RoR
CRG

**Rate of Return Consumer Reference Group**

# Submission to the Australian Energy Regulator Rate of Return Guideline Review

***Consumer reference group***

May 2018

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## The review

In July 2017 the Australian Energy Regulator (AER) initiated a review (the Review) of the Rate of Return Guideline (the Guideline).[1] The AER has introduced three new process elements for the conduct of this review: the formation of a Consumer Reference Group (CRG); the conduct of Concurrent Expert Evidence Sessions (the Evidence Sessions); and an Independent Review Panel.

The CRG was established by the AER to provide consumers with a voice in the present Guideline review process. The CRG represents a broad range of consumer interests, including community representatives, small business, major energy users and agricultural sectors. Consumers are well placed to evaluate what is in their own long term interests and whether current outcomes are meeting the objectives of the national energy laws or not.

In creating the CRG the AER recognised that "…the decisions we make and the actions we take in performing our regulatory roles and other activities affect a wide range of individuals, businesses and organisations."[2]

The CRG agreed to make a combined submission to the AER Review. Unfortunately, the CRG was not formed in time to provide a submission to the Issues Paper for the Review. This submission is therefore the first formal submission by the CRG to the Review and is informed by the Evidence Sessions.

The Council of Australian Governments (COAG) Energy Council has released draft legislation to replace the Guideline with a Binding Instrument. The legislation incorporates the three new process elements referred to above, and foreshadows the repeal of the current Rules that guide the AER in making the Guideline. The CRG has prepared this submission on the assumption that the AER will continue to use the Rules to guide its decision making, but that the end point will be a Binding Instrument.

## Regulatory objectives

In exercising its economic regulatory functions, the AER is required to act in ways that will, or are likely to, contribute most to the achievement of the objectives of the energy laws – the National Electricity Objective (NEO) and the National Gas Objective (NGO). Both objectives require economic efficiency for the long-term interests of consumers (emphasis added). This can be more simply stated as a requirement that current and future consumers pay no more than necessary for the efficient delivery of the services they require.

The Guideline is intended to ensure the regulated monopolies do not earn excessive (inefficient and unfair) profits on their investments. It has no role specifying or guaranteeing

[1] See *Better Regulation; Rate of Return Guideline*, AER, December 2013.

[2] See *Consultation paper Process for reviewing the rate of return guidelines*, AER July 2017.

a level of service. Other parts of the regulatory framework deal with the setting of reliability levels.

In our submission, we provide comprehensive detail of the current energy affordability crisis for residential and business consumers. Price is the overwhelming concern for consumers. This is reflected in the federal Treasurer's direction to the ACCC to hold an inquiry into the supply of retail electricity and the competitiveness of retail electricity prices.[3]

Sixteen South Australian organisations provided evidence to the Australian Competition Tribunal (the Tribunal) in 2016, as part of a community consultation process, which formed part of the Tribunal hearing of SA Power Networks' review of its Regulatory Determination. The Tribunal noted in its decision that 'when considered according to the elements of the NEO – price, quality, safety, reliability and security of supply of electricity – the only element with which consumers were dissatisfied was price.'[4]

The Tribunal further held that the 'the consultation process and the submissions of consumers (and the Minister) may have become particularly significant (if error had been found in the final decision) in the consideration of the materially preferable NEO decision.'[5] [6] In other words, had the Tribunal found that the AER had erred in its Regulatory Determination for SA Power Networks, the evidence of the consumer organisations (which overwhelmingly focussed on the impact of electricity prices), may have been sufficient for the Tribunal to make a determination consistent with the long term interests of consumers with respect to price.

Energy Consumers Australia's latest Consumer Sentiment Survey shows that only between 29 and 39 percent of residential consumers in the National Energy Market (NEM) has a positive response on the value for money from their electricity services, the lowest of any of the services surveyed. In comparison, 65 to 76 percent of consumers have a positive response to the existing level of reliability. Consumers have a greater concern about high prices than about reduced reliability.[7]

Consumers including small business consumers in the agricultural sector are making investments in generating services on their side of the meter, in response to high prices. These investments are potentially exacerbating the problem of high prices for other users.

## Does the Guideline get it right?

The CRG strongly believes the Guideline is not meeting its objective.

While there is no formal mechanism for testing whether the Guideline serves the long term interests of consumers, the available evidence demonstrates the objectives are not being met.

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[3] See *Retail Electricity Pricing Inquiry: Preliminary Report*, ACCC, 22 September 2017.

[4] See Application by SA Power Networks [2016] ACompT 11, para 59.

[5] Ibid, para 103

[6] See http://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/full/2018/2018fcafc0003

[7] Sentence on the ECSS http://energyconsumersaustralia.com.au/wp-content/uploads/Energy-Consumer-Sentiment-Survey-December-2017.pdf

The Review is occurring in an environment of increasing energy prices that could be described as an 'affordability crisis.' The impact has been particularly severe on low-income households, young families and trade exposed energy intensive businesses including agriculture, manufacturing and catering. Increasing network charges have been a significant contributor to these unsustainable prices.

Over the last decade the combined Regulatory Asset Base (RAB) of the electricity distribution networks has almost doubled while network utilisation has declined from just under 60 per cent to just over 40 per cent. Despite these changes, network businesses are continuing to enjoy strong earnings and are trading at multiples of 1.3 to 1.6 of the RAB.

Conversely, there is no evidence of under-investment resulting in a decline in network reliability.

## Why the Guideline does not get it right

There are four reasons this has occurred.

- The reduction in risk faced by the regulated network businesses afforded by the rules is not reflected in the 2013 Guideline. The consequence is significant; for example consumption volume risk is not borne by the electricity networks.
- The companies the AER draws its market data sample from do not represent benchmark efficient entities, as these companies operate both regulated and non-regulated businesses.
- There is no data on actual returns against which to compare modelled returns so as to allow the AER to make informed judgements under the Guideline for future periods. Previous decisions are reinforced by the use of market data that themselves reflect previous decisions, as identified in the Evidence Sessions.
- The Black version of the Capital Asset Pricing Model (CAPM) and the Dividend Growth Model (DGM) used in the Foundation model (2013 Guideline) result in an excessive allowance for the equity risk premium.

In combination, the problems with the Guideline result in a substantial over-estimation of the efficient rate of return. This is inconsistent with the NEO/NGO and the Revenue and pricing principles.

## Exercising judgment

In determining the allowed rate of return, the AER must have regard to "relevant estimation methods, financial models, market data and other evidence."[8] A common theme in the expert advice and evidence presented at the Evidence Sessions is that financial modelling of the CAPM provides a deceptive level of precision in the calculation of the ROR. Most notably, the approach doesn't provide information on the ROR that is required to attract efficient network investment.

The use of estimation methods using market data can only provide a guide; and use of judgment is unavoidable. The AER's exercise of judgement appears to be heavily influenced

[8] NER 6.5.2 (e)

by a view that the damage to consumers from too little network investment is greater than the detriment to consumers over-paying for the service. In exercising regulatory discretion under the 2013 Guideline, the AER set input parameters resulting in an ROR that is too high. The risk to investors has not been adequately balanced against the consequence to consumers of inefficiently high prices.

The degree of "insurance" included in the AER use of judgement was an issue raised during the Evidence Sessions. It was claimed that the AER's exercise of its judgment under the Guideline embedded a consistent bias in favour of network businesses in the assessment of each point estimate used in the application of the CAPM.

The experts in the Evidence Sessions did not agree as to whether the AER had used its judgement correctly in previous decisions. They were split as to how the AER should use its judgement in future. The CRG contends that the AER's exercise of regulatory judgment needs to better balance the interests of consumers and network businesses, and be informed by the consequences of the ROR being set too high under the 2013 Guideline.

## Choosing key CAPM parameter values

The allowed rate of return applies to the assets used to provide regulated services. These assets, subject to the regulatory regime and the revenue and pricing principles, provide a relatively stable income stream. In determining the rate of return the AER needs to reflect on the extent to which the networks are insulated from economy wide (systematic) risks.

This section deals with the CAPM parameters for which we consider significant change is warranted.

The AER has relied on estimates of the systematic risk parameter (known as beta) from a small number of currently and previously listed firms. This provides a range of beta estimates of 0.4 – 0.7. The CRG notes that these estimates include an upward bias on the basis that the market estimates do not fully incorporate the reduction on risk afforded to the returns available from the regulated assets. This indicates that the AER should choose a value below the midpoint of the range.

The CRG notes that transactions for businesses containing regulated entities imply RAB multiples in the range of 1.3 to 1.6. It is reasonable to assume that the asset risk is higher for the unregulated parts of the business and the realisation of efficiency improvements than it is for the regulated asset. Adjusting for this bias would move the observed range from 0.4 – 0.7 to about 0.2 – 0.5. The evidence suggests the AER should choose a value below the mid-point of this range.

The standard analysis to determining the MRP uses an arithmetic average of the MRP derived each year from comparing the equities accumulation index to bond rates. Using this approach the data on the Market Risk Premium (MRP) has not fundamentally changed since the 2013 Guideline.

An alternative approach to calculating the MRP is to recognise that networks are long lived assets and investors are more likely to be long term investors. Consistent with the approach used for other rates it is reasonable to compare the return from equities held for ten years with the ten year bond rate, which provides a much lower MRP, as low as 3.6 percent

applying a geometric mean. In making its determination the AER should provide justification for not using the 10 year MRP approach based on a geometric mean.

Consistent with our view that the AER should be informed by the consequences of its previous decision, less weight should be afforded to the Dividend Growth Model thus favouring a significant reduction in MRP.

The CRG supports the continued use of the AER approach to the transition to the trailing average for return on debt. However, we note that some adjustments should be made to the process to choose the values for three reasons.

- Corporate debt is typically raised over shorter periods (and hence lower rates) than the ten year period assumed.
- The current approach assumes the benchmark efficient business has a BBB+ rating but the estimation is derived from a broad BBB rating.
- A further adjustment should be made to reflect the fact that the actual rates paid by networks are lower than a credit rating of BBB+ would suggest.

The CRG supports the use of a mean of the BBB data series and the AA data series as a reasonable approach to reflect the correct stand-alone debt costs for the regulated assets.

Typically, one expects the return on equity to be higher than return on debt. In the CRG's view, the risk equity investors' face is only marginally greater than that faced by debt holders. We also note that some of the unlisted network businesses are held in corporate structures in such a way that the entire capital base is ultimately debt at some level of the structure.

Finally, the CRG has considered the approach to the utilisation of imputation tax credits that would be expected from an efficient financing structure and we conclude that gamma could be close to 1. A firm investing exclusively in the RAB would be expected to have no need to retain earnings and would have a high distribution rate, possibly even greater than 100 percent. We recommend the AER recognise the inherent inconsistency of observed tax data and make its decision on the basis of the rate that is consistent with efficient costs.

# Conclusion

Australian energy consumers share in a regulatory compact with the networks that provides them a guarantee of the right to recover their efficient costs on the condition that consumers are not over-charged for network services. To fulfil its obligations to both parties under the compact, the AER must set the allowed rate of return at an efficient level. For the last decade consumers have not been getting the outcomes they deserve in this process and are paying prices that are too high, driven by an allowed rate of return that has erred on the side of promoting investment rather than promoting efficiency.

The return on RAB for the network businesses constitutes about 25 percent of a retail electricity bill. The CRG's assessment is that the return on RAB for the network businesses could be more than 40 percent higher than the efficient rate of return.

For small customers, network bills typically represent around half their total retail bill. If the inefficient component in network prices attributable to the current Guideline were removed, retail bills could fall by up to 10 per cent.

In making its first rate of return Binding Instrument in the long term interests of consumers, the AER can provide significant price relief to consumers while providing network businesses with a fair and efficient return on their investment.

We note that this review has raised further concerns about the use of the CAPM and we encourage the AER to undertake a more fundamental review of the approach to determining the allowed ROR as soon as the first binding instrument is made. This needs to include a performance evaluation framework.

In compiling this submission the CRG would like to acknowledge the excellent support afforded by the AER staff.

# 1. Introduction

## 1.1 Report purpose

This report has been prepared by the Consumer Reference Group (CRG) to inform and influence decisions by the Australian Energy Regulator (AER) with respect to a review of the AER's Rate of Return (ROR) Guideline. The CRG was established by the AER to provide consumers with a voice in the present Guideline review process.

## 1.2 The review

In July 2017 the Australian Energy Regulator (AER) initiated a review (the Review) of the Rate of Return Guideline (the Guideline).[9] The AER has introduced three new process elements for the conduct of this review:

- the formation of a Consumer Reference Group (CRG);
- the conduct of Concurrent Expert Evidence Sessions (the Evidence Sessions); and
- an Independent Review Panel.

The CRG was established by the AER to provide consumers with a voice in the present Guideline review process. The CRG represents a broad range of consumer interests, including community representatives, small business, major energy users and agricultural sectors. Consumers are well placed to evaluate what is in their own long term interests and whether current outcomes are meeting the objectives of the national energy laws or not.

In creating the CRG the AER recognised that "…the decisions we make and the actions we take in performing our regulatory roles and other activities affect a wide range of individuals, businesses and organisations."[10]

The CRG agreed to make a combined submission to the AER Review. Unfortunately, the CRG was not formed in time to provide a submission to the Issues Paper for the Review. This submission is therefore the first formal submission by the CRG to the Review and is informed by the Evidence Sessions.

The Council of Australian Governments (COAG) Energy Council has released draft legislation to replace the Guideline with a Binding Instrument. The legislation incorporates the three new process elements referred to above, and foreshadows the repeal of the current Rules that guide the AER in making the Guideline. The CRG has prepared this submission on the assumption that the AER will continue to use the Rules to guide its decision making, but that the end point will be a Binding Instrument.

[9] See *Better Regulation; Rate of Return Guideline*, AER, December 2013.

[10] See *Consultation paper Process for reviewing the rate of return guidelines*, AER July 2017.

## 1.3 The CRG

The purpose of the CRG is to provide as a central point of contact for individual consumers or small consumer groups to coordinate participation in various steps of the process. This goes beyond technical feedback provided by the Consumer Challenge Panel (CCP).

The CRG represents a diverse range of consumer perspectives. Members were however, appointed in their individual capacity and not as representatives of organisations they are associated with. The table below lists the members of the CRG and the organisations with which they have an affiliation, merely to demonstrate the breadth of the perspectives covered.

**Table 1 CRG membership**

| Individual | Organisation |
|---|---|
| John Devereaux (Chair) | Tasmanian Small Business Council |
| Robyn Robison, , Deputy Chair | COTA Australia |
| Warren Males, | CANEGROWERS |
| Ash Saladini, | NSW Farmers Federation |
| Miyuru Ediriweera, | Public Interest Advocacy Centre |
| David Havyatt | Energy Consumers Australia |
| David Headberry | Major Energy Users |
| Mark Henley | Uniting Communities |
| Mark Grenning | Energy Users Association of Australia |
| Heather l'Anson | SA Farmers' Federation |
| Chris Joseph | Primary producer and agricultural consultant |
| Ian McAuley | CARE ACT |

| Individual | Organisation |
|---|---|
| Kym Mercer | Anti-Poverty Network SA |
| Brendon Radford | National Seniors |
| Jo De Silva | South Australian Council of Social Service |

This is the first time that a consolidated submission has been presented to the AER for a network regulatory process, with a wide diversity of consumer perspectives being bought together, over a short period of time. This reflects the material impact of the Guideline on electricity prices and consumer impacts.

## 1.4 2018 Guideline review process

Key steps in the review process so far include:

- In July 2017 the AER released a consultation paper Process for reviewing the rate of return guidelines.
- In October 2017, the AER released an issues paper Review of the rate of return guidelines.
- The CRG was formed from October 2017.
- In November 2017, the AER released a rate of return positions paper. It also released a discussion paper on profitability measures for regulated gas and network businesses.

In March 2018, the COAG Energy Council released a draft package of amendments to the NEL/NGL creating a binding rate of return instrument. This proposed elevating the Guideline to a binding instrument.

It also removed the Allowed ROR objective from the Rules and appears to remove the distinction between the allowed ROR and the actual ROR ("profitability").

Under the March 2018 proposals, the role of the CRG in the development of a binding Guideline is formalised. Under proposed transition arrangements the final Guideline from the present review would become a mandatory instrument following the passage of the proposed changes to the National Electricity Law (NEL)/National Gas Law (NGL).

## 1.5 Report structure

The structure of the remainder of this report is as follows.

- Chapter 2 discusses whether the Guideline meets regulatory objectives
- Chapter 3 discusses whether the Guideline gets it right, including the impact on consumer bills.
- Chapter 4 discusses why the Guideline does not get it right.
- Chapter 5 discusses the exercise of regulatory discretion

- Chapter 6 discusses the choice of CAPM parameter values.
- Chapter 7 summarises dialogue between the CRG and the ENA.
- Chapter 8 provides concluding comments

# 2. Regulatory objectives

**Question 1:** ***In your view, to what extent has the current approach to setting the allowed rate of return achieved the National Electricity Objective (NEO) and National Gas Objective (NGO), the Allowed Rate of Return Objective (ARORO), and the related revenue and pricing principles (RPPs)?***

## 2.1 Overview

In exercising its economic regulatory functions, the AER is required to act in ways that will, or are likely to, contribute most to the achievement of the objectives of the energy laws – the National Electricity Objective (NEO) and the National Gas Objective (NGO). Both objectives require economic efficiency for the long-term interests of consumers (emphasis added). This can be more simply stated as a requirement that current and future consumers pay no more than necessary for the efficient delivery of the services they require.

The Guideline is intended to ensure the regulated monopolies do not earn excessive (inefficient and unfair) profits on their investments. It has no role specifying or guaranteeing a level of service. Other parts of the regulatory framework deal with the setting of reliability levels.

In our submission, we provide comprehensive detail of the current energy affordability crisis for residential and business consumers. Price is the overwhelming concern for consumers. This is reflected in the federal Treasurer's direction to the Australian Competition and Consumer Commission (ACCC) to hold an inquiry into the supply of retail electricity and the competitiveness of retail electricity prices.[11]

Sixteen South Australian organisations provided evidence to the Australian Competition Tribunal (the Tribunal) in 2016, as part of a community consultation process, which formed part of the Tribunal hearing of SA Power Networks' review of its Regulatory Determination. The Tribunal noted in its decision that 'when considered according to the elements of the NEO – price, quality, safety, reliability and security of supply of electricity – the only element with which consumers were dissatisfied was price.'[12]

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[14] http://www.judgments.fedcourt.gov.au/judgments/Judgments/fca/full/2018/2018fcafc0003

the Tribunal to make a determination consistent with the long term interests of consumers with respect to price.

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Consumers including small business consumers in the agricultural sector are making investments in generating services on their side of the meter, in response to high prices. These investments are potentially exacerbating the problem of high prices for other users.

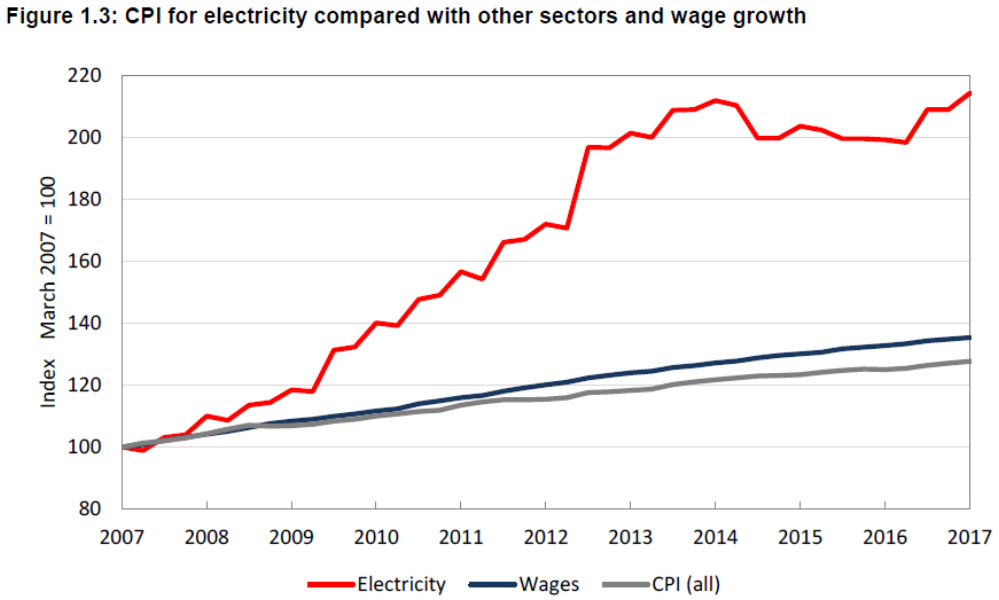
## 2.2 The energy affordability problem

There is widespread agreement among a range of observers that Australia has a severe energy affordability problem. Retail electricity and gas prices have increased by between 80 and 90 per cent in real terms over the past decade.

For retail electricity, these prices changes are set out in the figure below from the ACCC's September 2017 Interim report for its Retail competition review.

[15] Sentence on the ECSS. http://energyconsumersaustralia.com.au/wp-content/uploads/Energy-Consumer-Sentiment-Survey-December-2017.pdf

**Figure 1 CPI comparison Electricity and all sectors, Australia, 2007 - 17**




**Source:** ACCC

The relative moderation in the increase in retail prices, since 2014 indicated by this chart has been partly reversed due to rising wholesale prices and a May 2017 decision by the Federal Court to reject the AER's appeal against an earlier decision by the Australian Competition Tribunal.[16]

In the case of electricity, increasing regulated prices were the largest single contributor (66 per cent) to retail price increases[17] .

## 2.3 Consumer impacts of inefficient network prices

Energy affordability is more than a throw away heading. When energy becomes unaffordable it has very real consequences across the broad spectrum of consumers, from a family on low income support through to major manufacturing, and thus the economy. This section summarises key consumer impacts from inefficient network prices.

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16 See Federal Court of Australia; Australian Energy Regulatory v Australian Competition Tribunal (No 2) [2017] FCAFC79.

17 See page 34, Ibid.

### 2.3.1 Disconnections from Supply

The following two tables are from the AER's Annual Report on Compliance and Performance of the Retail Energy Market in Australia, 2016-17[18]

Table 2.12: Residential electricity disconnections for non-payment, 2009–10 to 2016–17

| | Queensland | New South Wales | South Australia | Tasmania | ACT |
|---|---|---|---|---|---|
| 2009–10 | | 15 835 | 4 748 | 1 396 | 880 |
| 2010–11 | | 18 561 | 7 383 | 958 | 402 |
| 2011–12 | | 23 207 | 9 893 | 178 | 420 |
| 2012–13 | | 24 888 | 10 723 | 1 057 | 73 |
| 2013–14 | | 32 940 | 10 148 | 1 555 | 269 |
| 2014–15 | | 31 979 | 10 179 | 1 046 | 345 |
| 2015–16 | 21 672 | 30 065 | 10 546 | 1 172 | 388 |
| 2016–17 | 25 201 | 27 380 | 10 902 | 1 016 | 427 |

Table 2.13: Residential gas disconnections for non-payment, 2009–10 to 2016–17

| | Queensland | New South Wales | South Australia | ACT |
|---|---|---|---|---|
| 2009–10 | | 14 811 | 3 410 | 1 611 |
| 2010–11 | | 17 480 | 2 724 | 1 411 |
| 2011–12 | | 20 118 | 4 403 | 2 356 |
| 2012–13 | | 7 520 | 3 129 | 1 572 |
| 2013–14 | | 4 921 | 3 418 | 1 066 |
| 2014–15 | | 7 555 | 4 575 | 1 404 |
| 2015–16 | 1 410 | 6 389 | 5 081 | 1 403 |
| 2016–17 | 1 029 | 5 536 | 3 626 | 423 |

Source: AER

To also consider the situation in Victoria, the following information is taken from the Essential services Commission of Victoria and is reported by the Herald Sun[19] newspaper on 26th September 2017

*"Data collected from retailers reveals 28,628 electricity customers were disconnected for unpaid bills for all of 2016-17. That's down from 32,360 in 2015-16, but still at disturbing levels.*

*Residential gas disconnections reached 17,494 for 2016-17, compared with 24,150 for the previous financial year.*

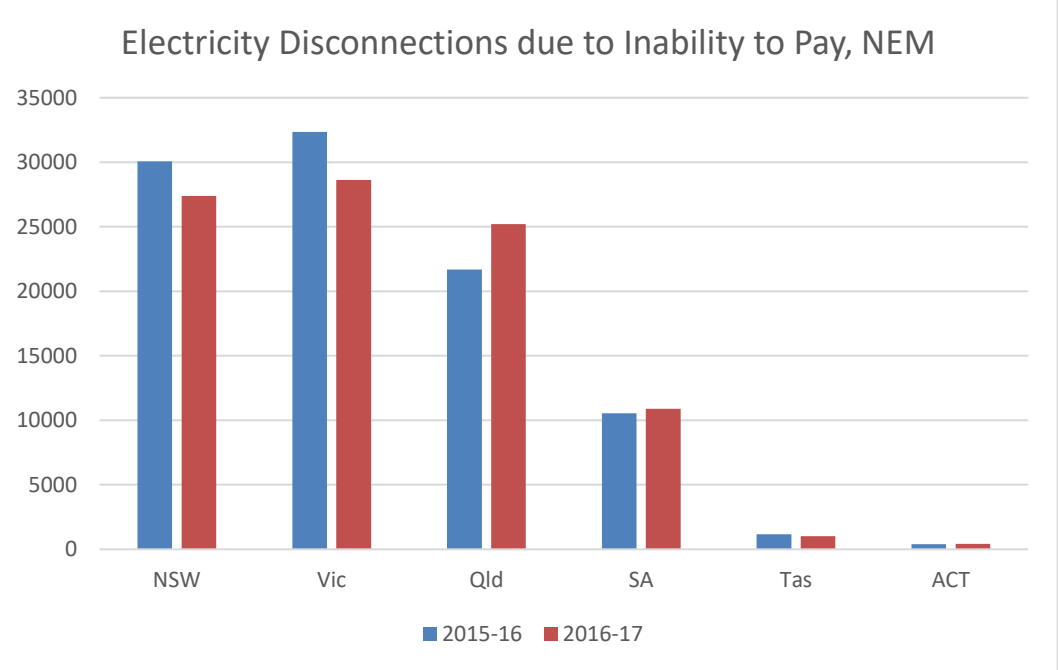
*Almost 37,000 energy customers in hardship programs for that quarter owed retailers $60 million — an average $1629 each."*

Disconnections for households over the past 2 years are shown in figure 2 below

[18] https://www.aer.gov.au/system/files/AER%20Performance%20Report%20on%20Compliance%20%26%20Performance%20of%20the%20retail%20energy%20market%202016%E2%80%9317.pdf

[19] http://www.heraldsun.com.au/news/victoria/energy-disconnections-have-surged-in-recent-months-as-customers-battle-costly-bills/news-story/7fe8bfb952efc7b7e8cbfc2c6e7c641b

**Figure 2 Disconnections**




Source AER and ESCV

We regard disconnection from electricity supply for households and small business as akin to being suspended from trading for a larger business. We can therefore give an indicative comparison, ex post, of the impacts of risk for consumers and network businesses, this is shown in figure 3.

**Figure 3 Suspension of trading, number of events**

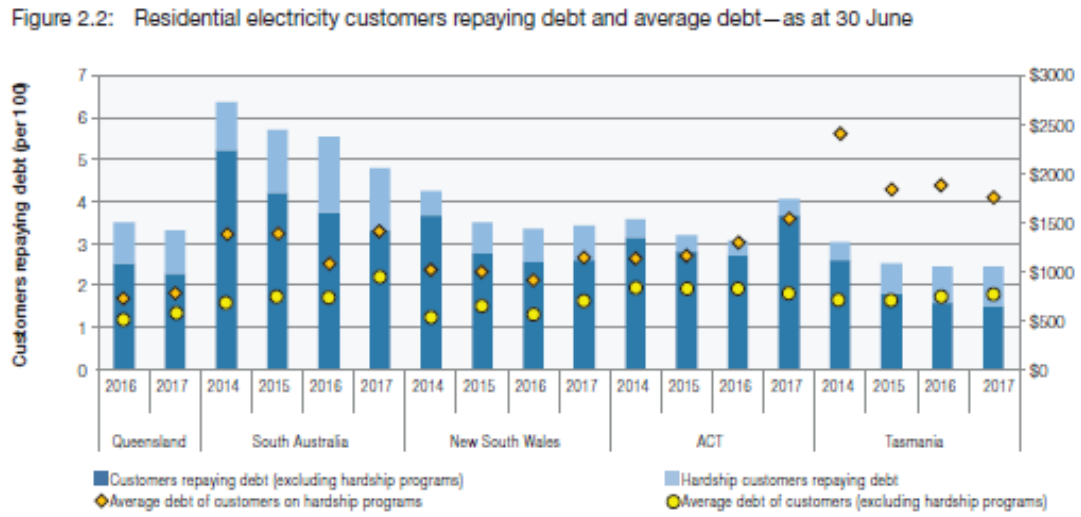
| | **Aust Energy Network Businesses** | **NEM Household Consumers** |
|---|---|---|
| 2015-16 | 0 | 96,203 |
| 2016-17 | 0 | 93,554 |

It is evident that a substantially greater risk is borne by consumers in terms of number of adverse events.

## 2.3.2 Customer debt

A second measure of comparison for risk is actual unpayable debt carried by respective entities. The following figures 4 and 5 are also taken from the AER's annual retail performance and compliance report.

**Figure 4 Customer debt - electricity**




Source: AER annual retail performance report

**Figure 5 Customer debt - gas**


The AER's commentary in their 2017 report says, *"the debt customers held when they started receiving hardship assistance increased everywhere except Tasmania. In South Australia the debt increased by $326; by $213 in New South Wales; and $47 in Queensland. The ACT saw its fifth consecutive increase in the average debt of these customers, rising by $245 (to $1537).*

> *Tasmania had the highest average debt for customers commencing hardship assistance, at $1750, although that has fallen from $1866 last year.*
>
> *In Queensland, over 3 per 100 residential electricity customers are repaying debt, including customers in hardship programs (just over 1 per 100). The average debt of customers entering hardship programs was $776, the lowest of any jurisdiction.*

*Conversely, the average debt of customers commencing hardship assistance rose across all jurisdictions. Nationally, the ACT had the highest figure in this category with debt of $1783, an increase of $677, reversing a decrease of similar size in the previous year."*

To further consider the incidence of risk between consumers and network businesses, we have estimated the number of household customers who have experienced debt due to unpaid electricity bills. The total customers with energy debt is 275,000 (rounded, conservative estimate). This is shown in Table 2.

**Table 2 Number of households with energy debt**

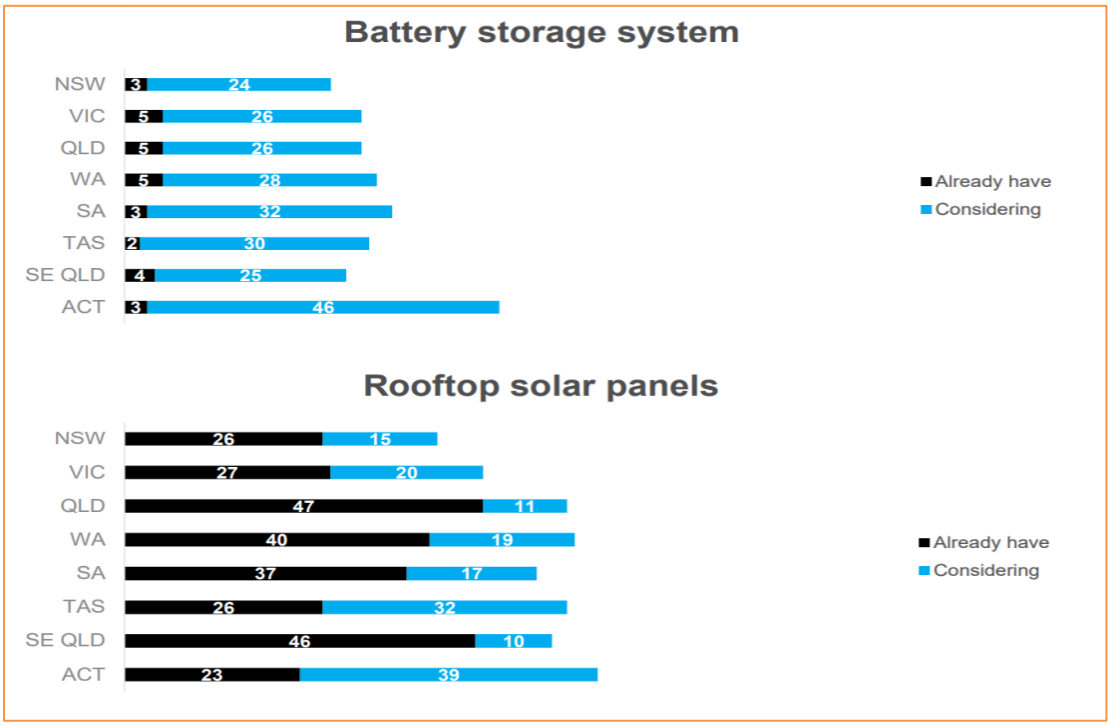
| | **Residential Electricity** | **Residential Gas** | **Small Business Electricity** | **Small Business Gas** |
|---|---|---|---|---|
| NSW | 71,469 | 43,187 | 9,792 | 3,086 |
| QLD | 41,610 | 8,020 | 3,168 | 672 |
| SA | 23,986 | 12,194 | 2,677 | 376 |
| Tas | 4,340 | 0 | 153 | 0 |
| ACT | 5,909 | 6,258 | 444 | 163 |
| Victoria (estimate) | 38,000 | | | |
| **Total** | **185,318** | **69,659** | **16,234** | **4,297** |

Sources: AER Annual Retail Performance Report data – unpublished. Victorian estimate from ESCV

An unpaid energy debt for a consumer is the equivalent of a business defaulting on repayments to financiers. So table 2 summarises estimates of the number of household who have defaulted on energy bills with the number of network businesses that have defaulted, over the last 2 year. Though the number of default events by jurisdictionally significant network businesses is zero over the past 50 years.

Further, there is clear evidence of consumers' preparedness to move away from the electricity grid altogether. As energy prices (electricity) continue to rise, at the same time as the cost of "local generation" declines, those consumers who have the financial capacity are preparing to do so, as indicated particularly in the preparedness to invest in battery storage systems.

**Figure 6 Consumer preparedness to invest**




**Source:** Energy Consumers Australia, Energy Consumer sentiment survey, December 2017

### 2.3.3 Risk Impacts for different consumers

Consumers are heterogeneous and so the risk from higher than necessary energy costs play out in many different ways.

For individual consumers and households the risk with most immediate impact is risk of disconnection from the essential service of electricity, due to inability to pay. In a similar manner debt incurred from inability to pay previous energy costs is an additional risk. Previous research from UnitingCare Australia shows that electricity bills are the second bill paid by almost all households, after rent (or mortgage for modest through middle income households).

The consequences of higher than prudent energy costs from any component of the electricity price stack for many households include:

- inability to buy fresh fruit,
- forgoing visits to the doctor,
- inability to buy medicines,
- no capacity to invest in training or education that could improve employment prospects,
- no extracurricular activities for children and
- certainly no capacity for dental care holidays
- no capacity for holidays or any other escape from the burden of daily survival.

Many older consumers are vulnerable to energy affordability issues. In particular, they often have more pronounced heating and cooling needs to maintain health and wellbeing, especially during extreme temperature events such as heat waves and cold spells. With the effects of climate change being felt globally, such events are becoming more frequent. Older consumers are generally living on low or fixed incomes. Neither incomes (eg the age pension) nor the available energy rebates have kept pace with energy price increases over the past 10 years. These consumers have limited ability to adapt to higher energy prices often due to being out of the home less frequently than other consumers (e.g. workers, families) and generally being frugal energy users, therefore having less ability to reduce energy usage. Many older consumers are compromising on food, medicines, discretionary expenditure and social interaction in order to pay their energy bills.

For a sole trader or small business, high energy costs can erode profit margins to the point where some businesses become unviable and so the business owner maintains a business by effectively living in poverty conditions themselves or closes down a business that may otherwise have been viable.

Industries with relatively high energy use but low margins are also threatened by higher than efficient energy pricing, for example any agricultural business relying on irrigation including vineyards, tree fruit production dairy and sugarcane. These businesses generally are impacted by global markets and so competing against overseas producers with significantly lower energy costs places these producers at a significant disadvantage.

**The following, recent media reports reflect this concern of energy costs for business:**

*Mr Marquardt retired as the head of business group AmCham Australia earlier this month and was previously US Consul General in Sydney from 2010 to 2013.*

*"The biggest concern they have is the high cost of doing business in Australia mainly because of energy and labour."*

*The former career diplomat was speaking in a personal capacity while on a business group trip to the US.*

*Countering the widespread perception that China had become Australia's most important economic partner, Mr Marquardt emphasised that the US was easily the largest foreign investor into Australia*

*Mr Marquardt said the energy price crisis had also deterred power-intensive manufacturers and other companies from investing in Australia.*

*"If any company is using substantial amounts of energy they're absolutely not competitive," he said ""*

*The food and grocery sector fears thousands of jobs could be at risk amid soaring energy prices.*

*The industry employed an extra 7,000 people last financial year, but the new chief of the Australian Food and Grocery Council (AFGC) fears that could be short lived.*

*Businesses at the moment are facing a profit squeeze. They're going to have to consider whether or not to retain their jobs and investments here or whether they look to move offshore, "Tanya Barden said.*

*I think absolutely there's the potential for thousands of job losses in food and grocery manufacturing, and also a loss of investment, which is a loss of capability to be able to otherwise grow into export markets and the like.'*

Research by Deloitte and the AFGC four years ago showed 14,500 jobs could be lost across manufacturing more broadly due to the price of gas. [20]

The following is an extract from 'The Australian'

> *"High energy costs remain a key concern for business despite a surge in optimism from chief executives.*
>
> *Australian Industry Group boss Innes Willox says a risk remains that surging energy bills might send some companies offshore".*[21]

This is the situation of a large energy using, trade exposed business.

*'Businesses that had failed to contract long-term supplies, or were coming to the end of multi-year contracts struck when energy prices were more favourable, are being asked to pay double and triple the price for gas and electricity, sparking fears they will become uncompetitive and be forced to close or move offshore.*

> *"Gas is a smaller part of the national economy than electricity but companies that are affected are badly affected," Mr Leitch, founder of ITK Consulting said.*
>
> *Adelaide Brighton Cement, which uses up to six petajoules of gas a year in its kilns, said this month it expected its energy bill to increase by $8m.*[22]

A further story from Sunday 20 August, 2017

> *According to the latest Suncorp–Resilium-Chamber of Commerce and Industry Queensland Pulse Survey, electricity and utility costs are now the number one challenge facing the state's business community.*[23]

These impacts feed through to community wide risk, particularly in regional communities where high energy prices impact on competitiveness of local businesses which impacts on local employment and flows through to reduced confidence with social and economic costs.

The risks from high and potentially still rising energy costs are high and being borne by consumers, be they households or businesses

In assessing risk and risk mitigation, including by insurance companies, the risk premium is basically the product of probability of a risky event and the impact, simplistically summarised by the following matrix.

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[20] http://www.abc.net.au/news/rural/2017-10-16/calls-for-an-energy-retailers-code-of-conduct-food-grocery/9043854

[21] http://www.abc.net.au/radio/programs/am/energy-costs-wages-pressure-worry-ceos/9355240

[22] https://www.theaustralian.com.au/business/mining-energy/call-for-energy-policy-as-high-prices-hit-companies/news-story/412fbfb2f30edf9010d9035a5245d30c

[23] https://www.cciq.com.au/news/rising-energy-costs-are-a-business-confidence-shocker/

**Table 3 Consumer risk impact**

| Finance risk Impact | Low cost of event | High cost of event |
|---|---|---|
| Low Probability | Of modest concern to consumers | Of most concern to Network Businesses |
| High Probability | Of most concern to consumers | No plausible situtions to meet both criteria |

What we summarise in table 3 is finance risk potential impacts and observe that most of the rate of return risk debate focusses on low probability events with high costs, for example a network business defaulting on a loan payment, or similar.

However, data presented in the earlier tables shows that large numbers of households are disconnected from supply, 93,500 Australia wide in 2017 and / or have an energy debt, 243,000 households in 2017. The cost on a per household basis is small, compared to the large financing portfolios managed by network businesses, hence high probability and low cost per individual event. However, if the average energy debt of household is $1,000, then the net impact, Australia wide is over a quarter of a billion dollars, which is a substantial realised finance risk and it is borne entirely by households. So the major finance risk is borne by consumers, in aggregate through high probability, low individual cost events.

Substantial additional realised financial risk is being carried by small business.

We conclude that it is consumers who are bearing the risk of excessive energy costs, which include network financing costs.

# 3. Does the Guideline get it right?

The CRG strongly believes the Guideline is not meeting its objective.

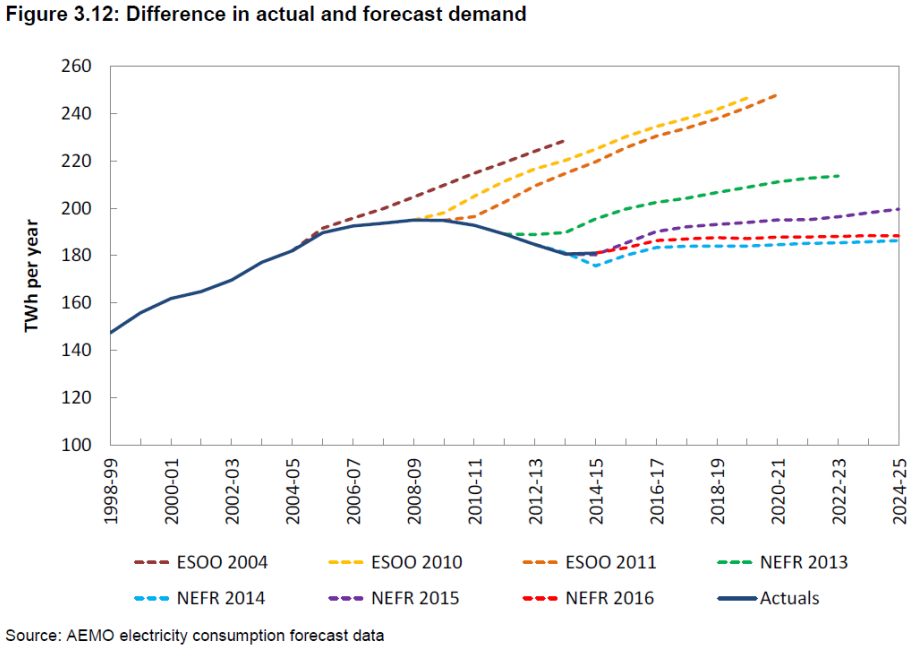
There is no testing as to whether the Guideline serves the long term interests of consumers. The available evidence demonstrates the objectives are not being met.

The Review is occurring in an environment of increasing energy prices that could be described as an 'affordability crisis.' The impact has been particularly severe on low-income households, young families and trade exposed energy intensive businesses including agriculture, manufacturing and catering. Increasing network charges have been a significant contributor to these unsustainable prices.

Over the last decade the combined Regulatory Asset Base (RAB) of the electricity distribution networks has almost doubled while network utilisation has declined from just under 60 per cent to just over 40 per cent. Despite these changes, network businesses are continuing to enjoy strong earnings and are trading at multiples of 1.3 to 1.6 of the RAB.

Conversely, there is no evidence of under-investment resulting in a decline in network reliability.

**Figure 7 Aggregate electricity consumption[24]**




Source: AEMO electricity consumption forecast data

The other major cost building blocks include regulatory depreciation, tax and operating and maintenance expenditure (henceforth "OPEX"). All non-capital charge components are also

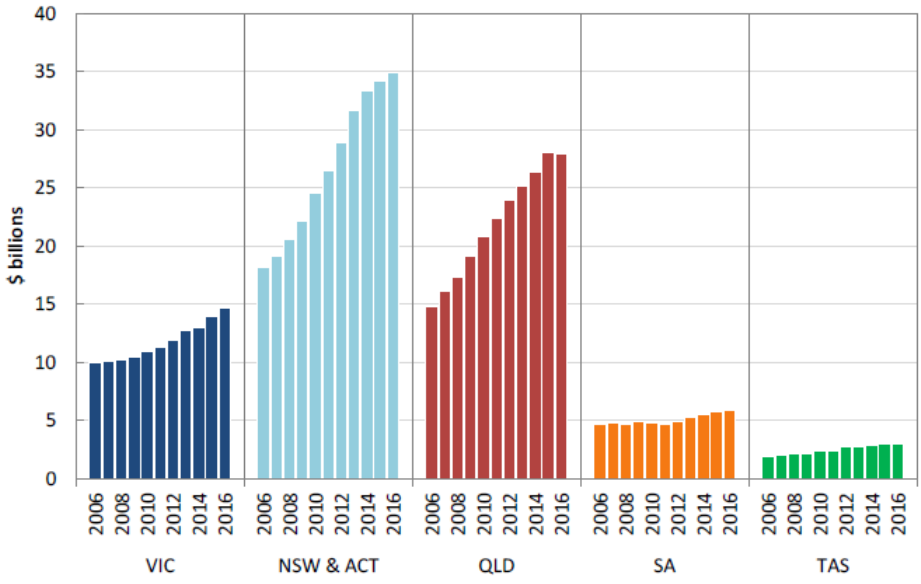
[24] Note that annual maximum demand (TW) has also been flat or falling in most parts of the NEM over this period, with the notable exception of regional Queensland due to increased demand/consumption from the gas export sector.

heavily influenced by any changes in the allowed value of the RAB. Regulatory depreciation and statutory tax rates are directly affected. While new assets may require less OPEX than older assets, they nevertheless require additional OPEX. Another cost component is the contribution to jurisdiction schemes including the funding of feed in tariffs.

A substantial increase in network capacity and associated expansion in RABs took place over the period from around 2006. This meant the aggregate value of the aggregate RAB across the sector increased 75 per cent from $49 billion in 2006 to $86 billion in 2016 (in 2016 dollars.[25]

**Figure 8 Regulatory Asset Base growth**

**Figure 2.34: Regulatory Asset Base from 2006 to 2016, by NEM region, real values in 2015–16 dollars**




Source: AER economic benchmarking, Regulatory Information Notice responses.

**Source:** ACCC Preliminary retail competition review report, September 2017

The reliability impact of the increase in RABs is discussed around figure 9 below. RAB increases in NSW and Queensland before around 2012 reflect jurisdictional licence conditions that were superseded.

Developments in the non-regulated parts of the sector are also contributing to the energy affordability problem. Most notably, this includes market concentration and evidence of super-normal returns in the non-regulated parts of the sector.[26]

The domestic supply and price impacts of several very large scale new gas liquefaction facilities are also a major contributing factor. This directly affects wholesale and retail gas prices. It also has substantial effects for wholesale and retail electricity prices.

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25 See page 62., retail electricity pricing enquiry, preliminary report, September 2017, ACCC.

26 Refer ACCC September 2017.

Other factors have also contributed to higher network prices. Most notably, this includes the adoption by some jurisdictions of higher mandated electricity network reliability standards.

Faced with massive retail price increases, consumers have responded where able to do so by switching fuels, adopting and investing in energy efficiency, and investing in distributed generation in the form of rooftop solar photovoltaic (PV) generation. With low global prices for liquid fuels, alongside falling costs of very low carbon emission sources of non-grid energy, and the emergence of electricity storage, these trends are likely to continue.

There is now substantial excess capacity in many parts of the electricity and gas sector. This is most obviously reflected in the withdrawal of uneconomic thermal generation capacity. Over the period substantial thermal electricity generation has withdrawn from the wholesale market. Similarly, domestic gas demand has also reduced.

**Figure 9 Asset utilisation across the NEM**

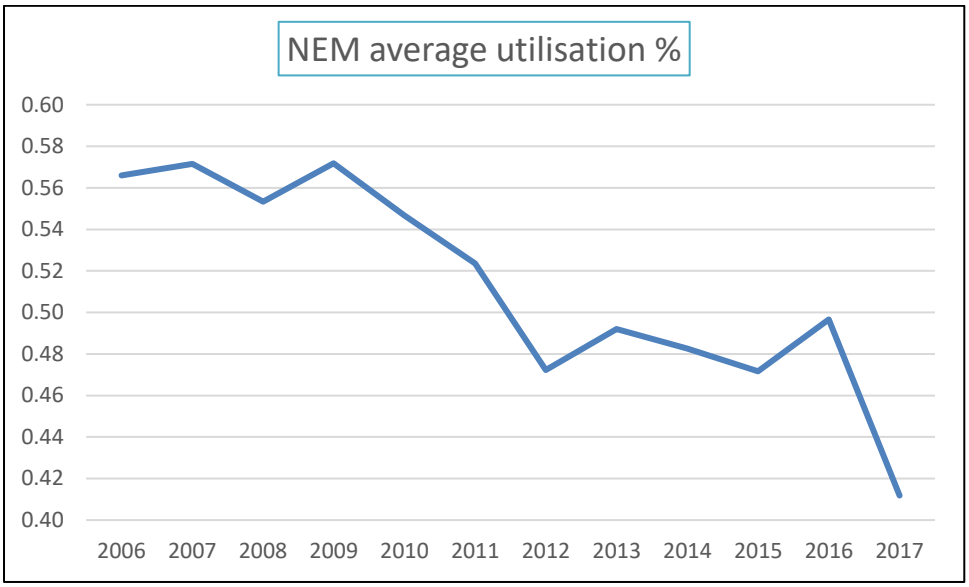
| Business | Asset u |
|---|---|
| Essential Energy | 26% |
| Energex | 27% |
| TasNetworks (D) | 41% |
| Ergon Energy | 43% |
| Endeavour Energy | 49% |
| Power and Water | 52% |
| ActewAGL Distribution | 52% |
| Ausgrid | 53% |
| CitiPower | 58% |
| SA Power Networks | 60% |
| AusNet (D) | 61% |
| Jemena Electricity | 61% |
| United Energy | 66% |
| Powercor Australia | 80% |

**Source:** RIN data as processed and summarised by the AER, sorted by CRG

The figure below shows NEM wide average utilisation trends. This highlights a significant reduction in average utilisation, reflecting a combination of:

- Flat to falling demand, due to substitution of network services and responses to rising total retail prices; and
- Excess CAPEX before changes to reliability settings by jurisdictions, and the introduction of the CAPEX Incentive Guideline.

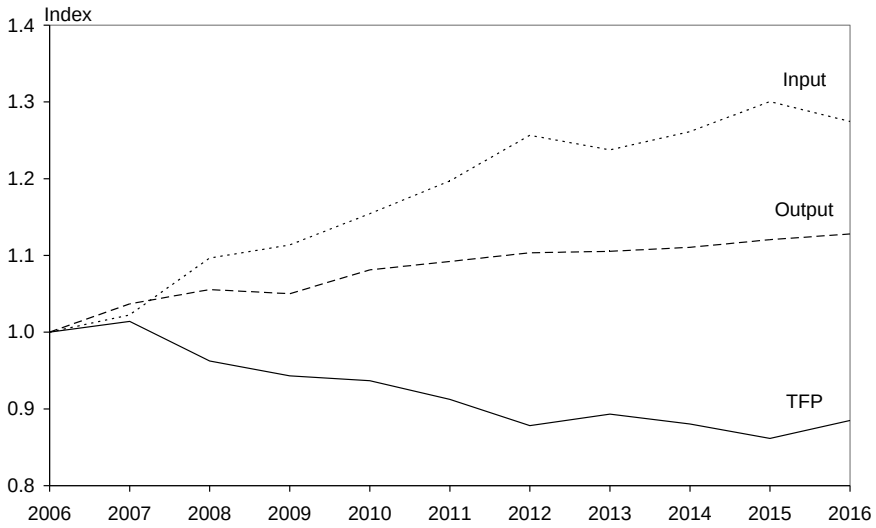
**Figure 10 NEM wide average utilisation**




**Source:** RIN data as processed and summarised by the AER

In electricity networks, annual productivity reporting by the AER shows that productivity has fallen across the sector. This is illustrated in the figure below.

**Figure 11 Industry level distribution output, input, and total factor productivity indexes, 2006-2016**[27]




**Source:** Economic Insights

This productivity reporting includes change in network reliability in its output measures. Accordingly, any improvements in network reliability due to asset renewal and increased capacity are already taken into consideration in the output metrics and total factor productivity.

As discussed below, there is currently no reporting on ROR outcomes either by the regulated entities or by the AER under the current Guideline. Private sector profitability analysis also indicates the existence of excessive prices due to excessive ROR. For example, in a report dated April 2018, a former AER Consumer Challenge Panel member, Hugh Grant, concludes that Queensland network prices incorporate excessive returns and result in revenue allowances over two times efficient levels.[28]

## 3.1 Possible impact on consumer bills

The return on RAB for the network businesses constitutes about 25 percent of a retail electricity bill. The CRG's assessment is that the return on RAB for the network businesses could be more than 40 percent higher than the efficient rate of return.

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[27] See *Economic Benchmarking Results for the Australian Energy Regulator's 2017 DNSP Benchmarking Report, Report prepared for Australian Energy Regulator*, 31 October 2017.

[28] See *The Winners and losers of the monopoly game; how the Queensland Government profits from Queensland's excessive electricity prices*, Hugh Grant, April 2-018.

For small customers, network bills typically represent around half their total retail bill. If the inefficient component in network prices attributable to the current Guideline were removed, retail bills could fall by more than 10 per cent.

This is summarised in the two tables below. In Table 4, the mid-point of the CRG's estimates for each WACC parameter, or in case of MRP, an estimate at the top of the range identified by the CRG, are compared with the baseline (Ausgrid 2014-19 final decision) values in the AER's Sensitivity Matrix spreadsheet model. See https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/review-of-rate-of-return-guideline/consultation

**Table 4 Overview**

| Parameter | AER | CRG | Variance |
|---|---|---|---|
| Risk free rate | 2.55% | 2.55% | 0% |
| Equity beta | 0.7 | 0.3 | 0.40 |
| Market risk premium | 6.50% | 5.75% | -0.8% |
| Return on equity | 7.1% | 4.6% | -2.5% |
| Gamma | 0.4 | 0.9 | 0.5 |
| Expected inflation | 2.38 | 2.38 | 0% |
| Gearing | 0.6 | 0.6 | 0% |
| Return on debt year 1 | 6.51% | 4.55% | -2.0% |
| WACC year 2-5 | 6.68% | 4.48% | -2.2% |

**Source:** CRG inputs and outputs from AER WACC sensitivity matrix spreadsheet model

Table 4 highlights that, in CRG's view, the current Guideline consistently errs in favour of over-compensating investors, rather than ensuring the return on capital is no more than required to compensate for systematic risk.

In table 5, the impact of the changed WACC inputs relative to the rate of return on capital is quantified using the AER's WACC sensitivity matrix spreadsheet model. Due to imprecision in all of the WACC parameter inputs, in the text above, the values have been rounded off.

**Table 5 Efficient rate of return**

| Cost component | Percentage change |
|---|---|
| Rate of return on capital (WACC*average RAB or EBIT/average RAB) | -37.2 |
| Total network bill | -18.6 |
| Total customer (retail) bill | -9.3 |

**Source:** CRG WACC parameter inputs and outputs from AER WACC sensitivity matrix spreadsheet model

**Note on quantification of possible bill impacts**

The quantification of possible bill impacts of errors in the present Guideline has been derived by way of the sensitivity matrix spreadsheet model prepared by the AER for the present review.[29] The WACC inputs for the spreadsheet are the mid-points of the proposed ranges for each parameter, or in the case of MRP, at the top end of the range of possible outcomes identified by the CRG, as discussed in detail in section 6 below and summarised in the Executive Summary.

The CRG provides this as a reference point for discussion and analysis and does not purport that the inputs or outputs are definitive. It suggests that the AER should provide very solid reasons for selecting values which deliver outcomes less favourable to consumers.

[29] See the excel file "sensitivity matrix" available at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/review-of-rate-of-return-guideline/consultation

# 4. Why the Guideline does not get it right

**Question 2:** ***Should information on profitability, asset sales, financeability and any other financial information be used when assessing outcomes against the NEO and NGO, ARORO, and the related RPPs? If so, how?***

## 4.1 Introduction

There are four key reasons as to why the current Guideline does not get it right. These are:

1. The reduction in risk faced by the regulated network businesses afforded by the rules is not reflected in the 2013 Guideline. The consequence is significant; for example consumption volume risk is not borne by the electricity networks.

2. The companies the AER draws its market data sample from do not represent benchmark efficient entities, as these companies operate both regulated and non-regulated businesses.

3. There is no data on actual returns against which to compare modelled returns so as to allow the AER to make informed judgements under the Guideline for future periods. Previous decisions are reinforced by the use of market data that themselves reflect previous decisions, as identified in the Evidence Sessions.

4. The Black version of the CAPM and the Dividend Growth Model (DGM) used in the Foundation model (2013 Guideline) result in an excessive allowance for the equity risk premium.

In combination, the problems with the Guideline result in a substantial over-estimation of the efficient rate of return. The Guideline consistently errs on the side of over-compensating investors for systematic risk, rather than ensuring that the return on capital component of network bills is not excessive. This is inconsistent with the NEO/NGO and the Revenue and pricing principles.

## 4.2 Risk reduction under the regulatory framework

Table 6 below summarises a selection of provisions in the rules that have the effect of reducing various systematic and non-systematic risks for regulated entities.

**Table 6 Reduction of systematic risk under the regulatory framework[30]**

| Rule | Effect on risk |
|---|---|
| 6.3.2(b) | The term of each regulatory control period is at least 5 years, providing a fixed duration in which a service provider has a regulated return on its assets, revenue certainty, and fixed terms of access for its services. |
| 6.2.6 | The AER adopts a control mechanism formula to calculate the total revenue that service providers may collect over a regulatory control period (and for each year of a regulatory control period). This control mechanism automatically accounts for indexation and annual increases in efficient input costs. The control mechanism that the AER adopts (typically in the form of a revenue cap), also ensures a service provider has a guaranteed level of total revenue that it may collect across the regulatory control period, regardless of unexpected changes in demand. This significantly limits risks to revenue. |
| 6.5.9 | X factors in the control mechanism smooth revenues across the regulatory control period and limit shocks from the last year of a regulatory control period before the start of the next. The AER sets X factors, among other things, to allow service providers to recover a revenue shortfall in one year in a subsequent year. Through X factors, service providers have a stable and certain level of revenue over each regulatory control period, with reduced risks of short term revenue volatility. |
| 6.18 | The prices service providers may charge annually are certain. They are set through a regulatory process to approve annual pricing proposals. |
| 6.4.3(a)(1)-(3), 6.5.1, 6.5.2, 6.5.5, S6.2.1, S6.2.2B, S6.2.3, | The total revenue that the AER determines incorporates a return on and of the service provider's asset base. The historical asset base rolls forward from one regulatory control period to the next and from year to year within each regulatory control period. The NER guarantees recovery of historical asset costs through depreciation, the earning of a return on the asset base, indexation and recovery of future efficient capex. This substantially lessens risks in capital investment that might |

[30] From Table 3-3: Key clauses in the rules that mitigate systematic risk FINAL DECISION AusNet Services distribution determination 2016 to 2020 Attachment 3 – Rate of return May 2016

| | |
|---|---|
| | otherwise apply to a business operating in a workably competitive market. An asset that is not utilised or productive may still provide a return under the NER through the setting and rolling forward of the asset base, the return on and of the asset base and the application of indexation. |
| 6.5.2 | The AER sets the rate of return on the asset base by reference to the risks faced by the service provider. The AER updates this each regulatory control period to account for changed market conditions. |
| 6.5.3 | Provision for tax in determining total revenue is required regardless of whether the service provider pays tax. |
| 6.5.6 and 6.5.7 | The AER assesses expenditure requirements for each service provider by reference to the amount necessary to meet a set of standards and objectives. These include the need to meet the expected demand for services and to meet quality, reliability, security, and safety standards. The AER does not assess expenditure by reference to the capacity of consumers to pay. This removes risks that could otherwise arise in providing a reliable and safe service. The AER reassesses the requirements of service providers for each regulatory control period to account for changes in market conditions and trends. |
| 6.5.10 | Allows service providers to pass through certain costs to consumers in circumstances where this might not be possible in a workably competitive market. For instance, the pass through provisions provide for a pass through of costs that arise through regulatory change. |
| 6.5.7(f), 6.6A, chapter 5 | Establishes a planning regime for DNSPs that assists in predicting future costs and appropriate planning for changes in the commercial environment. This includes provision for contingent projects during a regulatory control period and longer term projects through the RIT-D process. |
| 6.20, 6.21, 6.6.1(a1)(d), and RoLR provisions | Provides for a statutory billing and settlements framework with prudential requirements (and other similar provisions) to minimise financial risk associated with providing and charging for services. There is also provision for dealing with potential risks associated with retailer insolvency. |

Source: NER, AER analysis.

https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausnet-services-sp-ausnet-determination-2016-20/final-decision

Rule 6.6.5 *Reopening of distribution determination for capital expenditure* is also relevant. It provides for an additional pass- through mechanism for any material (+5%) incremental CAPEX following an unforeseen event (e.g. natural disaster).

## 4.3 Benchmark efficient entity

The companies the AER draws its market data sample from do not represent benchmark efficient entities (BEE), as these companies operate both regulated and non-regulated businesses.

**Figure 12 Sample for estimating risk for BEE**

| Firm (symbol) | Time/trading period | Sectors |
|---|---|---|
| AGL Energy Limited (AGK) | January 1990 – October 2006 | Electricity<br>Gas |
| Alinta (AAN) | October 2000 – August 2007 | Gas |
| APA Group (APA) | June 2000 – present | Gas<br>Minority interest in energy |
| DUET Group (DUE) | August 2004 – present | Electricity<br>Gas |
| Envestra Ltd. (ENV) | August 1997 – present | Gas |
| GasNet (GAS) | December 2001 – November 2006 | Gas |
| Hastings Diversified Utilities Fund (HDF) | December 2004– November 2012 | Gas |
| Spark Infrastructure Group (SKI) | March 2007[59] – present | Electricity<br>Gas |
| SP AusNet (SPN) | December 2005 – present | Electricity<br>Gas |

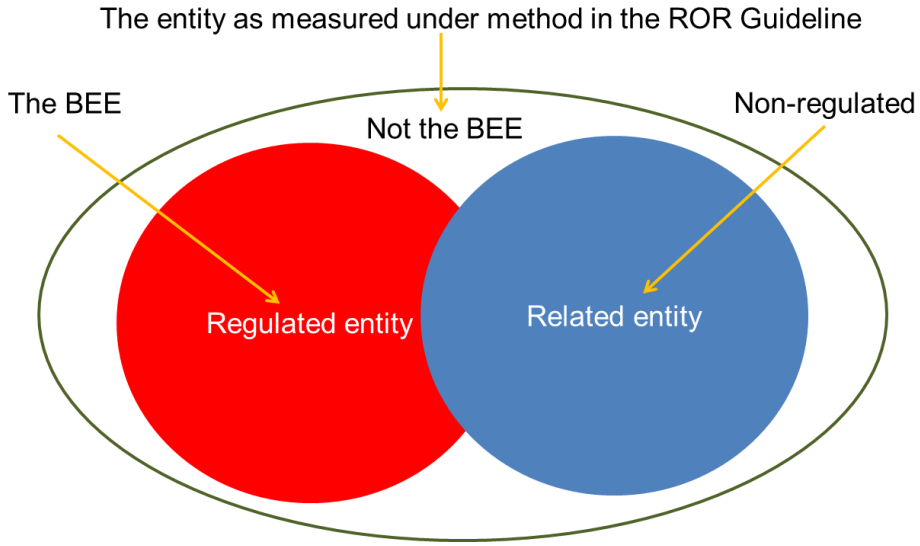
Source: AER analysis, Bloomberg, AER, *Final decision: WACC review*, May 2009, p. 255

**Source:** Table 3.1 Equity beta issues paper ROR Guideline, October 2013

The non-regulated component of the portfolio above is substantial. For example, at present, more than 90 per cent of APA's revenues are non-regulated. Only three entities from the sample above are still listed. Of the sample above, most are a combination of regulated and non-regulated entities.

This is illustrated in Figure 13 below.

**Figure 13 The entity being measured under the Guideline vs. the BEE**




The BEE for regulated price settings is the red circle. However, performance data for this entity is not available in the data set used under the current methodology. The only data available, and used for estimating the AROR, is the totality of the regulated entity (red) and the related entity (blue).

The related entity has materially higher variability in returns compared with the BEE. This reflects the fact that only the regulated component benefits from the extensive reduction in systematic risk under the present regulatory framework.

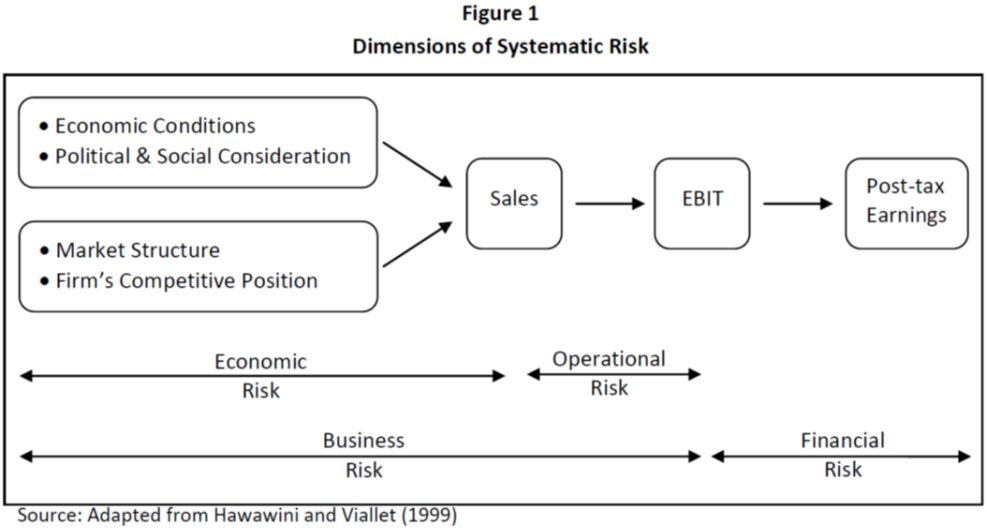
Most notably, for APA, AGL, Alinta, Hastings (and others), the related entity did not benefit from the extensive reduction in systematic risk as summarised in Table 6. For example, APA's current equity beta is similar to that for AGK (the successor to the gentailer component of AGL). AGK is a gentailer that does not benefit from the risk reduction in the rules for setting regulated network prices.

In the figure above, the regulated and related entities are depicted as being the same size. There is a wide variation over the sector in the size of the regulated entity relative to the related entity. The size of excess profits is not dependent on the relative sizes of the two entities.[31]

The effect of measuring the risk for the total entity instead of BEE under the current methodology in the Guideline is substantially to dilute and therefore under-estimate the effect of the risk reductions for networks under the current regulatory framework. This means that under the current Guideline networks are being compensated for risks that are not being borne by networks.

[31] Briefly, this is because the excess margin from applying the total entities higher WACC to the BEE does not change with changes to the relative sizes of the regulated and related entity.

**Figure 14 Dimensions of systematic risk[32]**




The systematic risk only refers to the non-diversifiable risk. The ROR of these businesses are fundamentally isolated from the systematic risk in the energy sector. This implies that the equity beta should be less than 1. The question is by how much.

Collectively, the very substantial risk reductions under the rules mean that economic and financial risk (the top left boxes) for regulated entities are almost entirely neutralised. Any risks to sales volumes from changes in market structure and or substitution by competing services have little or no bearing on revenue and EBIT, and hence for efficient financing costs. The major residual risks borne by the businesses are non-systematic operational risks.

This risk reduction process is dynamic. For example the move to RFM for determining the opening RAB was formally completed with the rewriting of chapter 6 and Chapter 6A following the Parer Review and around the time the AER was reformed.

The benefit of this risk reduction has become more substantial as electricity consumption and power prices gradually decoupled from the broader economy. This is important because earlier observations for the measurement of systematic risk are unlikely to be a useful guide to the recent and future benefit of this risk reduction for networks.

The risk reduction process is ongoing. For example recent network tariff reform under the AEMC's Demand Side Participation Review is increasing inter-annual and intra-annual revenue smoothing. That is to say variation in sales and revenues for regulated entities is being reduced even further. There are two elements to this of revenue smoothing:

- Increasing the proportion of total regulated revenue obtained from fixed (daily connection) charges. This removes a substantial proportion of seasonality and sensitivity of revenues to variations in sales volumes year on year.

[32] Report to the AER; Estimation of the equity beta (conceptual and econometric issues) for a gas regulatory process in 2012, Michael McKenzie and Graham Partington.

- The application of congestion pricing in the absence of congestion. Networks are required to ensure sufficient firm capacity to meet demand reliably (00.2 percent) in a one in 10 year event. In other words, for most networks most of the time, high levels of congestion may only occur 1 year in every decade. The cost of this otherwise unused capacity for the other nine years is nevertheless passed on to customers over those other nine years. In other words, the revenue smoothing under the X factor price/revenue control formula extends over not one price control period (5 years) but two price control periods (10 years).

These two types of revenue smoothing further reduce any remaining sensitivity of revenue and EBIT to changes in consumption or utilisation of capacity. In other words, they reduce systematic risk.

## 4.4 No reference to the rate of return

In a report prepared by the Consumer Challenge Panel dated July 2014, the CCP concluded that:[33]

> *…it is essential that the AER should have regard to actual market and comparative regulatory information in exercising its discretion when determining the regulatory WACC. This recommendation is consistent with the views expressed by the consumer representatives who participated in the extensive consultation process undertaken by the AER in the development of the Guideline. The CCP believes such examination provides the AER with an objective way of evaluating the options available to it, and to exercise its discretion in doing so.*

There is no data on the rate of return actually achieved against which to compare modelled returns so as to allow the AER to make informed judgements under the Guideline for future periods. Previous decisions are reinforced by the use of market data to derive CAPM parameter values that themselves reflect previous decisions, as identified in the Evidence Sessions.

When the present Guideline was established, no performance evaluation framework was put in place in preparation for the present review, which was mandated in the 2012 rule changes that led to the present Guideline. This is because, as the AER notes:

> *The AER does not currently have in place a performance measurement framework to provide a clear picture of the profitability of regulated electricity and gas businesses.*[34]

In the current Guideline, throughout the present Review process, and in the parallel review of profitability measures, the AER has maintained that the ROR is not relevant to the ROR Guideline.[35] The only relevant data according to the AER is data it uses to populate its preferred model to derive the WACC component of the AROR.

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33 See page 14, *Smelling roses and escaping the rabbit holes: the value of looking at actual outcomes in deciding WACC,* CCP.

34 See page 5 of *Discussion paper, Financial Performance Measures*, AER, February 2018.

35 See Page 3, and 11-12, *Discussion paper, Financial Performance Measures*, AER, February 2018.

As a result of this view, the only "evidence" available to the Review and the CRG has been in relation to the data used to populate the model used to derive the WACC. So far, the AER has not provided initial outcomes from its profitability review. There is no public data on the ROR of regulated entities available for this review. The most recent ROR data available from the AER relates to 2011-13, well before the current Guideline was developed.[36]

By contrast, in the ACCC's report on airport profitability released in late April 2018, the ACCC accurately defines ROR as actual EBIT/actual assets (equivalent to ROR/average RAB).[37] There is no reference whatever to parameters for a model of an ideal efficient firm such as the Capital Asset Pricing (CAP) Model. Similarly, there is no reference to CAPM in the ACCC's preliminary retail electricity price review report. This is the fifth airport ROR monitoring report defining ROR in this way since the most recent electricity ROR report.

The AROR relates to the rate of return – that is the earnings before interest and tax (EBIT) divided by the average regulated asset base (RAB) for a given performance reporting period. This is how the ACCC and all other economic regulators apply the concept of ROR (See box).

**Rates of return**

Rate of return measures can also inform analyses of profitability. The rate of return measure used by the ACCC in this report is return on assets which may be expressed in a number of forms (for example, pre- or post-tax returns; including or excluding interest expenses and/or depreciation and amortisation). The ACCC's approach to calculating rates of return in this report is discussed below.

**Return on assets**

This report also looks at the rate of return that airports earn from their assets. This measure consists of EBITA on the average value (of opening and closing balances) of tangible non-current assets. The ratio provides a measure of the efficiency with which an entity uses its assets to produce operating profit before interest, tax and amortisation.

*ACCC Airports Monitoring Report 2018*
https://www.accc.gov.au/media-release/airport-profits-continue-to-grow

The relevance of ROR monitoring is well understood in other regulatory settings, especially 'light-handed' regulation which focuses on outcomes. For example, the ACCC monitors and publishes information relating among other things to profitability in a range of sectors including aeronautical services, airports, postal services, telecommunications, waterfront and shipping, and the water sectors. This includes information on industry margins and the rate

[36] See https://www.aer.gov.au/networks-pipelines/network-performance/electricity-distributors-2011-13-performance-report

[37] See https://www.accc.gov.au/media-release/airport-profits-continue-to-grow

of returns on assets.[38] Other regulators monitor returns in the energy sector including the UK's Ofgem, the New Zealand Commerce Commission and the Ontario Electricity Board.[39]

**Accounting and Economic Value (EV) profit reporting in New Zealand.**[40]

Under the New Zealand information disclosure regulations, regulated entities are required to disclose and publicly report profitability data to ensure that the objectives of Part 4 of the New Zealand Commerce Act 1986 are being achieved. These objectives include ensuring that suppliers of regulated goods or services are limited in their ability to extract excessive profits. Profitability data must include disclosure of EV accounts regarding EV gains or losses. Profitability reporting for all regulated entities in a given sector must apply a set of standardised information disclosure templates (similar in concept to RIN). The Commerce Commission then aggregates this information disclosure to provide cross sectoral profitability reporting.

ROR monitoring is also a necessary requirement for ring-fencing to ensure that any errors in regulation of standard control/reference services does not adversely affect competition and efficiency in related markets. Inefficient outcomes in the parts of energy markets that are outside standard control/reference services are also inconsistent with the NEO/NGO.

Because returns are not measured, the errors in the present Guideline are never detected, let alone corrected. There is no error correction process; only an error reinforcement process. The performance "evaluation" framework used in the present ROR Guideline review is illustrated in Figure 15 below.

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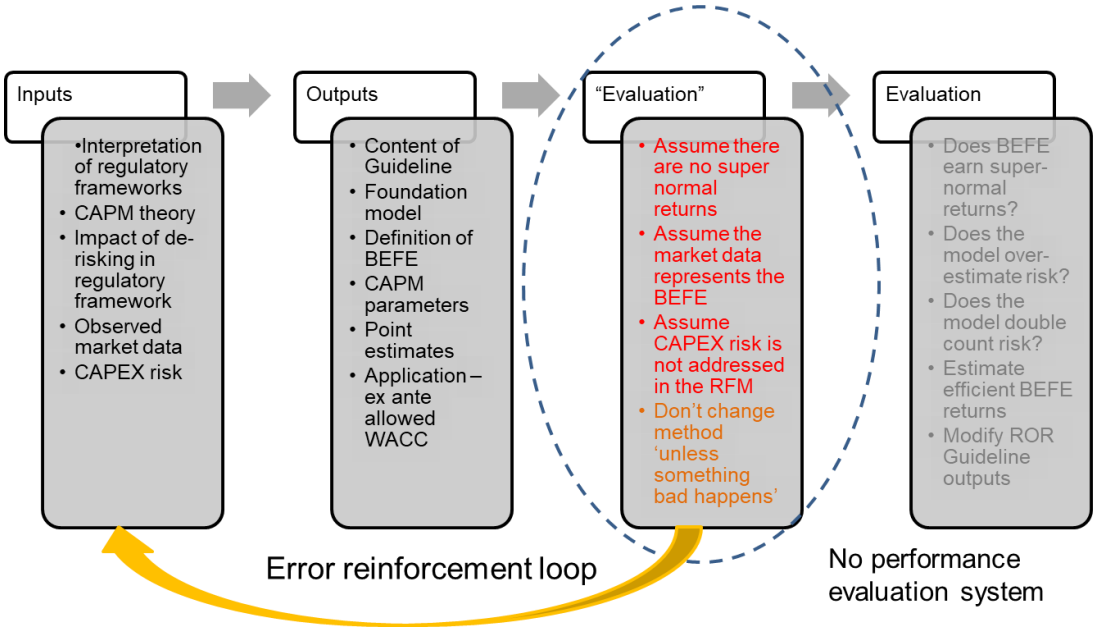
38 See for example:
ACCC, Airport monitoring reports, at: https://www.accc.gov.au/publications/airport-monitoring-reports
ACCC, Assessing cross subsidy in Australia Post, at: https://www.accc.gov.au/publications/assessing-cross-subsidy-in-australia-post/assessing-cross-subsidy-in-australia-post-2013-14
ACCC, Water monitoring and reporting, at:
https://www.accc.gov.au/system/files/1144_Water%20Report%202015-16_Text_FA4.pdf

39 See page 4 of the AER's Profitability measures Position Paper.

40 See for example http://www.comcom.govt.nz/regulated-industries/electricity/performance-analysis-and-data-for-distributors/profitability-of-electricity-distributors/

**Figure 15 Performance "evaluation" under the ROR Guideline review process**

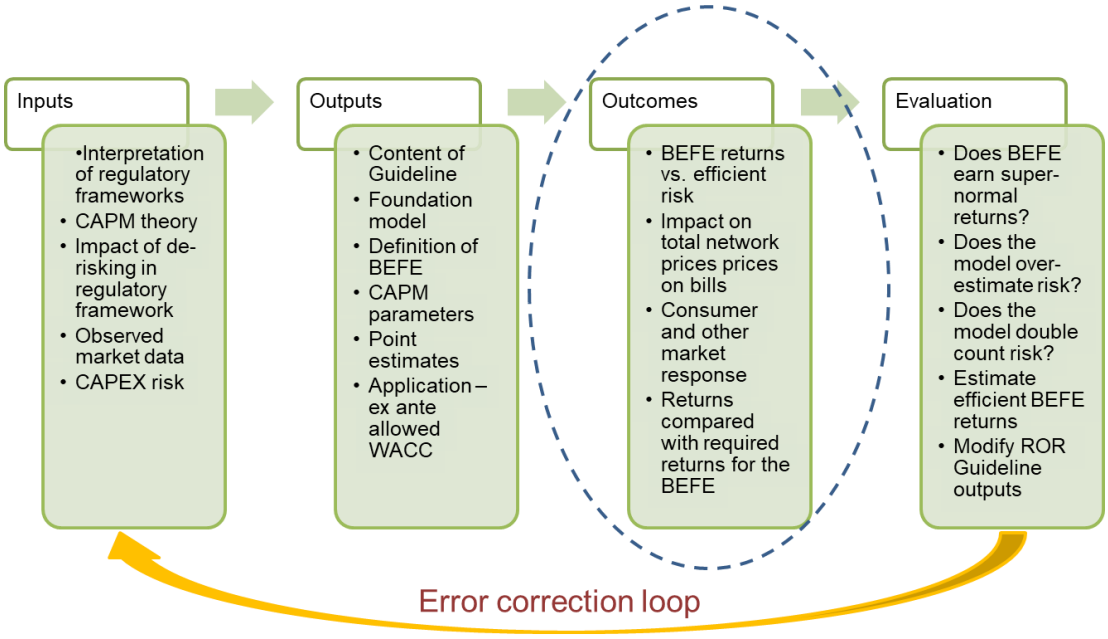



Instead of an error correction loop from the right hand chevron back to the left hand chevron, there is an error reinforcement loop from the third chevron from the left to the left hand chevron.

Error correction requires reference to ROR outcomes across the entire sector. This data can be used to compare with relevant benchmarks and to estimate efficient capital costs. This is standard best practice regulation, for example under the New Zealand regulator's information disclosure regime.

A high level performance evaluation framework for the ROR Guideline is illustrated in Figure 16 below.

**Figure 16 Best practice performance evaluation framework for the ROR Guideline**




Under a best practice performance evaluation framework, outcomes from the Guideline are measured and inform an evaluation. Any errors in the outputs leading to inefficient outcomes are identified.

This results in revisions to the inputs and corrections to the outputs. For example, if outcomes include economic profits because systematic risk is over-estimated, then the inputs used to derive the point estimates for systematic risk are corrected and modified so that the BEFE no longer generators super-normal returns.

## 4.5 An excessive allowance for the cost of capital

Together, the Black version of the CAPM and the Dividend Growth Model (DGM) used in the Foundation model (2013 Guideline), result in an excessive allowance for the equity risk premium. This is discussed further in section 6 below.

## 4.6 Conclusion

In the CRG's view an incremental review of the Guideline is not sufficient to address the deep seated problems with the Guideline outlined above. The present Guideline review process does not constitute an error correction process but instead represents an error reinforcement process.

Most importantly, there is no reference to data on the rate of return being achieved across the sector. To this end, the CRG is disappointed that rate of return data being developed by the AER and due to be released later in May 2018 was not available for this submission.

The remainder of body of this submission relates to the present incremental review. The CRG supports a full review of the Guideline to be conducted as soon as possible. Within the available timing and resource constraints, the CRG has considered a possible approach to full review of the Guideline. This is discussed in Appendix 1 and Appendix 2 to this submission.

# 5. Exercising regulatory judgment

In determining the allowed rate of return, the AER must have regard to "relevant estimation methods, financial models, market data and other evidence."[41] A common theme in the expert advice and evidence presented at the Evidence Sessions is that financial modelling of the CAP Model provides a deceptive level of precision in the calculation of the ROR. Most notably, the approach doesn't provide information on the ROR that is required to attract efficient network investment.

The use of estimation methods using market data can only provide a guide; and use of judgment is unavoidable. The AER's exercise of judgement appears to be heavily influenced by a view that the damage to consumers from too little network investment is greater than the detriment to consumers over-paying for the service. In exercising regulatory discretion under the 2013 Guideline, the AER set input parameters resulting in an ROR that is too high. The risk to investors has not been adequately balanced against the consequence to consumers of inefficiently high prices.

The degree of "insurance" included in the AER use of judgement was an issue raised during the Evidence Sessions. It was claimed that the AER's exercise of its judgment under the Guideline embedded a consistent bias in favour of network businesses in the assessment of each point estimate used in the application of the CAP Model.

The experts in the Evidence Sessions did not agree as to whether the AER had used its judgement correctly in previous decisions. They were split as to how the AER should use its judgement in future. The CRG contends that the AER's exercise of regulatory judgment needs to better balance the interests of consumers and network businesses, and be informed by the consequences of the ROR being set too high under the 2013 Guideline.

[41] NER 6.5.2 (e)

# 6. Choosing key CAPM parameter values

## 6.1 Introduction

This section provides CRG advice to the AER on choosing key parameters. The CRG notes that it does not have the technical resources or capacity to arrive at definitive answers on each of these topics, so the intention of the discussion below is to suggest that, in exercising its judgment and technical expertise, the amended Guideline should take into account the perspectives and matters discussed.

In particular, the CRG notes that the use of CAPM draws data from competitive markets and that this data reflects the risk profile of firms operating in a competitive market. In contrast, in a regulated energy network environment, while the investors bear some risk, the rules exclude a significant amount of the risk that would otherwise be faced by networks, as identified at Section 4.2, table 6. In competitive markets most, if not all, of these risks are borne by the firm.

When these risk adjustments are coupled to a secure and known cash flow, the risk faced by investors in network assets more closely reflects that faced by a provider of debt for such assets. At the second concurrent evidence session, the expert nominated by the investment community commented (page 74 of the unproofed transcript)

> *"And a lot of investors recognise that as a feature of the current framework which is, you know, a fixed MRP over a bond rate that moves, and that is seen particularly for long-term investors, superannuation funds they want their members to have exposure to Australian macro-economic variables.* ***They see this as a resetting bond in that circumstance****. So they understand that in absolute sense, even though they are investing their equity for a long time, 99 years, they accept that during different five-year periods they are going to get an absolute return that is a function of the bond rate, and that's priced into the way the investment works." (emphasis added)*

The clear implication of the statement that investors see investment in regulated networks as a "resetting bond" is that the investment is seen more in terms of extremely low risk and not as a risk that equity holders consider they face. Observations by the other experts reinforced this view through their comments that the market risk premium and equity beta should show little variation over time. If the equity risk premium (i.e. MRP*equity beta) should vary little with time, then the only time related variable would be the risk free rate which, by the current definition, is the Australian government 10 year bond rate (CGS) which does move with time.

The CRG agrees that the risk profile of regulated networks should be seen more as a bond (i.e. debt) than as equity as the risks normally faced by equity holders have been mostly mitigated. This, then, raises the question as to whether using an equity beta based on the relative volatility of share prices in the stock market (where investors face all of the systematic risks) is an appropriate measure to assess the underlying risk faced by the network firm where these systematic risks have been mitigated through the rules.

## 6.2 Overview of CAPM

The use of the CAPM approach does not replicate the actuality of investment, so care needs to be applied in its use as a surrogate for investment in network assets.

The CRG notes that the AER has just been through four years of reviews by the ACT and Courts on the application of the 2013 Guideline. Given this context, the current Review of the Rate of Return Guideline is limited to an incremental review. The CRG submits that a more fundamental review is required. There are major issues with the CAPM model (as noted in above sections) which the CRG believes require thorough examination. Using CAPM as an indicator and measure of risk is fraught conceptually. The CRG notes the significant investigation that would be required for determining an alternative approach.

The use of CAPM as a tool to set the rate of return needs to reflect that it is likely to over-estimate the required rate of return as it ignores revenue from other sources that networks gain and that many of the systematic risks that the CAPM incorporates have, in the case of networks, are mitigated through the rules.

Further, the data which populates the CAPM parameters also reflects the entire value of the profitability of the firms that comprise the cohort of firms that are listed on the Australian Stock Exchange (ASX). In contrast, while using the CAPM data to inform on what the return on the assets should be for the regulated firms, the regulated firms also have additional revenue from incentives to be efficient in the use of opex (EBSS) and capex (CESS) and to enjoy the benefits of increasing reliability of the services (STPIS) and to structure their finances to minimise the cost of debt and tax liabilities. Effectively, whereas the market data used to populate the CAPM inputs reflects the profitability of firms from all sources of revenue, the regulated networks get their revenue from the rate of return delivered by applying the CAPM **plus** from other sources.

The efficacy of the CAPM is also compromised by the paucity of companies the AER draws its market data sample from to calculate the equity beta where the cohort is not only very small but by including businesses which have a significant unregulated income streams, providing a significant upward bias to the outcome.

While there is a disconnect between the use of the CAPM (based as it is on investment in a portfolio of shares) and the investment in long lived network assets, observations have been made that the CAPM approach has validity in the assessment of a rate of return for network firms because of the principle that a firm has the ability to invest where it wants to generate the maximum benefit for its shareholders. This concept implies that the returns the network firm generates from its normal activities would have to, at least, match the returns that firm might gain from investing in the stock market. This concept is flawed on four counts at least:

1. A firm will invest in its physical assets in order to maintain (even increase) its cash flow which is its main source of revenue. To redirect funds to (say) the share market, would result in a move to a source of revenue that was less well understood than the core business of the firm[42]. So such a move would incur a higher risk than

[42] For example, a firm making paper invests in paper making activities. It does not decide to move to (say) cement making because it doesn't understand the industry, even if higher returns might be possible. Similarly, a firm making paper would not become an investor in the stock market because returns might be higher – it will stick to its core business where it knows how to manage the risk.

providing sufficient funds just to maintain the physical assets in a state where the main source of revenue is maintained. Investments in maintaining "business as usual" attract a very low hurdle rate for investment as the failure of the assets will have a major impact on revenue

2. A firm seeking to invest in its core business will examine all possible (actual and potential) sources of revenue (not just the return on assets) as part of its assessment of the investment and will look to increase its revenue, including through operational rewards and efficiency gains (eg providing a lower cost or higher quality product) as well as from other sources such as from taxation and financial approaches. So an assessment of an investment is not made purely on the revenue from the direct investment (i.e. the WACC*RAB revenue).

3. There is an assumption behind the CAPM that the risk for investing in the stock market sector with apparently the same risk as the core business reflects the risks (especially the systematic risks) that the network faces in its core business. Yet the risk as measured by the equity beta reflects the volatility of the share price (relative to the market as a whole) rather than the underlying risks faced by the firm in its core business.

4. The CAPM measures the source of profits that listed firms get from all of their activities, so applying a rate of return based on the profits from all sources and then applying this just to physical assets alone assumes that there is no other source of revenue that the networks gain from their physical assets. There are observations that indicate the rate of return the network firms actually get is higher than the rate of return they might get through investing in the stock market because the rate of return they achieve is the sum of all sources of revenue rather than just from the WACC*RAB return. Because of the risk profile for these other sources of revenue, to assess the rate of return in isolation (as implied by the CAPM) is flawed.

At an empirical level, at the current rate of return (plus the benefits of other sources of revenue) network firms are still investing in network assets and related activities – they are not investing in the stock market, implying that the returns they garner from their core business are greater than an equivalent return from the stock market on which the CAPM is based.

## 6.3 Gearing

**Question 3:** *Is the current approach to setting the benchmark term and level of gearing appropriate?*

The AER removes subordinated debt from the calculation of the gearing ratio, in doing so effectively provides the same returns to subordinated debt as provided to equity.

In the first instance, we argue that given the significantly reduced risk of default in regulated utilities, the risk profile of subordinated and unsubordinated debt is very similar and should be afforded the same return.

In the second instance, we argue that subordinated debt has a lower risk profile than equity, and can't simply be afforded the same return as equity. This would over-reimburse

infrastructure owners and this may require a change to the binary debt v equity treatment of returns.

## 6.4 Setting of averaging periods for the risk free rate

**Question 4:** *Should the conditions and process for setting averaging periods be refined?*

The AER currently estimates the risk free rate using the annualised 10 year CGS rate which they average over a 20 business day period. The AER states that this period is nominated by the regulated business and it must be as close as practicable to the commencement of the upcoming regulatory period[43].

The AER has proposed to continue to allow the regulated businesses to propose the timing of the averaging period but allow a period from 20 days up to 60 business days to be nominated by the business as long as it:

- is nominated ahead of time
- closes as close as practically possible to the start of the regulatory period

The CRG has considered this proposal and the question of whether it balances the need to capture current market conditions with that of avoiding unnecessary volatility.

The CRG agrees that:

- Provision for the averaging period to extend to 3 months would appropriately balance the consideration of reduced estimate 'noise' and ensuring major changes in prevailing risk-free rates form part of the estimate;
- Period to be nominated in advance in accordance with current practice, and;
- An AER determined default averaging period should apply if no nomination received by the business.

However, we sought further information to understand why the regulated business should have the discretion to choose between 20 days and 60 days, noting that this discretion may result in:

- Businesses being reasonably able to forecast rising or falling markets (one year in advance), and choosing the averaging period to their advantage (as identified by CRG members);
- A common and longer averaging period would ensure all the customers of different utilities in the same regulatory cycle would face the same ROE and result in greater stability than the current approach (as identified by CCP).

[43] AER (2018c) Discussion paper - Market Risk Premium, risk free rate averaging period and automatic application of the rate of return at https://www.aer.gov.au/system/files/AER%20-%20MRP%20Risk%20Free%20Rate%20Averaging%20Period%20and%20Automatic%20Application%20Discussion%20Paper%20-%20March%202018.pdf

The CRG has engaged with the ENA on this issue and notes the ENA advice that:

"There is limited ability for any organisation, particularly network businesses, to be able to reliably forecast/predict market movements. This is the key intention of the AER historically requiring, and ENA supporting, nominating averaging periods at least a year in advance to ensure any resulting cost of equity (and indeed debt) reflects an unbiased estimate. Even if it were possible, it is not clear what the resultant impact would be on the cost of equity from choosing a 20 business day period over a 60 business day period (given possible short term market movements that occur in rising, falling or stable markets)".

The CRG also notes that on the question of customers of different utilities in the same regulatory cycle facing different ROE outcomes and thus prices the ENA's advice that: "This would be the case if networks not only used a 60 day averaging period but also had the AER prescribed that period to regulated businesses. While there may be some benefits with this approach, we note that the benefit is likely to be immaterial on the basis that:

- the resultant overall rate of return faced by customers across businesses will always be different due to the requirement for the cost of debt averaging period to be held confidential (which we assume is a non-controversial position for all stakeholders); and
- given the framework proposed for the cost of equity, particularly lengthening to 60 business days (and even at 20 days), any difference in the overall rate of return for different businesses is most likely to be immaterial (but will always exist no matter what decisions are made on the equity averaging period).

Related to the first point, we consider it is a key principle of incentive based regulation that businesses continue to be responsible for managing their costs. This includes making decisions that will achieve reliability, safety and price outcomes that are in the long term interest of our customers.

The financing costs represent a significant cost that business is required to manage. Related to the cost of equity for example, some businesses will hedge the risk free rate over the nominated averaging period (in the same way they do for debt) at varying levels while other businesses might not. Mandating an averaging period of a particular length unnecessarily reduces the ability for businesses to do this, with no clear benefit to customers.

The proposed position however improves the scope to provide an unbiased estimate of the cost of equity that may result in a more stable cost of equity estimate. In short, we believe the proposed position provides scope to achieve more stable estimates of the cost of equity while maintaining sufficient flexibility for business to manage their costs".

On the basis of that dialogue the CRG supports the AER's proposal.

## 6.5 Transitioning to a trailing average

**Question 5:** *To what extent are changes required to the current approach of transitioning from an on-the-day rate to a trailing average?*

The CRG notes that the AER has indicated it intends to publish a further consultation paper on the approach to the return on debt including the outcomes of surveys they have completed.

# 6.6 Debt

**Question 6:** *Is it appropriate for us to review the return on debt implementation approach by performing a review of the four third party debt data series currently available to us? Please also explain if you think there is further valuing in broadening this scope of debt implementation issues and why you hold this view?*

## 6.6.1 The current approach

In the 2012 rule change by the AEMC to the electricity and gas network regulations (AEMC, 2012) in the executive summary the AEMC emphasised that the AER being in the best position to determine the best methodology to estimate a return on debt. The CRG believes this is still the appropriate position.

In the 2013 Guideline the AER decided to estimate the allowed return on debt using a trailing average portfolio approach following the completion of a transitional arrangement period. (AER, 2013)

The Guideline also proposed to apply an estimation procedure for estimating the prevailing return on debt using independent third party data, using a credit rating of BBB+ and a term of debt of 10 years. The averaging periods for the debt calculation were to be nominated by the networks (within certain parameters and be kept confidential.

## 6.6.2 Application of the Guideline

The AER's transitional approach was subject to review on a number of occasions and the AER is satisfied that the approach meets the requirements of the Rules. (AER, 2017) In particular

- the approach no longer defines a Benchmark Efficient Entity as either regulated or unregulated;
- It also interprets "efficient financing cost" as an ex ante concept, and does not rely on considerations of past financial practices.
- It indicates that if the AER could not apply an approximately revenue neutral transition the AER would continue to only apply the on the day methodology.

The CRG notes that while the benchmark entity is identified as having a BBB+ credit rating it seems that the data series used were for a broad-BBB credit rating. No adjustment seems to have been made for the mismatch between the data series and the BEE credit rating.

## 6.6.3 Matters for review

In providing these comments on the return on debt approach the CRG notes that the AER has indicated it intends to publish a further consultation paper on the approach to the return on debt including the outcomes of surveys they have completed. The CRG however offers the following preliminary comments.

### 6.6.4 Debt term

The CRG, however, believes that the actual debt profile of the regulated businesses is less than 10 years. Discussions with AER staff indicate that this is part of the data that will be included in their further consultation on debt. As debt of a shorter period is less risky, rates are typically lower. The AER should assess the amount by which a shorter term would result in a lower cost of debt and use this as an adjustment on the estimated cost of debt.

### 6.6.5 Choice of third party data series

The CRG supports at least the continued use of a simple average of the RBA and Bloomberg series. The CRG notes the extensive discussion provided by the CCP on the value of including the Thomson Reuters or Standard & Poors series. We support these conclusions and note that an extra data series should only be added if it demonstrably provides a better estimator (as reflected in the approach to by Lally in supporting the simple average of the RBA and BVAL).

Further whatever series the AER decides to use when making the Instrument, the Instrument should specify the mechanism to be used for averaging these series, including the averaging of a remaining set of series if one or more is no longer published. The Instrument should only need to be re-opened if none of the initial series continues to be available.

### 6.6.6 Credit Rating

The AER identifies the benchmark efficient entity as having a credit rating of BBB+. However the current approach uses a broad BBB series for estimating the return on debt uses rather than a BBB+ rating. We are further concerned by the evidence advanced by the CCP that credit rating alone may over-estimate the debt finance costs of utility businesses.

The CRG expects that the use of the simple average of the BBB series and A series for the determination of the cost of debt would, in the CRG's view, adequately address these two current over-estimations of the cost of debt. However, we may revise our position once we see the AER's further discussion paper.

## 6.7 Equity risk premium

**Question 7:** *Would a more prescriptive approach to setting the equity risk premium be appropriate? If the Guideline has a more prescriptive approach to estimating equity risk premium, what set of conditions for reopening the Guideline would best achieve the national gas and electricity objectives and the allowed rate of return objective?*

The use of the CAPM approach does not replicate the actuality of investment by networks due to the move of risks from those faced by the firms to be carried by consumers, so care needs to be applied in its use as a surrogate for investment in network assets and the development of the parameters to be used by the AER in using the CAPM to develop a rate of return on equity for the networks. This concern is explained in more detail below

Because the averaging approach for market risk premium and equity beta is over long durations, the resetting of the equity risk premium due to short term movements in the market is inappropriate, especially as each regulatory period is so short compared to the

averaging periods. Further, the CRG notes that "reopeners" initiated by the networks are invariably when costs increase, providing a bias against consumer interests.

The CRG does not support reopening the guideline to address short term market movements, noting that the guideline is to be readdressed on a regular basis.

### 6.7.1 About investing

Investors in shares have a different focus to a firm investing in its physical assets, different views and different tools for managing the risk they face in their investments. In particular, an investor in shares can readily change shareholdings between firms and is focused on the profitability of a portfolio of shares and the risk that the profitability of the portfolio of shares will not be surpassed by an ASX benchmark (eg ASX 200)

This means that there is a major difference in the goals and the risk profile between an investor in shares and an investor in physical assets. Yet the use of the CAPM by regulators to assess the rate of return for a network firm uses data from the stock market which is all about investing in shares

When an investment decision is made by a firm in an asset its primary goal is to be satisfied that the risk is as low as possible in achieving the targeted cash flow. In the case of regulated networks this risk is very low (see comments in section 4.2) except if the firm fails to manage the assets properly. The next question is whether the cash flow is sufficiently high that the investment made delivers a return that exceeds the return the firm might get from making a different investment. As firms tend to invest in providing a product or service they know – their area of expertise – the opportunity for investment in other physical assets is less than for an investor in shares which can readily their investment between firms in the same market or even change to investing in firms in other markets. An investor in shares expects that the firm will only invest in its area of expertise and if it doesn't then the shareholder may see this as a source of risk.

### 6.7.2 The risk free rate

The development of the Market Risk Premium (MRP) is predicated on what the risk free rate to be used will be as the MRP is the difference between the risk free rate and the market out-performance that is observed. Currently the AER uses the 10 year Commonwealth Government security bond rate (CGS) as the risk free rate, whereas the Economic Regulation Authority of WA (ERA) uses the 5 year CGS as the risk free rate. The ERA uses the 5 year CGS as the basis for its return on equity as this reflects the regulatory period used. In contrast, the AER has used the 10 year CGS as this reflects more closely the long term of the investments, which typically are depreciated over 40 years or more.

However, there is some inconsistency with using a 10 year CGS as the risk free rate for a number of reasons:

- The cost of debt is now effectively set each year under the trailing average approach, so the only impact on using the 10 year bond rate is on the RoE. In the past, the return on debt was also set using the risk free rate with a debt risk premium added and the average term of debt was between 6-8 years, implying a longer term risk free rate was appropriate

- As the RoE is set for a specific 5 year regulatory period, the RoE should reflect the 5 year window, with the network knowing that it will get a new RoE in the future set on the same basis as the last RoE
- The argument for using 10 year CGS is that it better reflects the long term investment window for the assets, yet the equity beta in the CAPM comes from an index of share price volatility measured weekly but averaged over a longer period,
- Investors in shares assess, rebalance and re-risk their portfolios on a much shorter basis than 10 years – often as frequently as each three months. As the equity beta is an outturn of the share price volatility, and volatility is driven by frequency of share price movements that result from rebalancing and re-risking portfolios, there is an inconsistency between using data which reflects short term assessments and a longer term risk free rate
- The MRP is measured each year although it is averaged over a longer term.

The CRG considers that using the trailing average approach to debt, the reasons for using 10 year CGS as the risk free rate are less valid than in the past and there is a greater validity in using a shorter term risk free rate which reflects the term of the regulatory period and the source of data which populated the CAPM

## 6.8 Equity beta

Equity beta is the measure of volatility of a specific share price relative to the overall volatility of all shares on the stock exchange. It is not a measure of risk of a physical asset returning the requisite reward for an investment in that asset. From a shareholder's point of view, a volatile share price introduces risk to the balance of a share portfolio and so it is a guide for assessing the risk the investor in shares sees. It is not a measure of the risk faced by an owner of assets in generating its revenue.

There is no evidence to suggest that he AER's approach to calculating the cost of equity has resulted in returns that are systemically too low when compared to the actual returns achieved by the networks themselves in each regulatory period or by firms in either comparable or different markets, but there is a strong indication that it might provide an over-estimate (see comments in section 4.3). This implies that a closer examination of the AER approach to setting the equity beta is needed.

Accepting that volatility in share price in a specific firm is a guide to the risk that the firm takes from making an investment in shares, this raises the question as to how to "wash" out impacts on share price of firms caused externally (e.g. a GFC, a mining boom, a tech boom, a flight to security when there are major disturbances, etc.) where the volatility is driven by issues totally unrelated to the risks the firm takes with its investment in assets. In theory, by comparing the volatility of a specific share to the volatility of the market as a whole, this assumes removal of these specific market wide issues, as the market as a whole will react to market wide impacts. Yet this is not quite correct. When a disturbance occurs, it triggers the sale of some shares and the purchase of others, with movements to and from the money markets as well. All of these increase volatility of share prices but which do not affect the underlying risk faced by owners of physical assets like the networks.

The question then becomes "how useful is volatility of a share price" (even in relative terms) in assessing the risk of investment in the physical asset that networks get rewarded for via

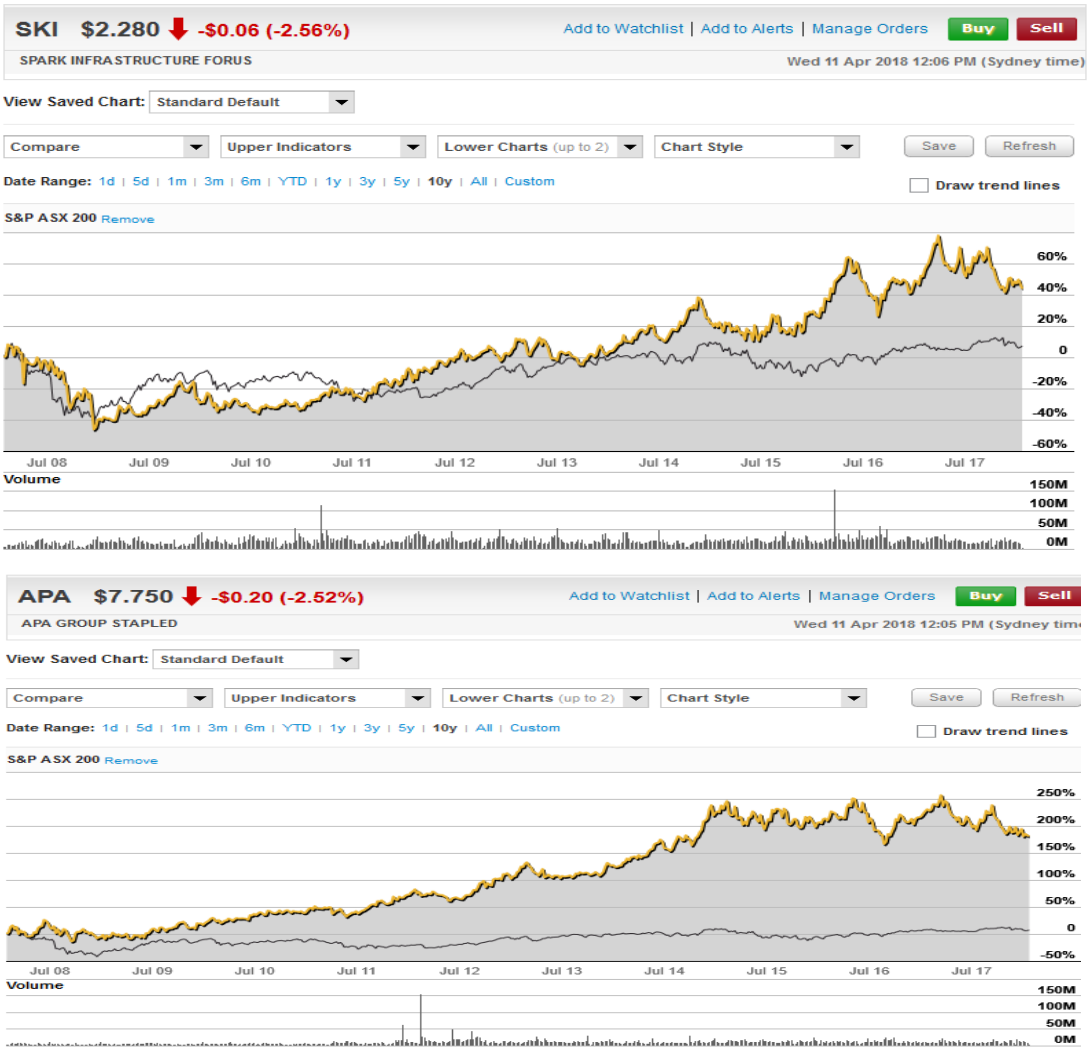
RAB*WACC and where the regulatory rules processes mitigates risk. While theory might indicate that the investor in a regulated firm would be aware of and price into its purchase of the firm's share (noting that the market is assumed to be fully aware of all aspects of investment) this assumption is "courageous" to say this least as generally there is an acceptance that the market is not fully aware of all aspects and in fact many investors have little knowledge of a firm's specific risk factors.

Then comes the problem of how to measure the asset beta when the number of firms that have some match to the benchmark efficient entity (BEE) with a similar degree of risk as that which applies to the service provider in respect of the regulated services is limited to just one – Ausnet Services. Ausnet invests directly in physical assets but the other two firms used as a current source of data by the AER are not close to the BEE. One, APA, has relatively few regulated assets and the other, Spark, is an investor in a number of firms that have network assets. Other firms used by the AER but no longer listed are also not quite matches for the BEE. For example Envestra owned assets but contracted out the management of them (to APA) and, like Spark, DUET owned shares in network firms. AGL was a retailer as well as asset owner.

The equity beta is seen as the measure to reflect systematic risk. While firms like the BEE do face systematic risk, they have mechanisms available to them to manage this which are not available to other firms. For example, while the assumption made is that the RoE will provide a return for systematic risk, there are avenues available to networks to mitigate much of this risk through the rule based mechanisms such as automatic roll in of capex, a guaranteed cash flow, market reopeners, no optimisation of assets, access to incentives, debt allowances larger than costs and no technological risk. As all firms operating in the competitive market face these risks, the market data used to generate the parameters in the CAPM include full exposure to all these risks.

The following three charts show the daily share price movements of the three remaining listed firms with significant exposure to regulated networks – Ausnet Services (AST), Spark Infrastructure (SKI and APA.

**Figure 17 Daily share price movements**




**Source: CommSec**

What stands out from these charts is that:

- There is significant volatility in the share prices that does not match the reality of firms that have a secure and stable cash flow, raising the concern that other forces are at play than the fundamentals of the underlying risk
- For example, the significant fall in all three stocks in November 2016 coincides with an upward movement in the ASX 200, reflecting a transition away from defensives stocks, yet there is no fundamental reason for the share price of all three stocks to fall at all.
- The share price movements of APA shows a tripling of its share price over the last decade as it acquired new assets, and where most of these new assets are unregulated reflecting the systematic risks faced in the competitive market. In contrast, the share price movements of Ausnet and Spark show more modest growth, but perhaps not to the same extent that is seen in the RAB values increases for the networks involved.

In 2013, the AER used a number of firms holding energy network assets to advise its estimate of equity beta[44] and again in its recasting of equity beta in its 2017 update. The data used includes a number of entities that have significant elements of competitive (unregulated) activities as well as regulated activities and this biases upwards the estimates of equity beta. For example the equity beta calculated for APA is much higher (between 0.7 and 1.0) than for most of its peers (such as Ausnet and Spark which exhibit equity betas of 04-0.6) biasing upwards the portfolio effect, possibly because more than 80% of the APA assets are not regulated and more subject to market forces and risks. Similarly AGL has a high equity beta (0.5-0.7) and had considerable exposure to the retail market at the same time as the use of the data, Alinta (as well as owning significant amounts of network assets was also active in other areas and its share price was beset by issues unrelated to its network assets - it has an equity beta in the range if 0.6-0.8. Hastings exhibits a high equity beta in the later stages of its existence as it was the focus of competing bids before its ultimate take over in 2013.

What the significant share price volatility does not reveal is why this occurs for an asset that provides a relatively fixed service and a secure and known cash flow. What is of concern is that, while the three stocks are considered to be "defensive"[45], they show significant volatility in share price. The reason for this volatility is not necessarily related to their fundamental characteristics but because they are bought and sold when other stocks are considered to be more or less risky. For example, if the market was burgeoning and more risky stocks appear more attractive because of the buoyant economy, defensive stocks are sold to enable the purchase of more risky stocks. Conversely, when the economy is weaker, defensive stocks are purchased. Thus, the perceived volatility of defensive stocks is more an outcome of perceptions of the wider economy than of the fundamental characteristics of the risks the firm faces[46].

More simply put, to what extent does the apparent volatility of defensive stocks reflect the volatility of more risky stocks rather than being a reflection of the essential characteristics of the fundamental risks the firm faces? Further, to what extent is the stock market aware of the features of network stocks that makes network stocks even more secure investments than most other defensives stocks.

A review of the apparent high volatility seen in share price movements in the three listed network entities compared to the ASX 200 is inconsistent with the view that the dividends from the three entities are secured by certainty of cash flow.

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[44] See table 1 ESTIMATING EQUITY BETA FOR AUSTRALIAN UTILITIES: THE AER'S STUDY IN 2017. Scenarios 1 and 2 are used as this reflects the longest period, although the CRG is not convinced that the tech boom and GFC should be excluded from the data, as these are not excluded from the MRP calculations

[45] Investopedia defines a defensive stock as one that "provides a constant dividend and stable earnings regardless of the state of the overall stock market. Because of the constant demand for their products, defensive stocks tend to remain stable during the various phases of the business cycle. The utility industry is an example of defensive stocks because, during all phases of the business cycle, people need gas and electricity. Investors tend to invest in defensive stocks if a market downturn is expected. However, if the market is expected to prosper, active investors will often choose stocks with higher betas in an attempt to maximize return. Defensive stocks are also known as "non-cyclical stocks" because they are not highly correlated with the business cycle.

[46] CRG questions whether this apparent anomaly is the cause of the bias assumed by the Black CAPM

The RoE is seen more as a resetting bond with its defined yield and certain maturity date rather than an investment in the stock market so why do we use the volatility of market shares as a surrogate for risk?

If we accept the premise that equity beta is a reasonable surrogate for the risks faced by a firm providing network services, what should be the equity beta used. Recent AER studies have the equity beta in the range of 0.4-0.7, noting that this range reflects an average of all the stocks in the cohort, regardless of their fundamental differences to the BEE.

It is not clear why equity beta is an acceptable surrogate on which to base the fundamental risks faced by a network as share price volatility for defensive stocks such as networks is driven more by share traders seeking the maximise their profitability and minimise their losses and less by the risk fundamentals of defensive stocks.

The CRG considers that the fundamental aspects of the firms used in the data set to inform the equity beta need to be considered rather than just applying the data as if all firms comply with the BEE fundamentals to assess whether they should be included in the cohort and, if so, to what extent.

What is clear is that the equity betas used in developing the equity beta for the BEE are overstated as the equity beta does not account for the risks that network firms can pass to consumers through the rules.

In 2014, Henry advised that the median value of equity beta was 0.3285[47] with an average value of 0.5223. As noted above, the CRG considers that an average value for equity beta does not reflect the reality that the many firms included in the portfolio (especially those with activities which remove them from the BEE) would have a high equity beta and moderating the input from these to reflect those elements similar to the BEE would bias the outcome closer to the median.

The CRG is aware that the April 2017 update of the Henry work carried out by the AER implies that equity betas have risen, but not to the level used by the AER as its point estimate of 0.7

When assessing the equity beta, the AER should adjust the observed equity betas to:

- adjust for the risks the networks are not exposed to.
- eliminate the upward biases inherent in the portfolio of firms used,
- eliminate the upward bias from the imposition of volatility on defensive stocks from share market actions by share traders.

On this basis the CRG considers that this would effectively reduce the range for equity beta to approximately 0.2-0.5 with the point estimate being in the lower end of the range.

[47] Page 63 Olan T Henry "Estimating ß: An update" April 2014

# 6.9 Use of Black CAPM

**Question 8:** *Is the theory underlying the Black CAPM still appropriate for informing an equity beta point estimate? In its place, should alternative information to guide the selection of an equity beta point estimate?*

## 6.9.1 The current approach

In the current Guideline the point estimate for equity beta is set at the top of the range of equity parameter estimates selected. The AER used the Black CAPM to inform its selection of the point estimate for the equity beta calculated from the market data. This provided the AER with a view that the point estimate for the equity beta needed to be at the extreme upper end of the range of potential equity betas. The CRG considers that the AER should reassess this approach

The decision to use the Black CAPM to guide the point estimate for equity beta appears to be based on concerns that, if the estimated cost of capital is too low, there will be insufficient new investment in the network. A lack of investment will result in higher rates of congestion in the network and reduced reliability, especially during periods of very high demand.

## 6.9.2 About the Black CAPM

The Black CAPM has its origin in empirical observations of the returns earned by firms with different asset betas. A plot of return versus beta is then found to intersect the SL-CAPM line at beta equals one, but otherwise have a lower slope and a higher intercept with the vertical axis. This is generally referred to as demonstrating a 'low beta bias'. Because the intercept with the vertical axis means that the return on a zero beta asset is higher than the risk free rate; one hypothesis for the observation is that investors cannot actually obtain unlimited access to funds at the risk free rate (an assumption of the SL-model) and this "zero beta" rate should be used instead.

This is not the only posited explanation however. Another explanation is the theory that the diversified portfolio is one that includes all assets the investor could hold, including property and cash, and that an MRP based on equities deviates systematically from the overall portfolio. The second alternative is based on behavioural finance. The CAPM is an assessment of compensation investors seek for risk (as defined by Frank Knight) – a set of possible future outcomes for which the distribution of outcomes is known. Investors, however, don't fully know the distribution of outcomes – they are uncertain of that. The consequence is a bias towards expected returns closer to the portfolio return than would be expected from the historical trend.

If the last of these, the most credible, is accepted then the question needs to be asked how uncertain would investors be of the distribution of expected returns for the benchmark efficient entity – an entity that is only providing regulated services. It is the CRG's contention that the fact of regulation itself reduces or eliminates these uncertainties. Unlike other low beta stocks (such as pharmaceuticals) the returns are effectively underwritten by the government (on behalf of consumers) in the regulatory compact. It would be an incorrect assessment of the efficient financing costs of a benchmark efficient entity to place any weight on the Black CAPM

It is worth noting that in its 2013 Guideline the AER was advised that the best estimate of beta was 0.5, but said that it chose 0.7 to reflect the observations of the Black CAPM. If this is interpreted as that the rate of return calculated using the SL CAPM using a beta of 0.7 would be the same as the Black CAPM using a beta of 0.5 it is possible to evaluate the "zero beta" rate assumed by the AER. The result is that the AER is assuming that the "zero beta" rate is 2.8% higher than the risk free rate[48]. That is an extremely high value — it not only assumes the investor can't access funds at the risk free rate, but that the spread they face is about that of a BB rated entity.

Accordingly the CRG believes that little to no weight should be given to the Black CAPM in determining the beta for the benchmark efficient entity.

### 6.9.3 Capex risk addressed elsewhere

The main driver for setting the CAPM inputs which increase the WACC is based on the assumption that new investment is required to maintain the reliability of the networks. Yet the decision to bias upwards the WACC to ensure such investment occurs should not be a rate of return issue as rate of return is to only address systematic risks and the rewards that flow for accepting these risks. Although there are risks applying to capex, it has a non-systematic risk aspect and should not influence the rate of return

Capex is required in a network to maintain reliability of supply and this is subject to two aspects of risk – the risk of whether the project is sized correctly and whether the amount of capex forecast will be sufficient ..

There are five key protection mechanisms in the Rules that avoid or minimise any risk of inefficient capex outcomes. These are:

- Capex is to achieve jurisdictionally set reliability standards, and these are coupled to the capex incentive scheme (CESS), the reliability incentive scheme (STPIS) and tests made for the adequacy of the proposed capex
- The RFM (actual capex is rolled in to the RAB and not optimised (as was the case in the National Electricity Code – a precursor to the current Rules – and implied by the National Gas Rules which requires investment to be demonstrably "prudent" before inclusion in the RAB)
- The ability of the firm to time when the capex is incurred, with allowed capex potentially being frontloaded and actual capex being deferred to later in the period or even to the next period
- Contingent projects and reopening of allowances after a catastrophe
- The PTRM which incorporates a series of interconnected tests as to whether allowed revenues are sufficient to recover the efficient cost of each major building block.

Due to these mechanisms, the linkage between a reduction in the rate of return and reductions in capex is far from direct, with the rate of return having little to do with reliability outcomes.

A well-known issue with the CAPM is that it treats uncertainty around capex risk as diversifiable. As a result a rate of return sufficient to compensate investors for the existing

[48] The workings for this can be provided if needed

asset base (with a known capital cost) may not be sufficient to compensate investors sufficiently to attract investment in new capacity. This uncertainty is substantial due to uncertainty in both future demand and the level of future capex required to provide required capacity.

The capex forecast problem is currently addressed in the RFM where actual capex is rolled into the RAB. There is also an incentive mechanism if capex is lower than forecast, but there is no optimisation risk for capex that is lower than forecast.

However, if capex drives a higher rate of return, it becomes an overly generous incentive as it delivers an upward adjustment to the entire RAB, not merely to the contribution from capex to the change in the RAB. This may have been defensible around a decade ago when forecast capex was very high compared with the opening RAB at the start of a revenue control period. It is not defensible under conditions where in most parts of the NEM there is more than sufficient spare capacity and forecast capex is a modest contributor to changes in the RAB.

The treatment of inflating to rate of return to accommodate capex risk breaches the non-duplication or no double counting criterion in best practice regulated revenue price setting.

## 6.10 Conclusions on equity beta

When assessing equity beta, the AER should reassess the range of the likely equity betas to accommodate the inherent upward bias from using firms in the cohort that have significant revenue from other unregulated sources. On the revised (lower) range, the AER should use the mid-point of the range and bias the set point down to:

- Adjust for the risks the networks are not exposed to
- Eliminate the upward bias from the imposition of volatility on defensive stocks from share market actions by share traders.
- Recognise that the Black CAPM should not be used as a basis for inflating the AROR above the efficient AROR.
- Reflect that the drive to increase equity beta to incentivise CAPEX is not appropriate as CAPEX is not a diversifiable risk and that the Rules already provide sufficient incentive to ensure that there is adequate CAPEX

On this basis the CRG considers that a point estimate for equity beta should be closer to 0.4 or lower.

## 6.10 About the MRP

Market risk premium (MRP) is the measure of the reward in investing in the shares on the ASX where the portfolio is weighted on a market capitalisation basis. It is the difference between the accumulation index for all shares (where the dividend from a share is added to growth in the share price) and the risk free rate (RFR). It is a measure of the overall profitability of having a portfolio of shares which has the same weighting as the ASX compared to investing in Australian government bonds (CGS).

Implicitly the MRP is a guide to what a share investor might consider a reasonable return from investing in shares. It has no relationship with what an investor in an asset might seek

from a physical investment. As noted above, an investor in a share has different drivers as to what is considered to be an appropriate profitability from the physical asset.

A key question is how reflective is MRP as a measure that an investor in a physical asset delivering a cash flow might consider to be sufficient to invest in that asset. If we accept that the MRP provides a guide as to what an investor in a physical asset might require, the question then becomes how appropriate is the ASX accumulation index in setting a market risk premium

The CRG has noted that in recent years, there have been many networks that have been purchased by overseas firms who have assessed the profitability of the Australian networks against rewards available in a global market. Additionally, the CRG has also identified that many of the Australian networks have sourced debt from the overseas markets. Both of these indicators support a view that the current regulatory approach (especially the rate of return) overstates the reality that the regulatory processes deliver the rewards from the benchmark efficient entity

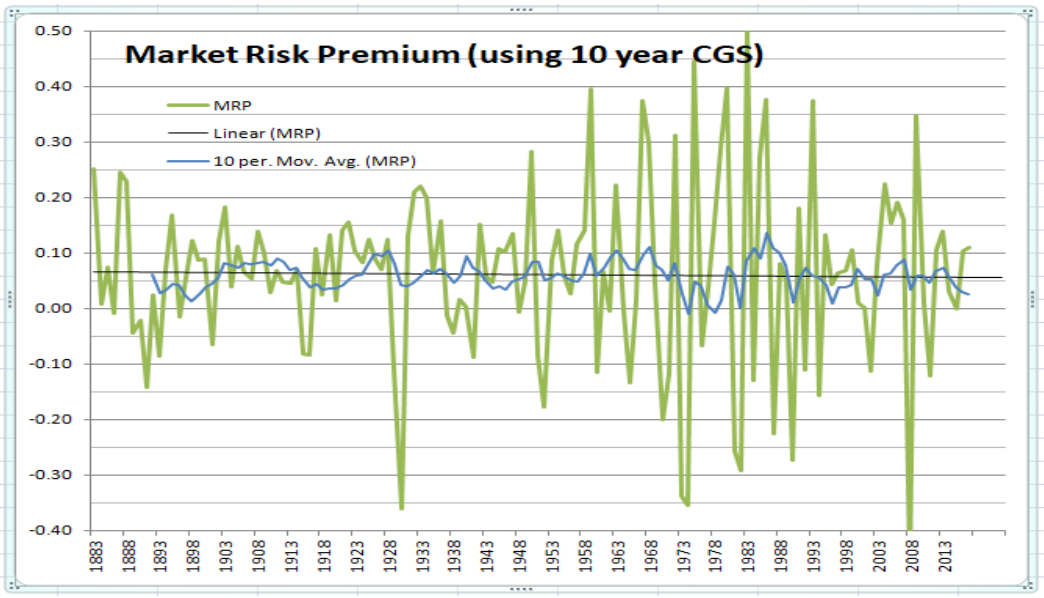
Yet at the same time, the AER assesses the MRP on an Australian basis and also debt as if it was acquired from Australian sources. This implies that the AER should be guided not only by data from the Australian markets but also from the global markets as well as this is more reflective of the reality of the ownership of network assets and the sources of debt used by them.

### 6.10.1 MRP and arithmetic or geometric mean[49]

During the concurrent expert session #2, the experts were asked whether MRP should be assessed on a geometric or arithmetic mean. The experts nominated by the networks provided a view that the arithmetic mean should be used, but elaborated little on any reasons why this should be the case. The CRG notes that the arithmetic mean delivers an average MRP which is 170 basis points higher than the geometric mean when measured over the entire ASX accumulation index series, providing guidance as to why the arithmetic mean would be supported by the networks. The CRG considers that the issue needs to be investigated further.

Essentially, a geometric mean acts to moderate the impacts of skewed data, or where there are a few very large data aberrations or "outliers" where these few but in size very influential data points can provide a significant skew to seeking an "average". The following chart provides the MRP since the beginning of the Australian stock market. It also includes a linear trend line and a 10 year moving average trend line.

[49] Throughout this section, the MRP used is the ASX data less the 10 year CGS, excluding the impacts of imputation. Inclusion of the impacts of imputation have a marginal upward bias by about 2 to 3 basis points




**Source: Data from AER**

There are two key aspects that can be drawn from the chart;

Firstly, the linear trend line shows that over time, the MRP has slowly reduced from 6.8% in 1883 to 5.6% now, supporting a view that with the opening up of the Australian economy, the Australian MRP is reducing to meet the lower World MRP. This implies that a forward looking MRP should be smaller than the level of the MRP used in the current guideline.

Secondly, the volatility of the MRP, especially from about 1958, is quite extreme with quite massive swings and a significant number of "outliers" in both directions. As the geometric mean is designed to better accommodate the impacts of these outlier data points, it is interesting to note that the geometric mean for the MRP over the entire period (1883 to 2017) is 4.7% compared to an arithmetic mean of 6.1%. In the period 1883 to 1958, there is significantly less volatility in the data and the geometric mean during this period is about 5.4% compared to an arithmetic mean of about 6.0% (even while including the impacts of the 1930s depression which did generate outliers in the data). Between 1958 and 2017, the geometric mean of the MRP is 3.5% and the arithmetic mean 6.0%.

So while the arithmetic mean has remained reasonably constant over time (although slightly declining), the geometric mean during the period with massive swings and significant outliers has fallen considerably, implying the underlying view that the Australian MRP has indeed moved closer to the world MRP as would be expected because over this same period, there has been a massive change in the Australian economy as it moved towards an open economy with a floating dollar and the elimination of trade barriers, so this shift towards the world economy MRP is quite understandable and would be anticipated.

This raises the question as to how best to manage the impact of the "outliers" in the MRP data and how they should be specifically accommodated. The CRG notes that in the assessment of equity beta, there has been a call for outliers to be excluded from the data (for example during the "Tech Boom" and again during the Global Financial Crisis). So there is an argument that periods generating outliers in calculating MRP should also be accommodated in some way. The CRG does not consider that outliers should be excluded (either in the calculation of the MRP or equity beta as this distorts the market data seen) but

neither can they be ignored. The CRG sees that the use of a geometric mean for calculating MRP does provide a sound mathematical approach to addressing the impacts of outliers in the data for MRP.

While theory says that if the MRP data are samples of an underlying parameter, the best estimate of that parameter is the arithmetic average (ie 6.1% from 1883 to 2017), but if we need to know what the average return would have been on a balanced investment portfolio made at the start of a period and held to the end of the period, we would use the geometric mean (ie 4.7% from 1883 to 2017).

In the Evidence Sessions Professor Stephen Gray (sponsored by ENA) in explaining RAB multiples said:

> *I think, like, a good setting to consider that is the TransGrid sale. So, TransGrid changed hands at a time when the allowed return on equity was 7.1% and there was a multiple, depending on how you compute it, maybe 1.6, so the question is, what does that 1.6 tell you about the 7.1% return – allowed return on equity at the time? That 7.1% was going to apply for four out of 99 years, so it's not clear that that first four years is going to be a material part of present value that the bidder has computed. Most of the value is going to relate to what the bidder thinks allowed returns might be in the remaining 95 years, so I'm not sure, it's a huge extrapolation to say, because I observed that multiple I know that the allowed return for the first four of 99 years must be too high.*

Professor Gray's point is that the buyers of the lease made their valuation decision to buy TransGrid assets on a 100 year return. If an investor bought a market portfolio they would earn the geometric average (the cumulative average) of the MRP, and this has to be the return that the investor is comparing the TransGrid lease to. So there is a very strong case that the geometric average of the entire observed series is the appropriate benchmark for MRP.

This view is further supported by another approach to consider MRP in the overall context of the CAPM. The MRP is used in a formula that estimates returns over a five year period. Currently all the other time based parameters used in the current AER approach have a term of ten years (ie for the risk free rate, the term of debt, and the number of years used for forecast inflation)[50].

If the ten year bond rate is the appropriate benchmark (and it is the rate used in the data set from which the MRP has been estimated) then the appropriate MRP estimate is the arithmetic average of the geometric averages of every ten year data set. That results in an even lower value of the MRP of 4.69%. There might be a concern that this over samples each year other than the last ten; however, the alternative of taking only every tenth geometric average (those in 1900, 1910, etc) is an even lower value of 4.52%. For comparison, using the arithmetic average of the 5 year geometric averages results in an MRP of 4.76%.

There has been a view generated by the owners of networks that the observed MRP (as seen on an arithmetic basis) is too low and needs to be increased to reflect the outcomes from

[50] As discussed earlier in this submission the CRG believes a case can be made that the risk free rate be assessed for a five year rather than a ten year bond.

other models (such as the Dividend Growth Model – DGM) used for assessing the MRP as they deliver higher outcomes for MRP than the arithmetic mean from the observed market data[51].

In the same way, the CRG considers that the MRP needs to be better informed by an alternative method of assessing the MRP, such as through assessing the geometric mean. While the AER did include the geometric mean in its assessment of the MRP, it provided little weight to this aspect, with a much greater preference given to the views of other regulators and the DGM assessments it made. In assessing its views on the geometric mean, the AER did not assess the impacts of the massive increase in volatility seen in the period post 1958 when weighting the evidence and the tools to be used.

## 6.11.2 Double counting

The MRP is a function of the total rewards a firm gets from all of its activities and the risks it faces compared to investing in a "risk free" investment. The risks faced by a firm in a competitive environment compared to those faced by a network are addressed in section 4.3 on risk and in the section above addressing equity beta.

What has been overlooked in the AER assessments of MRP, is that the application of the MRP in the return on equity excludes the fact that the networks get the reward from its WACC*RAB as well as from other sources, including the incentives embedded in the opex, capex and STPIS and under-runs in the acquisition of debt and tax payable. The return on equity seen in the wider market and as calculated as a market risk premium, reflects the **total** reward seen from the market and includes the rewards from product innovation, more efficient operation, clever financing and tax minimization strategies, so the approach implicit in the CAPM includes all of these rewards in the market risk premium.

Further, the outcomes of decisions made by the market, are based on data derived from statutory accounts, including a return of assets valued on a depreciated actual cost (DAC) basis as well as the revenue from all sources. In contrast, the application of the derived market data is applied to data established from the regulatory approach, including assets valued on a depreciated replacement cost (DRC) basis, effectively increasing the reward for the regulated entity.

For example, after year 1, the DAC value of assets will be lower than the DRC basis. For the same profitability the earnings before interest and tax (EBIT) when compared to the DAC asset base will provide a higher percentage profit than that calculated on the same EBIT compared to the DRC asset base, yet the AER approach uses the market data that reflects the EBIT/DAC outcome and then applies this figure to the DRC asset base, over-rewarding the regulated entity.

The risks and rewards from product innovation, more efficient operation, clever financing and tax minimization strategies are included in the market data used to inform the CAPM but the rewards from them should be excluded in the regulatory reward because the rules mitigate the risks and protect the networks from them. Essentially, in the WACC*RAB calculation, the rewards from the risks that are avoided because of the rules, have to be

[51] The CRG also notes that Lally advised the AER of the risk of expectations (such as embedded in the DGM) being higher than achieved reality, providing a view that the DGM is more likely to deliver an over-estimate

removed from the market data which includes these rewards with the resultant increase in profitability. Further, the MRP observed in the market reflects the rewards that come from being in a competitive market where firms face the impacts of technology changes (which the networks don't), the likelihood that will not recover the capital invested (which the networks do), and write-downs of capital (which the networks don't).

To ensure consistency, the MRP used in the CAPM for regulatory purposes should be discounted to exclude the benefits of no exposure to asset write downs, under-recovery of capital, and no exposure to product innovation and more efficient operation by competitors. But, in addition, the MRP needs to be further reduced because the networks are able to retain the benefits of the incentives, clever financing and tax minimization strategies to improve their revenues and overall profitability.

## 6.11.3 The DGM influence

**Question 9:** *What is the appropriate role of dividend growth models (DGMs) in setting the allowed return on equity?*

In the current guideline, the AER calculates the MRP and then uses the dividend growth models (DGMs) to inform whether the MRP should be increased or decreased. In its assessment for the current guideline, the AER used the DGM assessments to increase the MRP from 6.0 to 6.5

The data on the Market Risk Premium (MRP) has not fundamentally changed since the 2013 Guideline. However, the CRG is of the view that one change to the MRP should be less weight should be afforded to the Dividend Growth Model thus favouring a lower MRP.

The CRG considers that the assumption that the historical growth for the networks as an input into the DGM is not as clear as perhaps applied in the past. The CRG has noted that the consumption of electricity and gas is falling, leading to a reducing utilisation of the existing assets. In the past, there was a consistent increase in electricity and gas consumption but there has been a significant break point in recent years as this long term trend has broken and the massive historic growth rate in the RAB has also flattened.

Therefore to assume that the historical growth will continue as it did in the past is not supported by observation and therefore is fundamentally flawed.

If the RAB remains constant or even falls, then the return on the assets will similarly reduce (assuming constant rates of return). As the WACC*RAB is the primary driver of the allowed revenue, then an assumption that there will be continued growth rate the same as when the RAB was increasing rapidly is unlikely to be correct.

At the same time, the CRG is observing a move for the networks to increase their revenues from sources other than the "pure play regulated energy network business" perhaps in reflection of the declining growth seen for regulated network assets. This means that the observed market data is increasingly being impacted by revenues from unregulated activities (as observed in the section on equity beta), raising concerns that the DGM approach perhaps is not as robust as required to provide guidance as to the use of the DGM for the BEE.

## 6.11 Conclusions on MRP

The MRP is an outworking of the profitability from the holding of shares. This then raises the key question as to how reflective is MRP as a measure that an investor in a physical asset delivering a known cash flow might consider to be sufficient to invest in that asset.

If it is accepted that the MRP provides a guide as to what an investor in a physical asset might require, the question then becomes how appropriate is the ASX accumulation index when network firms source debt and equity from the international market as well as the Australian market.

The CRG considers that there is doubt over which period the MRP is measured, considering that the Australian market has transitioned from being an effectively closed economy with high tariff walls to an open and international economy with very few barriers to overseas investors. It is generally accepted that the Australian market became a relatively open economy during the 1980s when the dollar was floated and many tariff barriers were reduced or eliminated. Prior to this time, tariff barriers allowed local firms to enjoy limited competition which in turn provided higher profitability. This supports a view that more recent MRP data should be used

But what is just as important is how the excessive volatility in MRP seen in more recent times should be accommodated. The CRG considers that more weight should be given to the geometric mean in calculating MRP for regulatory purposes.

The CRG has doubts about the use of the DGM to inform the MRP as the assumptions embedded in the DGM are more likely to be optimistic than pessimistic delivering a biased assessment.

However, the major concern of the CRG is:

- that the data derived from the market includes rewards for risks that the networks do not face. Therefore the market data needs to be discounted for these rewards
- the revenues that the networks receive from other sources is already embedded in the data used to develop the MRP

Whereas the current AER guideline has calculated that the MRP lies within the range 5.0% to 6.5% and the AER decided to use the high end of the range as its point estimate. The CRG considers that for the reasons above, a very sound argument can be mounted that the MRP should be closer to the geometric mean of 3.6% (as measured for the period 1984 – 2017 which reflects when most the changes to open the Australian economy were implemented) to reflect that the networks should not get a reward for risks that they do not face and for the revenue they receive from other sources.

Similarly, as outlined above, a very sound argument can be mounted that using an arithmetic mean, the MRP should be as low as 4.76%.

To demonstrate the impact on consmer bills of changes to WACC parameters, the CRG's analysis at section 3 includes a higher MRP of 5.75%, well in excess of the values which, as noted above, can be argued.

The CRG contends however that in developing the revised Guideline, the AER must provide a sound justification for why consumers should pay network charges incorporating an MRP greater than 3.6%.

## 6.12 Imputation Credits (Gamma)

**Question 10:** *Is it appropriate to limit the review of the valuation of imputation credits to updating the empirical analysis? Are there any particular issues we should take into account when updating empirical analysis?*

In gamma, we note that the AER has used an arguably arbitrary approach in assuming that the market is fully segmented and that only Australian ownership is included. Taking account of overseas ownership is likely to result in a very different estimate. As noted in chapter 5 there has been no feedback as to whether the outcome of the rate of return parameters used bear any relationship to what the firms have actually achieved. Whilst the CRG firmly considers that bottom up analysis needs to be done in conjunction with top down analysis, the lack of testing and reconciliation as to the reasons between actual and allowed ROR has meant that the top down analysis has not been sufficiently performed in relation to gamma.

These preliminary comments are appropriate in the context of consideration of imputation credits because since 2015, the AER's estimated value of imputation credits has been 0.4, from within the range 0.3 to 0.5. In the Issues Paper for the Review of the Rate of Return Guideline (the "Issues Paper"), the AER has stated that "a value of imputation credits of 0.4 under our current construction is a reasonable estimate", although the AER notes that "Lally considers 0.4 might be too low and recommending a value of at least 0.5"[52].

In its more recent *Discussion Paper on the Value of Imputation Credits*, the AER reveals its update of the data to the latest data available and the AER states that the evidence suggests that a reasonable estimate of the value of imputation credits is within the range 0.3 to 0.6[53]. It is noted that this is a broader range than that set out in the determinations since the 2013 Guideline. The AER states that "the broader range is driven by revised equity ownership data from the ABS and Lally's estimate of the distribution rate based on the annual financial report data of the top 20 ASX firms"[54].

The AER approach to estimating the value of imputation credit includes applying the widely-accepted approach of estimating the value of imputation credits to investors as the product of the 'distribution rate' and 'utilisation rate'.

We find it hard to understand why the AER is considering a γ "in the range of 0.3 to 0.6". It has become apparent to us that the process of setting gamma has essentially been that the

[52] AER (2017) Issues Paper for Review of Rate of Return Guideline at https://www.aer.gov.au/system/files/AER%20-%20Rate%20of%20return%20issues%20paper%20-%2031%20October%202017_0.pdf p.33

[53] AER (2018b) Discussion Paper on the Value of Imputation Credits at https://www.aer.gov.au/system/files/AER%20-%20Gamma%20Discussion%20Paper%20-%20March%202018.pdf

[54] AER (2018b) ibid p.16

AER has applied its judgement to come up with a number somewhere between 1 and zero. This is essentially a bargaining process without reference to objective criteria.

Instead of such an arbitrary process, we suggest one based on objective criteria. The criteria we suggest are presented below.

The CRG considers that γ should be calculated on the following basis:

- An assumption that the utilisation rate of imputation credits (Θ) is 100 per cent. That is, the firms are using the most efficient source of finance, that being Australian investors entitled to make use of imputation credits,
- A distribution rate in line with what an efficiently financed form would be expected to distribute, based on the value of the RAB, depreciation and any necessary new investment in the RAB.
- If the value of new and replacement assets is I, and the value of depreciation is D then a reasonable retention amount on the RAB is (I –D).
- The firm's profit on the RAB will be RAB * WACC. Therefore the retention ratio will be: (I – D)/(RAB * WACC)

  Therefore a reasonable distribution ratio is: 1 – ((I – D)/(RAB * WACC)).

  If that is > 1 then one could assume the ratio = 1, on the basis that any excess distribution is unlikely to attract imputation credits, and therefore not affect γ. If that is < 1 (and it is hard to see why it would be in an industry with running down assets) then γ would be equal to the distribution, assuming a Gamma = 1.

The CRG acknowledge that the above analysis assumes that Australian investors are fully utilising their imputation credits. As the AER is required to evaluate what a benchmark efficient entity would do and in this case, we assume that they would use the most efficient source of funding from Australian sources[55].

What they are actually doing is an altogether different issue which is not at stake in estimating the value of imputation credits. Firms may argue that they are actually using foreign sources of funding. If that is the case, it is presumably because firms find equity from foreign sources to be lower-cost than equity from Australian sources and if this is the case. our suggested method for calculating Gamma is almost certainly biased towards *overstating* their cost of equity finance.

The CRG notes that in the expert session on imputation credits, Lally notes major concerns with the use of the tax statistics data. Accordingly, he states the financial statement data from high-value listed companies (the 20 largest firms) gives a distribution rate figure of at least 83 per cent. Lally also posited a utilisation rate of 1. As summarised in the facilitator's notes:

[55] This reflects that the AER assesses the cost of debt from Australian corporate bonds and the cost of equity is derived from a risk free rate based on Australian government securities, an MRP derived from the ASX accumulation index and an equity beta from firms listed on the ASX

> *"The distribution rate for listed firms without foreign operations is at least 0.83, from the Lally analysis. The utilisation rate should be 1, consistent with the Officer model assuming that national equity markets are closed to foreign investors. This implies an estimate for gamma of at least 0.83. However, if one considers that the presence of foreign investors must be reflected in the estimate of the utilisation rate, the best estimate is 0.61 to 0.70, as per the AER's analysis of ABS data on local ownership of all equity (Table 2 of the AER's "Discussion Paper: Value of Imputation Credits"). This implies a range for gamma of 0.51 to 0.70."*[56]

Tax statistics bear only a distant relationship with the most efficient means of raising equity to finance the RAB. Most firms listed on the stock exchange are in growth industries, and can reasonably be expected to be withholding dividends to finance an expanding capital base. By contrast the electricity and gas network industry is in a mature market with largely mature technologies.

The CRG has done some preliminary estimation of the market distribution rate derived from ASX data[57]. The ASX data gives PE ratios and dividend yield. By simple arithmetic the product of P/E multiplied by D/P gives D/E, which is the distribution rate. The CRG notes that this has been rising since 2006 and is now much higher than it was when the last determination was made. The average over 2017 was 0.71 percent. Lally has used the 20 largest firms to get a figure of 0.83, presumably because large and established firms are likely to have higher payout ratios than firms still in a growth phase. But we suggest that even this figure is conservative, because even these large firms are generally in an expanding market.

It could be argued that the distribution rate of listed network firms should be used but again this is almost certainly biased to give a low estimate, because these firms have assets other than assets in the RAB, and it would be in line with sound business practice if they were to be retaining profits to finance activities with higher growth potential than their regulated activities.

If there is to be reliance on empirical data, then we note that for the three ASX listed firms with regulated assets the distribution rates are very high with APA at 191%, SKI at 161% and AST at 126%[58]

The CRG supports Lally's view that the utilisation rate should be 1. The CRG notes the judgement which is implicit in determining the distribution rate, due to the challenges with the ATO data and the limited sample of financial statement data. The CRG has offered an alternative objective method for determining the distribution rate above.

## 6.13 Inflation

**Question 11:** *Should expected inflation and its interaction with the allowed rate of return be a priority under the Guideline review?*

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[56] Lally (2018) in AER Rate of Return Guideline Review Facilitation of Concurrent Expert Evidence at https://www.aer.gov.au/system/files/AER-%20Concurrent%20Evidence%20Session%202%20-%20Facilitator%27s%20Note%20-%204%20April%202018.pdf p.57

[57] https://www.marketindex.com.au/statistics accessed 19 Aprl 2018

[58] Yahoo Finance 2 Mar 2018

In its final position on the regulatory treatment of inflation, dated December 2017, the AER noted that it applied a CPI minus X incentive regulation approach. Under this approach, once a regulatory period is commenced, the escalation in following years uses actual inflation less the X factors determined in the relevant pricing or revenue determination. This means that, over a regulatory period, the estimate of expected inflation built into target revenue is displaced with the actual inflation outcome in each year as it becomes known. This means that both consumers and producers face constant prices in real terms.

In CRG's view it would have been preferable if final decision on the regulatory treatment of inflation could have been included in the proposed binding instrument.

## 6.14 Conclusion on WACC parameters

The AER has relied on estimates of the systematic risk parameter (known as beta) from a small number of currently and previously listed firms. This provides a range of beta estimates of 0.4 – 0.7. The CRG notes that these estimates include an upward bias on the basis that the market estimates do not fully incorporate the reduction on risk afforded to the returns available from the regulated assets. This indicates that the AER should choose a value below the midpoint of the range.

The CRG notes that transactions for businesses containing regulated entities imply RAB multiples in the range of 1.3 to 1.6. It is reasonable to assume that the asset risk is higher for the unregulated parts of the business and the realisation of efficiency improvements than it is for the regulated asset. Adjusting for this bias would move the observed range from 0.4 – 0.7 to about 0.2 – 0.5. The evidence suggests the AER should choose a value below the mid-point of this range.

The data on the Market Risk Premium (MRP) has not fundamentally changed since the 2013 Guideline. Consistent with our view that the AER should be informed by the consequences of its previous decision, less weight should be afforded to the Dividend Growth Model thus favouring an MRP of 5.5 – 6 percent.

The CRG supports the continued use of the AER approach to the transition to the trailing average for return on debt. However, we note that some adjustments should be made to the process to choose the values for three reasons.

- Corporate debt is typically raised over shorter periods (and hence lower rates) than the ten year period assumed.
- The current approach assumes the benchmark efficient business has a BBB+ rating but the estimation is derived from a broad BBB rating.
- A further adjustment should be made to reflect the fact that the actual rates paid by networks are lower than a credit rating of BBB+ would suggest.

The CRG supports the use of a mean of the BBB data series and the AA data series as a reasonable approach to reflect the correct stand-alone debt costs for the regulated assets.

Typically, one expects the return on equity to be higher than return on debt. In the CRG's view, the risk equity investors' face is only marginally greater than that faced by debt holders.

We also note that some of the unlisted network businesses are held in corporate structures in such a way that the entire capital base is ultimately debt at some level of the structure.

Finally, the CRG has considered the approach to the utilisation of imputation tax credits that would be expected from an efficient financing structure and we conclude that gamma could be close to 1. A firm investing exclusively in the RAB would be expected to have no need to retain earnings and would have a high distribution rate, possibly even greater than 100 percent. We recommend the AER recognise the inherent inconsistency of observed tax data and make its decision on the basis of the rate that is consistent with efficient costs.

The mid-point of the estimates above, and the possible impact on network bills and consumers prices is set out in Section 3.1 above.

# 7. CRG/ENA dialogue

In February 2018 the CRG and ENA established a joint working group with the following objectives:

1. *Explore avenues for finding common ground*

Explore whether common ground can be found on some issues in the guideline review process. Where common positions can be found, this will be put before AER decision makers.

2. *Understand differences*

On the issues where common ground cannot be found, through the CRG and ENA engagement process enable both parties to better understand their differing points of view..

3. *Build a relationship*

Establish a relationship between the CRG & ENA which can be leveraged by both parties and the AER in ongoing work.

The working group has met regularly since its inception and has exchanges views and information on a broad range of subjects relevant to Guideline review. The CRG has appreciated the opportunity to engage and the resulting dialogue to date and is of the view that continued engagement, with terms of reference which extend beyond the Guideline review, would be beneficial to all stakeholders, including the CRG, ENA and AER.

As a result of the engagement with the ENA, the CRG supports the AER's proposal on the averaging period for the risk free rate, as detailed at section 6.4.

# 8. Conclusion

Australian energy consumers share in a regulatory compact with the networks that provides them a guarantee of the right to recover their efficient costs on the condition that consumers are not over-charged for network services. To fulfil its obligations to both parties under the compact, the AER must set the allowed rate of return at an efficient level. For the last decade consumers have not been getting the outcomes they deserve in this process and are paying prices that are too high, driven by an allowed rate of return that has erred on the side of promoting investment rather than promoting efficiency.

The return on RAB for the network businesses constitutes about 25 percent of a retail electricity bill. The CRG's assessment is that the return on RAB for the network businesses could be more than 40 percent higher than the efficient rate of return.

For small customers, network bills typically represent around half their total retail bill. If the inefficient component in network prices attributable to the current Guideline were removed, retail bills could fall by up to 10 per cent.

In making its first rate of return Binding Instrument in the long term interests of consumers, the AER can provide significant price relief to consumers while providing network businesses with a fair and efficient return on their investment.

We note that this review has raised further concerns about the use of the CAPM and we encourage the AER to undertake a more fundamental review of the approach to determining the allowed ROR as soon as the first binding instrument is made. This needs to include a performance evaluation framework.

In compiling this submission the CRG would like to acknowledge the excellent support afforded by the AER staff.

# Appendix 1 Limitations of Guideline Review

## Introduction

The main CRG submission has been prepared within the limitations of an incremental Guideline Review. The errors in the present Guideline may be corrected within the existing rules; indeed the existing rules require these errors to be corrected.

The purpose of this appendix is to explain shortcomings in the present Review process arising from the limitations of the present review – in particular the absence of a performance evaluation framework. CRG supports a full review of the Guideline to be conducted as soon as possible.

## Context for considering limitations of present review

The Guideline applies to a set of 33 electricity and gas transmission and distribution entities. These entities own and operate assets providing energy transportation services in the national electricity and gas markets.

The sector is capital intensive, with high fixed costs. As at mid-2017, the total regulated asset base (RAB) for electricity distribution alone was $91billion.[59] This translates to an allowed rate of return (ROR) of around $6billion or 6.7 per cent. Obviously the values are much larger once electricity transmission and gas transmission and distribution assets and returns are included.

The ROR is therefore the single largest cost building block in allowed revenues. It typically constitutes around half the allowed revenue and hence around half the typical network bill. It is around a quarter of the final retail bill.

All of these regulated entities have a degree of statutory protection from competition. In a given franchise area, no other entity is permitted to own network infrastructure or offer network services.[60] For transmission, no other entity is permitted to build and operate competing transmission services. On the demand side, especially for electricity or where gas is an essential service (Victoria), consumers obliged to pay regulated services at regulated prices have limited ability to exercise economic power by switching entirely to other energy services.

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59 From aggregated electricity distribution RAB data provided to the CRG by the AER.

60 There are some very limited exceptions, known as insets.

# Why rate of return regulation matters

Given the absence of competition, the purpose of revenue/price cap regulation is to constrain regulated entities from raising prices above efficient costs and earning super-normal or economic profits (henceforth EV profits). The purpose of the Guideline should be to establish a methodology to allow the AER to make pricing/revenue decisions that avoid sector-wide EV profits.

Under workably efficient competition, or effective regulation, the ROR is proportional to systematic or non-diversifiable risks. This means that, for the typical regulated entity in the typical year, profits are sufficient, but no more than sufficient, to fund efficient interest costs and efficient returns to equity holders. Under incentive regulation, this means that more efficient firms may be able to earn EV profits while less efficient firms may experience EV losses.

EV profits due to excessive allowed returns are inefficient and unfair. They transfer wealth and result in deadweight losses. They may also lead to excess investment by consumers investing in substitute assets and services at higher levels than otherwise. As a result, EV profits reduce dynamic efficiency or economic efficiency over the long run.

EV profits and the consequential resource misallocations significantly reduce the total Gross Domestic Product (GDP). For example, in 2003, the consulting firm ACIL Tasman was retained by the ACCC to study the benefits and costs of access regulation of access regulation for gas and electricity. This report formed part of an ACCC submission to the Productivity Commission's inquiry into gas pipeline access regulation.

The ACIL Tasman report used Computerised General Equilibrium Modelling to measure the potential costs (benefits) avoiding unconstrained, monopolistic, rates of return in the sector. It found net GDP benefits of between (2003 dollars) $2.2 and 11 billion over a 15 year time horizon (at a 7 per cent discount rate). In today's values the net GDP benefit range is between $3 billion and $15.5 billion.[61] These values are relevant in considering the potential economic impacts of excess returns under the ROR Guideline.

# Limitations of Guideline and Guideline review

The central premise for the Guideline review process is that the ARORO relates only to the ex- ante WACC. This is a misreading of the ARORO.

**What is the Rate of Return in the Rules?**

Under the present Rules,[62] the allowed rate of return objective is specified as follows (our emphasis is underlined – italicised phrases are defined in the rules):

> The *allowed rate of return objective* is that the rate of return for a *Distribution Network Service Provider* is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the

[61] Using the RBA inflation calculator available at https://www.rba.gov.au/calculator/annualDecimal.html

[62] The allowed rate of return objective is proposed to be removed under the draft [mandatory ROR instrument consequential amendments] but is nevertheless useful in considering (a) the meaning of the current rules around the ROR and b) the implications of proposed changes.

*Distribution Network Service Provider* in respect of the provision of *standard control services* (the *allowed rate of return objective*).

There is no discussion regarding the interpretation of the AROR objective in the documents supporting the present ROR Guideline, or in the ROR Guideline itself. The AER appears to be interpreting the current ROR objective in the rules as relating only to the allowed ROR not to the actual ROR.

A plain reading of the allowed ROR objective is that the objective relates to 'the rate of return,' or what the AER refers to as "profitability".[63] That is, the allowed ROR objective relates to the actual ROR (profitability), not the allowed ROR.

The term "allowed" is omitted before the phrase 'rate of return' is repeated to differentiate the allowed from the actual ROR. If the ROR objective related only to the allowed rate of return, then there would be no repetition of the term ROR.[64][65]

The AROR relates to the rate of return – that is the earnings before interest and tax (EBIT) divided by the average regulated asset base (RAB) for a given performance reporting period.

This interpretation is also suggested by the AEMC's 2012 final rule determination creating the ROR objective, where on page 43 the AMEC states (our emphasis):

> *The draft rule determination stated that the primary objective of the allowed rate of return is to provide service providers with a return on capital that reflects efficient financing costs. A rate of return that reflects efficient financing costs will allow a service provider to attract the necessary investment capital to maintain a reliable energy supply while minimising the cost to consumers.*

This interpretation of ROR outcomes highlights that investors are concerned with the actual ROR. Investors are compensated from actual returns, not *ex ante* allowed returns. They are therefore interested in outcomes, not forecasts of outcomes. This is how the ACCC and all other economic regulators apply the concept of ROR (See box).

**Rates of return**

Rate of return measures can also inform analyses of profitability. The rate of return measure used by the ACCC in this report is return on assets which may be expressed in a number of forms (for example, pre- or post-tax returns; including or excluding interest expenses and/or depreciation and amortisation). The ACCC's approach to calculating rates of return in this report is discussed below.

**Return on assets**

This report also looks at the rate of return that airports earn from their assets. This measure consists of EBITA on the average value (of opening and closing balances) of

63 Note that CRG members are not purporting to offer a legal opinion on this matter.

64 Note that in the draft mandatory instrument exposure draft released in March 2018, the distinction between the allowed and actual ROR has been removed altogether.

65 Note that the author is not qualified to offer legal advice on the legal interpretation of the allowed ROR objective.

tangible non-current assets. The ratio provides a measure of the efficiency with which an entity uses its assets to produce operating profit before interest, tax and amortisation.

*ACCC Airports Monitoring Report 2018*
https://www.accc.gov.au/media-release/airport-profits-continue-to-grow

The basic problem with both the Guideline and the present review is that WACC is conflated with the ARORO (EBIT/average RAB). This leads to failing to gather data on EBIT/average RAB across the sector, which means errors in the setting of the WACC are never identified and corrected.

**Technical note on *ex ante* AROR and *ex-post* ROR**

*Ex ante*, the AROR is: WACC*average RAB = allowed EBIT (allowed return on capital).

*Ex post* the ROR is: EBIT/average RAB= ROR (actual return on capital).

*Ex ante* EBIT and *ex post* EBIT for a given reporting period are directly comparable (after adjusting for actual vs. forecast inflation). Excluding variations in operational performance, the two EBIT values might vary – for example if actual CAPEX in the RFM is higher or lower than forecast. This highlights that CAPEX uncertainty is addressed in the numerator for the ROR calculation.

Under a proper test for assessing the efficient AROR, for the typical regulated entity in the typical year, the ROR component of regulated network prices (EBIT/average RAB) should be sufficient, but no more than sufficient, to compensate investors for the systematic risks of their investment. That is to say, the ex-post EV profit should be zero for the typical regulated entity in the typical year.

To be clear, under incentive regulation, regulated entities may on occasion earn EV profits or losses, including from out-performing financing and operational benchmarks, or innovation. Conversely, if they under-perform financing and operational benchmarks, regulated entities would experience EV losses. Continual EV profits over multiple years for a regulated entity with typical financing and operational performance should not be an expected outcome under the ROR Guideline.

Contrary to the view of the AER, there is no conflict whatsoever between constraining returns and incentive regulation. In fact, the reverse is true. Without effective regulation of returns, regulation of other cost building blocks and service quality cannot be effective. The flaws in the ROR Guideline not only undermine the monitoring of the ROR cost building block, they also undermine the monitoring of all cost building blocks (OPEX, tax and regulatory depreciation).

# Problems with the current Guideline

The CAP Model and the data used to derive the input parameters for the *ex ante* ROR are not relevant to assessing the presence of actual EV profits – what should be the very purpose of the Guideline. The CAP Model embeds the efficient markets theory and hence assumes that observed returns (and variability in returns for an asset class compared with all assets) are efficient. On its own, CAP Model cannot detect actual EV profits.

Due to conflating the WACC with the ROR, the present Guideline review process fails to identify the fact that the allowed WACC inevitably creates EV profits inconsistent with the ROR Guideline. This is because:

1. The Guideline does not set out a clear ROR objective – avoiding EV profits (excess prices) for the typical entity in the typical year (contrast the ACCC's simple and direct explanation of why it monitors airport ROR). There is no reference to the concept of EV profits. Again, contrast this with the ACCC's rationale as to why it monitors airports.

2. The input data used to derive the WACC do not relate to EBIT/average RAB (or to EBIT/average RAB minus net interest costs – return on equity). They relate instead to the entire reporting entity measured by the CAP Model for just three entities corresponding to about five of the 33 entities "regulated" under the Guideline. For example APA's uncovered revenues are more than 90 per cent of its total revenues.[66] Again, this contrasts with the ACCC's treatment of airports, which recognises there are two relevant reporting entities - aeronautical services (notably runways) and landside services (carparks and shopping centre). (The ACCC reports on all major airports, and does not seek to extrapolate (without any adjustment for observational bias) from a small set of ASX data for (any) listed entities holding airport assets within a portfolio of assets.)

3. As a result of point 2), the derivation of the WACC fails to measure the very material reduction in risk for networks under the rules. This substantial over-compensation for risk is not capable of being detected under the method set out in the current Guideline. The experts at the two evidence sessions failed to identify this basic methodology flaw (and this flaw is separate from, and not to be confused with, the circularity flaw that was identified). The CRG was not consulted in the design and content of the evidence sessions.

4. The AER acknowledges that it is inflating the WACC (and hence the AROR) because it has a concern about investment and reliability (this is presented as being "conservative"). This is misguided for three reasons.

   (a) The AER is not the reliability regulator – that role rests with jurisdictions and implemented via reliability or planning standards. The Guideline is not a mechanism for trading-off reliability and cost/price.

   (b) The quantity of capital necessary for reliability etc. is already dealt with in the RAB (the numerator in the AROR calculation).

   (c) Any uncertainty over the quantity of CAPEX (a diversifiable risk) is already dealt with under the roll-forward model (RFM), under which any CAPEX overruns relative to forecast are allowed into the RAB.

Putting a loading into the denominator (e.g. references to the relevance of reliability or ad hoc resort to the Black CAP Model), for matters already accounted for in the numerator, is

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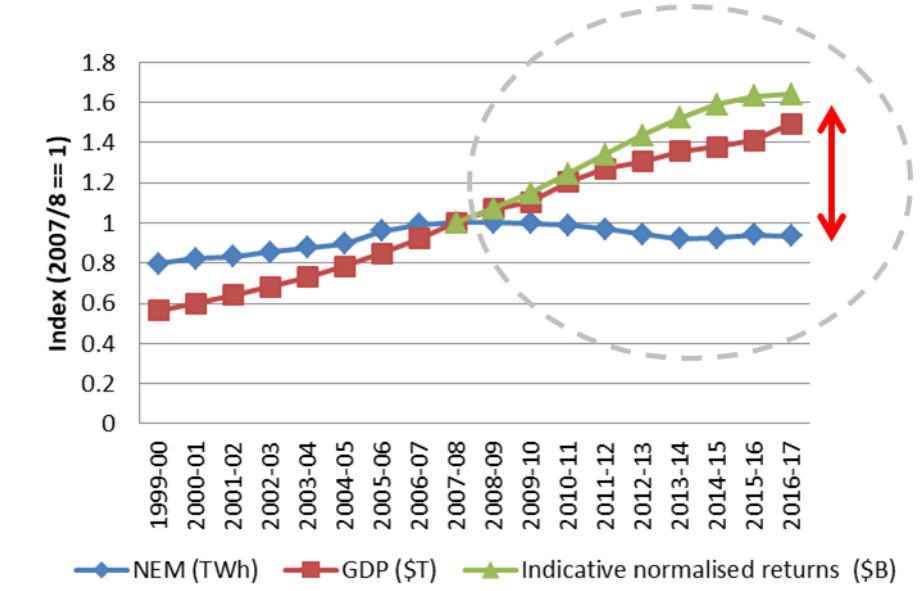
[66] APA's current equity beta is similar to that of AGK – the gentailer part of the former AGL that is in the data set used for the CAPM. This highlights that APA is not a relevant benchmark for regulated entities.

double counting. This is an out working of the basic muddle of conflating WACC with the AROR.

## Evidence of excessive returns

Even in the absence of detailed ROR data, a defensible top down sense test of whether returns are excessive is possible. In capital intensive, competitive markets, large reductions in demand, utilisation, and productivity relative to growth in the broader economy would result in a substantial reduction in returns and most likely asset write downs. This is evident in other sectors including postal services, print media and traditional point-to-point transport services (taxis). Instead, the observed outcome for the regulated energy sector is dollar returns broadly tracking the economy (possibly at record highs). This is illustrated in the figure below.

**Figure 18 Evidence of excessive returns**




The figure compares changes in indicative normalised electricity distributor returns, on the one hand, with changes in electricity consumption and broader economic conditions, on the other. The anomaly is emphasised by the two headed red arrow.

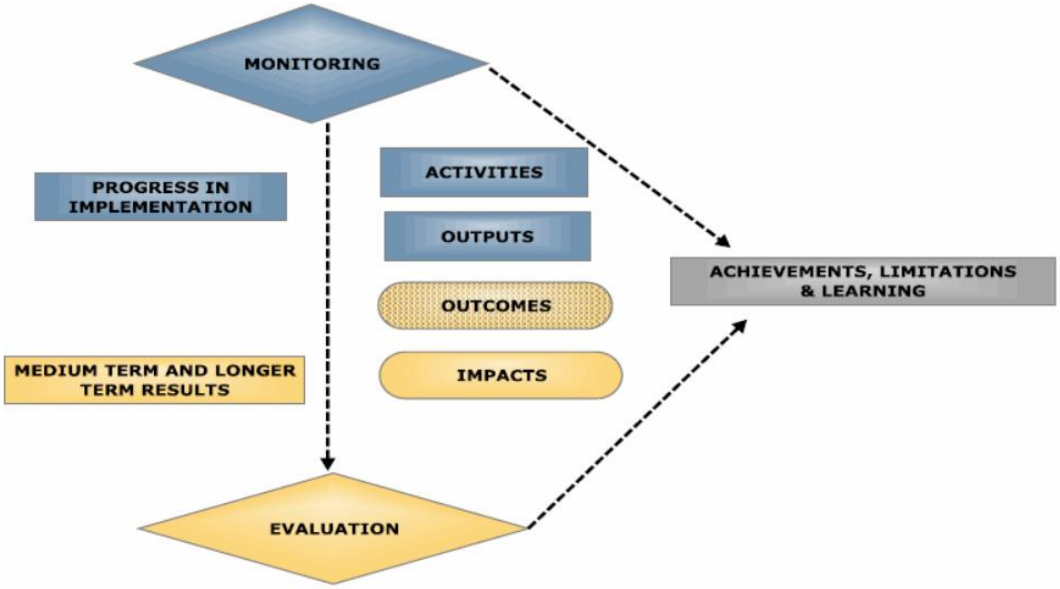
In any workably competitive market or well-regulated sector that is performing so badly, returns should be substantially lower than in the broader economy. Energy sector outcomes are anomalous.

The slope of the green line is not accurate due to the unavailability of allowed WACC data. Despite problems with measuring the anomaly, this is nevertheless a broadly accurate representation of actual EV profits. It is certainly superior to non-relevant CAP Model estimates of the WACC (not ROR), using flawed model parameters.

# Best practice evaluation frameworks

'Evaluation' is an open concept of a process applied to a very wide range of contexts, so here we draw on public sources available via links on the AES website to provide definitions of foundation concepts, particularly resources aggregated by the international collaboration www.betterevaluation.org to improve evaluation practice.[67] Figure 19 schematically describes the relationship between monitoring, a process to periodically report against planned targets, and evaluation, a "systematic and objective process to make judgments about the merit or worth of one or more programs, usually in relation to their effectiveness, efficiency and/or appropriateness."[68]

**Figure 19 Relationship between Monitoring and Evaluation**




**Source:**
http://www.betterevaluation.org/en/resources/guide/concepts_monitoring_evaluation_frameworks

In particular an evaluation looks beyond outputs, the products produced by a program, towards outcomes and impacts, that is the result or effect that is caused by or attributable to the program, relative to the objective of the program defined at its outset. The evaluation framework typically raises questions in 3 to 5 domains[69]:

- **Appropriateness**: A measure of whether a program's design and approach is suitable in terms of achieving its desired effect and working in its given context.

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67 While this community of resources is framed in the language of government programs, these evaluation concepts are entirely generalizable and can be employed to construct an evaluation framework for nearly any activity, the AER's ROR process being just a particular instance of a government intervention.

68 NSW Government, Evaluation Framework, August 2013, ISBN: 978-0-7313-5499-3

69 Based on the Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) Evaluation Criteria.

- **Effectiveness**: The extent to which the program and broader stakeholder objectives were achieved, or are expected to be achieved, taking into account their relative importance.
- **Efficiency**: A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
- **Impact**: Positive and negative, longer-term effects produced by a program, directly or indirectly, intended or unintended, particularly at a structural or systemic level.
- **Sustainability**: The continuation of a program, its support or its benefits after initial funding.

Two types of evaluations are commonly recognised relative to a program's maturity: [70]

- **Formative evaluation**: Evaluation which is generally undertaken while a program is forming (prior to implementation), directed at optimising a program. Typically used to identify aspects of a program that can be improved to achieve better results.
- **Summative evaluation**: Evaluation generally reports when the program has been running long enough to produce results, although it should be initiated during the program design phase. It assesses the positive and negative results of a program, as well as the intended and unintended outcomes delivered. This form of evaluation is used to determine whether the program caused demonstrable effects on specifically defined target outcomes.

In the present case a summative evaluation would have been possible, if ROR data had been obtained and assessed. Nevertheless a formative evaluation is still possible. There is no reason why a formative evaluation could not be undertaken immediately.

[70] NSW Government, Evaluation Framework, August 2013, ISBN: 978-0-7313-5499-3

# Appendix 2 Options for changes to the Guideline

## Introduction

Outside the constraints of the present review process, this Appendix briefly sets out a set of options for how the Guideline could be changed. These suggestions are not intended to be definitive and should be considered merely as options for consideration. Changes to the criteria for exercising judgment are possible under the existing rules. Once the rules are changed, as proposed, then alternative methods for deriving an ex ante Rate of Return could be considered.

## Criteria for exercising judgment

The main changes required to the ROR Guideline relate to the criteria for the exercise of regulatory judgment. These criteria need to be changed. In the first place, there should be a clear statement of the Guideline objective.

This objective could be stated along the following lines:

*The objective of this ROR Guideline is to limit the ability of regulated entities to extract excess profits, while retaining incentives for regulated entities to improve efficiency, and allowing for the sharing of the benefits of efficiency gains in the supply of regulated goods and services, including through lower prices.*

This is necessary because the ARORO is proposed to be removed and because ROR itself is not a defined term in the present rules.

A possible statement of ROR outcomes and a key ROR performance indicator (ROR KPI), consistent with the ROR Guideline objective, could be:

*For the typical regulated entity in the typical year, the ROR component of regulated network prices is sufficient, but no more than sufficient, to compensate investors for the systematic risks of their investment. That is to say, the ex-post EV profit should be zero for the typical regulated entity in a typical year. Regulated entities may on occasion earn EV profits or losses, including from innovation, or out performing financing and operational benchmarks. Conversely, if they under-perform financing and operational benchmark, regulated entities would experience EV losses. Continual EV profits over multiple years for a regulated entity with typical financing and operational performance should not be an expected outcome under the ROR Guideline.*

In exercising regulatory judgment, among other things the AER should:

1. Under any method applied for setting ex ante allowed ROR, explicitly consider ROR outcomes under the ROR KPI, and modify the input parameters as required consistent with the ROR Objective. In other words, the initial estimate of the AROR must be checked against ROR outcomes, and the initial estimate modified as required to achieve the AROR objective. In doing so, the AER should exercise its judgment taking the following matters into account.

(a) Methods and data should be fit for purpose:

  (i) They must be robust and relate to the ROR Guideline objective and ROR KPI.

(b) They should avoid undue complexity.

(c) The regulated entity should be clearly identified and financially and operationally ring-fenced from the total entity, including the related entity to which standard control or coverage does not apply.

(d) The reduction in systematic risk for regulated entities should be explicitly quantified in estimating the ROR (both ex ante and ex-post), in order to avoid compensating for systematic risks that are not being borne by regulated entities.

(e) Undue reliance should not be placed on theoretical methods for measuring returns. Where there is a conflict between theoretical methods and measured returns, theoretical methods should be recalibrated consistent with the proposed statement of ROR outcomes and the ROR objective above.

(f) Trade-offs between cost and reliability are a matter for jurisdictions and therefore should not be a factor in the exercise of regulatory judgment in reaching ROR decisions, either in the ROR Guideline or subsequent determinations.

(g) There should be no reference, explicit or implicit, to outcomes regarding non-systematic risk that are non-compensable from the capital charge and instead addressed elsewhere in the regulatory framework – e.g. CAPEX risk. This means that, consistent with the existing criterion, arbitrary filtering or adjustment of the data, which does not have a sound rationale, should be avoided, including reference to the Black CAP Model.

(h) The capital charge component of regulated network prices should be conservative in terms of dynamic efficiency risks from excess returns. This means minimising the risk that the capital charge component of network prices marginally increases rates of substitution from regulated network services, with the potential to create an unstable vicious cycle in which rising prices increase substitution, leading to further price rises and so on.

## Creation of information disclosure obligations

In line with best practice economic regulation (e.g. airports), the AER should create a new set of information disclosure and public reporting obligations for regulated entities, to ensure any divergence from ROR objectives is readily identifiable and capable of independent scrutiny. This also means the performance of the AER itself in regulating returns under the Guideline can be independently scrutinised and assessed.

Information disclosure needs to include extension of RIN reporting and ring-fencing requirements so that only efficient financing costs are attributable to the regulated entity. This would require changes to the RIN data requirements and in particular ring-fencing of regulated returns and debt servicing costs. This would require obtaining stand-alone credit ratings for the regulated businesses, to avoid applying lower ratings to the overall business. This is to ensure the regulated entity does not end up generating excess profits due to its

significantly lower systematic risk and capital servicing costs than the total entity within which the regulated entity operates.

The AER would then analyse and prepare aggregate reports such as the distribution of accounting and EV profits across the sector. It should then consider the distribution of returns across the sector as a portfolio, relative to the ROR objective and KPI above. Drawing on this distribution, ideally over a number of years, the AER should exercise regulatory judgment to identify a set of typical (benchmark) regulated entities in order to determine a reference point for the measurement of the ROR KPI. If EV profits or losses are a regular feature of the reference point, and these are not attributable to over or under-performance of non-financing benchmarks, then the AROR should be adjusted in line with the ROR objective and KPI.

## Possible alternative methodology for deriving an ex ante AROR

Once ROR data are available, it would be possible to estimate the raw returns for the typical benchmark entity within the portfolio – at the reference point. The cost of debt for the portfolio could then be measured and an efficient benchmark established. The residual after accounting for actual debt servicing would represent the equity margin or raw return on equity.

The next challenge would be to calculate the premium over the cost of debt necessary to compensate equity holders, in order to derive an estimate of EV profit or loss. The outcome should depend on how much NPAT/average equity varies relative to EBIT/average RAB (and why). If the variation is due to non-financial performance (e.g. optimisation of OPEX), then that variability should be set aside- investors should not be compensated for the outcome of incentive regulation itself. If the difference in variability between debt and equity is modest (return on equity in the regulated entities is similar to a recurring bond), then the equity premium necessary for EV profit to equal zero should also be modest. As the difference increases, then the equity premium needs to be increased until EV profit is equal to but does not exceed zero.

This alternative process uses the concept of systematic risk within the CAP Model. However, the concept is applied at the fundamental (individual firm) level, not the technical level (traded equity prices). The outcomes are far more reliable because a) it uses the entire sample b) it measures the risk of the regulated assets, not the total assets and c) it does not require a complex theory and model. If there were any relevant ASX data, then the outcomes of the fundamental analysis could be cross checked with a technical analysis. However, in the event of a conflict, the fundamental analysis should prevail.

The main challenge with the alternative process is estimating an AROR (WACC*average RAB) during the transition period, when multi-year ROR data are not available. This challenge is not insuperable. The first step would be to remove the distortions in the current process for deriving an ex ante WACC. This could be cross checked against available evidence on the ROR for the total entities, ensuring that the AROR is substantially discounted to reflect the risk reduction for networks. There may be a debate as to whether this can be undertaken within the current rules. This debate could be settled relatively quickly under the jurisdiction led rule changes consequential to the transition to the proposed mandatory instrument. Transition rules could also be developed to allocate the

risk of WACC estimation error – allowing ex post 'true ups'. Any transition rules should acknowledge as a starting point the excess returns that have been allowed over the duration not only of the current Guideline but over the entire period since the AER assumed responsibility for regulation of the sector.