Attachment 1.6

Australian Gas Networks – AER Gas Price Review

A report by HoustonKemp

2016/17 to 2020/21 Access Arrangement Information

Australian Gas Networks

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HOUSTONKEMP
Economists

Australian Gas Networks – AER Gas Price Review

A report for Johnson Winter & Slattery

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Disclaimer

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1. Introduction

I have been asked by Johnson Winter & Slattery (JWS) to prepare this report on behalf of Australian Gas Networks Ltd (AGN).

AGN is to submit a revised access arrangement proposal in relation to the terms and conditions for use of its South Australian gas distribution network to the Australian Energy Regulator (AER) on 1 July 2015. The AER will then publish a Draft Decision on AGN's revised proposal.

JWS has asked that I undertake an economic review of the AER's Rate of Return Guideline (the Guideline)[1] published in December 2013, as well as its recent Preliminary and Final Decisions (the recent decisions)[2] in relation to a number of electricity network service providers and natural gas pipeline service provider, as they relate to its approach to the rate of return and gamma. I have been asked to undertake this review on the basis that the AER's approach in these decisions gives an indication of its likely approach in relation to AGN's revised access arrangement, and to express an opinion on the extent to which such a decision would be likely to contribute to the achievement of the national gas objective (NGO) and to represent a materially preferable NGO decision.

1.1 Scope of report

The essential focus of the review I have been asked to undertake is the economic reasoning that underpins the AER's Guideline and recent decisions in respect of the constituent components relating to the rate of return and gamma, assessed by reference to the NGO. It is not the purpose of my review to address in a detailed manner the individual elements of the Guideline or recent decisions. Indeed, AGN has separately commissioned a number of experts to review various matters arising in constituent components of the Guideline and recent decisions, and the reports prepared by those experts have been made available to me in order to prepare this report[3].

Rather, my report assesses the extent to which various components of the Guideline and recent decisions satisfy the requirement that, where there are two or more possible decisions, the AER must make the one that will or is likely to contribute to the achievement of the NGO to the greatest possible degree. I have also been asked whether the errors identified by the various experts from which AGN has sought opinions, if corrected, would or would be likely to result in a materially preferable decision in terms of achievement of the NGO. Finally, in making this assessment I have also been asked to identify and evaluate the manner in which any constituent components of the decision that each expert has been asked to consider relate to each other and to the matters that each expert has raised as errors.

JWS's instructions to me are attached as Annexure A1 to my report.

1.2 Qualifications

I am a founding Partner of the economic consulting firm, HoustonKemp. Over a period of twenty five years I have accumulated substantial experience in the economic analysis of markets and the provision of expert advice and testimony in litigation, business strategy and policy contexts. I have developed that expertise in the course of advising corporations, regulators and governments in Australia and the Asia-Pacific region on a wide range of regulatory, competition and financial economics matters.

[1] AER, *Rate of return guideline*, Dec 2013.

[2] The AER has recently issued Preliminary Decisions in relation to SA Power Networks, Energex and Ergon Energy and Final Decisions in relation to TransGrid, Networks NSW, ActewAGL, Tas Networks, Directlink and Jemena Gas Networks.

[3] A table of these expert reports, prepared by SFG, NERA, Incenta, Frontier, CEG and United States regulatory experts Professor Malko and Mr Knecht, can be found in JWS's instructions to me attached as Annexure A1.

My industry sector experience spans aviation, beverages, building products, cement, e-commerce, electricity and gas, forest products, grains, medical waste, mining, payments networks, office products, petroleum, ports, rail transport, retailing, scrap metal, securities markets, steel, telecommunications, thoroughbred racing, waste processing and water. I have testified on these matters on numerous occasions before arbitrators, appeal panels, regulators, the Federal Court of Australia, the Competition Tribunal and other judicial or adjudicatory bodies.

I hold a BSc (Hons) in Economics, a University of Canterbury post-graduate degree, which I was awarded with first class honours in 1983.

Of some relevance to matters the subject of this report, in 2004 I was one of three members of an expert panel retained by the Standing Committee of Officials of the then Ministerial Council on Energy to advise on the specification of a proposed national electricity objective, which was to be included in the then proposed national electricity law. The present form of the NGO has its origins in the findings and recommendations of that expert panel.

Separately, in December 2005 I was appointed to an expert panel convened by the Minister for Industry and Resources, the Hon Ian Macfarlane, to prepare a report for the Ministerial Council on Energy on the harmonisation of the price determination elements of the access regimes for electricity network and gas pipeline services. The expert panel provided its report in April 2006, and many of its recommendations form the basis for the current framework of national gas and electricity laws and rules.

A copy of my curriculum vitae is attached as Annexure A2.

In preparing this report I have been provided with a copy of the Federal Court practice note CM7, entitled *Expert Witnesses in Proceedings in the Federal Court of Australia* (the CM7 Guidelines). I have read the CM7 Guidelines and agree to be bound by them. My declaration in compliance with the CM7 Guidelines is set out in section 6.

I have been assisted in the preparation of this report by my Sydney-based colleagues, Brendan Quach and Richard Grice. Notwithstanding this assistance, the opinions in this report are my own, and I take full responsibility for them.

1.3 Structure of report

I have structured the remainder of my report as follows:

- in section 2, I summarise the essential requirements governing decision making under the National Gas Law and the National Gas Rules, and the questions that JWS has asked me to address in relation to the AER's Guideline and recent decisions;
- in section 3, I discuss the economic role of the NGO, the principles that should be adopted in a regulatory regime that promotes the NGO, and the role of the building block approach in meeting those principles and the NGO;
- in section 4, I present my assessment of the AER's Guideline and recent decisions and provide my opinion as to whether, having regard to a number of expert reports that I have reviewed, the AER's approach contained therein is likely to meet the contribution to the NGO requirement;
- in section 5, I present my opinion as to whether the AER's approach in its Guideline and recent decisions is likely to meet the preferable designated reviewable regulatory decision requirement and, separately, whether the errors identified by each of the experts, if corrected, would be likely to result in a materially preferable designated NGO decision; and
- finally, section 6 contains my declaration, in accordance with the CM7 Guidelines.

2. Context and Scope of Report

Before expanding on the scope and purpose of my report, it is helpful to summarise the context for the AER's revised access arrangement determination for AGN, the requirements that govern decision making under the National Gas Law (the law) and the National Gas Rules (the rules) along with the particular questions that I have been asked to address in assessing the Guideline and recent decisions.

Necessarily, the summary I set out below is a condensation of that provided in JWS's instructions to me.[4] To the extent that there may be differences between my summary of the arrangements that govern the AER's revised access arrangement determination and that set out in the instructions to me, I confirm that I have taken JWS's instructions as providing definitive guidance.

2.1 National Gas Objective

The National Gas Objective or NGO forms a foundational reference point for decisions made by regulators under the law and its accompanying rules. The NGO states that: [5]

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

I explain my understanding of the NGO in section 3. For the purpose of this context-setting part of my report, it is important to note that the decision the AER is to make in relation to AGN's revised access arrangement is a 'designated reviewable regulatory decision'.[6] Further, by nature of the rules that govern the AER's review of a revised access arrangement proposal, such a decision includes a number of constituent components.

2.2 NGO reference point for AER decision making

Under the law the AER must, in performing or exercising an economic regulatory function or power, including the making of a designated reviewable regulatory decision, meet certain obligations. These are that the AER must:

- perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of the NGO;
- specify the manner in which the constituent components of the decision relate to each other; and
- specify the manner in which that interrelationship has been taken into account in the making of the decision.

Further, in making a designated reviewable regulatory decision, when there are two or more possible decisions that could be made, the AER is required:

- to make the one that the AER is satisfied will contribute, or is likely to contribute, to the achievement of the NGO to the greatest possible degree; and
- to specify the basis of that satisfaction.

Finally, in any merits review of the AER's final decision, the Australian Competition Tribunal (the Tribunal) is only entitled to vary or set aside the designated reviewable regulatory decision if it is satisfied that to do so

[4] JWS, Letter to Greg Houston, 25 June 2015.

[5] The law, s 23.

[6] JWS, Letter to Greg Houston, 25 June 2015.

will, or is likely to, result in a decision that is materially preferable to the AER's designated reviewable regulatory decision in terms of contributing to the achievement of the NGO.

2.3 Scope of report

I have been asked by JWS to review the AER's Guideline and recent decisions, and a number of expert reports on various aspects of the approach in the Guideline and recent decisions, with a particular attention to errors identified by each expert. I have been asked to undertake this review on the basis that the AER's approach in these decisions gives an indication of the AER's likely approach in respect to AGN's revised access arrangement. Finally, I have been asked to explain and/or provide my opinion on a variety of general and specific matters arising in relation to the NGO and elements of the rules that govern the assessment of AGN's revised access arrangement.

2.3.1 Question 1

The general questions on which I have been asked to provide my opinion relate to:

- my understanding of the NGO requirement;
- the principles that should be adopted in a regime that promotes the NGO requirement, including the relevance of the Revenue and Pricing Principles set out in the law in this regard;
- the role of the building block approach in the rules and whether it is concordant with those principles and therefore the NGO requirement; and
- how, in my view, a failure to comply with those principles and/or rules as they relate to the building blocks approach is, or is likely, to result in a failure to meet the NGO requirement.

I address these questions in section 3 of my report.

In addition, I have also been asked to explain and provide my opinion on a number of questions arising directly from the AER's Guideline and recent decisions. In particular, I have been asked:

- to summarise any matters adopted by, and errors made by, the AER as identified in the expert reports that suggest the principles, building blocks or other rules have been offended;
- to summarise each material constituent component of the AER's decisions on the rate of return and gamma, and the overall impact on the business of AGN over the next regulatory control period;[7] and
- to opine on whether, having regard to all of the material that I refer to above, the AER has met the NGO requirement.

I address this set of questions in section 4 of my report.

2.3.2 Questions 2 and 3

Drawing on this framework of considerations and analysis, JWS has also asked me to assess and report on two further substantive questions. These are whether, having regard to the reports prepared by the experts:

- the AER will have met the requirement that, if two or more designated reviewable regulatory decisions could be made, it has made the one that contributes to the NGO to the greatest possible degree; and
- whether the errors identified in each of the reports, if corrected, would, or would be likely to, result in a materially preferable designated NGO decision overall.

In making the last of these assessments, I have been asked to include:

[7] By 'next regulatory control period' I denote the 2016 to 2020 regulatory control period for AGN. Any reference to the 'current regulatory control period' refers either to the 2011 to 2016 regulatory control period for AGN or the regulatory control period currently underway for other electricity network and natural gas pipeline service providers.

- if my assessment is affirmative, the basis upon which I make that assessment;
- a consideration of how the constituent components of the decision considered by the experts interrelate with each other and with the matters raised by the experts as errors;
- how the Revenue and Pricing Principles set out in the law have been taken into account; and
- in assessing the extent that corrections of the errors identified by the experts will contribute to the NGO, my consideration of the decision as a whole in respect of the topics reviewed by the experts.

I address these questions in section 5 of my report.

3. The NGO and Principles for its Promotion

In this section I set out my response to the general issues arising in the first set of questions put to me and summarised in section 2.3.1, ie, those corresponding to:

- the economic role of the NGO:
- the principles that should be adopted in a regulatory regime that promotes the NGO, including the Revenue and Pricing Principles; and
- the role of the building blocks under the rules in meeting those principles and the NGO.

3.1 National Gas Objective

The National Gas Objective or NGO is the foundational reference point for decisions made by regulators under the National Gas Law and its accompanying rules. In other words, the law requires the AER to perform its functions and to exercise its power in a manner that will, or is likely to, contribute to the achievement of the NGO to the greatest degree ('the NGO requirement'). The NGO states that:[8]

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

In my opinion, the fundamental architecture of the NGO has an economic foundation. I draw this conclusion because:

- the NGO explicitly identifies the promotion of efficiency (of 'investment in', 'operation' and 'use of' natural gas services) as its foundational objective;
- the concept of efficiency has a similar foundational role in both economic theory and practice and so is well understood by economists; and
- none of the following items referenced as being the focus of the NGO act to compromise its efficiency objective.

Indeed, the then Minister for Energy noted in 2005 that the National Electricity Objective, which was then the national electricity market objective and mirrors the NGO:[9]

> … is an economic concept and should be interpret as such.

Rather than acting to compromise the efficiency objective in the NGO, the reference to efficiency being 'for the long term interests of consumers…' and then 'with respect to…' a number of specified elements of natural gas services serves to clarify:

- the ultimate beneficiary of such efficiency, ie, consumers;
- the relevant timeframe over which the efficiency objective should be interpreted, ie, the long term;
- the particular dimensions of natural gas services to which the efficiency objective should be directed, ie, quality, safety, reliability and security of supply.

Again, when explaining the objective of the National Electricity Law in 2005, the then Minister for Energy explained that:[10]

[8] The law, part 7.

[9] Hansard, South Australia House of Assembly, Feb 2005.

[10] Hansard, South Australia House of Assembly, Feb 2005.

> If the national electricity market is efficient in an economic sense the long term economic interests of consumers in respect of price quality, reliability, safety and security of electricity services will be maximised.

A parallel conclusion can be drawn for the national gas market. In the following sub-sections I explain in more detail the concept of economic efficiency and the guidance that is given by the clarifying phrases embedded in the NGO, each of which gives emphasis to particular dimensions of this foundational economic concept.

3.1.1 Dimensions of efficiency

'Efficiency' is a term of art in economics and is widely accepted by economists as having three distinct dimensions, being:[11]

- **productive efficiency**, which is concerned with the means by which goods and services are produced, and is attained when production takes place with the least-cost combination of inputs;
- **allocative efficiency**, which is concerned with what is produced and for whom, and is attained when the optimal set of goods and services is produced and allocated so as to provide the maximum benefit to society; and
- **dynamic efficiency**, which is concerned with society's capacity to achieve the efficient production and allocation of goods and services through time, in the face of changing productivity and/or technology (which reduces the cost of production and alters the optimal mix of inputs), the changing preferences of consumers (which alters the good and services that are desired the most by consumers), and the competing demands of consumers and producers in different time periods.

Each of these dimensions of efficiency is reflected in the architecture of the NGO. By way of explanation:

- the reference to efficient 'investment in' and 'operation of' natural gas services refers to the productive dimension of efficiency, ie, the NGO will be promoted if decisions made under the law promote the supply of natural gas services using the least cost combination of both capital and operating inputs;
- the reference to efficient 'use of' natural gas services refers to the allocative dimension of efficiency, ie, the NGO will be promoted if decisions are made that give rise to a level and structure of prices that both recover the cost of making natural gas services available and maximise the extent to which natural gas services are allocated to those consumers that derive the greatest benefit from them, so as to maximise the benefit to society; and
- the reference to efficient 'investment in' natural gas services and for the 'long term' interests of consumers refers to efficiency's dynamic dimension, ie, the NGO will be promoted if decisions are made that balance the pursuit of productive and allocative efficiencies for current consumers with the requirement to invest for productive and allocative efficiency gains in the long term.

The specific reference to the interest of consumers in the 'long term' and the reduced emphasis it implies for short term considerations recognises that in the application of frameworks for economic regulation there is a need to make trade-offs between competing objectives.

By way of example, the potential for short and long term efficiency objectives to be in tension with each other arises when a decision that may have the effect of increasing short term allocative efficiency (such as forcing a substantial reduction in prices paid by consumers may do), is not consistent with the achievement of long term productive or allocative efficiency – because it threatens the reliability of a service provider's operations or its plans for efficient investment in future reliability.

To summarise, the NGO is structured so as to encapsulate all three dimensions of efficiency that are familiar to economists, ie, productive, allocative and dynamic efficiency. As a matter of principle, efficiency can be assessed in both static (at a particular point in time) and dynamic (over a period of time) terms. However, by

[11] For further discussion of the dimensions of efficiency and their relation to public policy see Productivity Commission, *On efficiency and effectiveness – some definitions*, May 2013.

its reference to the 'long term' interests of consumers, the NGO is structured so as to clarify that the balance of emphasis is to be given to the long term, dynamic dimension of efficiency.

Indeed, this view is consistent with that of the expert panel appointed to review the limited merits review regime, which, by way of reference to the various dimensions of efficiency, stated that:[12]

> There are trade-offs among these various dimensions that need to be resolved by reference to some balancing or weighting of the different elements, and this balancing/weighting usually depends upon a value system beyond the notion of economic efficiency itself. It is the Panel's view that this is precisely what the reference to 'for the long-term interests of consumers' in the legislation provides.

3.1.2 Long term interests of consumers

The NGO specifies that the promotion of efficiency is 'for the long term interest of consumers of natural gas'. I explain above that the specific reference in the NGO to the 'long term' serves to clarify that primary regard is to be had to the dynamic or long term dimension of efficiency. However, the particular reference to the 'interests of consumers' also warrants explanation.

In economics, the pursuit of efficiency generally goes to the benefit of society as a whole, measured as the sum of the economic surplus or benefit derived by producers and consumers. It follows that promoting economic efficiency does not necessarily promote the interests of consumers in particular. Indeed, the expert panel appointed to review the limited merits review regime noted that it is a manifest economic error to assume that promoting economic efficiency necessarily promotes long term consumer interests.[13]

One such example arises in circumstances where the benefits of enhancements to the productive efficiency of a business are captured wholly by the business itself, ie, in the form of higher profits for its owners, rather than lower prices for consumers. In this circumstance, the promotion of a productively efficient outcome would be 'for the interests of producers' and the allocative efficiency outcome may remain unchanged.

The structure of the NGO makes clear that the promotion of efficiency is 'for the interests of consumers', as distinct from any other particular societal interest group. While this specific reference to the interests of consumers is a helpful reinforcement, the reference earlier in the structure of the NGO to efficient 'investment in' natural gas services also serves to promote dynamic efficiency that is consistent with the interests of consumers.

However, I note that the 'interests of consumers' does not automatically equate with reductions in the profits earned by the business, since the ability of a business to earn additional profits in the short term provides an incentive for it to seek improvements in productive efficiency. This is in the long term interests of consumers, provided that such efficiency gains are ultimately reflected in the price, quality, safety, reliability or security of supply. Similarly, a reduction in profits can also have adverse implications for investment in the pipeline.

3.1.3 Price, quality, safety, reliability and security of supply of natural gas.

The NGO specifies that the relevant interests of consumers are those that encompass 'price, quality, safety, reliability and security of supply of natural gas'.

Taken together, these considerations comprise the typical attributes of a natural gas service. To the extent that they reflect informed preferences of consumers, these attributes might be interpreted as reinforcing the earlier reference in the NGO to the 'use of' natural gas services, and so the allocative dimension of efficiency. However, I interpret the explicit reference to these attributes of a natural gas service to confirm that the NGO is not concerned with the promotion of matters that fall outside these attributes. By way of an

[12] Expert Panel, *Review of the Limited Merits Review Regime – Stage 2 Report*, Sep 2012, page 38.

[13] Expert Panel, *Review of the Limited Merits Review Regime – Stage 2 Report*, Sep 2012, page 4.

example to the contrary, the NGO does not permit its efficiency focus to be extended so as to encompass external costs and benefits of the use of natural gas services, such as its effect on the environment.

Indeed, this interpretation is consistent with a statement made in 2007 by the then Minister of Energy in relation to the electricity sector, ie:[14]

> It is important that the National Electricity Objective does not extend to broader social and environmental objectives.

Again, this statement is equally applicable to the interpretation of the NGO.

3.1.4 Conclusion

Drawing together the various elements of the NGO that I explain above, I observe that its fundamental architecture is of an economic nature. Further, the NGO is structured so as to clarify that it is concerned with promoting all three dimensions of economic efficiency and that the primary regard is to be had to the longer term, dynamic efficiency considerations.

3.2 Principles necessary for promotion of the NGO

The administrative determination of the maximum level of revenue that may be collected (or prices that may be charged) by a provider of an infrastructure-based service with a substantial degree of market power – such as the services provided by a regulated natural gas pipeline – involves balancing two forms of potential inefficiency.

Put simply, the maximum level of revenue must be set so as to pass cost improvements on to consumers, thereby improving allocative efficiency, but not so much that it removes incentives to invest in future cost improvements, which improves future productive and allocative efficiency. This trade-off is a consequence of the tension between long term productive efficiency and the short term allocative efficiency. In other words, in the absence of competitive discipline on both allocative and productive efficiency, setting the maximum level of revenue that may be collected, and so prices charged, by a service provider involves choices between:

- attaining greater productive efficiency, the pursuit of which is compromised by the poor incentives created when regulation seeks substantially to eliminate opportunities for a service provider to benefit (in the form of temporarily higher profits) from gains in the efficiency of production; and
- attaining greater short term allocative efficiency, by seeking to ensure that prices reflect as closely as possible the efficient cost of supply and the willingness of buyers to purchase the product or service.

By way of example, if a regulatory regime requires the benefits of a productivity improvement to be captured entirely by consumers (in the form of lower prices), then short term allocative efficiency will be promoted at the expense of incentives for investment in longer term productive and allocative efficiency. By contrast, in a workably competitive market, the threat of competition balances these incentives so as to achieve the optimal combination of investment that will secure longer term productivity and lower prices for the benefit of consumers.

By reason of this essential trade-off, a regulatory framework that has the objective of promoting the NGO must encompass three core principles, namely:

- the service provider must have reasonable assurance that costs efficiently incurred – including a return on its capital costs – will be recovered over the life of the investment;
- consumers must be protected from the ability and incentive of the service provider to raise prices above the cost of supply in a substantial or sustained manner; and

[14] Hansard, South Australia House of Assembly, Sep 2007.

- incentive mechanisms must be put in place that promote investment by the service provider to achieve productive efficiency gains.

The Revenue and Pricing Principles set out in section 24 of the law collectively reflect each of these well understood economic principles. The principle that a service provider must have a reasonable assurance that its efficient costs will be recovered is reflected more or less directly in section 24(2), which states that:[15]

> A service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs in—
>
> (a) providing reference services; and
>
> (b) complying with a regulatory obligation or requirement or making a regulatory payment.

This principle is supplemented by those set out in sections 24(5) and (4), which, respectively, recognise the need for an appropriate return on capital, and for past values of that capital to be recognised in future price setting processes, thereby offering assurance that costs will be recovered over future time.

The protection of consumers is recognised through the existence of processes in the rules for establishing regulated tariffs, which establish the maximum price that is to be paid for pipeline services.

The reference above to the recovery of *at least* the efficient level of costs is consistent with the inclusion in the regulatory framework of incentive mechanisms that promote investment to improve productive efficiency by allowing the service provider to retain some of the benefits of achieving productive efficiency gains. The requirement for incentive mechanisms is also explicitly recognised in the Revenue and Pricing Principles, in section 24(3), which states that:[16]

> A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides. The economic efficiency that should be promoted includes—
>
> (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
>
> (b) the efficient provision of pipeline services; and
>
> (c) the efficient use of the pipeline.

The two remaining revenue and pricing principles (being those set out at section 24(6) and 24(7)) reflect the existence of the trade-off between productive and allocative efficiency that I identify above and, in effect, allow consideration of the wider costs and risks of under/over investment and under/over utilisation of pipeline services when making that assessment.

In addition to the trade-off between productive and short-term allocative efficiency, I note that the regulatory task is made more challenging by the fact that the efficient outcome is itself constantly changing, and cannot be objectively determined. Consumer preferences and technologies change over time, thereby altering the most efficient mix of goods and services. Production technology also changes over time, reducing production costs and expanding the potential means by which a given mix of goods and services may be produced. In consequence, what constitutes an efficient outcome is constantly evolving.

In practical terms, efficiency is an objective that businesses may be constantly working towards, without necessarily ever achieving, since the efficiency frontier itself is always moving, and there are constraints on the rate at which businesses can alter their mix of goods, services and production processes.

By contrast, the economics textbook definition of efficiency is underpinned by the concept of perfect

[15] The law, section 24(2).

[16] The law, section 24(3).

competition. A perfectly competitive market ensures that businesses are always producing at least cost, and are constantly entering and exiting to ensure that those that remain are producing the optimal mix of goods and services at least cost over time.

However, beyond the textbook, companies' abilities to enter and exit markets, and to transform inputs into outputs efficiently will be constrained by their particular operating environments, and will vary over time. This is particularly true for businesses operating in industries that are capital intensive and where assets are long-lived, such as infrastructure businesses.

In addition, the attainment of perfect, frontier efficiency is not directly observable, and so the determination of what constitutes efficient expenditure is a matter of judgement. Under the construct of a perfectly competitive market, whether or not a business is operating on the efficiency frontier can be deduced from observing whether or not it continues to operate. Businesses that are not perfectly efficient will be undercut by businesses that are, so that inefficient businesses will no longer be able to sell their output. However, in practice businesses operate in markets that are less than perfectly competitive, and so this external gauge of whether a business is achieving frontier efficiency is not available.

In circumstances of less than perfect competition, the assessment of efficiency typically becomes a relative concept. A particular business' efficiency is measured by assessing its costs relative to those of other businesses. However, in practice, it is difficult to gauge the precise extent to which a business is performing efficiently.

Given these challenges, the role of effective incentive mechanisms within the regulatory framework is of particular importance in promoting the threefold efficiency objective at the foundation of the NGO. Consistent with this observation of principle, I noted above that the Revenue and Pricing Principles explicitly reference the need for the service provider to be provided with effective incentives in order to promote economic efficiency.

3.3 Building block approach reflects these principles

The rules require the application of a building block approach to determine the total revenue to be collected by a pipeline service provider in each regulatory year of an access arrangement period. The building blocks are:[17]

1. a return on the projected capital base for the year;
2. depreciation on the projected capital base for the year;
3. the estimated cost of corporate income tax for the year;
4. increments or decrements for the year resulting from the operation of an incentive mechanism to encourage gains in efficiency; and
5. a forecast of operating expenditure for the year.

Taking the total revenue amount determined for each regulatory year, rules 94(3) and (5) (for distribution pipelines) and rule 95(1) (for transmission pipelines) require that the revenue expected to be received from all applicable tariffs permit a pipeline service provider to recover the expected revenue referable to those pipeline services.

I highlight below the principal means by which the building block approach, applied in accordance with the rules, is consistent with the principles required to promote the achievement of the NGO.

[17] The rules, rule 76.

3.3.1 The projected capital base

The building block approach involves determining a projected capital base, to which a rate of return is applied so as to calculate the return on the capital base, as well as depreciation. The projected capital base comprises two essential elements, being:

- the incorporation of capital expenditure incurred in the previous access arrangement period (subject to limited exceptions)[18] – thereby establishing the opening capital base; and
- a forecast of future prudent and efficient capital expenditure, which is itself derived by reference to – among other considerations – a forecast of the future demand for natural gas services.[19]

The rules calculate the opening capital base in a manner that guarantees the recovery of capital expenditure previously incorporated into the capital base notwithstanding that, in hindsight, that capital expenditure may or may not have turned out to have been fully efficient.[20] This promotes economic efficiency in two ways, ie:

- it provides certainty to investors, and so encourages investment, which promotes dynamic and allocative efficiency; and
- it reduces the expected risk associated with investment, which reduces capital costs and promotes productive efficiency.

The rules also require that the projected capital base only include forecast capital expenditure as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services.[21] The use of the phrase 'in accordance with accepted good industry practice' recognises that an assessment is required (ie, involving a degree of subjectivity), which is conducted by reference to the practices of other industry participants, rather than the expenditure criteria reflecting an objective standard. This is consistent with the observation I make in section 3.2 above, that whether or not a business is operating efficiently cannot be directly observed.

It follows that the projected capital base component of the building block approach:

- promotes productive efficiency by ensuring services are produced at the lowest sustainable cost;
- promotes productive and allocative efficiency by ensuring capital expenditure forecasts are subject to regulatory review by reference to the criteria of prudence and efficiency, thereby avoiding the cost of over-investment; and
- promotes allocative efficiency by ensuring prices in a given regulatory year reflect only efficient capital expenditure in that year.

3.3.2 The return on capital

The building block approach requires that the return on capital for each regulatory year be determined by multiplying the allowed rate of return by the projected capital base in the respective year. Further, the rules require that the allowed rate of return be determined such that it achieves the allowed rate of return objective, namely:[22]

> …the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

[18] The rules, rule 77.

[19] The rules, rules 78 and 79.

[20] The rules, rule 77.

[21] The rules, rule 79(1).

[22] The rules, rules 87(2) and (3).

It follows that in calculating the return on capital in accordance with the rules, application of this component of the building block approach will:

- provide assurance to investors that they will derive a return on investment commensurate with the degree of risk they bear, which encourages ongoing investment in pipeline infrastructure and services and so promotes productive and dynamic efficiency; and
- exploit measures to prevent investors from collecting a rate of return in excess of efficient financing costs, which promotes allocative and dynamic efficiency.

3.3.3 Depreciation

The depreciation building block is calculated in each regulatory year by reference to the projected capital base for that year, and acts to return capital to investors. The rules governing the determination of the depreciation building block require that:

- tariffs vary over time in a way that promotes efficient growth in the market for reference services, which promotes dynamic efficiency;[23]
- the depreciation to be recovered over an asset's life not exceed the initial value of that asset, which promotes allocative and dynamic efficiency;[24] and
- the recovery of capital expenditure be spread over the economic life of the asset to which that expenditure relates, thereby promoting allocative and dynamic efficiency.[25]

3.3.4 The estimated cost of corporate income tax

The building block approach includes an explicit allowance for the recovery of the cost of corporate income tax,[26] which promotes efficiency by:

- providing assurance to investors that they will be able to recover the cost of income tax, which promotes productive efficiency;
- reducing the estimated cost of income tax by the value of imputation credits, which ensures investors are not overcompensated and so promotes allocative and dynamic efficiency; and
- calculating the corporate tax allowance by reference to the tax that would be payable by a benchmark efficient entity, which encourages efficient tax management and so promotes allocative and dynamic efficiency.

3.3.5 Operating expenditure

The rules relating to the building block calculation for operating expenditure require the determination of an allowance for operating expenditure such as would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.[27]

The rules provide that the AER may not withhold its approval of operating expenditure proposed by the service provider if it is consistent with these criteria.[28] This provision provides reasonable assurance that operating costs – efficiently incurred – will be able to be recovered, thereby promoting productive and dynamic efficiency.

[23] The rules, rule 89(1)(a).

[24] The rules, rule 89(1)(d).

[25] The rules, rules 89(1)(b) and (c).

[26] The rules, rule 87A.

[27] The rules, rule 91(1).

[28] The rules, rules 91(2) and 40(2).

The rules relating to the operating expenditure building block also promote the NGO by encouraging service providers only to incur operating expenditure that is efficient, thereby providing services at the lowest sustainable cost, which promotes allocative efficiency.

3.3.6 Incentive mechanism to encourage efficiency improvements

The existence of a separate building block for 'one or more incentive mechanisms to encourage efficiency in the provision of services by the service provider' explicitly recognises the importance of providing incentives for efficiency in the application of economic regulation.[29]

This building block enables a regulator to offer service providers financial incentives that take the place of those that would otherwise be provided by competition, in order to promote all three dimensions of economic efficiency. These incentives also provide for a service provider to be financially penalised for inefficiency.

I described above that the provision of incentives is important in addressing the constant evolution as to what constitutes efficient outcomes, due to changes in technology and consumer preferences, the competing demands of market participants across time, and the inability to observe directly whether businesses are operating efficiently.

The inclusion of a separate building block for increments or decrements resulting from an incentive mechanism therefore promotes the NGO by providing incentives for businesses to improve longer term productive efficiency, provided that these efficiency gains are eventually reflected in price, quality, safety, reliability and security outcomes for consumers.

3.3.7 Summary

To summarise, the essential architecture of the building block approach promotes efficiency by means of two key elements, namely:

- deriving forecast total revenue as the sum of a service provider's expected costs; and
- ensuring that each cost building block draws reference – whether directly or through other, constituent elements of the rules – to the need for such costs to be those of a service provider acting efficiently and prudently, including through the operation of incentive arrangements designed to achieve such outcomes.

The former provides a reasonable assurance as to the ability of a service provider to recover its efficiently incurred expected costs, thereby promoting ongoing investment and dynamic efficiency. The latter serves to ensure that the framework of the rules operates for the long term benefit of consumers, consistent with productive, allocative and dynamic efficiency.

3.4 Building blocks and pricing principles necessary to promote the NGO

I described in section 3.3 above that each constituent component of the building block approach provides incentives and/or mechanisms that promote the threefold dimensions of efficiency, which represent the foundation of the NGO. In addition, the NGO requires that these components of the building block approach be applied such that, when there is tension between two elements of efficiency, the dynamic element is given preference so as 'to promote the long term interests of consumers'.

By way of an example to the contrary, consider the return on capital building block. The rate of return objective provides for a service provider to pay a rate of return that is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk.[30] If this component was not complied with, say through the determination of a rate of return that was below efficient financing costs, then the incentives for investment would be weakened, since investors could not be expected to derive a return

[29] The rules, rule 98.

[30] The rules, rule 87(3).

on investment commensurate with the degree of risk they bear. Weakened incentives would give rise to the underfunding of expenditure necessary to ensure the safety and reliability of supply of natural gas services, thereby risking:

- productive inefficiency, since safety and security would have to be provided over the long term through inefficient, second-best options, perhaps involving a disproportionate emphasis on operating expenditure;
- allocative inefficiency, since the insufficient rate of return would translate to lower prices, and so unsustainably greater demand for natural gas services (compounding reliability issues), even though most customers may be willing and able to pay for greater reliability of supply; and
- dynamic inefficiency, since the interests of consumers today have not been balanced with the interests of future consumers, say through compromising reliability of supply issues for future consumers that all consumers, future and present, would have been willing to pay to avoid.

It follows that a decision that fails to comply with any constituent component of the building block approach will also fail to promote the NGO by failing to provide effective incentives and/or mechanisms for the promotion of efficiency. Therefore, if the AER were to make such a decision, it would not meet the requirement to contribute to the achievement of the NGO.

4. Assessment of the AER's approach

In this section I present my assessment of certain aspects of the AER's approach to the allowed rate of return and corporate income tax in its Guideline and recent decisions, and in particular:

- summarise those matters adopted by, and errors made by, the AER in both its Guideline and recent decisions, as identified by the expert reports that suggest the principles, building blocks or other rules have been offended;
- summarise each material constituent component of the AER's decisions on the rate of return and gamma, and the overall impact on the business of AGN over the next regulatory control period; and
- provide my opinion on whether, taking into account the whole of the matters raised by the experts, the AER is likely to meet the NGO requirement.

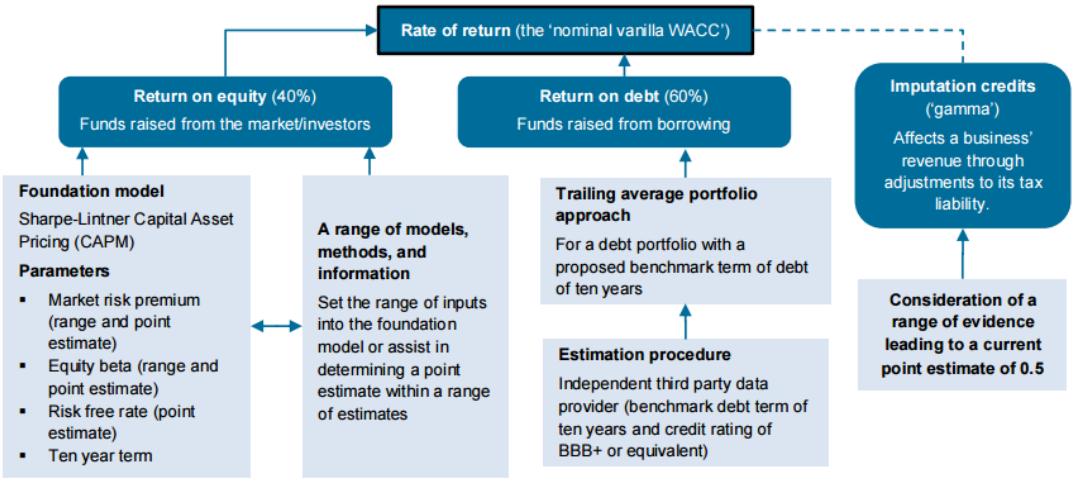
4.1 Return on capital

The allowed rate of return is designed to ensure that a pipeline service provider receives a sufficient return on capital to meet the interest cost on its loans and to provide a return on equity to investors. The rate of return is multiplied by the value of the regulatory asset base to calculate the return on capital building block. The AER's approach to determining the allowed rate of return, as set out in its Guideline and summarised in Figure 4.1, is:[31]

- to estimate the expected **return on equity** using a foundation model approach based upon the Sharpe-Lintner CAPM, populated with separately estimated and assessed input parameters, and assessed in turn by reference to an alternative specification of the Sharpe-Lintner CAPM, independent equity risk premium estimates and the prevailing cost of debt;
- to estimate the **return on debt** through a trailing average approach (currently transitioning from an on-the-day approach), estimated by reference to a simple average of data series published by the Reserve Bank of Australia and Bloomberg with a benchmark credit rating of BBB+ over a term of 10 years and averaged each year over a sampling period set by the service provider; and
- lastly, to determine the weight given to the return on equity and return on debt in the rate of return through a **gearing ratio**, which is assessed by reference to a group of companies comparable to a benchmark efficient pipeline service provider. The AER has consistently adopted a gearing ratio of 60 per cent debt.

[31] AER, *Rate of return guideline*, Dec 2013

Figure 4.1 – The AER's approach to the allowed rate of return in its Guideline



Source: AER, Rate of return guideline factsheet, Dec 2013.

Although it may do so, the AER has not departed from this approach to calculating the rate of return in any of its recently issued Preliminary Decisions in relation to SA Power networks, Energex and Ergon Energy, and Final Decisions in relation to TransGrid, Networks NSW, Actew AGL, Tas Networks, Directlink and Jemena Gas Networks.[32] This has resulted in an allowed rate of return for these businesses of between 5.41 per cent (in Jemena Gas Networks' Final Decision)[33] and 6.75 per cent (in TransGrid's Final Decision) [34] for 2015-16 of the current regulatory control period.

I have been provided a number of expert reports that identify shortcomings and errors in the AER's approach to estimating the rate of return and gamma.[35] I summarise these reports below.

4.1.1 The return on equity

The AER's approach to the return on equity, as set out in its Guideline, is to estimate both a point and range using the Sharpe-Lintner CAPM as foundation model, populated with three, separately estimated input parameters, ie:[36]

- a **risk free rate**, estimated using the yields on Commonwealth Government Securities (CGS) as reported by the Reserve Bank of Australia (RBA);
- an **equity beta**, for which a range is estimated using a set of Australian energy utilities and then a point selected using additional information, including empirical estimates from overseas energy networks and the theoretical principles of the Black CAPM; and
- a **market risk premium**, for which a range is estimated using a dividend growth model and historical excess returns and then a point selected using the AER's regulatory judgement.

Lastly, the AER assesses whether the foundation model point estimate achieves the rate of return objective by reference to other relevant information, including an alternative specification of the Sharpe-Lintner CAPM, equity risk premiums calculated by other market participants and the prevailing cost of debt.

[32] AER, *Rate of return fact sheet*, Apr 2015; and AER, *Rate of return fact sheet*, June 2015.

[33] AER, *Rate of return fact sheet*, June 2015, page 1.

[34] AER, *Rate of return fact sheet*, Apr 2015, page 1.

[35] A list of these expert reports can be found in the Letter of Instruction attached as Annexure A1 to this report.

[36] AER, *Rate of return guideline*, Dec 2013, section 5.3.

The AER's recent decisions have applied the approach set out in the Guideline, calculating an allowed rate of return on equity of 7.1 per cent for the current regulatory control period.[37]

I have been provided with expert reports prepared by SFG, NERA, Frontier, Incenta, and United States (US) regulatory experts Professor Malko and Mr Knecht, that address two principal shortcomings in the design and application of this approach by the AER. In particular, these expert reports address:

- shortcomings associated with the AER's design and application of a foundation model approach that relies upon the Sharpe-Lintner CAPM to the exclusion of other available, relevant information; and
- a second, related but distinct shortcoming in the AER's empirical application of the Sharp-Lintner CAPM.

I summarise the findings of the expert reports in relation to these two shortcomings below.

The foundation model approach

I noted above that the AER's approach to estimating the rate of return on equity adopts as its foundation model a specification of the Sharpe-Lintner CAPM. In SFG's expert opinion, the AER errs by adopting a foundation model to the exclusion of other potential models:[38]

> The AER persists with its exclusive reliance on the Sharpe-Lintner CAPM as the only model for estimating the required return on equity for the benchmark efficient entity by concluding that no other relevant financial model is sufficiently reliable to even warrant estimation. The AER concludes that the Black CAPM, Fama-French model and dividend discount models are all relevant models for estimating the required return on equity for the benchmark efficient firm, but that none of them should even be estimated.

In 2012, the AEMC made changes to the rules to alter the then prevailing regulatory practice of relying exclusively on the Sharpe-Lintner CAPM when estimating the required return on equity,[39] since it had concluded that this approach did not contribute fully to the achievement of the NGO. Under the previously applying rules, the Tribunal had concluded that using a single, well-accepted model effectively guaranteed a reasonable estimate, to which the AEMC responded:[40]

> The Commission considered that this conclusion presupposes the ability of a single model, by itself, to achieve all that is required by the objective. The Commission is of the view that any relevant evidence on estimation methods, including that from a range of financial models, should be considered to determine whether the overall rate of return objective is satisfied.

The rules now require the AER to have regard to relevant estimation methods, financial models, market data and other evidence.[41] However, the rules do not specify the weight the AER is to place on each piece of evidence. SFG highlights that the AER exploits this specification to maintain the approach it adopted under the previous rules, and in doing so disregards the requirement to have regard to relevant information, by 'inventing' the notion of primary and secondary evidence such that:[42]

> The evidence that the AER now adopts as its "primary evidence" is the same evidence that the AER used under the previous Rules
>
> …the AER "has regard to" the secondary evidence in such a way that it has no material effect on the primary parameter estimates

[37] AER, *Rate of return fact sheet*, Apr 2015, page 2.

[38] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, pages 8 to 9.

[39] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 5.

[40] AEMC, *Rule determination – National Gas Amendment (Economic regulation of gas services) Rule 2012*, Nov 2012, page 48, cited in SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 5.

[41] The rules, rule 87(5)(a).

[42] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 2.

This practice has the result that:[43]

> The way the AER has regard to the secondary evidence effectively guarantees that it will have no effect. That is, the estimation process neuters all but the AER's favoured subset of "primary" evidence – effectively producing the same outcome that would have been obtained under the previous Rules.

Frontier further explains that this result is achieved by an approach that deliberately widens the range of estimates supported by the secondary evidence, which Frontier denotes 'other' evidence', with the effect that:[44]

> …the "other" evidence is considered to support such a wide range of estimates that it is effectively uninformative and can never overturn the initial estimate from the "primary" subset of the relevant evidence.

SFG explains that the Sharpe-Lintner CAPM, the foundation model of the AER's current and previous approach, has been shown to have limitations in its ability to explain patterns in realised equity returns, namely:[45]

a) stocks with low beta estimates earn higher returns than predicted by the Sharpe-Lintner CAPM – which could be dealt with by implementing the Black CAPM to derive one estimate of the cost of equity; and

b) stocks with high book-to-market ratios persistently earn higher returns than predicted by the Sharpe-Lintner CAPM – which could be dealt with by implementing the Fama-French model to derive one estimate of the cost of equity.

An empirical assessment by NERA of the performance of the AER's Sharpe-Lintner CAPM reaches the same conclusion:[46]

> …the models tend to underestimate the returns required on low-beta equity portfolios and overestimate the returns required on high-beta equity portfolios.

NERA highlights that this is not a novel result:[47]

> It has been known for well over 40 years that there is empirical evidence against the SL CAPM.

If these limitations remain unaccounted for, as they were in previous decisions by the AER,[48] SFG's expert opinion is that:[49]

> …the foundation model approach will not deliver an estimate of the return on equity that is consistent with the allowed rate of return objective, and is reflective of prevailing conditions in the market for equity funds.

[43] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 2.

[44] Frontier, *Key issues in estimating the return on equity for the benchmark efficient entity*, June 2015, page 10.

[45] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, page 3.

[46] NERA, *Empirical performance of Sharpe-Lintner and Black CAPMs*, Feb 2015, page v; a more recent report by NERA finds that criticisms raised by the AER and its consultants in its recent decisions fail to acknowledge that NERA has addressed in this empirical assessment issues that they raise, and reaches the same conclusion as quoted here, see NERA, *The Cost of Equity: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors, and for Jemena Gas Networks*, June 2015, pages iii to vii.

[47] NERA, *Empirical performance of Sharpe-Lintner and Black CAPMs*, Feb 2015, page i.

[48] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 1.

[49] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, pages 12 and 13.

SFG sets out how the empirical limitations of the Sharpe-Lintner CAPM-based foundation model approach can be addressed through a multi-model approach, combining estimates from financial models the AER notes as relevant but does not estimate:[50]

> …the best approach to estimating the required return on equity is to set out the estimate from every model that is considered to be relevant and then to weight each according to an assessment of the relative strengths and weaknesses of each.

Such an approach is also recommended by Professor Malko and Mr Knecht, who explain that it is widely adopted in energy utility regulatory decisions across the US:

> In my [Professor Malko's] opinion, to ensure the most appropriate decision, it is important to consider the results of several models. In my opinion, using several models helps compensate for the drawbacks in any single model and increases the probability that the appropriate, and reasonable range is identified.[51]

> I [Professor Malko] have observed that in the United States, regulators and expert financial witnesses generally use multiple methods, at least two, when determining a reasonable point estimate for the cost of common equity for a regulated energy utility.[52]

> …the American tradition is for regulatory decisions to review all the evidence in the record and then, subjectively balancing the merits and results of all of it, to arrive at a final conclusion as either a range of reasonableness or a point estimate.[53]

SFG identifies an array of inconsistencies and errors in the AER's reasoning for not using estimates of the Black CAPM, Fama-French model and dividend discount model in its estimate of the required return on equity. By way of example:

> …the AER's approach is to estimate only the Sharpe-Lintner model, but to adjust the beta parameter in order to have regard to the "theoretical principles underpinning" the Black CAPM. In our view, this involves an implementation that is not true to either model. Our view is that each model should be estimated as it was intended to be estimated.[54]

> The AER states that the estimates from the Fama-French model can vary across different estimation periods and techniques. In response, we note that this applies to all models that require the estimation of parameters…the fact that some estimates of the Fama-French model might produce inconsistent results is not a basis for dismissing all estimates.[55]

> The AER proposes that the SFG [dividend discount model] can be rejected because it produces outcomes that are equivalent to the use of an equity beta of 0.94 which is "inconsistent with the low risk nature of regulated natural monopoly businesses." This seems to suggest that the AER has some preconceived notion of what the equity beta should be, and that any evidence that is inconsistent with this preconceived notion can be rejected for no other reason than that.[56]

In SGF's opinion, the AER's reservations in relation to these financial models do not justify removing them from consideration altogether, and that doing so constitutes a failure to take into account relevant information as required by the rules.[57]

[50] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, page 7.

[51] Malko Energy Consulting, *Statement of Dr J. Robert Malko*, June 2015, page 10.

[52] Malko Energy Consulting, *Statement of Dr J. Robert Malko*, June 2015, page 10.

[53] Ronald Knecht, *Witness Statement*, June 2015, page 3.

[54] SFG, *Beta and the Black Capital Asset Pricing Model*, Feb 2015, page 4.

[55] SFG, *Using the Fama-French model to estimate the required return on equity*, Feb 2015, page 2.

[56] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 15.

[57] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, page 13.

The Sharpe-Lintner CAPM specification

Notwithstanding the shortcomings of the AER's foundation model approach, the expert reports provided to me identify a number of errors in the AER's empirical specification of the Sharpe-Lintner CAPM, which amount to a shortcoming in the AER's application of its chosen foundation model.

SFG highlights that the process by which the AER arrives at an estimate of beta, a parameter input to the Sharpe-Lintner CAPM, fails to have proper regard to information the AER identifies as relevant:[58]

> …the AER's beta point estimate of 0.7 relies entirely on the AER's conclusion that its initial range of 0.4 to 0.7 acts as a binding constraint on its other considerations, namely the Black CAPM, international listed firms, and predictability.

I understand from both SFG and Frontier that neither Black CAPM estimates of beta nor those arising from international evidence would necessarily fall within the 0.7 upper bound provided by the AER's small sample of Australian evidence. Indeed, analysis conducted by SFG causes it to conclude:[59]

> …we [SFG] consider that both of these sources of evidence support equity beta estimates above 0.7. However, at no stage of its estimation process does the AER ever estimate what estimate of beta would be supported by either of these pieces of relevant evidence.

Further, SFG and Frontier highlight that this process gives undue weight to domestic evidence, which does not produce a robust and reliable estimate. In particular, the AER errs by using a set of comparator firms containing only four domestic companies and five companies that no longer exist, and that therefore cannot reflect prevailing conditions in financial markets, despite the existence of relevant international evidence.[60]

Frontier highlights further errors in the AER's approach to estimating beta, including that it did not take account of systematic risk introduced by the benchmark efficient entities' high leverage ratio, which results partly from the AER misunderstanding an earlier report by Frontier,[61] and by the growth of disruptive technologies in the energy industry.[62]

SFG also highlights that the AER errs with respect to its estimate of the market risk premium (MRP), a second input parameter to the Sharpe-Lintner CAPM:[63]

> The AER places high reliance on the historical difference between market returns and government bond yields (that is, historical excess returns) which leads to the cost of equity being under-stated at present, with government bond yields being at historic lows.

In relation to the practical implications of these errors, SFG observes that such an approach cannot produce reasonable estimates in non-normal market conditions, such as during a financial crisis or when risk-free rates are at unprecedented lows, ie, the prevailing market conditions at the time of the last and current rounds of regulatory determinations, respectively.[64]

A literature review by Incenta of 53 independent expert reports on the cost of equity also highlights that the AER's 'mechanistic Sharpe-Lintner CAPM approach' does not produce a reasonable estimate in prevailing

[58] SFG, *Beta and the Black Capital Asset Pricing Model*, Feb 2015, page 6.

[59] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 10.

[60] SFG, *Beta and the Black Capital Asset Pricing Model*, Feb 2015, pages 10 to 12; and Frontier, *Key issues in estimating the return on equity for the benchmark efficient entity*, June 2015, page 9.

[61] Frontier, *Assessing risk when determining the appropriate rate of return for regulated energy networks in Australia*, July 2013.

[62] Frontier, *Review of the AER's conceptual analysis for equity beta*, June 2015, pages 2 and 3.

[63] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 10.

[64] SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 9.

market conditions. Its analysis finds that the average market-wide return over the previous two years, being a period with historically low interest rates, calculated by these reports is:[65]

> …46 basis points higher than the average over the period that is implied by the AER's current methodology (the 'spot' risk free rate plus a 6.5 per cent market risk premium) before accounting for dividend imputation (meaning the true difference is larger). During this period – which also experienced material fluctuations in the risk free rate – the difference was larger than the average during the times when the risk free rate was lower than the average.

Analysis by NERA highlights that the AER also errs by using an estimate of the MRP that uses a geometric mean of a sample of annual excess returns to the market portfolio in any one year, which will produce a downwardly biased estimate of the revenue the market requires in any one year:[66]

> An estimate of the MRP that relies solely on estimates that use arithmetic means will provide a materially better estimate than an estimate that relies either fully or in part on geometric means.

I understand from the opinions of these experts that the AER's empirical specification of the Sharpe-Lintner CAPM produces an estimate of the required return on equity that will not be commensurate with the efficient financing costs faced by a benchmark efficient entity over the next regulatory period.[67]

Conclusion

SFG, NERA, Frontier, Incenta, and US regulatory experts Professor Malko and Mr Knecht all conclude that the foundation model approach used by the AER does not have proper or sufficient regard to relevant information, including financial models and market data, as is required by the rules.

For financial models other than the Sharpe-Lintner CAPM, in SFG's expert opinion, the AER's reservations regarding these financial models do not justify removing them from consideration altogether,[68] and that its erroneous approach originates from a view that the Sharpe-Lintner CAPM should be relied upon unless the AER can be persuaded to depart from this position.[69] Put another way, the approach stems from a mistaken view that financial models to be used for estimating return on equity are mutually exclusive and that the Sharpe-Lintner CAPM is the superior model.

The result of this mistaken thinking is that:

- the AER's approach does not have regard to prevailing market conditions, and does not produce a reasonable estimate of the required return on equity in non-normal market conditions; and
- therefore, the estimate produced by the AER may not represent the efficient financing costs of the benchmark efficient entity and will not represent efficient financing costs in non-normal market conditions, which includes current prevailing market conditions.

The various expert reports also conclude that the process by which the AER incorporates information that it regards as secondary ensures that it will have no material effect on the estimate produced by the AER's foundation model.[70] The result is that the AER's approach will consistently provide an estimate of the required return on equity that is less than the efficient financing costs of the benchmark efficient entity.

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[65] Incenta, *Further update on the required return on equity from Independent expert reports*, Feb 2015, page 1.

[66] NERA, *Historical estimates of the market risk premium*, Feb 2015, page ii; a more recent report by NERA, which responds to criticisms raised by the AER in its recent decisions, maintains this position and highlights that it is consistent with the advice of consultants to the AER, see NERA, *Further Assessment of the Historical MRP: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors*, June 2015, pages iv to vi.

[67] See SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 10; NERA, *Historical estimates of the market risk premium*, Feb 2015, page I; and Incenta, *Further update on the required return on equity from Independent expert reports*, Feb 2015, page 2.

[68] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, page 13.

[69] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, pages 5 and 27.

[70] See SFG, *The required return on equity for the benchmark efficient entity*, Feb 2015, page 2.

The various experts' evidence shows that the required return on equity calculated under the approach taken by the AER in its Guideline and recent decisions will undercompensate investors, given the perceived level of risk. It follows that this results in:

- an allowed rate of return that does not meet the allowed rate of return objective;
- compromise to the promotion of ongoing investment in the network, and so to dynamic or long term productive efficiency; and
- compromise to the promotion of the long term interests of consumers.

The result of the two principal shortcomings highlighted by the expert reports is that the approach to the required return on equity in the Guideline and recent decisions does not meet the NGO requirement.

Further, I understand from SFG, Professor Malko and Mr Knecht that a multi-model approach combining estimates from the Sharpe-Lintner CAPM with estimates from the Black CAPM, Fama-French model and dividend discount model analysis would overcome the empirical limitations of the Sharpe-Lintner CAPM-based foundation model approach, ie:[71]

> …the best approach to estimating the required return on equity is to set out the estimate from every model that is considered to be relevant and then to weight each according to an assessment of the relative strengths and weaknesses of each.

Application of this approach by Frontier, which in November 2014 merged with SFG, calculates a required rate of return on equity of 9.91 per cent for the next regulatory control period.[72] This is a materially different result from the AER's estimate of 7.1 per cent,[73] calculated over the same time period.

In my opinion, it follows that there exists a decision to be made as to whether adopting an alternative approach to the one taken by the AER in its Guideline and recent decisions would make a greater contribution to the NGO.

4.1.2 The return on debt

The approach to the return on debt set out in the AER's Guideline is to transition from its previous 'on the day' portfolio estimate of the cost of debt to a trailing average portfolio estimate established over a 10 year period. The transitional arrangement estimates the allowed rate of return on debt as the rate of return from a portfolio consisting of 1/10 portions of debt entered into in each year of the transitional period preceding the current regulatory year, and the remaining proportion set by reference to the yields prevailing in the current regulatory year.[74]

For each regulatory year, the AER proposes to estimate the prevailing rate of return on debt as the simple average of observed yields on debt with a BBB+ credit rating and maturity of 10 years, over a sampling period proposed by AGN, which is to be no less than 10 days and no greater than 12 months. The prevailing rate of return on debt is to be estimated from data published by the Reserve Bank of Australia and the Bloomberg data service.

[71] SFG, *The foundation model approach of the Australian Energy Regulator to estimating the cost of equity*, Mar 2015, page 7.

[72] Frontier, *An updated estimate of the required return on equity*, June 2015, page 3; Frontier calculates this estimate using a risk free rate based on the same 20 day averaging period used by the AER in its recent decisions.

[73] AER, *Rate of return fact sheet*, Apr 2015, page 2.

[74] AER, *Rate of return guideline*, Dec 2013, section 6.3.

The AER's recent decisions have applied the approach set out in its Guideline, calculating an allowed rate of return on debt between 4.28 per cent (in Jemena Gas Networks' Final Decision)[75] and 6.51 per cent (in TransGrid's Final Decision)[76] for the 2015-16 regulatory year.

I have been provided with an expert report by CEG that addresses a principal shortcoming in the design and application of this approach by the AER. In particular, the expert report addresses errors associated with the AER's choice and implementation of a transitional approach for estimating the return on debt. I summarise the findings of CEG's expert report in regard to this shortcoming below.

The transitional approach

CEG explains that to estimate the allowed rate of return on debt for any entity, including the benchmark efficient entity, such that it is both consistent with the allowed rate of return objective and achievable, it is necessary to:[77]

> define a [debt management] strategy for a "benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services".

CEG agrees with the AER's position, as outlined in its Guideline and noted above, that its previous 'on the day' portfolio estimate of the cost of debt did not calculate the efficient financing costs of the benchmark efficient entity, and that the efficient financing costs should now be calculated by a trailing average portfolio estimate:[78]

> The previous 'on-the-day' approach to setting compensation for the cost of debt was flawed, including, in our view, being inconsistent with the newly formulated allowed rate of return objective.
>
> All parties agree that a business' efficient debt costs are and were based, at least in part, on a trailing average of historical costs over a period of around 10 years.

However, CEG disagrees with the AER in relation to the debt management strategy that would have derived the efficient financing costs under the 'on the day' approach:[79]

> …we do not believe that the AER is correct to define a uniquely efficient debt management strategy in the past. We consider that both the trailing average and the hybrid debt management strategy were efficient responses to the nonreplicable nature of the on-the-day approach.

This is because:[80]

> …the properties of the simple trailing average strategy that make it an efficient debt management strategy in the future, namely the minimisation of transaction costs, also make it an efficient debt management strategy in the past.

On CEG's analysis, it follows that:[81]

> …it is not obvious that any transition is required given our view that the trailing average debt management strategy is efficient in both the past and the future.

Notwithstanding its opinion that a hybrid debt management strategy was not uniquely efficient under the 'on the day' approach, CEG highlights that an efficient transitional approach would have to transition from either

[75] AER, *Rate of return fact sheet*, June 2015, page 2.

[76] AER, *Rate of return fact sheet*, Apr 2015, page 1.

[77] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page 3.

[78] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page ii.

[79] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page iii.

[80] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page iv.

[81] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page iii.

a hybrid or trailing average approach, not from the 'on the day' approach that every party has agreed was not previously efficient:[82]

> …the transition imposed by the AER not only retains the worst aspects of the on-the-day approach – it intensifies these problems.

As a result:[83]

> …the AER proposes a transition which, applied at the present time, will undercompensate all businesses – including both those that funded themselves with: i) a simple trailing average debt management strategy; and ii) the hybrid debt management strategy.

I understand from CEG that the only substantive reason given by the AER for choosing to implement such a transitional approach is to:[84]

> …impose a prospective loss on businesses in order to offset what it argues are 'windfall gains' made from the application of the on-the-day approach.

CEG outlines that this reasoning is inconsistent with the allowed rate of return objective and that, even if offsetting previous 'windfall gains' were consistent with that objective:[85]

> …there are many unanswered questions about how the retrospective correction would actually be implemented if it was accepted as appropriate…If 'windfall gains' are to be clawed back, why would it not be done on a bespoke basis for each network business?

In addition to these two errors made by the AER in selecting the applicable transitional approach – if indeed a transitional approach is applicable – CEG explains that:[86]

> …the AER debt transition results in a value for the return on debt that would not realistically be achieved under any debt management strategy. That is, the cost of debt calculation undertaken by the AER is not replicable by a benchmark efficient business – either in practice or in theory.

In light of its analysis, CEG concludes that:[87]

> …the AER's methodology for setting the cost of debt does not comply with Rule 87(3) [that is, the allowed rate of return objective].

Conclusion

I understand from CEG that the transitional approach adopted by the AER is not required for the rate of return on debt to be commensurate with the efficient financing costs of the benchmark efficient entity. Further, if a transitional approach is adopted, the transitional debt management strategy adopted by the AER is not that which a benchmark efficient entity would adopt to achieve efficient financing costs over the next regulatory control period.

In CEG's opinion, the AER is misguided in adopting this approach, which is justified substantively on the basis that it may correct past regulatory errors, in that it is impermissible under the rules and does not promote efficient use of and investment in pipeline services:[88]

[82] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page iii.
[83] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page iv.
[84] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, pages iv to v.
[85] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page v.
[86] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, pages i to ii.
[87] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page i.
[88] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page v.

> Attempting to reverse a perceived past error creates risk and uncertainty for investors and it does not promote investment incentives because investors can never be sure of whether the compensation they are paid today will be clawed back tomorrow.

The result of this misguided attempt to correct past regulatory errors is that the AER:

- adopts a transitional approach that will undercompensate AGN for the cost of debt financing, regardless of the efficient debt management strategy adopted by AGN under the previous 'on the day' approach;
- produces an estimate that will not represent the efficient financing costs of the benchmark efficient entity and so will not meet the allowed rate of return objective;
- adopts a transitional approach that compromises the promotion of ongoing investment in the network, and so too dynamic or long term productive efficiency; and
- compromises the promotion of the long term interests of consumers.

It follows that the principal shortcoming highlighted by the CEG expert report is that the transitional approach to the required return on debt in the Guideline and recent decisions does not meet the NGO requirement. The result of applying the transitional approach under the AER's recent decisions gives rise to return on debt allowances of between 4.28 per cent and 6.51 per cent (each depending on the particular sampling period adopted), for 2015-16 of the current regulatory control period.

By contrast, CEG's analysis shows that an efficient debt management strategy under the AER's previous 'on the day' approach could have been either a 'hybrid' or a 'trailing average' strategy, and that either of these strategies would give rise to an allowed rate of return on debt that is commensurate with the efficient financing costs of the benchmark efficient entity.

On that basis, CEG has calculated a required rate of return on debt for AGN if the AER were to determine that the uniquely efficient debt management strategy under its previous 'on the day' approach was a hybrid strategy. This gives rise to a required return on debt for AGN of 5.44 per cent on an annualised basis for 2015-16 of the current regulatory control period.[89]

Since the AER identifies that the current efficient debt management strategy is one that calculates a trailing average estimate, in CEG's opinion a business that previously employed a trailing average debt management strategy would not require any transition. CEG therefore also calculates a required rate of return on debt for AGN if a full trailing average were taken to be efficient without a transition, which is 7.76 per cent on an annualised basis for 2015-16 of the current regulatory control period.[90]

These are both materially different results from the AER's estimates in its recent decisions, and from that which would be likely to apply if the same approach was to be applied to AGN. In my opinion, it follows that there exists a decision to be made as to whether adopting an alternative approach to the one taken by the AER in its Guideline and recent decisions would make a greater contribution to the NGO.

4.2 Corporate income tax

The corporate income tax building block is designed to ensure that a pipeline service provider receives a revenue allowance for the cost of corporate income tax. The AER's approach to determining the cost of corporate income tax is set out in the rules by reference to an estimate of the taxable income that would be

[89] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, para 22; this estimate includes allowance for the additional costs associated with swap transactions and the new issue premium, which CEG has estimated to be 23 and 27 basis points, respectively.

[90] CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, para 23; this estimate does not include additional costs associated with swap transactions and the new issue premium, which CEG has estimated to be 23 and 27 basis points, respectively.

earned by a benchmark efficient entity, the expected statutory income tax rate and the value of tax imputation credits.[91]

4.2.1 Gamma

Dividends paid to equity holders from Australian post-tax profits may have tax imputation credits attached to them, which capture the corporate income tax already paid on the company's profits. A proportion of these imputation credits will be redeemed against the personal tax obligations of domestic equity holders.[92] The return that domestic equity holders require will therefore be a combination of the rate of return on equity and the value they gain in imputation credits, which is denoted by gamma (γ).[93]

It follows that the rate of return on equity and gamma are interrelated, since they collectively determine the return that equity investors require for investing, and the revenue that the service provider needs to collect from customers in order to deliver this expected return. The AER's Guideline calculates gamma as:[94]

$$\gamma = F \times \theta$$

- where F represents the distribution rate, ie, the proportion of credits that are distributed to investors; and
- θ (theta) represents the value of distributed imputation credits.

The AER has departed from its Guideline in recent decisions by adopting an interpretation of the value of imputation credits as the rate of utilisation by equity holders, and revised its estimate of gamma from the 0.5 proposed in the Guideline to a value of 0.4.[95]

I have been provided with reports by SFG, Frontier and NERA that identify two principal shortcomings in the AER's approach to estimating gamma. I summarise these reports below.

The value of imputation credits

The expert reports provided to me address a particular shortcoming in that an inconsistency arises between the corporate income tax and allowed rate of return building blocks as a result of the AER's interpretation of theta, and therefore gamma.

The rules require that gamma 'is the value of imputation credits'[96] and I understand from SFG that, consistent with this definition, theta is commonly taken to represent the value of an imputation credit.[97] As SFG explains, until the AER published its Guideline in 2013 it was uniformly accepted across Australian regulatory bodies that theta represents the value, as in 'worth', of imputation credits to investors.[98]

However, in its Guideline and recent decisions the AER interprets theta as the proportion of credits that are likely to be redeemed.[99] SFG notes that the approach to estimating theta will depend on the particular conceptual definition of theta adopted and that the two alternate definitions above:[100]

> …are inconsistent with each other and each would be estimated by different methods.

[91] The rules, rule 87A.

[92] SFG, *Estimating gamma for regulatory purposes*, Feb 2015, page 5.

[93] SFG, *Estimating gamma for regulatory purposes*, Feb 2015, page 6.

[94] SFG, *Estimating gamma for regulatory purposes*, Feb 2015, page 5.

[95] AER, *Rate of return fact sheet*, Apr 2015, page 2.

[96] The rules, rule 87A.

[97] SFG, *Estimating gamma for regulatory purposes*, Feb 2015, page 5.

[98] SFG, *Estimating gamma for regulatory purposes*, Feb 2015, pages 5 and 6.

[99] SFG, *Estimating gamma for regulatory purposes*, Feb 2015, page 7.

[100] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, page 12.

In SFG's opinion, the appropriate definition of theta considers the degree to which the two above definitions are consistent with the building block approach prescribed in the rules and, in particular, the rate of return building block:[101]

> Under the building block approach, the regulator makes an estimate of gamma and then reduces the return that is available to investors from dividends and capital gains from the firm accordingly. In my view, it is clear that this is consistent with a *value* interpretation. If the *value* of foregone dividends and capital gains is greater than the *value* of received imputation credits, the investors will be left undercompensated, and vice versa.

NERA agrees with this assessment, and emphasises that gamma, and therefore theta, should be interpreted in a manner consistent with the cost of equity:[102]

> Imputation credits created can only raise the value of a firm if credits distributed by the firm will cut its cost of equity. The extent to which the firm's cost of equity will be cut will be determined by the extent to which the firm distributes credits created and by the value placed on a dollar of credits distributed by a representative shareholder.

As such, the expert reports provided to me highlight the error made by the AER in calculating theta as the redemption rate of imputation credits:

> If theta is to be defined as the value (as in worth to investors) of imputation credits, the redemption rate estimates cannot be used to estimate theta. They can, at best, be used to provide an upper bound for theta. The AER and Tribunal have both previously accepted this point…[103]

> Thus an estimate of the proportion of credits created that are redeemed is unlikely to provide an unbiased estimate of the value of a dollar of tax credits created to a representative shareholder.[104]

SFG concludes that:[105]

> The only way to ensure that investors are not under- or over-compensated is for the regulator to make an adjustment in relation to imputation credits that reflects the value (as in "worth") of those credits to investors.

Estimating the distribution rate

The expert reports provided to me also address a second shortcoming in that the AER's estimate of the distribution rate of imputation credits is unlikely to represent the distribution rate of the benchmark efficient entity.

As SFG explains, in its recent decisions the AER departs from the widely accepted estimate of the distribution rate of 0.7 in its Guideline by dividing the estimate into one relating to all equity (or firms) and one relating to only listed equity.[106] The estimate relating to all equity remains 0.7 but, based upon a unique data set of listed firms, the estimate for only listed equity increases to 0.8.[107] SFG highlights that use of this data set introduces error into the estimate:[108]

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[101] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, page 2 (emphasis original).

[102] NERA, *Estimating distribution and redemption rates from tax statistics*, Mar 2015, pages i and ii.

[103] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, page 12.

[104] NERA, *Estimating distribution and redemption rates from tax statistics*, Mar 2015, page ii.

[105] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, page 13.

[106] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, pages 41 and 42.

[107] The AER then uses its regulatory judgement to select a gamma estimate from within the range calculated from these distribution rates. I note that in its most recent decision, being its Final decision regarding Jemena Gas Networks' revised access arrangement proposal, the AER revised its estimate of the distribution rate relating to only listed equity down to 0.77, see AER, *Final decision Jemena Gas Networks 2015-20 – Attachment 4 (Value of imputation credits)*, June 2015, page 4-21.

[108] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, page 4.

> The 80% estimate that the AER adopts for listed firms implicitly assumes that the benchmark efficient entity would be able to use foreign-sourced profits to enable it to distribute a higher proportion of foreign-sourced profits, when no such foreign-sourced profits would be available to it.

This point is also made by Frontier in outlining its analysis of the distribution rate calculated from listed Australian firms:[109]

> …the top 20 firms are very large multinationals that are able to distribute imputation credits via profits earned offshore and the benchmark entity operates only within Australia.

SFG goes on to conclude that the 0.7 estimate accepted widely by the AER in its Guideline, by its consultants, the Tribunal and the network businesses is, in SFG's expert opinion:[110]

> …a conservative estimate of the distribution rate for the benchmark efficient entity and, for the reasons set out in the preceding paragraph, there is no reasonable basis to increase it to 0.8 even if the data is restricted to listed firms only.

In addition, NERA's report identifies a more fundamental error in the AER's approach to estimating the distribution rate. As NERA explains, the distribution rate is a firm-specific parameter:[111]

> One firm, after weighing up the costs and benefits of distributing credits, may decide to distribute all of the credits that have been created over some period. A second firm may rationally decide to distribute no credits…

However, the AER computes the distribution rate on a market-wide basis. I understand from NERA that this is likely to introduce error into the estimate of gamma since:[112]

> The distribution rate for a benchmark efficient entity may differ from the distribution rate for the market as a whole.

NERA therefore concludes that:[113]

> …it is difficult to see that there is a case for setting the distribution rate to be any different than the value accepted by the Australian Competition Tribunal in its 2010 decision…

Frontier highlights that this error is compounded by the AER's mistaken view that an interrelationship exists between the data for estimating the distribution rate and theta:[114]

> The distribution rate is a firm specific parameter because it depends upon dividend payout policies that vary across firms. Theta is a market wide parameter because the value of a credit in the hands of an investor is independent of its source. Consequently, there is no reason to impose a constraint that the same data source must be used to estimate both parameters.

Leading Frontier to conclude that:[115]

[109] Frontier, *An appropriate regulatory estimate of gamma*, June 2015, page 6.

[110] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, page 4.

[111] NERA, *Estimating distribution and redemption rates from tax statistics*, Mar 2015, page ii.

[112] NERA, *Estimating distribution and redemption rates from tax statistics*, Mar 2015, page iii.

[113] NERA, *Estimating distribution and redemption rates from tax statistics*, Mar 2015, page iv; a more recent report by NERA demonstrates that criticisms of its work provided by Handley, the AER's consultant, are either of no 'practical interest' or internally inconsistent, and therefore do not alter this conclusion, see NERA, *Estimating Distribution and Redemption Rates: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors, and for Jemena Gas Networks*, June 2015, pages i to v.

[114] Frontier, *An appropriate regulatory estimate of gamma*, June 2015, page 7.

[115] Frontier, *An appropriate regulatory estimate of gamma*, June 2015, page 7.

> …the AER's approach of using different subsets of the available evidence to establish a range of ranges for each parameter and consequently for gamma is neither transparent nor necessary nor correct.

Conclusion

I take the evidence provided by SFG, Frontier and NERA as indicating that the AER has erred in its approach to estimating both theta and the distribution rate parameter, and therefore in estimating gamma. By means of this flawed approach, in the experts' opinions the AER adopts an estimate of gamma that is materially higher than even a conservative estimate of gamma that reflected the efficient financing costs of the benchmark efficient entity. In other words, in its recent decisions, the AER's approach overestimates both the distribution and benefit to investors of imputation credits and so undercompensates investors for the cost of corporate income tax.

By underproviding for the cost of corporate income tax, the AER's approach does not promote ongoing investment in the network and so does not promote dynamic and allocative efficiency. I explain in section 3 that offering a reasonable assurance as to the recovery of efficiently incurred costs is a core principle of a framework for economic regulation that has the objective of achieving the NGO. Moreover, this principle is explicitly reflected in the Revenue and Pricing Principles.

In my opinion, the result of these two shortcomings is that the approach to the value of gamma taken by the AER in its recent decisions does not meet the NGO requirement.

I further understand from Frontier that analysis conducted by it has produced a conservative estimate of theta equal to 0.35 and corresponding estimate of gamma equal to 0.25.[116] These estimates equate with those produced by a market study that SFG conducted in 2011, which was accepted by the Tribunal as an appropriate approach to estimating theta.[117] This estimate is materially different from the AER's estimate of gamma in its recent decisions of 0.4.

In my opinion, it follows that there exists a decision to be made as to whether adopting an alternative approach to the one taken by the AER in its Guideline and recent decisions would make a greater contribution to the NGO.

4.3 The NGO requirement

I have reviewed 21 reports by experts that have been provided to me, each addressing one or more aspects of the AER's approach in its Guideline and recent decisions to determining the rate of return and gamma for the current regulatory control period. A common thread running through all of these reports is the inability of the AER's approach to incorporate relevant information into estimates of the return required by investors and, as a result of this shortcoming, the under-estimation of efficient financing costs of a benchmark efficient entity.

One means of gaining some perspective on the extent of this underestimation is to compare the return on capital estimate that would be provided by the AER's approach in its Guideline and recent decisions, assuming that these decisions indicate the AER's likely approach in respect of AGN's revised access arrangement, and the return on capital estimate that would be implied by the alternative approaches in the expert reports. The aggregate of these alternative approaches takes account of the errors they identify, and has formed the basis for the approach used by AGN in its revised access arrangement proposal.

The post-tax rate of return calculated using the alternative approaches recommended by the experts to take account of the errors they identify is 7.23 per cent for 2015-16 of the current regulatory control period.[118] This

[116] This estimate utilises an estimate of the distribution rate parameter equal to the widely accepted rate of 0.7; see Frontier, *An appropriate regulatory estimate of gamma*, June 2015, pages 6 to 7.

[117] SFG, *Estimating gamma for regulatory purposes,* Feb 2015, pages 3 and 4.

[118] $The\ rate\ of\ return = 0.4 \times return\ on\ equity + 0.6 \times return\ on\ debt = 0.4 \times 9.91 + 0.6 \times 5.44 = 7.23$

estimate incorporates the required return on equity estimated through the multi-model approach recommended by SFG, Professor Malko and Mr Knecht,[119] the required return on debt estimated through the transitional approach from a hybrid debt management strategy recommended by CEG,[120] and the benchmark efficient entity's 60 per cent debt gearing ratio. Combining this rate of return with AGN's estimated opening regulatory asset base for 2016-17 of $1,429 million provides an indicative return on capital estimate of $103 million for 2016-17 of the next regulatory control period.[121]

The post-tax rate of return calculated using the AER's approach in its Guideline and recent decisions is approximately 5.64 per cent for 2015-16 of the current regulatory control period.[122] This estimate incorporates the required return on equity[123] and on debt[124] for the current regulatory control period estimated in the AER's Guideline, and the benchmark efficient entity's 60 per cent debt gearing ratio. Combining this rate of return with AGN's estimated opening regulatory asset base for 2016-17 of $1,429 million provides an indicative return on capital estimate of $81 million for 2016-17 of the next regulatory control period.[125]

Comparing estimates of the return on capital calculated through these two approaches reveals a difference of $22 million for just the first regulatory year of the next regulatory control period.[126] The quantum of this difference between the two estimates suggests the return on capital that will be provided for by the AER, if it applies the approach in its Guideline and recent decisions, will be insufficient for AGN to meet its requirements under the NGO to invest in and operate efficient pipeline services.

Indeed, my review of each expert report identifies strong evidence that, in relation to each of the constituent components of the AER's recent decisions, the NGO requirement has not been met. The collective implications for achievement of the NGO are substantial.

In particular, my review of each expert report identifies:

- a shortcoming in the AER's foundation model approach that causes it to not have proper regard to relevant information, resulting in an underestimate of the efficient financing costs of the benchmark efficient entity – this gives rise to a lower price for customers in the current regulatory control period but at the expense of investment directed to future productive and dynamic efficiency;
- several errors in the AER's empirical specification of its Sharpe-Lintner CAPM, resulting in a biased estimate of the required return on equity in non-normal market conditions – given prevailing market conditions, this gives rise to a lower price for customers in the next regulatory control period but at the expense of investment directed to future productive and dynamic efficiency;
- a shortcoming in the AER's transitional model approach that, in attempting to correct past regulatory errors, results in a rate of return on debt that creates risk and uncertainty for investors and does not promote investment incentives – this will give rise to lower prices for customers in the next regulatory control period but at the expense of investment directed to future productive and dynamic efficiency;

[119] 9.91 per cent, calculated in Frontier, *An updated estimate of the required return on equity*, June 2015, page 3.

[120] 7.76 per cent exclusive of swap transaction and new issue premium costs, calculated in CEG, *The hybrid method for the transition to the trailing average rate of return on debt*, June 2015, page 68.

[121] $Return\ on\ capital = the\ rate\ of\ return \times the\ regulatory\ asset\ base = 0.0723 \times \$1{,}429{,}000{,}000 \approx \$103{,}000{,}000$

[122] $The\ rate\ of\ return = 0.4 \times return\ on\ equity + 0.6 \times return\ on\ debt = 0.4 \times 7.1 + 0.6 \times 4.66 = 5.64$

[123] 7.1 per cent, see AER, *Rate of return fact sheet*, Apr 2015, page 2.

[124] 4.66 per cent, calculated as the simple average of the return on debt determined by the AER in recent draft decisions for SA Power Networks (4.35 per cent), Energex (5.01 per cent) and Ergon (5.01 per cent), and a recent final decision for Jemena Gas Networks (4.28 per cent). While I note that the unpublished averaging periods for these four estimates will not be the same sampling period used in calculating CEG's alternative estimate, they will be periods in 2015, and the average of these estimates therefore provides the most reasonable indicative estimate of the required return on debt calculated through application of the AER's approach for comparison with CEG's alternative approach. ($Return\ on\ debt = (4.35 + 5.01 + 5.01 + 4.28) \div 4 = 4.66$)

[125] $Return\ on\ capital = the\ rate\ of\ return \times the\ regulatory\ asset\ base = 0.0564 \times \$1{,}429{,}000{,}000 \approx \$81{,}000{,}000$

[126] While I note this quantum significantly exceeds the threshold amount required for granting of leave under section 249(2) of the NGL, I calculate this quantum only as a means of gaining perspective on the extent that the AER's approach underestimates the return on capital required by the benchmark efficient entity.

- an error in the AER's interpretation of the value of imputation credits that overestimates gamma, with the result that investors are under-compensated for the cost of corporate income tax – this also gives rise to a lower price for customers in the next regulatory control period, but at the expense of investment directed to future productive and dynamic efficiency; and
- a shortcoming in the AER's estimation of the distribution rate of imputation credits that overestimates gamma, with the result that investors are under-compensated for the cost of corporate income tax – this also gives rise to a lower price for customers in the next regulatory control period but at the expense of investment directed to future productive and dynamic efficiency.

I explain in section 3 that the AER's task is to strike a balance between the various dimensions of efficiency, and so the attributes of a decision valued by consumers, such that it promotes their long term interests. Further, the reference in the NGO to 'the long term interests of consumers' amounts to the achievement of dynamic efficiency, which requires a balancing of the interests of current consumers with those of future consumers.

However, in weighing this trade-off, virtually every element of the AER's recent decisions on the application of its approach to the rate of return and gamma is characterised by a short term perspective that generally does not extend beyond the next regulatory control period.

By contrast, and consistent with the imperative that long-lived assets be managed by reference to a long term perspective on the services to be provided, the AER is required by the NGO to have regard to and, indeed, give primacy to, the long term interests of consumers. Put another way, implicit in the AER's recent decisions is a balance of emphasis on the short term interests of consumers that unnecessarily puts at risk the long term interests of consumers. It follows that the AER's recent decision cannot be said to meet the NGO requirement.

I note also that, by misinterpreting the definition of theta as the value of imputation credits, the AER does not take account of the interrelationship between the value of tax imputation credits to investors and the rate of return required by investors. The result of this oversight is that the AER has provided for financing costs that are less than the efficient financing costs of the benchmark efficient entity, and so has not provided sufficient incentives for investment in long term productive and dynamic efficiency, for the long term interest of consumers.

For these reasons I conclude that the AER cannot meet the NGO requirement through the application of the approach used in its Guideline and recent decisions, and so will not meet the NGO requirement if it were to apply this approach in relation to AGN's revised access arrangement.

5. Materially Preferable Decision

In this section I address the final two substantive questions put to me. These are whether, in my opinion:

- if the AER's decision in relation to AGN's revised access arrangements proposal contains the errors identified in the expert reports, the AER will have met the requirement that, where two or more possible designated reviewable regulatory decisions can be made, it must make the one that contributes to the NGO to the greatest degree; and
- if the errors were corrected on merits review by the Australian Competition Tribunal, and having regard to all other relevant considerations, this would, or would be likely to, result in a materially preferable designated NGO decision overall.

5.1 Context

By way of context, it is helpful to explain the relevance of my conclusion in section 4 to these two questions. Section 28 of the law requires that:[127]

> The AER must, in performing or exercising an AER economic regulatory function or power, perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of the national gas objective.

I refer to this requirement as the 'NGO requirement'. I conclude in section 4 that the AER's Guideline and recent decisions are not likely to have met the NGO requirement. Section 28 of the law also requires that:[128]

> …if the AER is making a designated reviewable regulatory decision, if there are two or more possible designated reviewable regulatory decisions that will or are likely to contribute to the achievement of the national gas objective… [the AER must] make the decision that the AER is satisfied will or is likely to contribute to the achievement of the national gas objective to the greatest degree…

I refer to a designated reviewable regulatory decision that will or is likely to contribute to the achievement of the NGO to the greatest degree as a 'preferable decision'. Relevantly, the first of the final substantive questions that I have been asked requires me to draw a conclusion as to whether the AER's decision in relation to AGN's revised access arrangements proposal, assuming it adheres to the recent decisions, is a preferable decision, and so meets the above requirement in section 28 of the law.

The second of the final substantive questions that I have been asked by JWS is distinct from the others in that it does not relate to a requirement on the AER, but rather an obligation falling to the Tribunal in circumstances where there is an application for a merits review of a designated reviewable regulatory decision. If there was to be such an application, section 259 of the law requires that:[129]

> … the Tribunal may only make a determination if the Tribunal is satisfied that to do so will, or is likely to, result in a decision that is materially preferable to the designated reviewable regulatory decision in making a contribution to the achievement of the national gas objective (a materially preferable designated NGO decision)…

I refer to such a determination to be made by the Tribunal as a 'materially preferable decision'. It follows that section 259 of the law requires the Tribunal to undertake an additional task, as compared with the AER, in that it is required not only to assess whether a decision is preferable, but also whether it is a *materially* preferable decision.

[127] The law, section 28(1)(a).

[128] The law, section 28(1)(b)(iii).

[129] The law, section 259(4a)(c).

In the remainder of this section, I adopt an economic perspective to form my opinion as to whether:

- if the recent decisions are replicated in the decision with respect to AGN's revised access arrangement, the AER will have met the NGO requirement; and
- if any errors in the draft decision were corrected, and having regard to all other relevant considerations, this would be likely to result in a materially preferable decision.

In addressing these questions, it is helpful first to set out the economic framework I have adopted in assessing whether the AER's decisions meet the preferable decision requirement, and whether an alternative decision may be judged to be a materially preferable NGO decision. I contrast this with the framework that appears to have been adopted by the AER in its recent decisions in concluding that its decisions meet the preferable decision requirement.

5.2 Framework

In this section I set out the economic framework I have applied for assessing whether a particular decision:

- is a preferable decision; and
- is a materially preferable decision

5.2.1 The long-term interests of consumers is paramount

The expert panel appointed to review the limited merits review regime (the LMR expert panel) considered how to assess whether one decision is preferable to another with reference to the criteria, ie, the NGO and Revenue and Pricing Principles, and recommended that:[130]

> … the ultimate end, and therefore the ultimate test, is the long-term interests of consumers (there should be no displacement of ends (consumer interests) by means to those ends such as economic efficiency, not least because not all efficient outcomes are in consumers' interests).

Similarly, in the second reading of the limited merits review bill, the Minster for Energy explained that there may be several possible economically efficient decisions with different implications for the long term interests of consumers, and went on to state that:[131]

> The long term interests of consumers must be the Australian Competition Tribunal's paramount consideration in determining that a materially preferable decision exists.

5.2.2 Determining the preferable decision

Consistent with the law and statements by both the LMR expert panel and the Minister of Energy, I have taken the preferable decision to be that which promotes the long term interests of consumers of natural gas to the greatest degree.

I conclude in section 3.4 that failure to give effect to each and every building block, and to comply with each of the main Revenue and Pricing Principles would compromise the achievement of the NGO requirement. It follows that a designated reviewable regulatory decision that offends the revenue and pricing principles and the building block requirements set out in the rules will not meet the NGO requirement. Such a decision would not be a preferable decision. An alternative decision that was consistent with the Revenue and Pricing Principles and the building block requirements in the rules would clearly be preferable, since this would promote the long term interests of consumers to the greatest degree.

A more difficult task is identifying the preferable decision where there are two or more possible decisions that will, or are likely to, contribute to the NGO requirement. Although the promotion of the long term interests of

[130] Expert Panel, *Review of the Limited Merits Review Regime – Stage 2 Report*, Sep 2012, page 4.

[131] Hansard, *South Australia House of Assembly*, Feb 2005.

consumers remains the fundamental test, in this case it is necessary to identify the precise attributes of a decision that promotes the long term interests of consumers of natural gas to the greatest degree, so that the preferred alternative decision can identified.

I explained in section 3.1.2 that economic efficiency is the means by which the long term interests of consumers is promoted, but that promoting economic efficiency, in and of itself, does not necessarily promote the long term interests of consumers.

Consistent with this reasoning, the promotion of the long term interests of consumers is likely to be identified by first isolating the dimension or dimensions of efficiency that best promote the long term interests of consumers. Regulatory decisions can then be assessed and compared by reference to the extent to which one or other promotes this dimension or these dimensions of economic efficiency without unduly compromising others. Conversely, a preferable decision should not compromise the dimension or dimensions of economic efficiency that promote consumers' long term interests in favour of promoting other dimensions of efficiency.

The extent to which a decision promotes dimensions of efficiency that are favourable to consumers' long term interests at the expense of those that are not is a matter of judgement. However, the need to strike such a balance when promoting the long term interests of consumers is an intrinsic requirement of well-functioning economic regulation, and was recognised by the Minister of Energy, who stated that:[132]

> The long term interests of consumers are not delivered by any one of [the NGO's] factors in isolation, but rather require a balancing of the range of factors.

Similarly, the LMR expert panel stated that:[133]

> There are trade-offs among these various dimensions [of efficiency] that need to be resolved by reference to some balancing or weighting of the different elements, and this balancing/weighting usually depends upon a value system beyond the notion of economic efficiency itself.

The LMR expert panel went on to state that the reference in the NEO, and similarly the NGO, to the 'long term interests of consumers' provided this value system.

In my opinion, the long term interests of consumers will best be served by promoting dynamic efficiency, which is the dimension of efficiency that requires a balance be struck between the interests of current and future consumers.[134] This is consistent with the interpretation of the NGO that I set out in section 3.1.1, ie, by way of the NGO's reference to the 'long term' interests of consumers:[135]

> …the NGO is structured so as to clarify that the balance of emphasis is to be given to the long term, dynamic dimension of efficiency.

Promoting dynamic efficiency can be described as promoting productive and allocative efficiency through time, ie, in successive time periods. It follows that the trade-off, or balancing, to which I refer above relates to the extent that a decision promotes efficient production and consumption in the current period without unduly compromising the potential for efficient production and consumption in the future. Correspondingly, a designated reviewable regulatory decision should not promote short term productive and/or allocative efficiency at the expense of dynamic efficiency.

At a high level, this trade-off can be characterised as one between the interests of consumers in the short term, as promoted by short term allocative and productive efficiency, and the interests of consumers in the

[132] Hansard, *South Australia House of Assembly*, Feb 2005.

[133] Expert Panel, *Review of the Limited Merits Review Regime – Stage 2 Report*, Sep 2012, page 38.

[134] See section 3.1.1.

[135] See section 3.1.1.

long term, as promoted by dynamic efficiency. Indeed, this fundamental trade-off was recognised by the LMR expert panel, which noted that:[136]

> To the extent that the AER is required to engage in 'balancing' judgments, the chief balancing required is between the interests of consumers at different points in time.

For the avoidance of doubt, the primacy I give to the long term interests of consumers through the dynamic dimension of efficiency should not be interpreted as disregarding the interests of consumers in the short term. I explain above that a designated reviewable regulatory decision should promote the dimension of efficiency that goes to the long term interests of consumers without unduly compromising other dimensions of efficiency. This is consistent with the opinion of the LMR expert panel, which stated that:

> It is the long-term interests of consumers that are relevant. This cannot reasonably be interpreted as meaning that the interests of consumers today are irrelevant, and that the only thing that matters is the welfare of energy consumers at some distant point in time.

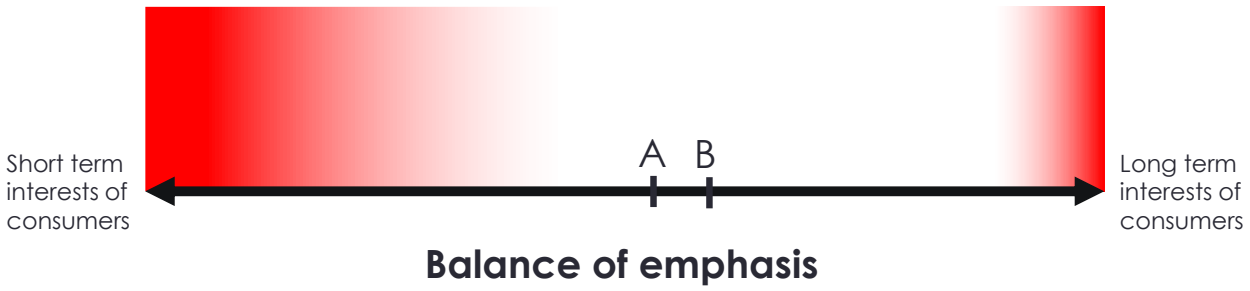
To summarise, in my opinion the preferable decision is that which promotes the long term interests of consumers of natural gas to the greatest degree. Further, in my opinion the long term interests of consumers will be best served by promoting dynamic efficiency to the greatest extent, without unduly compromising short term productive and allocative efficiency.

By way of an example to the contrary, a regulatory decision that is not preferable would be of a form that promotes the short term interests of consumers in such a manner that the benefit to consumers in the short term is outweighed by the much greater cost to consumers in the long term. In these circumstances, a preferable decision is one that rebalances the benefit derived by consumers such that, notwithstanding the existence of some cost to consumers in the short term, a disproportionately larger benefit (or the avoidance of disproportionally large costs) is realised in the long term.

5.2.3 Identifying a preferable decision

It follows from the above discussion that an assessment as to whether a decision is preferable should be made by reference to the balance struck between the long-term and short-term interests of consumers. I illustrate this balance in Figure 1, below.

Figure 5.1 – A preferable decision



This assessment is an inherently difficult task because:

- it requires assessment of a designated reviewable regulatory decision and, in particular, the likely effect of the decision on incentives for dynamic efficiency; and
- it must be informed by the particular circumstances and context of a decision.

This difficulty notwithstanding, the requirement for a preferable decision to promote the long term interests of consumers without unduly compromising their short term interests means that decisions that place excessive

[136] Expert Panel, *Review of the Limited Merits Review Regime – Stage 1 Report*, June 2012, page 37.

weight on either short term or long term outcomes are unlikely to be preferable. Such decisions would sit at either 'extreme' of the trade-off, ie, the shaded areas in Figure 5.1. They are likely not to meet the NGO requirement because they will offend one or more of the principles set out in the building block framework or the revenue and pricing principles. Further, the emphasis in the NGO on long-term interests suggests that decisions that place substantial weight on short term outcomes are more likely to offend the NGO requirement than those that place substantial weight on long term outcomes.

The more difficult task is to identify where potential decisions sit within these 'extremes'. In Figure 5.1, decision B is preferable to decision A, because it places greater weight on the long term interests of consumers without unduly compromising short term interests. However, in order to draw this comparison, the relative balance of interests under each of the decisions needs to be assessed.

In my opinion, the identification of where two decisions may sit relative to each other can usefully be informed by consideration of:

- the differing potential short and long term effects of the different decisions, in relation to both cost and service outcomes, and the extent of trade-off or mutual exclusivity between these effects; and
- the extent to which the differences between the decisions relate to fundamental elements of the overall framework, and therefore may be expected to have significant long term consequences for future outcomes.

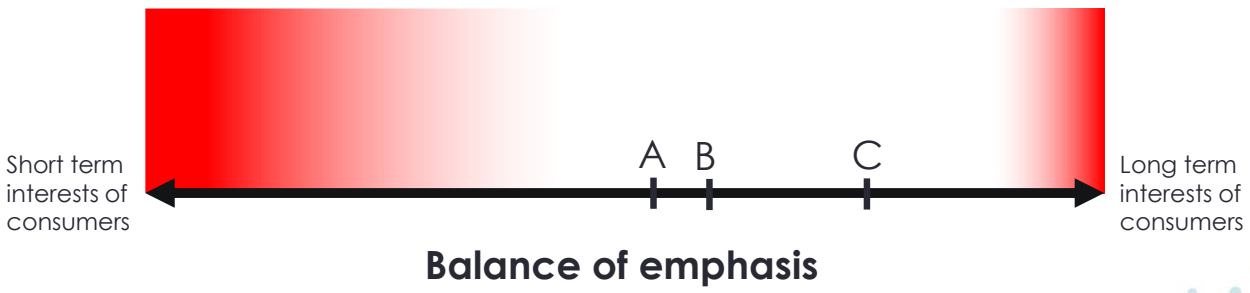
5.2.4 Identifying a materially preferable decision

For the Tribunal to make a determination to vary or set aside a designated reviewable regulatory decision, it must be satisfied that to do so will, or is likely to, result in a decision that is 'materially preferable' to the designated reviewable regulatory decision in making a contribution to the achievement of the NGO.[137]

The framework I present above focuses on identifying – from the perspective of economic reasoning – when a decision is likely to be a preferable decision. The additional consideration required of the Tribunal is to determine that an alternative decision is *materially* preferable. In other words it is necessary for the Tribunal to determine that the outcomes are sufficiently different under the two decisions to be material in terms of the balance between the short and long term interests of consumers.

In order for a decision to be considered materially preferable in economic terms, it needs to reflect a significantly greater long term benefit to customers than an alternative decision. In Figure 5.2, decision B is preferable to decision A, but not materially preferable. In contrast, decision C would be materially preferable.

Figure 5.2 – A materially preferable decision



The assessment of the materiality of the difference between outcomes should again focus on the extent to which an alternative decision would further dynamic efficiency, without compromising short term efficiency.

[137] The law, section 259(4a)(c).

The economic elements of a decision that are likely to be relevant for drawing this conclusion include those I list above, namely:

- the differing short and long term potential effects of the different decisions, in relation to both cost and service outcomes, and the extent of trade-off or mutual exclusivity between these effects; and
- the extent that the differences between the decisions relate to fundamental elements of the overall framework, and may therefore be expected to have significant long term consequences for future outcomes.

In addition, the extent of the difference between the revenue allowances implied under the alternative decisions is also likely to be relevant, with greater differences more likely to lead to materially different outcomes.

5.3 AER's framework for identifying a preferable decision

The law does not prescribe how the AER is to assess the degree to which a particular decision contributes to the achievement of the NGO. However, it does require that the AER provide reasons as to the basis on which it is satisfied that its decision is the preferable decision.[138]

5.3.1 Summary of the AER's approach

In making its most recent decisions[139] the AER provides only very limited guidance as to the framework it applied in determining whether the decision made was the preferable decision. At a high level, the AER appears to recognise that whether or not a decision it makes is in the long term interests of consumers requires a balance to be struck between the different (efficiency) factors captured within the NEO, ie:

> The long term interests of consumers are not delivered by any one of the NEO's factors in isolation, but rather by balancing them in reaching a regulatory decision.[140]

The AER explicitly recognises that:

> ….there are a number of plausible outcomes that may contribute to the achievement of the NEO. The nature of decisions under the NER is such that there may be a range of economically efficient decisions, with different implications for the long term interests of consumers.[141]

The AER also recognises that, in deciding between such different 'plausible outcomes', giving too much emphasis to one or other of the dimensions of efficiency is unlikely to contribute to the achievement of the NEO:

> At the same time, however, there are a range of outcomes that are unlikely to advance the NEO to a satisfactory extent. For example, we do not consider that the NER would be advanced if allowed revenues encourage overinvestment and result in prices so high that consumers are unwilling or unable to efficiently use the network. This could have significant longer term pricing implications for those consumers who continue to use network services. Equally, we do not consider the NEO would be advanced if allowed revenues result in prices so low that investors are unwilling to invest as required to adequately maintain the appropriate quality and level of service, and where customers are making more use of the network than is sustainable.[142]

[138] The law, section 28(1)(b)(iii).

[139] Formally, each of the AER's recent decisions arise in relation to electricity network services, and so are made by reference to the national electricity objective (NEO). However, beyond the fact of their application to electricity rather than gas services, the structure and essential elements of the NEO are not different from the NGO.

[140] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 41

[141] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 41

[142] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 41

In addition to these 'in principle' examples of outcomes that would not advance the NEO, the AER acknowledges the possibility of:

> …two or more decisions that will or are likely to contribute to the achievement of the NEO…[and the requirement that]…in those cases, we must make the decision we are satisfied will or is likely to contribute to the NEO to the greatest degree. The NER requires that we provide reasons for our decisions.[143]

The AER goes on to explain that:

> The NEL does not prescribe how we are to apply these overarching requirements and so, in applying them, we have exercised our regulatory judgement.[144]

The AER then states that:

> In the following sections, we explain our approach to evaluating these interrelationships [between constituent components of its decision] and then set out how we assessed what will contribute to the achievement of the NEO to the greatest possible degree.[145]

In the sections of the recent decisions that follow this statement, the AER explicitly describes the nature of the interrelationships between the different constituent components. However, it offers no such explanation or explanatory material as to how it has assessed what will contribute to the NEO (or, for the purpose of AGN's revised access arrangement, the NGO) to the greatest possible degree.

Rather, the AER's description as to how it will make decisions by reference to the intrinsic need for balancing the NGO factors distinguishing the short and long term interests of consumers is limited to the statement – appearing at an earlier point in its discussion of the framework it has applied – that:

> In general, we consider that we will achieve this balance and, therefore, contribute to the achievement of the NEO, where consumers are provided a reasonable level of safe and reliable service that they value, at least cost in the long run.[146]

Put another way, the AER explicitly recognises both the potential for there to be more than one decision that promotes the NGO, and that many elements of its decisions depart from material put before it that is held also to promote the NGO. However, the AER does not anywhere explain how it has determined which of two possible decisions that will contribute to the achievement of the NGO will do so to the greatest possible degree. Rather, the AER simply discusses each constituent component of its decision by reference to the applicable rules and its direct assessment of the proposal of the relevant service provider.

5.3.2 Evaluation of the AER's framework

I agree with the principle identified by the AER that the extent to which a particular designated reviewable regulatory decision contributes to the achievement of the NGO will be determined by the degree to which it achieves a favourable balance between the factors that comprise the NGO.

However, the AER's framework for determining whether or not the balance between the factors that comprise the NGO is favourable, and then assessing alternative decisions by reference to this, is neither clear nor focused on achieving the long term interests of consumers. The AER's guiding criteria of 'a reasonable level of safe and reliable service that they [consumers] value, at least cost in the long run'[147] does not explicitly contemplate either the existence of a trade-off between the short and long term interests of consumers, or shed any light on the means by which it has identified and evaluated those trade-offs.

[143] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 42

[144] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 43

[145] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 43

[146] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 41

[147] AER, *Final Decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, April 2015, page 41

Consistent with this, in its recent decisions the AER emphasises the degree of compliance with its own assessment made under the rules, rather than providing any assessment of the balance of considerations between the factors that underpin the NGO. In my opinion, this is not an adequate framework and is not geared towards identifying the decision that best meets the long term interests of consumers.

By way of example, it is unclear how the degree of compliance with the rules has any bearing on achieving a favourable balance between the allocative and dynamic dimensions of efficiency, even though this is a fundamental requirement of the NGO. Indeed, there may be multiple decisions that comply with the rules, but which have different implications as to economic efficiency, and therefore the long term interests of consumers.

In contrast, the framework I describe in section 5.2 seeks to balance the factors that comprise the NGO by reference to the long term interests of consumers, and provides guidance on how to identify the precise attributes of a decision that promotes the long term interests of consumers. It allows alternative decisions to be assessed relative to each other. Such an approach is also consistent with statements by the LMR expert panel and the Minister of Energy. In recognition of the inevitable trade-offs inherent in economic regulation and the need to balance the factors that comprise the NGO, the LMR Expert Panel states that:

> … this balancing/weighting usually depends upon a value system beyond the notion of economic efficiency itself. It is the Panel's view that this is precisely what the reference to 'for the long-term interests of consumers' in the legislation provides.[148]

Similarly, the Minister of Energy stated that:

> The long term interests of consumers must be the Australian Competition Tribunal's paramount consideration in determining that a materially preferable decision exists.[149]

And, further:

> The Australian Competition Tribunal likewise will consider the contribution of the regulatory decision to achieving the objective by considering and balancing the combination of factors in the objective, and arriving at the decision that best serves the long-term interests of consumers.[150]

It is unclear whether and, if so, how, the application of the AER's framework gives primacy to the long term interests of consumers in determining the appropriate balance between the factors that comprise the NGO, and so the preferable decision. Further, the emphasis given by the Minister of Energy and the LMR expert panel to balancing the factors that comprise the NGO when determining the preferable decision give weight to the proposition that compliance with the rules is not sufficient to conclude that the decision promotes the long term interests of consumers to the greatest degree, and to subsequently conclude that it is a preferable decision.

I conclude that the AER has not applied any explicit framework for determining how, where 'there are two or more possible designated reviewable regulatory decisions' that could be made, it has made the decision that would allow it to be satisfied will contribute to the NGO to the greatest degree.

5.4 Would the AER's decision represent a preferable decision?

I concluded in section 3.4 that failure to give effect to each and every building block, and to comply with each of the main Revenue and Pricing Principles, would compromise the achievement of the NGO requirement. In section 4.3 I also concluded that, having had regard to the errors in the AER's Guideline and recent decisions identified by the expert reports that have been provided to me, the AER has offended the building block requirements in the rules and the Revenue and Pricing Principles. In particular, I identified that, although not explicit weighing the trade-off between the short and long term interests of consumers, the

[148] Expert Panel, *Review of the Limited Merits Review Regime – Stage 2 Report*, Sep 2012, page 38.

[149] Hansard, South Australia House of Assembly, Feb 2005.

[150] Hansard, South Australia House of Assembly, Feb 2005.

AER's recent decisions are strongly characterised by a short term perspective that does not extend beyond the next regulatory control period.

In terms of the framework I set out in section 5.2, in the absence of any explicit assessment and so weighting given to the long term interests of consumers, it is infeasible for the AER's decision in regard to AGN – should it reflect the Guideline and recent decisions – to reflect the long term interests of consumers and so contribute to the NGO, regardless of the level of short term benefit the decision may provide. It follows that such a decision would fall outside of the range of those that are consistent with the NGO, as illustrated by decision D in Figure 5.3.

Figure 5.3 – The NGO requirement

In my opinion, such a decision cannot therefore be a preferable decision. An alternative decision that does not offend the building block requirements and the Revenue and Pricing Principles would clearly be a preferable designated reviewable regulatory decision, because this would promote the long term interests of consumers to the greatest degree, without unduly compromising the short term interests of consumers.

Notwithstanding this conclusion, I have also considered whether the AER's decision could be a preferable decision putting aside the (important) question of whether or not it has offended the building block provisions in the rules and the Revenue and Pricing Principles.

I discuss in section 5.2.2 above that the preferable decision is that which promotes the long term interests of consumers of natural gas to the greatest degree. Further, I set out my opinion that the long term interests of consumers will best be served by promoting dynamic efficiency to the greatest extent, without unduly compromising short term productive and allocative efficiency.

As such, the framework I describe in section 5.2 requires an assessment of the AER's decision by reference to the extent to which it promotes dynamic efficiency. I have also had regard to:

- the differing potential short and long term effects of the different decisions, in relation to both cost and service outcomes, and the extent of trade-off or mutual exclusivity between those effects; and
- the extent to which the differences between the decisions relate to significant elements of the overall framework, and so may be expected to have wider reaching consequences for future outcomes.

I note in section **Error! Reference source not found.** that I have been provided with a number of expert eports, each of which expresses the opinion that there is a high likelihood that the allowed rate of return in the AER's Guideline and recent decisions does not reflect the efficient financing costs of the benchmark efficient entity. This is a consequence of both a range of errors and shortcomings in the AER's approach, as well as the primacy given to selective relevant information.

I understand in particular from these expert reports that the efficient financing costs of the benchmark efficient entity will not be reflected in any decision made using the AER's approach when prevailing market conditions are substantially different from the historical norm, as is presently the case.

My opinion is substantiated by the expert evidence provided by SFG and NERA, which explains that when risk free rates are at historic lows (as they currently are), the AER's foundation model and approach to incorporating other relevant information will underestimate the return required by the market for a business with the characteristics of the benchmark efficient entity. By not altering its approach to take account of this underestimation, the AER provides for an allowed rate of return and associated maximum allowed revenue that results in lower prices for AGN's customers and lower returns for AGN's investors.

Such lower prices for pipeline services would be expected to give rise to some increase in allocative efficiency, since there is likely to be some increase in the quantity that is supplied. However, lower returns to investors will reduce the capital AGN is able to raise for investment in future pipeline services. In consequence, AGN will be at risk of not achieving future productivity gains that are likely to be available, and future customers will pay higher prices for a deteriorating service. The potential for future productive and allocative efficiency is therefore compromised. This represents a loss in dynamic efficiency; a welfare gain of current customers is being traded for a greater loss in welfare of future customers.

Therefore, the expert reports provided to me demonstrate that the approach adopted by the AER in its Guideline and recent decisions places undue weight on short term allocative efficiency, at the expense of longer-term considerations of dynamic efficiency. I understand from these reports that this shortcoming could be addressed by estimating the allowed rate of return using an approach that incorporates relevant methods and information to overcome identified weaknesses in the foundation model, and thereby provides for AGN to raise sufficient funds for investment purposes at prevailing and expected market conditions.

I conclude that the AER's constituent decision on the allowed rate of return has not given sufficient weight to dynamic efficiency, and therefore the long term interests of consumers.

I explained in section 5.2 that identification of a preferable decision requires consideration of the differing short and long term effects associated with different decisions. Differences of the magnitude that exist between the AER's decision regarding the allowed rate of return and alternatives proposed by the expert reports will inevitably lead to different outcomes. Further, the AER's recent decisions to substitute efficiency in financing costs for a short term gain in the allocative efficiency of prices involves a trade-off between significant potential effects on price and quality outcomes over the short and long term.

The AER appears to recognise the potential implications of this trade-off:[151]

> …[the AER] do not consider that the NEO would be advanced if allowed revenues encourage overinvestment and result in prices so high that consumers are unwilling or unable to efficiently use the network. This could have significant longer term pricing implications for those consumers who continue to use network services. Equally, [the AER] do not consider the NEO would be advanced if allowed revenues result in prices so low that investors are unwilling to invest as required to adequately maintain the appropriate quality and level of service, and where customers are making more use of the network than is sustainable. This could create longer term problems in the network and could have adverse consequences for safety, security and reliability of the network.

However, in attempting to strike a balance between differing short and long term effects, I conclude from the evidence provided in the expert reports that the AER has – albeit implicitly – placed too great an emphasis on the short term effects of its decision.

The final relevant consideration in the assessment of whether a decision is preferable is the extent to which differences between possible decisions relate to significant elements of the overall framework, and so may be expected to have wide reaching consequences for future outcomes. The AER's decision to give primacy in its foundation model approach to information and methods used under a previous version of the rules for determining the allowed rate of return amounts to the substantial disregard of relevant information to which the current framework and rules require it to have regard. This has implications for the expected rate of

[151] AER, *Final decision TransGrid transmission determination 2015-16 to 2017-18 – Overview*, Apr 2015, pages 41 to 42.

return AGN is allowed to earn and can therefore be expected to have wide reaching consequences for the future actions of AGN and future outcomes.

The AER appears to be of the opinion that the rules *permit* it to take account of relevant evidence when determining the allowed rate of return:[152]

> The Australian Energy Market Commission (AEMC) in its final rule determination considered that the estimation of the required rate of return could be improved by permitting us to take account of a broad range of information.
>
> The rate of return framework provides for us to take into account a wide range of relevant estimation methods, financial models, market data and other evidence as well as considering inter-relationships between parameter values.

This is incorrect; when determining the allowed rate of return, regard *must be had* to this information.[153] Although the rules do not stipulate the weight to be placed on each piece of relevant information, this does not absolve the AER of the requirement to have regard to all relevant information when estimating an allowed rate of return that is commensurate with the efficient financing costs of the benchmark efficient entity,[154] or the requirement to produce the best estimate possible in the circumstances.[155] However, I understand from the expert reports provided to me that the AER has chosen an approach to determining the allowed rate of return that cannot have regard to all relevant information and models.

The difference between this approach of the AER and the alternative approaches proposed by the expert reports relate to a significant element of the overall framework, on which the AER sought change in order to improve the outcome of the regulatory process. A decision that fails to have regard to a fundamental change to the regulatory framework, while at the same time being subject to substantial criticism in relation to the adequacy of the approach underpinning the decision, is unlikely to represent a preferable decision.

My assessment of the AER's Guideline and recent decisions and the expert reports provided to me against the framework I set out in section 5.2 leads me to conclude that the AER has not met the preferable decision requirement. The AER's decision, should it reflect the Guideline and recent decisions, will not provide sufficient weight to dynamic efficiency, being that element of efficiency directed to the long term interests of consumers. Rather, the AER's decision appears to be predicated on a view that near term allocative efficiency is the most important dimension of efficiency in determining revenue allowances. The AER's decision is not consistent with the emphasis given in the NGO to the long-term interests of consumers. It is also inconsistent with the guidance provided by the law, the LMR expert panel and the Minister for Energy, that the preferable decision should be determined by reference to the long-term interests of consumers.

5.5 Is the AER's decision a materially preferable decision?

I explain in section 5.2.4 that, adopting an economic perspective, in order for a decision to be materially preferable, it must be expected to provide a significantly greater long term benefit to consumers than a specified alternative without unduly compromising short term interests.

The expert reports I review and summarise in section 4 identify a number of errors and shortcomings in the constituent components of the AER's Guideline and recent decisions. By consequence of these errors, the approach adopted by the AER in the Guideline and its recent decisions involves a disproportionate emphasis on the short term interests of consumers to the detriment of their long term interests.

[152] AER, *Final decision TransGrid transmission determination 2015-16 to 2017-18 – Attachment 3 (Rate of return)*, Apr 2015, pages 3-16 and 3-17.

[153] The rules, rule 87(5).

[154] The rules, rule 87(2).

[155] The rules, rule 74(2)(b).

The extent of this misdirected emphasis is reinforced by the substantively different return on capital provided for, assuming the AER's decision reflects the Guideline and recent decisions, as compared with that derived using the approach recommended by the expert reports. I outlined in section 4.3 that the return on capital provided for by the AER's approach is $22 million less – in the first year of the next regulatory control period alone – than the return provided for by the alternative approaches recommended by the experts to take account of the errors they identify.

This emphasis on the short term interests of consumers in the AER's decision can be expected to cause prices to be lower for the next regulatory control period. However, the scale of cuts to service providers' allowed rate of return determined in the AER's Guideline and recent decisions, as identified in the expert reports provided to me, is highly likely to have adverse implications on the price, quality, safety, reliability and security of natural gas supply over an extended time horizon. These effects can be expected to begin to be felt even within the next regulatory control period. Such outcomes alone would serve to mitigate any benefit to consumers that may arise in the form of lower prices for natural gas services in the short term.

I have outlined above that the scale of the reductions in allowed revenues will have substantive, adverse implications for:

- AGN's ability to continue to attract finance and the cost of such finance;
- the future costs that AGN will need to incur to maintain and improve pipeline service quality; and
- the price, quality, safety, reliability and security of pipeline services provided to customers.

Each of these factors amounts to evidence that the decision will not promote the long term interests of consumers.

By contrast, an alternative decision by the Tribunal that corrects the errors and shortcomings I discuss in section 4 would re-align the balance of emphasis so that primacy is given to the long term interests of consumers. In particular:

- The expert reports provided to me recommend an alternative approach to estimating the required rate of return on equity that uses a combination of estimates from several financial models, weighted according to the relative strengths and weaknesses of each model, rather than relying on the estimate from a single financial model as is the AER's current approach.
  - An estimate calculated using this approach is more likely to reflect efficient financing costs in all market conditions and, in particular, will not underestimate efficient financing costs in currently prevailing market conditions, and so is more consistent with achieving dynamic and long term productive efficiency and therefore the long term interests of consumers.
- The expert reports provided to me recommend an alternative approach to estimating the Sharpe-Lintner CAPM that allows parameter inputs to have full regard to relevant information, rather than the AER's approach that has regard to relevant information only after boundaries for the range estimate have been set.
  - An estimate calculated using this approach is more likely to reflect efficient financing costs of the benchmark efficient entity, and so is more consistent with achieving dynamic and long term productive efficiency and therefore the long term interests of consumers.
- The expert reports provided to me recommend an alternative approach to transitioning from the AER's previous approach of the required rate of return on debt that discontinues inclusion of the inefficient and practically unachievable 'on the day' portfolio estimate, rather than the AER's transitional approach that maintains this inefficiency.
  - An estimate calculated using this approach will not provide uncertainty to investors and is more likely to reflect efficient financing costs of the benchmark efficient entity, unlike an estimate calculated through the AER's proposed approach, and so is more consistent with achieving dynamic and long term productive efficiency and therefore the long term interests of consumers.

- The expert reports provided to me recommend an alternative approach to accounting for the value of imputation credits that takes account of interrelationships between the corporate income tax and return on capital building blocks, rather than the AER's approach that disregards this interrelationship.
  - An estimate of gamma calculated using this approach will not systematically overvalue imputation credits, which would underestimate efficient financing costs, and so is more consistent with achieving dynamic and allocative efficiency and therefore the long term interests of consumers.
- The expert reports provided to me recommend an alternative approach to estimating gamma that uses a value of the distribution rate of imputation credits previously accepted by the Tribunal as reflecting the distribution rate of the benchmark efficient entity, rather than the approach taken by the AER in its recent decisions that chooses to depart from using this value.
  - An estimate of gamma using this approach is more likely to reflect efficient financing costs of the benchmark efficient entity, and so is more consistent with achieving dynamic and allocative efficiency and therefore the long term interests of consumers.

My assessment of the expert reports indicates that such an alternative decision, which is more likely to result in outcomes that enable AGN to recover its efficient costs and to provide appropriate incentives for AGN to achieve efficiencies going forward, is achievable by either the AER or, if necessary, the Tribunal. Such an alternative decision would, as a consequence, promote dynamic efficiency to a greater degree. Compliance with the building block requirements in the rules (such as the requirement for an allowed rate of return to be commensurate with the efficient financing costs of a benchmark efficient entity) ensures that the proposal does not unduly compromise short term productive and allocative efficiency. The expert reports I have been provided with suggest that future service quality would not be compromised by a decision that adopts the alternative approaches they suggest, in contrast to likely future outcomes under the AER's decision.

In my opinion, a decision that corrects the errors identified in each of the expert reports – either separately or in combination – would result in a materially preferable designated NGO decision, because it is more likely to promote the long term interests of consumers to a materially greater degree without compromising the short term interests of consumers, as compared with the decision made by the AER in its Guideline and recent decisions.

6. Declaration

In accordance with the CM7 Guidelines, I confirm that I have made all inquiries that I believe are desirable and appropriate, and that no matters of significance that I regard as relevant have, to my knowledge, been withheld from the Court.

Gregory J Houston
30 June 2015

Annexure A1 – Letter of Instruction

Partner: Roxanne Smith +61 8239 7108
Email: roxanne.smith@jws.com.au
Our Ref: B2385
Your Ref:
Doc ID: 66732414.1

25 June 2015

Mr Greg Houston
HoustonKemp Economists
Level 40, 161 Castlereagh Street
SYDNEY NSW 2000 **BY EMAIL**

Dear Sir

Australian Gas Networks Limited – AER Gas Price Review

We act for Australian Gas Networks Limited (**AGN**) who wishes to retain you to provide certain expert assessments and opinions as outlined below and to prepare a report to be completed before 1 July 2015 recording your assessments/opinions.

The background to the preparation of the report is as follows.

Terms of Reference

AER Draft Decisions/Final Decisions

As you are aware, the Australian Energy Regulator (**AER**) has recently issued Preliminary Decisions in relation to SA Power Networks, Energex and Ergon Energy and Final Decisions in relation to TransGrid, Networks NSW, Actew AGL, Tas Networks, Directlink and Jemena Gas Networks (**Recent Decisions**).

AGN's access arrangement revision proposal for its South Australian gas distribution network is due to be submitted to the AER on 1 July 2015. The AER will then publish a Draft Decision on AGN's revision proposal. The AER's Rate of Return Guideline published in December 2013 (**Guidelines**), as well as the Recent Decisions noted above, give an indication of the AER's likely approach to the rate of return and gamma in respect of AGN's revised access arrangement.

Obligations on the AER: contribution to NGO

Under the National Gas Law (**NGL**), the AER must, in performing or exercising an economic regulatory function or power, including the making of a designated reviewable regulatory decision, perform or exercise that function or power in a manner that will or is likely to

contribute to the achievement of the national gas objective[1] (referred to below as the "*contribution to NGO requirement*").

The national gas objective (**NGO**) is defined in section 23 of the NGL as:

> "*The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.*"

Further, under the NGL, if the AER is making a designated reviewable regulatory decision, it must[2] specify:

(a) the manner in which the constituent components of the decision relate to each other; and

(b) the manner in which that interrelationship has been taken into account in the making of the decision.

Where there are two or more possible designated reviewable regulatory decisions – materially preferable test

Further, under the NGL, in making a designated reviewable regulatory decision, where there are two or more possible designated reviewable regulatory decisions that could be made, the AER is required:

(a) to make the one that the AER is satisfied will or is likely to contribute to the achievement of the national gas objective (as stated above) to the greatest degree (defined in the NGL as "*the preferable designated reviewable regulatory decision*"); and

(b) to specify the reasons for the basis of that satisfaction,[3]

(collectively "*the preferable designated reviewable regulatory decision requirement*").

Tribunal review – materially preferable test

Further, on any merits review by AGN before the Australian Competition Tribunal, the Tribunal is only entitled to vary or set aside the reviewable regulatory decision if it is satisfied that to do so will, or is likely to, result in a decision that is materially preferable to the AER's decision in making a contribution to the achievement of the national gas objective ("*a materially preferable designated NGO decision*").[4]

Errors identified in the AER's Guidelines/recent decisions by experts retained by AGN

AGN has retained a number of experts who have reviewed the Guidelines and Recent Decisions and who have expressed certain opinions in relation to the rate of return and gamma, including that the AER has fallen into error in a number of respects as outlined in the reports (**Expert Reports**). In some cases, the expert may not formally have specifically identified error(s) but rather this is to be inferred from their opinion to the extent to which it differs from the Recent Decisions. You will need to take this into account when addressing

[1] See s28(1)(a) of the NGL.
[2] As required by s28(1)(b)(ii) of the NGL.
[3] As to paragraphs (a) and (b) above, see s28(1)(b)(iii) of the NGL.
[4] As that term is defined in s259(4a)(c) of the NGL.

the third issue we ask you to opine on as identified later in this letter. A list of the experts, together with the Expert Reports, and the key areas covered by those reports, is set out in the Table below.

Expert	Subject Matter/Title
Reports prior to AER April 2015 Decisions	
SFG Consulting	The required return on equity for the benchmark efficient entity (February 2015) (Primary Report)
SFG Consulting	The foundation model approach of the Australian Energy Regulator to estimating the cost of equity (March 2015) (Primary Report)
SFG Consulting	Beta and the Black Capital Asset Pricing Model (February 2015)
SFG Consulting	Share prices, the dividend discount model and the cost of equity for the market and a benchmark energy network (February 2015)
SFG Consulting	Using the Fama-French model to estimate the required return on equity (February 2015)
NERA Economic Consulting	Historical Estimates of the Market Risk Premium (February 2015)
Incenta Economic Consulting	Further update on the required return on equity from Independent expert reports (February 2015)
NERA Economic Consulting	Empirical Performance of Sharpe-Lintner and Black CAPMs (February 2015)
NERA Economic Consulting	Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model (March 2015)
SFG Consulting	Estimating gamma for regulatory purposes (February 2015) (Primary Report)
NERA Economic Consulting	Estimating Distribution and Redemption Rates from Taxation Statistics (March 2015)
Reports following AER April 2015 Decisions	
Competition Economics Group	The hybrid method for the transition to the trailing average rate of return on debt – Assessment and calculations for AGN (June 2015) (Primary Report)
Frontier Economics	Key issues in estimating the return on equity for the benchmark efficient entity (June 2015) (Primary Report)

Expert	Subject Matter/Title
Frontier Economics	An updated estimate of the required return on equity (June 2015)
Frontier Economics	Review of the AER's conceptual analysis for equity beta (June 2015)
NERA Economic Consulting	The cost of Equity: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors, and for Jemena Gas Networks (June 2015)
NERA Economic Consulting	Further Assessment of the Historical MRP: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors (June 2015)
Dr J Robert Malko	Witness statement regarding recent decisions of the AER relating to identification and application of models for the identification of the expected return on common equity (June 2015)
Ronald L Knecht	Witness statement regarding the use of the Fama French Three Factor Model in the regulation of energy utilities (June 2015)
Frontier Economics	An appropriate regulatory estimate of gamma (June 2015) (Primary Report)
NERA Economic Consulting	Estimating Distribution and Redemption Rates: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors, and for Jemena Gas Networks (June 2015)

Request to prepare Expert Report

We request that you prepare a report addressing the following issues:

First Issue – whether the NGO requirement will be met by the AER's approach

1 If the AER's decision in relation to AGN's revised access arrangements proposal contains the errors identified in the Expert Reports, please give your opinion whether, in making the Draft/Final Decision for AGN, the AER will have met the contribution to NGO requirement. When expressing your opinion on this issue, would you please:

(a) set out your understanding of the NGO requirement;

(b) having regard to paragraph (a) above, set out the principles which should be adopted in a regulatory regime which promotes the NGO requirement. Please explain how the revenue and pricing principles in section 24 of the NGL may be relevant in this regard;

(c) having regard to paragraphs (a) and (b) above, explain the role of the building blocks approach under the National Gas Rules (**Rules**) and whether it is concordant with those principles and therefore the NGO requirement;

(d) having regard to paragraphs (a) to (c) above, explain how in your view (if at all) a failure to comply with those principles and/or the Rules as they relate to the building blocks approach (and any other Rules in any other relevant regard) will, or is likely to, result in a failure to meet the NGO requirement;

(e) summarise any matters adopted by, and errors made by, the AER as identified in the Expert Reports which suggest that the principles (including the revenue and pricing principles), the building blocks and the other Rules you have identified in paragraphs (b) to (d) above have been offended;

(f) summarise each material constituent component of the Recent Decisions on rate of return and gamma (assuming the AER adheres to the Recent Decisions) and, in turn, the overall impact of the decisions on the business of AGN over the regulatory review period (2016 to 2020); and

(g) opine on whether, having regard to the matters above which will be dealt with in your report, the AER is likely to have met the NGO requirement. When assessing whether in your opinion the AER has met the NGO requirement, please take into account the whole of the matters raised in the Expert Reports, not only the errors as identified by the experts.

Second Issue – whether preferable designated reviewable regulatory decision requirement met

2 Having regard to the opinions you have expressed when addressing the first issue above, please assess and report on whether, having regard to the Expert Reports, the AER will have met the preferable designated reviewable regulatory decision requirement. Please note again that, when assessing whether in your opinion the AER has met this requirement, you should take into account the whole of the matters raised in the Expert Reports, not only the errors as identified by the experts.

Third Issue – whether materially preferable designated NGO decision will result if errors corrected

3 Further, please assess and report on whether, having regard to the Expert Reports, either separately or collectively,[5] the errors identified in each of the reports, if corrected, would, or would be likely to, result in a materially preferable designated NGO decision overall.

4 If you make an affirmative assessment in relation to the issue in question 3 above, please provide the basis upon which you make that assessment.

5 In particular, in making the assessment in relation to the issue in question 3 above, would you please include the following in your report:[6]

(a) a consideration of how the constituent components of those parts of the decision which each expert has been asked to consider interrelate with each other and with the matters which each expert has raised as errors (and which may therefore be grounds for review);

[5] See s246(1a) of the NGL.
[6] Which the Tribunal itself is required under s259(4b) of the NGL to have regard to when assessing whether a result will be, or will be likely to be, materially preferable.

(b) how you have taken into account the revenue and pricing principles;[7] and

(c) in assessing the extent of the contribution of the correction(s) identified in the Expert Reports to the achievement of the NGO, your consideration of the decision as a whole in respect of the topics the experts have reviewed. When addressing this issue, would you please relate your consideration to the matters you raise when addressing paragraphs (a) to (h) of question 1 above.

In relation to question 5 above, we stress that this is not an exhaustive list and that any other matter that may be relevant under the NGL should be taken into account.[8]

If you are in doubt about whether a matter may or may not be relevant in this regard, please include your consideration of it in your report. In particular, you should take into account any other matter you reasonably consider material and relevant and should indicate the relevant matter or matters which informs your opinions on the "materially preferable" issue referred to in question 3 above.

Further, in relation to questions 3 to 5 above, please note that[9] the following matters do not, in themselves, determine the question about whether a materially preferable decision exists, namely:

(a) the establishment of a ground for review under section 246(1) of the NGL – that is, whether there is error or are errors;

(b) consequences for, or impacts on, the average annual regulated revenue of a covered pipeline service provider; or

(c) that the amount that is specified in or derived from the decision exceeds the threshold amount required for the granting of leave (under section 249(2) of the NGL).

As mentioned above, in addition to addressing certain issues and errors on certain topics, a number of Expert Reports contain opinions on whether the errors as identified by the relevant expert, either separately or collectively, if corrected would, or would be likely to, result in a material preferable designated NGO decision as regards the relevant topic or topics covered by the relevant Expert Report. In forming your opinion on the third issue above, you should take into account the opinions of each such relevant expert on the materially preferable issue. If an expert has not expressed an opinion of this kind, you will need to assess their report and form your own opinion on the materially preferable issue as it relates to the report of that expert. Following these considerations, you must of course assess the third issue above having regard to your view of whether, overall, the result of the corrections would be materially preferable. You should also take into account that it may be possible that there may be considerations relevant to this question (for example interrelationships between constituent components) which have not (because the experts have reviewed the decision on a per topic or topics basis) been identified by the experts.

Use of Report

It is intended that your report will be submitted by AGN to the AER with its access arrangement revision proposal. The report may be provided by the AER to its own advisers. The report must be expressed so that it may be relied upon both by AGN and by the AER.

[7] Those principles are set out in s24 of the NGL.
[8] The opening words of s259(4b) of the NGL make this clear.
[9] As s259(4b) of the NGL indicates.

The AER may ask queries in respect of the report and you will be required to assist in answering these queries. The AER may choose to interview you and if so, you will be required to participate in any such interviews.

The report will be reviewed by AGN's legal advisers and will be used by them to provide legal advice as to its respective rights and obligations under the NGL and the Rules.

If AGN was to challenge any decision ultimately made by the AER, that appeal will be made to the Australian Competition Tribunal and your report will be considered by the Tribunal. AGN may also seek review by a court and the report would be subject to consideration by such court. You should therefore be conscious that the report may be used in the resolution of a dispute between the AER and AGN. Due to this, the report will need to comply with the Federal Court requirements for expert reports, which are outlined below.

Timeframe

AGN's revised access arrangement proposal must be submitted by **1 July 2015** and your report will need to be finalised by that time, with a draft to be provided by **30 May 2015**.

Compliance with the Code of Conduct for Expert Witnesses

Attached is a copy of the Federal Court's Practice Note CM 7, entitled "*Expert Witnesses in Proceedings in the Federal Court of Australia*", which comprises the guidelines for expert witnesses in the Federal Court of Australia (**Expert Witness Guidelines**).

Please read and familiarise yourself with the Expert Witness Guidelines and comply with them at all times in the course of your engagement by AGN.

In particular, your report should contain a statement at the beginning to the effect that the author of the report has read, understood and complied with the Expert Witness Guidelines.

Your report must also:

1 contain particulars of the training, study or experience by which the expert has acquired specialised knowledge;

2 identify the questions that the expert has been asked to address;

3 set out separately each of the factual findings or assumptions on which the expert's opinion is based;

4 set out each of the expert's opinions separately from the factual findings or assumptions;

5 set out the reasons for each of the expert's opinions; and

6 otherwise comply with the Expert Witness Guidelines.

The expert is also required to state that each of the expert's opinions is wholly or substantially based on the expert's specialised knowledge.

It is also a requirement that the report be signed by the expert and include a declaration 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 report*".

Please also attach a copy of these terms of reference to the report.

Terms of Engagement

Your contract for the provision of the report will be directly with AGN. You should forward AGN any terms you propose govern that contract as well as your fee proposal.

Please sign a counterpart of this letter and return it to us to confirm your acceptance of the engagement.

Yours faithfully

Johnson Winter & Slattery

Enc: Federal Court of Australia Practice Note CM 7, "Expert Witnesses in Proceedings in the Federal Court of Australia"

……
Signed and acknowledged by Greg Houston

Date ……..

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

Annexure A2 – Curriculum Vitae

Greg Houston

Partner

HoustonKemp
Level 40, 161 Castlereagh St
Sydney NSW 2000
Tel: +61 2 8880 4810
Mobile: +61 417 237 563
E-mail: Greg.Houston@houstonkemp.com
Web: HoustonKemp.com

Overview

Greg Houston is a founding partner of the firm of expert economists, HoustonKemp. He has twenty five years' experience in the economic analysis of markets and the provision of expert advice in litigation, business strategy, and policy contexts. His career as a consulting economist was preceded by periods working in a financial institution and for government.

Greg has directed a wide range of financial, competition and regulatory economics assignments during this consulting career. His work in the Asia Pacific region principally revolves around the activities of the enforcement and regulatory agencies responsible for these areas, many of whom also number amongst his clients. On competition and antitrust matters he has advised clients on merger clearance processes, competition proceedings involving allegations of anticompetitive conduct ranging from predatory pricing, anti-competitive agreements, anti-competitive bundling and price fixing. Greg also has deep experience of infrastructure access regulation matters, and intellectual property and damages valuation. In his securities and finance work Greg has advised clients on a large number of securities class actions, as well as market manipulation and insider trading proceedings, and on cost of capital estimation.

Greg's industry experience spans the aviation, beverages, building products, cement, e-commerce, electricity and gas, forest products, grains, medical waste, mining, payments networks, office products, petroleum, ports, rail transport, retailing, scrap metal, securities markets, steel, telecommunications, thoroughbred racing, waste processing and water sectors.

Greg has acted as expert witness in valuation, antitrust and regulatory proceedings before the courts, in various arbitration and mediation processes, and before regulatory and judicial bodies in Australia, Fiji, New Zealand, the Philippines, Singapore, the United Kingdom and the United States.

Greg was until April 2014 a Director of the global firm of consulting economists, NERA Economic Consulting, where for twelve years he served on its United States' Board of Directors, for five years on its global Management Committee and for sixteen years as head of its Australian operations.

Greg also serves on the Competition and Consumer Committee of the Law Council of Australia.

Qualifications

1982 **University Of Canterbury, New Zealand**
B.Sc. (First Class Honours) in Economics

Prizes and Scholarships

1980 University Junior Scholarship, New Zealand

Career Details

2014-	**HoustonKemp Economists** Partner, Sydney, Australia
1989-2014	**NERA Economic Consulting** Director (1998-2014) London, United Kingdom (1989-1997) Sydney, Australia (1998-2014)
1987-89	**Hambros Bank, Treasury and capital markets** Financial Economist, London, United Kingdom
1983-86	**The Treasury, Finance sector policy** Investigating Officer, Wellington, New Zealand

Project Experience[1]

Competition and Mergers

2015	**King & Wood Mallesons/Confidential Client** **Competition analysis** Analysis and advice in the context of the ACCC's inquiry into Eastern and Southern Australia wholesale gas prices.
2015	**Corrs/Confidential Client** **Merger clearance** Analysis, advice and expert report submitted to the ACCC in the context of a proposed acquisition in the office products sector.
2014-15	**Australian Government Solicitor/Commonwealth of Australia** **Competition and trade analysis** Expert report on competition and trade in tobacco products, prepared in the context of the World Trade Organisation dispute settlement proceedings concerning Australia's tobacco plain packaging legislation.
2014-15	**King & Wood Mallesons/Confidential Client** **Competitive effects of agreement** Analysis and advice prepared in context of an ACCC investigation of agreements between a supplier and its major customers that are alleged to harm competition.
2014-15	**Ashurst/Confidential Client** **Competitive effects of agreement** Analysis and advice prepared in context of an ACCC investigation of agreements between a supplier and its major customers that are alleged to harm competition.
2013-14	**Corrs/Australian Competition and Consumer Commission** **Effect of cartel conduct** Expert report on the price effects of an alleged market sharing arrangement in relation to the supply of forklift gas, prepared in the context of Federal Court proceedings brought against Renegade Gas (Supagas).

[1] Past ten years only.

2013-14	**Australian Competition and Consumer Commission** **Merger clearance** Expert report and testimony before the Competition Tribunal in the context of the ACCC's decision to oppose the acquisition of Macquarie Generation by AGL Energy.
2013-14	**Ashurst/BlueScope** **Merger clearance** Expert reports submitted to the ACCC in the context of the clearance of three approved transactions in the domestic steel industry.
2013-14	**Australian Government Solicitor/ACCC** **Merger clearance** Analysis and advice prepared in the context of the ACCC's review of the proposed acquisition by of petrol retailing sites in South Australia.
2012-13	**Minter Ellison/Confidential Client** **Merger clearance** Expert reports submitted to the ACCC in the context of a confidential application for clearance of a proposed acquisition in the industrial gases industry.
2011-12	**Gilbert + Tobin/Pact Group** **Merger clearance** Expert reports submitted to the ACCC on the competitive implications of the proposed acquisition of plastic packaging manufacturer Viscount Plastics by Pact Group.
2010-12	**Mallesons/APA** **Merger clearance** Expert reports submitted to the ACCC on the competitive implications of the proposed acquisition of the gas pipeline assets of Hastings Diversified Utilities Fund by APA Group.
2010-11	**Johnson Winter & Slattery/ATC and ARB** **Competitive effects of agreement** Expert reports and testimony in Federal Court proceedings concerning the competitive effects of restrictions on the use of artificial breeding techniques in the breeding of thoroughbred horses for racing.
2010-11	**Victorian Government Solicitor/State of Victoria** **Competitive effects of agreement** Expert report prepared for the State of Victoria on the effects of certain restrictions applying to the trading of water rights on inter-state trade in the context of a constitutional challenge brought against the state of Victoria by the state of South Australia.
2009-11	**Arnold + Porter/Visa Inc, Mastercard Inc and others** **Payment card markets** Expert reports and deposition testimony on behalf of defendants in the United States Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, on the effects of regulatory interventions in the Australian payment cards sector.

2010	**Australian Competition and Consumer Commission** **NBN Points of Interconnection** Report and advice on the competition implications in the markets for both telecommunications backhaul and retail broadband services of different choices as to the number of 'points of interconnection' in the proposed architecture of the national broadband network.
2010	**JWS, Gilbert & Tobin/Jetset Travelworld, Stella Travel Services** **Merger clearance** Advice on the competitive implications of the merger between Jetset Travelworld and Stella Travel Services.
2009-10	**Australian Government Solicitor/ACCC** **Misuse of market power** Expert report and testimony in the context of Federal Court proceedings brought by the ACCC against Cement Australia in relation to conduct alleged to have breached sections 45, 46 and 47 of the Trade Practices Act.
2008-10	**Gilbert & Tobin/Confidential** **Merger assessment** Advice on the competitive implications of the then proposed merger and then subsequently the proposed iron ore production joint venture between BHP Billiton and Rio Tinto.
2008-10	**Allens Arthur Robinson/Amcor** **Cartel damages assessment** Advice and preparation of an expert report on the approach to and quantification of economic loss in the context of two separate actions seeking damages arising from alleged cartel conduct.
2009	**State Solicitor's Office/Forest Products Commission** **Alleged breach of s46** Expert advice in the context of Federal Court proceedings alleging breaches of section 46 of the Trade Practices Act.
2009	**Clayton Utz/Confidential Client** **Joint venture arrangement** Reviewed the competitive implications under s50 of the Trade Practices Act of a proposed joint venture transaction in the rail industry.
2009	**Blake Dawson Waldron/Airservices** **Effect of potential industrial action by Air Traffic Controllers** Prepared an expert report in the context of a potential application to the Australian Industrial Relations Commission for termination or suspension of a bargaining period addressing the economic effect that certain forms of industrial action by Air Traffic Controllers would be likely to have on passengers, businesses, and the Australian economy.
2005-06, 08-09	**Phillips Fox/Fortescue Metals Group** **Access to bottleneck facilities** Expert report and testimony in the Federal Court proceedings concerning whether or not access to the BHP Billiton and Rio Tinto rail lines, serving iron ore export markets in the Pilbara, amounted to use of a production process. Subsequently, prepared expert reports on matters arising in interpreting the criteria for declaration under Part IIIA, and testified before the Competition Tribunal in late 2009.

2009	**Clayton Utz/Confidential Client** **Competitive implications of agreement** Advice on the competitive effects of a joint venture arrangement in the port terminal sector, in the context of Federal Court proceedings brought by the ACCC under section 45 of the Trade Practices Act.
2009	**Australian Competition and Consumer Commission** **Competitive effects of buy-sell agreements** Advice to the ACCC on the extent to which buy-sell arrangements between the four major refiner-marketers of petroleum products in Australia may be inhibiting competition in a relevant market.
2008-09	**Watson Mangioni/ICS Global** **Alleged misuse of market power** Expert report prepared in the context of Federal Court proceedings alleging breaches of section 46 of the Trade Practices Act.
2008-09	**Australian Competition and Consumer Commission** **Competitive effects of various agreements** Expert advice on potential theories of competitive harm arising from agreements between competitors in the oil and gas, and petroleum retailing industry sectors.
2008	**Johnson Winter & Slattery/Pepsico** **Merger analysis** Advice on the competitive implications certain potential transactions in the soft drinks sector.
2008	**Australian Competition and Consumer Commission** **Exemption from access undertaking** 'Peer review' report of the ACCC's draft decision on applications by Telstra for exemption from its standard access obligations (SAOs) for the supply by resale of the local carriage service (LCS) and wholesale line rental (WLR) in 387 exchange service areas in metropolitan Australia.
2008	**Deacons/eBay** **Exclusive dealing notification** Expert report submitted to the ACCC analysing the competitive effects of eBay's proposal that users of its online marketplace be required to settle transactions using eBay's associated entity, PayPal
2007-08	**Australian Energy Market Commission** **Wholesale market implications for retail competition** Retained to provide an overview of the operation and structure of the wholesale gas and electricity markets within the National Electricity Market (NEM) jurisdictions and to identify the issues that the AEMC should consider when assessing the influence of the wholesale markets on competition within the retail gas market in each jurisdiction.
2006-07	**Essential Services Commission of South Australia** **Competition assessment** Directed the preparation of a comprehensive report analysing the effectiveness of competition in retail electricity and gas markets in South Australia.
2006-07	**Allens Arthur Robinson/Confidential Client** **Merger clearance** Retained to provide advice on competition issues arising in the context of s50 clearance of a proposed merger in the board packaging industry.

2006-07	**Johnson Winter & Slattery/Confidential Client** **Damages assessment** Advice on the quantification of damages arising from alleged cartel conduct in the electricity transformer sector.
2006	**Minter Ellison/Confidential Client** **Misuse of market power** Expert economic advice in relation to market definition, market power and taking advantage in the context of an alleged price squeeze between wholesale and retail prices for fixed line telecommunications services, for proceedings brought under section 46 of the Trade Practices Act. The proceedings were withdrawn following regulatory amendments by the ACCC.
2006	**DLA Phillips Fox/Donhad** **Merger clearance** Preparation of an expert report on competition issues arising in the context of s50 clearance for the proposed Smorgon/One Steel merger.
2006	**Johnson Winter & Slattery/Qantas Airways** **Competition effects of proposed price fixing agreement** Assessed the competition effects of the proposed trans-Tasman networks agreement between Air New Zealand and Qantas Airways.
2006	**Phillips Fox/ACCC** **Vertical foreclosure** Advice in the context of proceedings before the Federal Court concerning the acquisition of Patrick Corporation by Toll Holdings. The proceedings were subsequently withdrawn following a S87B undertaking made by Toll.
2006	**Gilbert + Tobin/AWB** **Arbitration, access to bottleneck facilities** Expert report and testimony in an arbitration concerning the imposition of throughput fees for grain received at port and so bypassing the grain storage, handling and rail transport network in South Australia.
2006	**Qantas Airways, Australia/Singapore** **Assessment of single economic entity** Advice in the context of Qantas' Application for Decision to the Competition Commission of Singapore that the agreement between it and Orangestar did not fall within the ambit of the price-fixing and market sharing provisions of the Singapore Competition Act.
2005-06	**Qantas Airways, Australia/Singapore** **Competition effects of price fixing agreement** Expert report submitted to the Competition Commission of Singapore evaluating the net economic benefits of a price fixing/market sharing agreement, in relation to an application for exemption from the section 34 prohibition in the Competition Act of Singapore.
2005-06	**Australian Competition Consumer Commission** **Electricity generation market competition** Advice on the competition effects under S50 of the Trade Practices Act of three separate proposed transactions involving the merger of generation plant operating in the national electricity market.

2005	**Gilbert + Tobin/Hong Kong Government, Hong Kong** **Petrol market competition** Directed a NERA team working with Gilbert + Tobin that investigated the effectiveness of competition in the auto-fuel retailing market in Hong Kong.
2005	**Phillips Fox/National Competition Council** **Access and competition in gas production and retail markets** Retained as expert witness in the appeal before the WA Gas Review Board of the decision to revoke coverage under the gas code of the Goldfields pipeline. Proceedings brought by the pipeline operator were subsequently withdrawn.
2004-05	**Gilbert + Tobin/APCA** **Competition and access to Eftpos system** Economic advisor to the Australian Payments Clearing Association in connection with the development of an access regime for the debit card/Eftpos system, so as to address a range of competition concerns expressed by the Reserve Bank of Australia and the ACCC. This work included an expert report examining barriers to entry to Eftpos and the extent to which these could be overcome by an access regime.
2003-05	**Phillips Fox/Austrac** **Misuse of market power** Retained to assist with all economic aspects of a potential Federal Court action under s46 of the Trade Practices Act alleging misuse of market power in the rail freight market.

Regulatory Analysis

2015	**Government of New South Wales** **Economic regulation for privatisation** Advisor to government of New South Wales on all economic regulatory aspects of the proposed partial lease the electricity transmission and distribution entities, TransGrid, AusGrid and Endeavour Energy.
2015	**ActewAGL** **Regulatory price review** Expert report on the economic interpretation of provisions in the national electricity law and rules in relation to the application of the national electricity objective to the entire price determination of the Australian Energy Regulator.
2014-15	**Atco Gas** **Access price review** Expert reports on the economic interpretation of provisions in the national gas law and rules in relation to depreciation and the application of the national gas objective to the entire draft decision, submitted to the Economic Regulation Authority of WA.
2014-15	**Government of Victoria** **Economic regulation for privatisation** Advisor to government of Victoria on the economic regulation of the Port of Melbourne Corporation in the context of the proposed privatization of the port by way of long term lease.

2013	**Actew Corporation** **Interpretation of economic terms** Advice on economic aspects of the draft and final decisions of the Independent Competition and Regulatory Commission in relation to the price controls applying to Actew.
2012-13	**Gilbert + Tobin/Rio Tinto Coal Australia** **Price review arbitration** Analysis and expert reports prepared in the context of an arbitration concerning the price to be charged for use of the coal loading facilities at Abbott Point Coal Terminal.
2012-13	**Ashurst/Brisbane Airport Corporation** **Draft access undertaking** Advice, analysis and expert reports in the context of the preparation of a draft access undertaking specifying the basis for determining a ten year price path for landing charges necessary to finance a new parallel runway at Brisbane airport.
2012	**King & Wood Mallesons/Origin Energy** **Interpretation of economic terms** Expert reports and testimony in the context of judicial review proceedings before the Supreme Court of Queensland on the electricity retail price determination of the Queensland Competition Authority.
2012	**Contact Energy, New Zealand** **Transmission pricing methodology** Advice on reforms to the Transmission Pricing Methodology proposed by Electricity Authority.
2011-12	**Energy Networks Association** **Network pricing rules** Advice and expert reports submitted to the Australian Energy Market Commission on wide-ranging reforms to the network pricing rules applying to electricity and gas transmission and distribution businesses, as proposed by the Australian Energy Regulator.
2010-12	**QR National** **Regulatory and competition matters** Advisor on the competition and regulatory matters, including: a range of potential structural options arising in the context of the privatisation of QR National's coal and freight haulage businesses, particularly those arising in the context of a 'club ownership model' proposed by a group of major coal mine owners; and an assessment of competitive implications of proposed reforms to access charges for use of the electrified network.
2002-12	**Orion New Zealand Ltd, New Zealand** **Electricity lines regulation** Advisor on regulatory and economic aspects of the implementation by the Commerce Commission of the evolving regimes for the regulation of New Zealand electricity lines businesses. This role has included assistance with the drafting submissions, the provision of expert reports, and the giving of expert evidence before the Commerce Commission.

2011	**Meridian Energy, New Zealand** **Undesirable trading situation** Advice to Meridian Energy on the economic interpretation and implications of the New Zealand electricity rule provisions that define an 'undesirable trading situation' in the wholesale electricity market.
2011	**Ausgrid** **Demand side management** Prepared a report on incentives, constraints and options for reform of the regulatory arrangements governing the role of demand side management in electricity markets.
2010-11	**Transnet Corporation, South Africa** **Regulatory and competition policy** Retained to advise on the preparation of a white paper on future policy and institutional reforms to the competitive and regulatory environment applying to the ports, rail and oil and gas pipeline sectors of South Africa.
2010-11	**Minter Ellison/UNELCO, Vanuatu** **Arbitral review of decision by the Vanuatu regulator** Expert report and evidence before arbitrators on a range of matters arising from the Vanuatu regulator's decision on the base price to apply under four electricity concession contracts entered into by UNELCO and the Vanuatu government. These included the estimation of the allowed rate of return including its country risk component, and the decision retrospectively to bring to account events from the prior regulatory period.
2007-11	**Powerco/CitiPower** **Regulatory advice** Wide ranging advice on matters arising under the national electricity law and rules, such as the framework for reviewing electricity distribution price caps, the treatment of related party outsourcing arrangements, an expert report on application of the AER's efficiency benefit sharing scheme, the potential application of total factor productivity measures in CPI-X regulation, and arrangements for the state-wide roll out of advanced metering infrastructure.
1999-2004, 2010-11	**Sydney Airports Corporation** **Aeronautical pricing notification** Wide ranging advice on regulatory matters. This includes advice and expert reports in relation to SACL's notification to the ACCC of substantial reforms to aeronautical charges at Sydney Airport in 2001. This involved the analysis and presentation of pricing principles and their detailed application, through to discussion of such matters at SACL's board, with the ACCC, and in public consultation forums. Subsequent advice on two Productivity Commission reviews of airport charging, and notifications to the ACCC on revised charges for regional airlines.
2010	**Industry Funds Management/Queensland Investment Corporation** **Due diligence, Port of Brisbane** Retained to advise on regulatory and competition matters likely to affect the future financial and business performance of the Port of Brisbane, in the context of its sale by the Queensland government.
2009-10	**New Zealand Electricity Industry Working Group, New Zealand** **Transmission pricing project** Advice to a working group comprising representatives from lines companies, generators, major users and Transpower on potential improvements to the efficiency of New Zealand's electricity transmission pricing arrangements.

2007-09	**GDSE, Macau** **Electricity tariff reform** Advice to the regulator of electricity tariffs in Macau on a series of potential reforms to the structure of electricity supply tariffs.
2001-09	**Auckland International Airport Limited, New Zealand** **Aeronautical price regulation** Advice and various expert reports in relation to: the review by the Commerce Commission of the case for introducing price control at Auckland airport; a fundamental review of airport charges implemented in 2007; and the modified provisions of Part IV of the Commerce Act concerning the economic regulation of airports and other infrastructure service providers.
2008	**Western Power** **Optimal treatment and application of capital contributions** Advice on the optimal regulatory treatment of capital contributions, taking into account the effect of alternative approaches on tariffs, regulatory asset values, and network connection by new customers.
2000-08	**TransGrid** **National electricity market and revenue cap reset** Regulatory advisor to TransGrid on a range of issues arising in the context of the national electricity market (NEM), including: the economics of transmission pricing and investment and its integration with the wholesale energy market, regulatory asset valuation, the cost of capital and TransGrid's 2004 revenue cap reset by the ACCC.
2007	**Johnson Winter & Slattery/Multinet** **Review of outsourced asset management contracts** Expert report developing a framework for assessing the prudence of outsourcing contracts in the context of the Gas Code, and evaluating the arrangements between Multinet and Alinta Asset Management by reference to that framework.
2007	**Ministerial Council on Energy** **Review of Chapter 5 of the National Electricity Rules** Advice on the development of a national framework for connection applications and capital contributions in the context of the National Electricity Rules.
2006-07	**Ministerial Council on Energy** **Demand side response and distributed generation incentives** Conducted a review of the MCE's proposed initial national electricity distribution network revenue and pricing rules to identify the implications for the efficient use of demand side response and distributed generation by electricity network owners and customers.
2006	**Ministerial Council on Energy** **Electricity network pricing rules** Advice on the framework for the development of the initial national electricity distribution network pricing rules, in the context of the transition to a single, national economic regulator.
2005-06	**Minister for Industry** **Expert Panel** Appointment by Hon Ian Macfarlane, Minister for Industry, Tourism and Resources, to an Expert Panel to advise the Ministerial Council on Energy on achieving harmonisation of the approach to regulation of electricity and gas transmission and distribution infrastructure.

2005-06	**Australian Energy Markets Commission** **Transmission pricing regime** Advice to the AEMC on its review of the transmission revenue and pricing rules as required by the new National Electricity Law.
1998-2006	**Essential Services Commission of Victoria** **Price cap reviews** Wide ranging advice to the Essential Services Commission (formerly the Office of the Regulator-General), on regulatory, financial and strategic issues arising in the context of five separate reviews of price controls/access arrangements applying in the electricity, gas distribution, ports, rail and water sectors in Victoria. This work encompassed advice on the development of the Commission's work program and public consultation strategy for each review, direct assistance with the drafting of papers for public consultation, the provision of internal papers and analysis on specific aspects of the review, drafting of decision documents, and acting as expert witness in hearings before the Appeal Panel and Victorian Supreme Court.
2004-05	**Ministerial Council of Energy** **Reform of the National Electricity Law** Retained in two separate advisory roles in relation to the reform of the institutions and legal framework underpinning the national energy markets. These roles include the appropriate specification of the objectives and rule making test for the national electricity market, and the development of a harmonised framework for distribution and retail regulation.
2004-05	**Johnson Winter Slattery, ETSA Utilities** **Price determination** Advice on a wide range of economic and financial issues in the context of ETSA Utilities' application for review of ESCOSA's determination of a five year electricity distribution price cap.

Securities and Finance

2015	**O'Donnell Legal/Representative proceeding** **Misleading and deceptive conduct** Expert report submitted to the Federal Court assessing the effect of alleged misstatements in relation to the annual accounts and associated going concern assumption in relation to Tamaya Resources Ltd (in liquidation).
2013-15	**Sydney Water Corporation** **Cost of capital estimation** Preparation of three expert reports for submission to the Independent Pricing and Regulatory Tribunal (IPART) on the framework for determining the weighted average cost of capital for infrastructure service providers, and on estimation of an appropriate equity beta.
2012-15	**HWL Ebsworth/Confidential client** **Insider trading** Expert advice and analysis in the context of criminal proceedings alleging insider trading in certain ASX-listed securities (2012-13). Subsequent expert report filed in Supreme Court of Tasmania estimating price effects of inside information in context of subsequent 'proceeds of crime' proceedings.

2014	**Wotton Kearney/Genesys Wealth Advisors** **Misleading and deceptive conduct** Expert report submitted to the Supreme Court of Victoria assessing the accuracy of product disclosure statements and other information in relation to two fixed interest investment funds offered by Basis Capital.
2014	**TransGrid** **Cost of capital estimation** Preparation of an expert report for submission to the Australian Energy Regulator (AER) estimating the weighted average cost of capital for electricity network service providers.
2011-13	**Slater & Gordon/Modtech** **Shareholder damages assessment** Expert reports and testimony in representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of the ASX-listed entity, GPT.
2011-12	**Freehills/National Australia Bank** **Shareholder damages assessment** Expert advice in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.
2012	**Johnson Winter & Slattery/Victorian gas distributors** **Cost of equity estimation** Expert report submitted to the AER on the appropriate methodology for estimating the cost of equity under the Capital Asset Pricing Model.
2009-13	**Minter Ellison/Confidential client** **Misleading and deceptive conduct** Expert report and related advice in light of investor claims and pending litigation following the freezing of withdrawals from a fixed interest investment trust that primarily held US-denominated collateralised debt obligations (CDOs), as offered by a major Australian financial institution. Analysis undertaken includes the extent to which the investment risks were adequately described in the fund documents, and the quantum of any potential damages arising.
2011	**Barringer Leather/Confidential client** **Market manipulation** Expert report prepared in the context of criminal proceedings brought in the Supreme Court of NSW alleging market manipulation in the trading of certain ASX-listed securities.
2010-11	**Wotton Kearney/Confidential client** **Misleading and deceptive conduct** Expert report and analysis in light of investor claims and pending litigation following the freezing of withdrawals from two fixed interest investment trusts that primarily held US-denominated collateralised debt obligations (CDOs).
2010-11	**Maurice Blackburn/Confidential client** **Shareholder damages assessment** Analysis prepare for use in connection with representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of an ASX-listed entity.

2010-11	**Mallesons/ActewAGL** **Judicial review of rate of return determination** Expert report and testimony in Federal Court proceedings seeking judicial review of a decision by the Australian Energy Regulator of its determination of the risk free rate of interest in its price setting determination for electricity distribution services.
2009-11	**William Roberts/Clime Capital** **Shareholder damages assessment** Preparation of two expert reports in representative proceedings before the Federal Court alleging misstatement and/or breach of the continuous disclosure obligations of ASX-listed entity, Credit Corp.
2009	**Jemena Limited** **Cost of equity estimation** Co-authored an expert report on the application of a domestic Fama-French three-factor model to estimate the cost of equity for regulated gas distribution businesses.
2008-09	**Clayton Utz/Fortescue Metals Group** **Materiality of share price response** Preparation of expert report and testimony before the Federal Court addressing alleged breaches of the ASX continuous disclosure obligations and the associated effect on the price of FMG securities arising from statements made by it in 2004.
2008-09	**Energy Trade Associations – APIA, ENA and Grid Australia** **Value of tax imputation credits** Preparation of expert report on the value to investors in Australian equities of tax imputation credits, for submission to the Australian Energy Regulator.
2008-09	**Freehills/Centro Properties** **Shareholder damages assessment** Assistance in the estimation of potential damages arising in representative proceedings concerning accounting misstatements and/or breach of the continuous disclosure obligations of an ASX-listed entity.
2008	**Slater & Gordon/Boyd** **Shareholder damages assessment** Preparation of an expert report for submission to a mediation on the damages arising in representative proceedings before the Federal Court alleging accounting misstatements and/or breach of the continuous disclosure obligations of EDI Downer.
2007-08	**Maurice Blackburn/Watson** **Shareholder damages assessment** Preparation of advice estimating the damages arising in representative proceedings before the Federal Court alleging accounting misstatements and/or breach of the continuous disclosure obligation by the ASX-listed entity, AWB Limited.
2007	**Freehills/Telstra Corporation** **Shareholder damages assessment** Advice and assistance in the preparation of the expert report of Dr Fred Dunbar submitted to the Federal Court in the context of proceedings alleging breaches of the continuous disclosure obligations by Telstra. The principal subject of this work was the assessment of the extent to which of material alleged not to have been disclosed was already known and incorporated in Telstra's stock price.

2006-07	**Maurice Blackburn/Dorajay** **Shareholder damages assessment** Advice and assistance in the preparation of the expert report of Dr Fred Dunbar submitted to the Federal Court in the context of proceedings between Dorojay and Aristocrat Leisure. The principal subject of this work was the assessment of the extent and duration of share price inflation arising from various accounting misstatements and alleged breaches of the continuous disclosure obligations.

Valuation and Contract Analysis

2014-15	**Rahmat Lim & Partners/Port Dickson Power Berhad** **Power purchase agreement arbitration** Expert reports submitted in the context of an international arbitration held in Kuala Lumpur concerning the interpretation of the price indexation provisions in a power purchase contract between Port Dickson Power Berhad and Tenaga Nasional Berhad.
2013	**Johnson Winter & Slattery/Origin** **Gas supply agreement price review** Analysis and advice on the implications of certain contract terms for the price of gas, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.
2013	**Herbert Smith Freehills/Santos** **Gas supply agreement price review** Analysis and advice on factors influencing the market price of gas in eastern Australia, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.
2012-13	**Herbert Smith Freehills/North West Shelf Gas** **Gas supply agreement arbitration** Expert reports on the implications of certain contract terms for the price of gas under a substantial long term gas supply agreement.
2012-13	**Allens/BHP Billiton-Esso** **Gas supply agreement arbitration** Analysis, advice and expert report on the implications of certain contract terms for the price of gas under a substantial long term gas supply agreement.
2012	**King & Wood Mallesons/Ausgrid** **Power purchase agreement arbitration** Expert report prepared and filed in an arbitration on the in relation to the effect of the government's newly introduced carbon pricing mechanism on the price to be paid under a long term power purchase and hedge agreement between an electricity generator and retailer.
2011	**Kelly & Co/Cooper Basin Producers** **Wharfage dues agreement arbitration** Expert report and testimony in arbitration proceedings to determine the 'normal wharfage dues' to be paid for use of a facility that assists the transfer of petroleum products to tanker ships from a processing terminal in South Australia.

2010	**Barclays Capital/Confidential Client** **Due diligence, Alinta Energy** Retained to advise on the key industry related risks and issues facing Alinta Energy's gas and electricity assets during the due diligence process associated with its recapitalisation and sale.
2009	**Freehills/Santos** **Gas supply agreement price review** Analysis and advice on factors influencing the market price of gas in eastern Australia, to be determined in a potential arbitration concerning the terms of a substantial long term gas supply agreement.
2008-09	**Clayton Utz/Origin Energy** **Gas supply agreement arbitration** Expert reports and testimony in an arbitration concerning the market price of gas, which was determined and applied in a substantial long term gas supply agreement.
2008-09	**Minter Ellison/Confidential client** **Treatment of past capital contributions** Expert report and evidence given in arbitration proceedings on the extent to which a discount should apply under a long term water supply contract, in recognition of a capital contribution made at the outset of the agreement.
2008	**Freehills/Tenix Toll** **Logistics contract arbitration** Advice on the appropriate methodology for adjusting prices under a long term logistics contract in light of changing fuel costs.
2008	**BG plc** **Market analysis** Advise on economic aspects of the operation of the east Australian wholesale gas market in the context of the potential development of coal seam gas for use in LNG production and export.
2008	**Gilbert + Tobin/Waste Services NSW** **Damages estimation** Damages assessment in the context of a Federal Court finding of misleading and deceptive conduct in relation to the extent of environmental compliance in the provision of waste services.
2007	**Meerkin & Apel/SteriCorp** **Damages assessment** Expert report and testimony in the context of an international arbitration on commercial damages arising from alleged non-performance of a medical waste processing plant.
2006-07	**Middletons/Confidential Client** **Damages assessment** Retained to provide an expert report on the methodological framework for assessing alleged damages arising from contractual non-performance and associated forecast for demand and supply conditions and prices for natural gas and ethane prices and over a ten year period.

2006	**Confidential Client/Australia** **Valuation of digital copyright** Advice in relation to the negotiation for a licence for digital copyright. This included the discussion of the matters that should be considered in determining fees for a digital copyright licence, including the extent to which digital material should be valued differently from print material and whether the charging mechanism for print is appropriate for digital copyright.
2006	**Minter Ellison/Australian Hotels Association** **Valuation of copyright material** Expert report in the context of proceedings before the Copyright Tribunal concerning the appropriate valuation of the rights to play recorded music in nightclubs and other late night venues.
2005-06	**Minter Ellison and Freehills/Santos** **Gas supply agreement arbitrations** Principal economic expert in two separate arbitrations of the price to apply following review of two substantial gas supply agreements between the South West Queensland gas producers and, respectively, a large industrial customer and major gas retailer.

Institutional and Regulatory Reform

2008-11	**Department of Sustainability and Environment** **Management of bulk water supply** Various advice on the concept and merits of establishing market based arrangements to guide both the day-to-day operation of the bulk water supply system in metropolitan Melbourne, as well as the trading of rights to water between the metropolitan water supply system and those throughout the state of Victoria.
2008	**Department of Treasury and Finance** **Access regime for water networks** Prepared a report on the principles that should be applied in developing a state-wide third party access regime for water supply networks.
2007	**Economic Regulatory Authority** **Options for competitive supply bulk water** Prepared a report on institutional and structural reforms necessary to encourage the development of options for the procurement of alternative water supplies from third parties.
2006	**Bulk Entitlement Management Committee** **Development of urban water market** Prepared a report for the four Melbourne water businesses on options for devolution of the management of water entitlements from collective to individual responsibility, including the development of associated arrangements for oversight and co-ordination of the decentralised management and trading of water rights.
2003-05	**Goldman Sachs/Airport Authority, Hong Kong** **Framework for economic regulation** Lead a team advising on the options and detailed design of the economic regulatory arrangements needed to support the forthcoming privatisation of Hong Kong Airport.

Sworn Testimony, Transcribed Evidence[2]

2015	**Expert evidence before an arbitral tribunal on behalf of Port Dickson Power Berhad (PDP), in the matter of PDP v Tenaga Nasional Berhad (TNB)** Expert reports, sworn evidence, Kuala Lumpur, 28 January 2015
2014	**Expert evidence before a UNCITRAL arbitral tribunal on behalf of Maynilad Water Corporation Inc (MWCI), in the matter of MWCI v Metropolitan Waterworks and Sewerage System (MWSS)** Expert reports, sworn evidence, Sydney (by videolink to Manila), 31 August 2014
	Expert evidence before the Australian Competition Tribunal on behalf of the ACCC, in the matter of AGL Energy v ACCC Expert reports, sworn evidence, Sydney, 10-11 June 2014
2013	**Expert evidence before the Supreme Court of Victoria on behalf of Maddingley Brown Coal in the matter of Maddingley Brown Coal v Environment Protection Agency of Victoria** Expert reports, sworn evidence, Melbourne, 12 August 2013
	Expert evidence before the Federal Court on behalf of Modtech v GPT Management and Others Expert reports, sworn evidence, Melbourne, 27 March 2013
2012	**Expert evidence before the Supreme Court of Queensland on behalf of Origin Energy Electricity Ltd and Others v Queensland Competition Authority and Others** Expert reports, sworn evidence, Brisbane, 3 December 2012
2011	**Expert evidence before the Federal Court on behalf of the Australian Turf Club and Australian Racing Board in the matter of Bruce McHugh v ATC and Others** Expert report, transcribed evidence, Sydney, 12 and 14 October 2011
	Expert evidence in arbitration proceedings before J von Doussa, QC, on behalf of Santos in the matter of Santos and Others v Government of South Australia Expert report, transcribed evidence, Adelaide, 13-15 September 2011
	Expert evidence before a panel of arbitrators on behalf of UNELCO in the matter of UNELCO v Government of Vanuatu Expert report, transcribed evidence, Melbourne, 23 March and 21 April 2011
	Expert evidence before the Federal Court on behalf of ActewAGL in the matter of ActewAGL v Australian Energy Regulator Expert report, sworn evidence, Sydney, 17 March 2011
	Deposition Testimony in Re Payment Care Interchange and Merchant Discount Litigation, in the United States District Court for the Eastern District of New York Deposition testimony, District of Colombia, 18 January 2011

[2] Past ten years only.

2010	**Expert evidence before the Federal Court in behalf of the Australia Competition and Consumer Commission in the matter of ACCC v Cement Australia and others** Expert report, sworn evidence, Brisbane, 19-21 October 2010
	Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Input Methodologies Emerging View Paper Transcribed evidence, public hearings, Wellington, 24 February 2010
	Deposition Testimony in *Re Payment Card Interchange and Merchant Discount Antitrust Litigation*, in the United States District Court for the Eastern District of New York Deposition Testimony, District of Columbia, 18 February 2010
2009	**Expert evidence before the Australian Competition Tribunal on behalf of Fortescue Metals Group Ltd, in the matter of Application for Review of Decision in Relation to Declaration of Services Provided by the Robe, Hamersley, Mt Newman and Goldsworthy Railways** Expert report, sworn evidence, Melbourne, 12-13 October and 5-6 November 2009
	Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Input Methodologies Discussion Paper Transcribed evidence, public hearings, Wellington, 16 September 2009
	Expert evidence before the Federal Court on behalf of Fortescue Metals Group Ltd, in the matter of ASIC v Fortescue Metals Group and Andrew Forrest Expert report, sworn evidence, Perth, 29 April–1 May 2009
	Expert report and evidence in arbitration proceedings before Hon Michael McHugh, AC QC, and Roger Gyles, QC, between Origin Energy and AGL Expert report, sworn evidence, Sydney, 19-24 March 2009
2008	**Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Draft Decision on Authorisation for the Control of Natural Gas Pipeline Services** Transcribed evidence, public hearings, Wellington, 21 February 2008
2007	**Expert report and evidence in arbitration proceedings before Sir Daryl Dawson between SteriCorp and Stericycle Inc.** Expert report, sworn evidence, 11 July 2007
2006	**Expert report and evidence in arbitration proceedings before Sir Daryl Dawson and David Jackson, QC, between Santos and others, and AGL** Expert report, sworn evidence, November 2006
	Expert report and evidence before the Federal Court on behalf of Fortescue Metals Group in the matter of BHP Billiton v National Competition Council and Others Expert report, sworn evidence, November 2006
	Expert report and evidence in arbitration proceedings before Sir Daryl Dawson and David Jackson, QC, between Santos and Others, and Xstrata Queensland Expert report, sworn evidence, September 2006

Expert report and evidence before the Copyright Tribunal on behalf of the Australian Hotels Association and others in the matter of PPCA v AHA and Others
Expert report, sworn evidence, May 2006

Expert report and evidence in arbitration proceedings before Hon Michael McHugh, AC QC, on the matter of AWB Limited v ABB Grain Limited
Expert report, sworn evidence, 24 May 2006

Expert report and evidence to Victorian Appeal Panel, in the matter of the appeal by United Energy Distribution of the Electricity Price Determination of the Essential Services Commission
Expert report, sworn evidence, 10 February 2006

2005

Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on its Notice of Intention to Declare Control of Unison Networks
Transcribed evidence, public hearings, Wellington, 17 November 2005

Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on Asset Valuation choice and the electricity industry disclosure regime
Transcribed evidence, public hearings, Wellington, 11 April 2005

2004

Expert report and evidence to the Australian Competition Tribunal, in the matter of Virgin Blue Airlines v Sydney Airport Corporation
Expert reports, sworn evidence, 19-20 October 2004

Expert evidence on behalf of Orion NZ, at the Commerce Commission's Conference on the ODV Handbook for electricity lines businesses
Transcribed evidence, public hearings, Wellington, 26 April 2004

Speeches and Publications[3]

2015

Competition Law Conference, Sydney
The Public Interest in Private Enforcement
Paper and Speech, Sydney, 30 May 2015

GCR 4th Annual Law Leaders Forum Asia-Pacific
Differences in using economics in EU and Asia Pacific
Speech, Singapore, 5 March 2015

AEMC Public Forum
East Coast Gas Market Review
Speech, Sydney, 25 February 2015

2014

Competition and Consumer Workshop, Law Council of Australia
An Economist's Take on Taking Advantage
Paper and Speech, Brisbane, 14 September 2014

Energy Networks 2014
Innovation and Economic Regulation
Speech, Melbourne, 1 May 2014

[3] Past seven years

The Network Industries Quarterly, *Consumer Advocacy in Australian Regulatory Decision Making – 'Hard Choices Await',* Vol. 16, No 1, 2014
Ecole Polytechnique Federale de Lausanne, 31 March 2014

GCR 3rd Annual Law Leaders Asia Pacific
Role of Economists in Competition Law Enforcement in Asia-Pacific
Speech, Singapore, 6 March 2014

2013

University of South Australia – Competition and Consumer Workshop
Empirical test and collusive behaviour
Speech and participation game, Adelaide, 16 November 2013

Energy in WA Conference
Capacity Payments in the WEM – Time to Switch?
Panel Discussion, Perth, 21 August 2013

ACCC/AER Regulatory Conference
Designing Customer Engagement
Speech, Brisbane, 25 July 2013

Victorian Reinsurance Discussion Group
Australian Mining – When Opportunities and Risk Collide
Speech, Melbourne, 1 March 2013

NZ Downstream Conference
Investment and Regulation
Panel Discussion, Auckland, 25 July 2013

2012

Rising Stars Competition Law Workshop
Expert Evidence in Competition Cases
Speech, Sydney, 24 November 2012

KPPU – Workshop on the Economics of Merger Analysis
Theories and Methods for Measuring the Competitive Effects of Mergers
Speech, Bali, 19-21 November 2012

University of South Australia – Competition and Consumer Workshop
Reflections on Part IIIA of the Competition Act
Speech, Adelaide, 12 October 2012

NZ Downstream Conference
Lines company consolidation – what are the benefits and risks?
Panel discussion, Auckland, 6-7 March 2012

2011

Law Council of Australia - Competition Workshop
Coordinated effects in merger assessments
Speech, Gold Coast, 27 August 2011

ACCC Regulatory Conference
Adapting Energy Markets to a Low Carbon Future
Speech, Brisbane, 28 July 2011

2010

IPART Efficiency and Competition in Infrastructure
Improving Performance Incentives for GTE's
Speech, Sydney, 7 May 2010

Law and Economics Association of New Zealand
Shareholder Class Actions – A Rising Trend in Australia
Speeches, Auckland and Wellington, 15-16 November 2010

2009

ACCC Regulatory Conference
Substitutes and Complements for Traditional Regulation
Speech, Gold Coast, 30 July 2009

Minter Ellison Shareholder Class Action Seminar
Investor Class Actions – Economic Evidence
Speech, Sydney, 18 March 2009

Competition Law and Regulation Conference
Commerce Amendment Act: Impact on Electricity Lines Businesses
Speech, Wellington, 27 February 2009

2008

Non-Executive Directors
Shareholder Class Actions in Australia
Speech, Sydney, 28 July 2008

Mergers & Acquisitions: Strategies 2008
Competition Law Implications for Mergers & Acquisitions
Speech, Sydney, 27 May 2008

Institute for Study of Competition and Regulation
Role of Merits Review under Part 4 and Part 4A of the Commerce Act
Speech, Wellington, 20 February 2008

2007

Law Council of Australia - Trade Practices Workshop
Hypothetical breach of s46
Economic expert in mock trial, 20 October 2007

Assessing the Merits of Early Termination Fees, *Economics of Antitrust: Complex Issues in a Dynamic Economy, Wu, Lawrence (Ed)*
NERA Economic Consulting 2007

Assessing the Impact of Competition Policy Reforms on Infrastructure Performance
ACCC Regulation Conference
Speech, Gold Coast, 27 July 2007

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