EV:RAB Multiples

Australian Energy Regulator

24 October 2022

FINAL REPORT

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1. SUMMARY AND INTRODUCTION

As part of its work for the 2022 Rate of Return Instrument (RORI), the Australian Energy Regulator (AER) engaged CEPA to undertake analysis of (EV/RAB) multiples which was published in May 2022. In the Explanatory Statement (ES) to its Draft RORI, the AER considered that with careful interpretation there is merit in using evidence from EV/RAB multiples as a cross-check of the Rate of Return. The Independent Panel agreed, and recommended further analysis and consultation on EV/RAB multiples before the AER makes its final determination on the RORI.

The AER has accordingly engaged CEPA to undertake further analysis, and in particular to:

- Assess the analysis by the AER on the historic **achieved returns on equity** compared to allowed returns as a guide to future expected outperformance.
- Respond to **stakeholder feedback** on our May 2022 report.
- In the light of the above analysis, consider whether the **range of possible inferences** for the cost of capital can be narrowed.
- We have also been asked to consider whether applications by network companies to undertake **discretionary network investment** provides any insights on the cost of capital.

EV/RAB multiples and CEPA's May 2022 report

The Independent Panel has summarised the logic behind the interpretation of EV/RAB multiples, noting that "*if the ratio of market value to RAB is above one it indicates that at some future time the firm will be able to earn a rate of return above the [regulated] cost of capital*".

However, an allowed return above the cost of capital is only one of the reasons for an EV/RAB multiple above one for a RAB regulated business. For example, investors may expect companies to outperform operating or capital cost allowances. They may expect to benefit from additional revenue from incentive arrangements. The measured EV/RAB may need to be adjusted for the value of non-RAB regulated activities. As the Independent Panel has noted, if EV/RAB multiples are to inform decisions on the cost of capital, they "*must be decomposed to quantify…and to remove the effects from sources other than the cost of capital estimate*".

The purpose of our May 2022 report was to undertake such analysis. The first step was to **measure the EV/RAB**, for two Australian energy network companies, Spark Infrastructure (SKI) and AusNet Services (AST), both of which were previously listed and now acquired. We made adjustments to ensure the EV/RAB was for the RAB-regulated business, as well as an adjustment for the value of the AER's trailing average cost of debt approach. We found that both during the period when their shares were trading, and for the price paid by their acquirors, Enterprise Value (EV) was at a substantial premium to the RAB. This is consistent with other evidence on EV/RAB from market data and transactions.[1]

The second step was to estimate the **sources of the EV premium to RAB**. This depends on the difference between expected returns and the returns required by investors (this difference being known as "excess returns") in combination with the expected growth in RAB. Excess returns reflect the extent to which:

- achieved returns are expected to be different from allowed returns because of cost savings and incentive payments ("**excess allowance returns"**).
- companies are expected to outperform cost of debt allowances, the benefit of which accrues to equity.
- allowed returns differ from the returns required by investors ("**excess equity returns**").

[1] AER (2022). Electricity network performance report. July 2022.

We used stylised financial models for RAB regulated entities, based on the AER's post-tax revenue models (PTRMs) and identified a range of combinations of assumptions about the future financials of network companies, that are consistent with the observed EV/RAB multiples.

In this report we update this analysis, responding to feedback on our May report from stakeholders, and commentary from the Independent Panel on the Draft Rate of Return Instrument.

Stakeholder feedback – analysis and assumptions

Stakeholders provided feedback on the measurement of EV/RAB, and on the assumptions used to make inferences on the RAB model, and on whether inferences can be drawn from the EV/RAB multiples.

On the measurement of EV/RAB, multiple stakeholders have said that they considered our assumption for the EV of the **non-RAB regulated assets of AusNet** ("DFN") to be too low, and that it would be more appropriate to use the estimate of value by Grant Samuel of $3.0-3.3bn for the combined value of the business's leases and non-financial assets. However, deducting the value of assets that already exist of approximately $1bn shows that Grant Samuel's valuation includes a net present value of over $2bn for investments that have not yet been made. For an investment pipeline of $2.5bn that has yet to be spent to have a net present value of $2bn requires an assumption that there will be very high returns indeed. While possible in theory, given that many of the investments (as described by Grant Samuel) are in activities related to the core business, we consider that a valuation assuming a regulatory response and/or lower returns associated with effective competition for provision of these assets is more likely to reflect the value that investors would place on these assets. Grant Samuel prepared its valuation to inform shareholders whether they should accept an offer to acquire the business. Their report may be suitable for that purpose, which is a different purpose from ours.

However, some investors may place weight on the Grant Samuel valuation. We therefore include it in our analysis at the upper end of our estimate of the value of DFN activities.

There are a range of other detailed comments from stakeholders related to our analysis and we respond in detail in the body of this report. Some are incorrect; for others we have made adjustments to our analysis in response, but the overall impact is immaterial. For example, some stakeholders (e.g. ENA) assert that we have assumed zero RAB growth. That was not our assumption. The charts on pages 21 and 22 of our previous report show combinations of nominal RAB growth and outperformance on the cost of equity that are consistent with observed EV/RAB multiples. Nominal RAB growth is illustrated at between -2% and 10% per year (for over 50 years).

Two other points are worth making about stakeholder feedback on the draft RORI ES:

- Stakeholders (including ENA[2]) consider that there is at best limited scope for outperformance on the cost of debt. Consistent with this, in our estimates in this report we have provided for none in this report (in contrast to the assumption used in our May report).
- Stakeholders have provided no evidence on the outperformance against regulatory cost allowances that investors are anticipating. Without firm evidence to the contrary, we therefore use assumptions reflecting the evidence from the AER as suggested by the Independent Panel.

Stakeholder feedback – approaches and inference

Stakeholders mostly agreed with the approach of quantifying the sources of EV/RAB premia before using them as a cross-check. However, there is a view which has been expressed by some stakeholders that a decomposition of the excess returns cannot be done with certainty, expressed for example by Frontier which concluded that "*a reliable disaggregation of the RAB multiple is an impossible task*". As a result, it is argued that "*there is no reasonable basis for the conclusion that RAB multiples provide any support for the adequacy of the AER's allowed return on equity*"[3].

[2] ENA (2022) p 113.

[3] ENA (2022), p 16.

It is obvious that estimates of EV/RAB multiples are uncertain, as are estimates of the sources of EV/RAB premia or discounts. But it does not follow that conclusions about return expectations cannot be drawn. Examining alternative combinations of assumptions that are consistent with the evidence, and identifying when assumptions are implausible, does allow judgements to be made. There is uncertainty about the inputs to the Sharpe-Lintner Capital Asset Pricing Model (SL-CAPM) used in the RORI. That is precisely why this more direct cross check of the cost of equity is valuable. Ignoring highly relevant data is what may lead to "regulatory error". Like any piece of evidence, it needs to be treated with care, and should be considered alongside other evidence.

Other regulators are faced with such evidence, and in this context it is helpful to consider how they have considered and used it. Recently in the UK, for example, the Gas and Electricity Markets Authority (GEMA) made its "RIIO-2" determinations which were appealed by 9 companies to the Competition and Markets Authority (CMA). In its comments on the cost of equity, the CMA stated:

> *"More broadly, the appellants had argued that RIIO-2 presented a 'tough' package in the round - specifically that they faced difficult ongoing efficiency challenges and that the scope for outperformance had been significantly reduced in RIIO-2 relative to previous price controls. We noted, however, that the two most recent large premium transactions had occurred after the announcement of the respective price control regimes (RIIO-2 in the case of National Grid buying WPD and the CMA PR19 Redetermination in the case of Pennon buying Bristol Water). This made it even more difficult to accept the appellants' assessment that large MAR premiums can be justified by assumptions other than higher than required allowed returns or lengthy and consistent expected outperformance."*
>
> *"In our view, GEMA's assessment appeared significantly more likely to be consistent with the evidence. While there would be the potential for both synergies and overpayment in private M&A transactions,* ***the bulk of 'justifiable' premium would seem to be explained by a combination of assumptions about expected outperformance and differences between allowed and required returns on equity****. This would seem to match with a reasonably consistent pattern of listed company premiums (although at significantly lower levels than those seen in the recent large 'whole asset' transactions).* ***GEMA's assessment that significant MAR premiums provide supportive cross-check evidence that the allowed return is not too low seemed to match the available evidence****."*
>
> *We disagreed with the appellants that little to no inference could be taken from MAR premiums, and concluded that GEMA was not wrong to use MAR evidence as a cross-check to its cost of equity estimate. We also agreed with GEMA's assessment that the MAR evidence available suggests that GEMA's allowed return on equity is not too low.*[4]

While the legal framework in the UK is different from Australia, and the duties of GEMA (and CMA) differ from those of the AER, this is evidence that EV/RAB ratios are an appropriate cross check on the adequacy of allowed returns, and the analysis sufficiently robust to withstand the challenge of an appeal process. Like the approach of the GEMA and CMA, our approach does allow conclusions to be drawn from EV/RAB multiples.

Narrowing the range of possible inferences

We used a wide range of **assumptions about overall outperformance** in the analysis in our May 2022 report and illustrated the impact of these. The Independent Panel recommended the AER's analysis of historical returns on equity compared to allowed returns be used as a guide for expectations of future outperformance.

AER's analysis of data from 2014 – 2021 shows an equity return of 9.15% compared to a forecast return on equity of 4.95%.[5] The AER has decomposed this gap of 4.2% into seven components.[6] Of this, 0.79% is a result of

[4] CMA (2021), page 227, paragraphs 5.684, 5.685, and 5.686.

[5] AER (2022), page 32.

[6] These are opex, capex, tax, incentive schemes, temporary revenue effects, financing structure and cost of debt.

companies having higher gearing than the AER's notional gearing, and it is not appropriate to project outperformance for this. 1.49% is a result of lower interest rates than allowed for in price controls. Following commentary from stakeholders, we consider that it is not appropriate to project this into the future: stakeholders said that they consider that debt costs broadly align with future AER allowed returns on debt. There are also "other" revenues that have affected the overall returns by 0.28%. We assume that these are symmetric and on average will be neutral in their impact on equity returns.

Given historic outperformance against allowances, however, we consider it reasonable to assume that investors anticipate continued outperformance from a combination of incentive schemes, operating cost incentives, and capex incentives. These give the potential for overall outperformance of equity returns against the allowed cost of equity of approximately **1.6%**, of which incentives schemes are 0.65%, opex 0.47%, and capex 0.50%. Evolution of the regulatory framework may lead to changes to the composition of the excess allowance return, but we consider an aggregate excess allowance return assumption of 1.6% to be a reasonable reflection of expectations. We note that if expectations of excess allowance returns are higher or lower than this, our estimate of excess returns would change very little, with just a change to the balance between excess allowance returns and excess equity returns.

In our May 2022 report, we illustrated a very wide range of assumptions about **RAB growth in real terms**. In this report our analysis considers investor expectations of real RAB growth in the next 30 years of 0-1.9% CAGR (compound average growth rate) with a central projection of 0.95% CAGR, which aligns with a range of sources of evidence of expectations.

Updated analysis – EV/RAB estimates

Reflecting our updated assumptions, our central raw estimate of the EV/RAB of RAB regulated activities at the transaction dates is 1.52x for SKI and 1.67x for AST, compared to 1.64x and 1.74x in our May report. The main sources of the differences reflect: updates to the value of the non-RAB regulated activities for AST; a correction for the treatment of the loan note for SKI, and an adjustment for the value of other balance sheet assets and liabilities.

In our May 2022 report, we made a further adjustment to reflect the value to investors of the cost of debt approach adopted by the AER. In this approach, companies receive an allowance for the cost of debt which reflects the average of the 10-year yield in the previous 10 years. In an environment of falling interest rates that leads to higher allowed costs which add to the market value of the debt portion of the RAB. After adjusting for this effect, the central case EV/RAB estimates are 1.44x for SKI and 1.61x for AST.

There is uncertainty over these data. Using alternative assumptions for the value of non-RAB regulated activities gives a range of 1.35x – 1.53x for SKI and 1.47x – 1.76x for AST respectively.

Updated analysis – inferences

In our May 2022 report, we decomposed the source of EV/RAB premia into several components to illustrate possible impacts of alternative assumptions. However, for the purpose of making inferences about the cost of equity this level of detail is not required. As we are assuming no out- or under-performance on the cost of debt, excess returns can be divided into just two components: the difference between allowed returns and achieved returns (**excess allowance returns**) and differences between allowed returns and the investor required return (**excess equity return**).

Our analysis shows that with real RAB growth of 0.95% CAGR, at our central case EV/RAB multiples, total excess equity returns are expected to be approximately **3.8%** for AST and **2.4%** for SKI.

The inferences about the cost of equity are sensitive to assumptions about the value of non-RAB regulated businesses, asset growth, the assumed excess allowance return, and the period over which excess returns are earned. For example, if non-RAB regulated business valuations are assumed to be at the lower end of our range, then with central case assumptions for asset growth and the excess allowance return, there is an excess equity return of approximately 4.9% for AST and 3.1% for SKI. With higher values for the non-RAB regulated businesses, the excess equity returns are estimated at approximately 2.7% and 1.6% respectively.

Crucially, though, even if it is assumed that non-RAB regulated businesses have values at the upper end of our ranges, for there to be a negative excess equity return an assumption for real RAB growth of more than 3.0% CAGR (i.e. 5.5% in nominal terms) is required, combined with expectations of an excess allowance return of 1.6%. There is no evidence that such significant growth is factored into investor expectations. Our base assumption is that investors do not factor excess equity returns into their valuation after 2050; if, alternatively, it is assumed that investors factor these in, excess equity returns are estimated at 3.2% for AST and 2.1% for SKI.

Within our framework, we find that a zero excess equity return can only be inferred based on an assumption of both a high valuation for non-RAB regulated businesses, combined with a sustained high capital investment. While the implied cost of equity from these calculations is low compared to the cost of debt, this signals a large margin of error in the calculations, giving greater confidence to a conclusion that the excess equity return is likely to be positive.

Discretionary capex

The Independent Panel suggested that company attitudes to discretionary capex could provide evidence on whether the cost of capital is higher than the allowed return, arguing that if companies would like to make such investments it must be because they are earning high returns compared to their cost of capital.

Our review of the design of the regulatory framework for Australian energy networks indicates that the incentive arrangements are not consistent with such an interpretation. Under the incentive-based framework, network companies have a financial incentive to receive capital allowances that are as high as possible. This in turn maximises their returns (or minimises their losses) under the capital incentive sharing scheme (CESS) because the CESS determines financial rewards (penalties) based on actual capital expenditure *relative* to the allowance.

As such, we do not consider that applications for "discretionary expenditure" are an indication of an attractive allowed rate of return. Instead, they are an indication that the design of the CESS incentivises the network to pursue a high capital expenditure allowance. This is a well-known feature of the CESS.

EV/RAB: a cross check on the cost of equity

EV/RAB multiples represent direct evidence of the returns expected by investors in RAB-regulated businesses compared to those in investments of similar risk. The analysis provides a cross-check on other evidence used by the AER in setting the Rate of Return in the context that there is uncertainty about the cost of equity derived using the SL-CAPM model.

While there is uncertainty about the precise observed EV/RAB, even taking the lowest observed EV/RAB multiple consistent with the evidence shows that the overall returns that investors expect to earn from RAB regulated energy network businesses (the excess allowance return combined with the excess equity return) are not lower than those that are available to them in other investments of similar risk.

The analysis also indicates that the overall expected excess return is above that from outperformance of cost allowances and incentives. There is uncertainty about assumptions used to derive the estimates of excess equity return, and each individual assumption can be challenged. But the robustness of the result to the range of different assumptions, means that this evidence cannot be dismissed. It provides a solid basis for a conclusion in the round that investors do not expect the cost of equity set by the AER to be too low.

2. COMMENTS FROM STAKEHOLDERS

A number of stakeholders commented on our May 2022 report. Comments from ENA, supported by a report by Frontier Economics have been repeated by energy network companies and associations representing them and/or investors. The Consumer Reference Group has independently commented. In our remarks below we respond to the most significant comments, with other comments responded to in Table 1.

We respond to comments in three categories on:

- The measurement of EV/RAB.
- The assumptions used to draw inferences from the EV/RAB.
- The methodology and principles behind EV/RAB valuation.

For this report, we also consider it important to highlight issues that have not received any commentary, as well as submissions that stakeholders have made on other related topics such as views on the cost of debt allowance.

2.1. COMMENTS ON THE MEASUREMENT OF EV/RAB

AusNet's non-RAB regulated activities

Grant Samuel prepared a valuation of AusNet, the purpose of which was to inform former shareholders on their decision as to whether to accept an offer to sell their shares as part of an acquisition process. Several stakeholders, in particular ENA, considered that Grant Samuel's DCF valuation of $3.0-$3.3bn for the financial and non-financial assets of the non-RAB regulated activities of AST should be used to adjust the EV estimate. This compares to the valuation for the non-financial assets of $185m – $585m in CEPA's May 2022 report.

Grant Samuel notes that the multiples it attributes to this business are "very high relative to the available market evidence". However, the valuation is not based on multiples, but a discounted cash flow (DCF) valuation. It has not published its cash flow projections, but explains that it has placed "great reliance on medium to long term projections prepared by management".

While we cannot directly scrutinise the projections, we can draw on statements made by Grant Samuel:

- Over $2bn (over 60%) of Grant Samuel's value of the business is represented by the NPV of investment that has not yet been made.
- Of the $2.5bn investment pipeline, "the majority is more than five years away from commencement".
- Grant Samuel views DFN as "*an "extension" of AusNet's electricity transmission business, representing the unregulated growth options for the electricity transmission network*", and "*as the incumbent provider of Victoria's electricity transmission network, AusNet is well positioned to capture a large share of new transmission and connection projects in the state*".
- In terms of returns, these "should be higher than the regulated returns generated by its electricity transmission business".

For Grant Samuel to calculate that the NPV of $2.5bn of investment to be worth $2.0bn today before any capex has been spent (i.e. a present value of revenues less operating costs of over $4bn), it can be inferred that it is projecting that AusNet will earn returns that are at a very large premium to the cost of capital. This very high value of future capex could be caused by high cash returns during the projection period, or alternatively by implicitly high returns in its terminal value assumption.

If there is scope for incumbent network businesses to create such large NPVs from investment in related assets, we would anticipate a regulatory response to protect customers, or for competition to lead to a reduction in returns. We

consider it prudent to reflect that in the valuation used to assess EV/RAB multiples. Grant Samuel's valuation may have been suitable for its purpose of advising shareholders on a transaction; this is different from our purpose.

There is also commentary on the relationship between our valuation and the "contracted asset value". However, the status of the contracted asset value is not clear. In the 2021 Annual Report, it is stated that a value of $1.021bn represents the total value of contracted assets, regardless of the construction phase. So value is included in the contracted asset reporting of assets which may not be complete or possibly construction may not have been started. In addition, the terms of the contracts are not fully disclosed, the associated assets are not clearly identified in the financial statements, so it is not obvious to an external party that this asset value should be a proxy for the value to shareholders.

AusNet commented that CEPA has not engaged with it. However, our task was to make independent judgements based on publicly available information and reasonable inferences that can be drawn from these.

One further comment is in order on the Grant Samuel valuation of AusNet, of which the DFN value forms a part. ENA represents that Grant Samuel concludes that "*the market cost of equity capital is materially higher than the AER's regulatory allowance*" [7] At the same time, Grant Samuel values the regulated assets of AST at a substantial premia to RAB, averaging 1.4x for the RAB regulated businesses.[8] Those two statements are only consistent if Grant Samuel expects there to be very substantial persistent outperformance against regulatory allowances (and much larger than we assume later in this document), either during their forecast period or embedded in their terminal value assumption.

Impact on our approach

Grant Samuel's assumption is that returns from the non-RAB regulated activities will be persistently very high. It is possible that investors would place weight on that valuation. We therefore include it at the upper end of our range of valuation assumptions for these activities. We have maintained our May 2022 low end valuation (including both non-financial and financial assets) as our lower end of the range of values for these activities.

Debt valuation

There were a few different comments on our calculation of debt which are listed in the table where we have commented on these.

There is one methodological issue that is worth noting. Frontier Economics states that "*CEPA appears to have assumed that all debt relates to the regulated entity whereas a portion of that debt is likely to have been used to fund unregulated activities*". As is standard in finance practice, we estimate EV for the entire business by adding the equity for the whole business and debt for the whole business. We then deduct EV associated with non-RAB regulated activities to obtain EV for RAB regulated activities. Whether the debt is notionally financing RAB regulated or non-RAB regulated assets does not matter. Frontier's comment is not correct.

For our estimate of the EV/RAB ratio for the transactions, we used the market value of debt as far as we could. We also recognised that the AER allows debt costs based on the trailing average of 10-year bond yields. This means that the portion of RAB that is notionally financed by debt has a higher value than the face value of that notional debt. This increases the value of the RAB by 3.3% for AST and 5.7% for SKI. This approach is discussed in more detail in section 3.2.1 of CEPA's original report prepared for the AER.[9] This increases our estimates of EV/RAB ratios, and it is the first time that we are aware of such an adjustment. We received no comments on this adjustment, we consider it appropriate, and we therefore maintain it.

[7] ENA (2022). Rate of return instrument review. Response to AER's draft instrument and Explanatory Statement.

[8] CEPA analysis of data in the Grant Samuel (2021) report.

[9] CEPA (2022), EV/RAB multiples, prepared for the AER, May 2022.

Tax benefits

In our May 2022 report, we noted the possibility of a tax "step up" as a result of acquisitions. This has the potential to increase the tax base leading to lower tax payments. This is a factor which may have led the investors in the assets to pay more for assets.

We deducted an estimate of this tax step up as a sensitivity to our base case estimates of EV. Frontier Economics, in its report for ENA, stated that it considered that this should be included in the base case. As it appears to be broadly accepted that such tax structuring and savings is possible, to make the estimate of EV consistent with that for a benchmark investor, we agree that this value should be deducted. Our updated analysis includes this as a base case.

2.2. COMMENTS ON ASSUMPTIONS USED TO DRAW INFERENCES FROM EV/RAB

Terminal EV/RAB multiple

Stakeholders noted that in our inference model we have assumed a terminal value of 1.1 x RAB and that this had not been justified. Frontier suggested that a ratio of 1.41 should be adopted as the terminal value.

The EV/RAB multiple appropriate for the terminal value assumptions is one that represents a steady state. There is a good case for using 1.0x as the terminal value multiple. This would be based on the assumption that in future the regulator would make an accurate assessment of the cost of capital, and would also make appropriate forecasts of operating and other costs in price controls so that there was no systematic out- or under-performance.

However, the history of RAB premia suggests that a modest RAB premium is likely to be observed, and the 1.1x assumption was based on a subjective balancing of these factors, and it is consistent with the midpoint of Darryl Biggar's (2018) assessment of where one might expect EV/RABs to trade (0.9x – 1.3x).[10]

We recognise that an explicit assumption with a rationale for a choice of terminal multiple is appropriate. Our approach to this is set out in section 4 below. The impact of this on our base case projections is not material.

The value of cost savings and incentives

Network stakeholders make limited comments on the assumptions on likely achievement of cost savings and outperformance of incentives or the reasonableness of our assumptions.

We note that Frontier stated that "*CEPA's analysis relies heavily on the assumption that OPEX outperformance continues in the future according to the historical average rate…[and] there is considerable variability in past OPEX outperformance…It is unclear what assumptions about OPEX outperformance might have been adopted by the winning bidders".*[11]

It is not clear why variability in outperformance is a reason to exclude evidence of past performance as an indicator of future outperformance. In the estimation of the market risk premium for example, estimates of past rather volatility returns are used as an indicator of future expectations. While bidding assumptions are obviously confidential, it is reasonable to assume that bidders will, among other evidence, consider outperformance that has historically been achieved, consistent with the recommendation of the Independent Panel.

Cost of debt outperformance

In our May 2022 paper, we attributed a portion of the RAB premium to network outperformance of the cost of debt. There were no comments on this assumption by networks, who appeared happy to accept that this was a part of the reason for EV/RAB premia (e.g. Frontier Economics made no comment on this).

[10] Darryl Biggar (2018), Understanding the role of RAB multiples in regulatory processes. Page 11.

[11] Frontier (2022), page 13.

However, we also note that networks consider that the AER approach to the cost of debt is in line with debt costs. For example, ENA stated *"ENA supports the AER's conclusion that [there is] no evidence of material and persistent outperformance [and there is a] very close match to the average cost of debt in the network data".*[12] This comment reflects careful consideration of data by AER and stakeholders, adjusting for tenor and credit ratings.

We accept this latter evidence. In the circumstances, therefore, we consider it appropriate to assume that no value is obtained from cost of debt outperformance. If investors do in fact expect cost of debt outperformance and have factored that into their valuations, then that would directly affect the conclusions drawn about the cost of equity and may have implications for the appropriate cost of debt allowance.

Asset growth assumption

There has been limited commentary on what asset growth assumption it would be reasonable to assume. Frontier (2022) in its paper mentions an assumption of a conservative assumption of 4% net capex as a percentage of RAB, which they say leads to a decline in the real value of the network.

In considering asset growth, some stakeholders (e.g. ENA) assert that we have assumed zero RAB growth.[13],[14] That was not our assumption. The charts on pages 21 and 22 show combinations of nominal RAB growth and outperformance on the cost of equity that are consistent with observed EV/RAB multiples. Nominal RAB growth is illustrated at between -2% and 10% (for over 50 years).

We provide further consideration of asset growth in Chapter 4.

Frontier's inferences from the inference model

Frontier (2022) presents data from re-running our model using different assumptions. With their preferred valuation of AST's DFN assets, they estimate an EV for regulated assets of $13.9bn. With their chosen assumptions for outperformance against allowances, they calculate that the EV after adjustments is at a discount of 13% to the RAB.[15]

The purpose of the analysis in the May 2022 report was to be able to identify combinations of assumptions that are consistent with the observed EV/RAB ratios. We should expect that the cost of equity would be above the allowed return on equity for certain combinations of assumptions. If those combinations of assumptions are consistent with the evidence, then it would suggest that markets were expecting returns on equity that are below the cost of equity. The conclusions are dependent on the data and realism of the assumptions.

However, while ENA and Frontier have used this table to represent that it demonstrates that the cost of equity is too low, they are themselves relying on assumptions that are inconsistent with statements that they make elsewhere, [16] for example the value that they attribute in that table to the outperformance of the cost of debt. The representations of ENA members in discussions with AER [17]indicates that that they believe that the consumers are the main beneficiaries from opex outperformance and incentives.

[12] ENA (2022), page 112.

[13] For example see Frontier (2022) page 9.

[14] ENA (2022), page 119.

[15] Frontier (2022), page 11.

[16] ENA (2022), page 112 makes reference to alignment of AER cost of debt allowance wit the cost of debt, also see ENA's 11 March 2022 response to AER's Final Omnibus papers.

[17] See ENA (2022a) Review of incentive schemes, Response to AER discussion paper, 15 March 2022, page 3

2.3. COMMENTS ON METHODOLOGY AND PRINCIPLES

ENA on aggregated RAB multiples

ENA states[18] *"In theory, the RAB multiple would equal 1* ***if and only if*** *the EV reflected the present value of allowed revenues on the current RAB, assuming that the current allowance remains fixed in perpetuity; and the regulator's allowed return matched the market cost of capital – the return required by real world investors".*

The "if" part of this statement by ENA is correct: if the conditions are satisfied, the RAB multiple will equal 1. The "only if" part is not correct. A combination of alternative assumptions can be readily shown to be consistent with an EV/RAB multiple of 1. For example, one variation (of an infinite number) is that the "current allowance" could increase as the risk free rate rises, in line with a return required by investors that rises correspondingly.

This is important because the ENA's representation of the EV/RAB ratio suggest that it is a theoretical rather than a practical tool. It is our experience that it is an immensely practical tool used by investors worldwide as part of decision processes on relevant assets.

Disaggregation of RAB multiples

In line with the conclusions of the Independent Panel, stakeholders in general agreed that the sources of EV/RAB premia should be identified if conclusions on the cost of capital are to be drawn.

However, while there was support for this decomposition, there is not agreement about the inferences that can be drawn from this disaggregation. Frontier Economics, in its work for ENA, for example has stated "*a reliable disaggregation of the RAB multiple is an impossible task".* [19] The NSG concurs, and considers that *"reliance on RAB multiples as a cross-check could result in regulatory error*".

It is entirely normal to draw inferences from data when there is uncertainty about that data. The approach adopted in our May 2022 report, with analysis updated here, provides a framework within which to assess what combinations of assumptions are consistent with the observed data, and through refining those assumptions identify what can be inferred. Rejecting data without this careful consideration would also likely lead to "regulatory error".

Portfolio benefits

The NSG state that "*there can be factors outside of the regulatory framework that have still impacted that RAB multiple, such as portfolio benefits of investing in the relevant assets (for diversification or other reasons) as well as future opportunities to provide unregulated services. This will vary on an asset-by-asset basis."*

If "portfolio benefits" increase the price that investors are prepared to pay for assets that reflects a reduction in the cost of capital. For example, individual investors may value inflation protection, increasing the price that they are prepared to pay for electricity network assets, lowering their expected return. In addition, if there are future opportunities to provide unregulated services these should be valued, taking account of any interactions with the regulated business.

Grant Thornton on EV/RAB multiples and related matters

The ENA commissioned Grant Thornton to prepare a report on EV/RAB multiples, and refers to this evidence in its submissions on the Rate of Return Instrument. We provide comment here on the matters that relate to our work for the AER on EV/RAB multiples.

[18] ENA (2022), ENA response to AER's Draft Instrument and Explanatory Statement, page 117.

[19] Frontier (2022) page 13.

The purpose of Expert Reports

ENA has relied on expert reports in its submissions. As noted above, expert reports on transactions are prepared with a particular purpose: to advise investors on whether they should accept the terms offered by a potential acquiror. Grant Thornton, on behalf of ENA, asserts that the overall incentive arrangements on Experts, commissioned by a company's board, makes them independent and their views of value unbiased. We make no comment on that, or on the direct commentary of Grant Thornton on the market cost of equity vs the AER's determination, but simply note that the purpose of advising whether "*a transaction is fair and reasonable, or in the best interests of shareholders*" is different from our purpose or indeed that of the AER.

Reasons for differences between EV/RAB and 1

Grant Thornton lists and discusses a number of factors that may lead to EV/RAB premia or discounts. These include: out- or under- performance against Opex allowances; out- or under-performance against Capex allowances; differences in tax liabilities from tax allowances; the relationship between regulated entities and other group companies; the benefits of incentive schemes; unregulated returns; and synergies.

Most of these factors have been considered elsewhere in our commentary. One which has not is the relationship between regulated entities and group companies. Grant Thornton states that outsourcing to group companies may "*result…in the regulated entity incurring a higher cost…the AER …does not approve amounts that are above this value".* It is a regulated company's choice whether it outsources costs, and whether this allows it best to beat the benchmark set as part of the price control setting process.

As Grant Thornton notes, expectations of synergies between an acquiror and an acquired company may lead the acquiror to bid higher to reflect the value of these. If so, this would not just be reflected in the price paid, but also in the projected future cash flows, an expected value of which is reflected in our methodology.

The potential for non-RAB regulated activities to enhance valuations has been addressed in our work by valuing those businesses separately.

Terminal value assumptions

Grant Thornton notes that the Experts it is commenting on use a Gordon Growth method to estimate terminal values, and that the embedded growth assumption is 2.5%, consistent with the centre of the RBA's band for inflation. We can also infer from the Expert reports that the valuers have estimated that regulated businesses have an EV/RAB at terminal is substantially above 1.

An expectation that outperformance is limited in the long term, combined with an assumption that the returns are below the cost of capital are inconsistent with an EV/RAB multiple that is above 1. It appears from the text of the Grant Thornton report that this is driven by the cash flow assumption and the mechanical application of the Gordon Growth method. If the EV/RAB at terminal is substantially above 1 it means that implicitly large excess returns are being projected into perpetuity. The Grant Thornton report on Expert valuation appears to represent that Experts value these businesses without any consideration of whether valuations are consistent with equilibrium returns on investment into the long term.

Decomposing the EV/RAB multiple

Grant Thornton notes[20], in common with other stakeholders, that adjustments need to be made to enable inferences to be made about the adequacy of regulated returns. The purpose of the work in this report (updating our May report) is to allow such analysis.

However, Grant Thornton notes that forecast data for Expert Reports is often not made public, and valuations are based on "*qualitative assessments which are not observable or measurable in terms of their impact on the RAB multiple…as such, it is unlikely that the RAB multiple could be reliably broken down sufficiently to provide a reasonable benchmark for determining the adequacy of regulated returns*". In our work we have identified

[20] Grant Thornton (2022), page 30.

combinations of assumptions that are consistent with observed data on EV/RAB. While the disaggregation desired may not be done with certainty, it is possible to assess the reasonable of different assumptions that may determine observed EV/RABs.

Comparing Expert Report views of the cost of equity

Grant Thornton notes that the Expert Reports publish "*estimates of the market cost of equity capital against which the regulatory allowance can be compared"*. However, Grant Thornton also highlights that the method of the Experts that it has concentrated on (Grant Samuel and KPMG) take a different approach than the AER: "*the AER sets the regulatory WACC for a single regulatory period, while the discount rate adopted by an Expert or investor is used into perpetuity"*. Furthermore, it explains that: *"as a result, KPMG and Grant Samuel took separate approaches to remove the short-term market conditions from the selected discount rate...in contrast the AER …did not adjust these factors"*. [21]

Grant Thornton states "*Given the comparability of the tasks undertaken by independent experts and the AER, and the independence requirements ASIC place on Experts, the approach to calculating the required rate of return for regulated energy assets should be consistent between both parties".*[22] But the Experts cited are projecting a single nominal discount rate to apply into perpetuity. This requires a view to be taken of where risk free rates are likely to be in the long term. The AER's method, in contrast, uses a measure of prevailing risk-free rates which are appropriate for an individual price control period. Under the AER's approach risk free rates included in allowed return estimates adjust as and when risk free rates change. If the Experts are correct about their assumption about long-term risk-free rates, their risk-free rate estimate will align with the average of those of the AER in its future determinations, and in that respect there may be consistency as suggested by Grant Thornton. The Experts' approach may sometimes be appropriate for long-term valuations[23], but a normalised approach to assessing returns cannot be expected to be the same at each date as the one used by the AER which reflects current market conditions and will evolve as interest rates rise (see section 3 below for a further discussion of this in the context of the analysis of this report).

The difference in methodology means that the assertion by the ENA that "*the independent expert reports provide direct evidence of the material inadequacy of the current level of the allowed return on equity*"[24] is not supported by the evidence. When risk free rates are low, by construction, the AER's approach will lead to lower cost of equity than that of Experts, and it is possible for there to be such a difference and for both to be correct given the different methodologies. EV/RAB multiples provide a more direct estimate of the cost of equity as it is based on what investors do, rather than on what Experts say.

However, we note that in Grant Samuel's report on AST, they estimate an EV/RAB substantially above 1 for each of the RAB-regulated businesses. That implies that their cash flow projections are based on an expectation that each of those businesses will deliver excess returns (either from allowances or the allowed return on equity or both), i.e. overall returns are expected to be above those required by investors.

Summary of other comments

We have summarised the range of comments related to our May 2022 report submitted to the AER in Table 1 below. We note that many comments from networks repeat or are similar to those from ENA.

[21] Grant Thornton (2022), pages 13-14.

[22] Grant Thornton (2022), page 18.

[23] In our experience, sophisticated investors typically use time-varying nominal discount rates rather than the single nominal discount rate that is reported here to be used by Experts.

[24] ENA (2022) page 126.

Table 1: Summarised stakeholder comments

Stakeholder	Source	Comment	CEPA response
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	Total debt includes bank debt facilities for SPARK but does not include these for AusNet	Market value of debt calculations are slightly different for each of AST and SKI due to differences in reporting and availability of data. For AST our calculation was the market value of all public debt instruments we could find plus the difference in the face value of public debt instruments and the face value in debt reported on AST balance sheet. This difference in face values captures bank debt facilities reported on AST's balance sheet.
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	Have assumed that all debt relates to the regulated entity rather than assigning some of this debt to unregulated activities	We valued unregulated activities using an enterprise value. Enterprise value will capture the value of debt assigned to the unregulated activities
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	Difference in Spark valuation between page 25 and Figure 4.4. $6,251 bn versus $17,149 bn	The $17,149 bn represented the RAB unweighted for the ownership percent of SKI.
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	CEPA: Applies a multiple of 1-3 to current unregulated revenues. No regard to substantial future investment program. Mid-point estimate is $370 million. Alternative: Independent expert report contains detailed modelling of proposed future investment program. Independent expert mid-point estimate is $3,150 million.	Addressed in section 2 and 4.
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	CEPA: Zero tax benefits arising from sale transaction Alternative: Independent expert valuation of benefits from step-up in	Step-up now included in base case.

Stakeholder	Source	Comment	CEPA response
		tax asset base arising from the sale transaction.	
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	CEPA: Assumes aggregate RAB multiple reduces over time to 1.1. No reason provided. Alternative: Assume that aggregate RAB multiple remains constant over time.	Addressed in section 4
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	CEPA: Zero new investment in regulated assets. Implication is that the value of regulated assets asymptotes to 0 over 50 years. Alternative: Conservative estimate of 4%. Still does not keep up with depreciation. Real value of assets declines slowly over time.	See main text in this chapter, the assumption was not zero growth.
ENA	Analysis of RAB multiples, Frontier Economics, 27 May 2022.	Valued Spark Renewables pipeline valued at 0	We have included a revised valuation of Spark renewables pipeline of approximately $35 - $65m taken from the range of estimates provided in the independent expert report for the SKI takeover.
AusNet	AusNet – Response to AER Draft RORI – September 2022.	CEPA made some fundamental errors in its analysis, most strikingly the valuation of AusNet's development and future networks business, which has a current contracted asset base of $0.9bn, more than double CEPA's 'high-end' valuation. This error has arisen from CEPA using an inappropriate valuation methodology which does not reflect the nature of the business and ignoring key evidence in the independent expert report prepared for the AusNet acquisition.	Addressed in section 4.2
AusNet, Ausgrid and Transgrid	AusNet – Response to AER draft RORI – September 2022.	Expressed support for ENA's submission.	Have addressed in our responses to ENA's comments

Stakeholder	Source	Comment	CEPA response
	Ausgrid – Response to AER draft RORI – September 2022. Transgrid – Response to AER draft RORI – September 2022.		

Source: CEPA analysis

3. NARROWING THE RANGE OF POSSIBLE INFERENCES

To assess the sources of EV/RAB premia or discount, we have constructed a stylised financial model (our "Inference Model") and use this to assess possible combinations of assumptions that are consistent with the evidence of observed EV/RAB ratios. We make projections of future cash flows using assumptions about the returns that investors may expect to earn, and the model solves for the discount rate that is consistent with the observed EV/RAB ratio.

In our May 2022 report, we used a wide range of assumptions about overall outperformance in the analysis in our May 2022 report and illustrated the impact of these. The AER asked us to narrow the range of possible inferences. In this section, we consider five different assumptions.

In this section we consider:

- The period of explicit forecasts.
- Expected excess allowance returns.
- Expected RAB growth.
- The terminal EV/RAB ratio.
- The projected allowed return.

3.1. THE PERIOD OF EXPLICIT FORECASTS

In common with valuation practice[25], our model has a period of explicit cash flow projections, with value of cash flows beyond that period reflected in a terminal value. The terminal value should be based on a neutral or equilibrium set of assumptions, at a time sufficiently far in the future that it can be assumed that a company is neither creating nor destroying substantial shareholder value from its activities.

For the analysis in this report, we have chosen 2050 to be the end of the explicit forecasting period, which aligns with AEMO's ISP planning horizon. We consider it likely that the bulk of value creation/dilution by any energy network company that an investor would reflect in their valuation would be achieved by 2050, and accordingly it would be spurious to include substantial value creation or erosion after that date. Given the uncertainty about projections beyond 2050, we consider this a more appropriate assumption than the 54 years we assumed in our May 2022 report. We make different projections in the explicit forecast period from those reflected in the terminal value.

3.2. OUTPERFORMANCE VS REGULATORY ASSUMPTIONS ("EXCESS ALLOWANCE RETURNS")

In our May 2022 report, to make inferences about the value of future cost savings measures, we made assumptions about future operating cost savings and incentive payments that reflected the outperformance against allowances in percentage terms[26].

The AER has undertaken analysis of profitability with a view to identifying measures of profitability that allow it to assess the expected returns of a network service provider compared to actual returns, in comparison to its peers, and other industries.[27] As part of its work, it identified a few key ratios to examine, and these include measure of

[25] For example see Copeland, Koller & Murrin (1995).

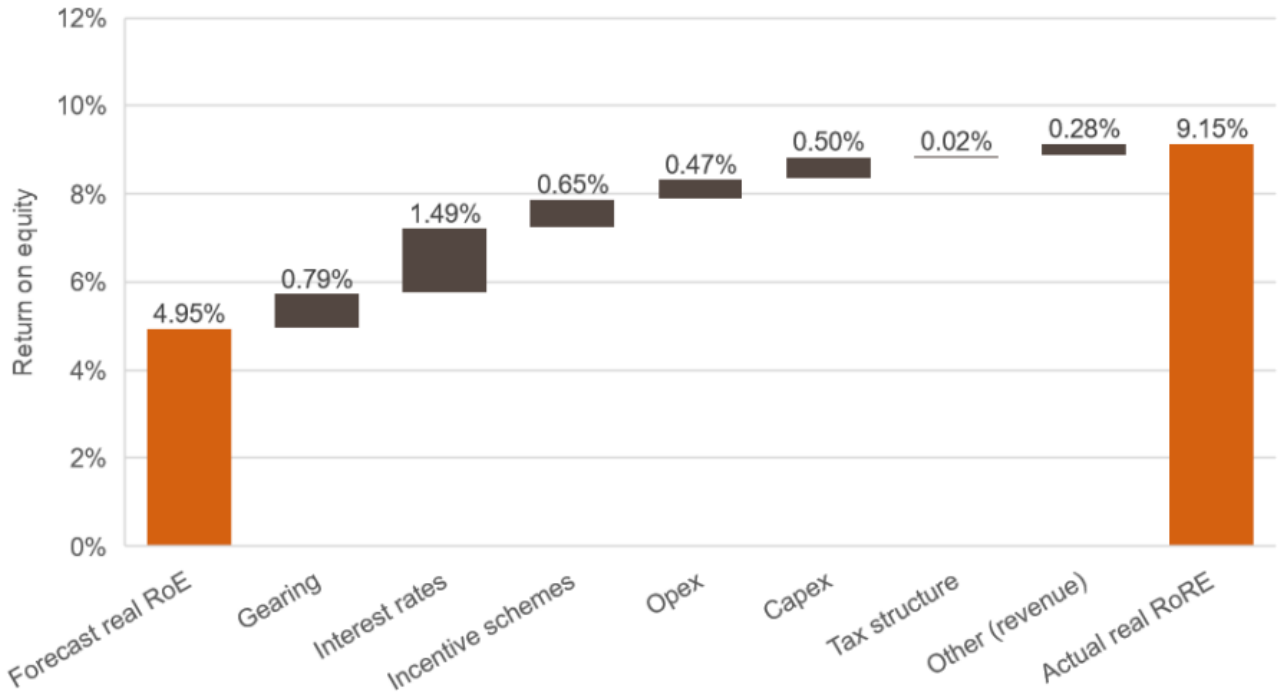
[26] CEPA (2022) Appendix B.

[27] AER: Electricity network performance report 2021 and 2022.

Return on Regulatory Assets, and Return on Regulatory Equity. The data used is from regulatory (rather than statutory) accounts and there has been wide ranging stakeholder commentary on the approach to collation and processing. The Independent Panel has highlighted that this data may play a possible role in the decomposition of the RAB multiple.

The average outperformance against regulatory assumptions over 2014-21 led to an aggregate excess allowance return (achieved return compared to the allowed return) of 4.2%. The breakdown of these effects averaged across all network companies for the whole period considered in aggregate is illustrated below. In the following sections we consider each of these drivers and our observations on appropriate assumptions.

Figure 1 AER's historic analysis of return on equity



Source: AER Electricity network performance report 2022 figure 4-6.

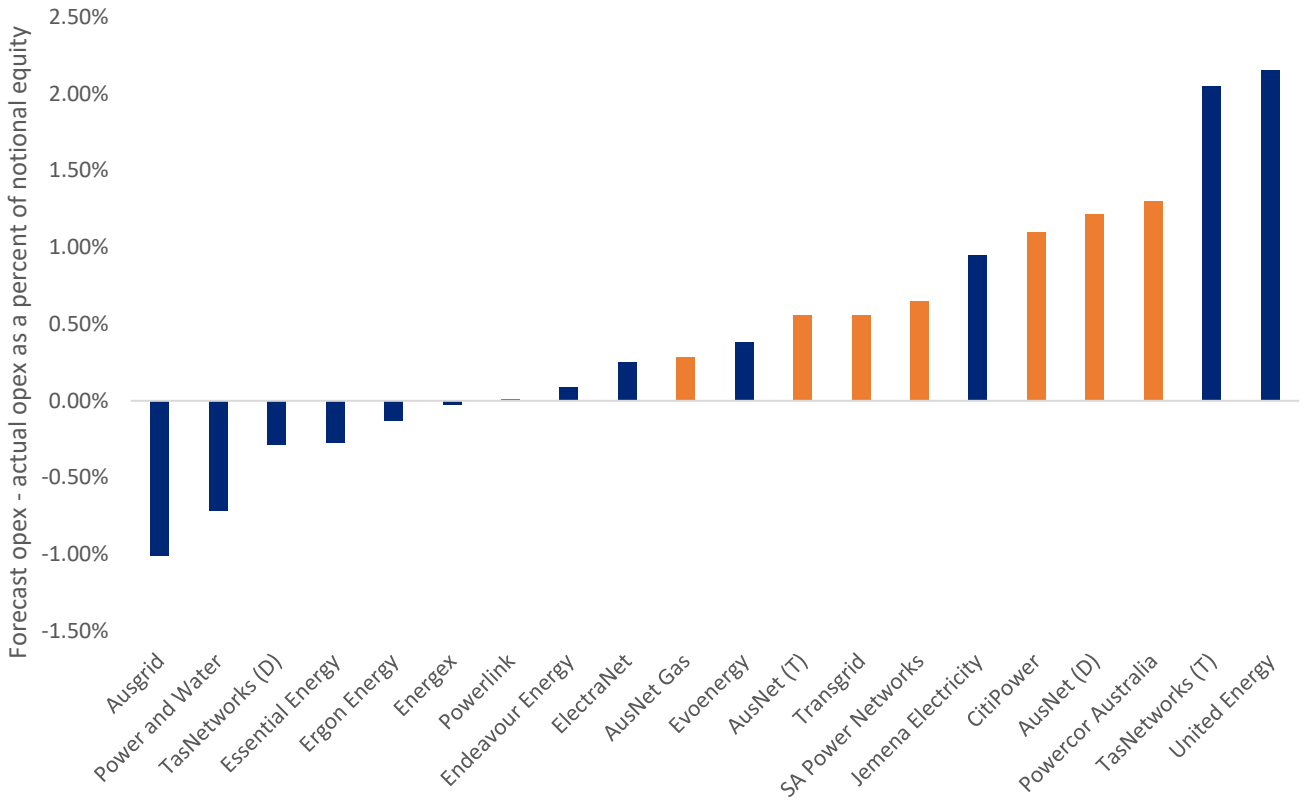
Opex

If a network's opex is lower than projected at the time of a price control it will achieve higher returns to equity through the incentives framework. The AER found that opex outperformance by electricity networks on average made an incremental contribution to equity returns of 0.47%.[28]

The following figure shows the differences in forecasted opex and actual opex for Australian energy networks from 2014 – 2020. The results show that businesses owned by AST and SKI do not significantly differ from other networks. Therefore, we are confident that the 0.47% identified by the AER is representative of expected outperformance of AST and SKI.

[28] Electricity network performance report 2022, AER, figure 4-6.

Figure 2: Difference between forecast and actual opex for electricity networks, average across 2014 - 2020



Source: CEPA analysis of AER data

Capex

The AER's Electricity network performance report 2021 gives the following reason for why differences in actual and forecasted return can contribute to differences in forecasted and actual returns to equity:[29]

- *If capex is lower (or higher) than forecast, the network will have to raise less (or more) capital than forecast; and*
- *as a result will keep (or lose) the incremental return on capital allowance relating to the difference until the end of the regulatory period when the RAB is rolled-forward.*

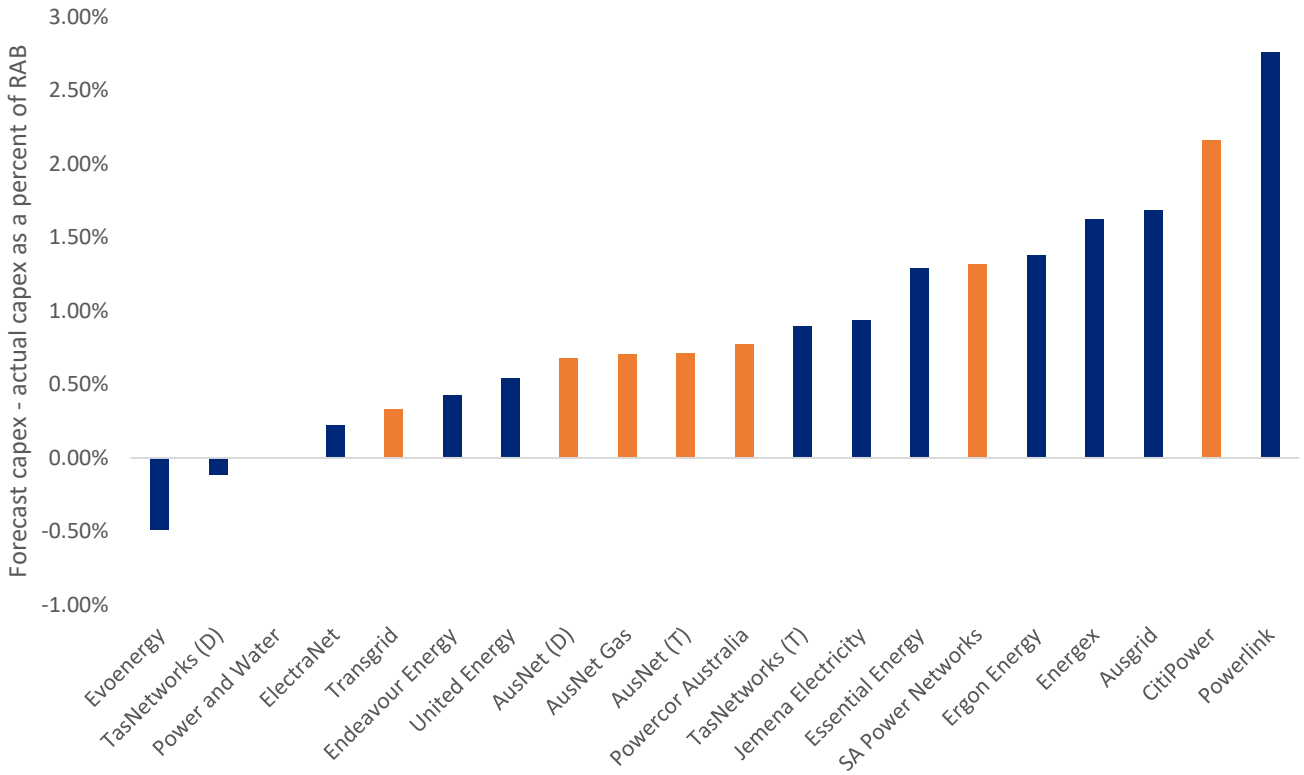
The AER found that on average across all networks differences in capex compared to forecast contributed approximately 0.5% to the differences in allowed and actual returns to equity.[30]

The flowing graph shows the difference between forecasted and actual capex. Similarly to opex, we found that differences in forecasted and actual capex do not differ significantly between business owned by AST and SKI and other networks. Therefore, we consider it appropriate to rely on the AER's figure of 0.5% as expected outperformance from capex.

[29] AER (2021), page 70.

[30] AER (2022), figure 4-6.

Figure 3: Difference between forecast and actual capex for energy networks, average of 2014 - 2020



Source: CEPA analysis of AER data

Tax

The AER found that tax structure had almost no effect on returns for electricity networks, because:[31]

- *Most electricity networks reported in most years that they are taxed as companies, NTER (National Tax Equivalent Regime) entities or government owned non-NTER entities.*
- *Those that reported as flow-through entities retail part ownership.*
- *As a result, if we treat NTER payments as tax (or transaction equivalents for the government owner non-NTER), average tax rates are very close to our 30% benchmark.*

The analysis and commentary indicate that it is reasonable to assume that EV/RAB multiples do not reflect any expected outperformance or underperformance against the tax allowances.

Incentive schemes

Incentive schemes are designed to reward networks for delivering outcomes that are in the best interests of their customers and to encourage them to do so. The rewards (and/or penalties) increase (/decrease) network profits.[32] The AER found that on average across all networks incentives schemes contributed 0.65% to the difference

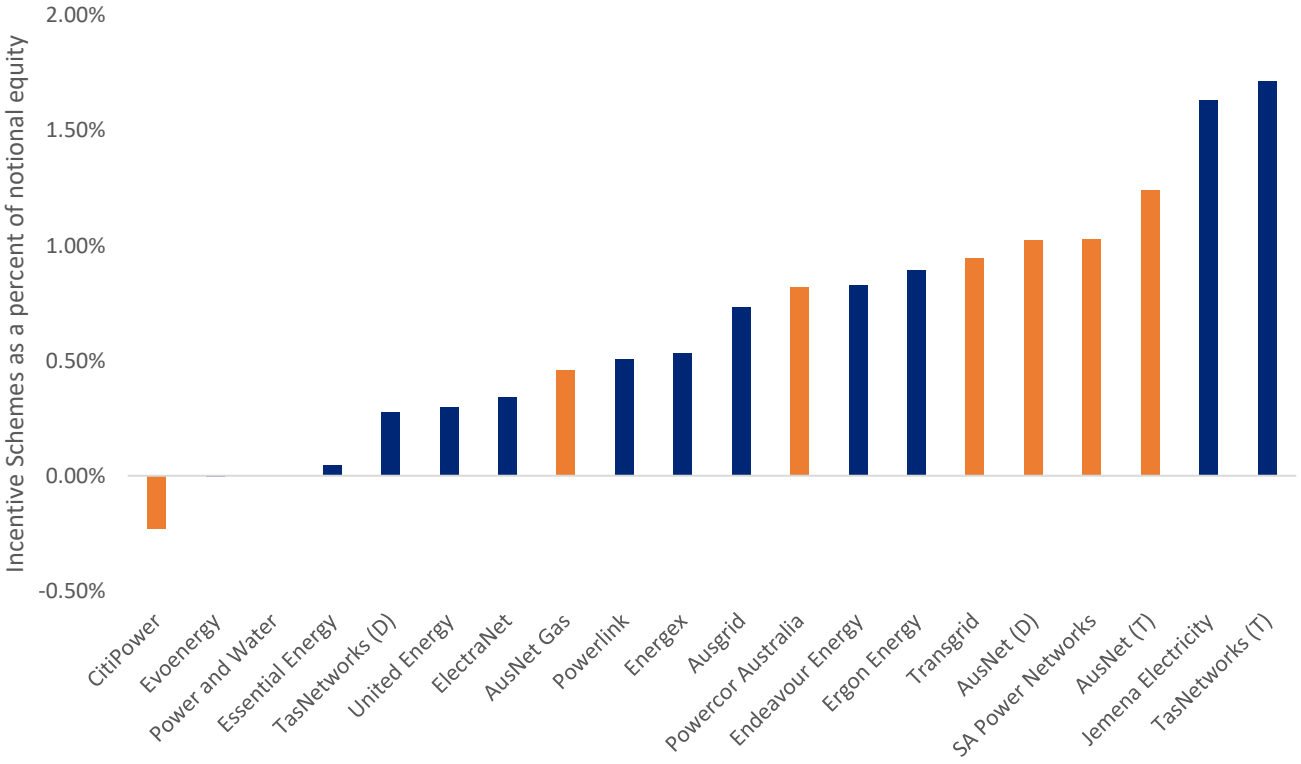
[31] AER (2021), page 74.

[32] AER (2021), page 73.

between actual and forecasted returns.[33] The AER has also stated that they expect average benefits from incentive schemes to increase in the future due to CESS.[34]

The following graph shows incentive payments as a percentage of RAB for energy networks in Australia. Incentive payments to businesses owned by AST and SKI are significantly different to other networks. Therefore, we consider it appropriate to rely on the AER's figure of 0.65% as expected outperformance from incentives schemes.

Figure 4 Incentive payments for energy networks, average of 2014 - 2020



Source: CEPA Analysis of AER data

Temporary revenue effects

Networks may earn more or less revenue than the targeted revenue cap due to actual demand being different from forecasted demand. The AER states three different ways that there may be differences in actual return and forecasted return due to revenue:[35]

- *Collecting more or less revenue than targeted through the revenue cap.*
- *Impacts of revenue smoothing.*
- *Increases or decreases to the annual revenue target to account for past over or under recoveries.*

Neither of these revenue effects are lasting and over the long-term can be expected to average zero. We therefore consider it inappropriate to assume that investors expect such effects to persist and therefore do not reflect any value from such effects in our analysis of EV/RAB multiples.

[33] AER (2022), figure 4-6.

[34] AER (2021). Review of incentive schemes for networks. Discussion paper.

[35] AER (2021), page 63.

Financing structure

To estimate the appropriate return to use in revenue allowances, the AER assumes that companies will be financed with a specific mix of debt and equity, the "notional gearing". If a company chooses a different capital structure, gearing that is higher or lower than the notional gearing, equity holders would receive a different return than the allowed return on equity even if all other allowances reflect regulatory projections. If the actual gearing is higher than the notional gearing, then returns on equity will mechanically be higher, and *vice versa*.

The AER found that differences in financing structure made an incremental contribution of 0.79% to the difference in actual and allowed return to equity.[36] It is possible that network companies will choose to have higher or lower gearing than the notional gearing in future. However, these effects are mechanical, and don't in themselves signify a misalignment of allowances with investor requirements. We therefore do not reflect any expectation of higher or lower returns from this factor in our analysis.

Cost of debt

The AER uses a benchmark cost of debt to set revenue allowances. This means that Networks may raise debt at higher or lower rates than used by the AER in its building blocks. The profitability analysis undertaken for the AER over the period 2014 to 2020 found that:[37]

- *Networks have, on average, consistently achieved higher returns as a result of raising debt at rates below forecast.*
- *The magnitude of impact arising from this difference has varied through time.*
- *We expect that some of these differences will decline as networks complete their transitions into full trailing average debt portfolios under our binding rate of return instruments.*
- *However, there is some evidence of persistent outperformance which we are investigating through our pathway to the 2022 binding rate of return instrument.*

We noted in the section above that the ENA has commented that it also considers that the AER's approach to the cost of debt is appropriate and aligns allowed costs with actual costs. While it is possible that investors may anticipate debt cost outperformance, in the circumstances we think it reasonable to assume no debt outperformance in future in line with the views of ENA and AER.

We have, however, made an adjustment to the opening EV/RAB multiple to consider the impact of the AER's trailing average cost of the debt.

Assumptions about excess allowance returns

The difference between achieved returns and allowed returns resulting from gearing, tax, and the cost of debt and other revenue effects accounted for 2.6 percentage points of the 4.2% excess allowance return estimated by the AER. However, we consider that it is appropriate to assume that there is no sustained value for shareholders from these and therefore do not contribute to EV/RAB.

The source of the remaining 1.6% excess allowance return is from opex incentives, capex incentives, and other incentive allowances. The Australian regulatory framework has evolved over the last 25 years, including the establishment of the AER in 2005. As the framework has matured, more recent data as analysed by the AER is more likely to reflect future expectations of outperformance or underperformance against allowances.

[36] AER (2022), figure 4-6

[37] AER (2021), page 66

In our May report, we noted that there has been variability in the contribution from these components across time, and the charts above show that there has been variability between companies.

It cannot be certain what assumptions investors make about companies, but given the persistence of the outperformance, we consider that it is reasonable to assume that investors in making their decisions are likely to have assumed that it will persist, and that the historic average is a sensible base case expectation for EV/RAB analysis. Of course, expectations of the performance against allowances of different companies will differ, in particular in the near term. Over the period of the model, though, it is likely that investors would expect outperformance not to be systematically different for different companies. We note that the performance of the two companies considered in this report is either average or above average.

We therefore assume that as a base case assumption, investors expect companies to achieve an excess allowance return from all three sources of **1.6%** for the explicit forecasting period to 2050. If expected excess allowance returns are different from this, it should be noted that it would not make a material difference to the calculation of the expected overall excess return.

Beyond 2050, we consider that investors would not factor in such significant outperformance in their valuations. However, it is likely that the regulatory framework would have evolved so that either regulators are setting cost allowances that are closely aligned with costs, and/or approaches have developed to reduce the impact of the information asymmetry between regulators and regulated companies. We therefore consider it appropriate to for an excess allowance return of **0.5%** to be incorporated in the calculation of terminal value, reflecting a continued outperformance from incentives in line with that achieved in recent years.

3.3. RAB GROWTH

With the energy transition, there is uncertainty about future growth in the RAB, and the growth investors considered appropriate in their assessment of value. Factors that will affect growth include: the pace of decarbonisation; the technology used; the location of new generation, and whether new renewables are at utility scale connected to transmission or are distributed energy resources; the pace of electrification of transport in particular the penetration of EVs and the build out of associated infrastructure; the pace of development and scale of Australia's hydrogen sector.

We take the following as informative data points:

- The historic growth in electricity network RABs over the last 15 years was 1.87% CAGR in real terms.[38] It is accepted that earlier data included a period of higher network investment spending and is unlikely to be representative, with more recent years showing slower growth. We also note that average electricity usage per customer on distribution networks has been falling. [39]
- For electricity transmission, AEMO has undertaken extensive work and consultation in preparing the 2022 ISP. The "step change" scenario includes $12.7bn of spending on new projects over the 27 year time frame of the plan. On an asset base (current $) of $22.8bn, this gives an average real RAB growth (CAGR) of 1.65%. However, much of this growth is in New South Wales and if it proceeds would be undertaken by Transgrid (see section 4). Under the "Hydrogen superpower" scenario, there is much more significant network investment. Under that scenario, which involves development of the transmission system to be approximately 2.5x larger at the end of the plan, real growth in the RAB would be approximately 3.5% CAGR over 27 years. These figures assume that maintenance investment and growth capex from smaller projects are equal to depreciation.

[38] CEPA analysis of AER DNSP and TNSP operation performance data 2006-2020.

[39] AER (2022) page 106.

- For the AST transaction, Grant Samuel assumed that distribution network RAB growth would be 3.8% [40]nominal, or 1.3% real (with an inflation assumption of 2.5% in the midpoint of the RBA inflation target band), whilst for transmission they assumed 2.3% nominal RAB growth.[41] Growth projections have not been explicitly stated in the scheme report for SKI.
- For the current regulatory period, nominal RAB growth is approximately 2.5% CAGR or 0% real with a 2.5% inflation assumption across the electricity network.[42]

Over the 29 years of our inference model, we consider that the 1.9% CAGR historical trend real growth of the last 15 years to be the upper end of our range for average growth, as that encompasses a period considered to be one of high electricity network capital expenditure. We recognise that implementation of the ISP may lead to very substantial growth in the capex of Transgrid, of which SKI has a 15% share, and we include contingent projects as a sensitivity (see section 4). While there are factors that could point to faster growth than our base case, we would consider this upper case to be unrealistic over the life of the model, although it could be sustained for shorter periods. At the low end, we assume 0% real growth in RAB, consistent with the current average growth forecast. Our base case is between those rates, at 0.95% real CAGR, which is also consistent with the assumption reflected in our terminal EV/RAB ratio.

3.4. THE TERMINAL EV/RAB RATIO

As discussed in section 3.1 above, the terminal EV/RAB ratio reflects long term equilibrium assumption about future cash flows and investor valuation of them. We calculate our estimate of this equilibrium EV/RAB ratio using the following formula which relates EV/RAB to steady state excess returns and the relevant cost of capital.

$$\frac{EV}{RAB} = 1 + \frac{E_{excess\ returns} * (1-G)}{WACC_{actual} - g}$$

where G is gearing, g is growth $WACC_{actual}$ is the cost of capital and $E_{excess\ returns}$ is the excess returns. The excess returns are on equity (as considered in section 3.2 above); the (1-G) term scales the returns to be an excess return on capital, and these are then capitalised using a perpetuity formula. The WACC-g term can use nominal or real inputs.

It is unlikely that prudent investors would today factor in very large excess returns in the far distant future, and base a valuation on an assumption that the future regulatory framework would allow them to earn such returns in perpetuity. However, we consider it reasonable for investors to anticipate a modest excess return, consistent with the returns earned from incentive mechanisms in recent years, i.e. **0.5%**.

For long term real RAB growth we assumed 0.95%. This is based on long-term real GDP growth of 2.3%[43], in line with the projections from 2050 onwards in the 2021 Intergenerational Report, and an electricity demand to GDP elasticity of 0.4. There is some uncertainty around the actual electricity demand to GDP elasticity (for example see Liddle, Parker & Hasanov 2022[44]) but we consider 0.4 to be a reasonable assumption.

These assumptions lead to a terminal value EV/RAB ratio of 1.09. This is in line with the 1.1 value that we used in our May 2022 report, and is in the middle of the range considered reasonable by Biggar (2018).

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[40] AusNet Services Scheme Booklet, Grant Samuel (2021) Independent Expert report, Appendix 4 page 2.

[41] Ibid, page 1.

[42] CEPA analysis of most recent finalized PTRM's for electricity networks.

[43] Australian Treasury (2021). 2021 Intergenerational report: Australia over the next 40 years.

[44] Liddle, Brant and Parker, Steven and Hasanov, Fakhri, Why Has the OECD Long-Run GDP Elasticity of Economy-Wide Electricity Demand Declined? Because the Electrification of Energy Services Has Saturated (March 1, 2022). USAEE Working Paper No. 22-546, Available at SSRN: https://ssrn.com/abstract=4072057 or http://dx.doi.org/10.2139/ssrn.4072057

We note that changing the terminal EV/RAB ratio makes no material difference to our conclusions (see Section 4.5).

3.5. PROJECTED ALLOWED RETURNS

The value of projected excess returns depends not just on the level of those returns but also on the discount rate, with higher EV/RAB ratios being consistent with a lower discount rate, for the same level of excess returns. In the stylised model used in our May report, we assumed that the AER's allowed rate of return would align with most recent determinations, in the context of the wide range of assumptions being considered in that analysis.

With the narrowing of the range of other assumptions being considered, it is appropriate to choose a profile of expected allowed returns that is consistent with market projections of key macroeconomic variables. For our projection of the AER allowed cost of equity, we have assumed:

- A risk free rate that is in line with consensus forecasts at October 2021. At that time, consensus was for a progressive increase in 10 year bond yields in Australia to 3.0% over the next 10 years.
- An equity beta of 0.6.
- A market risk premium of 6.1%.
- A debt risk premium of 1.86%.
- Inflation of 2.5%, consistent with consensus expectations for the bond yield.

This leads to an increase in the assumed cost of equity from 5.16% at the start of the modelling period to 6.86% in 2030 and beyond in nominal terms. Crucially, it leads to an increase in the real cost of capital from 2.61% today to 3.03% in 2030 and beyond.[45]

[45] Real cost of capital figures for AED reported here, slight variations in cost of capital amongst the regulated companies due to time varying cost of debt.

4. UPDATED ANALYSIS

In response to the comments from stakeholders, the Independent Panel, and our own analysis and review we have made adjustments to our approach and the assumptions used.

4.1. UPDATE TO OUR APPROACH

Our approach to estimating the adjusted EV/RAB remains essentially the same. For the EV which represents the RAB we add our estimate of the market value of debt to the market value of equity, and deduct the value attributable to non-RAB regulated activities. For the value of the RAB we construct an adjusted RAB value by adding our estimate of the value that investors receive from the trailing average approach to debt.

We have, however, adjusted our approach to drawing inferences from the observed EV/RAB.

- Step 1 is to identify the aggregate impact of the additional equity return that investors receive from incentive arrangements, and out/under-performance on opex and capex. The combination of these effects may be either positive (if companies are expected to outperform allowances) or negative (if companies are expected to under-perform). We term this difference between the achieved return on equity and the allowed return on equity as **the excess allowance return**.
- Step 2. Using the estimate of the excess allowance return, combined with the allowed real return, we make a projection of the achieved return on equity.
- Step 3. We use our inference model, with assumptions about asset growth and the terminal EV/RAB multiple to infer the equity return that is consistent with the observed EV/RAB. The difference between the achieved return and the estimated equity return is the total **excess return** on equity.
- We then deduct the excess allowance return from the excess return to obtain the **excess equity return** which is the difference between the allowed return on equity and the cost of equity.

The change compared to our May report is to aggregate the components of the excess allowance return in the model into a single figure, and we do not consider any expected out or under performance on the cost of debt. We made this change because:

- From the point of view estimating the excess equity return, the individual components of the excess allowance return do not matter, it is the overall estimate that drives the answer. This approach allows for more detailed analysis of components if that is helpful, but makes the exposition simpler.
- All of the components of the excess return are affected by the assumed growth in the RAB. The approach in our May report only accounted for the interaction between RAB growth and some of the components.
- We have made an assumption, based on stakeholder feedback on the RORI ES, that we do not need to separately identify a component associated with expected out or under performance of the cost of debt.

4.2. UPDATE TO OUR ASSUMPTIONS

The main changes to our assumptions for the estimate of EV/RAB are:

- Non-RAB regulated activities of AST within DFN. Our upper estimate of valuation now matches the higher base case value assumed by Grant Samuel in its report for shareholders. Our lower estimate for the non-financial assets remains as before ($185m), and we have now explicitly included the value of financial assets of $466.7m, making the overall value including financial assets approximately $652m.
- We have included derivatives within our debt valuation, have made an adjustment for balance sheet items not explicitly accounted for elsewhere, and corrected the treatment of the loan note for SKI.

Our assumptions for our inference model are:

- We assume that the **excess allowance return** is 1.6%, the rationale for that assumption is in chapter 3.
- For **RAB growth** during the explicit projection period, we consider a range of 0.0% real to 1.9% real, with a central case of 0.95% real.
- We have assumed **terminal EV/RAB ratios** of 1.09, calculated based on a perpetuity formula discussed above. This is the steady state EV/RAB ratio that is consistent with an excess allowance return of 0.5% and sustained real asset growth of 0.95%. Previously we assumed 1.1.
- We explicitly project interest rates over the period.

4.3. UPDATED ANALYSIS – EV/RAB

Our updated analysis reflecting our updated assumptions is set out in Figure 6 below. The EV/RAB for AST is estimated to be in the range 1.52 x to 1.81x. After adjusting for the value of the trailing average cost of debt, this is a range of 1.47x – 1.76x, with a central case estimate of 1.61x. For SKI the base EV/RAB numbers are 1.43x – 1.61x, or 1.35x-1.53x after the trailing average adjustment, with a central case estimate of 1.44x.

Table 4.1: EV, RAB and adjusted EV/RAB ratios for AST and SKI at transaction date

Entry ($ AUD million)		AST (low)	AST (high)	SKI (low)	SKI (high
Equity	+	10,149	10,149	5,177	5,177
Book value of net debt	+	8,278	8,278	5,077	5,077
Market value of debt adjustment	+	-417	-417	182	182
Derivatives adjustment	+	35	35	-1	-1
Other balance sheet adjustments	+	788	788	168	168
Enterprise Value (EV)	**=**	**18,833**	**18,833**	**10,604**	**10,604**
Value of DFN (financial and non-financial assets)	-	3,300	652		
Value of other non-RAB regulated businesses	-	345	115	1,657	526
Tax uplift	-	161	161		
EV attributable to RAB	**=**	**15,027**	**17,905**	**8,947**	**10,078**
RAB		9,869	9,869	6,251	6,251
RABa		10,200	10,200	6,606	6,606
EV:RAB (×)		1.52	1.81	1.43	1.61
EV:RABa (×)		1.47	1.76	1.35	1.53

RABa and EV:RABa signify that the RAB has been increased to reflect the value of the AER's trailing average approach to determining the cost of debt allowance. For SKI, the equity value is the value of stapled securities which is the sum of the value of equity and the stapled loan note, which is therefore excluded from the value of debt. The EV represents SKI's proportionate share of EV of associate companies, so the debt is the proportional share of debt in associates plus net debt held in fully consolidated entities; no adjustment has been made for cash in associates. Subordinated shareholder loans to associates have been treated as equity in associates. For AST, EV includes the value of financial and non-financial assets DFN. For both companies, other balance sheet adjustments are the value of liabilities / assets not accounted for elsewhere.

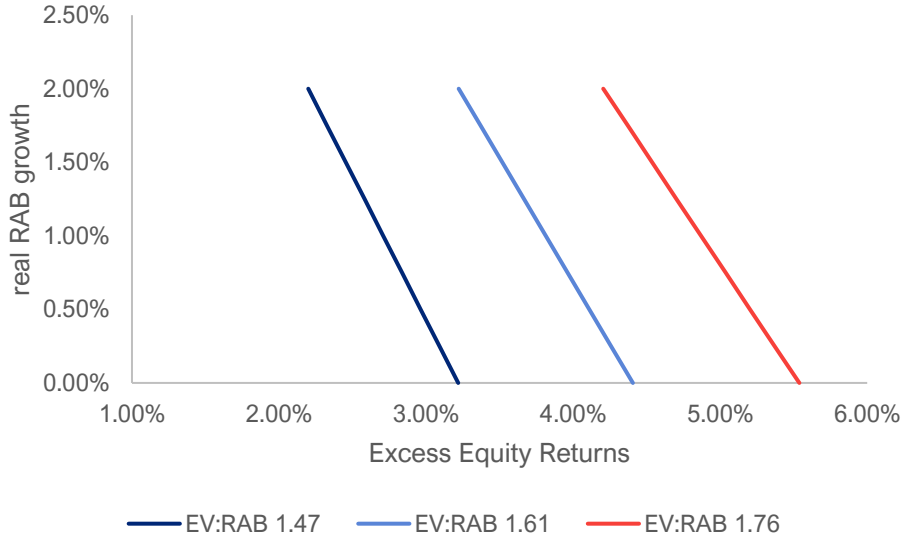
4.4. UPDATED INFERENCE

The charts below show the relationship between real RAB growth and the excess equity returns for AST and SKI.

In our central case EV:RAB case, with 0.95% real RAB growth, excess equity returns are approximately 3.8% for AST and 2.4% for SKI.

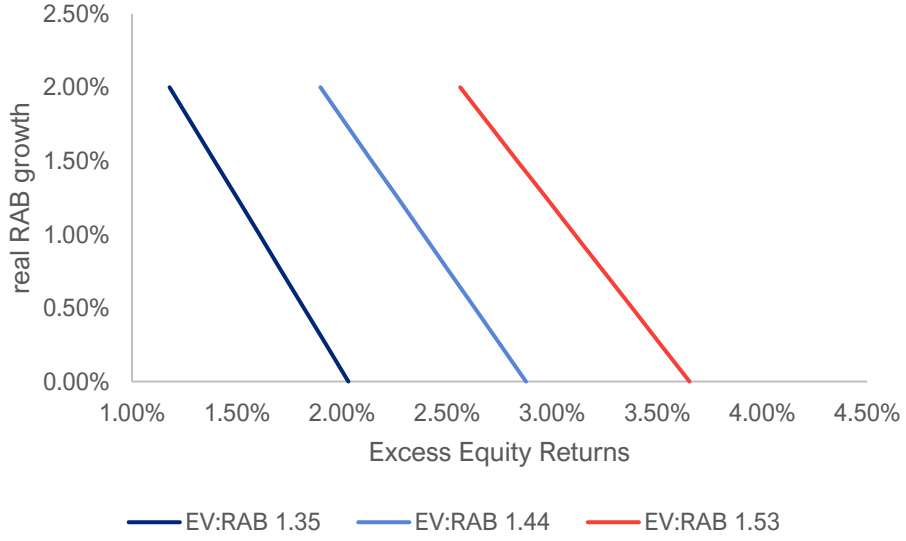
These numbers are sensitive to the value assumed for non-RAB regulated activities, RAB growth, and the excess allowance returns. However, to infer that there is no excess equity return requires an assumption of a very high value for non-RAB regulated activity combined with a very high assumed growth in RAB.

Figure 5: Relationship between real RAB growth and excess equity returns for AST



Source: CEPA analysis

Figure 6: Relationship between real RAB growth and excess equity returns for SKI



Source: CEPA analysis

4.5. SENSITIVITY ANALYSIS

As with all modelling exercises, the results are sensitive to the assumptions used, and the weight to be placed on the conclusions is influenced by how sensitive conclusions are to those assumptions.

We have modelled the impact of alternative assumptions on the excess equity return, and in particular:

- **Transgrid capex**. A substantial proportion of AEMO's ISP involves Transgrid. The projects have not yet been finalised, but if they all go ahead, Transgrid's capex in the next 9 years could be approximately $18bn, or 284% of current RAB.[46] We have run this as a sensitivity with capex returning to our base case after the first 9 years.
- **Real RAB growth**. Our base case capex assumption is for 0.95% real RAB growth (CAGR). We assess the impact of the upper end of our range of assumptions of 1.9% (CAGR), and 0% at the lower end.
- **Nominal cost of equity**. A higher (/lower) underlying allowed return leads to a lower (/higher) EV/RAB ratio, and thus a higher (/lower) estimated excess equity return. For the reported sensitivity we varied the nominal cost of equity.
- **Excess allowance return**. Our base case assumes excess allowance returns of 1.6%. We provide sensitivities for 0.5% either side.
- **Terminal EV/RAB multiple**. Our base case, consistent with growth in RAB of 0.95%, excess allowance returns of 0.5%, and a real allowed return of 3.23% is consistent with a terminal EV/RAB multiple of 1.09. As a sensitivity we assume that the excess allowance return is 0% at the low end or 1.0% at the high end, giving EV/RAB multiples of 1.0x and 1.17x.
- **Terminal excess equity returns.** In our base case we assumed 0% excess equity returns in our terminal EV/RAB multiple. As a sensitivity we include results where we assume that excess equity returns would persist into perpetuity. We adjusted our model to solve for excess equity returns with an assumption that terminal excess equity we would be the same as the visible period excess equity returns.

The table below provides these sensitivities while maintaining all other assumptions as in our base case. The base case estimates for excess equity return for AST was 3.8% and for SKI 2.4%.

Table 4.2: Sensitivities to estimated excess equity return, percentage points

Sensitivity	Base case assumption	Assumptions low-high	AST (low)	AST (high)	SKI (low)	SKI (high)
Transgrid capex program	Real RAB growth of 0.95%	0.95% – with	NA	NA	2.4%	1.5%
Real RAB growth (visible period)	0.95%	0% - 1.9%	4.4%	3.3%	2.9%	2.0%
Nominal cost of equity (visible period)	6.7%[47]	6.1% - 7.3%	3.6%	4.1%	2.2%	2.6%
Excess allowance	1.6%	1.1% - 2.1%	4.2%	3.5%	2.8%	2.0%

[46] Transgrid (2021), Transgrid advisory Council.

[47] Time varying cost of equity applied in modelling, the average over the visible period is reported here.

Sensitivity	Base case assumption	Assumptions low-high	AST (low)	AST (high)	SKI (low)	SKI (high)
return (visible period)						
Terminal EV/RAB ratio	1.09	1.0x – 1.17x	4.4%	3.3%	2.9%	1.9%
Terminal excess equity returns	0%	Same as visible period		3.2%		2.1%

5. DISCRETIONARY CAPEX

EV/RAB multiples are one possible source of direct evidence of investor behaviour on the cost of capital. The Independent Panel suggested that it was possible that applications by network companies to incur discretionary capital expenditure could be another. In particular, it recommended that: the AER assess whether

> "*the incentive the RORI provides for investment by analysing regulated companies' applications for approval of capital expenditure that is discretionary e.g. increases reliability above minimum quality standards." The Panel's rationale for this assessment is that "[S]ince such expenditure is not mandatory, applications to undertake it are evidence that the allowed rate of return on it is attractive*."

However, while in some regulatory regimes, a desire to invest in discretionary capex may indicate that allowed returns are attractive, we don't consider that this is an appropriate inference for the Australian system.

5.1. INCENTIVES UNDER THE CESS

Under the incentive-based framework, network companies have a financial incentive to receive capital allowances that are as high as possible. This in turn maximises their returns (or minimises their losses) under the capital incentive sharing scheme (CESS) because the CESS determines financial rewards (penalties) based on actual capital expenditure relative to the allowance.

In determining the capex allowance for a regulatory period, the AER must be satisfied that a network's proposal reflects the efficient level of capital expenditure that will be required to meet its service standards. In practice, to favourably influence the AER's current or future decision and to expedite the regulatory review process, or to induce a generally favourable regulatory environment, the network company may rationally not make spurious applications for inefficient capital expenditure. Nevertheless, the financial incentives are to influence the AER to determine as high a capital expenditure allowance as possible over time (see Box 1).

As such, applications for "discretionary expenditure" are not an indication of an attractive allowed rate of return. Instead, they are an indication that the design of the CESS incentivises the network to pursue a high capital expenditure allowance. This is a well-known feature of the CESS, and a problem as old as incentive-based regulation itself.

Having been granted a capital expenditure "allowance", the incentives provided by the CESS are to minimise actual capital expenditure incurred while meeting service standards, as this maximises the reward (minimises the penalty) under the CESS. Despite its name, the companies are allowed to spend more than the allowance, but will incur penalties for doing so.

Consequently, *actually incurred* discretionary expenditure might indicate that there is a countervailing incentive arising from expecting to receive an allowed rate of return in excess of the actual cost of capital for the expenditure over the life of the asset. Clearly, the current rate of return is relevant in the network company's assessment, but the company's expectations of future actual and allowed rates of return will also be relevant, given that depreciation of the assets occurs over multiple resets of the allowed rate of return.

Box 1. RAB multiples and the returns earned by investors
The AER sets the allowed return, and this return is applied to the RAB as part of the building blocks methodology. However, if the EV/RAB ratio is above 1 for existing assets, an investor does not receive that return. For example, if the allowed return were 9%, and the EV:RAB 1.5, a new investor would only receive a 6% return (9% / 1.5). The return on new investment works differently. If the cost of capital is 9%, and the EV:RAB 1.5, the investor does earn a 9% annual return on the investment. But because the asset is valued by other investors at 1.5x RAB, the profile of the return will be that the investor receives an immediate 50% uplift in value, followed by a 6% return.

Unfortunately, it is very difficult to assess whether actually incurred expenditure is discretionary. Assessing expenditure against the capital expenditure allowance is a flawed approach because the capital expenditure allowance is a forecast of efficient expenditure. As with any forecast, it could be wrong. Expenditure above the allowance could nevertheless be efficient if the allowance was too low; expenditure below the forecast may nevertheless be inefficient if the forecast was too high.

Instead, assessment of actually incurred discretionary expenditure requires the regulator to assess individual expenditure decisions on a case-by-case basis to determine if the expenditure was efficient. If the regulator, or any central agency, were well placed to determine what is efficient, then there would be no need for incentive based economic regulation in the first place. The regulator or central agency would simply make expenditure decisions directly. Instead, the philosophy of incentive based regulation is that financially motivated companies, and not the regulator, are best placed to make efficient expenditure decisions, and will do so providing they have appropriate incentives. The concern here is that the incentives are inappropriate, and hence the companies are incentivised to act inefficiently. But to assess whether the incentives are inappropriate requires the regulator or some other external body to assess whether the expenditure is efficient despite the unavoidable information asymmetry.

5.2. Are the standards efficient?

A separate but related issue is whether the service standards are themselves efficient. For example, a large proportion of capital expenditure in transmission assets is currently being justified because of "market benefits" (eg, alleviating constraints and so reducing the cost of generation capital and operating expenditure) as opposed to meet reliability standards for consumers. To our knowledge there are no service standards relating to market benefits.

Under the CESS, the direct and immediate financial incentives for the network companies are to not make these investments (even if the network company has been provided a capital expenditure allowance to do so either as part of the regulatory review process or via a contingent project assessment) because this increases the reward (decreases the penalty) under the CESS. Countervailing this incentive are incentives provided by other incentive schemes, such as the market impact component (MIC) of the service target performance incentive scheme (STPIS). There may also be reputational incentives that arise from not making an otherwise efficient investment (particularly if the AER has granted expenditure allowance relating to the project which the network company will profit from by not spending under the CESS).

5.3. Why may efficient projects not proceed?

There are several reasons why an apparently efficient project may not proceed, meaning it is very challenging to determine whether the problem lies specifically in the allowed rate of return:

- A shortcoming in the minimum service standards meaning that the network company is better off under the CESS to not invest in an efficient project because it will meet its minimum service standards regardless.
- A shortcoming in other incentive schemes such as the STPIS meaning that the countervailing incentives to invest are not high enough to overcome the incentives provided by the CESS acting in concert with the minimum standards.
- Insufficient reputational incentives.
- An attempt by the network company to extract a higher allowed rate of return or other favourable outcomes by "holding-out" and not investing, despite the allowed rate of return already exceeding the actual rate of return required for the project.
- An allowed rate of return being lower than the actual rate of return.

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