expected inflation without any change to perceptions of risk. • Moreover, there is substantial evidence that the returns on the market are more stable than returns on government bonds across multiple time periods and multiple countries.[24] Whilst this does not imply perfect negative correlation between the risk-free rate and market returns – a position that networks have never put forward – it does suggest that adding a constant mark-up to the risk-free rate – as is done in the 2018 RORI – is likely to create more volatility and uncertainty than investors in market assets are expecting.

[24] See Jorda, O, Knoll, K, Kuvshinov, D, Schularick, M and Taylor, AM, 2019, *The Rate of Return on Everything – 1870–2015*, NBER Working Paper 24112, available from http://www.nber.org/papers/w24112.

Topic	Question	Response
		• The key is that there are a wide range of potential market conditions where different relationships between the MRP and the risk-free rate may apply – it could be positive, negative, or non-existent. • Our concern is that the 2018 RORI locks in one set of assumptions – namely that the return on equity moves one for one with the risk-free rate – without it being obvious why this would apply in all market conditions. • As posited in section 2, the estimation approaches adopted in the 2022 RORI should be robust to a wide range of market conditions, not just those applying at the time it is published.
Equity beta	*We invite submissions on how we should develop beta estimates that are representative of the risks associated with the regulated entities.* (p. 4) *We invite submissions on how we should develop beta estimates that are representative of the risks associated with the regulated entities. Where stakeholders suggest that a number of approaches be undertaken, it would also be helpful to have a framework for how the set of evidence is to be evaluated.* (p. 26)	• As we raise in Section 3, the AER should actively consider whether the RORI delivers allowed rates of return for gas pipelines that promote the NGO when gas pipelines are properly considered as a temporary monopoly. • By necessity, this means testing whether it is appropriate to use share price (and credit rating) information data for electricity networks when determining parameters like equity beta (and cost of debt) for gas pipelines. Even if the systematic risks facing electricity and gas pipelines were considered sufficiently similar in the past, the energy transition that they are facing affect them quite differently now. • This issue should be covered when the AER consults on parameter estimation and we will respond on

Topic	Question	Response
		this issue in more detail then; below we offer a few preliminary thoughts. • We are also mindful that there are genuine challenges with estimating equity betas for gas pipelines and electricity networks in Australia due to a lack of current share price data for comparable Australian listed networks. The Brattle Report notes that, when faced with similar challenges, other regulators tend to broaden their samples by looking at data from overseas jurisdictions (e.g. the NZ Commerce Commission). • Other Australian regulators do the same. For instance, the Essential Services Commission recently recognised the need to consider equity betas from overseas ports when reviewing the rate of return adopted by the Port of Melbourne.[25] • In our view, it is untenable to continue relying on the same very small set of Australian listed energy infrastructure firms. Many of those firms have been out of business for more than a decade. • Finally, risk changes over time. We are concerned with the long time period used to inform the equity beta adopted in the 2018 RORI does not accurately reflect current market conditions. • Informed by what international regulators do and its own experience, the Brattle Group recommend that the AER adopt a short and more recent time

[25] Essential Services Commission of Victoria, 16 December 2019, *Interim commentary – Port of Melbourne tariff compliance statement 2019-20*, pp. 24–31.

Topic	Question	Response
		period to estimate equity betas from. A broader international sample will help in placing more reliance on recent data. • As such, the AER should: – Reconsider the assumption in the 2018 RORI that the same equity beta should be applied to both gas pipelines and electricity networks – Look at equity betas from gas pipelines in other jurisdictions to see whether these can help augment the limited Australian sample – this will also help in using largely the same sample in all future RORIs adding to consistency in decision making – Place more weight on equity betas estimated using data from shorter and more recent estimation windows (e.g. 5 years of monthly date, or 3 years of weekly data etc). • Given the changes that the energy supply change has experienced over recent times, it is highly unlikely that share price movements from more than 10 years ago reflect investors risk perceptions today.
Other return on equity models	*Aside from the standard CAPM and DGM discussed above, our current assessment of the other candidate models is they have substantial limitations (the Black CAPM, international CAPM, consumption CAPM, Fama-French factor models, and a fixed-rate-plus-margin model). They see almost no use by overseas regulators. On the*	• No return on equity model is perfect. They all have flows; none can capture all of the interactions that play out in the real world. This needs to be front of mind when looking at *all* models when applying them. • Certainly, the SL CAPM is widely used in regulatory settings, but it is not infallible. It has limitations that

Topic	Question	Response
	information available to us at this time, it is therefore not clear how these models could have a role in setting our regulated return on equity. Nevertheless, if you are aware of new material that might support the use of these models, we would welcome that material. *More broadly, if you are aware of new material on how we might combine multiple models then we would welcome that material.* (p. 4) *On the information available to us at this time, it is therefore not clear how these models could have a role in setting our regulated return on equity. Nevertheless, if stakeholders are aware of new material that might support the use of these models, we would welcome submission of that material.* (p. 26–27)	could be addressed by looking at other return on equity models. • Simply deciding upon which model to use is inadequate as what matters is how it is implemented. There are many different ways to implement the CAPM, focussing particularly on how its parameters are estimated, and very few users of the CAPM implement it in exactly the way the AER does. • Our concern is that unconscious behavioural biases make the AER's implementation of the SL CAPM the default return on equity model, making it hard for other models or alternative implementations to be given serious consideration. Conscious effort is needed to avoid falling into this trap.
One model or multiple models	*If we were to primarily use one model, this would be compatible with retaining the 'foundation model' approach applied in the 2018 Instrument, though we would be able to make changes to other steps as appropriate. A multiple model approach involving a weighted averaging of different models would require changes to our overall equity estimation process. Overall, there appear to be a number of significant challenges to be overcome before a multiple model approach could be employed.* *We invite stakeholder submissions on these issues.* (p. 27)	• Our focus is on ensuring that the approaches adopted in the 2022 RORI are robust to a wide range of market conditions. • This could be achieved by looking at: – Alternative approaches when implementing the SL CAPM – A broader information set when estimating the SL CAPM, and – Cross-checks that provide reasonable bounds that the return on equity should fall within. • Our past position was based, in part, on a concern that the way that the AER applied the SL CAPM was

Topic	Question	Response
		not robust to a wide range of market conditions – and so using multiple models helped provide some diversification benefit across models that respond differently to those conditions. • As explained in Section 2, our focus now is more direct. Whatever approaches are adopted, they must be robust to a wide range of market conditions, including by testing candidate approaches against different conditions that may arise when the RORI is applied. There may also be an important role for cross-checks to apply automatically to give an extra layer of protection against inappropriate rate of return estimates.