# Attachment 5.1

## Using the Profile of Prices During an Access Arrangement Period and Return of Capital to Improve Financial Metrics

A report by Incenta Economic Consulting

**2016/17 to 2020/21 Access Arrangement Information**

Australian Gas Networks

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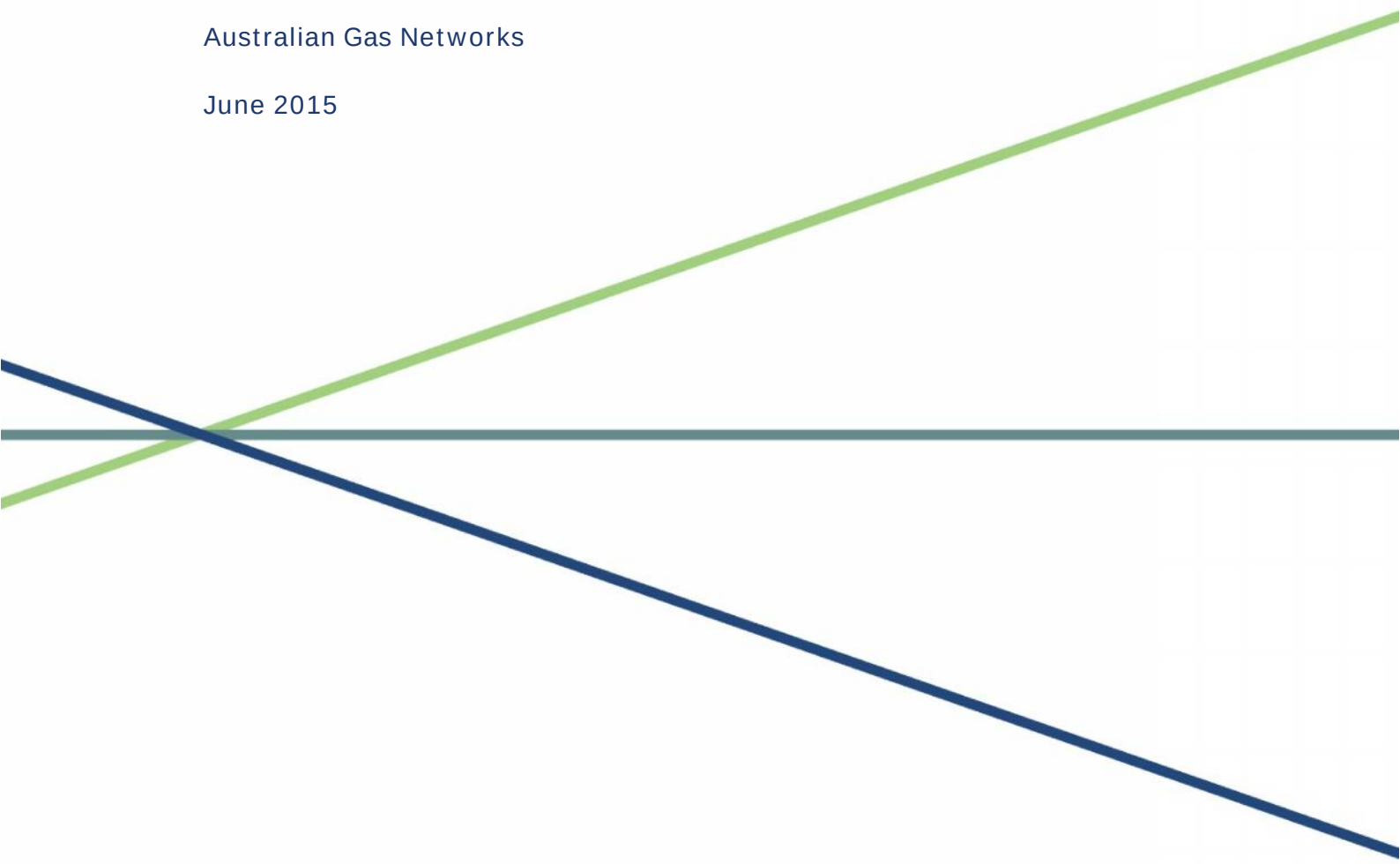
Australian Gas Networks

June 2015



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# 1. Introduction and summary

## 1.1 Scope of the report

The Australian Energy Regulator (AER) assumes a BBB+/Baa1 credit rating for the purpose of estimating the benchmark cost of debt financing for regulated energy networks, which in turn is an input into the benchmark weighted average cost of capital (WACC). Whether the AER's assumption that a benchmark efficient regulated energy network could receive and maintain a BBB+/Baa1 credit rating – and hence whether all elements of the AER's regulatory determination are consistent with this assumption – is an empirical question, being dependent upon the strength of the cash flows to the regulated energy network.

Within this context, Australian Gas Networks Limited (AGN) has asked Incenta Economic Consulting (Incenta) to advise on two related matters:

- *Scenario 1* – Under the assumption that AGN's proposed WACC is accepted, AGN's proposed profile of prices (i.e., the balance between the initial price change and the subsequent ongoing price change, which is referred to as $X_1$ and $X_{2\text{-}5}$) during the next Access Arrangement period.

- *Scenario 2* – Under an assumption that a WACC based on the AER's recent decisions for other regulated networks is applied, whether the straight line approach to depreciation on an inflation indexed asset base (straight line CCA depreciation) is appropriate in the context of achieving the AER benchmark BBB+/Baa1 credit rating.

## 1.2 Authorship

This report has been prepared by Jeffery John Balchin. I am the Managing Director of Incenta Economic Consulting, a firm that specialises in advising in relation to economic regulation issues in the infrastructure sector. I have 20 years of experience in relation to economic regulation and pricing issues across the electricity, gas, ports, airports and water sectors in Australia and New Zealand, having advised governments, regulators and major corporations on issues including the development of regulatory frameworks, regulatory price reviews and with respect to the negotiation of charges for unregulated infrastructure services. My full curriculum vitae is attached to this report as Appendix A.

I have been assisted in producing this report by two of my colleagues, Dr Michael Lawriwsky and Mr Scott Stacey; however, I am solely responsible for its contents.

I have read, understood and complied with the Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia, which are appended to this report as Appendix B.

## 1.3 Summary of key conclusions

### 1.3.1 Assessment of the objectives

I understand that AGN's objectives with respect to the matters it has requested me to analyse are twofold. First, AGN is concerned to ensure that a benchmark efficient entity would have sufficient cash flows to be able to receive and maintain the AER's assumed credit rating of BBB+/Baa1 over the next (2016/17 to 2020/21) Access Arrangement period (referred to as the *financeability objective*).

Secondly, in relation to the first matter that I address, AGN is seeking to deliver a price path that minimises the prospect of large changes in price between Access Arrangement Periods and, in relation to the second matter, is aware of the need to not unduly cause distortions away from efficient network use more generally (referred to below as the *price path objective*).

In my view, each of these objectives is consistent with the requirements and guidance in the NGL and NGR.

- With respect to the *financeability objective*, strong financial ratios, leading to stable credit ratings assist businesses such as AGN to minimise the cost of debt finance. This is particularly relevant given the capital intensity of gas network services and the need to finance these capital costs over an extended period of time. Minimising the cost of finance will promote the national gas objective (NGO), and economic efficiency more broadly, by promoting efficient investment in natural gas services and by minimising the price paid by customers.

- With respect to the *price path objective*, I agree that minimising the prospect of large price changes between regulatory periods, and targeting prices that are more constant than not in real terms over time is likely to improve the efficiency of use of the assets in question and hence consistent with the NGO.

In relation to the second of the matters that I have been asked to address, I observe that the return of capital (or regulatory depreciation) is particularly well suited to address this issue. Altering the return of capital changes only the timing of the cash flow to the asset owner – and with it, the time profile of prices to customers – but not change the value of the cash flow (or the average level of prices), once the time value of money is taken into account. Indeed the NGR suggest that an adjustment to regulatory depreciation is the preferred tool for addressing a financeability issue, providing as follows:[1]

> *The depreciation schedule should be designed … so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.*

One approach for giving effect to this change in the return of capital that is particularly straightforward to implement and aligns well with the how rating agencies measure interest costs (which is to recognise the *nominal* interest payments in the relevant financial ratios) is to provide the compensation provided to investors for inflation as a cash item rather than capitalising this compensation into the RAB. Compensating investors for inflation as cash will not affect the asset lives that have been assumed for regulatory purposes.

### 1.3.2 Thresholds for a BBB+/Baa1 credit rating

I have been provided with a report from Moody's and from Standard & Poor's that both set out the credit metrics that they would expect from a firm in the position of AGN in order for a BBB+/Baa1

[1] NGR, clause 89(1)(e). Clause 89(1)(a) provides that the depreciation schedule should be designed "so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services", which we read (consistent with the AER's previous views) as encouraging a price path over time that encourages the efficient use of network services. We noted above that such an outcome would also appear to be encouraged directly by the NGO.

credit rating to be received and retained. The conclusions that I draw from these reports are as follows.

- At the current time – and in particular, in the context of the current low corporate borrowing costs – the credit metric defined as the ratio of "funds from operations to debt" is likely to provide the constraint to a firm's credit rating (rather than a measure of interest cover, as is more typically the case). This is consistent with the findings reached in a similar piece of work for another client.

- Moody's reports that,[2] for a stand-alone entity (which is the appropriate assumption), an expected "funds from operations to debt" of 9 per cent or greater would be required to receive and maintain a Baa1 credit rating (which is equivalent to BBB+ in Standard & Poor's nomenclature).[3]

- Standard & Poor's requirements are consistent with those of Moody's.[4]

### 1.3.3 Results

#### *Scenario 1*

In the first scenario, I assumed that AGN's proposed WACC for the next period is accepted, and assessed the effect of AGN's proposed price path (which involved a large initial price reduction – 11.4 per cent – followed by an annual real price increase of 5 per cent for the remainder of the period) against an alternative whereby there is a smaller initial price reduction (2.6 per cent) and a constant price in real terms thereafter.

I find that AGN's proposed price path generates credit metrics that are much smoother over the period than the alternative path that was assessed, and also that AGN's proposal is expected to generate less of a price change between the next Access Arrangement period and the subsequent period (a real price reduction of 2.3 per cent compared to an increase of 8.0 per cent).[5] I therefore conclude that, out of the alternatives, AGN's proposed price path is superior both in terms of meeting the financeability objective and the price path objective.

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2 Moody's, 'Credit Option: Australian Gas Networks Limited', 19 January 2015, p.4.

3 Moody's also reports threshold values of FFO interest cover of 2.4 times although, as noted above, we find (as expected) that the FFO to debt ratio is the indicator that binds first. In addition, Moody's also notes that a Debt/RAB ratio lower than 80 per cent would be required to maintain a Baa1 rating. As we are assuming a gearing level of 60 per cent, we are assuming that this will not be breached.

4 Standard & Poor's, 'Research Update: Ratings on Australian Gas Networks Ltd. Affirmed At 'BBB+; Outlook Stable, 22 May 2015.

5 The 2.3 per cent price reduction in the next period that is modelled under AGN's proposed price path is driven in part by the base case assumption that capital expenditure falls back to the historical average. If the level of capital expenditure forecast at the end of the next Access Arrangement period continues, then AGN's proposed price path will imply a 1.4 per cent real price increase into the next Access Arrangement period, compared to a 12.1 per cent real price increase if a constant price path after year 1 is adopted. An alternative measure of the potential for "price shock" after the next Access Arrangement period would be to compare the forecast revenue with the allowed revenue in year 5 of the next Access Arrangement period. Under AGN's proposed price path, forecast revenue at the end of the next period is materially the same as allowed revenue, whereas under the alternative (i.e., constant price path after year 1) forecast revenue is 9.6 per cent below allowed revenue at the end of the next period.

### *Scenario 2*

The second scenario tests outcomes that may arise for AGN if the WACC that the AER applied in the Preliminary Decision for SA Power Networks is applied also to AGN. I assessed the credit metrics expected under this scenario if there was no other change to the regulatory arrangement, and most importantly that straight line depreciation on an inflation-indexed asset base continued. I also assessed the effect of two possible changes to the regime to improve financeability, namely:

- paying out part or all of the compensation for inflation as cash in the relevant Access Arrangement Period, rather than capitalising this compensation into the RAB (I report results assuming that all of the inflation compensation is provided in a cash sense, which amounts to straight line depreciation on a historical cost asset base), and

- reclassifying a portion of capital expenditure as operating expenditure for regulatory purposes and so permitting this portion to be recovered on a "pay as you go" basis (I report results assuming a constant transfer of 20 per cent of capital expenditure into operating expenditure).[6]

The clear conclusion from my assessment of AGN's credit metrics if a WACC consistent with what was applied to SA Power Networks is applied and no other changes are made to improve financeability is that:

- A stand-alone entity in AGN's positon would have credit metrics that are below what is required to attract and maintain a BBB+/Baa1 credit rating, and

- Indeed the metrics are sufficiently poor that there is a material risk as to whether a BBB credit rating could be maintained.[7]

Accordingly, applying such a WACC without also applying measures to improve financeability would be inconsistent with the NGL and NGR, and most notably:

- Inefficiently raise the cost of finance, which is likely to be detrimental to the interests of users over the long term

- Create a situation where a benchmark regulated business would not be able to earn a commercial return and recover at least its efficient cost because it would not be in a position to achieve the credit rating the AER has assumed, and

- Would not result in the service provider's legitimate needs for cash flow being met, and so is not consistent with rule 89(1)(e) of the NGR.

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6 We assume, however, that the existing classifications remain both for tax purposes and for assessments by credit rating agencies of financeability.

7 Standard and Poor's commented in the report referenced earlier that AGN's stand-alone credit rating could fall below BBB (Baa2 in Moody's nomenclature) if its "funds from operations to debt" were to remain sustainably below 7 per cent (Standard & Poor's, 'Research Update: Ratings on Australian Gas Networks Ltd. Affirmed At 'BBB+; Outlook Stable, 22 May 2015, p.5). I interpret this as implying that a stand-alone entity would require a ratio of "funds from operations to debt" of 7 per cent or greater to receive and maintain a BBB/Baa2 rating.

My analysis suggests that if the provider is compensated fully for inflation in a cash sense, then this would be sufficient to generate credit metrics that are consistent with a BBB+/Baa1 rating, and which would endure over the 40 year forecast period that was analysed.[8]

I also compared the real price paths that would be expected under the base case and alternative options. I conclude that I do not think the difference in the price paths is sufficiently large to consider that a material difference in economic (allocative) efficiency would flow from the choice of whether or not part of the compensation for inflation would be paid out in a cash sense in the year in question (the difference in the projected prices after 40 years between the book-ends of compensating fully for inflation in cash terms and capitalising the whole value into the capital base was in the order of 10 per cent). Part of my reason for reaching this conclusion is that I have doubts about the precision of comparisons of long term price paths because the results are sensitive to long term forecasts of capital expenditure, which are uncertain.

8 My modelling suggested that providing approximately 2 percentage points of the forecast compensation for inflation (of 2.5 per cent) on a cash basis would be the minimum required to satisfy the financeability objective (this provided an average FFO/debt ratio of 9.1 per cent over the 40 year analysis period). The tool of transferring expenditure from capital to operating was less successful at improving financeability and was sensitive (as expected) to the level of capital expenditure that was forecast.

# 2. Relevant considerations for the analysis

## 2.1 Introduction

There are a number of important considerations that need to be taken into account when analysing the implications for financeability from the variety of revenue outcomes that can arise from a regulatory determination. This recognises that the quantum and timing of revenue earned by a business, and therefore its cash flow, can create implications for the credit metrics of the business as well as on the signals for efficient use of network services.

A number of options are discussed below that have the effect of adjusting the timing of cash flow to investors. It is important to note, however, that each of the alternatives that are discussed in this chapter, and also modelled throughout the report, are NPV neutral. That is, they impose no net cost onto customers. Further, it is also my assumption that none of the options compromise the objective that there should be a high degree of assurance that costs (i.e. the regulatory asset base) will be recovered over its life so that the business can expect to earn at least a normal return on investment.

This chapter first discusses the relevant considerations for efficient financing for a regulated entity. It then focuses on the factors to have regard to with respect to implications for the price path. In each case I consider the requirements and guidance provided by the regulatory framework for gas networks.

## 2.2 Conditions for efficient financing

### 2.2.1 Strong credit ratings are consistent with the National Gas Objective

The credit rating of a business can have a material impact on the cost of running the business. This is because a firm's credit rating affects the ability for a firm to secure financing in a timely way and the cost of that finance. Downgrades to credit ratings can lead to restrictions to debt financing options or mean that finance can only be obtained at a significantly higher cost.

Credit ratings agencies assign credit ratings to firms in part based upon on the strength of the firm's cash flows, with the indicators of this "strength" often referred to as the firm's credit metrics. The two most common credit metrics employed by ratings agencies for infrastructure assets are Funds From Operations (FFO) to interest cover, and the FFO/Debt ratio. Ratings agencies define ranges that they expect a firm's credit metrics to sit within for the different credit ratings. Where a firm's credit metrics fall below (or are expected to fall below) the range for a sustained period then the prospect exists that the firm's credit rating will be reduced. I note that given the current low interest rates that prevail in Australia, it is my understanding that the FFO/Debt ratio is the critical indicator (that is, the indicator most likely to constrain a firm's credit rating) rather than interest cover.[9]

Strong financial ratios assist businesses such as AGN to minimise the cost of debt finance. This is particularly relevant given the high capital nature of the gas network service and the need to finance the costs of these assets over an extended period of time. Minimising the cost of finance will promote

[9] This reflects that the interest cover metric for today, given low interest rates, may not reflect the long term capacity for a firm to fund debt.

the National Gas Objective (NGO), and economic efficiency more broadly, by promoting efficient investment in natural gas services, in particular with respect to price.

I observe below that the AER has assumed a BBB+/Baa1 credit rating when deriving the WACC for the regulated energy network businesses. Such a target would mean that a benchmark efficient businesses would be expected to maintain a strong investment grade credit rating under expected future conditions, and provide confidence that an investment grade credit rating could be maintained if adverse events were to result (a BBB+/Baa1 credit rating is two "notches" above the minimum of the investment grade credit rating band). This outcome is consistent with a benchmark efficient business having the capacity to access the deeper and lower cost pools of debt finance (for which an investment grade rating is a prerequisite) and for this access to have a degree of resilience to adverse events.

### 2.2.2 Consistency with the benchmark credit rating assumed by the AER

In deriving the WACC for a regulated network the AER needs to make assumptions about the benchmark credit rating and the term of debt issuance. This is required to estimate the benchmark cost of debt. The benchmark credit rating that is applied by the regulator should be reflective of the default risk characteristics of the regulated businesses. Whether or not the credit rating that the AER assumes for the regulated business is given effect to in its decision can be tested by examining the strength of the cash flows of the regulated business, applying the targets for the relevant credit metrics that are applied by the credit ratings agencies.

The AER, in its Rate of Return Guideline, indicates that it proposes to apply a benchmark credit rating of BBB+/Baa1, or equivalent, for the purpose of estimating the cost of debt component of the WACC. The benchmark term of the debt is 10 years.[10] While the AER has the option to depart from its Guideline, I note that this credit rating has been applied in recent decisions for New South Wales electricity network businesses.[11]

The implication of the AER applying a benchmark credit rating assumption of BBB+/Baa1 is that in order for its decision to be internally consistent (and for the business to have the opportunity to earn a normal return on investment), there is a need for the totality of the regulatory determination to be consistent with achieving this target. Whether the regulatory determination in total is consistent with achieving this target is an empirical question, and depends upon the strength of the credit metrics of the benchmark efficient firm.

I address how such an analysis can be undertaken – and the tools available to address a weakness in credit metrics – below.[12]

### 2.2.3 Mechanisms to maintain strong credit metrics

Under economic regulation there are a number of options available to ensure that the credit metrics of the business achieve what is required in order to deliver consistency with the assumed credit rating of

10 AER, 'Rate of Return Guideline' December 2013, p.4.

11 See for example: AER, 'Final Decision, Ausgrid distribution determination 2015-16 to 2018-19, Attachment 3 – Rate of return', April 2015, p.3.

12 We discuss my measures of the relevant credit metrics in more detail, and explain the thresholds that we have applied in my analysis, in section 3.4.

the regulator for the purposes of estimating the cost of debt; in this case BBB+/Baa1. As previously indicated, with the exception of the third option below (the explicit revenue uplift), these options do not impose a net cost onto customers and also continue to ensure that the business can expect to earn a normal return on investment. The primary objective for each of the options is to improve credit metrics by increasing the cash flow that is provided to the business over the short term.

There are a number of options that have been applied previously by regulators that I will outline here, these include:

- Adjustment to the approach to depreciation
- Treating a portion of capital expenditure as 'pay-as-you-go', or
- Providing an explicit revenue uplift.

### *Adjustment to the approach to depreciation*

Perhaps the most straightforward approach in the context of the current regulatory framework that applies to AGN is to make an adjustment to the approach to depreciation. An adjustment to depreciation can be made in a number of ways, including either by adjusting:

- The profile of depreciation
- The assumed asset life, or
- The extent to which the RAB is "revalued" and the revaluation gain subsequently treated as income (under the AER's standard approach, the RAB is revalued each year by the rate of change in CPI inflation, with the gain in the RAB then treated as an offset to depreciation).

It is evident that the NGR explicitly contemplates depreciation being applied in a way to maintain satisfactory credit ratings for financeability purposes (or to maintain sufficient cash flows to meet financing costs). Specifically, clause 89(1)(e) states that the depreciation schedule, which impacts on the cash flow of the business, should be designed:

> *so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.*

The implication of this requirement is that, subject to the consideration of the other criteria associated with the choice of depreciation schedule, the NGR directs that the depreciation schedule be designed in such a way that the service provider has sufficient cash flow to meet its reasonable financing (amongst other) costs. The presence of this criterion in the NGR also implies that there should be a presumption that making such an adjustment to depreciation for financeability purposes is consistent with the promotion of the NGO.

The simplest means of altering the depreciation allowance for a regulated business within the context of the PTRM is to change how inflation is treated when updating the RAB and calculating the revenue requirement – which reduces to making a choice as to whether the compensation provided to investors for inflation (which is a component of the nominal vanilla WACC) is provided as an increment to the

RAB or paid out in cash within the year, or something in between. This concept is explained further in Box 1.

It is also noted that changing how the service provider is compensated for inflation is a particularly effective means of improving the financeability of regulated businesses. This is because the financial ratios (credit metrics) that are calculated by the ratings agencies (and are discussed further below) measure interest costs on a nominal basis. As a consequence, by paying out the compensation for inflation in cash, a greater alignment is created between the cash receipts and cash costs of the organisation from the perspective of ratings agencies. In addition, as the vast majority of debt of the regulated energy networks is denominated in nominal terms (i.e., there are only very small amounts of inflation-linked debt on issue) compensating for inflation on a cash basis will also create a greater alignment between cash inflows and cash needs of the regulated energy networks in reality.

**Box 1: Alternative approaches to straight-line depreciation**

The AER's Post Tax Revenue Model is constructed on the basis of a straight-line profile of depreciation. While the option exists to shift away from the straight-line approach, it is possible to retain the structure of straight line depreciation, but fine tune the timing of cash flow in order to achieve a financeability objective. This can be achieved through the way that inflation is treated when updating the RAB.

The two bookends for the treatment of inflation when updating the RAB that have been applied in the Australian regulatory context are the current cost accounting method and historical cost accounting method.

Under the current cost method to straight-line depreciation, which is presently applied by the AER, the compensation to investors for inflation (which is part of the nominal WACC) is capitalised into the regulatory asset base, and with the corresponding amount removed from the revenue requirement to avoid a double-counting of this compensation (more specifically, in the PTRM the inflationary gain is applied as an offset to depreciation). The implication of this is that the compensation to investors for the inflation portion of the WACC is received over the remaining lives of the assets in question rather than in the year in question. In contrast, under the historical cost approach, the compensation to investors for the "inflation" portion of the WACC is received as cash by investors in the year. The distinction between the two methods of compensation for inflation can be likened to the distinction between capital expenditure and operating expenditure – under the current cost method, the compensation for inflation is treated in the same manner as a capital expense (i.e., spread out over time), whereas under the historical cost method the compensation for inflation is treated in the same manner as an operating expense (i.e., recovered in the year).

As such, the historical cost approach would be expected to generate an earlier receipt of cash flow, and so improve credit metrics relative to the current cost method of depreciation. It is my understanding that the historical approach to straight-line depreciation is widely applied by regulators in the United States.

In addition, it is possible to create a middle ground between the current cost and historical cost methods by providing part of the compensation for inflation akin to a capital expense (i.e., capitalised into the RAB) and for the remainder to be paid in the year.

Again, from the perspective of customers, each approach is NPV neutral and therefore imposes no additional cost onto customers, albeit with an impact on the path of prices over time.

The other reasonably straightforward mechanism for adjusting the rate of depreciation to improve financeability is to alter the lives of assets. It is notable that in the United Kingdom adjustments have been made to the asset lives, in addition to adjustments to the profile of depreciation, for the same purpose. In one case Ofgem sought to shorten the average asset age so that capital is returned sooner to investors and, as such, minimising the potential for cash flow and financeability issues. Further, it accelerated the depreciation associated with expenditure already incurred. Ofgem explained its approach in the context of electricity distribution as follows:[13]

> *3.13. The rate at which the RAV is depreciated has significant implications for the cash flows a company receives.*
>
> *3.14. In electricity distribution, the depreciation profile has been tilted by reducing assumed asset lives so that revenues are advanced. We have done this in a way that is neutral to consumers in net present value terms but brings cash flows forward, meaning that a greater burden is placed on present rather than future consumers.*
>
> *3.15. DPCR4 was a case in point. In essence, the assumed average asset life was reduced to around 20 years for assets that are likely to last on average at least 40 years with an acceleration of depreciation over 15 years for expenditure already incurred. This was done to overcome the so called "cliff face" issue. This accelerated depreciation profile has been maintained for DPCR5.*

I note also that in a recent decision relating to a change to the average asset life it would apply, Ofgem chose an approach that sought to address potential financeability issues. Specifically, while it chose to apply a 45 year average life to new assets, for existing assets it chose to maintain an average life of 20 years. This decision was based squarely on a view that operators may face financeability problems if the adjustment to asset life was made to existing assets also. It is notable also that Ofgem indicated that despite applying the change in asset lives to new assets only, in order to ensure financeability businesses would be able to propose additional transitional arrangements:[14]

> *We are committed to ensuring that efficient networks are able to raise the finance they require, both equity and debt, in a timely manner. We recognise that, even with the policy of applying the change in asset lives to new assets only, transitional arrangements may be required and that these may need to be over more than one price control period. Companies will have the opportunity to fully demonstrate, in their business plans at RIIOED1, the transitional arrangements that they believe are necessary to ensure financeability.*

### *Treating a portion of capital expenditure as pay-as-you-go*

Implementing this approach requires, in essence, that a portion of capital expenditure is transferred to operating expenditure. An alternative way to conceptualise the approach is to consider that the asset life associated with the investment is set to zero years. Treating the capital expenditure in this way provides for an immediate return of the relevant portion of capital expenditure in the same way that operating expenditure is recovered immediately.

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13 Ofgem, Regulating Energy Networks for the Future: RPI-X@20 Emerging Thinking – Embedding financeability in a new regulatory framework, 20 January 2010, p.8.

14 Ofgem, 'Decision letter on the regulatory asset lives for electricity distribution assets', 31 March 2011, p.1.

Recovering capital expenditure as if it were operating expenditure is an approach that has been applied in the United Kingdom to address financeability issues. For instance, in past gas reviews Ofgem has allowed businesses to recover 50 per cent of replacement expenditure in the year that it was incurred rather than over the life of the assets.

Financeability is also an important consideration for Ofgem in deciding on its allocation between its 'fast pot' (i.e. recovery in the year, akin to operating expenditure) and its 'slow pot' (i.e. the spread over an extended period, akin to capital expenditure) under its TOTEX approach. In this case, the businesses are able to propose the ratio between the 'fast pot' and the 'slow pot' having regard to the impact this has for financeability. For instance, in its recent decisions on electricity distribution businesses Ofgem allowed a distributor to reduce its capitalisation rate (i.e. slow pot money) from 72 per cent to 68 per cent, thereby increasing is proportion of 'fast pot' money. Ofgem justified this approach on the basis of improved financeability stating:[15]

> *5.30. The change to ENWL's capitalisation rate has a neutral effect on the present value of allowed revenues over time. It improves the company's cash flows and gearing levels in RIIO-ED1 and we believe it provides a better foundation for any owner initiatives to reinforce its financial position further. Although this change means lower revenues after RIIO-ED1 it should mean less new borrowing at the end of RIIO-ED1 and better financial metrics thereafter. We think ENWL's proposal is in the consumer interest.*

#### *Explicit revenue uplifts*

I note for completeness that a third mechanism for addressing a financeability concern is to set the price path such that sufficient revenue is provided to achieve a required cash flow objective. This is an approach that was applied in the United Kingdom by the water regulator, Ofwat. In 2004 it allowed a number of companies additional revenue totalling £430 million in NPV terms over a five year period due to a large capital expenditure program. Ofwat had done something similar in 1999.[16]

I note that in order to ensure that this approach remains revenue neutral it would be necessary for the business to return the funds at a later date. As such, if the uplift was to be applied in a manner that is revenue neutral, then the outcome is equivalent to altering regulatory depreciation, albeit doing so on a flexible basis.

## 2.3 Price path objective

Spreading the recovery of "residual costs" over time in a manner that has the least impact on network use serves to avoid distortions from the efficient use of the assets.[17] Such distortions would be considered to be losses of allocative efficiency and therefore losses to society. The distortions would also be inconsistent with the National Gas Objective which includes the promotion of the efficient use of natural gas services.[18]

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15 Ofgem, 'RIIO-ED1: Final determinations for the slowtrack electricity distribution companies Overview Final decision', 28 November 2014, p.44.

16 IPART, 'Financeability tests in price regulation Research — Draft Decision', August 2013, p.15.

17 Residual costs refers to the costs that would not be recovered under efficient marginal cost pricing.

18 The National Gas Objective is set out in section 23 of the National Gas Law.

One way to avoid distortions to efficient use of natural gas services through price is through two-part tariffs. Under this form of charging a fixed component contributes to the recovery of residual costs. It is also desirable in this regard to attempt to avoid price shock. Price shock occurs where there is a sudden, and large, increase in prices from one year to the next. The impact of price shock is that it can, even temporarily, disrupt network use from what it otherwise might be.[19]

I note that the criteria for the approach to depreciation in the NGR also appears to refer to the desirability of achieving a price path objective. Specifically, section 89(1)(a) states that the depreciation schedule should be designed:

> *so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services;*

I read this criterion as guiding the regulator to consider allocative efficiency concerns, that is, whether the proposed profile of depreciation will be consistent with the efficient use of the network. In gas distribution (consistent with other energy networks) much of the cost that is recovered through prices relates to costs that were incurred in the past and will not be affected by future network use. Efficient use of the network in this context is encouraged by spreading the recovery of these sunk costs over time in a manner that has the least effect on network use, which (in the absence of any expected changes in technology or customer preferences) has been found to support prices that are smoother (in real terms) over time. Accordingly, I have also considered how a depreciation adjustment would affect the time profile of prices as an indicator of whether a depreciation adjustment would be consistent with rule 89(1)(a) of the NGR.

[19] We note that it is not uncommon for regulatory frameworks to include provisions that limit the scope for price shock to occur. This can include in the form of side-constraints on the change of prices from one year to the next.

# 3. Modelling approach

## 3.1 Scenarios tested

As discussed above, AGN has requested that I advise upon two related matters – which differ in terms of the WACC that is assumed to apply – as follows:

- *Scenario 1* – Under the assumption that AGN's proposed WACC is accepted, AGN's proposed profile of prices (i.e., the balance between the initial price change and the subsequent ongoing price change, which is referred to as $X_1$ and $X_{2\text{-}5}$) during the next Access Arrangement period.

- *Scenario 2* – Under an assumption that a WACC based on the AER's recent decisions for other regulated networks is applied, whether the straight line approach to depreciation on an inflation indexed asset base (straight line CCA depreciation) is appropriate in the context of achieving the AER benchmark BBB+/Baa1 credit rating.

## 3.2 Assumptions applied about future expenditure and demand

The two scenarios that AGN has requested that I test require assumptions to be made about expenditure and demand within the next Access Arrangement period, as well as in future Access Arrangement periods.[20] In relation to the next Access Arrangement period, I have applied AGN's forecast of demand and expenditure. In relation to the periods beyond that, I have adopted the following assumptions:

- The forecast operating expenditure for the last year of the next period continues (in real terms) into the future

- Capital expenditure after the end of the next Access Arrangement period is equal to the average of the real expenditures over the past 10 years (that is, the average expenditure in CPI-inflation adjusted terms in each category over the 10 years ending with the estimate for the current year)

- The assumed WACC for the next period continues into the future, and

- The forecast rate of customer growth between years 4 and 5 of the next period continues in the future, and average use per customer remains constant in future periods at the level assumed in year 5 (this means that, for a given price, revenue will grow in line with customer growth in future periods).

I observe that my assumption about future capital expenditure implies that I am assuming that the annual rate of capital expenditure in the period after 2020-21 is approximately half of the annual rate that is forecast for the next Access Arrangement Period. However, I have also tested as a sensitivity the impact on AGN's financial ratios if a high rate of capital expenditure continues into the future, for which I have used the level of expenditure in 2020-21 ($130 million in real 2015-16 dollars, compared to $72 million per annum if expenditure is assumed to revert to the historical average).

[20] Assumptions about the future are less relevant for the first question because a comparison between the forecast revenue and cost of service in the last year of the access arrangement period will provide a good guide as to whether there is expected to be a change in prices from one period to the next.

## 3.3 Mechanisms to alter the timing of cash flow to the investor

In order to test the effect of changes to the timing of cash flow on the modelled financial ratios and the time path of prices, I have retained the assumption that assets are depreciated on a straight line basis over their standard lives. The policy tools that I have tested are as follows.[21]

- First, to vary the proportion of the compensation for inflation that is provided through indexation (revaluation) of the RAB as opposed to paid in a cash sense in the relevant year. If no compensation is paid in cash, then this is standard current cost depreciation, and if all of the inflation compensation is provided in cash, then this equates to standard historical cost depreciation. Adjusting the proportion of inflation compensation that is capitalised into the RAB versus paid in cash provides a flexible means of altering the timing of cash flow. It is noted that the PTRM defines regulatory depreciation as the difference between the calculated straight line depreciation and the inflationary (revaluation) gain, and so altering the extent of the revaluation gain amounts to a change to regulatory depreciation as that term is applied by the AER.

- Secondly, to alter the classification of expenditure between capital and operating expenditure. In the scenario I have assumed that a given proportion of all capital expenditure in a year (i.e., across all classes) is shifted from capital expenditure to operating expenditure.

As indicated in Chapter 2, both of these changes are revenue neutral in present value terms and therefore impose no additional cost onto customers over the long term.

I observe that two further tools that could be used to alter the timing of cash flow are:

- altering the life of the asset, or

- altering the depreciation method.

## 3.4 Financial ratios required to receive and maintain a BBB+/Baa1 credit rating

### 3.4.1 Definition of the financial ratios

I have tested the effect of the relevant choices on the following two key financial ratios:

- FFO interest cover, which is defined as: $\frac{FFO+interest}{interest}$

- FFO to debt ratio, which is defined as: $\frac{FFO}{Debt}$

In all cases, the ratios have been calculated in a manner that is consistent with the regulatory benchmark assumptions, so that, for example, the stock of debt is equal to 60 per cent of the RAB and the rate of interest is equal to the cost of debt assumed in the WACC. The exception to this is where expenditure is transferred from capital expenditure to operating expenditure – I assume in this case that the financial ratios would be calculated using the initial classification of expenditure (i.e., the

[21] In all cases we have assumed that the change modelled continues for the 40 year analysis period. In practice, refinements at future reviews if appropriate in light of events during the intervening period.

change in classification is assumed to be for regulatory purposes only). If this was not the case, then changing the treatment of the expenditure would not be effective in improving the financeability of the business.

Funds from operations is calculated as:

$$Smooth\ revenue\ (incl\ ancillary) - Interest - \ Opex - Tax\ (gross)$$

with these items again all calculated on the basis of the benchmark assumptions applied when calculating the revenue requirement.

### 3.4.2 Credit metrics required to achieve the AER benchmark credit rating

AGN has provided me with a report from Standard & Poor's[22] and a report from Moody's[23] that I have used to derive my assumption about the level of the relevant financial ratios that would be required for a firm in the positon of AGN to receive and maintain a BBB+/Baa1 credit rating on a stand-alone basis. The focus on the rating achievable for a stand-alone entity is consistent with the AER's previous consideration of this matter.

In relation to the thresholds for my analysis, I derive the following from these reports.

- Moody's reports that a rating downgrade may be triggered where FFO interest cover falls consistently below 2.4 times, the ratio of FFO-to-debt falls below 9 per cent, or AGN's Debt/RAB ratio increases above 80 per cent on a consistent basis.[24] I interpret these figures as the thresholds that are required for an entity in AGN's position to receive and retain a Baa1 (BBB+ under Standard & Poor's nomenclature) credit rating.[25]

- Standard & Poor's expectations of the thresholds for a stand-alone entity to receive and maintain a BBB+ credit rating (Baa1 under Moody's nomenclature) are less transparent because Standard & Poor's credit rating for AGN factors in support from AGN's parent entity.[26] Nevertheless, I read the Standard & Poor's report as containing broadly similar expectations as Moody's as to the threshold required for an entity to maintain a BBB+ credit rating on a stand-alone basis.[27]

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22 Standard & Poor's, 'Research Update: Ratings on Australian Gas Networks Ltd. Affirmed At 'BBB+; Outlook Stable, 22 May 2015.

23 Moody's, 'Credit Option: Australian Gas Networks Limited', 19 January 2015.

24 Moody's, 'Credit Option: Australian Gas Networks Limited', 19 January 2015, p. 4.

25 As we assume the regulatory benchmark gearing of 60 per cent, the last of these thresholds is not relevant to my analysis.

26 It states, for example: "the SACP [stand-alone credit profile] will need to fall by two notches to 'bbb-' before the issuer credit rating would be affected" (Standard & Poor's, 'Research Update: Ratings on Australian Gas Networks Ltd. Affirmed At 'BBB+; Outlook Stable, 22 May 2015, p.5). In contrast, Standard & Poor's is clear about the cut-off point between a BBB (Baa2) and BBB- (Baa3) credit rating for a stand-alone entity, which I discuss further below.

27 I base this inference, amongst other things, on (i) Standard and Poor's conclusion that AGN currently has a stand-alone credit profile of BBB+ (Baa1), and that (ii) Standard and Poor's forecasts the ratio of FFO to debt for AGN to be between 11.0 per cent and 12.0 per cent in 2015 and between 10.0 per cent and 11.0 per cent in 2016, albeit falling to 8.5 per cent to 9.0 per cent by year end 2017 (Standard & Poor's, 'Research Update: Ratings on Australian Gas Networks Ltd. Affirmed At 'BBB+; Outlook Stable, 22 May 2015, pp.6, 3-4).

In my analysis below I find that the first of the credit metrics that Moody's cites to bind is the ratio of FFO to debt. This is consistent with the findings in similar work for a different client, and reflects the fact that corporate borrowing costs are currently at low levels by historical standards (in my experience, measures of interest cover historically have been the more important metrics in credit assessments). I therefore focus on the ratio of funds from operation to debt in my analysis below, but also report interest cover for completeness.

# 4. Scenario 1 – time profile of prices during the next access arrangement period (under AGN's proposal)

## 4.1 Task and approach

As described above, in this scenario I have been asked to assume that AGN's proposed WACC is accepted, and to assess the price path during the next Access Arrangement period that has been proposed.

I observe that the AGN proposal is for a substantial initial real price reduction (11.4 per cent in year 1) followed by a real annual increase in price of 5.0 per cent per annum in subsequent years during the next Access Arrangement period. I have compared this to an alternative price path, in which the price is held constant (in real terms) after year 1, and the price change for the first year is derived to equate revenue with cost (which I refer to as the "constant price path" case. This results in a smaller initial real price decrease (2.6 per cent) and (by construction) a constant price in real terms for the remainder of the Access Arrangement period.

In comparing AGN's preferred price path to the alternative, I have focussed on:

- The credit metrics received in the individual years over the period, and
- The expected change in prices between the end of the next Access Arrangement period and the subsequent period.

## 4.2 Results

Figures 1 and 2 set out my projections of the ratio of funds from operation to debt and funds from operation interest cover over the next Access Arrangement period. Figure 3 then shows the projected time path of real prices over the next Access Arrangement period as well as in the subsequent five year period (the longer period is used in this latter figure to show the transition between the next Access Arrangement period and the subsequent period).

**Figure 1: FFO to Debt under different time paths for the reference tariff**

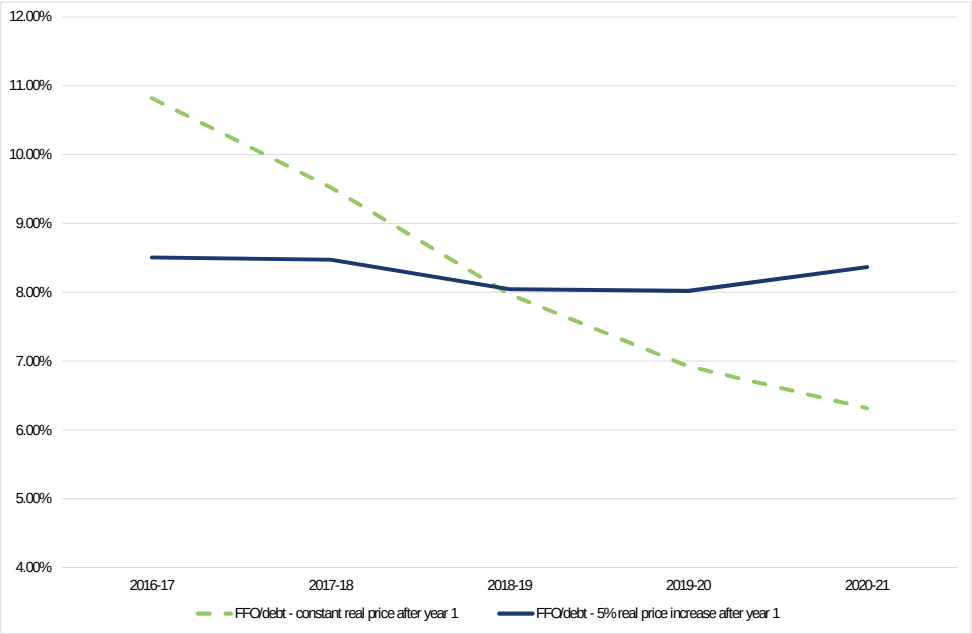



**Figure 2: FFO Interest Cover under different time paths for the reference tariff**

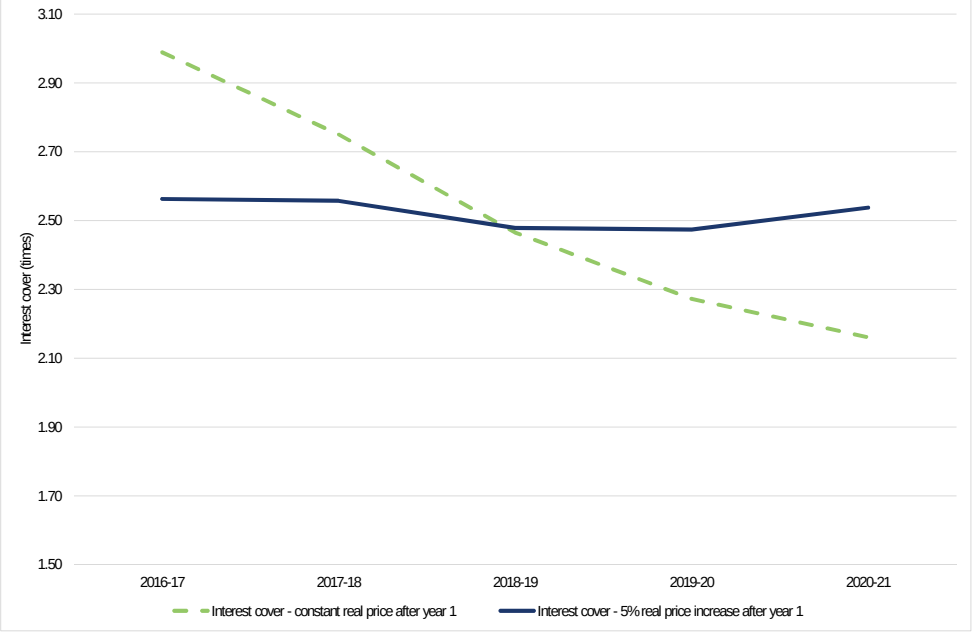
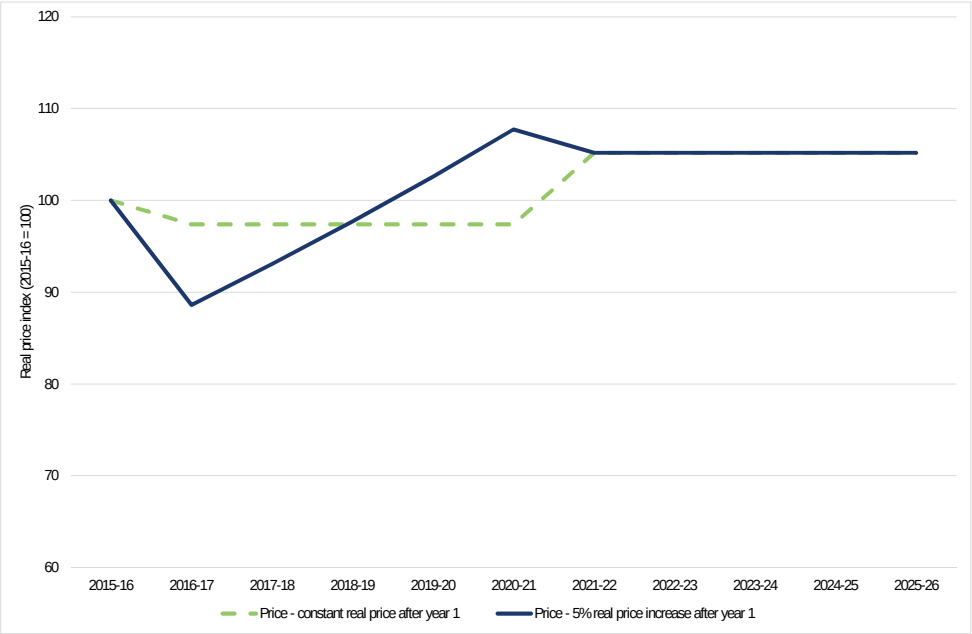


**Figure 3: Real price under different time paths for the reference tariff**




It is clear from the figures above that AGN's proposed price path generates financial ratios over the next Access Arrangement period that are smoother than under the alternative (constant) price path and therefore are more consistent with achieving the financeability objective than the alternative I considered.

In relation to the price, under the results presented above AGN's proposed price path is expected to result in a modest change in prices between the end of the next Access Arrangement period and the subsequent period (a fall of 2.3 per cent) compared to a price increase (of 8.0 per cent) under the alternative that I tested. AGN's price path is therefore expected to contain less potential for a "price shock" at the transition between periods. Moreover, I note that the projected change in prices at the transition between periods is sensitive to the assumption that is made about capital expenditure in future periods. If the level of capital expenditure forecast at the end of the next Access Arrangement period continues, then AGN's proposed price path will imply a 1.4 per cent real price increase into the next Access Arrangement period, compared to a 12.1 per cent real price increase if a constant price path after year 1 is adopted.

An alternative measure of the potential for "price shock" after the next Access Arrangement period would be to compare the forecast revenue with the allowed revenue in year 5 of the next Access Arrangement period. Under AGN's proposed price path, forecast revenue at the end of the next period is materially the same as allowed revenue, whereas under the alternative (i.e., constant price path after year 1) forecast revenue is 9.6 per cent below allowed revenue at the end of the next period.

These observations reinforce my view that AGN's proposed price path for the next Access Arrangement period is also superior in terms of meeting the price path objective.

Accordingly, I conclude that, compared to the alternative price path involving a constant price after year 1, AGN's proposed price path is superior under both the financeability and price path objectives. I note, however, that even if AGN's proposed WACC is accepted, there is a substantial risk that the

credit metrics that are projected would not be sufficiently strong for a stand-alone entity to receive and retain a BBB+/Baa1 credit rating.

# 5. Scenario 2 – return of capital and the effect on AGN's longer term financial ratios and time profile of prices

## 5.1 Task and approach

In recent decisions on regulated prices for electricity networks the AER has set a WACC value that is significantly lower than the WACC that presently applies to AGN and lower than the WACC that AGN has proposed in its revised Access Arrangement.

Against this context, AGN has asked me to assess the credit metrics that would follow in the next Access Arrangement period and beyond from the application of such a WACC,[28] if the current approach for regulatory depreciation is retained. The current approach to regulatory depreciation is a straight line approach to depreciation on an inflation indexed asset base. I refer to the outcomes from this approach to depreciation as the "base case" in the figures below.

To the extent that a financeability concern was found, I was asked to develop and assess measures for remedying the financeability concern. To this end, I have tested two alternative measures for alleviating the financeability concern, namely:

- Paying out part or all of the compensation for inflation as cash rather than capitalising this compensation into the RAB (in the figures below I report the results from paying out all of the inflation compensation as cash, which amounts to straight line depreciation on a historical cost asset base), and

- Reclassifying a portion of capital expenditure as operating expenditure for regulatory purposes and so permitting this portion to be recovered on a "pay as you go" basis (in the figures below I have assumed a constant transfer of 20 per cent of capital expenditure into operating expenditure).[29]

In addition to assessing the impact of these tools for the financeability of the asset, I also test the effect on the long term real price path given the relevance of this for the achievement of the NGR and NGO, as discussed above.

## 5.2 Results

Figures 4 and 5 show my estimates of the relevant financial indicators (FFO to debt and FFO interest cover) under the base case and the alternative mechanisms described above.[30] As discussed in

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28 We have been asked to apply the value for the WACC that the AER adopted in the Preliminary Decision for SA Power Networks.

29 Note that this transfer of capital expenditure to operating expenditure is for regulatory purposes only. Such a transfer would have no impact on the tax classification of the expenditure or how it is treated for determining credit ratings.

30 The results generated here assume an ongoing X factor (i.e., $X_{2-5}$) of -2.0 per cent for the next Access Arrangement period, and an equivalent ongoing X factor of 1.0 per cent for future Access Arrangement periods, with $X_1$ solved to equate revenue and cost over the relevant Access Arrangement period (in present value terms). The $X_{2-5}$ factors were chosen to smooth to the extent practicable the financial ratios within each Access Arrangement period (with the actual values selected being a compromise, given that the optimal $X_{2-5}$ for this objective differed between the scenarios and across Access

Chapter 3, these figures all assume that capital expenditure after the end of the next Access Arrangement period falls back to the level that is consistent with the historical average (a sensitivity whereby capital expenditure is assumed to remain at a level consistent with AGN's proposal for the next Access Arrangement period is tested below).

**Figure 4: FFO/Debt: different RAB indexation and capex/opex classification**

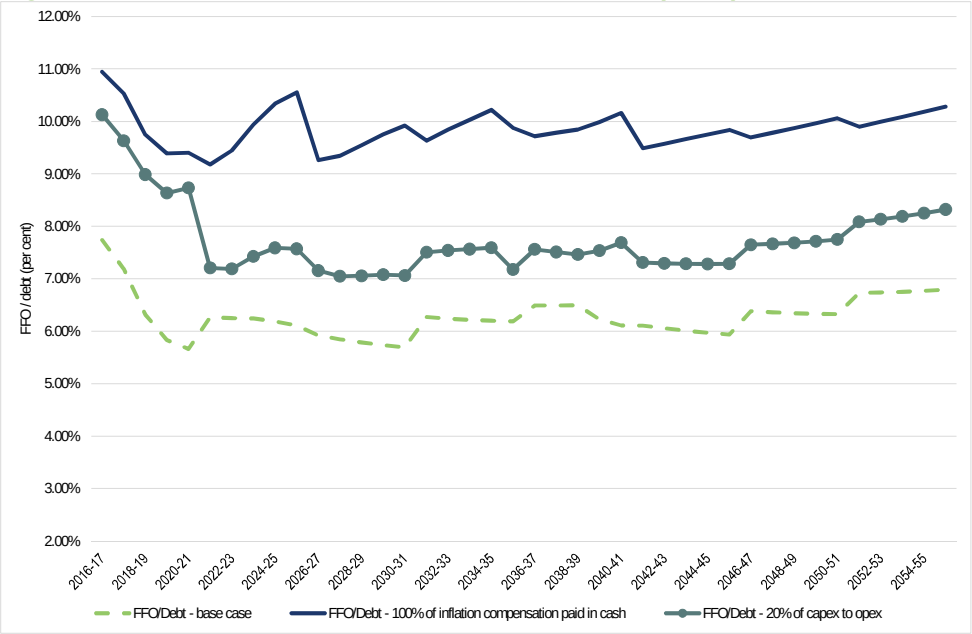
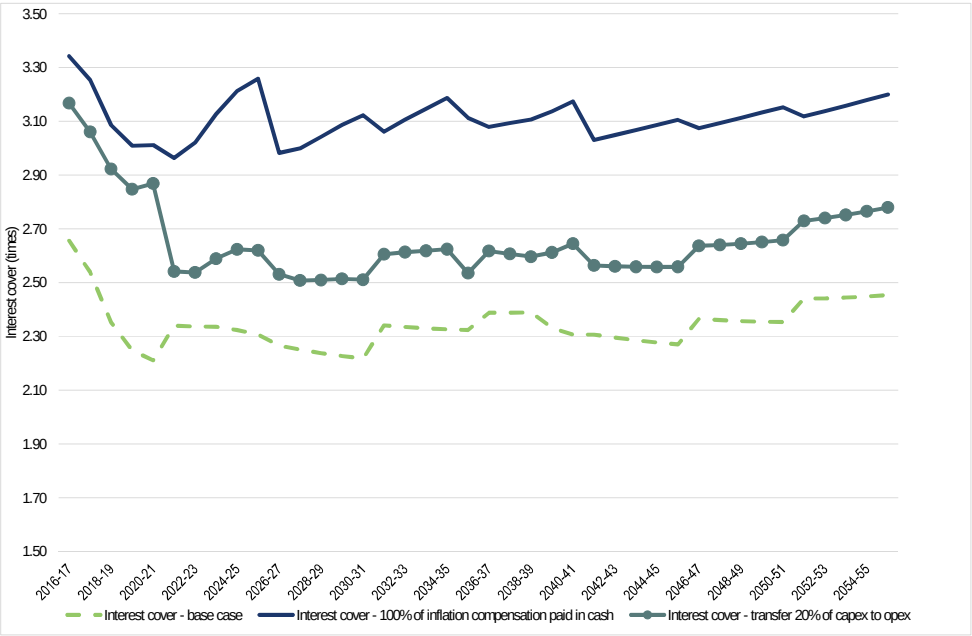



**Figure 5: FFO interest cover: different RAB indexation and capex/opex classification**




Arrangement periods). The choice of a different mix of X factors would only change the intra-period variation in credit metrics and not alter the conclusions that may be drawn from the analysis.

The immediate conclusion that can be drawn from the above figures is that if a WACC that is consistent with the AER's recent decisions is applied to AGN and nothing else is done to improve the financeability of the asset, then the credit metrics generated would be substantially below the threshold required to maintain a BBB+/Baa1 credit rating. That is:

- Funds from operation to debt would be projected to be below 7 per cent for much of the period, materially below the threshold identified above for BBB+/Baa1 of 9 per cent,[31] and

- FFO interest cover is below 2.4 times for most of the period, whereas 2.4 times was the threshold Moody's identified for BBB+/Baa1 (note, however, that this metric is not relevant if the FFO to debt metric is already binding).

Indeed, the FFO to debt ratio would be sufficiently low that it is questionable whether a stand-alone entity could receive and retain a BBB (Baa2) credit rating.[32] This outcome would not satisfy rule 89(1)(e) of the NGR as it would not provide sufficient cash flow to meet the service provider's legitimate cash flow needs.

In terms of the alternative mechanisms that I have tested, compensating for inflation fully in cash terms (i.e., applying straight line depreciation on a historical cost asset base) generates a material improvement in credit metrics that is sustained over the 40 year period that was analysed. This change in policy would be sufficient to generate confidence that a stand-alone entity in the position of AGN could receive and retain a BBB+/Baa1 credit rating, with FFO to debt above the threshold of 9 per cent over the forecast period.[33] Accordingly, this change would be consistent with achieving the requirements of rule 89(1)(e) of the NGR.

The scenario of transferring expenditure from capital to operating expenditure also generates a material improvement in financial ratios; however, the degree of the improvement in financial ratios from this mechanism is directly related to the amount of capital expenditure, and so much less improvement is provided after 2020-21 when capital expenditure is assumed to revert back to the (lower) historical average.

Figure 6 shows the real weighted average prices projected under each of the options (this is expressed as an index, with the price in the last year of the current period set at 100).

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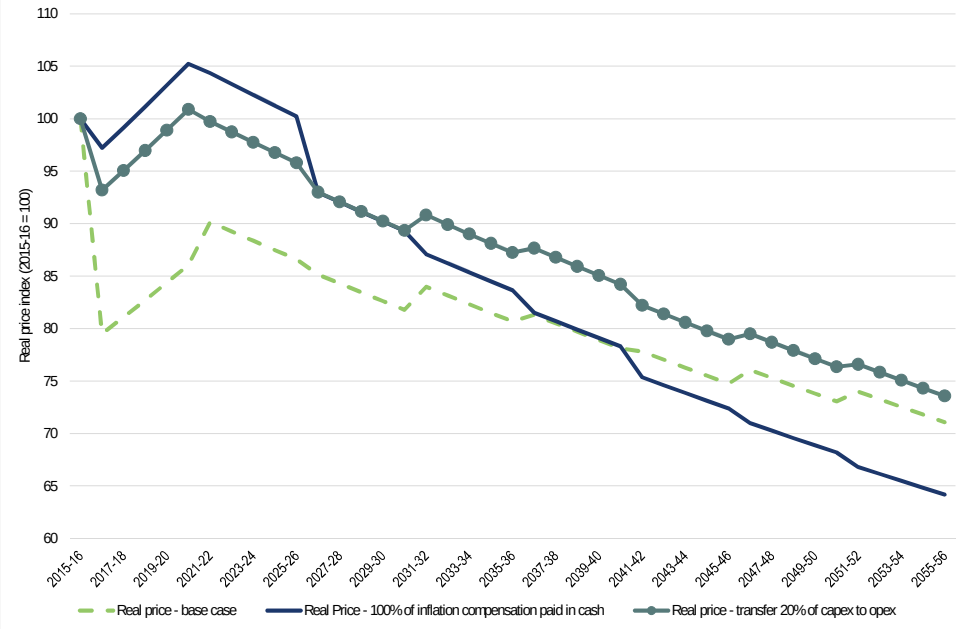
31 The average FFO-to-debt ratio under this scenario is 6.3 per cent over the 40 year analysis period.

32 Standard and Poor's commented that AGN's stand-alone credit rating could fall below BBB (Baa2 in Moody's nomenclature) if its "funds from operations to debt" were to remain sustainably below 7 per cent (Standard & Poor's, 'Research Update: Ratings on Australian Gas Networks Ltd. Affirmed At 'BBB+; Outlook Stable, 22 May 2015, p.5). I interpret this as implying that a stand-alone entity would require a ratio of "funds from operations to debt" of 7 per cent or greater to receive and maintain a BBB/Baa2 rating.

33 The average FFO-to-debt ratio under this scenario is 9.9 per cent over the 40 year analysis period. My modelling suggested that providing approximately 2 percentage points of the forecast compensation for inflation (of 2.5 per cent) on a cash basis would be the minimum required to satisfy the financeability objective (this provided an average FFO/debt ratio of 9.1 per cent over the 40 year analysis period).

**Figure 6: Real weighted average price: different RAB indexation and capex/opex classification**




I observe that the price expected under all of the options is projected to fall in real terms over the longer term. Comparing the base case option with the option whereby inflation compensation is paid out fully in cash terms,[34] the price is higher under the latter method in the short term, but lower after around 2041-42. At the end of the 40 year modelled period, the prices are not substantially different, however: the CCA depreciation price is 67 and the HCA depreciation price is 61, a difference of approximately 10 per cent after 40 years. I do not think the difference in the price paths is sufficiently large to consider that a material difference in economic (allocative) efficiency would flow from the choice of whether or not part of the compensation for inflation would be paid out in a cash sense in the year in question. Part of my reason for reaching this conclusion is that I have doubts about the precision of comparisons of long term price paths because the results are sensitive to long term forecasts of capital expenditure, which are uncertain. I demonstrate this sensitivity below.

Lastly, Figures 8 to 10 below repeat the figures above, but for the sensitivity assumption that the level of capital expenditure forecast for 2020-21 continues into the future, rather than future expenditure reverting to the historical average (this implies real ongoing capital expenditure of $130 million per annum, compared to $72 million per annum).

34 It is also noted that the "base case" option is not internally consistent because it assumes a credit rating (and thereby WACC) that not consistent with the strength of the cash flows. If the current depreciation method were to be retained, the internally consistent price would be higher (reflecting the higher WACC). This factor has not been taken into account in the above price comparisons.

**Figure 8: FFO/Debt: different RAB indexation and capex/opex classification – High Capex Sensitivity**

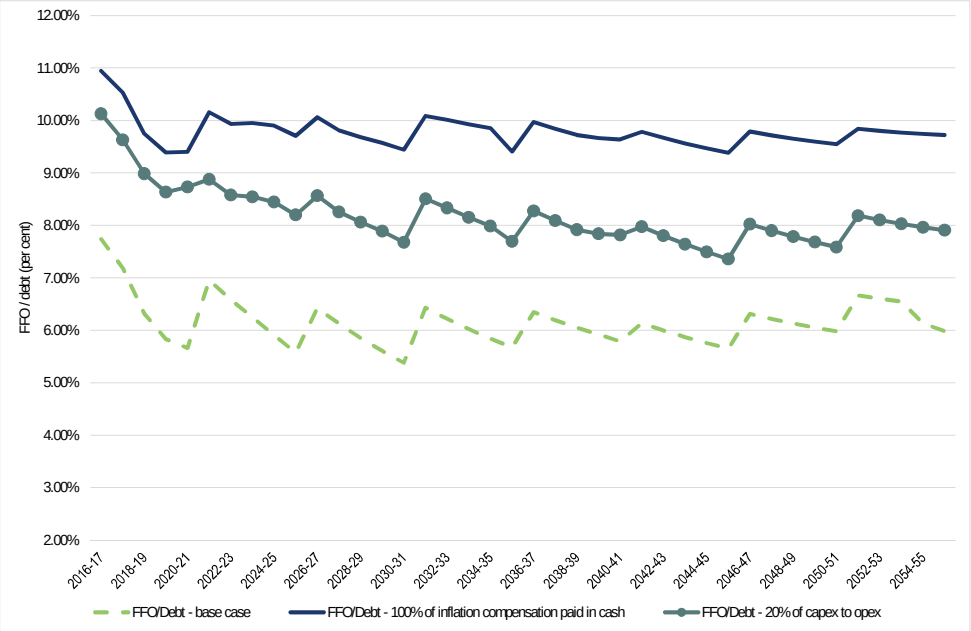



**Figure 9: FFO interest cover: different RAB indexation and capex/opex classification – High Capex Sensitivity**

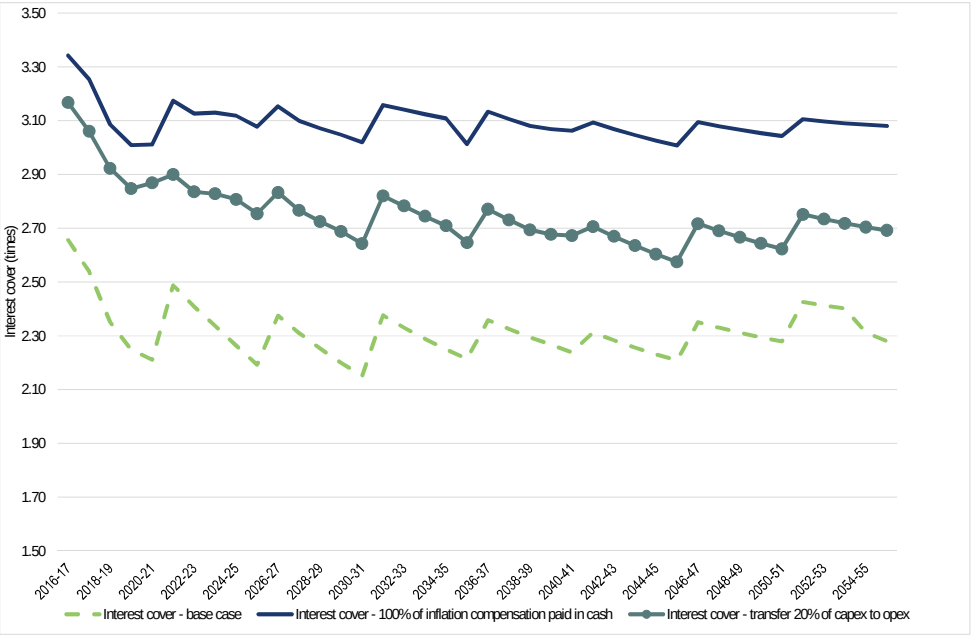
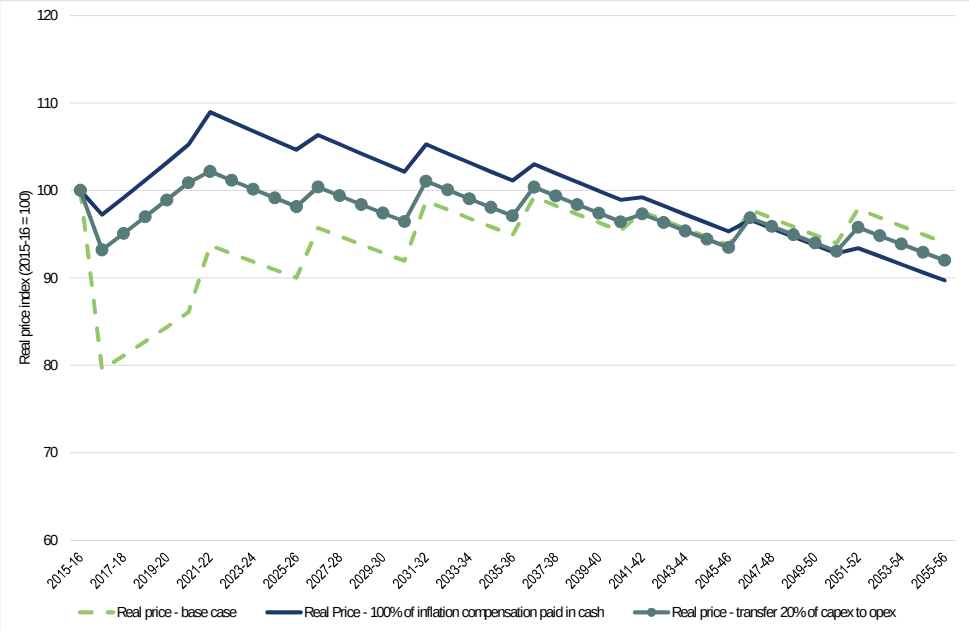


**Figure 10: Real weighted average price: different RAB indexation and capex/opex classification – High Capex Sensitivity**




The conclusions under this high capital expenditure are very similar to those already drawn above:

- Under the current cost method (base case), the key financial indicator (FFO/debt) would remain materially below the threshold required for a stand-alone business to receive and retain a BBB+/Baa1 credit rating, and indeed below the level required to receive and retain a BBB rating. Accordingly, again this outcome would not satisfy rule 89(1)(e) of the NGR as it would not provide sufficient cash flow to meet the service provider's legitimate cash flow needs.

- Compensation for inflation in cash terms would still be sufficient to ensure that a stand-alone entity in the position of AGN is able to receive and retain a BBB+/Baa1 credit rating. Accordingly, this correction again would be consistent with achieving the requirements of rule 89(1)(e) of the NGR.

- The much higher rate of future capital expenditure makes the tool of transferring expenditure from capital to operating much more effective at improving the financeability of the asset, although the transfer of 20 per cent of capital expenditure to operating as modelled would not be sufficient to generate FFO to debt greater than the threshold of 9 per cent.

- As alluded to above, future prices are projected to be flatter in real terms under the high capital expenditure sensitivity than when capital expenditure was more modest. In this case, there is very little difference in prices after 40 years between the options. In addition, the base case option is projected to generate a larger variation in real prices over the period than under either of the alternative options. However, again, I do not consider that the difference in price paths to be sufficiently large to expect there to be a material difference in allocative efficiency between the alternatives.

# 6. Declaration

I have has made all of the inquiries that I believe to be desirable and appropriate in the preparation of this report and no matters of significance that I regard as relevant have, to my knowledge, been withheld.

Jeffrey John Balchin
30 June 2015

# A. Curriculum vitae

# Jeff Balchin

**Managing Director**

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Jeff is the Managing Director of Incenta Economic Consulting. Jeff has 20 years of experience in relation to economic regulation issues across the electricity, gas, ports, airports, rail, water and telecommunications sectors in Australia and New Zealand. He has advised governments, regulators and major corporations on issues including the development of regulatory frameworks, regulatory price reviews and issues around the introduction and measurement of competition (including franchise bidding). His particular specialities have been on the application of finance principles to economic regulation, the design of incentive compatible regulation and efficient tariff structures and the drafting and economic interpretation of regulatory instruments.

In addition, Jeff has substantial experience with the application of economic and finance principles to pricing and investment appraisal and associated commercial disputes in unregulated infrastructure and non-infrastructure markets. He has also assisted with applying economic principles to transfer pricing.

Jeff has undertaken a number of expert witness assignments.

## Past positions

Jeff previously was a Principal at PwC in its economics and policy team for almost 4 years, prior to that a director and partner at the Allen Consulting Group for over 13 years, and prior that he held a number of policy positions in the Commonwealth Government. In this latter role, he was on the secretariat of the Gas Reform Task Force (1995-1996), where he played a lead role in the development of the National Gas Code.

## Relevant experience

### A. Economic regulation of network / monopoly activities

#### *Assistance to parties during price reviews/negotiations*

- Regulatory valuation of telecommunications local loop assets (Client: Chorus, 2014) – prepared a report advising on the appropriate valuation of local loop assets for the purpose of deriving a TSLRIC price for unbundled local loop access.
- Design of incentives for operating expenditure efficiency (Client: ElectraNet, 2012-13) – provided expert advice on the detailed application of the incentive arrangements for operating expenditure, including the link between the incentive scheme and the forecasting method.
- Regulatory depreciation (Client: APA, 2012-13) – provided expert reports on the economic principles relevant to the depreciation method that is applied to set gas transmission charges.
- Regulatory cost of debt (Clients: Powerlink, ElectraNet and Victorian gas distributors 2011-2012) – provided a series of reports addressing how the benchmark cost of debt should be established pursuant to the National Electricity Rules and on the appropriate benchmark allowance for debt and equity raising costs.
- Real cost escalation (Client: Energex, 2009-10) – advised Energex on appropriate escalators to apply to forecasts of operating and capital expenditure over the regulatory period.

- Strategic advice, Victorian electricity distribution review and NSW gas distribution review (Client: Jemena Electricity Networks, 2009-2011) – retained as strategic adviser during the review and also provided advice on a range of technical regulatory economic issues, including on regulatory finance matters, service incentives, party contracts, allocation of costs between regulated and unregulated activities and forecasting of expenditure.
- Regulatory cost of debt (Client: Powercor Australia Limited, 2009-2010) – provided a series of reports addressing how the benchmark cost of debt should be established pursuant to the National Electricity Rules.
- Service incentive scheme (Client: Powercor Australia Limited, 2010) – assisted Powercor to quantify the financial effect that would have flowed if the former service performance incentive scheme had continued. Also prepared an expert report pointing to a material inconsistency in how the AER intended to close out the old scheme and the parameters for the new service performance incentive scheme, which was accepted by the AER.
- Input methodologies for NZ regulated businesses (Clients: Powerco NZ and Christchurch International Airport, 2009-2012) – advised in relation to the Commerce Commission's development of input methodologies, focussing asset valuation, the regulatory cost of capital, the use of productivity trends in regulation and the design of incentive-compatible regulation. Also assisted in briefing counsel in subsequent reviews.
- Commercial negotiation of landing charges (Client: Virgin Blue, 2009-2012) – economic advice to Virgin Blue during its commercial negotiation of landing charges to a number of major and secondary airports.
- Equity Betas for Regulated Electricity Transmission Activities (Client: Grid Australia, APIA, ENA, 2008) – Prepared a report presenting empirical evidence on the equity betas for regulated Australian electricity transmission and distribution businesses for the AER's five yearly review of WACC parameters for these industries. The report demonstrated the implications of a number of different estimation techniques and the reliability of the resulting estimates. Also prepared a joint paper with the law firm, Gilbert+Tobin, providing an economic and legal interpretation of the relevant (unique) statutory guidance for the review.
- Economic Principles for the Setting of Airside Charges (Client: Christchurch International Airport Limited, 2008-2013) – Provided advice on a range of economic issues relating to its resetting of charges for airside services, including the valuation of assets and treatment of revaluations, certain inputs to the cost of capital (beta and the debt margin) and the efficiency of prices over time and the implications for the depreciation of assets and measured accounting profit.
- Treatment of Inflation and Depreciation when Setting Landing Charges (Client: Virgin Blue, 2007 2008) – Provided advice on Adelaide Airport's proposed approach for setting landing charges for Adelaide Airport, where a key issue was how it proposed to deal with inflation and the implications for the path of prices over time. The advice also addressed the different formulae that are available for deriving an annual revenue requirement and the requirements for the different formulae to be applied consistently.
- Application of the Grid Investment Test to the Auckland 400kV Upgrade (Client: Electricity Commission of New Zealand, 2006) - As part of a team, undertook a review of the Commission's process for reviewing Transpower's proposed Auckland 400kV upgrade project and undertook a peer review of the Commission's application of the Grid Investment Test.

- Appropriate Treatment of Taxation when Measuring Regulatory Profit (Client: Powerco New Zealand, 2005 2006) - Prepared a series of statements on how taxation should be treated when measuring realised and projected regulatory profit.
- Application of Directlink for Regulated Status (Client: Directlink, 2003-2004) – Prepared advice on the economic efficiency of the conversion of an unregulated (entrepreneurial) interconnector to a regulated interconnector and how the asset should be valued for pricing purposes.
- Principles for the 'Stranding' of Assets by Regulators (Client: the Independent Pricing and Regulatory Tribunal, NSW, 2005) - Prepared a report discussing the relevant economic principles for a regulator in deciding whether to 'strand' assets for regulatory purposes (that is, to deny any further return on assets that are partially or unutilised).
- Principles for Determining Regulatory Depreciation Allowances (Client: the Independent Pricing and Regulatory Tribunal, NSW, 2003) - Prepared a report discussing the relevant economic and other principles for determining depreciation for the purpose of price regulation, and its application to electricity distribution. An important issue addressed was the distinction between accounting and regulatory (economic) objectives for depreciation.
- Methodology for Updating the Regulatory Value of Electricity Transmission Assets (Client: the Australian Competition and Consumer Commission, 2003) - Prepared a report assessing the relative merits of two options for updating the regulatory value of electricity transmission assets at a price review - which are to reset the value at the estimated 'depreciated optimised replacement cost' value, or to take the previous regulatory value and deduct depreciation and add the capital expenditure undertaken during the intervening period (the 'rolling-forward' method). This paper was commissioned as part of the ACCC's review of its Draft Statement of Regulatory Principles for electricity transmission regulation.
- Application of Murraylink for Regulated Status (Client: Murraylink Transmission Company, 2003) – Prepared advice on the economic efficiency of the conversion of an unregulated (entrepreneurial) interconnector to a regulated interconnector and how the asset should be valued for pricing purposes.
- Proxy Beta for Regulated Gas Transmission Activities (Client: the Australian Competition and Consumer Commission, 2002) - Prepared a report presenting the available empirical evidence on the 'beta' (which is a measure of risk) of regulated gas transmission activities. This evidence included beta estimates for listed firms in Australia, as well as those from the United States, Canada and the United Kingdom. The report also included a discussion of empirical issues associated with estimating betas, and issues to be considered when using such estimates as an input into setting regulated charges.
- Treatment of Working Capital when setting Regulated Charges (Client: the Australian Competition and Consumer Commission, 2002) - Prepared a report assessing whether it would be appropriate to include an explicit (additional) allowance in the benchmark revenue requirement in respect of working capital when setting regulated charges.
- Pricing Principles for the South West Pipeline (Client: Esso Australia, 2001) - As part of a team, prepared a report describing the pricing principles that should apply to the South West Pipeline (this gas transmission pipeline was a new asset, linking the existing system to a new storage facility and additional gas producers).
- Likely Regulatory Outcome for the Price for Using a Port (Client: MIM, 2000) - Provided advice on the outcome that could be expected were the dispute over the price for the use of a major port to be resolved by an economic regulator. The main issue of contention was the valuation of the port

assets (for regulatory purposes) given that the installed infrastructure was excess to requirements, and the mine had a short remaining life.

- Relevance of 'Asymmetric Events' in the Setting of Regulated Charges (Client: TransGrid, 1999) - In conjunction with William M Mercer, prepared a report (which was submitted to the Australian Competition and Consumer Commission) discussing the relevance of downside (asymmetric) events when setting regulated charges, and quantifying the expected cost of those events.

### *Major roles for regulators*

- Aurizon Network price review (Client: Queensland Competition Authority, 2013-14) – advised the QCA on the appropriate rate of return (discount rate) for the Aurizon Network business, which included an assessment of the relative risk of Aurizon Network compared to other infrastructure sectors, advice on the appropriate benchmark gearing level and on the benchmark debt interest rate.
- Victorian Gas Distribution Price Review (Client: the Essential Services Commission, Vic, 2006 2008) - Provided advice to the Essential Service Commission in relation to its review of gas distribution access arrangements on the treatment of outsourcing arrangements, finance issues, incentive design and other economic issues.
- Envestra Gas Distribution Price Review (Client: the Essential Services Commission, SA, 2006) - Provided advice on several finance related issues (including 'return on assets' issues and the financial effect of Envestra's invoicing policy), and the treatment of major outsourcing contracts when setting regulated charges.
- DBCT price review (Client: QCA, Qld, 2004-2006) – advice on a number of finance related issues, including the calculation of IDC for a DORC valuation, cost of debt and equity beta.
- Victorian Electricity Distribution Price Review (Client: the Essential Services Commission, Vic, 2003 2005) - Provided advice to the Essential Service Commission on a range is economic issues related to current review of electricity distribution charges, including issues related to finance, forecasting of expenditure and the design of incentive arrangements for productive efficiency and service delivery. Was a member of the Steering Committee advising on strategic regulatory issues.
- Victorian Water Price Review (Client: the Essential Services Commission, Vic, 2003 2005) - Provided advice to the Essential Services Commission on the issues associated with extending economic regulation to the various elements of the Victorian water sector. Was a member of the Steering Committee advising on strategic regulatory issues, and also provided advice on specific issues, most notably the determination of the initial regulatory values for the water businesses and the role of developer charges.
- ETSA Electricity Distribution Price Review (Client: the Essential Services Commission, SA, 2002 2005) - Provided advice on the 'return on assets' issues associated with the review of ETSA's regulated distribution charges, including the preparation of consultation papers. The issues covered include the valuation of assets for regulatory purposes and cost of capital issues. Also engaged as a quality assurance adviser on other consultation papers produced as part of the price review.
- Victorian Gas Distribution Price Review (Client: the Essential Services Commission, Vic, 2001 2002) - Economic adviser to the Essential Services Commission during its assessment of the price caps and other terms and conditions of access for the three Victorian gas distributors. Was responsible for all issues associated with capital financing (including analysis of the cost of capital and assessment of risk generally, and asset valuation), and supervised the financial modelling and derivation of regulated charges. Also advised on a number of other issues, including the design of

incentive arrangements, the form of regulation for extensions to unreticulated townships, and the principles for determining charges for new customers connecting to the system.

- ETSA Electricity Distribution Price Review (Client: the South Australian Independent Industry Regulator, 2000 2001) - As part of a team, prepared a series of reports proposing a framework for the review. The particular focus was on the design of incentives to encourage cost reduction and service improvement, and how such incentives can assist the regulator to meet its statutory obligations. Currently retained to provide commentary on the consultation papers being produced by the regulator, including strategic or detailed advice as appropriate.
- Dampier to Bunbury Natural Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 2000 2002) - Provided economic advice to the Office of the Independent Regulator during its continuing assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft decision, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Represented the Office on these matters at a public forum, and provided strategic advice to the Independent Regulator on the draft decision.
- Goldfield Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 2000 2004) - Provided economic advice to the Office of the Independent Regulator during its continuing assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft decision, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Represented the Office on these matters at a public forum, and provided strategic advice to the Independent Regulator on the draft decision.
- Victorian Electricity Distribution Price Review (Client: the Office of the Regulator General, Vic, 1999 2000) - Economic adviser to the Office of the Regulator General during its review of the price caps for the five Victorian electricity distributors. Had responsibility for all issues associated with capital financing, including analysis of the cost of capital (and assessment of risk generally) and asset valuation, and supervised the financial modelling and derivation of regulated charges. Also advised on a range of other issues, including the design of incentive regulation for cost reduction and service improvement, and the principles for determining charges for new customers connecting to the system.
- Victorian Ports Corporation and Channels Authority Price Review (Client: the Office of the Regulator General, Vic, 2000) - Advised on the finance related issues (cost of capital and the assessment of risk generally, and asset valuation), financial modelling (and the derivation of regulated charges), and on the form of control set over prices. Principal author of the sections of the draft and final decision documents addressing the finance related and price control issues.
- AlintaGas Gas Distribution Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 1999 2000) - Provided economic advice to the Office of the Independent Regulator during its assessment of the regulated charges and other terms and conditions of access for the gas pipeline. This advice included providing a report assessing the cost of capital associated with the regulated activities, overall review of all parts of the draft and final decisions, with particular focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Also provided strategic advice to the Independent Regulator on the draft and final decisions.
- Parmelia Gas Pipeline Access Arrangement Review (Client: the Independent Gas Pipelines Access Regulator, WA, 1999 2000) - Provided economic advice to the Office of the Independent Regulator during its assessment of the regulated charges and other terms and conditions of access for the gas pipeline, including a review of all parts of the draft and final decisions, with particular

focus on the sections addressing the cost of capital (and assessment of risk generally), asset valuation and financial modelling. Also provided strategic advice to the Independent Regulator on the draft and final decisions.

- Victorian Gas Distribution Price Review (Client: the Office of the Regulator General, Vic, 1998) - Economic adviser to the Office of the Regulator General during its assessment of the price caps and other terms and conditions of access for the three Victorian gas distributors. Major issues addressed included the valuation of assets for regulatory purposes, cost of capital financing and financial modelling. Principal author of the draft and final decision documents.

***Development/Review of Regulatory Frameworks***

- Review of the Australian energy economic regulation (Client: Energy Networks Association, 2010-2012) – assisting the owners of energy infrastructure to engage in the current wide-ranging review of the regime for economic regulation of energy infrastructure. Advice has focussed in particular on the setting of the regulatory WACC and on the regime of financial incentives for capital expenditure efficiency, and included strategic and analytical advice, preparation of expert reports and assistance with ENA submissions.
- Review of the Australian electricity transmission framework (Client: Grid Australia, 2010-2013) – assisting the owners of electricity transmission assets to participate in the wide-ranging review of the framework for electricity transmission in the national electricity market, covering such matters as planning arrangements, the form of regulation for non-core services and generator capacity rights and charging. Has included analytical advice on policy choices, facilitation of industry positions and articulation of positions in submissions.
- Implications of greenhouse policy for the electricity and gas regulatory frameworks (Client: the Australian Energy Market Commission, 2008-2009) – Provided advice to the AEMC in its review of whether changes to the electricity and gas regulatory frameworks is warranted in light of the proposed introduction of a carbon permit trading scheme and an expanded renewables obligation. Issues addressed include the framework for electricity connections, the efficiency of the management of congestion and locational signals (including transmission pricing) for generators and the appropriate specification of a cost benefit test for transmission upgrades in light of the two policy initiatives.
- Economic incentives under the energy network regulatory regimes for demand side participation (Client: Australian Energy market Commission, 2006) – Provided advice to the AEMC on the incentives provided by the network regulatory regime for demand side participation, including the effect of the form of price control (price cap vs. revenue cap), the cost-efficiency arrangements, the treatment of losses and the regime for setting reliability standards.
- Implications of greenhouse policy for the electricity and gas regulatory frameworks (Client: the Australian Energy Market Commission, 2008) - Provided advice to the AEMC in its review of whether changes to the electricity and gas regulatory frameworks is warranted in light of the proposed introduction of a carbon permit trading scheme and an expanded renewables obligation. Issues addressed include the framework for electricity connections, the efficiency of the management of congestion and locational signals for generators and the appropriate specification of a cost benefit test for transmission upgrades in light of the two policy initiatives.
- Application of a 'total factor productivity' form of regulation (Client: the Victorian Department of Primary Industries, 2008) - Assisted the Department to develop a proposed amendment to the regulatory regime for electricity regulation to permit (but not mandate) a total factor productivity approach to setting price caps – that is, to reset prices to cost at the start of the new regulatory

period and to use total factor productivity as an input to set the rate of change in prices over the period.

- Expert Panel on Energy Access Pricing (Client: Ministerial Council on Energy, 2005 2006) - Assisted the Expert Panel in its review of the appropriate scope for commonality of access pricing regulation across the electricity and gas, transmission and distribution sectors. The report recommended best practice approaches to the appropriate forms of regulation, the principles to guide the development of detailed regulatory rules and regulatory assessments, the procedures for the conduct of regulatory reviews and information gathering powers.
- Productivity Commission Review of Airport Pricing (Client: Virgin Blue, 2006) - Prepared two reports for Virgin Blue for submission to the Commission's review, addressing the economic interpretation of the review principles, asset valuation, required rates of return for airports and the efficiency effects of airport charges and presented the findings to a public forum.
- AEMC Review of the Rules for Setting Transmission Prices (Client: Transmission Network Owners, 2005 2006) - Advised a coalition comprising all of the major electricity transmission network owners during the new Australian Energy Market Commission's review of the rules under which transmission prices are determined. Prepared advice on a number of issues and assisted the owners to draft their submissions to the AEMC's various papers.
- Advice on Energy Policy Reform Issues (Client: Victorian Department of Infrastructure/Primary Industries, 2003 ongoing) - advice to the Department regarding on issues relating to the transition to national energy market arrangements, cross ownership rules for the energy sector, the reform of the cost benefit test for electricity transmission investments and the scope for lighted handed regulation in gas transmission.
- Productivity Commission Review of the National Gas Code (Client: BHPBilliton, 2003 2004) - Produced two submissions to the review, with the important issues including the appropriate form of regulation for the monopoly gas transmission assets (including the role of incentive regulation), the requirement for ring fencing arrangements, and the presentation of evidence on the impact of regulation on the industry since the introduction of the Code.
- Development of the National Third Party Access Code for Natural Gas Pipeline Systems Code (Client: commenced while a Commonwealth Public Servant, after 1996 the Commonwealth Government, 1994-1997) - Was involved in the development of the new legal framework for the economic regulation of gas transmission and distribution systems, with advice spanning the overall form of regulation to apply to the infrastructure and the appropriate pricing principles (including the valuation of assets for regulatory purposes and the use of incentive regulation), ring fencing arrangements between monopoly and potentially contestable activities, and whether upstream infrastructure should be included within the regime.

### *Licencing / Franchise Bidding*

- Competitive Tender for Gas Distribution and Retail in Tasmania (Client: the Office of the Tasmanian Energy Regulator, 2001 2002) - Economic adviser to the Office during its oversight of the use of a competitive tender process to select a gas distributor/retailer for Tasmania, and simultaneously to set the regulated charges for an initial period.
- Issuing of a Licence for Powercor Australia to Distribute Electricity in the Docklands (Client: the Office of the Regulator General, Vic, 1999) - Economic adviser to the Office during its assessment of whether a second distribution licence should be awarded for electricity distribution in the Docklands area (a distribution licence for the area was already held by CitiPower, and at that time, no area in the state had multiple licensees). The main issue concerned the scope for using

'competition for the market' to discipline the price and service offerings for an activity that would be a monopoly once the assets were installed.

*Assessments of the degree and prospects for competition / need for regulation*

- Transmission connection assets (Client: Grid Australia, 2012) – prepared an assessment of the degree of competition in the provision of transmission connection assets, which included advice on the market within which the service is provided and an assessment of the degree of rivalry (including the prospects for entry) in that market.
- South East network (Client: Kimberley Clarke, 2011) – advised whether the gas pipeline from which it is supplied would pass the threshold for regulation.
- Pilbara rail access (Client: BHP Billiton) – assisted in the preparation of expert evidence on whether the Pilbara rail infrastructure passed the test for declaration of essential infrastructure, with specific focus on the analysis of whether there would be a promotion of competition in other markets from the granting of access.
- Need for regulation of gas transmission pipelines (Client: SA Government) – advised as to whether the Moomba to Adelaide pipeline was likely to pass the threshold required for regulation under the Gas Code, focussing upon an assessment of the degree of competition for its services.

## B. Pricing in non-infrastructure markets

*Assessment of competition in energy retail markets*

- Assessment of retail competition in Victoria and South Australia (Client: Australian Energy Market Commission) – assisted the Commission to quantity and interpret information on margins for retailers and to draw inferences about the level of competition. Also provided a peer review of the Commission's overall assessment of the level of competition, including the Commission's overall analytical framework and the other indicators it considered.

*Default/transitional regulated prices for retail functions*

- ACT transitional tariff review (Client: ICRC, ACT, 2010) – advised the regulator on an appropriate method to derive a benchmark wholesale electricity purchase cost for an electricity retailer, including the relationship between the wholesale cost and hedging strategy.
- South Australian default gas retail price review (Client: the Essential Services Commission, SA, (2007-2008) – derived estimates of the benchmark operating costs for a gas retailer and the margin that should be allowed. This latter exercise included a bottom-up estimate of the financing costs incurred by a gas retail business.
- South Australian default electricity retail price review (Client: the Essential Services Commission, SA, 2007) - estimated the wholesale electricity purchase cost for the default electricity retail supplier in South Australia. The project involved the development of a model for deriving an optimal portfolio of hedging contracts for a prudent and efficient retailer, and the estimate of the expected cost incurred with that portfolio.
- South Australian default gas retail price review (Client: the Essential Services Commission, SA, 2005) - As part of a team, advised the regulator on the cost of purchasing gas transmission services for a prudent and efficient SA gas retailer, where the transmission options included the use of the Moomba Adelaide Pipeline and SEAGas Pipeline, connecting a number of gas production sources.

### *Market Design*

- Options for the Development of the Australian Gas Wholesale Market (Client: the Ministerial Committee on Energy, 2005) - As part of a team, assessed the relative merits of various options for enhancing the operation of the Australian gas wholesale markets, including by further dissemination of information (through the creation of bulletin boards) and the management of retailer imbalances and creation of price transparency (by creating short term trading markets for gas).
- Review of the Victorian Gas Market (Client: the Australian Gas Users Group, 2000 2001) - As part of a team, reviewed the merits (or otherwise) of the Victorian gas market. The main issues of contention included the costs associated with operating a centralised market compared to the potential benefits, and the potential long term cost associated with having a non-commercial system operator.
- Development of the Market and System Operation Rules for the Victorian Gas Market (Client: Gas and Fuel Corporation, 1960) - Assisted with the design of the 'market rules' for the Victorian gas market. The objective of the market rules was to create a spot market for trading in gas during a particular day, and to use that market to facilitate the efficient operation of the system.

### *Transfer pricing*

- Application of a netback calculation for infrastructure under the Minerals Resource Rent Tax (Client: BHPB, 2011-13) – advised on how the arms-length price for the use of downstream infrastructure should be determined, including the valuation of assets, weighted average cost of capital and on the implications for the price of incentive compatible contracts.

### *Pricing strategy*

- Pricing for telephone directory services (Sensis, 2012) – as part of a team, advised on how margins could be maximised for the telephone directory business in the context of falling print advertising and a very competitive digital market, informed by the application of econometric techniques.
- Effectiveness of promotional strategies (Target, 2011-12) – as part of a team, applied econometric techniques to assess the effectiveness of Target's promotional strategies, with tools developed for management to improve profitability.
- Optimal pricing (Client: Coles, 2011-12) – applied econometric techniques to assist Coles to set relativities of prices within "like" products and developed a method to test the effectiveness of promotional strategies.

## C. Regulatory due diligence and other finance work

- Sale of the Sydney Desalination Plant (Client: a consortium of investors, 2011-12) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Sale of the Abbot Point Coal Terminal port (Client: a consortium of investors / debt providers, 2010-11) – Prepared a regulatory due diligence report for potential acquirer of the asset, including a review of the financial modelling of future pricing decisions.
- Private Port Development (Client: Major Australian Bank, 2008) - Prepared a report on the relative merits of different governance and financing arrangements for a proposed major port development that would serve multiple port users.

- Sale of Allgas gas distribution network (Client: confidential, 2006) – Prepared a regulatory due diligence report for potential acquirer of the asset.
- Review of Capital Structure (Client: major Victorian water entity, 2003) - Prepared a report (for the Board) advising on the optimal capital structure for a particular Victorian water entity, taking account of the likely impact of cost based regulation.

### D. Expert Witness Roles

- Abbot Point Coal Terminal Pricing Arbitration (Client: Adani, 2013) – Prepared a number of expert reports for the arbitration on economic issues arising from the application of the cost-based formula in the pricing agreement, including the economic meaning of key terms, the valuation of assets (and specifically the role and calculation of interest during construction), the quantification of transaction costs of raising finance and the calculation of the required rate of return (most notably, the benchmark cost of debt finance).
- New Zealand Input Methodologies (Clients: Powerco and Christchurch International Airport Limited, 2009-2012) – Prepared expert report for both clients on a range of economic issues, including the valuation of assets, weighted average cost of capital, cost allocation, the regulatory treatment of taxation and interpretation of the new purpose statement in the Commerce Act. Appeared as an expert before the Commerce Commission in the key conferences held during the review. Also assisted the clients in their subsequent merit reviews of the Commission's decision.
- Victorian gas market dispute resolution panel (Client: VENCorp, 2008) – Prepared a report and was cross examined in relation to the operation of the Victorian gas market in the presence of supply outages.
- Consultation on Major Airport Capital Expenditure Judicial Review (Client: Christchurch International Airport, 2008) - Prepared an affidavit for a judicial review on whether the airport consulted appropriately on its proposed terminal development. Addressed the rationale, from the point of view of economics, of separating the decision of 'what to build' from the question of 'how to price' in relation to new infrastructure.
- New Zealand Commerce Commission Draft Decision on Gas Distribution Charges (Client: Powerco, 2007 08) - Prepared an expert statement about the valuation of assets for regulatory purposes, with a focus on the treatment of revaluation gains, and a memorandum about the treatment of taxation for regulatory purposes and appeared before the Commerce Commission.
- Sydney Airport Domestic Landing Change Arbitration (Client: Virgin Blue, 2007) - Prepared two expert reports on the economic issues associated with the structure of landing charges (note: the evidence was filed, but the parties reached agreement before the case was heard).
- New Zealand Commerce Commission Gas Price Control Decision – Judicial Review to the High Court (Client: Powerco, 2006) - Provided four affidavits on the regulatory economic issues associated with the calculation of the allowance for taxation for a regulatory purpose, addressing in particular the need for consistency in assumptions across different regulatory calculations.
- Victorian Electricity Distribution Price Review – Appeal to the ESC Appeal Panel: Service Incentive Risk (Client: the Essential Services Commission, Vic, 2005 2006) - Prepared expert evidence on the workings of the ESC's service incentive scheme and the question of whether the scheme was likely to deliver a windfall gain or loss to the distributors (note: the evidence was filed, but the appellant withdrew this ground of appeal prior to the case being heard).
- Victorian Electricity Distribution Price Review – Appeal to the ESC Appeal Panel: Price Rebalancing (Client: the Essential Services Commission, Vic, 2005 2006) - Prepared expert

evidence on the workings of the ESC's tariff basket form of price control, with a particular focus on the ability of the electricity distributors to rebalance prices and the financial effect of the introduction of 'time of use' prices in this context (note: the evidence was filed, but the appellant withdrew this ground of appeal prior to the case being heard).

- New Zealand Commerce Commission Review of Information Provision and Asset Valuation (Client: Powerco New Zealand, 2005) - Appeared before the Commerce Commission for Powerco New Zealand on several matters related to the appropriate measurement of profit for regulatory purposes related to its electricity distribution business, most notably the treatment of taxation in the context of an incentive regulation regime.
- Duke Gas Pipeline (Qld) Access Arrangement Review – Appeal to the Australian Competition Tribunal (Client: the Australia Competition and Consumer Commission, 2002) - Prepared expert evidence on the question of whether concerns of economic efficiency are relevant to the non price terms and conditions of access (note: the evidence was not filed as the appellant withdrew its evidence prior to the case being heard).
- Victorian Electricity Distribution Price Review – Appeal to the ORG Appeal Panel: Rural Risk (Client: the Office of the Regulator General, Vic, 2000) - Provided expert evidence (written and oral) to the ORG Appeal Panel on the question of whether the distribution of electricity in the predominantly rural areas carried greater risk than the distribution of electricity in the predominantly urban areas.
- Victorian Electricity Distribution Price Review – Appeal to the ORG Appeal Panel: Inflation Risk (Client: the Office of the Regulator General, Vic, 2000) - Provided expert evidence (written and oral) to the ORG Appeal Panel on the implications of inflation risk for the cost of capital associated with the distribution activities.

## Qualifications and memberships

- Bachelor Economics (First Class Honours) University of Adelaide
- CEDA National Prize for Economic Development

# B. Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia

# FEDERAL COURT OF AUSTRALIA
# *Practice Note CM 7*
# EXPERT WITNESSES IN PROCEEDINGS IN THE FEDERAL COURT OF AUSTRALIA

*Practice Note CM 7 issued on 1 August 2011 is revoked with effect from midnight on 3 June 2013 and the following Practice Note is substituted.*

## Commencement

1. This Practice Note commences on 4 June 2013.

## Introduction

2. Rule 23.12 of the Federal Court Rules 2011 requires a party to give a copy of the following guidelines to any witness they propose to retain for the purpose of preparing a report or giving evidence in a proceeding as to an opinion held by the witness that is wholly or substantially based on the specialised knowledge of the witness (see **Part 3.3 - Opinion** of the *Evidence Act 1995* (Cth)).

3. The guidelines are not intended to address all aspects of an expert witness's duties, but are intended to facilitate the admission of opinion evidence[1], and to assist experts to understand in general terms what the Court expects of them. Additionally, it is hoped that the guidelines will assist individual expert witnesses to avoid the criticism that is sometimes made (whether rightly or wrongly) that expert witnesses lack objectivity, or have coloured their evidence in favour of the party calling them.

## Guidelines

### 1. General Duty to the Court[2]

1.1 An expert witness has an overriding duty to assist the Court on matters relevant to the expert's area of expertise.

1.2 An expert witness is not an advocate for a party even when giving testimony that is necessarily evaluative rather than inferential.

1.3 An expert witness's paramount duty is to the Court and not to the person retaining the expert.

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[1] As to the distinction between expert opinion evidence and expert assistance see *Evans Deakin Pty Ltd v Sebel Furniture Ltd* [2003] FCA 171 per Allsop J at [676].

[2] The "*Ikarian Reefer*" (1993) 20 FSR 563 at 565-566.

## 2. The Form of the Expert's Report[3]

2.1 An expert's written report must comply with Rule 23.13 and therefore must

(a) be signed by the expert who prepared the report; and

(b) contain an acknowledgement at the beginning of the report that the expert has read, understood and complied with the Practice Note; and

(c) contain particulars of the training, study or experience by which the expert has acquired specialised knowledge; and

(d) identify the questions that the expert was asked to address; and

(e) set out separately each of the factual findings or assumptions on which the expert's opinion is based; and

(f) set out separately from the factual findings or assumptions each of the expert's opinions; and

(g) set out the reasons for each of the expert's opinions; and

(ga) contain an acknowledgment that the expert's opinions are based wholly or substantially on the specialised knowledge mentioned in paragraph (c) above[4]; and

(h) comply with the Practice Note.

2.2 At the end of the report the expert should declare that "[the expert] has *made all the inquiries that* [the expert] *believes are desirable and appropriate and that no matters of significance that* [the expert] *regards as relevant have, to* [the expert's] *knowledge, been withheld from the Court*."

2.3 There should be included in or attached to the report the documents and other materials that the expert has been instructed to consider.

2.4 If, after exchange of reports or at any other stage, an expert witness changes the expert's opinion, having read another expert's report or for any other reason, the change should be communicated as soon as practicable (through the party's lawyers) to each party to whom the expert witness's report has been provided and, when appropriate, to the Court[5].

2.5 If an expert's opinion is not fully researched because the expert considers that insufficient data are available, or for any other reason, this must be stated with an indication that the opinion is no more than a provisional one. Where an expert witness who has prepared a report believes that it may be incomplete or inaccurate without some qualification, that qualification must be stated in the report.

2.6 The expert should make it clear if a particular question or issue falls outside the relevant field of expertise.

2.7 Where an expert's report refers to photographs, plans, calculations, analyses, measurements, survey reports or other extrinsic matter, these must be provided to the opposite party at the same time as the exchange of reports[6].

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[3] Rule 23.13.

[4] See also *Dasreef Pty Limited v Nawaf Hawchar* [2011] HCA 21.

[5] The *"Ikarian Reefer"* [1993] 20 FSR 563 at 565

[6] The *"Ikarian Reefer"* [1993] 20 FSR 563 at 565-566. See also Ormrod *"Scientific Evidence in Court"* [1968] Crim LR 240

**3. Experts' Conference**

3.1 If experts retained by the parties meet at the direction of the Court, it would be improper for an expert to be given, or to accept, instructions not to reach agreement. If, at a meeting directed by the Court, the experts cannot reach agreement about matters of expert opinion, they should specify their reasons for being unable to do so.

J L B ALLSOP
Chief Justice
4 June 2013