Commonwealth of Australia

National Electricity (Victoria) Act 2005

In the Australian Competition Tribunal

File No.

Re	Application under section 71B of the National Electricity Law for a review of a transmission determination made by the AER in relation to AusNet Transmission Group Pty Ltd pursuant to Rule 6A.13 of the National Electricity Rules
Applicant:	AusNet Transmission Group Pty Ltd (ABN 78 079 798 173)
Address of Applicant:	Level 31, 2 Southbank Boulevard, Southbank Victoria 3006

Affidavit of	**Roxanne Kylie Smith**
Address:	Level 9, 211 Victoria Square, Adelaide, South Australia, 5000
Occupation:	Solicitor
Date:	18 May 2017

I, Roxanne Kylie Smith, of Level 9, 211 Victoria Square, Adelaide in the state of South Australia, Solicitor, say on oath as follows:

1. I am a partner at Johnson Winter & Slattery and I have the carriage and conduct of this matter on behalf of the Applicant, AusNet Transmission Group Pty Ltd (**AusNet Services**).

2. I make this affidavit in support of AusNet Services' Application for Leave and Application for Review dated 18 May 2017 to the Australian Competition Tribunal (**Tribunal**) for leave to apply for review of a reviewable regulatory decision of the

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Filed on behalf of the Applicant by:
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Australian Energy Regulator (**AER**) under s 71B of the National Electricity Law (**Application**).

3. I make this affidavit from my own knowledge and belief unless otherwise stated. Where I refer in this affidavit to being informed of matters, I believe those matters to be true.

4. In this affidavit, where I refer to a document as being exhibited to this affidavit, that document is located on a USB marked "Exhibits", with the electronic files produced to me at the time of making this affidavit. The exhibits are arranged by Part ("**RKS-1**", "**RKS-2**" and "**RKS-3**"). A full list of all the material contained in the exhibits to this affidavit is contained in Annexure A to this affidavit.

AusNet Transmission Group Pty Ltd

5. AusNet Services owns and operates the high voltage electricity transmission network in Victoria (**Network**). The Network, which is 6,754 kilometres long, serves Victoria, covering an area of approximately 227,600 square kilometres and supplying electricity to more than 2.1 million households and businesses. The Application relates to the Network.

6. Section 6 of the *National Electricity (Victoria) Act 2005* (Vic) applies the National Electricity Law (**NEL**) as a law of Victoria. The NEL is set out as a Schedule to the *National Electricity (South Australia) Act 1996* (SA).

7. Section 9 of the NEL gives the National Electricity Rules (**NER**) the force of law in Victoria.

8. AusNet Services is a "network service provider" within the meaning of s 2 of the NEL because it:

   (a) owns, controls or operates a transmission system that forms part of the interconnected national electricity system; and

   (b) is so registered under the NER.

9. The Network is a "transmission system" within the meaning of s 2 of the NEL, in that it is "the apparatus, electric lines, equipment, plant and buildings used to convey or control the conveyance of electricity that the [National Electricity] Rules specify as, or forming part of, a transmission system."

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10. AusNet Services is a "regulated network service provider" within the meaning of s 2 of the NEL in that it is a "regulated transmission system operator", being an owner, controller or operator of a transmission system who is a registered participant, and whose revenue from the provision of electricity network services is regulated under a transmission determination.

11. AusNet Services is a "transmission network service provider" within the meaning of Chapter 10 of the NER in that it engages in the activity of owning, controlling or operating a transmission system. The NER defines a "transmission system" as "[a] transmission network, together with the connection assets associated with the transmission network, which is connected to another transmission or distribution system." The Network is a "transmission system" within the meaning of the NER.

12. The NEL and the NER regulate the revenue that AusNet Services is permitted to derive from the provision of electricity network services.

AER transmission determination process

13. Pursuant to s 2 of the NEL, a reference to the AER in the NEL is to be read as a reference to the Australian Energy Regulator established by s 44AE of the *Competition and Consumer Act 2010* (Cth).

14. Section 15 of the NEL prescribes the functions and powers of the AER under the NEL and the NER.

15. The AER is responsible for the economic regulation of services provided by a regulated transmission system operator, including AusNet Services, by means of or in connection with a transmission system. In particular, under Chapter 6A of the NER, the AER is responsible for determining the total revenue for AusNet Services for each regulatory year of a regulatory control period for the provision by AusNet Services of electricity services using the Network.

16. The regulatory control period to which the Application relates commenced on 1 April 2017 and concludes on 31 March 2022 (**2017-2022 regulatory control period**).

17. Pursuant to cl 6A.10.1 of the NER, AusNet Services was required to submit, and on 30 October 2015 did submit, a revenue proposal to the AER for its consideration in accordance with Chapter 6A (**Revenue Proposal**).

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18. Clause 6A.12.1 of the NER requires the AER to make a draft decision in relation to the Revenue Proposal.

19. On 20 July 2016, the AER made such a decision entitled *Draft Decision, AusNet Services transmission determination 2017-18 to 2021-22* dated July 2016 (**Draft Decision**).

20. On 21 September 2016, in accordance with cl 6A.12.3 of the NER, AusNet Services submitted a revised revenue proposal entitled *AusNet Transmission Group Pty Ltd, Transmission Revenue Review 2017-2022, Revised Revenue Proposal* dated 21 September 2016 (**Revised Revenue Proposal**).

21. On 20 December 2016, AusNet Services submitted a further short submission to the AER addressing certain aspects of its Revised Revenue Proposal.

22. On 28 April 2017, the AER made its final decision under cl 6A.13.1 of the NER, entitled *Final Decision, AusNet Services transmission determination 2017 – 2022* dated April 2017 (**final decision**).

23. On the same day, in accordance with cl 6A.13.4 of the NER, the AER made the transmission determination to which the final decision relates, entitled *AusNet Services, Transmission determination 2017-22* dated April 2017 (**Transmission Determination**). The Transmission Determination states that AER's reasons are included in the final decision which is to be read in conjunction with the Transmission Determination (page 3). Hereafter in this affidavit, the final decision and Transmission Determination are referred to collectively as the **Final Decision**.

24. Exhibited to this affidavit and marked "**RKS-1**", "**RKS-2**" and "**RKS-3**" are copies of the documents listed in Annexure A to this affidavit which are relevant to the Application, including:

    (a) Relevant extracts of AusNet Services' Revenue Proposal and supporting material;

    (b) Relevant extracts of the Draft Decision and supporting material;

    (c) Relevant extracts of AusNet Services' Revised Revenue Proposal and supporting material;

    (d) Relevant extracts of the final decision and supporting material;

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(e) The Transmission Determination;

(f) The following decisions of the Australian Competition Tribunal:

(i) *Application by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1;

(ii) *Application by SA Power Networks* [2016] AComptT 11; and

(iii) *Application by Energex Limited (Distribution Ratio (Gamma) No 3* [2010] ACompT 9.

(iv) *Application by Energex Limited (Gamma) No 5* [2011] ACompT 9.

The reviewable decision

25. The Final Decision is a reviewable regulatory decision for the purposes of s 71B(1) of the NEL as it is a network revenue or pricing decision that sets a regulatory period. As referred to at paragraph 23 above, the reasons for the Transmission Determination are set out in the AER's final decision, and those documents are to be read together (and are together referred to herein as the Final Decision).

26. AusNet Services is an affected or interested person or body (as that term is defined in s 71A of the NEL) for the purposes of s 71B of the NEL, being the regulated network service provider to whom the reviewable regulatory decision applies.

Application for leave

27. AusNet Services seeks the leave of the Tribunal to apply to the Tribunal for a review of the Final Decision pursuant to s 71B of the NEL. Subject to leave being granted by the Tribunal, an application is made under s 71C of the NEL for review of a reviewable regulatory decision of the AER.

28. The Tribunal may only grant leave to apply for review of a reviewable regulatory decision if:

(a) pursuant s 71E(a) of the NEL, it appears to the Tribunal that there is a serious issue to be heard and determined as to whether a ground for review set out in s 71C(1) exists;

(b) the provisions of s 71E(b) of the NEL have been met (as to which see paragraph 29 and 30 below);

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(c) pursuant to s 71F(2) of the NEL, the amount that is specified in or derived from the reviewable regulatory decision exceeds the lesser of $5,000,000 or 2% of the average annual regulated revenue of the regulated network service provider.

29. Pursuant to s 71E(b) of the NEL, the Tribunal may only grant leave to apply under s 71B(1) if it appears to the Tribunal that AusNet Services has established a *prima facie* case that a determination made by the Tribunal varying the reviewable regulatory decision, or setting aside the reviewable regulatory decision and a fresh decision being made by the AER following remission of the matter to the AER by the Tribunal, on the basis of one or more grounds raised in the application, either separately or collectively, would, or would be likely to, result in a "materially preferable NEO [national electricity objective] decision".

30. A "materially preferable NEO decision" is defined in s 71P(2a)(c) of the NEL to mean a decision that is materially preferable to the reviewable regulatory decision in making a contribution to the achievement of the national electricity objective (**NEO**) (set out in s 7 of the NEL).

Grounds for review

31. AusNet Services seeks leave to apply for review of the Final Decision on the grounds for review stated in the Application filed with this affidavit in support.

Value of imputation credits (Gamma)

32. In the Final Decision, the AER did not approve AusNet Services' proposed value of imputation credits (also referred to as "gamma") of 0.25.

33. For the reasons set out in the Application in Part C, AusNet Services considers the AER's decision on gamma contained an error or errors of fact material to the making of the decision, and further or alternatively, involved an incorrect exercise of discretion, and further or alternatively, the decision was unreasonable having regard to all the circumstances.

34. In respect of the AER's decision in relation to gamma, on the basis of the material exhibited to this affidavit and marked "**RKS-1**", "**RKS-2**" and "**RKS-3**":

(a) I am of the opinion that there is a serious issue to be heard and determined as to whether a ground for review set out in s 71C(1) of the NEL exists;

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(b) I am of the opinion that the grounds for review relied upon by AusNet Services relate to the amount of revenue that may be earned by AusNet Services that is specified in or derived from the Final Decision;

(c) I am informed by Mr Robert Ball, Senior Economist at AusNet Services, and believe, that the amount of revenue derived from the Final Decision in respect of the AER's decision concerning gamma is approximately $19.2 million ($nominal) over the 2017-2022 regulatory control period, being referable to the difference between the gamma of 0.25 for use in the estimation of the cost of corporate income tax for the 2017-2022 regulatory control period (as proposed by AusNet Services) and the gamma of 0.4 (being the value adopted by the AER in the Final Decision).

Financial threshold

35. For the 2017-2022 regulatory control period, the Final Decision allows AusNet Services to recover total regulated revenue of $2,742.8 million (unsmoothed).

36. I am informed by Mr Ball and believe that $2,742.8 million of total regulated revenue equates to an average annual total regulated revenue of $548.6 million (unsmoothed), 2% of which is $10.972 million, meaning the relevant financial threshold for AusNet Services for the purposes of s 71F(2) of the NEL is $5 million.

37. As the amount specified or derived from the Final Decision in respect of the AER's decision concerning gamma which is the subject of the Application ($19.2 million) exceeds $5 million, the financial threshold in s 71F(2) of the NEL is met.

Materially preferable NEO decision

38. AusNet Services has identified what it considers to be serious and material errors in the Final Decision and, as a consequence of these errors, considers that the Final Decision is not a materially preferable NEO decision. In particular, I am instructed that for the reasons set out in Part D of the Application the addition of the amount referable to the AER's decision on gamma to AusNet Services' regulated revenue requirement over the 2017-2022 regulatory control period would materially contribute to the advancement of the NEO for the following reasons:

(a) The Gamma Decision involves the construction of a new rule in the NER which, if the AER has applied incorrectly (as AusNet Services contends), will result in a

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permanent overstatement of the value of imputation credits, and thus an understatement of the cost of corporate income tax.

(b) The correct application of the building block approach in the NER involves providing AusNet Services with a reasonable opportunity to recover at least its efficient costs (through the building blocks) of providing prescribed transmission services and complying with regulatory obligations or requirements as contemplated by the revenue and pricing principles in the NER. Calibrating the total revenue allowed to AusNet Services for the efficient costs of providing the prescribed transmission services and complying with regulatory obligations or requirements is in the long term interest of consumers with respect to the three facets of the NEO:

(i) investment in;

(ii) operation of; and

(iii) use of,

electricity services.

(c) Allowing AusNet Services to recover at least its efficient costs, including in relation to the cost of corporate income tax, is necessary to ensure that AusNet Services can attract the necessary investment to allow it to invest efficiently in its transmission network, and that there are appropriate incentives on it to invest efficiently in the network in the long term interest of consumers with respect to price, safety, quality, reliability and security of supply of electricity.

(d) Understatement of the cost of corporate income tax therefore results in an inadequate return for investors in regulated businesses. If the overall return to investors is depressed to a material amount due to an overstatement of the value of imputation credits, AusNet Services may not be able to attract or retain sufficient funds to make the required investments in its network, which are necessary to promote the long term interests of consumers, because investors will be undercompensated and reliability and service standards may decline. The quantum in issue here is material enough to have the above effect.

(e) Further, the impacts of the shortfalls in AusNet Services' ability to recover at least its efficient costs if the errors in the AER's gamma decision are left uncorrected are that:

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(i) the dimensions of efficiency (productive, allocative and dynamic) recognised and sought in the NEO, namely the promotion of efficient investment in, and efficient operation and use of electricity services for the long term interests of consumers, will be unrealised;

(ii) investment in the network may be delayed;

(iii) to that extent, there may be adverse impacts on the quality, safety, security and reliability of electricity supplied to consumers over the long term, which is contrary to the achievement of the NEO;

(iv) the weighting required by the NEO in favour of the long term interests of consumers will have been disturbed by the undue weight given to short term price reduction by reason of the errors made by the AER.

(f) Thus, if the Final Decision were varied to substitute the adoption of a gamma value of 0.4 with one of 0.25, on the grounds for review described in the Application, the resultant decision would be a 'materially preferable NEO decision', within the meaning of s 71P(2a)(c) of the NEL.

(g) In the event that, rather than varying the Final Decision, the Tribunal opted to set it aside and remit for redetermination by reference to grounds of review in respect of the AER's decision on gamma, then in that event too, on the currently available material, the Tribunal can be reasonably satisfied that a materially preferable designated NEO decision would result from the remitter, for the same reasons as outlined above and in the Application.

(h) Further, the perpetuation of error is itself a matter that impairs 'regulatory certainty', and thus the correction of error is itself conducive to the achievement of the NEO.

(i) A decision correcting one or more of the errors identified in Part C of the Application would be more conducive to the avoidance of the above impacts and to the promotion of efficient investment in the AusNet Services transmission network. That efficient investment effect would, in turn, be more conducive to the efficient operation and use of the prescribed transmission services than if the Final Decision is left uncorrected.

39. On the basis of the material exhibited to this affidavit in respect of the Application there is a *prima facie* case that a determination made by the Tribunal varying the Final

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Decision to correct one or more of the errors would, or would be likely to, result in materially preferable NEO decisions.

40. The Tribunal, in making a determination to vary or set aside the Final Decision, is required to take into account the revenue and pricing principles (per s 71P(2b)(b) of the NEL). AusNet Services contends that the errors are inconsistent with the correct application of the revenue and pricing principles and that, alone or in combination with the specific matters raised herein, give rise to a serious issue (or serious issues) to be heard and determined and, further, unless the errors are corrected, the Final Decision will continue to contravene the revenue and pricing principles and the NEO.

Sworn by the deponent)
at Adelaide)
on 18 May 2017)

Signature of deponent

Before me:

Signature of witness

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ANNEXURE A

Index to exhibit "RKS-1" – AusNet Services Regulatory Proposals, AER Decisions and Transmission determination

Tab/File	Document	Date
1.1	Transmission Revenue Review 2017-2022, Initial Regulatory Proposal, Overview	30 October 2015
1.2	Transmission Revenue Review 2017-2022, Initial Regulatory Proposal, Chapter 10 - Rate of Return	30 October 2015
1.3	Draft Decision, AusNet Services transmission determination, 2017-18 to 2021-22, Overview	July 2016
1.4	Draft Decision, AusNet Services transmission determination, 2017-18 to 2021-22, Attachment 3 - Rate of Return	July 2016
1.5	Transmission Revenue Review 2017-2022, Revised Revenue Proposal, Overview	21 September 2016
1.6	Transmission Revenue Review 2017-2022, Revised Revenue Proposal, Chapter 6 - Rate of Return and Forecast Inflation	21 September 2016
1.7	AusNet Services: Submission on revised proposal *(including attachments* - Revised Rate of Return Calculation *and* correspondence from the AEMO*)*	20 December 2016
1.8	Final Decision, AusNet Services transmission determination 2017 – 2022, Overview	April 2017
1.9	Final Decision, AusNet Services transmission determination 2017 – 2022, Attachment 3 - Rate of Return	April 2017
1.10	AusNet Services transmission determination 2017-22	April 2017
1.11	AusNet Services transmission determination 2017-22, Attachment A – Negotiating framework	April 2017
1.12	AusNet Services transmission determination 2017-22, Attachment B – Pricing methodology	April 2017

Index to exhibit "RKS-2" – Ground of Review – Value of imputation credits

Tab/File	Document	Date
2.1	Transmission Revenue Review 2017-2022, Initial Regulatory Proposal, Chapter 11 - Tax and the Value of Imputation Credits	30 October 2015
2.2	Frontier Economics, 'An appropriate regulatory estimate of gamma: Report prepared for ActewAGL Distribution, AGN, APA, AusNet Services, CitiPower, Ergon, Energex, Jemena Electricity Networks, Powercor, SA Power Networks and United Energy' (Appendix 11A to the Initial Regulatory Proposal)	June 2015
2.3	Simon Wheatley, 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' (Appendix 11B to the Initial Regulatory Proposal)	June 2015
2.4	Draft Decision, AusNet Services transmission determination, 2017-18 to 2021-22, Attachment 4 - Value of imputation	July 2016

Tab/File	Document	Date
	credits	
2.5	Dr Martin Lally, Capital Financial Consultants Ltd, 'Gamma and the ACT Decision'	23 May 2016
2.6	Transmission Revenue Review 2017-2022, Revised Revenue Proposal, Chapter 7 - Tax and the Value of Imputation Credits	21 September 2016
2.7	Frontier Economics, 'An updated dividend drop-off estimate of theta: Report prepared for AGN, Multinet Gas, AusNet Transmission, AusNet Gas Distribution and Transgrid' (Appendix 7A to the Revised Revenue Proposal)	September 2016
2.8	Frontier Economics, 'Issues in the estimation of gamma: Report prepared from AGN, Multinet Gas, AusNet Transmission, and AusNet Gas' (Appendix 7B to the Revised Revenue Proposal)	September 2016
2.9	SFG Consulting, 'Dividend drop-off estimate of theta Re Application by Energex Limited (No 2) [2010] ACompT7'	21 March 2011
2.10	Professor Stephen Gray, SFG Consulting, 'Updated dividend drop-off estimate of theta: Report for the Energy Networks Association'	7 June 2013
2.11	SFG Consulting, 'An appropriate regulatory estimate of gamma: Report for Jemena Gas Networks, ActewAGL, APA, Networks NSW (Ausgrid, Endeavour Energy and Essential Energy), ENERGEX, Transend, TransGrid and SA Power Networks'	13 May 2014
2.12	Dr Andrew Ainsworth, Assoc. Prof. Graham Partington and Dr Geoff Warren, Centre for International Finance and Regulation, 'Do Franking Credits Matter? Exploring the Financial Implications of Dividend Imputation', Research Working Paper No 058/2015/Project No F004	June 2015
2.13	Final Decision, AusNet Services transmission determination 2017 – 2022, Attachment 4 - Value of imputation credits	April 2017

Index to exhibit "RKS-3" – Relevant Authorities

Tab/File	Document	Date
3.1	Application by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1	26 February 2016
3.2	Application by SA Power Networks [2016] AComptT 11	28 October 2016
3.3	Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9	24 December 2010
3.4	Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9	12 May 2011

AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Submitted: 30 October 2015

About AusNet Services

AusNet Services is a major energy network business that owns and operates key regulated electricity transmission and electricity and gas distribution assets located in Victoria, Australia. These assets include:

- A 6,574 kilometre electricity transmission network that services all electricity consumers across Victoria;
- An electricity distribution network delivering electricity to approximately 680,000 customer connection points in an area of more than 80,000 square kilometres of eastern Victoria; and
- A gas distribution network delivering gas to approximately 572,000 customer supply points in an area of more than 60,000 square kilometres in central and western Victoria.

AusNet Services' purpose is 'to provide our customers with superior network and energy solutions.'

For more information visit: www.ausnetservices.com.au

Contact

This document is the responsibility of the Asset Management division of AusNet Services. Please contact the indicated owner of the document below with any inquiries.

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Glossary

Abbreviation	Full Name
AARR	Aggregate annual revenue requirement
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMS	Asset Management System
APS	Anglesea Power Station
ASIC	Australian Securities and Investments Commission
ASRR	Annual Service Revenue Requirement
BAU	Business-as-usual
BLTS	Brooklyn Terminal Station
CBD	Central Business District
CAM	Cost Allocation Methodology
capex	Capital Expenditure
CCP	Consumer Challenge Panel
CESS	Capital Efficiency Sharing Scheme
CGS	Commonwealth Government Security
DC	Direct Current
DCF	Discounted Cash Flow
DGM	Dividend Growth Model
DI	Dispatch Intervals
DNSP	Distribution Network Service Provider
EAM	Enterprise Asset and Works Management
EBSS	Efficiency Benefit Sharing Scheme
EGTS	East Geelong Terminal Station
EGWWS	Electricity, Gas, Water and Waste Services

Abbreviation	Full Name
EMLO	Emergency Management Liaison Officer
EMV	Emergency Management Victoria
EPA	Environment Protection Authority
ERP	Enterprise Resource Planning Platform
ESC	Essential Services Commission
ESMS	Electricity Safety Management Scheme
ESV	Energy Safe Victoria
EUAA	Energy Users Association of Australia
EWL	East West Link
FBTS	Fisherman's Bend Terminal Station
FMECA	Failure Mode Effect Criticality Analysis
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GIS	Gas Insulated Switchgear
GST	Goods and Services Tax
GTS	Geelong Terminal Station
HTS	Heatherton Terminal Station
HWPS	Hazelwood Power Station
HYTS	Heywood Terminal Station
IAP2	International Association of Public Participation
ICT	Information and Communication Technology
IT	Information Technology
ITOMS	International Transmission Operations Maintenance Study
KPIs	Key Performance Indicators
LMA	Linking Melbourne Authority
MAR	Maximum Allowed Revenue

Abbreviation	Full Name
MIC	Market Impact Component
MPS	Morwell Power Station
MTFP	Multilateral Total Factor Productivity
MVA	Mega Volt Amps
NCC	Network Capability Component
NCIPAP	Network Capability Incentive Parameter Action Plan
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NGO	Non-Government Organisation
NIST-CSFCI	National Institute of Standards and Technology Cyber Security Framework for Critical Infrastructure
NPV	Net Present Value
NSP	Network Service Provider
OH&S	Occupational Health and Safety
Opex	Operating and Maintenance Expenditure
PCRs	Protection & Control Requirements
PPIs	Partial Performance Indicators
PTH	Point Henry
PTRM	Post Tax Revenue Model
PV	Present Value
RAB	Regulatory Asset Base
RCM	Reliability Centred Maintenance
repex	Replacement expenditure
RIN	Regulatory Information Notice
RPP	Revenue and Pricing Principles

Abbreviation	Full Name
RTS	Richmond Terminal Station
ROTS	Rowville Terminal Station
RWTS	Ringwood Terminal Station
SAIP	Smart Aerial Image Processing
SAUR	Shared Asset Unregulated Revenues
SCADA	Supervisory Control and Data Acquisition
SCC	State Control Centre
SCO	Synchronous condenser
SMTS	South Morang Terminal Station
STPIS	Service Target Performance Incentive Scheme
SVTS	Springvale Terminal Station
TDM	Transformer Dependability Model
TNIs	Transmission Node Identifiers
TNSP	Transmission Network Service Provider
TSTS	Templestowe Terminal Station
TTS	Thomastown Terminal Station
TUOS	Transmission Use of System
VCR	Value of Customer Reliability
WMTS	West Melbourne Terminal Station
WPI	Wage Price Index

Highlights

We will continue to provide Victorian customers with efficient and low cost transmission services	Transmission prices in Victoria will continue to be low and flat. AusNet Services has the lowest total cost per customer of all transmission networks in the NEM. This reflects AusNet Services' continued commitment to efficient asset management approaches.
We have reduced network capex as an efficient response to changing energy market conditions	AusNet Services has re-evaluated capital projects in response to lower network demand and the lower value placed on reliability by consumers, as demonstrated by AEMO's revised estimate of the Value of Customer Reliability. Consumers will benefit from these savings in the forthcoming regulatory period.
Our proposal increases inter-generational efficiency and equity in response to emerging energy market trends	This proposal includes a modest acceleration in depreciation for new investments. This better matches revenue recovery with network usage and, therefore, delivers fairer and more efficient outcomes.
Incentive regulation works	AusNet Services strongly supports incentive regulation and welcomes the application of the stronger capital efficiency incentive in the coming regulatory period. We will continue to drive efficiency and performance improvements under the AER's expenditure and service performance incentive schemes.
We have listened to stakeholder views	We have captured and responded to feedback from our stakeholders to develop our revenue proposal. This has helped validate that the revenue proposal reflects the long-term interests of consumers. We have highlighted where we have incorporated feedback and, where we have not, we have explained why.
Customers will benefit from lower interest rates and debt costs	AusNet Services is proposing a fair return on its assets, by balancing the interests of both network users and investors. Our proposed cost of capital is below that which has applied in the current period. We intend to pass on to customers the fall in interest rates through our approach to setting the cost of debt. We have set aside the AER's Guideline approach to estimating the cost of equity because, in the current environment, it does not deliver a return to equity holders which reflects market realities.
Current trends are recent changes are reflected in every building block	Changing energy market trends such as declining consumption and emerging technologies make it prudent to reduce capital investment and accelerate depreciation. The deferral of capital works has a consequential impact on reliability. The interactions between the proposed building blocks have been carefully considered to propose the lowest overall present value cost for consumers.

Executive Summary

AusNet Services[1] (formerly SP AusNet) owns and operates Victoria's shared electricity transmission network.

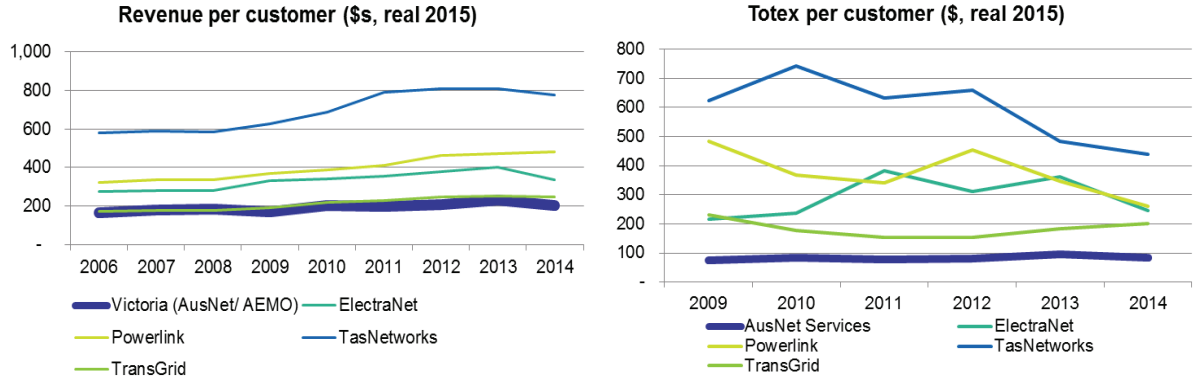
This proposal sets out AusNet Services' expenditure plans for the electricity transmission network for the five years from 1 April 2017, and the associated revenue requirements. The proposal excludes augmentation plans for the shared network, which are the responsibility of AEMO.

Some of the key features of the proposal are set out below.

AusNet Services will Continue to Deliver Low Cost Transmission Services

Over the next five years AusNet Services will continue to provide a reliable, low cost electricity supply for Victorian consumers. AusNet Services has the lowest cost per customer of all transmission networks in the NEM and this is not expected to change over the next regulatory period.

We have the lowest cost per customer of all transmission networks in the NEM



Source: Benchmarking data, 2014 Electricity Transmission Benchmarking Report Excludes Easement Land Tax for AusNet Services.

This revenue proposal has been developed with the price impact in mind. AusNet Services has responded to stakeholder feedback by focusing on keeping prices low. However, given our reliability and safety compliance obligations, we have balanced cost reductions with the need to replace and maintain ageing assets.

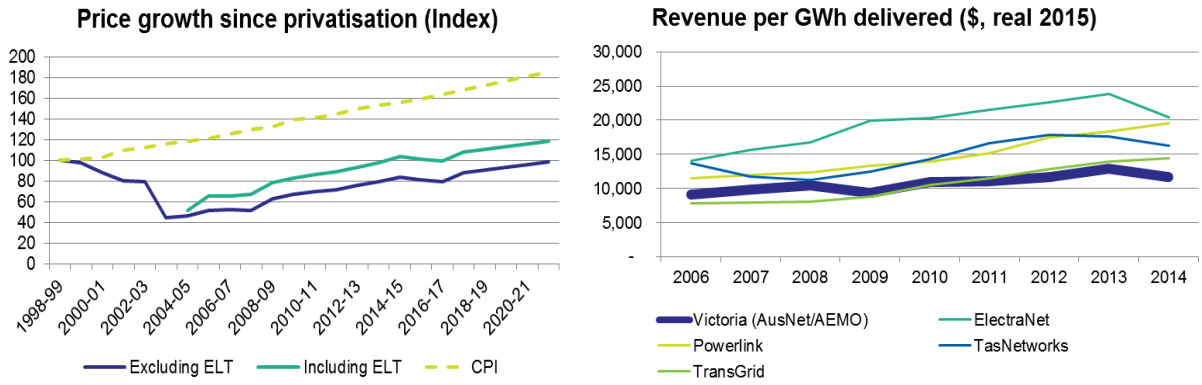
Transmission prices are forecast to increase by an average of 1.8% per annum in real terms over the 2017-22 regulatory period. Easing price pressure as a result of a reduction in capital expenditure and relatively low and stable financing costs are offset by:

- An increase in forecast depreciation (an additional $30m per annum, or 5% of average annual revenues) driven by asset base growth and a modest acceleration in the rate of depreciation for new investments;
- Asset base growth driven by new investments together with AEMO's augmentation decisions in the current period, providing an additional $27m per annum return on capital invested, or 5% of average annual revenues;

[1] The relevant licenced entity is AusNet Services Transmission Group Pty Ltd (ABN 78 079 798 173).

- A modest increase in opex (an additional $19m per annum, or 3% of average annual revenues); and
- An increase in the proposed tax allowance as a result of a decline in the value of imputation credits (an additional $19m per annum, or 3% of average annual revenues).

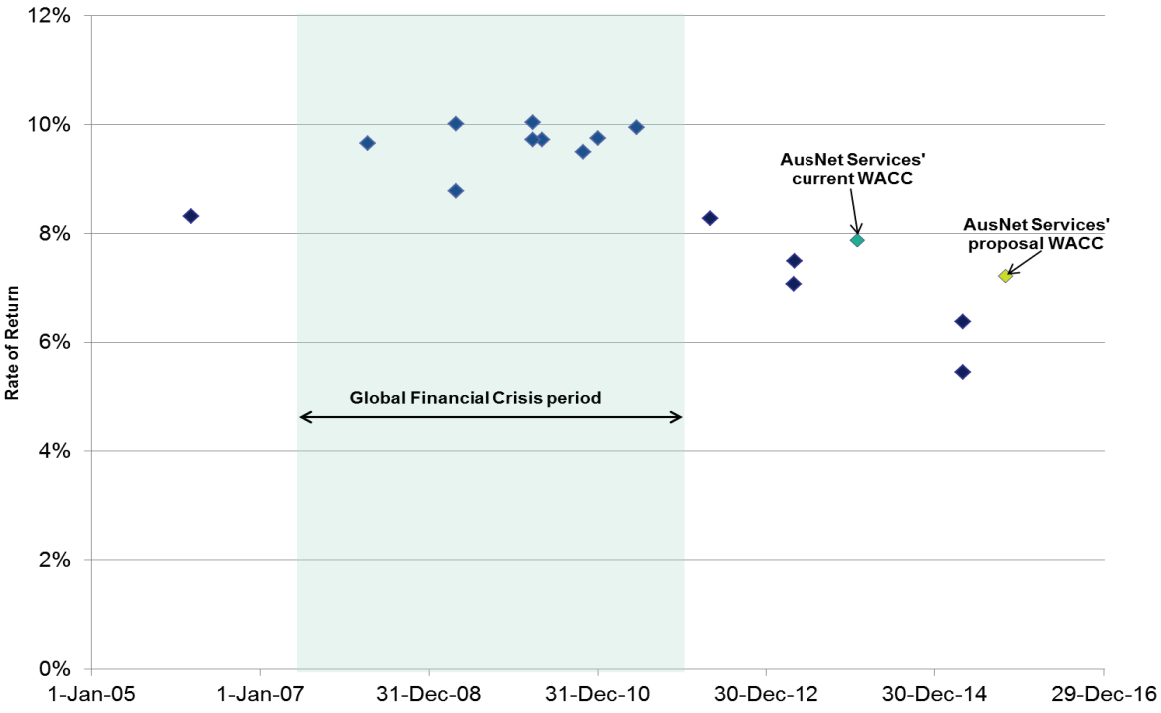
Despite this, Victorian transmission prices will continue to be low and stable…



Source: Huegin Consulting, AER RIN data, AusNet Services

In recent regulatory reviews, many network service providers have proposed real price reductions, following a period of particularly high growth in electricity prices in some jurisdictions. The proposed reductions are partly due to lower financing costs as the impact of the Global Financial Crisis (GFC) dissipates. In contrast to other network companies, AusNet Services' current determination was made less than two years ago, which means that the benefits of the reduction in financing costs post-GFC are already reflected in current prices. Therefore, much of the impact of the GFC is already reflected in the transmission prices charged by AusNet Services, and there is less flexibility to further reduce Victorian transmission prices as a consequence.

AusNet Services' financing costs already reflect post-GFC conditions

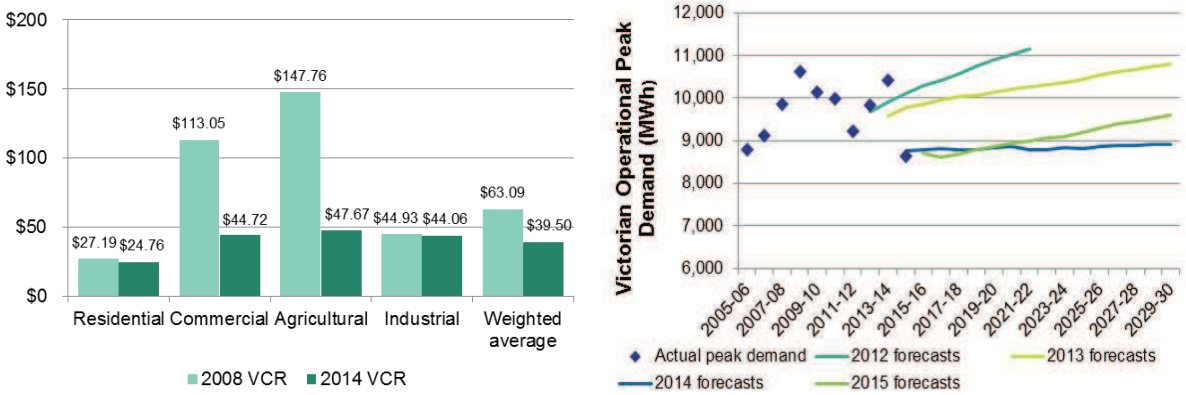


Source: AER, AusNet Services analysis

AusNet Services is Efficiently Responding to Change

Since AusNet Services' previous transmission revenue determination there have been two exogenous changes that have required AusNet Services to revisit its capital expenditure plans. These changes are reduced growth in network demand and AEMO's downward revision in the estimated Value of Customer Reliability (VCR).

Forecast demand and the Value of Customer Reliability (VCR) have declined



Source: AEMO

The need for investment in new and replacement transmission infrastructure is reduced as the energy sector embarks on a period of potentially significant transformation. This is apparent from a reduction in forecast demand seen over the last few years (except for a slight reversal in 2015). Customers do not place as high a value on reliability as previously, as evidenced in the lower value ascribed to VCR in AEMO's latest review. These impacts, and the increased level of uncertainty in relation to the longer term need for some transmission assets, means that AusNet Services' latest capital works program is reduced compared to previous requirements. Similarly augmentation programs planned by AEMO are reduced for the next regulatory period. As already noted, AEMO-directed augmentation of the shared network is outside of the scope of these capex forecasts.

This reduction in capital investment means that existing assets will remain in place for longer than originally planned. This will result in an overall cost saving to customers. However, as there is a trade-off between price and reliability, there will be a gradual decline in reliability. This has been reflected in AusNet Services' performance incentive scheme proposal, which includes adjustments to targets measuring the number of loss of supply events.

In addition to expected savings due to major project deferrals, the planned rebuild of West Melbourne Terminal Station has been re-scoped following the increase in land availability at the site. This has enabled a significantly cheaper Air Insulated Switchgear replacement project to proceed, saving customers approximately $90m.

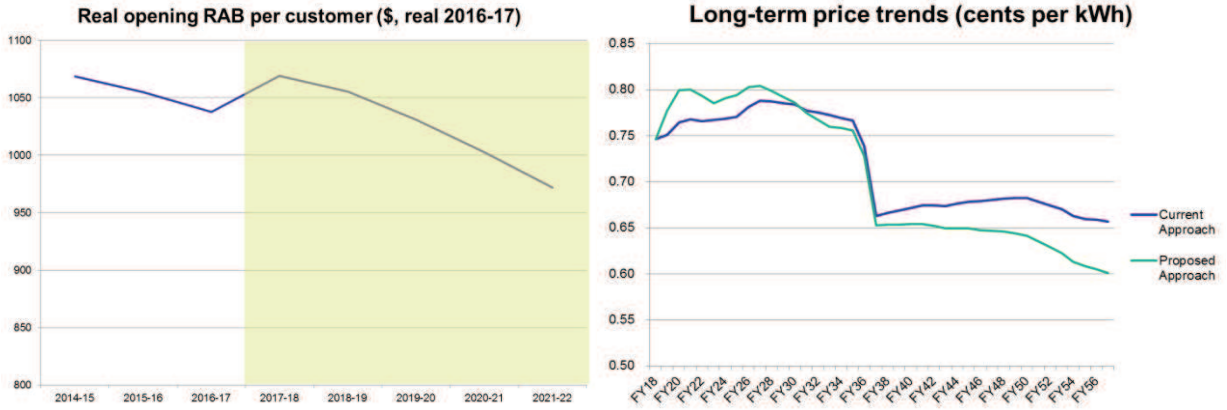
Improving the Sustainability of our Network Investment

Technological advancements are transforming the energy industry, changing the generation mix and creating opportunities for customer participation in producing and consuming electricity. These changes have begun to impact the transmission network but, at this time, the longer-term impacts of these developments are unclear.

AusNet Services' revenue proposal addresses these changes through balancing the interests of current and future network users. Given that network utilisation per customer is likely to reduce in the future, it is both efficient and equitable to recover a slightly higher proportion of investment costs from current, rather than future, network users. For this reason a small acceleration in the depreciation of new network assets is proposed. The current environment of

low financing costs and reduced capital expenditure provide an opportunity for this approach to have minimal impact on transmission prices.

RAB per customer and transmission prices are forecast to decline, in line with expected utilisation trends



Source: AusNet Services analysis

The majority of stakeholder feedback received strongly opposed accelerated depreciation. This has been factored into the development of our proposal, as AusNet Services has limited the application of accelerated depreciation to new investments.

While stakeholders' feedback is acknowledged, AusNet Services remains convinced there is merit to this approach. The NEO requires the 'long-term' interests of customers to be considered. Engagement has been conducted with stakeholders substantially representing current consumers, rather than future consumers. It is therefore necessary for a network service provider to extrapolate to some degree, to provide a reasonable assessment of the long-term interests of future consumers (including the future interests of existing consumers).

AusNet Services considers that it will be neither equitable nor efficient for future consumers to pay the same capital costs as current customers if future network utilisation is substantially lower. As noted above, it is likely that future network utilisation will decrease over time and, therefore, the proposal to accelerate depreciation is retained as a reasonable approach to addressing this asymmetry. For this reason, we have retained our proposal to accelerate depreciation but moderated it to address stakeholder concerns.

We have Listened to Stakeholder Preferences

The strong reliance of the Value of Customer Reliability (determined by AEMO) in our capital expenditure forecasting methodology ensures that customers' preferences are directly reflected in this revenue proposal. In relation to the price-reliability trade-off, we have implemented what consumers have decided, reaching the highest level of engagement under the International Association of Public Participation's Engagement Spectrum.

AusNet Services has also undertaken a stakeholder engagement program which has centred around three sequential forums, through which we have captured stakeholder feedback on key aspects of the revenue proposal. We have modified our plans where appropriate and where we have chosen to depart from stakeholder views we explain why we have done so.

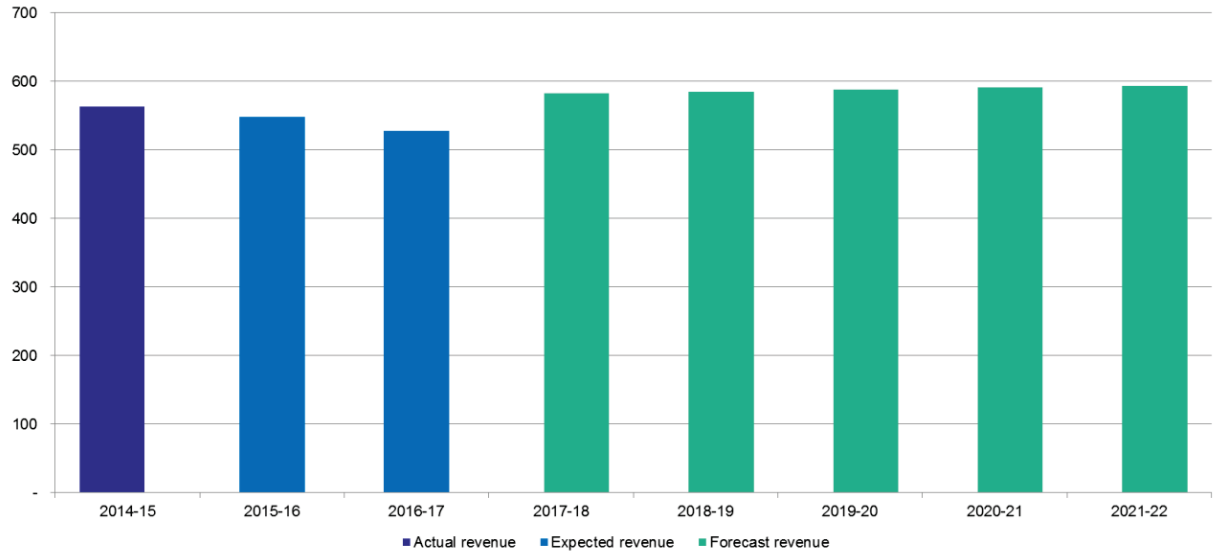
More Detail on our Revenue Proposal

Forecast Revenue and Prices

As a result of significant efforts to identify and implement strategies to reduce its required revenue, AusNet Services is able to propose a lower forecast than a piece-by-piece approach to addressing the key drivers outlined above would support. The revenue proposal manages the price impact on consumers without compromising investment incentives or the quality, safety, security or reliability of AusNet Services' electricity services. It therefore balances the conflicting objectives of the National Electricity Objective in a way that AusNet Services considers is equitable and reasonable.

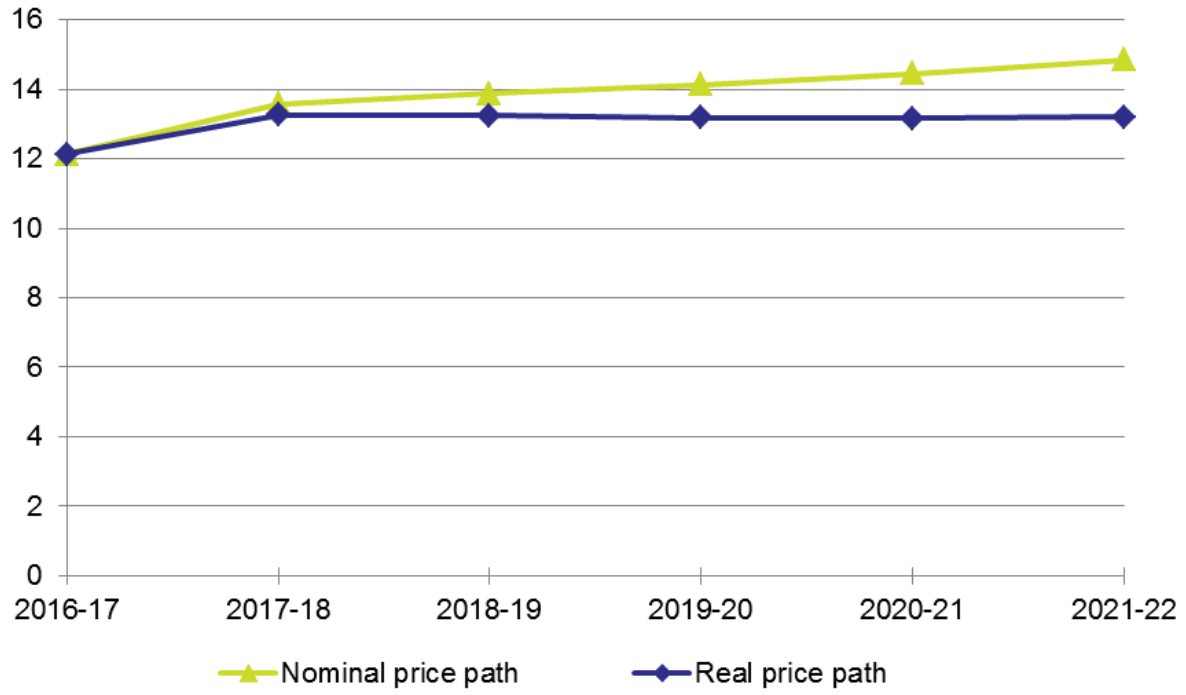
AusNet Services' total revenue requirement over the 2017-22 regulatory period is $2,945.3m (smoothed, real 2016-17). This represents an 8% increase compared to average allowed revenue for the 2014-17 regulatory period.

Figure ES1: Total Revenue Requirement ($m, real 2016-17)



The proposed price path represents an average increase of 1.8% per annum in real terms over the forecast period. The proposed price path is calculated as proposed revenue, divided by forecast Victorian electricity consumption. As there is a small increase in proposed revenues, and growth in forecast electricity consumption is very low, the resulting price path is relatively flat.

Figure ES2: Indicative Price Path ($ per MWh)



Source: AusNet Services' PTRM

This price outcome is considered to be in the long term interests of electricity consumers, given that the individual components of the revenue proposal have been developed with the interests of current and future consumers in mind, including through the use of the VCR in forecasting the capital expenditure requirement and by incorporating feedback received through the stakeholder engagement process. Benchmarking metrics confirm that AusNet Services has delivered low-cost and efficient transmission services and the proposed price path is a continuation of that trend.

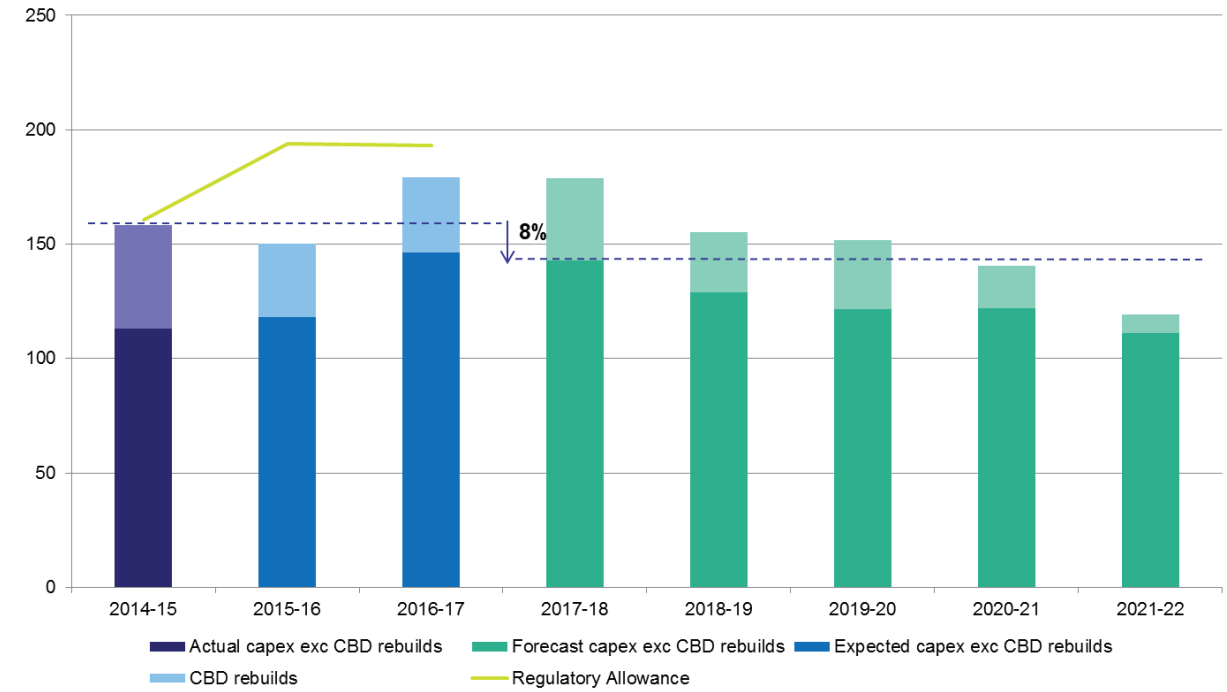
A high-level overview of the components of forecast revenue is provided below. More detail on each is contained in the following chapters of this revenue proposal.

Capital Expenditure Requirements

AusNet Services' capex forecast is driven by targeted asset replacement based on asset condition. AusNet Services' rigorous asset management practices work to minimise the total life cycle cost. Through this approach, an optimal balance is struck between the costs of asset replacement and maintenance on the one hand, and the risk and cost of deteriorating asset performance on the other. Changing utilisation patterns are also taken into consideration.

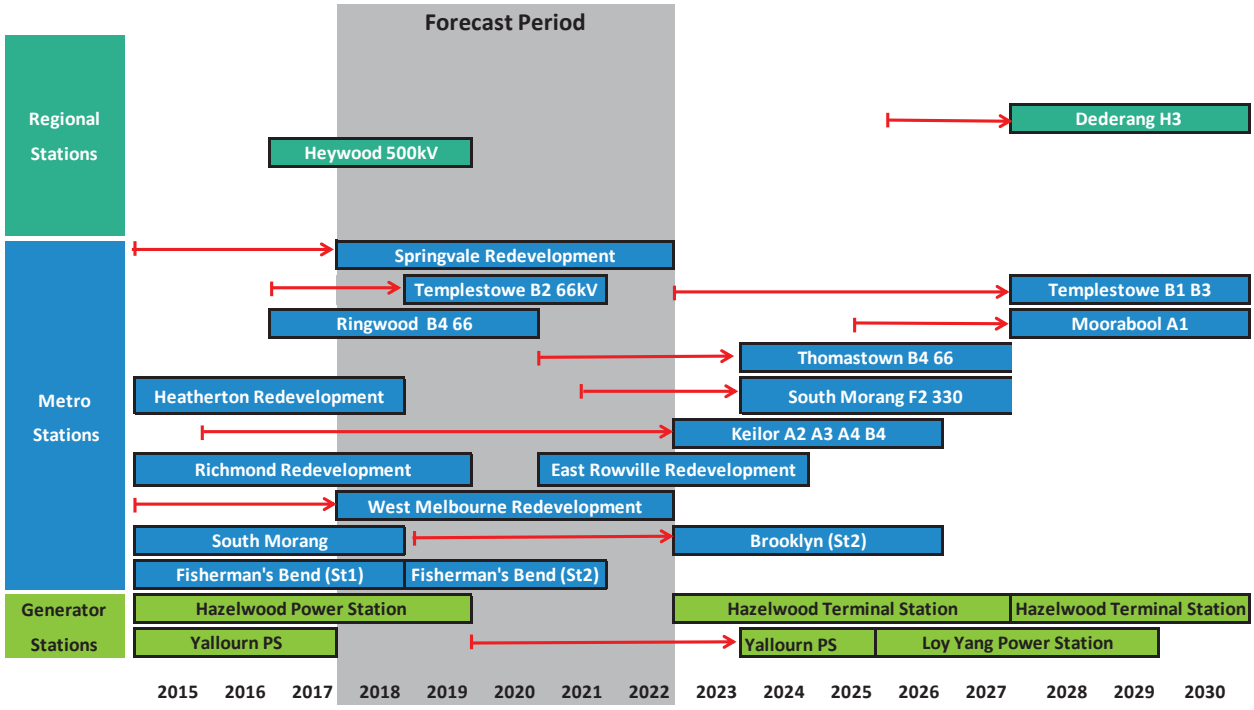
AusNet Services' total forecast capital expenditure for 2017-22 is $745.6m (real 2016-17). This forecast represents an 8% reduction in total capex compared to current period actual and forecast expenditure.

Figure ES3: Actual and forecast capex ($m, real 2016-17)



As already noted, the decline in forecast demand and the VCR have resulted in significant deferrals to the economic timing of major projects, with approximately $145m (or 19% of capex proposed) deferred beyond the 2017-22 regulatory period. The latest expected timing of major station replacement projects to be delivered is shown below.

Figure ES4: Indicative Major Projects Timing



Note: Projects that were previously expected to be undertaken before 2030 but have been deferred beyond this date are not represented in the above figure.

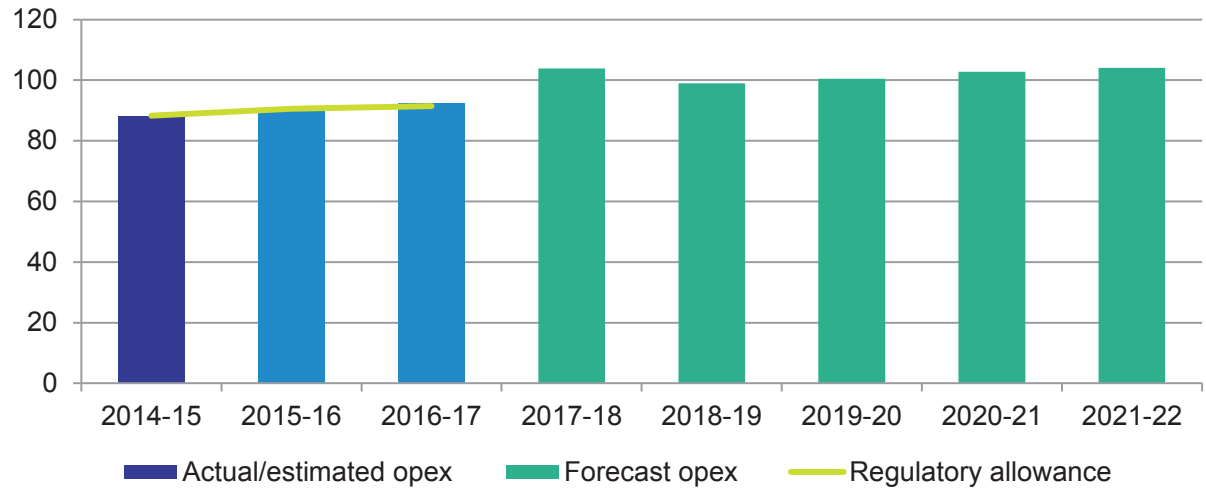
AusNet Services welcomes the introduction of the capex incentive schemes in the forthcoming period. AusNet Services will be the first network to be subject to the AER's ex post capex review, as an efficiency assessment of its capital expenditure for the 2014-15 year will be part of this review.

Operating Expenditure Requirements

Forecast operating expenditure is based on current expenditure levels and expected increases for network growth and labour costs. These are slightly offset by a reduction to account for expected productivity improvements over the period.

AusNet Services has also identified a small number of step changes driven by asset retirements, capex-opex trade-offs and regulatory changes.

Figure ES5: Actual and forecast controllable opex ($m, real 2106-17)

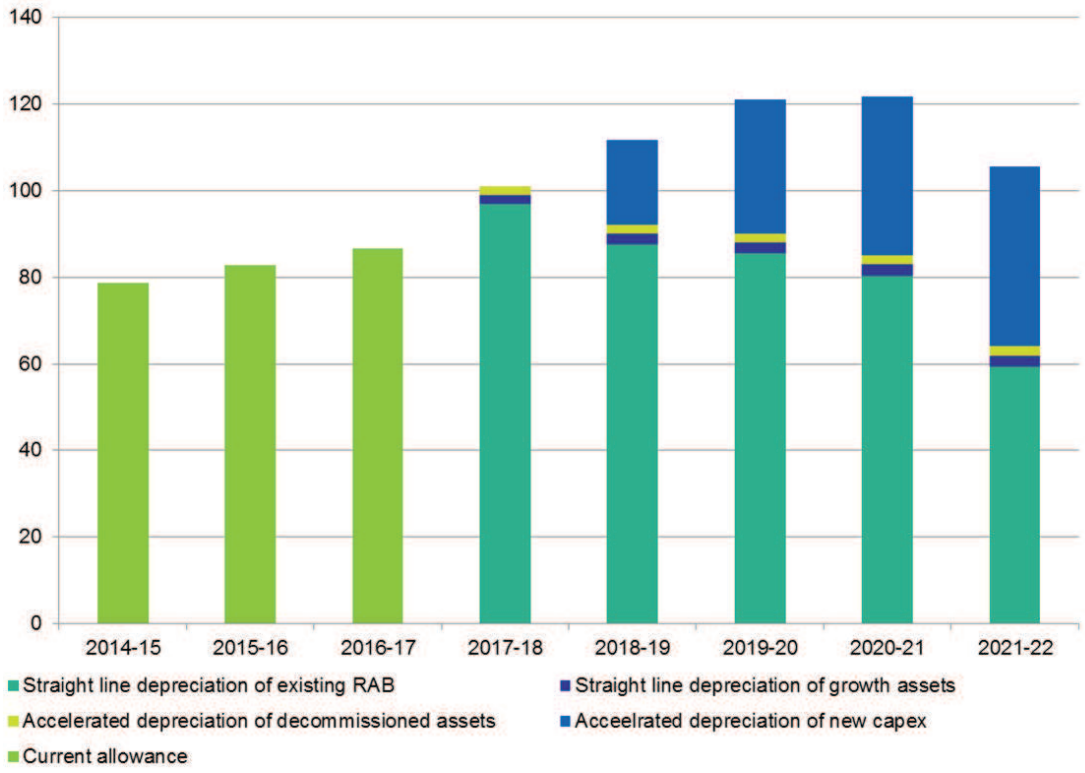


Performance under the opex efficiency incentive scheme has continued to be strong over the current period and AusNet Services will continue to respond to efficiency incentives in the next regulatory period.

Return of Capital (Depreciation)

AusNet Services is proposing to accelerate depreciation for new investment in the forthcoming regulatory period. To manage the price impact on today's consumers, only a moderate rate of acceleration is proposed. This moderate increase is shown in the figure below.

Figure ES6: Accelerated vs Straight Line Depreciation ($m, real 2016-17)



This proposal does not change the present value of the investment costs recovered from consumers. However, it does change the profile of cost recovery. A higher proportion of the cost of new investments will be recovered from current consumers, and a lower proportion of cost will be recovered from future consumers. This is consistent with the expected trend in network utilisation, which is likely to fall over time.

This acceleration in the depreciation allowance is an appropriate means to address the increased utilisation risk that networks are currently facing. This is a risk that is not compensated for elsewhere in the regulatory framework, including through the rate of return.

Return on Capital

It is essential that the rate of return is set at an adequate level to allow the level of financing required to enable networks to undertake investment.

AusNet Services is proposing a fair return on its assets from both the perspective of customers and investors, thus balancing the objectives reflected in the National Electricity Objective. In particular, the relatively significant fall in interest rates and debt costs experienced in worldwide markets are being passed back to customers. However, AusNet Services considers that, in a low interest rate environment, the AER's Guideline approach does not deliver a return to equity holders which is reflective of market realities. This, therefore, distorts the balance between an equitable return to customers, on the one hand, and to investors, on the other hand. Despite proposing to set aside the AER's approach, AusNet Services' proposed a rate of return lower than that in the current period.

The industry has presented substantive evidence that cost of equity does not fluctuate in line with the underlying interest rate; rather, it is counter-cyclical. This was best illustrated in the fallout from the GFC, where central banks around the world cut interest rates to protect their economies while a simultaneous reassessment of risk by investors sent equity premiums upwards.

AusNet Services has submitted alternative cost of equity models which better reflect this reality than the AER's chosen foundation cost of equity model – the simple but largely superseded Sharpe-Lintner CAPM. AusNet Services considers that the use of models that better reflect the observed real life outcomes in equity markets actually leads to less volatile price outcomes for customers as well as businesses as equity premiums fall when interest rates are above their long term averages. In short, it is submitted that the inclusion of alternative models better achieve the outcomes of the national electricity objective.

Service Standards Proposal

AusNet Services and AEMO have agreed to close the Availability Incentive Scheme (AIS). This legacy scheme provided incentives which duplicated or conflicted with those provided by the AER's Service Target Performance Incentive Scheme (STPIS). The effective date of closure of the AIS has not yet been confirmed; however AusNet Services has proposed that it ceases from 1 April 2016. This will enable AusNet Services to pass back $2.3m to customers in the 2016-17 regulatory year. We are currently awaiting a decision from AEMO on whether it supports this timing.

AusNet Services was the first network to participate in Network Capability Component of the STPIS. This has delivered consumer benefits in the current regulatory period and will continue to do so beyond the end of the period.

AusNet Services will be the first TNSP to be subject to the new version of the STPIS (v5) and proposes targets which will appropriately drive and reward service performance improvements at a level consistent with the signals provided by the reduction in the VCR.

Conclusion

AusNet Services' regulatory proposal properly serves the long-term interests of its customers. The proposal meets the immediate needs of the network and delivers a longer term vision for the network that sees the network continuing to provide efficient transmission services in a safe and reliable manner.

AusNet Services has carefully balanced current and future consumers' interests, while addressing the need to attract and retain long-term investment to provide assurance that its electricity transmission business remains viable and sustainable, and capable of delivering safe and reliable transmission network services, into the future.

DRAFT DECISION
AusNet Services transmission determination 2017–18 to 2021–22

Overview

July 2016

AUSTRALIAN ENERGY REGULATOR

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Tel: 1300 585 165
Email: AERInquiry@aer.gov.au

AER reference: 56417

Note

This attachment forms part of the AER's draft decision on AusNet Services' revenue proposal 2017–22. It should be read with other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – maximum allowed revenue

Attachment 2 – regulatory asset base

Attachment 3 – rate of return

Attachment 4 – value of imputation credits

Attachment 5 – regulatory depreciation

Attachment 6 – capital expenditure

Attachment 7 – operating expenditure

Attachment 8 – corporate income tax

Attachment 9 – efficiency benefit sharing scheme

Attachment 10 – capital expenditure sharing scheme

Attachment 11 – service target performance incentive scheme

Attachment 12 – pricing methodology

Attachment 13 – pass through events

Attachment 14 – negotiated services

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Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider

Shortened form	Extended form
NTSC	negotiated transmission service criteria
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
WACC	weighted average cost of capital

1 Introduction

We, the Australian Energy Regulator (AER), are responsible for the economic regulation of electricity transmission and distribution systems in all Australian states and territories, with the exception of Western Australia. AusNet Services owns and operates Victoria's electricity transmission network. We regulate the revenues that AusNet Services can recover from its customers.

AusNet Services submitted a revenue proposal for its electricity transmission network on 30 October 2015. The proposal sets out the revenue AusNet Services proposes to recover from electricity consumers through transmission charges for the period 2017–22. This overview, together with its attachments, constitutes our draft decision on AusNet Services' revenue proposal.

The National Electricity Law (NEL) and National Electricity Rules (NER) provide the regulatory framework governing electricity networks. In regulating AusNet Services, we are guided by the National Electricity Objective (NEO), as set out in the NEL. The NEO is:[1]

> to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.

1.1 Structure of overview

This overview provides a summary of our draft decision and its individual components. The remainder is structured as follows:

- Section 2 provides a high level summary of our draft decision
- Section 3 provides a breakdown of our draft decision into its key components
- Section 4 sets out our draft decision on the incentive schemes that will apply to AusNet Services for the 2017–22 regulatory control period
- Section 5 explains our views on the regulatory framework and the NEO
- Section 6 outlines our consultation process in reaching this draft decision and our view of AusNet Services' consumer engagement undertaken in developing its revenue proposal
- Appendix A contains the full list of constituent components that make up AusNet Services' proposal and our draft decision on each of them

[1] NEL, s. 7.

- Appendix B lists the stakeholder submissions received on AusNet Services' revenue proposal.

In our attachments to this decision we set out detailed analysis of the constituent components that make up our draft decision.

1.2 Our process

This draft decision is one of the key steps in reaching our final decision. Our final decision will be released no later than 31 January 2017. Before that, AusNet Services will have the opportunity to submit a revised proposal in response to this draft decision. Stakeholders will also have the opportunity to make submissions to us on our draft decision and AusNet Services' revised proposal.

Following receipt of the revised proposal and submissions, we will then make our final decision taking everything we have heard into account. Table 1.1 lists the key dates and consultation deadlines for the process.

Table 1.1 Key dates and consultation

Task	Date
Revenue proposal submitted to the AER	30 October 2015
AER released Issues paper	11 December 2015
AER held public forum	17 December 2015
Submissions on revenue proposal closed	4 February 2016
AER draft decision published	20 July 2016
AER public forum to explain draft decision	9 August 2016
Submissions due on draft decision	21 September 2016
Revised revenue proposal due to AER	21 September 2016
Further submissions, including on revised proposals	13 October 2016
AER release of final decision	No later than 31 January 2017

1.3 Victorian electricity transmission

In Victoria, two separate organisations are responsible for the electricity transmission network—AusNet Services and the Australian Energy Market Operator (AEMO). Under this model, the transmission network planning functions in Victoria are separated from network ownership and operation.

AusNet Services is the transmission network service provider (TNSP) which owns and operates Victoria's electricity transmission network. It is responsible for transporting

electricity from generation sources into Victoria's five lower–voltage distribution networks.[2]

AEMO is also a designated TNSP and is responsible for planning and procuring the augmentation of the Victorian shared transmission network. Given that AEMO is responsible for augmentation investment and plans, these are not included in AusNet Services' revenue proposal.

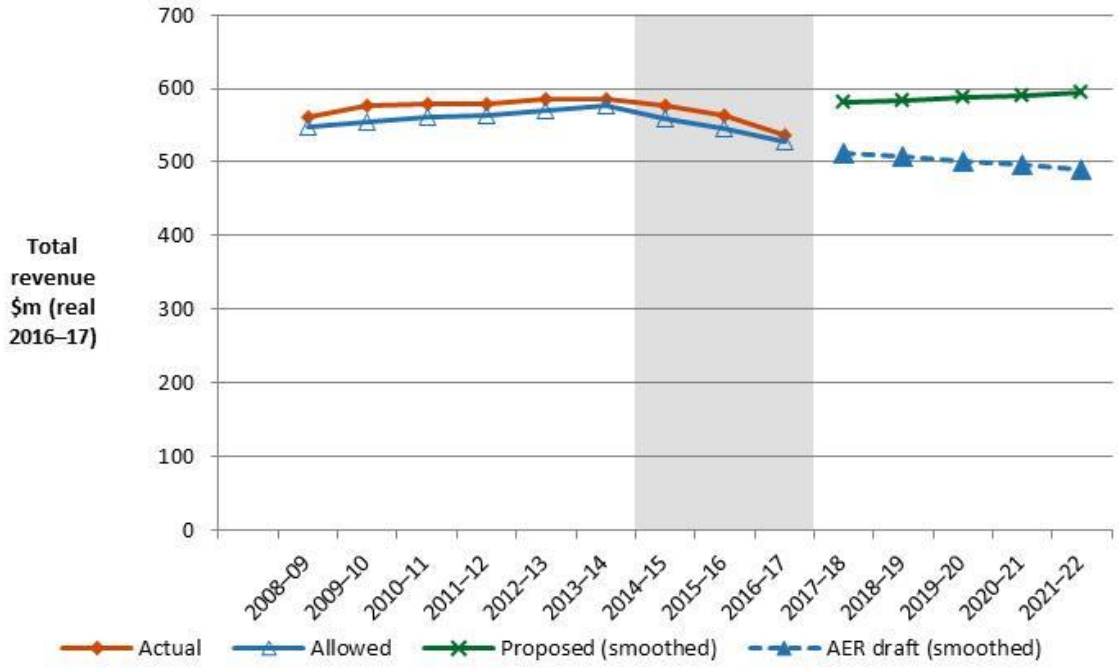
[2] Ausnet Services, Determining electricity transmission revenue (http://www.ausnetservices.com.au/Electricity/Determining+Revenues/Transmission+Network.html), Accessed online 19 May 2016.

2 Summary of draft decision

Our draft decision is that AusNet Services can recover $2695.0 million ($ nominal, smoothed) from consumers over the 2017–22 regulatory control period. This is a 14.7 per cent reduction from AusNet Services' proposed revenue allowance of $3160.5 million ($ nominal).

Figure 2.1 compares our draft decision on AusNet Services' revenue for 2017–22 to its proposed revenue and to the revenue allowed and recovered during the two previous regulatory control periods of 2008–14 and 2014–17. AusNet Services' annual revenue decreased each year from 2014–17 in real dollar terms.

Figure 2.1 AusNet Services' past total revenue, proposed total revenue and AER draft decision total revenue allowance ($million, 2016–17)



Source: AER analysis.

2.1 What is driving allowed revenue?

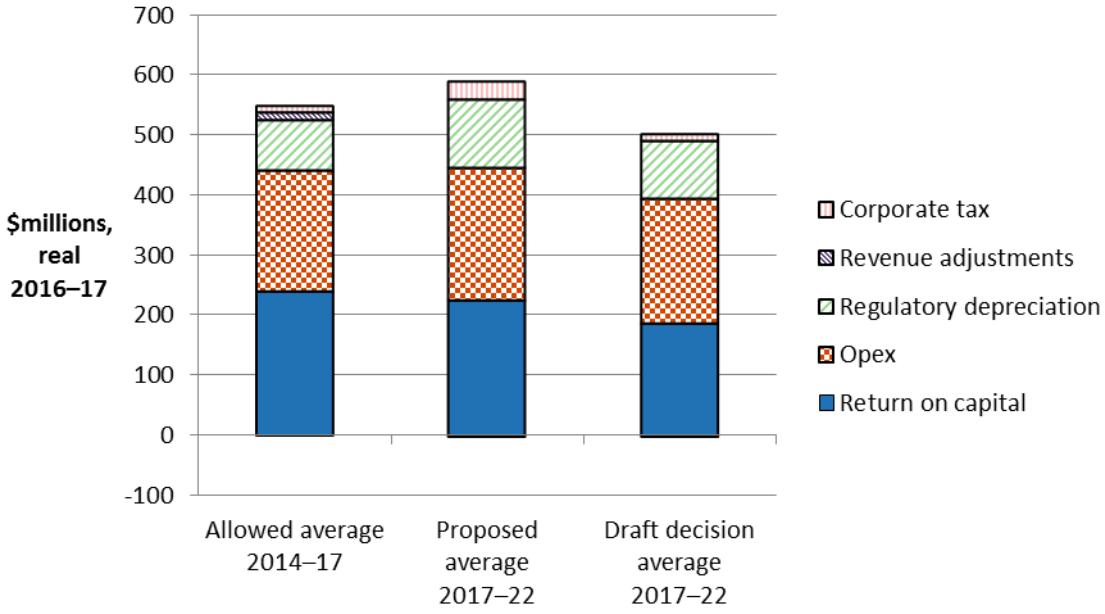
Our draft decision approves average annual revenues for the 2017–22 regulatory control period that are $43.3 million ($ 2016–17)—or 8.0 per cent—lower than was approved in our decision for 2014–17 in real dollar terms.[3] Our draft decision provides

[3] In nominal dollar terms, our draft decision average annual revenues for the 2017–22 regulatory control period is about $5.5 million (or 1.0 per cent) higher than the average annual revenues approved for the 2014–17 regulatory control period.

for 14.7 per cent less revenue than AusNet Services sought to recover through its revenue proposal.

Figure 2.2 compares the average annual building block revenue from our draft decision to that proposed by AusNet Services for the 2017–22 regulatory control period, and to the approved average amount for the 2014–17 regulatory control period.

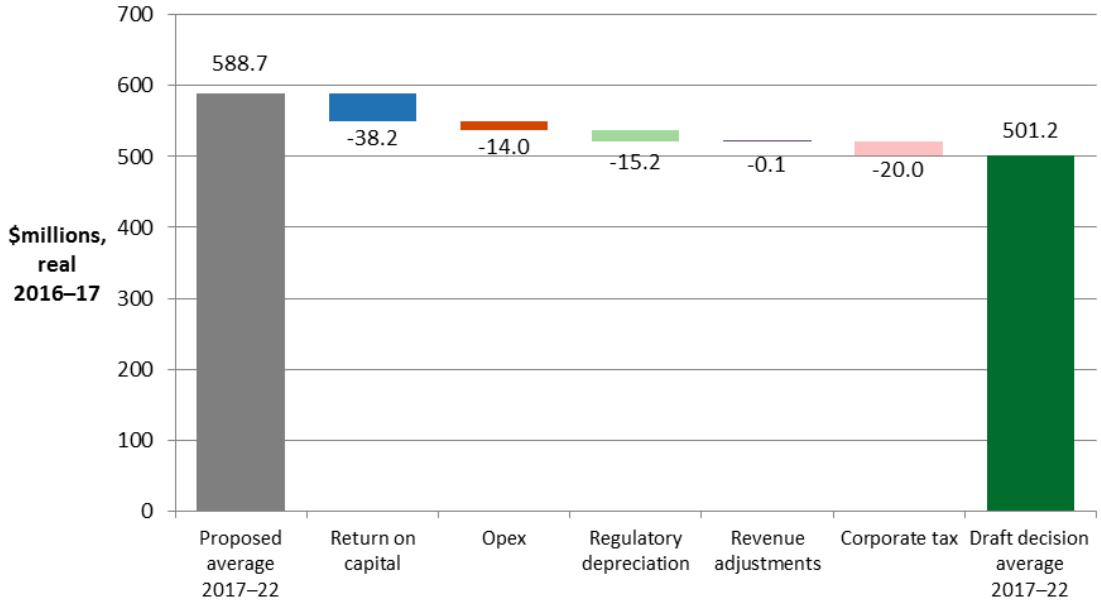
Figure 2.2 AER's draft decision on constituent components of total revenue ($million, 2016–17)



Source: AER analysis.

Figure 2.3 compares our draft decision with AusNet Services' proposal, broken down by the various building block components that make up the forecast revenue allowance.

Figure 2.3 AER's draft decision and AusNet Services' proposed annual building block costs ($million, 2016–17)



Source: AER analysis.

These figures highlight that the allowed rate of return—which feeds into the return on capital—is one of the key difference between our draft decision and AusNet Services' proposal. Our decisions on depreciation and corporate income tax also drive the difference between our draft decision and AusNet Services' proposal.

2.1.1 Allowed rate of return

The allowed rate of return provides AusNet Services with revenue to service the interest on its loans and give a return on equity to its shareholders. It is applied to AusNet Services' capital base to determine the return on capital building block.

Prevailing market conditions for debt and equity heavily influence the rate of return. Financial conditions have changed since our last decision for AusNet Services in January 2014. Interest rates are lower and financial market conditions are more stable. This means that the cost of debt and the returns required to attract equity are lower.

This is reflected in a lower rate of return in this decision. Our draft decision is for a rate of return of 6.16 per cent (for 2017–18)[4]—compared to AusNet Services' proposed 7.22 per cent and the 7.87 per cent set for the 2014–17 regulatory control period.

We set out our approach to determining the rate of return in the Rate of Return Guideline (Guideline) we published in December 2013. We undertook significant

[4] For the remaining years of the regulatory control period, we will update the rate of return annually.

consultation in developing this Guideline. Although it is not binding, the transmission businesses must provide reasons to justify any departure from the Guideline.[5] After considering the information before us in AusNet Services' proposal and in submissions, our draft decision position is to not depart from our approach set out in our Guideline.

2.1.2 Depreciation

Depreciation is the amount that the service provider recovers to pay for the real original cost of the asset over time—typically recovery occurs over the useful life of the asset. AusNet Services proposed to change the depreciation method for all new assets being acquired in the 2017–22 regulatory control period. It proposed using a diminishing value (DV) depreciation method for new assets, while maintaining a straight–line (SL) depreciation method for existing assets.

The DV method results in higher depreciation in the early years of an asset's life and lower depreciation in the latter years. That is, network customers pay off a higher proportion of the initial cost of the asset in the early years compared to the typical straight-line depreciation method.

Our draft decision does not accept AusNet Services proposal to apply the DV method for depreciating new assets as we do not consider that this method results in a depreciation profile that reflects the nature of these assets over their economic lives. Instead we have applied the SL depreciation method for both new and existing assets, resulting in a reduced depreciation allowance over the 2017–22 regulatory control period.

However, we have approved the creation of a new 'Accelerated depreciation' asset class for specific assets that are identified as likely to be no longer used over the 2017–22 regulatory control period. These assets are relatively few in number and will be depreciated over the five years of the 2017–22 regulatory control period.

In reaching our draft decision positions we considered submissions received from the Consumer Challenge Panel (CCP)[6] and the Energy Users Coalition of Victoria (EUCV)[7] in response to AusNet Services' proposal. Both the CCP and the EUCV were opposed to AusNet Services' proposal to use the DV method to calculate depreciation on new assets.

Our draft decision also makes other more minor adjustments which have resulted in further decreasing the depreciation allowance. These are listed in section 3.4 and discussed in detail in attachment 5.

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5 NER, cl. S6A.1.3(4A).

6 Consumer Challenge Panel, *Response to AusNet proposal and AER issues paper for AusNet transmission revenue review 2017-2022*, February 2016, pp. 30–37.

7 Energy Users Coalition of Victoria, *A response to AusNet revenue reset proposal for the 2017-2022 period*, February 2016, pp. 42–44.

2.1.3 Corporate income tax

Our revenue determination includes the estimated cost of corporate income tax for AusNet Services' 2017–22 regulatory control period.[8] This allows AusNet Services to recover the costs associated with the estimated corporate income tax payable during the 2017–22 regulatory control period.

Under the post-tax framework, a corporate income tax allowance is calculated as part of the building block assessment using our post-tax revenue model (PTRM). The reduction between AusNet Services' proposal and our draft decision reflects our amendments to some of AusNet Services' proposed inputs for forecasting the cost of corporate income tax. Changes to building block costs also affect revenues, which in turn impact the tax calculation. This is discussed further in section 3.7 and attachment 8.

2.2 Expected impact of decision on residential electricity bills

Transmission charges account for a relatively small percentage of a residential customers' annual electricity bill. The annual electricity bill for customers in Victoria will reflect the combined cost of all the electricity supply chain components—wholesale energy generation, transmission, distribution, metering, and retail costs. On average, transmission charges account for approximately 5 per cent of a Victorian customer's annual electricity bill. This small percentage largely explains the relatively modest average annual electricity bill impacts arising from our draft decision.

We estimate the expected bill impact by varying the transmission charges in accordance with our draft decision, while holding other components of the bill constant. This approach isolates the effect of our decision on electricity prices, but does not imply that other components will remain unchanged across the regulatory control period.[9]

Based on this approach, we expect that our draft decision will result in the transmission component of the average annual residential electricity bills in Victoria remaining generally constant over the 2017–22 regulatory control period. The transmission component of the average annual residential electricity bill in 2021–22 is expected to be only about $1 above the 2016–17 level.

By comparison, had we accepted AusNet Services' proposal, the expected transmission component of the average annual residential electricity bill in 2021–22 would increase by about $16 ($ nominal) or 1.2 per cent above the 2016–17 level.

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[8] NER, cl. 6A.5.4(a)(4).

[9] It also assumes that actual energy demand will equal the forecast in our draft decision. Since AusNet Services operates under a revenue cap, changes in demand will also affect annual electricity bills across the 2017–22 regulatory control period.

Table 2.1 shows the estimated impact of our draft decision on average residential and small business customers' annual electricity bills in Victoria over the 2017–22 regulatory control period, compared with AusNet Services' proposal. As explained above, these bill impact estimates are indicative only, and individual customers' actual bills will depend on their usage patterns and the structure of their chosen retail tariff offering.

Table 2.1 Estimated impact of draft decision on average Victorian residential and small business customers' electricity bills for 2017–22 period ($nominal)

	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22
AER draft decision						
Residential annual bill	1419[a]	1418	1419	1419	1420	1421
Annual change[d]		–1 (–0.1%)	0 (0%)	0 (0%)	1 (0%)	1 (0.1%)
Small business (flat) annual bill	3332[b]	3330	3331	3331	3333	3335
Annual change[d]		–2 (–0.1%)	1 (0%)	1 (0%)	1 (0%)	2 (0.1%)
Small business (TOU) annual bill	8247[c]	8242	8244	8246	8249	8255
Annual change[d]		–5 (–0.1%)	2 (0%)	2 (0%)	3 (0%)	6 (0.1%)
AusNet Services proposal						
Residential annual bill	1419[a]	1428	1430	1431	1433	1436
Annual change[d]		8 (0.6%)	2 (0.1%)	2 (0.1%)	2 (0.1%)	2 (0.2%)
Small business (flat) annual bill	3332[b]	3348	3351	3354	3358	3363
Annual change[d]		16 (0.5%)	3 (0.1%)	3 (0.1%)	4 (0.1%)	5 (0.1%)
Small business (TOU) annual bill	8247[c]	8286	8295	8303	8312	8323
Annual change[d]		39 (0.5%)	8 (0.1%)	8 (0.1%)	9 (0.1%)	11 (0.1%)

Source: AER analysis; ESCV, *Energy Retailers Comparative Performance Report — Pricing 2014–15*, January 2016, p. XIII; AEMO, *National electricity forecasting report for the national electricity market - Update*, December 2015, table 3, Medium.

(a) Based on weighted average standing offers at June 2016 from Switchon comparison tool for DNSP service areas (postcodes: 3000, 3047, 3134, 3199, 3550) using consumption of 4000 kWh per annum converted to middle of year 2016–17 dollar terms.

(b) Based on weighted average of Victorian bills in ESCV, *Energy Retailers Comparative Performance Report — Pricing 2014–15*, January 2016, converted to middle of year 2016–17 dollar terms.

(c) Based on weighted average of Victorian bills in ESCV, *Energy Retailers Comparative Performance Report — Pricing 2014–15*, January 2016, converted to middle of year 2016–17 dollar terms.

(d) Annual change amounts and percentages are indicative. They are derived by varying the transmission component of 2016–17 bill amounts in proportion to yearly expected revenue divided by AEMO forecast demand (Victoria). Actual bill impacts will vary depending on electricity consumption and tariff class.

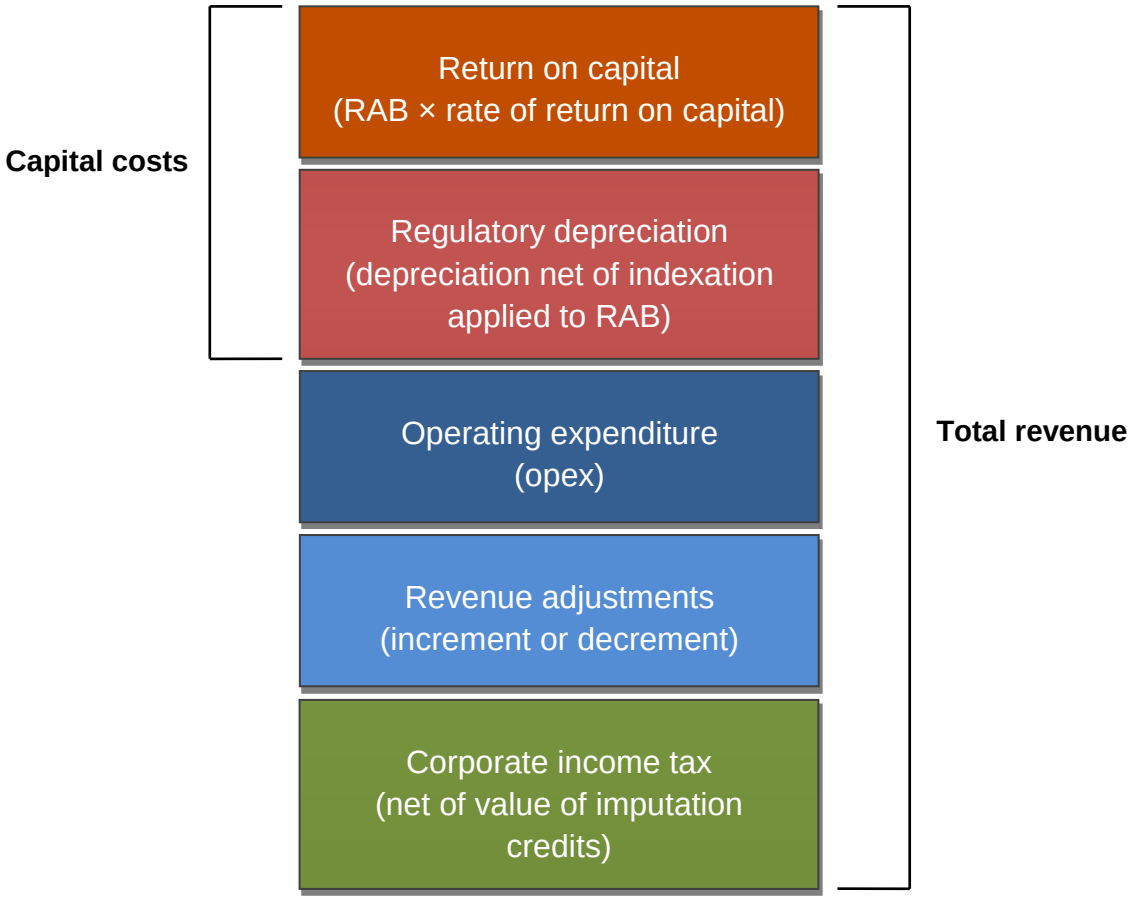
3 Key elements of our draft decision

We use the building block approach to determine AusNet Services' maximum allowed revenue (MAR). The building block approach consists of five costs that a business is allowed to recover through its revenue allowance.

The building block costs are illustrated in Figure 3.1 and include:

- a return on the regulatory asset base (RAB) (or return on capital)
- depreciation of the RAB (or return of capital)
- forecast opex
- revenue increments or decrements resulting from incentive schemes such as the efficiency benefit sharing scheme (EBSS)
- the estimated cost of corporate income tax.

Figure 3.1 The building block approach for determining total revenue



The building block costs are comprised of key elements that we determine through our assessment process. For example, the size of the RAB—and therefore the revenue generated from the return on capital and return of capital building blocks—is directly affected by our assessment of capex.

This section summarises our draft decision on key elements of the building blocks including:

- RAB (section 3.1)
- Rate of return (section 3.2)
- Imputation credits (section 3.3)
- Depreciation allowance (section 3.4)
- Efficient level of capex (section 3.5)
- Efficient level of opex (section 3.6)
- Forecast level of corporate income tax (section 3.7).

Incentive schemes including the EBSS and CESS are covered in section 4. Table 3.1 shows our draft decision on AusNet Services' revenues including the building block components.

Table 3.1 AER's draft decision on AusNet Services' revenues ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Return on capital	196.9	200.7	202.4	202.8	202.7	1005.4
Regulatory depreciation[a]	102.0	102.5	109.4	112.2	95.2	521.3
Operating expenditure[b]	210.8	216.2	221.9	227.7	233.6	1110.2
Revenue adjustments[c]	–0.2	–0.2	–0.3	–1.8	–0.8	–3.3
Net tax allowance	13.4	10.9	12.6	14.3	9.4	60.6
Annual building block revenue requirement (unsmoothed)	523.1	530.0	546.0	555.0	540.2	2694.3
Annual expected MAR (smoothed)	**524.8**	**531.8**	**538.9**	**546.1**	**553.4**	**2695.0**[d]
X factor[e]	n/a[f]	1.08%	1.08%	1.08%	1.08%	n/a

Source: AER analysis.

(a) Regulatory depreciation is straight-line depreciation net of the inflation indexation on the opening RAB.

(b) Operating expenditure includes debt raising costs.

(c) Includes efficiency benefit sharing scheme and shared asset amounts.

(d) The estimated total revenue cap is equal to the total annual expected MAR.

(e) The X factors will be revised to reflect the annual return on debt update. Under the CPI–X framework, the X factor measures the real rate of change in annual expected revenue from one year to the next. A negative X factor represents a real increase in revenue. Conversely, a positive X factor represents a real decrease in revenue.

(f) AusNet Services is not required to apply an X factor for 2017–18 because we set the 2017–18 MAR in this decision. The MAR for 2017–18 is around 3.0 per cent lower than the approved MAR for 2016–17 in real terms, or 0.6 per cent lower in nominal terms.

3.1 Regulatory asset base

We make a decision on AusNet Services' opening regulatory asset base (RAB) at 1 April 2017 as part of our revenue determination. We also make a decision on AusNet Services' projected RAB for the 2017–22 regulatory control period.[10]

The RAB roll forward accounts for the value of AusNet Services' regulated assets over the regulatory control period. The size of the RAB substantially impacts AusNet Services' revenue and the price consumers ultimately pay. It is an input into the determination of the return on capital and depreciation (return of capital) building blocks.[11] Other things being equal, a higher RAB increases both the return on capital and depreciation allowances. In turn, these increase AusNet Services' revenue, and prices for services.

We determine an opening RAB for AusNet Services of $3194.7 million ($ nominal) as at 1 April 2017. This is $34.1 million (or 1.1 per cent) lower than AusNet Services' proposed value of $3228.7 million. This is because we have amended AusNet Services' proposed roll forward model (RFM) to correct a number of input errors and made other adjustments. These include:

- applying the standard partially-lagged inflation approach for RFM indexation
- adjusting for the movements in capitalised provisions when adding actual capex to the RAB
- amending the asset class allocation of as-commissioned capex for 2013–14 and 2014–15
- accounting for asset disposal values based on gross proceeds.

To determine the opening RAB as at 1 April 2017, we have rolled forward the RAB over the 2014–17 regulatory control period to determine a closing RAB value at 31 March 2017. This roll forward includes an adjustment at the end of the 2014–17 regulatory control period to account for the difference between actual 2013–14 capex and the estimate approved at the 2014–17 determination.[12] The roll forward also includes an adjustment for new assets—labelled 'Group 3 assets'—added to the opening RAB at 1 April 2017 and a true-up for the difference between actual and forecast Group 3 assets rolled in at the 2014–17 determination.[13] Expenditure on

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10 NER, cl. 6A.6.1.

11 The size of the RAB also impacts the benchmark debt raising cost allowance. However, this amount is usually relatively small and therefore not a significant determinant of revenues overall.

12 The end of period adjustment will be positive (negative) if actual capex is higher (lower) than the estimate approved at the 2014–17 determination.

13 During a regulatory control period, AEMO or a distribution business may request AusNet Services to provide augmentations to the transmission network or distribution connection services. While the assets constructed due to these requests provide prescribed transmission services, the forecast capex associated with these assets sit outside of the revenue determination. This is because AusNet Services is not responsible for the planning of these capex. AusNet Services and AEMO refer to the assets that provide these services as ‘Group 3’ assets. Group 3

Group 3 assets occurs throughout the regulatory control period, but this capex is not added to the RAB each year (as is usually the case). Instead, these assets are added to the RAB at the commencement of each regulatory control period.[14]

Table 3.2 summarises our draft decision on the roll forward of AusNet Services' RAB over the 2014–17 regulatory control period.

Table 3.2 AER's draft decision on AusNet Services' RAB for the 2014–17 regulatory control period

	2014–15	2015–16[a]	2016–17[b]
Opening RAB	2876.0	2944.9	2984.7
Capital expenditure[c]	149.0	150.0	182.3
Inflation indexation on opening RAB[d]	66.4	44.3	70.1
Less: straight-line depreciation[e]	146.5	154.5	165.7
Closing RAB	2944.9	2984.7	3071.4
Difference between estimated and actual capex (1 April 2013 to 31 March 2014)			19.4
Return on difference for 2013–14 capex			4.7
Group 3 assets adjustments[f]			99.2
Opening RAB as at 1 April 2017			**3194.7**

Source: AER analysis.

(a) Based on estimated capex. We will update the RAB roll forward for actual capex in the final decision.

(b) Based on estimated capex provided by AusNet Services, adjusted for actual CPI. We expect to update the RAB roll forward for a revised capex estimate in the final decision, and true-up the RAB for actual capex at the next reset.

(c) As incurred, net of disposals, and adjusted for actual CPI.

(d) We will update the RAB roll forward for actual CPI for 2016–17 in the final decision.

(e) Adjusted for actual CPI. Based on as-commissioned capex.

(f) Roll in of Group 3 assets at 1 April 2017, and true-up for difference between actual and forecast Group 3 assets rolled in at the 2014–17 determination.

We determine a forecast closing RAB value at 31 March 2022 of $3295.7 million ($ nominal). This is $145.5 million (or 4.2 per cent) lower than the amount of $3441.2 million ($ nominal) proposed by AusNet Services. Our draft decision on the forecast closing RAB reflects the amended opening RAB as at 1 April 2017, and our

assets sit outside of the RAB and are governed by commercial contracts until such time as they are rolled into the RAB, usually at the next revenue reset. See: AusNet Services, *Revenue proposal*, October 2015, p. 23.

[14] As noted above, this adjustment includes estimated expenditure where actual expenditure is not yet known; so there is an additional true-up required at the next revenue determination.

draft decisions on the expected inflation rate (attachment 3), forecast capex (attachment 6) and forecast depreciation (attachment 5).

Table 3.3 sets out our forecast RAB for AusNet Services in 2017–22.

Table 3.3 AER's draft decision on AusNet Services' RAB for the 2017–22 regulatory control period ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22
Opening RAB	3194.7	3255.6	3283.2	3289.8	3288.4
Capital expenditure[a]	163.0	130.0	116.1	110.8	102.5
Inflation indexation on opening RAB	78.1	79.6	80.3	80.4	80.4
Less: straight-line depreciation[b]	180.2	182.1	189.7	192.6	175.6
Closing RAB	**3255.6**	**3283.2**	**3289.8**	**3288.4**	**3295.7**

Source: AER analysis.

(a) As incurred and net of disposals. Inclusive of equity raising costs and the half-WACC to account for the timing assumptions in the PTRM.

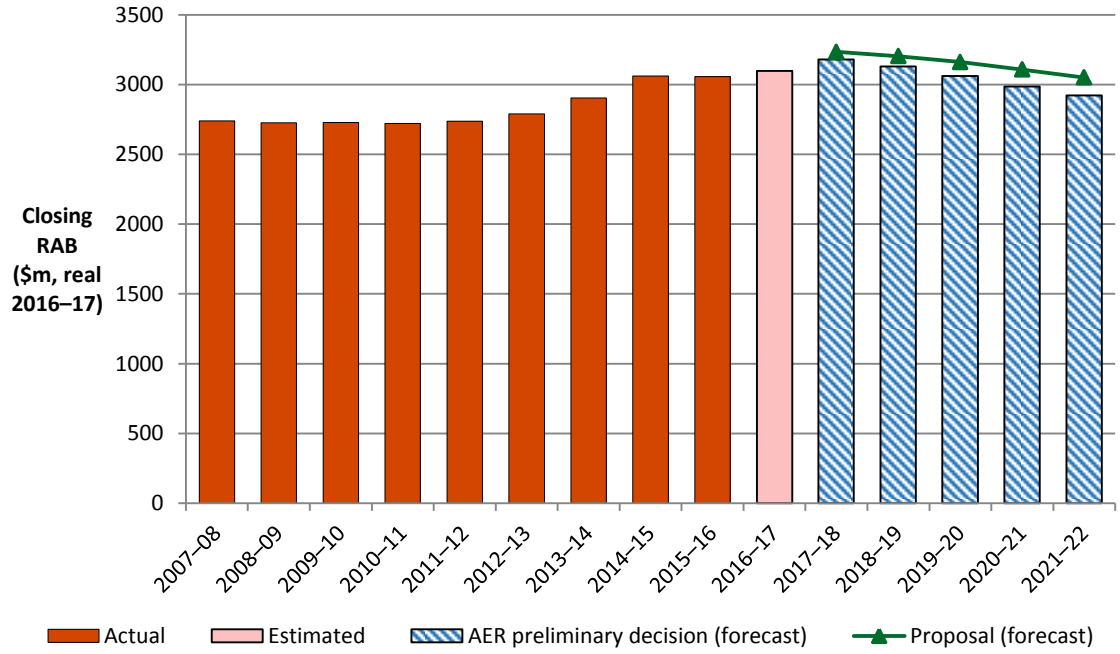
(b) Based on as-commissioned capex.

We accept AusNet Services' proposal that the forecast depreciation approach (instead of an actual depreciation approach) is to be used to establish the opening RAB at the commencement of the 2022–27 regulatory control period.[15] We consider this approach will provide sufficient incentives for AusNet Services to achieve capex efficiency improvements over the 2017–22 regulatory control period. AusNet Services is not currently subject to a capital expenditure sharing scheme (CESS). As explained in section 4.2 and attachment 10, we will apply the CESS to AusNet Services for the 2017–22 regulatory control period.

Figure 3.2 compares our draft decision on AusNet Services' forecast RAB to AusNet Services' proposal and actual RAB in real dollar terms. The forecast RAB does not include any Group 3 assets (augmentation capex), which may be commissioned during the 2017–22 regulatory control period. These assets would be added to the RAB at the next reset.

[15] NER, cl. S6A.2.2B(a).

Figure 3.2 AusNet Services' actual RAB, proposed forecast RAB and AER draft decision forecast RAB ($ million, 2016–17)



Source: AER analysis.

Further detail on our draft decision in regards to AusNet Services' RAB is set out in attachment 2.

3.2 Rate of return (return on capital)

The allowed rate of return provides a TNSP a return on capital to service the interest on its loans and give a return on equity to investors. The return on capital building block is calculated as a product of the rate of return and the value of the RAB.

We are satisfied that the allowed rate of return of 6.16 per cent (nominal vanilla) we determined contributes to the achievement of the NEO, and achieves the allowed rate of return objective (ARORO) set out in the NER.[16] That is, we are satisfied that this allowed rate of return is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to AusNet Services in providing prescribed transmission services.[17]

We are not satisfied that AusNet Services' proposed (indicative) 7.22 per cent rate of return for 2017–18 will achieve the ARORO.[18] In reaching our draft decision position we took account of information provided in submissions from the CCP, EUCV and

[16] NER, cl. 6A.6.2(b).
[17] NER, cl. 6A.6.2(c).
[18] AusNet Services, *Transmission Revenue Review 2017–2022 regulatory proposal*, 30 October 2015, p. 191.

other stakeholders. The CCP and EUCV raised concerns that the rate of return proposed by AusNet Services will provide excessive returns.[19]

Table 3.4 sets out our rate of return and AusNet Services' proposed rate of return.

Table 3.4 AER draft decision on AusNet Services' rate of return (% nominal)

	AER previous decision (2014–17)	AusNet Services proposal (2017–18)	AER draft decision (2017–18)	Allowed return over 2017–22 regulatory control period
Return on equity (nominal post–tax)	9.51	10	7.1	Constant (7.1%)
Return on debt (nominal pre–tax)	6.79	5.37	5.54	Updated annually
Gearing	60	60	60	Constant (60%)
Nominal vanilla WACC	7.87	7.22	6.16	Updated annually for return on debt
Forecast inflation	2.45	2.35	2.44	Constant (2.44%)

Source: AER analysis; AusNet Services, *Transmission Revenue Review 2017–2022 regulatory proposal*, 30 October 2015; AER, *Final Decision: SP AusNet Transmission determination 2014-2017*, January 2014.

Our return on equity estimate for this draft decision is 7.1 per cent. We derived this estimate by applying the same approach we applied to determine the allowed return on equity in our most recent decisions.[20] The Australian Competition Tribunal (Tribunal) recently upheld this approach, referred to in the Guideline as the foundation model approach.[21] This is a six step process, where we have regard to a considerable amount of relevant information, including various equity models.

Our return on equity point estimate and the parameter inputs are set out in Table 3.5. AusNet Services proposed departing from the approach in the Guideline. We are not satisfied that doing so would result in an outcome that better achieves the ARORO.[22] We do not agree with AusNet Services that our method outlined in the Guideline will result in a return on equity which is inconsistent with the ARORO.[23]

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19 EUCV, *Submission in response to AusNet Services' 2017–22 transmission determination proposal*, February 2016, pp. 40–42; Consumer Challenge Panel (Panel 5), *Submission on AusNet Services' transmission revenue review 2017-2022*, 8 February 2016, pp. 41–43.

20 For example, see AER, *Final decision: AusNet Services determination 2015 -16 to 2019–20, Attachment 3—Rate of return*, May 2016.

21 For example, see Australian Competition Tribunal, *Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 26 February 2016, para 813; AER, *Better regulation: Rate of Return Guideline,* December 2013.

22 NER, cl. 6.2.8(c); cl.6A.2.3(c).

23 AusNet Services, *Transmission Revenue Review 2017–2022 regulatory proposal*, 30 October 2015, pp. 191-195.

Table 3.5 AER draft decision on AusNet Services' return on equity (nominal)

	AER previous decision (2014–17)	AusNet Services proposal (2017-22)[a)]	AER draft decision (2017–22)
Nominal risk free rate (return on equity only)	4.31%	3.02%	2.57%
Equity risk premium	5.20%	7.24%	4.55%
Market risk premium	6.50%	8.17%	6.50%
Equity beta	0.8	0.886	0.7
Nominal post–tax return on equity	9.51%	10%	7.1%

Source: AER analysis; AusNet Services, *Transmission Revenue Review 2017–2022 regulatory proposal*, 30 October 2015; AER, *Final Decision: SP AusNet Transmission determination 2014-2017*, January 2014.

(a) AusNet Services used a multi-model approach to estimate return on equity and calculated with an indicative averaging period of 20 business days to 17 July 2015. The market risk premium shown in this table is the market return less the indicative risk free rate used in AusNet Services' estimated SLCAPM. The equity beta is an 'implied beta' calculated as the proposed equity risk premium divided by the market risk premium. AusNet Services, *Transmission Revenue Review 2017–2022 regulatory proposal*, 30 October 2015.

Our draft decision on the return on debt approach is to:

- estimate the return on debt using an on-the-day approach (that is, based on prevailing market conditions near the commencement of the regulatory control period) in 2017–18 of the 2017–22 regulatory control period, and
- gradually transition this approach into a trailing average approach (that is, a moving historical average) over 10 years.[24]

This gradual transition will occur through updating 10 per cent of the entire return on debt each year to reflect prevailing market conditions in that year (a full transition).[25] This approach is consistent with the approach we proposed in the Guideline and adopted in this draft decision. Our draft decision is to estimate the return on debt in each regulatory year by reference to:

- a benchmark credit rating of BBB+
- a benchmark term of debt of 10 years

[24] This draft decision determines the return on debt methodology for the 2017-22 regulatory control period. This period covers the first five years of the 10 year transition period. This decision also sets out our intended return on debt methodology for the remaining five years. However, we do not have the power to determine in this decision the return on debt methodology for those years. Under the NER, the return on debt methodology must be determined in future decisions that relate to that period.

[25] By entire return on debt, we mean 100% of the base rate and debt risk premium (DRP) components of the allowed return on debt.

- independent third party data series—specifically, a simple average of the broad BBB rated debt data series published by the Reserve Bank of Australia (RBA) and Bloomberg, adjusted to reflect a 10 year estimate and other adjustments[26]
- an averaging period for each regulatory year of between 10 business days and 12 months (nominated by the service provider), with that period being consistent with certain conditions that we proposed in the Guideline.[27]

It is worth noting that the Tribunal recently reviewed several aspects of our approach to estimating the allowed return on debt in recent decisions for ActewAGL, Jemena Gas Networks and Networks NSW. Specifically, the Tribunal was asked to review:

- Whether a benchmark efficient entity would have a credit rating of BBB rather than BBB+. It upheld our decision to define a benchmark credit rating as a BBB+ credit rating.[28]
- Whether we should estimate the allowed return on debt using the RBA data series alone or a simple average of the RBA and Bloomberg data series. It upheld our decision and found that, 'averaging of the two curves was an acceptable measure of the DRP'. [29]
- Whether we should transition all of the return on debt[30] from an on-the-day approach in the first regulatory year to a trailing average by updating 10 per cent of the debt portfolio over 10 years (a full transition). It remitted the determination back to us to make a constituent decision on introducing the trailing average approach in accordance with several reasons outlined in its decision.[31]

In the Guideline, we proposed to use one or more third party data series to estimate the return on debt.[32] At that time, however, we had not formed a view on which data series to use. Our April 2014 issues paper outlined how we would make this choice and sought submissions from service providers.[33] In this draft decision, we adopted a simple average of the RBA and Bloomberg data series.

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[26] For the RBA curve, our draft decision is to interpolate the monthly data points to produce daily estimates, to extrapolate the curve to an effective term of 10 years, and to convert it to an effective annual rate. For the Bloomberg curve, our draft decision is to extrapolate it to 10 years using the spread between the extrapolated RBA seven and 10 year curves (where Bloomberg has not published a 10 year estimate), and to convert it to an effective annual rate. While we do not propose estimating the return on debt by reference to the Reuters curve, we do not rule out including doing so in future determinations following a proper period of consultation.

[27] AER, *Rate of return guideline*, December 2013, pp. 21–2; AER, *Explanatory statement—Rate of return guideline*, December 2013, p. 126.

[28] For example, see Australian Competition Tribunal, *Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 26 February 2016, para 993.

[29] For example, see Australian Competition Tribunal, *Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 26 February 2016, para 983.

[30] For clarity, that is 100% of the base rate and DRP components of the allowed return on debt.

[31] For example, see Australian Competition Tribunal, *Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1*, 26 February 2016, para 1,227. The Tribunal's reasons are set out in paras 870 to 940.

[32] AER, *Explanatory statement—Rate of return guideline*, December 2013, pp. 23–24.

[33] AER, *Issues Paper - Return on debt: Choice of third party data service provider*, April 2014.

We estimated expected inflation using the RBA's short term inflation forecasts and the mid-point of the RBA's inflation targeting band. This is consistent with the approach we have applied since 2008. This differs from the approach AusNet Services applied in its regulatory proposal, which entailed estimating the expected inflation rate implied from comparing inflation-indexed and nominal government bonds.

The estimate of expected inflation in our draft decision is nine basis points higher than the estimate provided in AusNet Services' regulatory proposal. A higher estimate of expected inflation results in an increase to the indexation of the capital base component over the regulatory control period, causing a net decrease in the regulatory depreciation allowance.

Further detail on our draft decision in regards to AusNet Services' allowed rate of return is set out in attachment 3.

3.3 Value of imputation credits (gamma)

Under the Australian imputation tax system, investors can receive an imputation credit for income tax paid at the company level.[34] These are received after company income tax is paid, but before personal income tax is paid. For eligible investors, this credit offsets their Australian income tax liabilities. If the amount of imputation credits received exceeds an investor's tax liability, that investor can receive a cash refund for the balance. Imputation credits are therefore valuable to investors and are a benefit to investors in addition to any cash dividend or capital gains they receive from owning shares.

However, the estimation of the return on equity does not take imputation credits into account. Therefore, an adjustment for the value of imputation credits is required. This adjustment could take the form of a decrease in the estimated return on equity itself. An alternative but equivalent form of adjustment, which is employed under the NER, is via the revenue granted to a service provider to cover its expected tax liability. Specifically, the NER requires that the estimated cost of corporate income tax be determined in accordance with a formula that reduces the estimated cost of corporate tax by the 'value of imputation credits' (represented by the Greek letter, γ, 'gamma'). This form of adjustment recognises that it is the payment of corporate tax which is the source of the imputation credit return to investors.

Our draft decision does not accept AusNet Services' proposed value of imputation credits (or gamma) of 0.25. Instead, we adopt a value of imputation credits of 0.4. We consider that the use of a value for imputation credits of 0.4 will result in equity investors in the benchmark efficient entity receiving an ex ante total return (inclusive of the value of imputation credits) commensurate with the efficient equity financing costs of a benchmark efficient entity.

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[34] *Income Tax Assessment Act 1997,* parts 3–6.

Estimating the value of imputation credits is a complex and imprecise task. There is no consensus among experts on the appropriate value or estimation techniques to use. Further, with each estimation technique there are often a number of ways these may be applied resulting in different outcomes. Conceptually, the value of imputation credits must be between 0 and 1, and the range of expert views on the value of imputation credits is almost this wide.[35]

In coming to a value of imputation credits of 0.4:

- we adopt a conceptual approach consistent with the Officer framework, which we consider best promotes the objectives and requirements of the NER/NGR. This approach considers the value of imputation credits is a post-company tax value before the impact of personal taxes (and personal costs). As such, we view the value of imputation credits as the proportion of company tax returned to investors through the utilisation of imputation credits.[36]
- we consider our conceptual approach allows for the value of imputation credits to be estimated on a consistent basis with the allowed rate of return and allowed revenues under the post-tax framework in the NER/NGR.[37]
- we use the widely accepted approach of estimating the value of imputation credits as the product of two sub-parameters: the 'distribution rate' and the 'utilisation rate'.

Overall, the evidence suggests a range of estimates for the value of imputation credits might be reasonable. With regard to the merits of the evidence before us, we choose a value of imputation credits of 0.4 from within a range of 0.3 to 0.5.

In considering the evidence on the distribution and utilisation rates, we have broadly maintained the approach set out in the Rate of Return Guideline (the Guideline), but have re-examined the relevant evidence and estimates. This re-examination, and new evidence and advice considered since the Guideline, led us to depart from the 0.5 value of imputation credits we proposed in the Guideline.

Further detail on our draft decision in regards to the value of AusNet Services' imputation credits is set out in attachment 4.

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35 The value of imputation credits must be between 0 and 1 because receiving an imputation credit cannot make an investor worse off, nor would an investor value an imputation credit more than its face value.

36 This means one dollar of claimed imputation credits has a post (company) tax value of one dollar to investors before personal taxes and personal transaction costs.

37 In finance, the consistency principle requires that the definition of the cash flows in the numerator of a net present value (NPV) calculation must match the definition of the discount rate (or rate of return / cost of capital) in the denominator of the calculation (see Peirson, Brown, Easton, Howard, Pinder, *Business Finance*, McGraw-Hill, Ed. 10, 2009, p. 427). By maintaining this consistency principle, we provide a benchmark efficient entity with an ex ante total return (inclusive of the value of imputation credits) commensurate with the efficient financing costs of a benchmark efficient entity.

3.4 Regulatory depreciation (return of capital)

Depreciation is the allowance provided so capital investors recover their investment over the economic life of the asset (return of capital). In deciding whether to approve the depreciation schedules submitted by AusNet Services, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for AusNet Services' 2017–22 regulatory control period.[38] The regulatory depreciation allowance is the net total of the RAB depreciation less the inflation indexation adjustment of the RAB.

Box 1: What is depreciation?

Regulated service providers invest in large sunk assets to provide electricity transmission services to customers. While some of the cost of such assets may be recovered from customers upfront, a greater proportion is recovered over time. A depreciation charge is used for this purpose. This is particularly important for long-lived assets, since it spreads the cost across the current and future customers who benefit from the use of the asset.

Depreciation reflects the use of an asset each year and accounts for its loss of value due to wear and tear over its useful life.[39] Some assets, such as land, are not depreciated as they have an unlimited useful life.[40]

For assets that do depreciate, there are several methods that can be employed to calculate the annual depreciation amount. Under a 'straight-line approach', the asset is reduced by a constant amount each period. That is, the asset value is depreciated evenly over its useful life. Alternatively, under a 'diminishing value approach', a constant percentage is applied to the asset value to work out the annual depreciation amount.[41] Applying a constant percentage leads to a reducing annual depreciation amount over time as the asset value declines.

Our draft decision approves a regulatory depreciation allowance of $521.3 million ($ nominal) for the 2017–22 regulatory control period. This is $81.4 million (13.5 per cent) lower than AusNet Services' proposed value of $602.8 million ($ nominal).

Table 3.8 shows our draft decision on AusNet Services' depreciation allowance for the 2017–22 regulatory control period.

38 NER, cll. 6A.5.4(a)(1) and (3).

39 NER, cl. 6A.6.3(b).

40 For example, see Australian Accounting Standards Board, *AASB 116, Property, plant and equipment*, December 2015, paragraph 58.

41 For example, an asset with 10 year life could have a depreciation percentage of 10 per cent (i.e. 1/10) applied to the remaining asset value each year. This percentage may also have a multiple applied. For example, tax law may allow the 10 per cent to be doubled to 20 per cent for certain assets. The higher the multiple applied, the greater the decrease in the value of the asset early in its life due to faster depreciation.

Table 3.6 AER's draft decision on AusNet Services' depreciation allowance for the 2017–22 period ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Straight-line depreciation	180.2	182.1	189.7	192.6	175.6	920.1
Less: inflation indexation on opening RAB	78.1	79.6	80.3	80.4	80.4	398.8
Regulatory depreciation	**102.0**	**102.5**	**109.4**	**112.2**	**95.2**	**521.3**

Source: AER analysis.

The key reasons for the difference between our regulatory depreciation allowance and the allowance proposed by AusNet Services' are:

- We accept the continuation of AusNet Services' year-by-year tracking approach to calculate the straight-line depreciation of existing assets. However, we have applied an adjustment to AusNet Services' proposed depreciation calculations to ensure the profiles meet the requirements of the NER.
- As discussed in section 2.1.2, we do not accept the proposed use of the DV method for depreciating new assets (which would have effectively accelerated depreciation of these assets) reflects the nature of these assets over their economic lives.[42] We have substituted the SL depreciation method for these assets consistent with that applying to existing assets.
- We made determinations on other components of AusNet Services' proposal that also affect the forecast regulatory depreciation allowance—for example, the expected inflation rate (attachment 3) and forecast capex (attachment 6).

Further detail on our draft decision in regards to depreciation is set out in attachment 5.

3.5 Capital expenditure

Capital expenditure (capex) refers to the capital expenses incurred in the provision of network services. The return on and return of forecast capex are two of the building blocks we use to determine a TNSPs total revenue requirement.

Our draft decision approves $573.1 million ($2016–17) total net forecast capex for the 2017–22 regulatory control period. This is $172.5 million (or 23 per cent) lower than AusNet Services' proposed value of $745.6 million. Table 3.7 shows our decision compared to AusNet Services' forecast.

[42] NER, cl. 6A.6.3(b).

Table 3.7 AER draft decision on total net capex ($million, 2016–17)

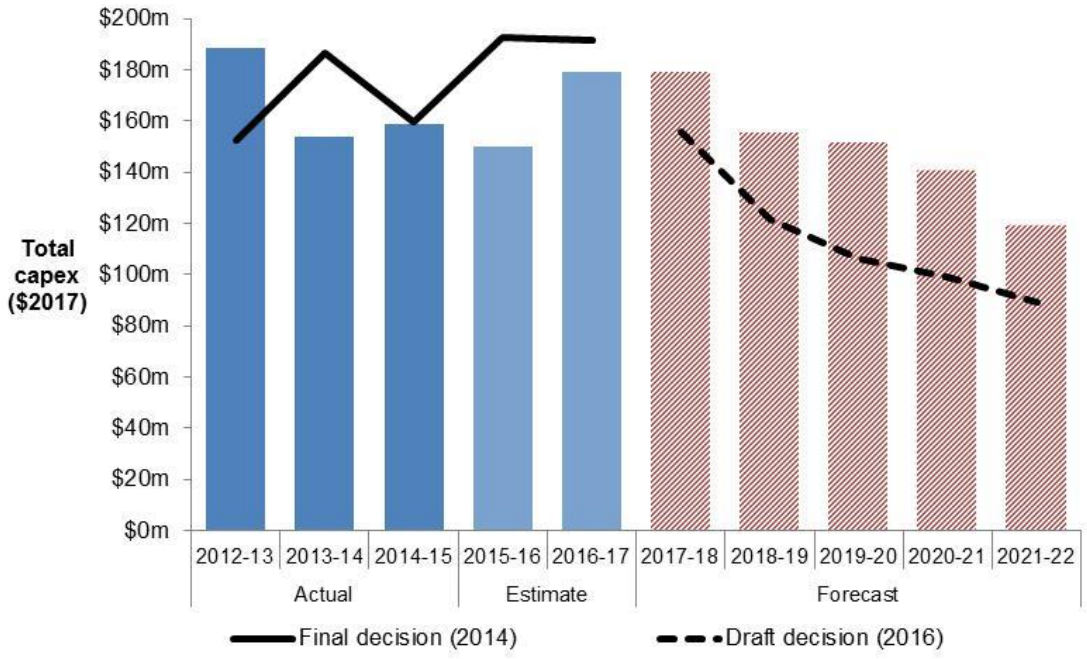
	2017–18	2018–19	2019–20	2020–21	2021–22	Total
AusNet Services' proposal	178.9	155.3	151.6	140.5	119.3	745.6
AER draft decision	156.5	121.9	106.3	99.0	89.4	573.1
Difference	-22.4	-33.4	-45.3	-41.5	-29.8	-172.5
Percentage difference (%)	-13	-22	-30	-30	-25	-23

Source: AusNet Services, *Revenue Proposal,* October 2015, p. 81; AER analysis

Note: Numbers may not total due to rounding.

Figure 3.3 shows our capex decision compared to AusNet Services' proposal, its past allowances and past actual expenditure.

Figure 3.3 AusNet Services total actual and forecast capex 2014–2022



The key components of our draft decision include:

- reductions in capex related to estimated safety risks ($99.0 million), based on a more realistic assumption of the probability of safety related outcomes
- reductions in capex related to reliability risk ($44.1 million) driven by updated forecasts of transmission connection point demand and adoption of the AEMO forecasts
- reductions in project cost estimates ($13.5 million) to ensure the forecast is unbiased
- reductions resulting from the application of updated CPI figures ($13.3 million)

- reductions in information and communication technology (ICT) expenditure ($4.6 million), where this expenditure has not been supported by business cases or where no supporting information was provided.

In reaching our draft decision we considered submissions received from the CCP and the EUCV on AusNet Services' proposed capex. The CCP and EUCV expressed concerns over the level of capex forecast over the 2017–22 regulatory control period and its contribution to continuing growth in AusNet Services' RAB.[43]

Further detail on our draft decision in regards to capex is set out in attachment 6.

3.6 Operating expenditure

Operating expenditure (opex) is the forecast of operating, maintenance and other non–capital costs incurred in the provision of prescribed transmission services.

Our draft decision approves $1024.1 million ($2016–17) total forecast opex for the 2017–22 regulatory control period. This is $61.0 million (5.6 per cent) lower than AusNet Services' proposed value of $1085.0 million ($2016–17). Table 3.8 shows our decision compared to AusNet Services' forecast.

Table 3.8 AER draft decision on total opex ($million, 2016–17)

	2017-18	2018-19	2019-20	2020-21	2021-22	Total
AusNet Services' proposal	218.9	214.0	215.5	217.7	219.0	1085.0
AER draft decision	204.2	204.4	204.8	205.2	205.6	1024.1
Difference	-14.7	-9.6	-10.7	-12.6	-13.4	-61.0

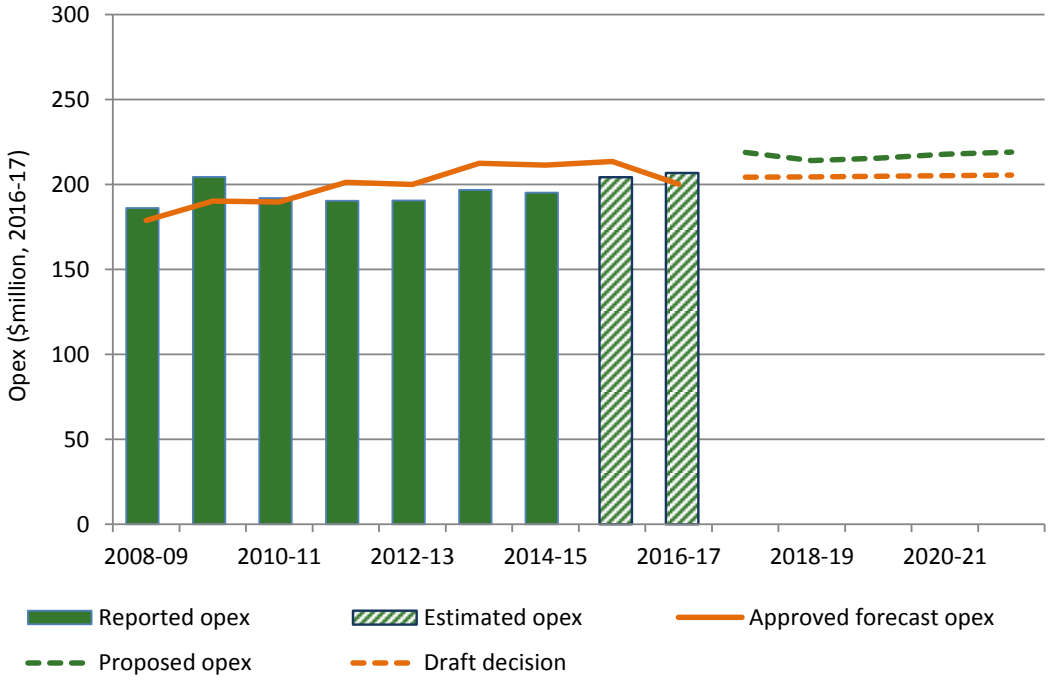
Source: AER analysis.

Note: Excludes debt raising costs.

Figure 3.4 shows our opex decision compared to AusNet Services' proposal, its past allowances and past actual expenditure.

[43] Consumer Challenge Panel (Panel 5), *Submission on AusNet Services' transmission revenue review 2017-2022*, 8 February 2016, p. 19; EUCV, *Submission on AusNet Services' transmission revenue review 2017-2022*, 9 February 2016, pp. 12–26.

Figure 3.4 AER draft decision on total forecast opex ($million, 2016–17)



Source: AusNet Services, *Regulatory accounts 2008–09 to 2014–15*; AusNet Services, *Economic benchmarking - Regulatory information notice response 2006 to 2015*; AER analysis.

The key areas of difference between our estimate of opex and AusNet Services' estimate are:

- our forecast of the overall rate of change used to derive our alternative estimate of opex is lower than AusNet Services' over the forecast period. Our findings are that:
    - AusNet Services' forecast of labour price growth overstates the cost inputs required by a prudent and efficient TNSP in the forecast period
    - AusNet Services' output growth forecast incorrectly assumes that the increase in opex due to output growth that occurs in the 2017–22 regulatory control period will be incurred by AusNet Services. Under existing arrangements, AEMO will fund the operation and maintenance of new augmentation and connection assets during the 2017–22 period
    - AusNet Services' productivity growth relies on outdated forecasts of productivity growth.
- AusNet Services proposed six step changes to its base level of opex, totalling $13.5 million ($2016–17). We have not included these step changes in our draft decision total opex forecast. We are not satisfied that the proposed step changes above the base level opex (escalated by the rate of change) are required in order to arrive at a forecast of total opex that reflects the opex criteria.

In reaching our draft decision we considered submissions received from the CCP and the EUCV in response to AusNet Services' proposal. Both were concerned about the increase in AusNet Services' proposed opex for the 2017–22 regulatory control period

compared to historical levels. The issues raised in these submissions included concerns over the output growth proposed by AusNet Services, as well as forecast labour costs. [44]

The CCP also considered that AusNet Services overstated the extent of step changes that are required. It argued for the removal of step changes related to the establishment of an IT security team, the costs of a new WMTS mobile switchboard, and the synchronous condenser decommissioning associated with the shutdown of the Morwell power station.[45]

Further detail on our draft decision in regards to opex is set out in attachment 7.

3.7 Corporate income tax

We make a decision on the estimated cost of corporate income tax for AusNet Services' 2017–22 regulatory control period as part of our revenue determination.[46] It enables AusNet Services to recover the costs associated with the estimated corporate income tax payable during the regulatory control period.

Our draft decision includes an estimated cost of corporate income tax of $60.6 million ($ nominal) for AusNet Services over the 2017–22 regulatory control period. This is $107.3 million (or 63.9 per cent) lower than AusNet Services' proposed value of $167.9 million. Table 3.9 shows our draft decision on AusNet Services' corporate income tax allowance for the 2017–22 regulatory control period.

Table 3.9 AER's draft decision on corporate income tax allowance for AusNet Services ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Tax payable	22.4	18.1	21.0	23.8	15.7	101.0
Less: value of imputation credits	9.0	7.2	8.4	9.5	6.3	40.4
Net corporate income tax allowance	**13.4**	**10.9**	**12.6**	**14.3**	**9.4**	**60.6**

Source: AER analysis.

The reduction reflects our amendments to some of AusNet Services' proposed inputs for forecasting the cost of corporate income tax such as the opening tax asset base, and the remaining tax asset lives. It also reflects a change to the proposed tax treatment of revenue adjustments associated with the efficiency benefit sharing

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44 EUCV, *Submission in response to AusNet Services' 2017–22 transmission determination proposal*, February 2016, pp. 27–32; CCP (subpanel 5), *Submission in response to AusNet Services' 2017–22 transmission determination proposal*, February 2016, p. 29.

45 CCP (subpanel 5), *Submission in response to AusNet Services' 2017–22 transmission determination proposal*, February 2016, pp. 25–29.

46 NER, cl. 6A.6.4.

scheme, and our draft decision on the value of imputation credits—gamma (attachment 4). Changes to building block costs also affect revenues, which in turn impact the tax calculation. The changes affecting revenues are discussed in attachment 1.

Further detail on our draft decision in regards to corporate income tax is set out in attachment 8.

4 Incentive schemes

Incentive schemes are a component of incentive–based regulation and complement our approach to assessing efficient costs. The incentive schemes that will apply to AusNet Services are:

- the efficiency benefit sharing scheme (EBSS)
- the capital expenditure sharing scheme (CESS)
- the service target performance incentive scheme (STPIS).

Our incentive schemes encourage network businesses to make efficient decisions. They give network businesses an incentive to pursue efficiency improvements in opex and capex, and to share them with consumers. Incentives for opex and capex are balanced with the incentives under our STPIS. The incentive schemes encourage businesses to make efficient decisions on when and what type of expenditure to incur, and meet service reliability targets.

4.1 Efficiency benefit sharing scheme (EBSS)

The EBSS provides an incentive for service providers to pursue efficiency improvements in opex.

As opex is largely recurrent and predictable, opex in one period is often a good indicator of opex in the next period.[47] Where a service provider is relatively efficient, we use the actual opex it occurred in a chosen base year of the regulatory control period to forecast opex for the next regulatory control period. We call this the 'revealed cost approach'.

However, using a network business' past information to set future targets can reduce the incentives of the business to reduce its costs—since the business knows that any cut in its expenditure will decrease its revenue allowance in the future.

To encourage a business to become more efficient it is allowed to keep any difference between its approved forecast and its actual opex during a regulatory control period. This is supplemented by the EBSS which allows the business to retain efficiency savings and losses for a longer period of time. In this way, the EBSS can provide businesses with an additional reward for reductions in opex and additional penalties for increases in opex.

Under the EBSS, a business gets to keep the benefits of any efficiency gains for a full five year period, but after that all the gains are passed on to consumers in the form of lower network charges. Efficiency gains made in year 1 or 2 of the regulatory period benefit the business as much as efficiency gains made in year 4 or 5. This ensures the

[47] Step changes provide for increases/decreases where this is not the case.

business faces a continuous incentive to pursue efficiency gains over the regulatory control period. The EBSS also discourages a service provider from inflating its base year opex in order to receive a higher opex allowance in the following regulatory control period.[48]

Our draft decision is to approve a positive EBSS carryover amount of $5.1 million ($2016–17) from the application of the EBSS in the 2014–17 regulatory control period. However we will update our calculation using AusNet Services' actual expenditure for 2015–16 in our final decision. Our draft decision for the carryover amounts from the application of the EBSS in the 2014–17 regulatory period is outlined in Table 4.1.

Table 4.1 AER's draft decision on AusNet Services EBSS carryover amounts ($million, 2016–17)

	2017-18	2018-19	2019-20	2020-21	2021-22	Total
AusNet Services' proposed carryover	1.7	1.7	1.7	0.5	-	5.6
Draft decision	1.3	1.3	1.3	0.0	1.1	5.1

Source: AusNet Services, Regulatory proposal, October 2015, p. 169; AER analysis.

Our draft decision is to apply version two of the EBSS to AusNet Services in the 2017–22 regulatory control period. This is consistent with our Final framework and approach paper[49] and AusNet Services' proposal.

Further detail on our draft decision in regards to the application of the EBSS, including proposed expenditure items to be excluded, is set out in attachment 9.

4.2 Capital expenditure sharing scheme (CESS)

The CESS provides an incentive for service providers to pursue efficiency improvements in capex. Similar to the EBSS, the CESS provides a network service provider with the same reward for an efficiency saving and the same penalty for an efficiency loss regardless of which year they make the saving or loss.

Under the CESS a service provider retains 30 per cent of the benefit or cost of an underspend or overspend, while consumers retain 70 per cent of the benefit or cost of an underspend or overspend. This means that for a one dollar saving in capex the service provider keeps 30 cents of the benefit while consumers keep 70 cents of the benefit. Conversely, in the case of an overspend, the service provider pays for 30 cents of the cost while consumers bear 70 cents of the cost.

We will apply the CESS as set out in version 1 of the capital expenditure incentives guideline to AusNet Services in the 2017–22 regulatory control period.[50] The guideline

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[48] These concepts are explained more fully in the explanatory statement to the EBSS; AER, *Efficiency benefit sharing scheme for electricity network service providers – explanatory statement,* November 2013.

[49] AER, *Final framework and approach for AusNet Services transmission determination 2017–22,* April 2015, p. 16.

provides for the exclusion from the CESS of capex the service provider incurs in delivering a priority project approved under the network capability component of the STPIS for transmission network service providers. This is consistent with the proposed approach we set out in our framework and approach paper.[51]

4.3 Service target performance incentive scheme (STPIS)

The STPIS is intended to balance a business' incentive to reduce expenditure with the need to maintain or improve service quality. It achieves this by providing financial incentives to businesses to maintain and improve service performance where customers are willing to pay for these improvements.

Businesses can only retain their rewards for sustained and continuous improvements to the reliability of supply for customers. Once improvements are made, the benchmark performance targets will be tightened in future years.

Our draft decision is to apply all components of version 5 of the STPIS to AusNet Services for the 2017–22 regulatory control period. The STPIS parameters applied in our draft decision are set out in attachment 11.

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50 AER, *Capex incentive guideline*, November 2013, pp. 5–9.

51 AER, *Final framework and approach for AusNet Services transmission determination 2017–22,* April 2015, p. 23.

5 Understanding the NEO

The NEO is the central feature of the regulatory framework. The NEO is to:

> promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.[52]

Energy Ministers have provided us with a substantial body of explanatory material that guides our understanding of the NEO.[53] 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.[54]

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.[55] We have also considered the quality and reliability of services provided to consumers. For example, opex allowances have been set so AusNet Services may meet existing and new regulatory requirements. Replacement expenditure (repex) allowances take into account the age and condition of assets. Our capex allowance is based on a contemporary estimate of the value of customer reliability. And the STPIS encourages maintenance, and indeed improvement of, service quality.

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.[56] At the same time, however, there are a range of outcomes that are unlikely to advance the NEO, or advance the NEO to the degree that others would.

For example, we 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.[57] This could have significant longer term pricing implications for those consumers who continue to use network services.

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52 NEL, section 7.

53 Hansard, *SA House of Assembly,* 9 February 2005, pp. 1451–1460; Hansard, *SA House of Assembly,* 27 September 2007, pp. 963–972; Hansard, *SA House of Assembly,* 26 September 2013, pp. 7171–7176.

54 Hansard, *SA House of Assembly,* 26 September 2013, p. 7173.

55 Hansard, *SA House of Assembly,* 9 February 2005, p. 1452.

56 Re Michael: Ex parte Epic Energy [2002] WASCA 231 at [143].
Energy Ministers also accept this view – see Hansard, *SA House of Assembly,* 26 September 2013, p. 7172.
AEMC*, Rule determination, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18*, 16 November 2006, p. 50.

57 NEL, s. 7A(7).

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. This could create longer term problems in the network[58] and could have adverse consequences for safety, security and reliability of the network.

The NEL also includes the revenue and pricing principles (RPP),[59] which support the NEO. As the NEL requires,[60] we have taken the RPPs into account throughout our analysis.

> The RPPs are:
>
> A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—
>
> – providing direct control network services; and
>
> – complying with a regulatory obligation or requirement or making a regulatory payment.
>
> A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—
>
> – efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and
>
> – the efficient provision of electricity network services; and
>
> – the efficient use of the distribution system or transmission system with which the operator provides direct control network services.
>
> Regard should be had to the regulatory asset base with respect to a distribution system or transmission system adopted—
>
> – in any previous—
>
> – as the case requires, distribution determination or transmission determination; or
>
> – determination or decision under the National Electricity Code or jurisdictional electricity legislation regulating the revenue earned, or prices charged, by a person providing services by means of that distribution system or transmission system; or

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58 NEL, s. 7A(6).

59 NEL, s. 7A.

60 NEL, s. 16(2).

– in the Rules.

A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.

Consistent with Energy Ministers' views, we set revenue allowances to balance all elements of the NEO and consider each of the RPPs.[61] For example:

- In determining forecast opex and capex that reasonably reflects the opex and capex criteria, we take into account the revenue and pricing principle that should provide AusNet Services with a reasonable opportunity to recover at least efficient costs. (Refer to capex attachment 6 and opex attachment 7).
- We take into account the economic costs and risks of the potential for under and over investment by a network service provider in our assessment of AusNet Services' forecast capex and opex proposals. (Refer to capex attachment 6 and opex attachment 7).
- We consider the economic costs and risks of the potential for under and over utilisation of AusNet Services' transmission system in our demand forecasting (Refer to capex attachment 6).
- Our application of the EBSS, CESS, and STPIS in this determination provide AusNet Services with effective incentives which we consider will promote economic efficiency with respect to the direct control services that AusNet Services provides throughout the regulatory control period. (Refer to attachments 9, 10 and 11).
- We have determined AusNet Services' opening RAB taking into account the RAB adopted in the previous transmission determination. (Refer to attachment 2, regulatory asset base).
- The allowed rate of return objective reflects the revenue and pricing principle in s. 7A(5) of the NEL. We have determined a rate of return that we consider will provide AusNet Services with a return commensurate with the regulatory and commercial risks involved in providing direct control services. (Refer to attachment 3, rate of return).

[61] Hansard, *SA House of Assembly,* 27 September 2007, p. 965; Hansard, *SA House of Assembly,* 26 September 2013, p. 7173.

- Our financing determinations provide the TNSP with a reasonable opportunity to recover at least the efficient costs of accessing debt and capital. (Refer to attachment 3, rate of return).

In some cases, our approach to a particular component (or part thereof) results in an outcome towards the end of the range of options that may be favourable to the businesses. While it can be difficult to quantify the exact revenue impact of these individual decisions, we have identified where we have done so in our attachments. Some of these decisions include:

- selecting at the top of the range for the equity beta
- setting the return on debt by reference to data for a BBB broad band credit rating, when the benchmark is BBB+
- the cash flow timing assumptions in the post-tax revenue model.

We take into account the RPPs when exercising discretion about an appropriate estimate. This requires a recognition that for the long term interests of consumers, the risk of under compensation for, or underinvestment by, a service provider may be less desirable than the risk of overcompensation or overinvestment. However, the AER is also conscious of the risk of introducing an inherent bias towards higher amounts where estimates throughout the different components of the determination are each set too conservatively.[62] The legislative framework recognises the complexity of this task by providing the AER with significant discretion in many aspects of the decision-making process to make judgements on these matters.

Chapter 6A of the NER provides specifically for the economic regulation of TNSPs. It includes rules about the constituent components of our decisions. These are intended to contribute to the achievement of the NEO.[63]

5.1 Achieving the NEO to the greatest degree

Electricity transmission determinations are complex decisions and must be considered as such. In most instances, the provisions of the NER do not point to a single answer, either for our decision as a whole or in respect of particular components. They require us to exercise our regulatory judgement. For example, chapter 6A of the NER requires us to prepare forecasts, which are predictions about unknown future circumstances. As a result, there will likely always be more than one plausible forecast.[64] There is substantial debate amongst stakeholders about the costs we must forecast, with both sides often supported by expert opinion. As a result, for certain components of our decision there may be several plausible answers or several plausible point estimates.

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62 AEMC, *Rule determination, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18*, 16 November 2006, p. 52.

63 NEL, s. 88.

64 AEMC, *Rule Determination: National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006,* (16 November 2006), 52.

When the constituent components of our decision are considered together, this means there will almost always be several potential, overall decisions. More than one of these may contribute to the achievement of the NEO. Where this is the case, our role is to make an overall decision that we are satisfied contributes to the achievement of the NEO to the greatest degree.[65]

We approach this from a practical perspective, accepting that it is not possible to consider every permutation specifically. Where there are choices to be made among several plausible alternatives each of which would result in an overall decision that contributes to the achievement of the NEO, we have selected what we are satisfied would result in an overall decision that contributes to the achievement of the NEO to the greatest degree. This is our role under the NEO.

In coming to this draft decision we considered AusNet Services' revenue proposal. We have examined each of the building block components of the initial proposal and the incentive mechanisms that would apply across the 2017–22 regulatory control period. We considered the submissions we received in regard to AusNet Services' initial proposal. We conducted our own analysis and engaged expert consultants to help us better understand if and how AusNet Services' initial proposal contributes to the achievement the NEO. We also considered how our constituent decisions relate to each other, the impact that particular constituent decisions have on other constituent components of our decision, and have described these interrelationships in this draft decision. We have undertaken an extensive and consultative regulatory review process to ensure we have canvassed stakeholder issues and made as much of this information publicly available as practicable. We have had regard to and weighed up all the information assembled before us in making this draft decision.

Therefore, we are satisfied that among the options before us our draft decision on AusNet Services' transmission determination for the 2017–22 regulatory control period contributes to the achieving the NEO to the greatest degree.

5.2 Interrelationships between constituent components

Examining constituent components in isolation ignores the importance of the interrelationships between components of the overall decision, and would not contribute to the achievement of the NEO. As outlined by Energy Ministers, considering the elements in isolation has resulted in regulatory failures in the past.[66] Interrelationships can take various forms, including:

- underlying drivers and context which are likely to affect many constituent components of our decision. For example, forecast demand affects the efficient levels of capex and opex in the regulatory control period (see attachment 6 and 7).

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[65] NEL, s. 16(1)(d).

[66] SCER, *Regulation impact statement: Limited merits review of decision-making in the electricity and gas regulatory frameworks, Decision paper,* 6 June 2013, p. 6

- direct mathematical links between different components of a decision. For example, the level of gamma has an impact on the appropriate tax allowance; the benchmark efficient entity's debt to equity ratio has a direct effect on the cost of equity, the cost of debt, and the overall vanilla rate of return (see attachments 3, 4 and 8).
- trade-offs between different components of revenue. For example, undertaking a particular capex project may affect the need for opex or vice versa (see attachments 6 and 7).
- trade-offs between forecast and actual regulatory measures. The reasons for one part of a proposal may have impacts on other parts of a proposal. For example, an increase in augmentation to the network means the TNSP has more assets to maintain leading to higher opex requirements (see attachments 6 and 7).
- the TNSP's approach to managing its network. The TNSP's governance arrangements and its approach to risk management will influence most aspects of the proposal, including capex/opex trade-offs (see attachment 6).

We have considered interrelationships, including those above, in our analysis of the constituent components of our draft decision. These considerations are explored in the relevant attachments.

6 Consultation

Stakeholder participation is important to informed decision making under the NEL and NER. It allows us to take a range of views into account when considering how a proposal or decision contributes to the NEO. Effective consultation and engagement provide confidence in our processes and are good regulatory practice. This is reflected in the consultation process set out in the NER, under which we have:

- published AusNet Services revenue proposals and supporting material
- published an issues paper identifying preliminary issues with the revenue proposal
- invited written submissions on the revenue proposal
- held a public forum on the revenue proposal
- published this draft decision.

We also sought advice from the AER's Consumer Challenge Panel (CCP) on AusNet Services revenue proposal. Both the CCP and AusNet Services met with the AER Board to discuss this review.

This process builds on consultation we undertook with a broad range of stakeholders as part of the Better Regulation program. Following changes to the NER in 2012, we spent much of 2013 consulting on and refining our assessment methods and approaches to decision making. We referred to this as our Better Regulation program. The Better Regulation program was designed to be an inclusive process that provided an opportunity for all stakeholders to be engaged and provide their input.[67]

This gives us confidence the approaches set out in our various guidelines, which we have applied in this decision, will result in outcomes that will or are likely to contribute to the achievement of the NEO to the greatest degree. Our Better Regulation guidelines are available on our website[68] and include:

- Expenditure forecast assessment guideline
- Expenditure incentives guideline
- Rate of return guideline
- Consumer engagement guideline for network service providers
- Shared assets guideline
- Confidentiality guideline.

The guidelines provide businesses, investors and consumers predictability and transparency of our approach to regulation under the new rules.

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[67] AER, *Overview of the Better Regulation reform package*, April 2014, pp. 4 & 7–13.

[68] www.aer.gov.au/better-regulation-reform-program

6.1 Consumer engagement

Recent changes to the NER provide further support for consumer involvement in the regulatory process, and enable us to engage more productively with energy consumers and businesses.[69] Chapter 6A of the NER was amended to, among other things, require:

- TNSPs to submit an overview with their revenue proposal which describes how they have engaged with consumers and sought to address any relevant concerns identified by that engagement[70]
- the AER to publish an issues paper after receiving the TNSP's revenue proposal.[71] The purpose of the issues paper is to assist consumer representative groups to focus on the key preliminary issues on which they should engage and comment[72]
- the AER, when determining capex and opex allowances, to have regard to the extent to which the forecast includes expenditure to address the concerns of consumers as identified by the TNSP in the course of its engagement with the consumers.[73]

Our Better Regulation Consumer engagement guideline sets out our expectations of how the network businesses should engage with their customers. We expect the network businesses to demonstrate a commitment to ongoing and genuine consumer engagement on issues relevant to consumers. We want to see businesses being more accountable to their consumers.[74] We understand the businesses may need some time to develop and implement robust and comprehensive engagement strategies and approaches.[75]

As set out in the guideline, we monitor consumer engagement activities through the CCP and our ongoing engagement with stakeholders. We may publicly comment in our decisions on any shortcomings that we identify from an expenditure proposal that reflect weaknesses in consumer engagement.[76]

We have considered the material presented in AusNet Services' revenue proposal (section 6.2), and stakeholder views presented to us in submissions (section 6.3) to form a view of its progress in implementing improved engagement strategies and approaches (section 6.4). We have not undertaken a substantive review of AusNet

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69 AEMC, *Rule determination, National Electricity Amendment (Economic Regulation of Network Service Prviders),* Rule 2012.

70 NER, cl. 6A.10.1(g)(2).

71 NER, cl. 6A.11.3(b)(1).

72 AEMC, *Rule determination, National Electricity Amendment (Economic Regulation of Network Service Prviders),* Rule 2012.

73 NER, cll. 6A.6.6(e)(5A) and 6A.6.7(e)(5A).

74 AER, *Better Regulation: Consumer engagement guideline for network service providers,* November 2013, p. 5.

75 AER, *Better Regulation: Consumer engagement guideline for network service providers,* November 2013, p. 12.

76 AER, *Better Regulation: Consumer engagement guideline for network service providers,* November 2013, p. 12.

Services' consumer engagement approaches and strategies against the above best practice principles as part of this process.

6.2 AusNet Services' consumer engagement activities

In its revenue proposal, AusNet Services submitted that with energy markets undergoing rapid changes, it is important that it understands stakeholder views and preferences. While transmission represents a relatively small component of most consumers' electricity bills, a reliable and cost-effective transmission service is a vital part of the electricity network service experienced by all consumers.[77]

AusNet Services submitted that while understanding and responding to stakeholder preferences is critical, there are many other factors that influence AusNet Services' activities, and hence the development of its revenue proposal. These factors include meeting compliance obligations to provide a safe and reliable supply of electricity. AusNet Services' role is to balance these influencing, and sometimes competing, factors. AusNet Services stated that where stakeholder preferences have not been incorporated, a clear explanation has been provided as to why this is the case.[78]

AusNet Services submitted that in developing a stakeholder engagement approach for this review it was guided by the AER's best practice Consumer Engagement Principles as set out in the AER's Consumer Engagement Guideline. AusNet Services also drew upon standards provided by the International Association of Public Participation (IAP2). AusNet Services submitted that the use of the IAP2 guideline emphasised to stakeholders that its engagement program was consistent with AER expectations.[79]

AusNet Services acknowledged that its stakeholder engagement practices are in a developmental phase.[80] Nonetheless, stakeholders provided some positive feedback about AusNet Services' stakeholder engagement activities in the lead-up to submitting its revenue proposal. These activities included conducting stakeholder forums, one-on-one consultation with consumer bodies, and online communication. AusNet Services also published a consultation paper seeking views on its proposed depreciation approach.

AusNet Services provided a summary of typical stakeholder views by topic, along with an outline of how these views were addressed in its revenue proposal.[81] These topics include reliability and capex, opex, and accelerated depreciation.

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77 AusNet Services, *Regulatory proposal 2017–22*, October 2015, pp. 40–44.
78 AusNet Services, *Regulatory proposal 2017–22*, October 2015, pp. 40–44.
79 AusNet Services, *Regulatory proposal 2017–22*, October 2015, pp. 42.
80 AusNet Services, *Regulatory proposal 2017–22*, October 2015, pp. 51–56.
81 AusNet Services, *Regulatory proposal 2017–22*, October 2015, pp. 51–56.

6.2.1 Reliability and capital expenditure

Stakeholder feedback

AusNet Services submitted that the impact on both price and reliability of deferring capital projects was explained at the second stakeholder forum. It noted that some stakeholders asked questions about the expected impacts on reliability at specific terminal stations that supply the Melbourne CBD, such as West Melbourne. Concern was expressed about the impact of a supply interruption in this case.[82]

AusNet Services also submitted that some stakeholders supported the recent lowering of the VCR, but questioned whether the application of the VCR at both the transmission and distribution networks was a duplicative assessment that resulted in excess capacity across the networks.[83]

AusNet Services' response in revenue proposal

AusNet Services submitted that, in its revenue proposal, it applied its economic planning approach to asset replacements, which uses AEMO's VCR to ensure that customer preferences related to the price/reliability trade-offs are robustly reflected. While reliability risk is expected to increase slightly over the period, reflecting the reduction in the VCR, this deterioration is expected to be gradual and will be localised to specific areas where terminal station rebuilds have been deferred.[84]

AusNet Services is comfortable that its application the VCR in its replacement decisions does not result in duplicated or unnecessary redundancies in the electricity supply chain. It submitted that the VCR is used at the connection point level when assessing whether to proceed with transmission asset replacements. AusNet Services works closely with the distributors in undertaking this assessment.[85]

AusNet Services also submitted that the reduction in reliability has also been acknowledged in its STPIS proposal, by adjusting the targets for the loss of supply event frequency parameters to reflect the efficient decline in reliability expected.[86]

6.2.2 Operating expenditure

Stakeholder feedback

AusNet Services submitted that stakeholders queried whether opex step changes could be funded by 'doing less elsewhere'. It also noted that stakeholders expressed interest in the AER's benchmarking analysis, and questioned whether AusNet

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82 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 52.
83 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 52.
84 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 52.
85 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 52.
86 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 52.

Services' benchmarking data included AEMO's costs to present an accurate picture of Victorian transmission costs.[87]

AusNet Services' response in revenue proposal

AusNet Services' revenue proposal explains how step changes in opex can lead to reductions in total cost to customers through savings in capex, either now or in future regulatory periods. AusNet Services identified savings in existing practices which will partially offset the magnitude of additional opex required.[88]

AusNet Services' revenue proposal includes the results of the AER's benchmarking analysis updated to incorporate AEMO's costs. AusNet Services submitted that this helps facilitate a comparison of its efficiency with other TNSPs on a like-for-like basis.[89]

6.2.3 Accelerated depreciation

Stakeholder feedback

AusNet Services submitted that participants were strongly against the application of any type of accelerated depreciation. Specific feedback included questioning why they should bear any risk of asset stranding when, in a competitive environment, this risk is borne by the firms making the investment decisions. It was suggested that the regulated rate of return compensates for asset stranding risk and that accelerating the depreciation allowance is at odds with the notion that assets will be worked harder and made to last longer.[90]

The one exception to this was written feedback provided by another TNSP, ElectraNet, which considered that 'alternative depreciation approaches described in the AusNet Services Consultation report need to be explored further'.[91]

AusNet Services submitted that stakeholders also questioned whether the application of accelerated depreciation to new capital investments would increase the incentive for it to spend inefficiently high levels of capex to maximise the depreciation allowance it receives.[92]

AusNet Services' response in revenue proposal

AusNet Services' proposal explains the intentional separation between the regulatory depreciation allowance and the physical service lives of network assets. Nonetheless, in response to this feedback, AusNet Services has selected an accelerated depreciation approach that does not shorten the regulatory life of the assets. AusNet Services submitted that, while it is in consumers' best interests for the physical lives of

87 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 53.
88 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 53.
89 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 53.
90 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 53.
91 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 53.
92 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 54.

assets to be extended, there are compelling reasons why the regulatory depreciation allowance should be accelerated.[93]

In response to stakeholders concerns about the price impact of accelerating the depreciation allowance, AusNet Services submitted that it applied accelerated depreciation to a subset of assets, rather than the whole transmission network. Specifically, AusNet Services proposed that declining balance depreciation is applied to investments made from 1 April 2017. It proposed that all investments made before this date continue to be depreciated on a straight line basis. AusNet Services submitted that stranding of particular assets at specific locations will continue to be managed to minimise the impact on the wider consumer base.[94]

AusNet Services also submitted that the application of accelerated depreciation to new investments does not increase AusNet Services' incentive to increase investment in the network. The economic assessments undertaken to justify the capex forecast are not impacted by the regulated depreciation allowance, and therefore the capex forecast is independent of the approach to accelerated depreciation.[95]

AusNet Services submitted that its proposal explains that under the NER, the value of the regulatory asset base is insulated from asset stranding. As a result of this, regulated rates of return have been lower historically, which have led to lower prices than would otherwise have been the case. AusNet Services submitted that its proposal explains why the AER's approach to setting the regulated rate of return does not compensate for asset stranding risk.[96]

6.3 Consumer submissions

The CCP considered that AusNet Services has made significant progress in seeking to apply consumer engagement principles. The CCP noted that AusNet Services progress in applying the first two levels of the IAP2 spectrum has been considerable and that it has shown goodwill in seeking engagement.[97]

In applying consumer engagement to this review, the CCP submitted that there has been reasonable responsiveness to some capex and opex views of consumers, including the confidential pass through event. The CCP noted that the major disappointment has been in rejecting strong consumer advice regarding accelerated depreciation.[98]

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93 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 54.

94 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 54.

95 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 54.

96 AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 54.

97 Consumer Challenge Panel (Panel 5), *Submission on AusNet Services' transmission revenue review 2017-2022*, 8 February 2016, p. 7.

98 Consumer Challenge Panel (Panel 5), *Submission on AusNet Services' transmission revenue review 2017-2022*, 8 February 2016, p. 7.

The Energy Users Coalition of Victoria (EUCV) acknowledged the consumer engagement activities undertaken by AusNet Services and noted that it is a 'good step forward'. However the EUCV raised a number of concerns over key areas within the program including:[99]

- the quality and objectivity of all information provided to those participating
- the generality of the topics discussed in the stakeholder forums
- the lack of identifiable consumer input into major decisions throughout this proposal
- low response rate of community participation on key areas of the program, notably, the low response rates within survey's and lack of consumer engagement on the 'one on one' meetings sought with consumers
- the continued use of claims of stakeholder engagement and input to areas of significance within the proposal, despite the lack of evidence to support them
- the lack of effective engagement with consumer advocates who are appropriately versed and understand the issues.

6.4 Our view of AusNet Services' consumer engagement

Overall we consider that AusNet Services has taken important steps to engage with its customers. Stakeholders have commented that AusNet Services has made significant progress and has shown considerable goodwill in seeking consumer engagement. This is very positive. We consider that the consumer engagement undertaken by AusNet Services to date has significantly built on the engagement program undertaken in its previous revenue review.

We accept that there are some concerns from stakeholders, in particular from the EUCV, regarding AusNet Services' approach to stakeholder engagement over the current regulatory control period. We note however that stakeholder engagement is a relatively new aspect undertaken by network service providers and should continue to improve over time. AusNet Services has also acknowledged that its stakeholder engagement practices are in a developmental phase and are a process of continuous improvement.[100]

AusNet Services submitted that it welcomes further feedback on its stakeholder engagement process.[101] We expect that AusNet Services will take into account the issues raised by stakeholders in developing its consumer engagement program going forward.

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[99] EUCV, *Submission in response to AusNet Services' 2017–22 transmission determination proposal*, February 2016, pp. 35–38.

[100] AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 41.

[101] AusNet Services, *Regulatory proposal 2017–22*, October 2015, p. 40.

A Constituent components

Our draft decision on AusNet Services' transmission determination includes the following constituent components:[102]

Constituent component
In accordance with clause 6A.14.1(1)(i) of the NER, the AER does not approve the total revenue cap set out in AusNet Services' revised building block proposal. Our draft decision on AusNet Services' total revenue cap is $2695.0 million ($ nominal) for the 2017–22 regulatory control period. This decision is discussed in Attachment 1 of this draft decision.
In accordance with clause 6A.14.1(1)(ii) of the NER, the AER does not approve the maximum allowed revenue (MAR) for each regulatory year of the regulatory control period set out in AusNet Services' revised building block proposal. Our decision on AusNet Services' MAR for each year of the 2017–22 regulatory control period is set out in Attachment 1 of this draft decision.
In accordance with clause 6A.14.1(1)(iii) of the NER, the AER has decided to apply the service component, network capability component and market impact component of Version 5 of the service target performance incentive scheme (STPIS) to AusNet Services for the 2017–22 regulatory control period. The values and parameters of the STPIS are set out in Attachment 11 of this draft decision.
In accordance with clause 6A.14.1(1)(iv) of the NER, the AER's decision on the values that are to be attributed to the parameters for the efficiency benefit sharing scheme (EBSS) that will apply to AusNet Services in respect of the 2017–22 regulatory control period are set out in Attachment 9 of this draft decision.
In accordance with clause 6A.14.1(1)(v) of the NER, the AER has approved the commencement and length of the regulatory control period as AusNet Services proposed in its revenue proposal. The regulatory control period will commence on 1 April 2017 and the length of this period is five years, expiring on 31 March 2022.
In accordance with clause 6A.14.1(2) and acting in accordance with clause 6A.6.7(d) of the NER, the AER has not accepted AusNet Services' total forecast capital expenditure of $745.6 million ($2016–17). Our substitute estimate of AusNet Services' total forecast capex for the 2017–22 regulatory control period is $573.1 million ($2016–17). This is discussed in Attachment 6 of this draft decision.
In accordance with clause 6A.14.1(3) and acting in accordance with clause 6A.6.6(d) of the NER, the AER has not accepted AusNet Services' total forecast operating expenditure inclusive of debt raising costs of $1085.0 million ($2016–17). Our substitute estimate of AusNet Services' total forecast opex for the 2017–22 regulatory control period is $1031.9 million ($2016–17) including debt raising costs. This is discussed in Attachment 7 of this draft decision.
In accordance with clause 6A.14.1(5A) of the NER, the AER has determined that version 1 of the capital expenditure sharing scheme (CESS) as set out the Capital Expenditure Incentives Guideline will apply to AusNet Services in the 2017–22 regulatory control period. This is discussed in Attachment 10 of this draft decision.
In accordance with clause 6A.14.1(5B) and 6A.6.2 of the NER, the AER has decided that the allowed rate or return for the 2017–18 regulatory year is 6.16 per cent (nominal vanilla), as set out in Attachment 3 of this draft decision. The rate of return for the remaining regulatory years 2018–22 will be updated annually because our decision is to apply a trailing average portfolio approach to estimating debt which incorporates annual updating of the allowed return on debt.
In accordance with clause 6A.14.1(5C) of the NER the AER has decided that the return on debt is to be estimated using a methodology referred to in clause 6A.6.2(i)(2), and using the formula to be applied in accordance with clause 6A.6.2(l). The methodology and formula are set out in Attachment 3 of this draft decision.
In accordance with clause 6A.14.1(5D) of the NER the AER has decided that the value of imputation credits as referred to in clause 6A.6.4 is 0.4. This is set out in Attachment 4 of this draft decision.
In accordance with clause 6A.14.1(5E) of the NER the AER has decided, in accordance with clause 6A.6.1 and schedule 6A.2, that the opening regulatory asset base (RAB) as at the commencement of the 2017–22 regulatory control period, being 1 April 2017, is $3194.7 million ($ nominal). This is set out in Attachment 2 of this draft decision.

[102] NEL, s. 16(1)(c).

Constituent component
In accordance with clause 6A.14.1(5F) of the NER the AER has decided that the depreciation approach based on forecast capex (forecast depreciation) is to be used to establish the RAB at the commencement of AusNet Services' regulatory control period as at1April 2022. This is discussed in Attachment 2 of this draft decision.
In accordance with clause 6A.14.1(6) of the NER the AER has approved AusNet Services' proposed negotiating framework. This is set out in Attachment 14 of this draft decision.
In accordance with clause 6A.14.1(7) of the NER the AER has specified the negotiated transmission services criteria for AusNet Services. This is set out in Attachment 14 of this draft decision.
In accordance with clause 6A.14.1(8) of the NER the AER has approved AusNet Services' proposed pricing methodology. This is set out in Attachment 12 of this draft decision.
In accordance with clause 6A.14.1(9) of the NER the AER has approved the following nominated pass through events to apply to AusNet Services for the 2017–22 regulatory control period in accordance with clause 6A.6.9: • terrorism event • insurance cap event • natural disaster event • insurer's credit risk event These events have the definitions set out in Attachment 13 of this draft decision.

B List of submissions

We received five submissions in response to AusNet Services' revenue proposal. These are listed below.

Submission from	Date received
AusNet Services	4 February 2016
AusNet Services	7 April 2016
Consumer Challenge Panel	8 February 2016
Energy Users Coalition Victoria (EUCV)	9 February 2016
GreenSync	4 February 2016

AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Revised Revenue Proposal

PUBLIC

Submitted: 21 September 2016

About AusNet Services

AusNet Services is a major energy network business that owns and operates key regulated electricity transmission and electricity and gas distribution assets located in Victoria, Australia. These assets include:

- A 6,574 kilometre electricity transmission network that services all electricity consumers across Victoria;
- An electricity distribution network delivering electricity to approximately 680,000 customer connection points in an area of more than 80,000 square kilometres of eastern Victoria; and
- A gas distribution network delivering gas to approximately 572,000 customer supply points in an area of more than 60,000 square kilometres in central and western Victoria.

AusNet Services' purpose is 'to provide our customers with superior network and energy solutions.'

For more information visit: www.ausnetservices.com.au

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Overview

Introduction

On 30 October 2015 AusNet Services submitted to the Australian Energy Regulator (AER) its initial regulatory proposal (Revenue Proposal) for its electricity transmission network for the 1 April 2017 to 31 March 2022 regulatory control period. The AER published its Draft Decision on that proposal on 20 July 2016.

This document, together with supporting materials, constitutes AusNet Services' Revised Revenue Proposal for the regulatory period from 1 April 2017 to 31 March 2022. It has been prepared in accordance with version 82 of the National Electricity Rules (NER).

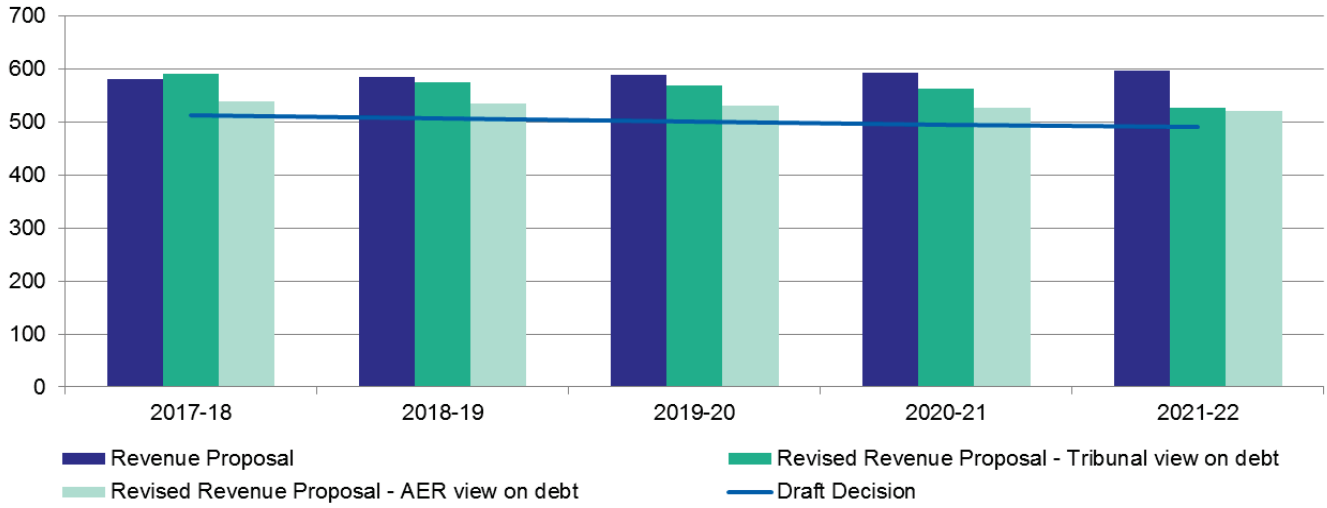
The Revised Revenue Proposal responds to issues raised in the Draft Decision and updates AusNet Services' Revenue Proposal for new information.

Importantly, AusNet Services' Revised Revenue Proposal is consistent with the priorities and the objectives set out in the Revenue Proposal and, if accepted by the AER, will continue to provide Victorian consumers with efficient and low cost transmission services.

Key Features of the Revised Revenue Proposal

The Revised Revenue Proposal sets out that AusNet Services' total revenue requirement over the 2017-22 regulatory period is $2,967.5m (smoothed, nominal).

Figure O1: Total Revenue Requirement ($m, real 2016-17, smoothed)



The basis for the revised forecast is explained in the remainder of this Revised Revenue Proposal and its supporting documents.

In developing this response to the Draft Decision, AusNet Services has carefully considered the matters raised by the AER.

Overall, there are many areas of agreement between the AER's Draft Decision and AusNet Services' Revised Revenue Proposal. AusNet Services has adopted the following aspects of the Draft Decision that reduce required revenues:

- Application of the AER's Guideline approach to estimating the cost of equity. This results in a reduction in proposed revenues of around $240m compared to the Revenue Proposal. However, AusNet Services considers that an upward adjustment to the Market Risk

Premium (allowed under the Guideline) is required due to the current lowest ever interest rate environment.

- The application of straight line depreciation to network investment undertaken in the 2017-22 regulatory period. This reduces required revenues by around $70m.
- The removal of the output growth adjustment, reducing required revenues by $34m.
- The AER's forecast for insurance premiums and debt raising costs, reducing required revenues by $13m.

However, there are several areas where AusNet Services considers the Draft Decision is not consistent with the NEO and the long term interests of consumers, including:

- Capital Expenditure – The AER's approach to valuing safety risk does not reflect the rigorous obligations in place to protect the safety of both employees and the general public. If implemented, the AER's approach would result in a substantial deterioration in the safety of transmission assets. The resulting change to work practices and feasible capex solutions would increase long term costs to consumers.
- Rate of Return and the Value of Imputation Credits – The allowed rate of return is not commensurate with benchmark efficient financing costs. In addition, the value of imputation credits is over-estimated. The Revised Revenue Proposal updates AusNet Services' proposed rate of return for the latest interest rate information and to reflect the Australian Competition Tribunal's February 2016 decision which sets out that efficient financing costs should reflect those that would be incurred by an unregulated entity.
- Operating Expenditure – The AER's rejection of additional costs for decommissioning assets reflect a misunderstanding about the treatment of historical decommissioning costs. AusNet Services can confirm that similar asset decommissioning costs are not embedded in its historic operating expenditure, and therefore the proposed step change is justified. Asset decommissioning is likely to become more frequent in future – it is important that efficient decommissioning costs can be recovered to maintain appropriate incentives to minimize long term costs. AusNet Services also considers the AER's approach to forecasting self-insurance costs is incorrect.
- Expected Inflation – The AER's inflation forecasting methodology does not produce realistic inflation forecasts. To allow AusNet Services to recover its efficient costs, it is imperative that the AER's approach is revised before AusNet Services' Final Decision. If the AER does not do so, its Final Decision is likely to apply de facto negative real interest rates over the coming period, contrary to observed Australian market outcomes. This clear perverse outcome will impact the level of investment AusNet Services is able to attract to efficiently invest in the network.

The Revised Revenue Proposal also differs from the Draft Decision by:

- Clarifying areas of confusion, including in relation to the safety obligations and standards that AusNet Services must comply with and the treatment of historical asset decommissioning costs.
- Responding to areas of the Draft Decision where the AER requires further information to complete its assessment of the Proposal. For example, additional supporting material for ICT capital expenditure has been provided at the AER's request, and a detailed explanation of AusNet Services' approach in choosing between alternative demand forecasts is included.
- Reflecting new information that was not available when AusNet Services' Revenue Proposal was prepared.
    - An additional major replacement project is now forecast following a recent asset fault which has led to the downgrading of the condition of particular transformers.

  - Consistent with the Australian Competition Tribunal's first decision on the AER's Rate of Return Guideline, AusNet Services has adopted the Guideline approach for the cost of equity and the Tribunal's alternative (immediate) transition path for implementing the new cost of debt approach.

- Modifying the proposed approach to accelerated depreciation. The AER has applied accelerated depreciation to assets that will no longer be in service. Expected changes to the transmission network over the next decade have led AusNet Services to consider whether depreciation of additional assets should be accelerated. Accelerated depreciation of Latrobe Valley generator connection assets with a total value of $13m is included in this Revised Revenue Proposal.

Responding to Stakeholder Concerns

In formulating this submission, AusNet Services has considered the written submissions the AER received from the Customer Challenge Panel (CCP) and other stakeholders in response to the Revenue Proposal, and matters raised at the AER's Public Forum held on 9 August 2016. It has also considered feedback received through the stakeholder engagement it has carried out since the Revenue Proposal was submitted, which includes:

- Individual discussions with the CCP and consumer advocates, particularly in relation to accelerated depreciation;
- A Public Forum held on 16 August 2016; and
- Engagement through AusNet Services' Consumer Consultative Committee (CCC).

The Revised Revenue Proposal addresses stakeholder concerns by:

- Removing the declining balance method for accelerated depreciation on all new investments. AusNet Services received very strong feedback that stakeholders did not support its short-term impact on price. The CCP expressed disappointment that AusNet Services had proposed an approach that was contrary to stakeholder feedback.
- Upholding its approach to valuing safety risk. This is critical if the safety performance of the transmission network is to be maintained. AusNet Services has discussed this topic with Energy Safe Victoria, a key stakeholder given it is responsible for regulating electricity and gas safety in Victoria, and understands that ESV will make a formal submission to the AER.
- Accepting the AER's Guideline approach to setting the return on equity, which is the preferred position of most stakeholders, although many consider that the AER's Guideline is conservative.
- Ceasing to apply an output growth escalation to operating expenditure, consistent with feedback from the Energy User Coalition of Victoria. AusNet Service agrees the increased operating costs are initially incurred and paid for outside the revenue cap.

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20 December 2016

Sebastian Roberts
General Manager – Networks Branch
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3001

Dear Sebastian,

AusNet Services' Transmission – Revised Revenue Proposal

AusNet Services submitted its Revised Revenue Proposal for the 2017-22 regulatory period on 21 September 2016. This further submission is provided to:

- Adopt the AER's Guideline approach to implementing the new cost of debt approach, reducing the proposed rate of return by around 1.3 percentage points.
- Update AusNet Services' Revised Revenue Proposal to reflect recent developments in the Latrobe Valley;
- Note relevant aspects of SAPN's application for Judicial Review of the ACT Decision in relation to gamma;
- Reduce AusNet Services' operating expenditure forecast to account for savings expected to result from the retirement of diesel generators;
- Inform the AER of a significant increase to the Victorian Government's easement land tax; and
- Flag to the AER that amendments to AusNet Services' STPIS data will be provided to correctly reflect the application of the unplanned outage event limit.

Many of the developments raised in in this submission are due to circumstances outside of AusNet Services' control, which have occurred since the submission of the Revised Revenue Proposal. Importantly, where the changes have been initiated by AusNet Services, they significantly reduce proposed revenues for the forthcoming period.

AusNet Services recognises the submission of additional information late in the regulatory review process is undesirable. However, the deferred publication date of the Final Decision, which AusNet Services understands to be 28 April 2017, should provide sufficient time for the AER to consider and consult on the additional information presented in this submission.

We will seek to engage with the Consumer Challenge Panel (CCP) on the information set out in this submission, and have provided a copy of the submission to the CCP for its consideration. AusNet Services would support the AER conducting further consultation with customers on this information.

Cost of debt and inflation

On 9 December 2016, AusNet Services wrote to the AER advising of our intent to propose a cost of debt transition consistent with the AER's Guideline in our 2018-22 Gas Access Arrangement Review Proposal (submitted to the AER on 16 December) and to withdraw the immediate transition cost of debt approach from our Transmission Revised Revenue Proposal for the 2017-22 regulatory control period.

This commitment removes uncertainty on over $170 million of potential transmission revenue and ensures transmission customers will not bear the burden of its recovery.

Accordingly, this letter formally amends AusNet Services' Transmission's Revised Revenue Proposal in the following respects:

- The immediate transition approach to the cost of debt is withdrawn; and
- A cost of debt transition consistent with the AER's Guideline is proposed.

However, AusNet Services maintains the position set out in our Revenue Proposal and Revised Revenue Proposal that the return on debt should be calculated using the Reserve Bank of Australia 10-year curve exclusively.

AusNet Services' proposal in relation to the cost of equity and inflation also remains unchanged. However, we note that on 15 December 2016, the AER announced a review in respect of its methodology for estimating expected inflation. AusNet Services supports the review and encourages the AER to take the review into account in making its Final Decision for the TRR.

As the AER will be aware, AusNet Services' final averaging period has now passed. On the basis of the application of our revised position on the cost of debt applied over the final averaging period, the table below sets out our updated rate of return proposal. The Revised Revenue Proposal's rate of return parameters are also shown, which demonstrate that AusNet Services' updated rate of return is a reduction of around 1.3 percentage points.

Table 1: Revised Revenue Proposal - Updated Rate of Return and Forecast Inflation

Parameters	Revised Revenue Proposal	Revised Revenue Proposal - amended
Return on Equity		
Risk free rate	1.97%*	2.52%
Equity beta	0.7	0.7
Market risk premium	7.5%	7.5%
Proposed Return on Equity	**7.20%**	**7.77%**
Return on Debt		
Immediate transition w/ RBA curve	**7.56%**	
AER Guideline transition w/ RBA curve		**5.03%**

Parameters	Revised Revenue Proposal	Revised Revenue Proposal - amended
Proposed WACC	**7.41%**	**6.13%**
Breakeven inflation forecast	**1.65%**	**1.86%**
Alternative approach to deriving Nominal WACC		
Proposed Alternative WACC	**8.24%**	**6.65%**

***Observed over a placeholder averaging period of 1 to 28 July 2016.*

The data and calculations underpinning the updated WACC parameters are provided at Attachment 1. An amended revenue forecast (and PTRM) incorporating these parameters will be provided to the AER in January 2017.

Latrobe Valley developments

AusNet Services' Revised Revenue Proposal included accelerated depreciation of connection assets located at Yallourn Power Station (YPS) on the basis that the power station was likely to close by 2025. This increased forecast revenues by $5 million (nominal).

In November 2016, Engie announced its intention to close Hazelwood Power Station (HWPS) in March 2017, providing greater certainty on the future of Latrobe Valley generation assets. AusNet Services, therefore, accepts that the closure of YPS by 2025 is unlikely, having regard to the market impacts of HWPS closure. Accordingly, AusNet Services withdraws the accelerated depreciation of YPS assets from its Revised Revenue Proposal, reducing forecast revenues by $5 million (nominal).

To ensure other customers' interests are protected, AusNet Services intends to seek to recover the remaining value of the connection assets at HWPS directly from Engie. This means AusNet Services will incur a tax liability which will need to be included in the tax allowance for the forthcoming period.

It is expected the net revenue impact of the above developments is positive for customers, in that it should reduce forecast revenues by $2 million. AusNet Services' estimated net impact is shown below.

Table 2: Estimated net revenue impact of Latrobe Valley developments ($m, nominal)

	Revenue impact
Withdrawal of YPS accelerated depreciation	- $5 million
Inclusion of tax allowance for HWPS payment*	+ $3 million*
Net revenue impact	**- $2 million***

* Figures to be confirmed in January 2017

An amended PTRM incorporating the above change will be provided in January 2017.

Gamma

For the reasons set out in our Revenue Proposal and Revised Revenue Proposal, AusNet Services maintains that the appropriate estimate of the value of imputation credits is 0.25.

AusNet Services is aware of the recent Tribunal decision in relation to SA Power Networks. However, AusNet Services also notes that decision is the subject of a judicial review application by SA Power Networks, including on grounds that the Tribunal did not determine the correct question, being the construction of the Rules relating to the value of imputation credits. We also note the judicial review application by the AER in respect of the Tribunal's decision in Ausgrid also remains outstanding.

Operating expenditure savings

In December 2016, AEMO confirmed that the services provided by diesel generators at four of AusNet Services' terminal stations will no longer be required from 1 January 2017. Accordingly, AusNet Services' operating expenditure forecast for the forthcoming period is formally amended to reflect the retirement of these assets via:

- A reduction of $55,000 in 2017-18 to reflect the avoided costs from 1 January 2017 to 31 March 2018; and
- An annual reduction of $44,000 from 2018-19 to 2021-22.

AEMO's correspondence on this matter is provided at Attachment 2.

An amended opex model and PTRM incorporating these changes will be provided in January 2017.

Easement Land Tax

On 14 December 2016, the State Revenue Office of Victoria (SRO) advised that AusNet Services' easement land tax payable in 2017-18 and 2018-19 would be approximately $136 million. The formal assessment notice will be provided by the SRO in January 2017.

Unfortunately, AusNet Services was not forewarned about this significant and unexpected increase, which represents a $25 million (23%) increase on the easement land tax paid in 2016-17 of $111 million. It is also approximately $22 million higher than the easement land tax forecast of $114 million (real 2016-17) determined by the AER in the Draft Decision.

AusNet Services is currently exploring options to manage a significant increase to the easement land tax, and would welcome the opportunity to engage with the AER on this issue.

Amended STPIS data

AusNet Services' Revised Revenue Proposal set out STPIS V5 Market Impact Component performance measure data from 2008-15 that assumed the unplanned outage event limit applied to the dispatch intervals associated with *individual* unplanned outage events.[1]

The AER has since advised that the unplanned outage event limit applies to *annual* total dispatch intervals attributable to unplanned outages in a given year. AusNet Services will recalculate its 2008-15 performance measure data and provide this to the AER in January 2017.

AusNet Services would be pleased to discuss matters raised in this submission with the AER and interested stakeholders. Please contact Rob Ball, Senior Economist on 03 9695 6281 with any inquiries.

Sincerely,

Tom Hallam
General Manager Regulation and Network Strategy
AusNet Services

[1] AusNet Services, *Revised Revenue Proposal 2017-22*, September 2016, p.219

FINAL DECISION
AusNet Services transmission determination 2017-2022

Overview

April 2017

AUSTRALIAN ENERGY REGULATOR

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AER reference: 56417

Note

This overview forms part of the AER's final decision on AusNet Services' revenue proposal 2017–22. It should be read with other parts of the final decision.

The final decision includes the following documents:

Overview

Attachment 1 – maximum allowed revenue

Attachment 2 – regulatory asset base

Attachment 3 – rate of return

Attachment 4 – value of imputation credits

Attachment 5 – regulatory depreciation

Attachment 6 – capital expenditure

Attachment 7 – operating expenditure

Attachment 8 – corporate income tax

Attachment 9 – efficiency benefit sharing scheme

Attachment 10 – capital expenditure sharing scheme

Attachment 11 – service target performance incentive scheme

Attachment 12 – pricing methodology

Attachment 13 – pass through events

Attachment 14 – negotiated services

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Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider

Shortened form	Extended form
NTSC	negotiated transmission service criteria
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
WACC	weighted average cost of capital

1 Introduction

We, the Australian Energy Regulator (AER), are responsible for the economic regulation of electricity transmission and distribution systems in all Australian states and territories, with the exception of Western Australia. AusNet Services owns and operates Victoria's electricity transmission network. We regulate the revenues that AusNet Services can recover from its customers.

AusNet Services submitted a revised revenue proposal for its electricity transmission network on 21 September 2016. AusNet Services' revised proposal sets out the revenue it proposes to recover from electricity consumers through transmission charges for the period 2017–22. The revised proposal was in response to our draft decision which was published on 20 July 2016. This overview, together with its attachments, constitutes our final decision on AusNet Services' revenue proposal.

The National Electricity Law (NEL) and National Electricity Rules (NER) provide the regulatory framework governing electricity networks. In regulating AusNet Services, we are guided by the National Electricity Objective (NEO), as set out in the NEL. The NEO is:[1]

> to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.

1.1 Structure of Overview

This overview provides a summary of our final decision and its individual components. The remainder is structured as follows:

- Section 2 provides a high level summary of our final decision
- Section 3 provides a breakdown of our final decision into its key components
- Section 4 sets out our final decision on the incentive schemes that will apply to AusNet Services for the 2017–22 regulatory control period
- Section 5 explains our views on the regulatory framework and the NEO
- Section 6 outlines our consultation process in reaching this final decision and our view of AusNet Services' consumer engagement undertaken in developing its revenue proposal
- Appendix A contains the full list of constituent components that make up AusNet Services' proposal and our final decision on each of them

[1] NEL, s. 7.

- Appendix B lists the stakeholder submissions received on our draft decision and AusNet Services' revised revenue proposal.

In our attachments to this decision we set out detailed analysis of the constituent components that make up our final decision.

1.2 Victorian electricity transmission

In Victoria, two separate organisations are responsible for the electricity transmission network—AusNet Services and the Australian Energy Market Operator (AEMO). Under this model, the transmission network planning functions in Victoria are separated from network ownership and operation.

AusNet Services is the transmission network service provider (TNSP) which owns and operates Victoria's electricity transmission network. It is responsible for transporting electricity from generation sources into Victoria's five lower–voltage distribution networks.[2]

AEMO is also a designated TNSP and is responsible for planning and procuring the augmentation of the Victorian shared transmission network. Given that AEMO is responsible for augmentation investment and plans, these are not included in AusNet Services' revenue proposal.

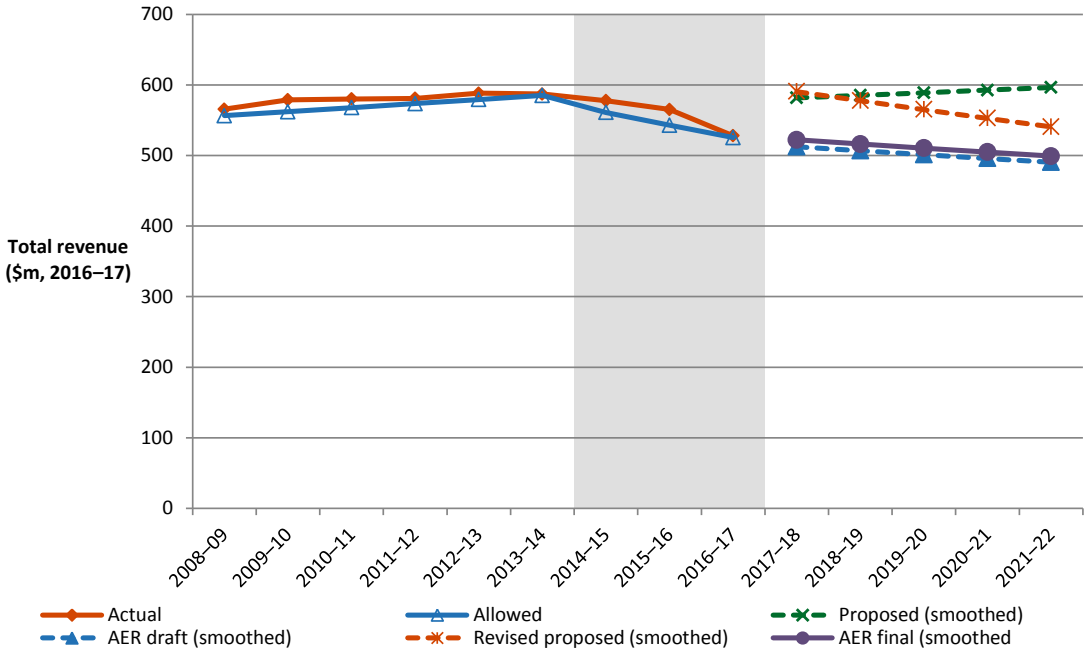
[2] Ausnet Services, Determining electricity transmission revenue (http://www.ausnetservices.com.au/Electricity/Determining+Revenues/Transmission+Network.html), Accessed online 19 May 2016.

2 Final decision

Our final decision is that AusNet Services can recover $2741.7 million ($ nominal, smoothed) from consumers over the 2017–22 regulatory control period. This is a 7.6 per cent reduction from AusNet Services' revised proposed revenue allowance of $2967.5 million ($ nominal). Our final decision allows AusNet Services to recover 1.7 per cent more revenue than our draft decision of $2695.0 million ($ nominal).

Figure 2.1 compares our final decision on AusNet Services' revenue for 2017–22 to its proposed revenue and to the revenue allowed and recovered during the two previous regulatory control periods of 2008–14 and 2014–17. AusNet Services' annual revenue decreased each year from 2014–17 in real dollar terms.

Figure 2.1 AusNet Services' past total revenue, proposed total revenue and AER final decision total revenue allowance ($million, 2016–17)



Source: AER analysis.

2.1 What is driving allowed revenue?

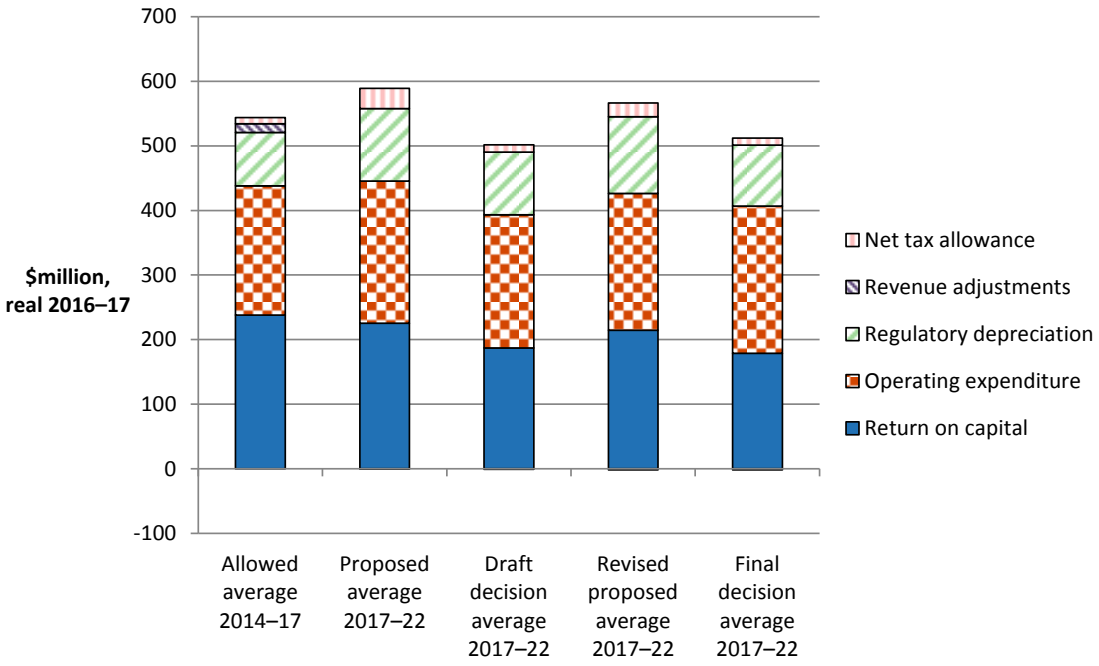
Our final decision approves average annual revenues for the 2017–22 regulatory control period that are $32.5 million ($ 2016–17)—or 6.0 per cent—lower than was approved in our decision for 2014–17 in real dollar terms.[3] Our final decision provides

[3] The comparison of average annual revenues between the 2017–22 and 2014–17 regulatory control periods is based on smoothed revenues. In nominal dollar terms, our final decision average annual revenues for the 2017–22

9.7 per cent less revenue than AusNet Services sought to recover through its revised revenue proposal in real dollar terms.

Figure 2.2 compares the average annual building block revenue from our final decision to that proposed by AusNet Services for the 2017–22 regulatory control period, and to the approved average amount for the 2014–17 regulatory control period.

Figure 2.2 AER's final decision on constituent components of total revenue ($million, 2016–17)



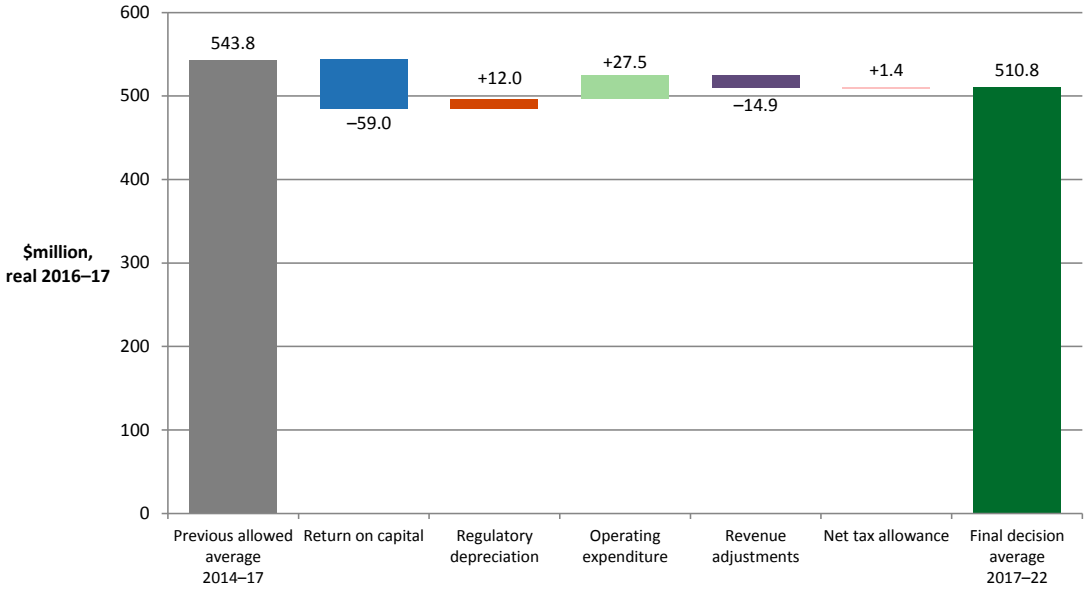
Source: AER analysis.

Figure 2.3 compares our final decision for the 2017–22 regulatory control period with AusNet Services' allowed revenue for the 2014–17 regulatory control period, broken down by the various building block components that make up the forecast revenue allowance. These are annual amounts based on average unsmoothed building block costs over the two relevant regulatory control periods.

---

regulatory control period is about $14.9 million (or 2.8 per cent) higher than the average annual revenues approved for the 2014–17 regulatory control period.

Figure 2.3 AER's final decision for the 2017–22 regulatory control period and AusNet Services' 2014–17 allowed average annual building block costs ($million, 2016–17)



Source: AER analysis.

These figures highlight that the return on capital is the key difference between our final decision for the 2017–22 regulatory control period and AusNet Services' allowed revenue for the 2014–17 regulatory control period. The reduction in the return on capital is however partially offset by an increase in opex.

The reduction in the return on capital is driven by changes in the estimated rates of return on debt and equity. The estimated return on debt and return on equity fell between regulatory periods by 2.4 and 1.9 percentage points respectively. The falls were largely caused by a reduction in the risk free rate. However, the equity beta used also fell from 0.8 for the 2014–17 regulatory control period to 0.7 for the 2017–22 regulatory control period reducing the estimated equity risk premium.

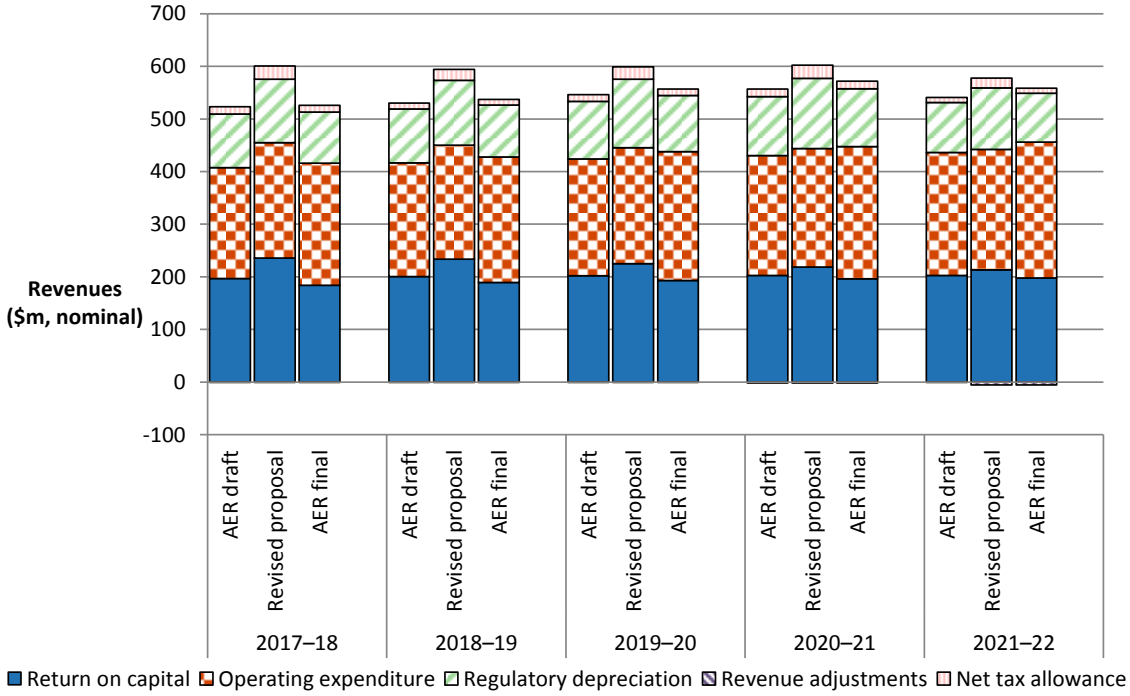
The increase in AusNet Services' opex allowance between the two periods is primarily due to an increase in forecast easement land tax. AusNet Services advised in a submission subsequent to its revised proposal that the Victorian Government had increased its easement land tax for 2017–18. This is discussed further in section 3.6.

2.2 Key differences between our draft and final decisions

While our approved revenue allowance is less than AusNet Services proposed, it is higher than we allowed in our draft decision. Our final decision allows AusNet Services to recover 1.7 per cent more revenue from its customers than our July 2016 draft decision of $2695.0 million ($nominal). Figure 2.4 shows the building block components from our final determination that make up the annual building block

revenue requirement for AusNet Services, and the corresponding components from its revised proposal and our draft decision.

Figure 2.4 AusNet Services annual building block revenue requirement ($million, nominal)



Source: AER analysis

In our draft decision we applied a rate of return of 6.16 per cent. While our approach to calculating the rate of return has not changed, our final decision updates the rate of return to reflect data from approved averaging periods for the return on equity and debt. The rate of return of 5.8 per cent approved in this final decision is lower than our draft decision of 6.16 per cent. While this results in a reduction in revenue from our draft decision, this is offset by increases in expenditure categories.

Our final decision opex forecast is higher than both our draft decision and AusNet Services' revised proposal opex. Our final decision is higher due to a substantial increase in forecast easement land tax. AusNet Services advised in a submission subsequent to its revised proposal that the Victorian Government had increased its easement land tax for 2017–18. Accordingly, we increased our forecast annual easement land tax from $114.3 million ($2016–17) to $135.0 million ($2016–17).[4] This is discussed further in section 3.6 and attachment 7.

The capex forecast allowed in our final decision is also higher than our draft decision. This is primarily due to updated inputs from AusNet Services, which mean that the

[4] AusNet Services, *Submission on revised proposal*, 20 December 2016.

same methodology applied to calculate the benefits of forecast replacement capex in our draft decision now suggests a higher forecast is warranted. Our final decision on AusNet's forecast capex is discussed further in section 3.5.

2.3 Expected impact of decision on residential electricity bills

The annual electricity bill for customers in Victoria will reflect the combined cost of all the electricity supply chain components. These components are:

- the cost of purchasing electricity (the wholesale energy generation cost)
- the cost of the poles/towers and wires used to transport the electricity (the transmission and distribution networks), and other infrastructure such as metering cost;
- the cost of environmental policies, including subsidies for renewable energy, such as solar feed-in-tariffs; and
- the retailer's costs and profit margin.

Therefore, the electricity bill changes to reflect movements in one or more of the components in the bill. Our final decision on AusNet Services affects the high voltage part of the poles/towers and wires (transmission network charges) component of the electricity bill for Victorian customers, which account for approximately 5 per cent of an average customer's annual electricity bill. This small percentage largely explains the relatively modest impact this final decision is likely to have on average annual electricity bills.

We estimate the expected bill impact by varying the transmission charges in accordance with our final decision, while holding other components of the bill constant. Based on this approach, we expect that our final decision will result in the transmission component of the average annual residential electricity bills in Victoria remaining generally constant over the 2017–22 regulatory control period. The transmission component of the average annual residential electricity bill in 2021–22 is expected to be only about $4 ($ nominal) above the current, 2016–17 level. We note that this bill impact estimate is indicative only, and individual customers' actual bills will also depend on their usage patterns and the structure of their chosen retail tariff offering.

While our approach isolates the effect of our decision on electricity prices, it does not imply that other components will remain unchanged across the regulatory control period.[5] We note that in its recent electricity price trends report for Victoria, the AEMC has indicated that wholesale costs are expected to rise following the closure of the

[5] It also assumes that actual energy demand will equal the forecast in our final decision. Since AusNet Services operates under a revenue cap, changes in demand will also affect annual electricity bills across the 2017–22 regulatory control period.

Hazelwood power station.[6] However, we do not expect transmission charges flowing from this final decision will be a contributor to the overall bill changes. Further detail on our final decision impact on overall bills is set out in attachment 1.

[6] AEMC, *2016 Residential Electricity Price Trends: Final Report – Victoria*, December 2016, p. 3.

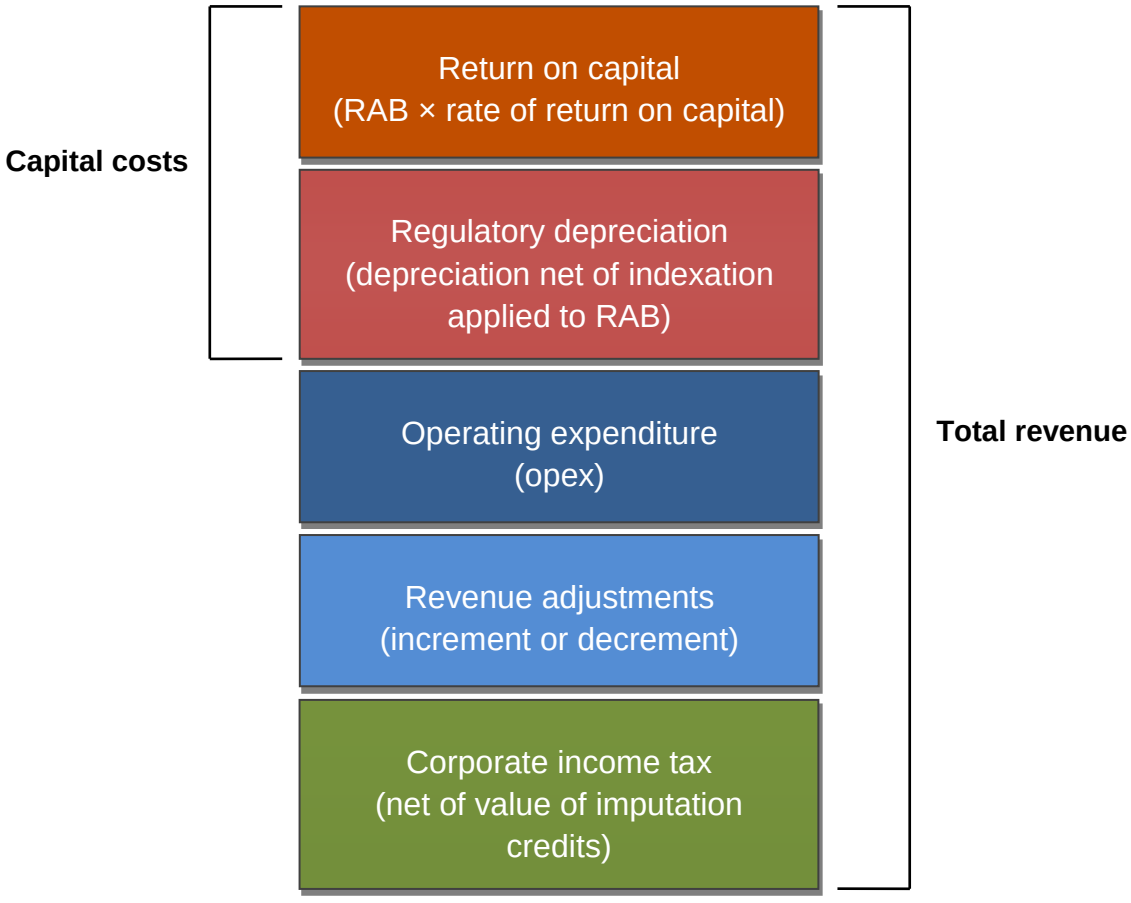
3 Key elements of our final decision

We use the building block approach to determine AusNet Services' maximum allowed revenue (MAR). The building block approach consists of five costs that a business is allowed to recover through its revenue allowance.

The building block costs are illustrated in Figure 3.1 and include:

- a return on the regulatory asset base (RAB) (or return on capital)
- depreciation of the RAB (or return of capital)
- forecast opex
- revenue increments or decrements resulting from incentive schemes such as the efficiency benefit sharing scheme (EBSS)
- the estimated cost of corporate income tax.

Figure 3.1 The building block approach for determining total revenue



The building block costs are comprised of key elements that we determine through our assessment process. For example, the size of the RAB—and therefore the revenue

generated from the return on capital and return of capital building blocks—is directly affected by our assessment of capex.

This section summarises our final decision on key elements of the building blocks including:

- RAB (section 3.1)
- Rate of return (section 3.2)
- Imputation credits (section 3.3)
- Depreciation allowance (section 3.4)
- Efficient level of capex (section 3.5)
- Efficient level of opex (section 3.6)
- Forecast level of corporate income tax (section 3.7).

Incentive schemes including the EBSS and CESS are covered in section 4. Table 3.1 shows our final decision on AusNet Services' revenues including the building block components.

Table 3.1 AER's final decision on AusNet Services' revenues ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Return on capital	183.9	189.2	193.2	196.3	198.1	960.7
Regulatory depreciation[a]	96.7	99.0	106.7	110.2	93.3	505.9
Operating expenditure[b]	232.4	238.5	244.8	251.2	257.8	1224.7
Revenue adjustments[c]	–0.2	–0.2	–0.3	–1.8	–5.4	–7.9
Net tax allowance	13.2	10.6	12.4	14.0	9.2	59.5
Annual building block revenue requirement (unsmoothed)	526.1	537.1	556.8	569.9	553.1	2742.8
Annual expected MAR (smoothed)	**534.8**	**541.5**	**548.3**	**555.1**	**562.1**	**2741.7**[d]
X factor[e]	n/a[f]	1.12%	1.12%	1.12%	1.12%	n/a

Source: AER analysis.

(a) Regulatory depreciation is straight-line depreciation net of the inflation indexation on the opening RAB.

(b) Operating expenditure includes debt raising costs.

(c) Includes efficiency benefit sharing scheme and shared asset amounts.

(d) The estimated total revenue cap is equal to the total annual expected MAR.

(e) The X factors will be revised to reflect the annual return on debt update. Under the CPI–X framework, the X factor measures the real rate of change in annual expected revenue from one year to the next. A negative X factor represents a real increase in revenue. Conversely, a positive X factor represents a real decrease in revenue.

(f) AusNet Services is not required to apply an X factor for 2017–18 because we set the 2017–18 MAR in this decision. The MAR for 2017–18 is around 1.1 per cent lower than the approved MAR for 2016–17 in real terms, or around 1.3 per cent higher in nominal terms.

3.1 Regulatory asset base

We make a decision on AusNet Services' opening regulatory asset base (RAB) at 1 April 2017 as part of our revenue determination. We also make a decision on AusNet Services' projected RAB for the 2017–22 regulatory control period.[7]

The RAB roll forward accounts for the value of AusNet Services' regulated assets over the regulatory control period. The size of the RAB substantially impacts AusNet Services' revenue path and the price consumers ultimately pay. It is an input into the determination of the return on capital and depreciation (return of capital) building blocks.[8] Other things being equal, a higher RAB increases both the return on capital and depreciation allowances. In turn, these increase AusNet Services' revenue, and prices for services.

We determine AusNet Services' opening RAB to be $3170.3 million ($ nominal) as at 1 April 2017. The difference of $11.0 million between this amount and AusNet Services' revised proposal reflects the update to the roll forward model (RFM) for 2016–17 actual inflation that is now available.

To determine the opening RAB as at 1 April 2017, we have rolled forward the RAB over the 2014–17 regulatory control period to determine a closing RAB value at 31 March 2017. This roll forward includes an adjustment at the end of the 2014–17 regulatory control period to account for the difference between actual 2013–14 capex and the estimate approved at the 2014–17 determination.[9] The roll forward also includes an adjustment for new assets—labelled 'Group 3 assets'—added to the opening RAB at 1 April 2017 and a true-up for the difference between actual and forecast Group 3 assets rolled in at the 2014–17 determination.[10] Expenditure on Group 3 assets occurs throughout the regulatory control period, but this capex is not added to the RAB each year (as is usually the case). Instead, these assets are added to the RAB at the commencement of each regulatory control period.[11]

Table 3.2 sets out our final decision on the roll forward of the RAB values for the 2014–17 regulatory control period.

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7 NER, cl. 6A.6.1.

8 The size of the RAB also impacts the benchmark debt raising cost allowance. However, this amount is usually relatively small and therefore not a significant determinant of revenues overall.

9 The end of period adjustment will be positive (negative) if actual capex is higher (lower) than the estimate approved at the 2014–17 determination.

10 During a regulatory control period, AEMO or a distribution business may request AusNet Services to provide augmentations to the transmission network or distribution connection services. While the assets constructed due to these requests provide prescribed transmission services, the forecast capex associated with these assets sit outside of the revenue determination. This is because AusNet Services is not responsible for the planning of these capex. AusNet Services and AEMO refer to the assets that provide these services as 'Group 3' assets. Group 3 assets sit outside of the RAB and are governed by commercial contracts until such time as they are rolled into the RAB, usually at the next revenue reset. See: AusNet Services, *Revenue proposal*, October 2015, p. 23.

11 As noted above, this adjustment includes estimated expenditure where actual expenditure is not yet known; so there is an additional true-up required at the next revenue determination.

Table 3.2 AER's final decision on AusNet Services' RAB for the 2014–17 regulatory control period ($ million, nominal)

	2014–15	2015–16	2016–17[a]
Opening RAB	2876.0	2948.1	2985.0
Capital expenditure[b]	151.3	145.1	181.1
Inflation indexation on opening RAB	66.4	44.3	38.7
Less: straight-line depreciation[c]	145.6	152.5	161.2
Closing RAB	2948.1	2985.0	3043.6
Difference between estimated and actual capex in 2013–14			20.0
Return on difference for 2013–14 capex			4.6
Final year adjustments[d]			102.1
Opening RAB as at 1 April 2017			**3170.3**

Source: AER analysis.

(a) Based on estimated capex.

(b) As incurred, net of disposals, and adjusted for actual CPI.

(c) Adjusted for actual CPI. Based on as-commissioned capex.

(d) Roll in of Group 3 assets at 1 April 2017, and true-up for difference between actual and forecast Group 3 asset roll in at the 2014–17 determination, and historical inventory allocation adjustment.

We determine a forecast closing RAB value at 31 March 2022 of $3443.9 million ($ nominal). This is $81.3 million (or 2.4 per cent) higher than AusNet Services' revised proposal. Our final decision on the forecast closing RAB reflects the amended opening RAB as at 1 April 2017, and our final decisions on the expected inflation rate (attachment 3), forecast capex (attachment 6) and forecast depreciation (attachment 5). The main driver of this increase is our final decision on the expected inflation rate. The higher expected inflation rate increases the indexation of the RAB component for the 2017–22 regulatory control period by $126.6 million.[12] This more than offsets our final decision reduction to forecast capex. The net impact is a higher RAB at 31 March 2022 than that proposed by AusNet Services.

Table 3.3 sets out our forecast RAB for AusNet Services in 2017–22.

[12] The inflation on the opening RAB is removed from the regulatory depreciation allowance. See section 3.4 and attachment 5 for further details.

Table 3.3 AER's final decision on AusNet Services' RAB for the 2017–22 regulatory control period ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22
Opening RAB	3170.3	3261.2	3330.0	3383.9	3414.4
Capital expenditure[a]	187.6	167.8	159.7	141.7	122.8
Inflation indexation on opening RAB	76.1	78.3	79.9	81.2	81.9
Less: straight-line depreciation[b]	172.8	177.2	186.6	191.4	175.2
Closing RAB	**3261.2**	**3330.0**	**3382.9**	**3414.5**	**3443.9**

Source: AER analysis.

(a) As incurred and net of disposals. Inclusive of equity raising costs and the half-WACC to account for the timing assumptions in the PTRM.

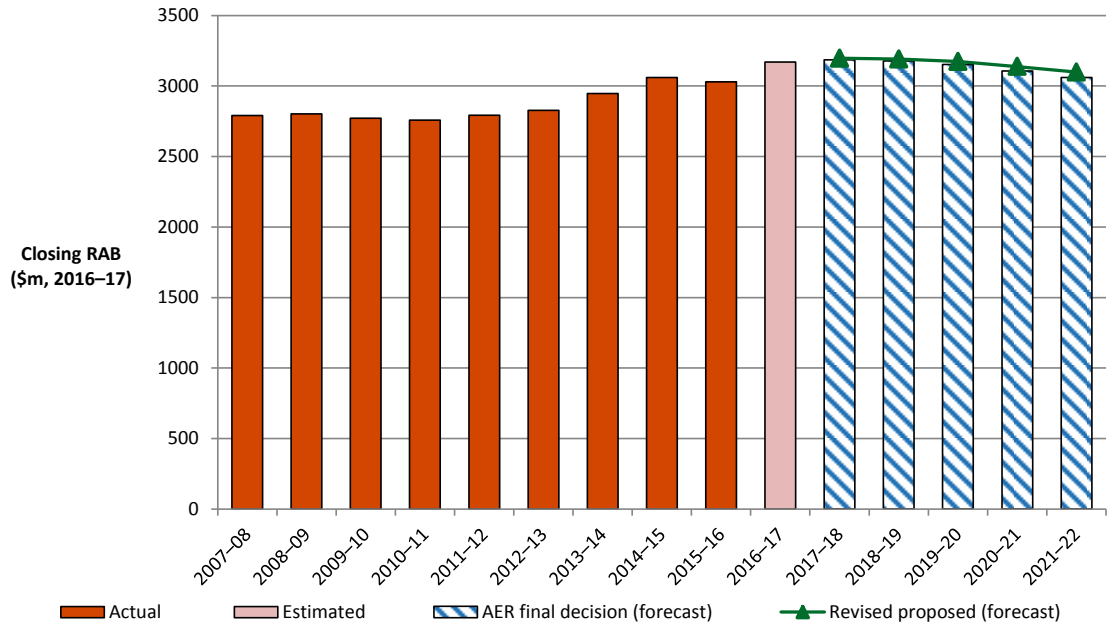
(b) Based on as-commissioned capex.

We accept AusNet Services' proposal that the forecast depreciation approach (instead of an actual depreciation approach) updated for actual inflation is to be used to establish the opening RAB at the commencement of the 2022–27 regulatory control period.[13] We consider this approach will provide sufficient incentives for AusNet Services to achieve capex efficiency improvements over the 2017–22 regulatory control period. AusNet Services is not currently subject to a capital expenditure sharing scheme (CESS). As explained in section 4.2 and attachment 10, we will apply the CESS to AusNet Services for the 2017–22 regulatory control period.

Figure 3.2 compares our final decision on AusNet Services' forecast RAB to AusNet Services' proposal and actual RAB in real dollar terms. The forecast RAB does not include any Group 3 assets (augmentation capex), which may be commissioned during the 2017–22 regulatory control period. These assets would be added to the RAB at the next reset.

[13] NER, cl. S6A.2.2B(a).

Figure 3.2 AusNet Services' actual RAB, proposed forecast RAB and AER final decision forecast RAB ($ million, 2016–17)



Source: AER analysis.

Further detail on our final decision in regards to AusNet Services' RAB is set out in attachment 2.

3.2 Rate of return (return on capital)

The return on capital is the key difference between our final decision for the 2017–22 regulatory control period and AusNet Services' allowed revenue for the 2014–17 regulatory control period. Both the estimated return on equity and estimated return on debt fell across the periods.

The estimated return on equity fell from 9.5 per cent in the 2014–17 regulatory control period to 7.1 per cent in the 2017–22 regulatory control period. The estimated return on debt fell from 6.79 per cent in the 2014–17 regulatory control period to 4.94 per cent in the 2017–22 regulatory control period.

Table 3-4 Final decision on AusNet Services' rate of return (% nominal)

	Previous allowed return (2014–17)	AER draft decision (2017–18)	AER final decision (2017–18)	Allowed return over 2017–22 regulatory control period
Return on equity (nominal post–tax)	9.51	7.10	7.1	Constant (7.1%)
Return on debt (nominal pre–tax)	6.79	5.54	4.94	Updated annually
Gearing	60	60	60	Constant (60%)
Nominal vanilla WACC	7.87	6.16	5.80	Updated annually for return on debt
Forecast inflation	2.45	2.44	2.40	Constant (%)

Source: AER analysis; AusNet Services, *Transmission Revenue Review 2017-2022 - Revised Revenue Proposal*, 21 September 2016; AER, *Final Decision: SP AusNet Transmission determination 2014-2017,* January 2014.

The falls were primarily caused by a reduction in the risk free rate, which flowed through to the estimated return on debt and return on equity. However, the equity beta used for return on equity estimation also fell from a value of 0.8 for the 2014–17 regulatory control period to 0.7 for the 2017–22 regulatory control period reducing the estimated equity risk premium.

Differences between the draft and final decisions for the 2017–22 regulatory control period were much smaller. The rate of return of 5.80 per cent approved in this final decision is lower than our draft decision of 6.16 per cent. Our approach to calculating the rate of return did not change, but our final decision updates the rate of return to reflect data from approved averaging periods used for estimating the return on equity and return on debt.

Further detail on our final decision in regards to AusNet Services' allowed rate of return is set out in attachment 3.

3.3 Value of imputation credits (gamma)

Our final decision adopts a value of imputation credits of 0.4. We do not accept AusNet Services' proposed value of imputation credits (or gamma) of 0.25. We consider that a value for imputation credits of 0.4 will result in equity investors in the benchmark efficient entity receiving an ex ante total return (inclusive of the value of imputation credits) commensurate with the efficient equity financing costs of a benchmark efficient entity.

In coming to a value of imputation credits of 0.4:

- We adopt a conceptual approach consistent with the Officer framework,[14] which we consider best promotes the objectives and requirements of the NER/NGR. This approach considers the value of imputation credits is a post-tax value before the impact of personal taxes and transaction costs.[15] As such, we view the value of imputation credits as the proportion of company tax returned to investors through the utilisation of imputation credits.[16]
- We consider our conceptual approach allows for the value of imputation credits to be estimated on a consistent basis with the allowed rate of return and allowed revenues under the post-tax framework in the NER/NGR.[17]
- We use the widely accepted approach of estimating the value of imputation credits as the product of two sub-parameters: the 'distribution rate' and the 'utilisation rate'.[18] Our definition of, and estimation approach for, these sub-parameters is set out in Table 3.5.

Table 3.5 Gamma sub-parameters: definition and estimation approach

Sub-parameter	Definition	Estimation approach
Distribution rate (or payout ratio)	The proportion of imputation credits generated that is distributed to investors.	Primary reliance placed on the widely accepted cumulative payout ratio approach. Some regard is also given to Lally's estimate for listed equity from financial reports of the 20 largest listed firms.
Utilisation rate (or theta)	The utilisation value to investors in the market per dollar of imputation credits distributed.[19]	A range of approaches, with due regard to the merit of each approach: • equity ownership approach • tax statistics • implied market value studies.

Source: AER analysis.

[14] The Officer framework is discussed in detail in section **Error! Reference source not found.**.

[15] Post-tax refers to after company tax and before personal tax.

[16] This means one dollar of claimed imputation credits has a post (company) tax value of one dollar to investors before personal taxes and personal transaction costs.

[17] In finance, the consistency principle requires that the definition of the cash flows in the numerator of a net present value (NPV) calculation must match the definition of the discount rate (or rate of return / cost of capital) in the denominator of the calculation (see Peirson, Brown, Easton, Howard, Pinder, *Business Finance*, McGraw-Hill, Ed. 10, 2009, p. 427). By maintaining this consistency principle, we provide a benchmark efficient entity with an ex ante total return (inclusive of the value of imputation credits) commensurate with the efficient financing costs of a benchmark efficient entity.

[18] These sub-parameters are discussed further in section **Error! Reference source not found.**.

[19] In this decision we use the terms theta, utilisation value and utilisation rate interchangeably to mean the same thing.

Overall, the evidence suggests a range of estimates for the value of imputation credits might be reasonable. With regard to the merits of the evidence before us, we choose a value of imputation credits of 0.4 from within a range of 0.3 to 0.5.

In considering the evidence on the distribution and utilisation rates, we have broadly maintained the approach set out in the Rate of Return Guideline (the Guideline), but have re-examined the relevant evidence and estimates. This re-examination, and new evidence and advice considered since the Guideline, led us to depart from the 0.5 value of imputation credits we proposed in the Guideline.

Further detail on our final decision in regards to the value of AusNet Services' imputation credits is set out in attachment 4.

3.4 Regulatory depreciation (return of capital)

Depreciation is the allowance provided so that capital investors can recover their investment over the economic life of the asset (return of capital). In deciding whether to approve the depreciation schedules submitted by AusNet Services, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for AusNet Services' 2017–22 regulatory control period.[20] The regulatory depreciation allowance is the net total of the RAB depreciation less the inflation indexation adjustment of the RAB.

Our final decision approves a regulatory depreciation allowance of $505.9 million ($ nominal) for the 2017–22 regulatory control period. This is $118.3 million (19.0 per cent) lower than AusNet Services' proposed value of $602.8 million ($ nominal).

Table 3.6 shows our final decision on AusNet Services' depreciation allowance for the 2017–22 regulatory control period.

Table 3.6 AER's final decision on AusNet Services' depreciation allowance for the 2017–22 regulatory control period ($ million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Straight-line depreciation	172.8	177.2	186.6	191.4	175.2	903.3
Less: inflation indexation on opening RAB	76.1	78.3	79.9	81.2	81.9	397.4
Regulatory depreciation	96.7	99.0	106.7	110.2	93.3	505.9

Source: AER analysis.

The key reasons for the difference between our regulatory depreciation allowance and the allowance proposed by AusNet Services' are:

[20] NER, cll. 6A.5.4(a)(1) and (3).

- We reject AusNet Services' revised proposal for accelerated depreciation over the next eight years of assets associated with the Yallourn Power Station (YPS)
- We made determinations on other components of AusNet Services' proposal that also affect the forecast regulatory depreciation allowance—for example, the expected inflation rate (attachment 3) and forecast capex (attachment 6). The revision to the expected inflation rate is the largest driver of the reduction in the regulatory depreciation allowance (which is net of the inflation indexation on the opening RAB) from that proposed.

Further detail on our final decision in regards to depreciation is set out in attachment 5.

3.5 Capital expenditure

Capital expenditure (capex) refers to the capital expenses incurred in the provision of network services. The return on and return of forecast capex are two of the building blocks we use to determine a TNSP's total revenue requirement.

Our final decision approves $719.1 million ($2016-17) total net forecast capex for the 2017–22 regulatory control period. This is $32.1 million (or 4.3 per cent) lower than AusNet Services' proposed value of $751.3 million. Table 3.7 shows our decision compared to AusNet Services' forecast.

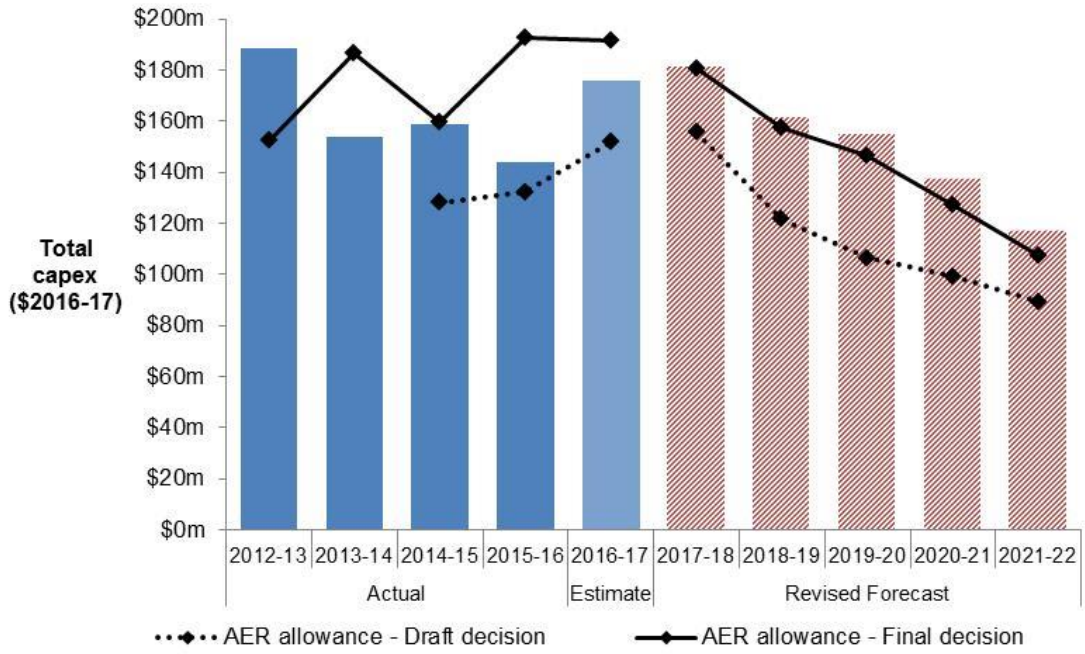
Table 3.7 Final decision on AusNet Services' total forecast capex ($2016–17, million)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
AusNet Services' revised proposal	181.0	161.6	154.7	137.3	116.7	751.3
AER final decision	180.5	157.6	146.5	127	107.5	719.1
Total adjustment	-0.5	-4.0	-8.1	-10.3	-9.2	-32.1
Total adjustment (%)	-0.3%	-2.5%	-5.3%	-7.5%	-7.9%	-4.3%

Source: AusNet Services, Revised regulatory proposal; 21 September 2016, p. 81; and AER analysis.
Note: Numbers may not add up due to rounding.

Figure 3.3 shows our capex decision compared to AusNet Services' proposal, its past allowances and past actual expenditure.

Figure 3.3 AusNet Services' total actual and forecast capex 2014–2022



Source: AER analysis.

AusNet Services' forecasting methodology for replacement capex uses a quantified risk based approach to support an economic analysis of project costs and benefits. AusNet Services quantifies the cost of asset failure associated with supply security, health and safety, environmental and plant collateral damage risks, and replaces assets when the quantified costs of these risks outweigh forecast replacement costs. This risk quantification approach is generally consistent with good industry practice. However, we have identified some issues relating to AusNet Services' input assumptions which have led us to conclude that AusNet Services' economic assessment is likely to overstate the cost of safety and supply security risks.

The key components of our final decision include:

- Reductions in replacement capex related to estimated risks associated with safety based on a more realistic assumption of the probability of safety related outcomes,
- Reductions in replacement capex related to reliability risk driven by adoption of AEMO's forecasts of transmission connection point demand, and
- Reductions in replacement capex related to reliability risk based on more realistic assumptions on the time to restore supply after a failure.

The quantum of the various reductions described above is less than the equivalent reductions applied in our draft decision, and indeed relatively minor overall. This is due to the additional justification provided by AusNet Services to support the need for particular projects, such as the West Melbourne and East Rowville terminal station projects, and the application of revised input assumptions for safety risk exposure and forecast demand.

Further detail on our final decision in regards to capex is set out in attachment 6.

3.6 Operating expenditure

Our final decision is to approve total forecast opex of $1132.0 million ($2016–17) for the 2017–22 regulatory period, which we consider reasonably reflects the opex criteria under the National Electricity Rules.

Our final decision is higher than AusNet Services' revised proposal of $1049.6 million ($2016–17).[21] This is because we have incorporated new information into our total opex forecast that became available subsequent to AusNet Services' revised proposal.

The Victorian Government increased the easement land tax imposed on AusNet Services.[22] Accordingly, we increased our forecast of *annual* easement land tax from $114.3 million to $135.0 million ($2016–17) in our alternative estimate.[23] Had this not occurred, our final decision would have been $21.2 million lower than AusNet Services' revised proposal. Otherwise, our final decision is largely consistent with our draft decision.

Our final decision is set out in table 3.6.

Table 3.8 Our final decision on total opex ($ million, 2016–17)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
AusNet Services' initial proposal	218.9	214.0	215.5	217.7	219.0	1085.0
AER draft decision	204.2	204.4	204.8	205.2	205.6	1024.1
AusNet Services' revised proposal	214.0	208.0	208.4	209.5	209.6	1049.6
AER final decision excluding impact of increase in easement land tax	204.6	205.1	205.7	206.2	206.7	1028.4
AER final decision	**225.4**	**225.8**	**226.4**	**226.9**	**227.4**	**1132.0**

Source: AusNet Services, *Revised proposal*, AER analysis. Note: Excludes debt raising costs. Numbers may not add up due to rounding.

Figure 3.4 shows our final decision compared to AusNet Services' initial and revised proposals, its past allowances and actual expenditure. It also shows the impact of the increase in the easement land tax on our final decision.

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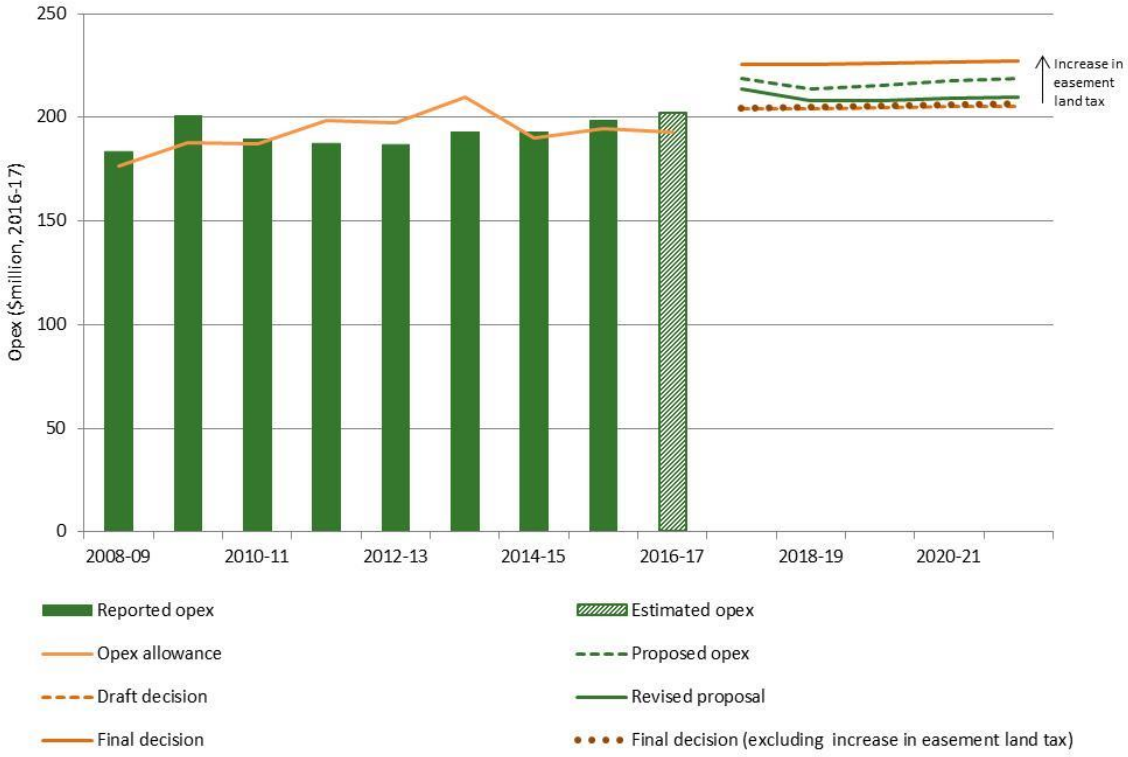
21 Excludes debt raising costs; AusNet Services, *Revised revenue proposal: 2017–22 Opex model, 21 September 2016*.

22 AusNet Services, *Submission on revised proposal*, 20 December 2016, p. 4.

23 We include a category specific forecast for easement land tax because AusNet Services is entitled to apply for a 'cost pass through' where our forecast differs (higher or lower) from the actual tax paid. To apply this pass through we need an explicit forecast of easement land tax costs. This is explained in section 7.5.3.2.

Figure 3.4 AER final decision compared to AusNet Services' past and proposed opex ($ million, 2016–17)



Source: AusNet Services, *Regulatory accounts 2008-09 to 2014–15*; AusNet Services, *Economic benchmarking - Regulatory Information Notice response 2006 to 2015*; AusNet Services, *initial and revised opex model and PTRM*, AER analysis. Note: Excludes debt raising costs and movements in provisions.

We assessed AusNet Services' opex proposal by applying our 'base–step–trend' forecasting approach to develop our alternative estimate.

We used AusNet Services' reported opex in 2014–15 as the 'base' component of our opex forecast for 2017–22. Our transmission benchmarking results do not indicate AusNet Services' reported opex is materially inefficient compared to the other NEM businesses. We therefore consider its reported opex in 2014–15 is a reasonable starting point for determining our opex forecast.

Our forecast of the rate of change is lower than AusNet Services' for two key reasons.

First, in forecasting labour price growth, AusNet Services treated all services contract expenditure as labour costs. This assumes the price change of contractors' non-labour inputs is the same as their labour. Consequently, AusNet Services applied a higher weighting to labour price growth in determining the mix of labour and non-labour price growth. Given labour costs are expected to increase at a higher rate than non-labour inputs, this overstates the cost inputs required by a prudent and efficient network service provider.

Second, for the cost inputs calculation, we reject AusNet Services' proposal to use 'firm-specific weights', which were based on its actual expenditure in 2014, rather than the 'benchmark weights' we typically apply across our regulatory decisions. We consider that using a network business' actual input price weights distorts the incentive to use the efficient proportion of internal labour, among other concerns.

We have not incorporated any step changes in our opex forecast. AusNet Services' proposed step changes are not driven by new regulatory obligations or efficient capex-opex trade-offs. We consider adding step changes for new or increasing opex items identified by AusNet Services *and* incorporating AusNet Services' revealed costs would lead to a forecast of total opex that is above efficient levels. For similar reasons, we have not included a category specific forecast for self-insurance as proposed by AusNet Services.

Further detail on our final decision in regard to opex is set out in attachment 7.

3.7 Corporate income tax

We make a decision on the estimated cost of corporate income tax for AusNet Services' 2017–22 regulatory control period as part of our revenue determination. It enables AusNet Services to recover the costs associated with the estimated corporate income tax payable during the regulatory control period.

Our final decision includes an estimated cost of corporate income tax of $59.5 million ($ nominal) for AusNet Services over the 2017–22 regulatory control period. This represents a reduction of $53.1 million (or 47.2 per cent) from AusNet Services' revised proposal. Table 3.9 shows our final decision on AusNet Services' corporate income tax allowance for the 2017–22 regulatory control period.

Table 3.9 AER's final decision on corporate income tax allowance for AusNet Services ($million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Tax payable	22.1	17.7	20.6	23.3	15.4	99.2
Less: value of imputation credits	8.8	7.1	8.2	9.3	6.2	39.7
Net corporate income tax allowance	**13.2**	**10.6**	**12.4**	**14.0**	**9.2**	**59.5**

Source: AER analysis.

This reduction is mainly driven by our determination on AusNet Services' proposed value of imputation credits (gamma) as discussed in attachment 4. Our determinations on other building block components including forecast capex (attachment 6) and forecast opex (attachment 7) also affect revenues, which impact the tax calculation. The changes affecting revenues are discussed in attachment 1.

Further detail on our final decision in regards to corporate income tax is set out in attachment 8.

4 Incentive schemes

Incentive schemes are a component of incentive–based regulation and complement our approach to assessing efficient costs. The incentive schemes that will apply to AusNet Services are:

- the efficiency benefit sharing scheme (EBSS)
- the capital expenditure sharing scheme (CESS)
- the service target performance incentive scheme (STPIS).

Our incentive schemes encourage network businesses to make efficient decisions. They give network businesses an incentive to pursue efficiency improvements in opex and capex, and to share them with consumers. Incentives for opex and capex are balanced with the incentives under our STPIS. The incentive schemes encourage businesses to make efficient decisions on when and what type of expenditure to incur, and meet service reliability targets.

4.1 Efficiency benefit sharing scheme (EBSS)

The EBSS provides an incentive for service providers to pursue efficiency improvements in opex.

To encourage a service provider to become more efficient, under an ex ante framework, a service provider retains any efficiency gains it makes until the end of the regulatory control period when its opex forecast is reset. The EBSS allows the service provider to retain any efficiency gains it makes for a total of six years, regardless of the year in which the gains are made.[24] This provides a continuous incentive for service providers to pursue efficiency gains over the regulatory control period. It also discourages a service provider from incurring opex in the expected base year to receive a higher opex allowance in the following regulatory control period.

We approve a total EBSS carryover amount of $1.0 million ($2016–17), from the application of the EBSS in the 2014–17 regulatory control period, be added to AusNet Services' allowed revenue.[25] This is consistent with AusNet Service' revised proposal.[26] Our final decision on the EBSS carryover amounts from the 2014–17 regulatory control period is outlined in Table 4.1.

[24] The service provider keeps any efficiency gains in the year it makes them. The service provider then keeps those gains for the length of the carryover period. The carryover length is usually five years so the service provider keeps efficiency gains for a total of six years.

[25] AER, *Electricity transmission network service providers' - Efficiency benefit sharing scheme*, September 2007.

[26] AusNet Services, *Revised regulatory proposal*, 21 September 2016, p. 221.

Table 4.1 AER's final decision on AusNet Services EBSS carryover amounts ($ million, 2016–17)

	2017-18	2018-19	2019-20	2020-21	2021-22	Total
AusNet Services proposal	1.7	1.7	1.7	0.5	-	5.6
AER draft decision	1.3	1.3	1.3	0.0	1.1	5.1
AusNet Services revised proposal	1.3	1.3	1.3	0.0	-3.0	1.0
AER final decision	1.3	1.3	1.3	0.0	-3.0	1.0

Source: AusNet Services, Regulatory proposal, October 2015, p.169; AusNet Services, Revised regulatory proposal, September 2016, p. 221; AER analysis.

Note: Numbers may not add up due to rounding.

Our final decision is to apply version two of the EBSS to AusNet Services in the 2017–22 regulatory control period.[27] When we apply version two of the EBSS, we will exclude the cost categories listed in section 9.4.2 of attachment 9 from forecast and actual opex used to calculate EBSS carryover amounts. Table 4.2 sets out our final decision on AusNet Services' target opex for the EBSS (total opex less excluded categories[28]), against which we will calculate efficiency gains in the 2017–22 regulatory control period.

Table 4.2 AER's final decision on AusNet Services forecast opex for the EBSS ($ million, 2016–17)

	2017-18	2018-19	2019-20	2020-21	2021-22
Total forecast opex	226.9	227.4	228.0	228.5	229.0
Less debt raising costs	–1.6	–1.6	–1.6	–1.6	–1.5
Less easement land tax	–135.0	–135.0	–135.0	–135.0	–135.0
Target opex for the EBSS	90.3	90.8	91.4	91.9	92.4

Source: AER analysis.

Note: Total forecast opex less forecast opex for easement land tax and debt raising costs. Forecast opex does not include AIS rebates or priority projects under the STPIS network capability function.

Further detail on our final decision in regards to the application of the EBSS, including proposed expenditure items to be excluded, is set out in attachment 9.

27 AER, *Efficiency benefit sharing scheme for electricity network service providers*, November 2013.

28 Easement land tax and debt raising costs.

4.2 Capital expenditure sharing scheme (CESS)

The CESS provides an incentive for service providers to pursue efficiency improvements in capex. Similar to the EBSS, the CESS provides a network service provider with the same reward for an efficiency saving and the same penalty for an efficiency loss regardless of which year they make the saving or loss.

Under the CESS a service provider retains 30 per cent of the benefit or cost of an under spend or overspend, while consumers retain 70 per cent of the benefit or cost of an underspend or overspend. This means that for a one dollar saving in capex the service provider keeps 30 cents of the benefit while consumers keep 70 cents of the benefit. Conversely, in the case of an overspend, the service provider pays for 30 cents of the cost while consumers bear 70 cents of the cost.

We will apply the CESS as set out in version 1 of the capital expenditure incentives guideline to AusNet Services in the 2017–22 regulatory control period.[29] The guideline provides for the exclusion from the CESS of capex the service provider incurs in delivering a priority project approved under the network capability component of the STPIS for transmission network service providers.[30] This is consistent with the proposed approach we set out in our framework and approach paper.[31]

4.3 Service target performance incentive scheme (STPIS)

The STPIS is intended to balance a business' incentive to reduce expenditure with the need to maintain or improve service quality. It achieves this by providing financial incentives to businesses to maintain and improve service performance where customers are willing to pay for these improvements.

Businesses can only retain their rewards for sustained and continuous improvements to the reliability of supply for customers. Once improvements are made, the benchmark performance targets will be tightened in future years.

Our final decision is to apply all components of version 5 of the STPIS to AusNet Services for the 2017–22 regulatory control period. The STPIS parameters applied in our final decision are set out in attachment 11.

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29 NER, cl. 6A.14.1(5A). AER, *Capex incentive guideline*, November 2013, pp. 5–9.

30 NER, cl 6A.14.1(5A).

31 AER, *Final framework and approach for AusNet Services transmission determination 2017–22,* April 2015, p. 23.

5 Understanding the NEO

The NEO is the central feature of the regulatory framework. The NEO is to:

> promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.[32]

Energy Ministers have provided us with a substantial body of explanatory material that guides our understanding of the NEO.[33] 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.[34]

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.[35] We have also considered the quality and reliability of services provided to consumers. For example, opex allowances have been set so AusNet Services may meet existing and new regulatory requirements. Replacement expenditure (repex) allowances take into account the age and condition of assets. Our capex allowance is based on a contemporary estimate of the value of customer reliability. And the STPIS encourages maintenance, and indeed improvement of, service quality.

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.[36] At the same time, however, there are a range of outcomes that are unlikely to advance the NEO, or advance the NEO to the degree that others would.

For example, we 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.[37] This could have significant longer term pricing implications for those consumers who continue to use network services.

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[32] NEL, section 7.

[33] Hansard, *SA House of Assembly,* 9 February 2005, pp. 1451–1460; Hansard, *SA House of Assembly,* 27 September 2007, pp. 963–972; Hansard, *SA House of Assembly,* 26 September 2013, pp. 7171–7176.

[34] Hansard, *SA House of Assembly,* 26 September 2013, p. 7173.

[35] Hansard, *SA House of Assembly,* 9 February 2005, p. 1452.

[36] Re Michael: Ex parte Epic Energy [2002] WASCA 231 at [143].
Energy Ministers also accept this view – see Hansard, *SA House of Assembly,* 26 September 2013, p. 7172.
AEMC*, Rule determination, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18*, 16 November 2006, p. 50.

[37] NEL, s. 7A(7).

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. This could create longer term problems in the network[38] and could have adverse consequences for safety, security and reliability of the network.

The NEL also includes the revenue and pricing principles (RPP),[39] which support the NEO. As the NEL requires,[40] we have taken the RPPs into account throughout our analysis.

> The RPPs are:
>
> A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—
>
> – providing direct control network services; and
>
> – complying with a regulatory obligation or requirement or making a regulatory payment.
>
> A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—
>
> – efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and
>
> – the efficient provision of electricity network services; and
>
> – the efficient use of the distribution system or transmission system with which the operator provides direct control network services.
>
> Regard should be had to the regulatory asset base with respect to a distribution system or transmission system adopted—
>
> – in any previous—
>
> – as the case requires, distribution determination or transmission determination; or
>
> – determination or decision under the National Electricity Code or jurisdictional electricity legislation regulating the revenue earned, or prices charged, by a person providing services by means of that distribution system or transmission system; or

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38 NEL, s. 7A(6).

39 NEL, s. 7A.

40 NEL, s. 16(2).

– in the Rules.

A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.

Consistent with Energy Ministers' views, we set revenue allowances to balance all elements of the NEO and consider each of the RPPs.[41] For example:

- In determining forecast opex and capex that reasonably reflects the opex and capex criteria, we take into account the revenue and pricing principle that should provide AusNet Services with a reasonable opportunity to recover at least efficient costs. (Refer to capex attachment 6 and opex attachment 7).
- We take into account the economic costs and risks of the potential for under and over investment by a network service provider in our assessment of AusNet Services' forecast capex and opex proposals. (Refer to capex attachment 6 and opex attachment 7).
- We consider the economic costs and risks of the potential for under and over utilisation of AusNet Services' transmission system in our demand forecasting (Refer to capex attachment 6).
- Our application of the EBSS, CESS, and STPIS in this determination provide AusNet Services with effective incentives which we consider will promote economic efficiency with respect to the direct control services that AusNet Services provides throughout the regulatory control period. (Refer to attachments 9, 10 and 11).
- We have determined AusNet Services' opening RAB taking into account the RAB adopted in the previous transmission determination. (Refer to attachment 2, regulatory asset base).
- The allowed rate of return objective reflects the revenue and pricing principle in s. 7A(5) of the NEL. We have determined a rate of return that we consider will provide AusNet Services with a return commensurate with the regulatory and commercial risks involved in providing direct control services. (Refer to attachment 3, rate of return).

[41] Hansard, *SA House of Assembly,* 27 September 2007, p. 965; Hansard, *SA House of Assembly,* 26 September 2013, p. 7173.

- Our financing determinations provide the TNSP with a reasonable opportunity to recover at least the efficient costs of accessing debt and capital. (Refer to attachment 3, rate of return).

In some cases, our approach to a particular component (or part thereof) results in an outcome towards the end of the range of options that may be favourable to the businesses. While it can be difficult to quantify the exact revenue impact of these individual decisions, we have identified where we have done so in our attachments. Some of these decisions include:

- selecting at the top of the range for the equity beta
- setting the return on debt by reference to data for a BBB broad band credit rating, when the benchmark is BBB+
- the cash flow timing assumptions in the post-tax revenue model.

We take into account the RPPs when exercising discretion about an appropriate estimate. This requires a recognition that for the long term interests of consumers, the risk of under compensation for, or underinvestment by, a service provider may be less desirable than the risk of overcompensation or overinvestment. However, the AER is also conscious of the risk of introducing an inherent bias towards higher amounts where estimates throughout the different components of the determination are each set too conservatively.[42] The legislative framework recognises the complexity of this task by providing the AER with significant discretion in many aspects of the decision-making process to make judgements on these matters.

Chapter 6A of the NER provides specifically for the economic regulation of TNSPs. It includes rules about the constituent components of our decisions. These are intended to contribute to the achievement of the NEO.[43]

5.1 Achieving the NEO to the greatest degree

Electricity transmission determinations are complex decisions and must be considered as such. In most instances, the provisions of the NER do not point to a single answer, either for our decision as a whole or in respect of particular components. They require us to exercise our regulatory judgement. For example, chapter 6A of the NER requires us to prepare forecasts, which are predictions about unknown future circumstances. As a result, there will likely always be more than one plausible forecast.[44] There is substantial debate amongst stakeholders about the costs we must forecast, with both sides often supported by expert opinion. As a result, for certain components of our decision there may be several plausible answers or several plausible point estimates.

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[42] AEMC, *Rule determination, National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006 No. 18*, 16 November 2006, p. 52.

[43] NEL, s. 88.

[44] AEMC, *Rule Determination: National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006,* (16 November 2006), 52.

When the constituent components of our decision are considered together, this means there will almost always be several potential, overall decisions. More than one of these may contribute to the achievement of the NEO. Where this is the case, our role is to make an overall decision that we are satisfied contributes to the achievement of the NEO to the greatest degree.[45]

We approach this from a practical perspective, accepting that it is not possible to consider every permutation specifically. Where there are choices to be made among several plausible alternatives each of which would result in an overall decision that contributes to the achievement of the NEO, we have selected what we are satisfied would result in an overall decision that contributes to the achievement of the NEO to the greatest degree. This is our role under the NEO.

In coming to this final decision we considered AusNet Services' revised revenue proposal. We have examined each of the building block components of the revised proposal and the incentive mechanisms that would apply across the 2017–22 regulatory control period. We considered the submissions we received in regard to AusNet Services' revised proposal. We conducted our own analysis and engaged expert consultants to help us better understand if and how AusNet Services' revised proposal contributes to the achievement the NEO. We also considered how our constituent decisions relate to each other, the impact that particular constituent decisions have on other constituent components of our decision, and have described these interrelationships in this final decision. We have undertaken an extensive and consultative regulatory review process to ensure we have canvassed stakeholder issues and made as much of this information publicly available as practicable. We have had regard to and weighed up all the information assembled before us in making this final decision.

Therefore, we are satisfied that among the options before us our final decision on AusNet Services' transmission determination for the 2017–22 regulatory control period contributes to the achieving the NEO to the greatest degree.

5.2 Interrelationships between constituent components

Examining constituent components in isolation ignores the importance of the interrelationships between components of the overall decision, and would not contribute to the achievement of the NEO. As outlined by Energy Ministers, considering the elements in isolation has resulted in regulatory failures in the past.[46] Interrelationships can take various forms, including:

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45 NEL, s. 16(1)(d).

46 SCER, *Regulation impact statement: Limited merits review of decision-making in the electricity and gas regulatory frameworks, Decision paper,* 6 June 2013, p. 6

- underlying drivers and context which are likely to affect many constituent components of our decision. For example, forecast demand affects the efficient levels of capex and opex in the regulatory control period (see attachment 6 and 7).
- direct mathematical links between different components of a decision. For example, the level of gamma has an impact on the appropriate tax allowance; the benchmark efficient entity's debt to equity ratio has a direct effect on the cost of equity, the cost of debt, and the overall vanilla rate of return (see attachments 3, 4 and 8).
- trade-offs between different components of revenue. For example, undertaking a particular capex project may affect the need for opex or vice versa (see attachments 6 and 7).
- trade-offs between forecast and actual regulatory measures. The reasons for one part of a proposal may have impacts on other parts of a proposal. For example, an increase in augmentation to the network means the TNSP has more assets to maintain leading to higher opex requirements (see attachments 6 and 7).
- the TNSP's approach to managing its network. The TNSP's governance arrangements and its approach to risk management will influence most aspects of the proposal, including capex/opex trade-offs (see attachment 6).

We have considered interrelationships, including those above, in our analysis of the constituent components of our final decision. These considerations are explored in the relevant attachments.

6 Consultation

Stakeholder participation is important to informed decision making under the NEL and NER. It allows us to take a range of views into account when considering how a proposal or decision contributes to the NEO. Effective consultation and engagement provide confidence in our processes and are good regulatory practice. This is reflected in the consultation process set out in the NER, under which we have:

- published AusNet Services revenue proposals and supporting material
- published an issues paper identifying preliminary issues with the revenue proposal
- invited written submissions on the revenue proposal
- held a public forum on the revenue proposal
- published a draft decision and reasoning
- published AusNet Services revised revenue proposal and supporting material
- invited written submissions on the draft decision and revised revenue proposal
- published this final decision and reasoning.

We also sought advice from the AER's Consumer Challenge Panel (CCP) on AusNet Services revised revenue proposal. Both the CCP and AusNet Services met with the AER Board to discuss this review.

This process builds on consultation we undertook with a broad range of stakeholders as part of the Better Regulation program. Following changes to the NER in 2012, we spent much of 2013 consulting on and refining our assessment methods and approaches to decision making. We referred to this as our Better Regulation program. The Better Regulation program was designed to be an inclusive process that provided an opportunity for all stakeholders to be engaged and provide their input.[47]

This gives us confidence the approaches set out in our various guidelines, which we have applied in this decision, will result in outcomes that will or are likely to contribute to the achievement of the NEO to the greatest degree. Our Better Regulation guidelines are available on our website[48] and include:

- Expenditure forecast assessment guideline
- Expenditure incentives guideline
- Rate of return guideline
- Consumer engagement guideline for network service providers
- Shared assets guideline

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47 AER, *Overview of the Better Regulation reform package*, April 2014, pp. 4 & 7–13.

48 www.aer.gov.au/better-regulation-reform-program

- Confidentiality guideline.

The guidelines provide businesses, investors and consumers predictability and transparency of our approach to regulation under the new rules.

6.1 Consumer engagement

Recent changes to the NER provide further support for consumer involvement in the regulatory process, and enable us to engage more productively with energy consumers and businesses.[49] Chapter 6A of the NER was amended to, among other things, require:

- TNSPs to submit an overview with their revenue proposal which describes how they have engaged with consumers and sought to address any relevant concerns identified by that engagement[50]
- the AER to publish an issues paper after receiving the TNSP's revenue proposal.[51] The purpose of the issues paper is to assist consumer representative groups to focus on the key preliminary issues on which they should engage and comment[52]
- the AER, when determining capex and opex allowances, to have regard to the extent to which the forecast includes expenditure to address the concerns of consumers as identified by the TNSP in the course of its engagement with the consumers.[53]

Our Better Regulation Consumer engagement guideline sets out our expectations of how the network businesses should engage with their customers. We expect the network businesses to demonstrate a commitment to ongoing and genuine consumer engagement on issues relevant to consumers. We want to see businesses being more accountable to their consumers.[54] We understand the businesses may need some time to develop and implement robust and comprehensive engagement strategies and approaches.[55]

As set out in the guideline, we monitor consumer engagement activities through the CCP and our ongoing engagement with stakeholders. We may publicly comment in our decisions on any shortcomings that we identify from an expenditure proposal that reflect weaknesses in consumer engagement.[56]

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49 AEMC, *Rule determination, National Electricity Amendment (Economic Regulation of Network Service Prviders),* Rule 2012.

50 NER, cl. 6A.10.1(g)(2).

51 NER, cl. 6A.11.3(b)(1).

52 AEMC, *Rule determination, National Electricity Amendment (Economic Regulation of Network Service Prviders),* Rule 2012.

53 NER, cll. 6A.6.6(e)(5A) and 6A.6.7(e)(5A).

54 AER, *Better Regulation: Consumer engagement guideline for network service providers,* November 2013, p. 5.

55 AER, *Better Regulation: Consumer engagement guideline for network service providers,* November 2013, p. 12.

56 AER, *Better Regulation: Consumer engagement guideline for network service providers,* November 2013, p. 12.

We have considered the material presented in AusNet Services' revised revenue proposal (section 6.2), and stakeholder views presented to us in submissions (section 6.3) to form a view of its progress in implementing improved engagement strategies and approaches (section 6.4). We have not undertaken a substantive review of AusNet Services' consumer engagement approaches and strategies against the above best practice principles as part of this process.

6.2 AusNet Services' consumer engagement activities

As part of preparing its revenue proposal, AusNet Services undertook a range of consumer engagement activities to understand the views of its stakeholders. We set out AusNet Services' consumer engagement activities in the lead up to its initial proposal in our draft decision.[57] In its revised proposal, AusNet Services submitted that it undertook further stakeholder engagement following the submission of its initial revenue proposal.[58]

AusNet Services submitted that most of its engagement undertaken since its initial proposal focused explicitly on better understanding stakeholder perceptions of accelerated depreciation. A key reason for this was that there was strong opposition to any form of accelerated depreciation in consultation undertaken prior to the submission of its revenue proposal.[59]

Following its initial submission, AusNet Services launched a range of engagement activities focusing on accelerated depreciation. These activities included discussions with customer advocates individually (formally and informally), and a customer advocate workshop. AusNet Services found that customer advocates did not support accelerated depreciation because customers would oppose higher short-term prices, despite longer-term price reductions.[60]

AusNet Services submitted that it prepared its revised revenue proposal with stakeholder feedback in mind. AusNet Services' revised proposal sets out the stakeholder feedback received and how it has been addressed. In regard to accelerated depreciation, the revised revenue proposal does not apply declining balance depreciation to new investments.[61]

AusNet Services submitted that it is committed to continuing stakeholder engagement through a range of ongoing consultative activities including:[62]

- improving the information that is available and easily accessible to customers and stakeholders through the launch of its new customer-centric website

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57 AER, *Draft decision, AusNet Services transmission determination 2017–22 overview,* September 2016, pp. 45–48.
58 AusNet Services, *Revised revenue proposal 2017–22*, September 2016, p. 8.
59 AusNet Services, *Revised revenue proposal 2017–22*, September 2016, pp. 8–10.
60 AusNet Services, *Revised revenue proposal 2017–22*, September 2016, pp. 10–11.
61 AusNet Services, *Revised revenue proposal 2017–22*, September 2016, p. 13.
62 AusNet Services, *Revised revenue proposal 2017–22*, September 2016, p. 14.

- reviewing key learnings from the efforts to date. AusNet Services will conduct an internal workshop with those involved in the program to evaluate the efforts described in this report and discuss areas of improvement for future engagement
- continued consultation with key stakeholders through activities such as presentations and workshops tailored specifically to the information needs and expertise of those groups.

6.3 Consumer submissions

The CCP submitted that, since the initial revenue proposal, it has observed genuine and continuing efforts to engage with end customers. The CCP submitted that there is no question about the sincerity and desire of AusNet Services to actively and meaningfully engage with stakeholders. The CCP noted that it continues to observe good progress being made in AusNet Services efforts to engage.[63]

The CCP however noted the following observations relating to AusNet Services consumer engagement:[64]

- sometimes AusNet Services has tended to regard stakeholder engagement processes as mechanisms to convince stakeholders of an AusNet Services position, when more open methodologies would be more helpful
- the 'promise to the public' aspect of the IAP2 spectrum is less developed than other aspects of the spectrum. The CCP considered that the 'promise to the public' action is somewhere between the 'inform' and 'consult' aspects of the spectrum.

6.4 Our view of AusNet Services' consumer engagement

Consistent with our draft decision, we consider that AusNet Services has taken important steps to engage with its customers in a very positive manner. We note that the CCP has also made many positive comments in regards to AusNet Services consumer engagement stating that it has made genuine and continuing efforts to meaningfully engage with end users.

A key concern for stakeholders arising from AusNet Services' initial proposal was in regard to AusNet Services' use of accelerated depreciation. In its submission on AusNet Services initial proposal the CCP expressed disappointment that AusNet Services had rejected strong consumer advice regarding accelerated depreciation.[65] We note that AusNet Services has responded to this issue by undertaking a range of

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63 CCP, *Transmission for the Generations II, Response to AER draft decision for AusNet Services,* September 2016, p. 23.

64 CCP, *Transmission for the Generations II, Response to AER draft decision for AusNet Services,* September 2016, p. 23.

65 CCP, *Submission on AusNet Services' transmission revenue review 2017–2022*, 8 February 2016, p. 7.

engagement activities focussed on accelerated depreciation and seeking stakeholder feedback on its proposal.

We accept that there are still some concerns from the CCP, regarding aspects of AusNet Services' approach to stakeholder engagement. However, as we noted in our draft decision, stakeholder engagement is a relatively new aspect undertaken by network service providers and should continue to improve over time. AusNet Services has submitted that it is committed to continuing and improving its practices when it comes to stakeholder engagement.[66] We expect that AusNet Services will take into account the issues raised by the CCP in developing its consumer engagement program going forward.

[66] AusNet Services, *Revised revenue proposal 2017–22*, September 2016, p. 14.

A Constituent decisions

Our final decision on AusNet Services' transmission determination includes the following constituent components:[67]

Constituent component
In accordance with clause 6A.14.1(1)(i) of the NER, the AER does not approve the total revenue cap set out in AusNet Services' revised building block proposal. Our final decision on AusNet Services' total revenue cap is $2741.7 million ($ nominal) for the 2017–22 regulatory control period. This decision is discussed in Attachment 1 of this final decision. [See also section 1.1–1.3 of the transmission determination]
In accordance with clause 6A.14.1(1)(ii) of the NER, the AER does not approve the maximum allowed revenue (MAR) for each regulatory year of the regulatory control period set out in AusNet Services' revised building block proposal. Our final decision on AusNet Services' MAR for each year of the 2017–22 regulatory control period is set out in Attachment 1 of this final decision. [See also section 1.1–1.3 of the transmission determination]
In accordance with clause 6A.14.1(1)(iii) of the NER, the AER has decided to apply the service component, network capability component and market impact component of Version 5 of the service target performance incentive scheme (STPIS) to AusNet Services for the 2017–22 regulatory control period. The values and parameters of the STPIS are set out in Attachment 11 of this final decision. [See also section 1.6 of the transmission determination]
In accordance with clause 6A.14.1(1)(iv) of the NER, the AER's final decision on the values that are to be attributed to the parameters for the efficiency benefit sharing scheme (EBSS) that will apply to AusNet Services in respect of the 2017–22 regulatory control period are set out in Attachment 9 of this final decision. [See also section 1.7 of the transmission determination]
In accordance with clause 6A.14.1(1)(v) of the NER, the AER has approved the commencement and length of the regulatory control period as AusNet Services proposed in its revenue proposal. The regulatory control period will commence on 1 April 2017 and the length of this period is five years, expiring on 31 March 2022. [See also section 1.9 of the transmission determination]
In accordance with clause 6A.14.1(2) and acting in accordance with clause 6A.6.7(d) of the NER, the AER has not accepted AusNet Services' total forecast capital expenditure of $751.3 million ($2016–17). Our substitute estimate of AusNet Services' total forecast capex for the 2017–22 regulatory control period is $719.1 million ($2016–17). This is discussed in Attachment 6 of this final decision.
In accordance with clause 6A.14.1(3)(ii) and acting in accordance with clause 6A.6.6(d) of the NER, the AER has not accepted AusNet Services' total forecast operating expenditure inclusive of debt raising costs of $1057.6 million ($2016–17). Our substitute estimate of AusNet Services' total forecast opex for the 2017–22 regulatory control period is $1139.8 million ($2016–17) including debt raising costs. This is discussed in Attachment 7 of this final decision.
In accordance with clause 6A.14.1(5A) of the NER, the AER has determined that version 1 of the capital expenditure sharing scheme (CESS) as set out in the Capital Expenditure Incentives Guideline will apply to AusNet Services in the 2017–22 regulatory control period. This is discussed in Attachment 10 of this final decision. [See also section 1.8 of the transmission determination]
In accordance with clause 6A.14.1(5B) and 6A.6.2 of the NER, the AER has decided that the allowed rate or return for the 2017–18 regulatory year is 5.8 per cent (nominal vanilla), as set out in Attachment 3 of this final decision. The rate of return for the remaining regulatory years 2018–22 will be updated annually because our decision is to apply a trailing average portfolio approach to estimating debt which incorporates annual updating of the allowed return on debt.
In accordance with clause 6A.14.1(5C) of the NER the AER has decided that the return on debt is to be estimated using a methodology referred to in clause 6A.6.2(i)(2), and using the formula to be applied in accordance with clause 6A.6.2(l). The methodology and formula are set out in Attachment 3 of this final decision.
In accordance with clause 6A.14.1(5D) of the NER the AER has decided that the value of imputation credits as referred to in

[67] NEL, s. 16(1)(c).

Constituent component
clause 6A.6.4 is 0.4. This is set out in Attachment 4 of this final decision.
In accordance with clause 6A.14.1(5E) of the NER the AER has decided, in accordance with clause 6A.6.1 and schedule 6A.2, that the opening regulatory asset base (RAB) as at the commencement of the 2017–22 regulatory control period, being 1 April 2017, is $3170.3 million ($ nominal). This is set out in Attachment 2 of this final decision. [See also section 1.5 of the transmission determination]
In accordance with clause 6A.14.1(5F) of the NER the AER has decided that the depreciation approach based on forecast capex (forecast depreciation) updated for actual inflation is to be used to establish the RAB at the commencement of AusNet Services' regulatory control period as at 1 April 2022. This is discussed in Attachment 2 of this final decision. [See also section 1.5 of the transmission determination]
In accordance with clause 6A.14.1(6) of the NER the AER has approved AusNet Services' proposed negotiating framework. This is set out in Attachment 14 of this final decision. [See also section 2 of the transmission determination]
In accordance with clause 6A.14.1(7) of the NER the AER has specified the negotiated transmission services criteria for AusNet Services. This is set out in Attachment 14 of this final decision. [See also section 3 of the transmission determination]
In accordance with clause 6A.14.1(8) of the NER the AER has approved AusNet Services' proposed pricing methodology. This is set out in Attachment 12 of this final decision. [See also section 4 of the transmission determination]
In accordance with clause 6A.14.1(9) of the NER the AER has approved the following nominated pass through events to apply to AusNet Services for the 2017–22 regulatory control period in accordance with clause 6A.6.9: • terrorism event • insurance cap event • natural disaster event • insurer's credit risk event. These events have the definitions set out in Attachment 13 of this final decision. [See also section 5 of the transmission determination]

B List of submissions

We received six submissions in response to the AER's draft decision and AusNet Services' revised revenue proposal. These are listed below.

Submission from	Date received
Ararat Wind Farm	15 September 2016
Consumer Challenge Panel	21 September 2016
Energy Safe Victoria	13 October 2016
AusNet Services	19 October 2016
Consumer Challenge Panel	19 October 2016
AusNet Services	20 December 2016

AusNet Services transmission determination 2017–22

April 2017

AUSTRALIAN ENERGY REGULATOR

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AER Reference: 56417

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Shortened forms

Shortened form	Extended form
AER	Australian Energy Regulator
AR	Annual revenue
CESS	Capital expenditure sharing scheme
EBSS	Efficiency benefit sharing scheme
MAR	Maximum allowed revenue
NER	National Electricity Rules
NSP	Network service provider
NTSC	Negotiated transmission service criteria
opex	operating expenditure
PTRM	Post tax revenue model
RAB	Regulatory asset base
STPIS	Service target performance incentive scheme
TNSP	Transmission network service provider

Summary

The Australian Energy Regulator (AER) makes a transmission determination for each transmission network service provider (TNSP) in accordance with chapter 6A of the National Electricity Rules (NER).[1]

This document is our transmission determination for AusNet Services for the regulatory control period 1 April 2017 to 31 March 2022. Our reasons are included in the AER's final decision on AusNet Services' transmission determination (April 2017) which is to be read in conjunction with this document.

Our transmission determination for AusNet Services consists of:[2]

- a revenue determination in respect of the provision by AusNet Services of prescribed transmission services (section 1)
- a determination relating to AusNet Services' negotiating framework (section 2)
- a determination that specifies the negotiated transmission service criteria (NTSC) that apply to AusNet Services (section 3)
- a determination that specifies the pricing methodology that applies to AusNet Services (section 4)
- a determination that specifies pass through events that will apply to this determination in addition to those specified in the NER (section 5).

1 NER, clause 6A.2.1.

2 NER, clause 6A.2.2; 6A.7.3(a1).

1 Revenue

We calculate the amount of revenue that AusNet Services requires each year of the regulatory control period in accordance with a building block approach.[3] This is referred to as the *annual building block revenue requirement*. The annual building block revenue is then used to calculate the expected *maximum allowed revenue* (MAR) for each year of the 2017–22 regulatory control period. The annual MAR that AusNet Services may earn from providing prescribed transmission services is subject to adjustments to account for factors such as inflation, approved pass through costs and annual performance rewards or penalties.

This revenue determination specifies the following matters:[4]

- The amount of the estimated total revenue cap for the regulatory control period and the method of calculating that amount.
- The annual building block revenue requirement for each regulatory year of the regulatory control period.
- The amount of the MAR for each regulatory year of the regulatory control period or the method of calculating that amount.
- The regulatory asset base (RAB) as at the commencement of the regulatory control period.
- The methodology that will be used for the indexation of the RAB.
- The values that are to be attributed to the performance incentive scheme parameters for the purposes of the application to AusNet Services of the service target performance incentive scheme (STPIS) that applies in respect of the regulatory control period.
- The values that are to be attributed to the efficiency benefit sharing scheme parameters for the purposes of the application to AusNet Services of the efficiency benefit sharing scheme (EBSS) that applies in respect of the regulatory control period.
- How the capital expenditure sharing scheme is to apply to AusNet Services.
- The commencement and length of the regulatory control period covered by this determination.
- That depreciation for establishing the regulatory asset base as at the commencement of the following regulatory control period is to be based on a forecast capital expenditure.

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[3] NER, clause 6A.5.4.

[4] NER, clause 6A.4.2

1.1 Method for calculating estimated total revenue cap

We determine an estimated total MAR of $2741.1 million ($ nominal) for AusNet Services for the 2017–22 regulatory control period, as shown in Table 1-1. The estimated total MAR is also known as the total revenue cap. It is the sum of the expected MAR for each regulatory year.[5]

Table 1-1 AER's final determination on AusNet Services' annual expected maximum allowed revenue ($ million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Annual expected MAR (smoothed)	534.8	541.5	548.3	555.1	562.1	2741.7[a]
X factor (%)[b]	n/a[c]	1.12%	1.12%	1.12%	1.12%	n/a

Source: AER analysis.

(a) The estimated total revenue cap is equal to the total annual expected MAR.

(b) The X factors for 2018–19 to 2021–22 will be revised to reflect the annual return on debt update. Under the CPI–X framework, the X factor measures the real rate of change in annual expected revenue from one year to the next. A negative X factor represents a real increase in revenue. Conversely, a positive X factor represents a real decrease in revenue.

(c) AusNet Services is not required to apply an X factor for 2017–18 because we set the 2017–18 MAR in this determination. The MAR for 2017–18 is around 1.1 per cent lower than the approved MAR for 2016–17 in real terms, or around 1.3 per cent higher in nominal terms.

We determine the annual expected MAR by using the X factors to smooth the annual building block revenue requirement as set out below.

1.2 Annual building block revenue requirement

We determine the annual building block revenue requirement for AusNet Services as shown in Table 1-2.

[5] NER, clause 6A.5.3.

Table 1-2 AER's final determination on AusNet Services's annual building block revenue requirement ($ million, nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	Total
Return on capital	183.9	189.2	193.2	196.3	198.1	960.7
Regulatory depreciation	96.7	99.0	106.7	110.2	93.3	505.9
Operating expenditure	232.4	238.5	244.8	251.2	257.8	1224.7
Revenue adjustments	–0.2	–0.2	–0.3	–1.8	–5.4	–7.9
Net tax allowance	13.2	10.6	12.4	14.0	9.2	59.5
Annual building block revenue requirement (unsmoothed)	**526.1**	**537.1**	**556.8**	**569.9**	**553.1**	**2742.8**

Source: AER analysis.

1.3 Method for calculating maximum allowed revenue

We use an expected inflation rate in our post-tax revenue model (PTRM) to calculate the expected MAR (as shown in Table 1-3) in nominal dollar terms. The calculation of the *actual* annual MAR will require an adjustment for actual inflation. The MAR is also subject to adjustments for updating the return on debt annually, revenue increments or decrements determined in accordance with the STPIS, and any approved pass through amounts. This section sets out the method of this annual adjustment process.

The method for calculating AusNet Services's MAR for each year of the 2017–22 period will be the sum of its allowed revenue (AR) for that year and adjustments arising from the STPIS and any approved pass through amounts.

We determine the 2017–18 AR of $534.8 million for AusNet Services. AusNet Services then applies an annual adjustment to determine its AR for each subsequent year of the regulatory period, based on the previous year's AR and using the CPI–X methodology. That is, the subsequent year's AR is determined by adjusting the previous year's AR for actual inflation and the X factor determined after the annual return on debt update:

$$AR_t = AR_{t-1} \times (1 + \Delta CPI) \times (1 - X_t)$$

where:

AR = the allowed revenue

t = time period/financial year (for *t* = 2, (2018–19), 3 (2019–20), 4 (2020–21), 5 (2021–22))

ΔCPI = the annual percentage change in the Australian Bureau of Statistics' (ABS) consumer price index (CPI) all groups, weighted average of eight capital cities from September in year *t* – 2 to September in year *t* – 1

X = the smoothing factor determined in accordance with the PTRM as approved in the AER's final decision, and annually revised for the return on debt update in accordance with the formula specified in the return on debt appendix calculated for the relevant year.

The MAR is determined annually in accordance with the NER by adding to (or deducting from) the AR:

- the service target performance incentive scheme revenue increment (or revenue decrement)[6]
- any approved pass through amounts.[7]

The annual MAR is established according to the following formula:

MAR*t* = (allowed revenue) + (performance incentive) + (pass through)

$$= \mathrm{AR}_t + \left(\left(\mathrm{AR}_{t-2} \times \frac{3}{12}\right) + \left(\mathrm{AR}_{t-1} \times \frac{9}{12}\right)\right) \times \mathrm{S}_{ct} + \mathrm{P}_t$$

where:

MAR = the maximum allowed revenue

AR = the allowed revenue

S = the revenue increment or decrement determined in accordance with the service target performance incentive scheme

P = the pass through amount (positive or negative) that the AER has determined in accordance with clauses 6A.7.2 and 6A.7.3 of the NER

t = time period/financial year (for *t* = 2 (2018–19), 3 (2019–20), 4 (2020–21), 5 (2021–22))

ct = time period/calendar year (for *t* = 2 (2017), 3 (2018), 4 (2019), 5 (2020)).

Under the NER, a TNSP may also adjust the MAR for under or over-recovery amounts.[8] That is, the revenue amounts recovered higher or lower than the approved

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6 NER, clauses 6A.7.4.

7 NER, clauses 6A.7.2 and 6A.7.3.

8 NER, clauses 6A.23.3(c)(2)(iii) and 6A.24.4(c).

MAR for each year would be included in the subsequent year's MAR. In the case of an under-recovery, the amount would be added to the future year's MAR. In the case of an over-recovery, the amount would be subtracted from the future year's MAR.

Table 1-3 sets out the timing of the annual calculation of the AR and performance incentive.

Table 1-3 Timing of the calculation of allowed revenues and the performance incentive for AusNet Services

t	Allowed revenue (financial year)	*ct*	Performance incentive (calendar year)
2	1 April 2018– 31 March 2019	2	1 January 2017– 31 December 2017
3	1 April 2019– 31 March 2020	3	1 January 2018– 31 December 2018
4	1 April 2020– 31 March 2021	4	1 January 2019– 31 December 2019
5	1 April 2021– 31 March 2022	5	1 January 2020– 31 December 2020

Note: The performance incentive for 1 January 2016–31 December 2016 is to be applied to the AR determined for 2017–18 (AR_1).

1.4 Regulatory asset base

We determine an opening RAB value of $3170.3 million as at the commencement of the 2017–22 regulatory control period for AusNet Services.

1.5 Method for indexation of the regulatory asset base

The method for indexing AusNet Services's RAB for each year of the 2017–22 regulatory control period will be the same as that used to escalate its AR for that relevant year—that is, to apply the annual percentage change in the published ABS CPI all groups, weighted average of eight capital cities.[9] For AusNet Services, this will be the September quarter CPI. This method will be used as part of the roll forward of AusNet Services's opening RAB for the purposes of the AER's transmission revenue determination for the regulatory control period commencing on 1 April 2022.

1.6 Performance incentive scheme parameters

All components of version 5 of the STPIS will apply to AusNet Services for the 2017–22 regulatory control period. The parameters applicable to AusNet Services are set out in accordance with the tables below.

[9] ABS, *Catalogue number 6401.0, Consumer price index*, Australia.

Table 1-4 Final decision — Caps, floors and targets for 2017–2022

Parameter	Distribution	Cap	Target	Floor
Lines outage rate - fault	Weibull	16.0%	25.4%	33.8%
Transformers outage rate - fault	Weibull	9.2%	20.3%	31.8%
Reactive plant outage rate - fault	Pearson5	18.4%	34.3%	61.2%
Lines outage rate - forced	Weibull	12.3%	15.0%	17.1%
Transformer outage rate - forced	Weibull	6.1%	10.4%	14.4%
Reactive plant outage rate - forced	Weibull	19.9%	30.9%	40.7%
Average outage duration	Lognorm	3.4	75.1	334.2
No. of events > 0.05 system minutes	Poisson	0	2	5
No. of events > 0.30 system minutes	Poisson	0	1	2
Failure of protection system	Poisson	23	32	42
Material failure of SCADA	Poisson	0.0	1.8	4.0
Incorrect operational isolation of primary or secondary equipment	Poisson	2.0	5.6	10.0

Source: AER analysis.

Table 1-5 Final decision — MIC parameter values for 2017–2022

Calendar year	performance count[10]
2009	1417
2010	2134
2011	2687
2012	909
2013	745
2014	858*
2015	906.5*
Target	1245
Cap for unplanned outages	208

[10] Data has been adjusted by the unplanned outage cap.

Calendar year	performance count[10]
Dollar per dispatch interval (1% smoothed 2017–18 MAR / target)	$4,296/DI

Source: AER analysis.

Table 1-6 Final decision — Network capability priority projects for 2017–2022 ($ real 2016-17)

Project	Target	Expected completion date	Capex	Opex	Value
1. Replace the existing interplant connections of the Hazelwood to Jeeralang 220kV No.4 line at Hazelwood power station	Transmission Circuit Hazelwood – Jeeralang No. 4 Summer 15 minute rating: 454 (1190A) Winter 15 minute rating: 597 (1566A)	2017/18	$107,000	0	$107,000
2. Increase the operating temperature of the South East to Heywood 275kV lines from 90 to 100 degrees celsius	Increase operating temperature of these lines from 90°C to 100°C[(a)]	2017/18	$18,000	0	$18,000

Source: AusNet Services, Regulatory proposal, Appendix 7B -Network Capability Incentive Parameter Action Plan (2017-22)

a: Details of the network capacity increase to be achieved over the 5-45 degree C ambient temperature range are explained in AusNet Services' Regulatory proposal, Appendix 7B -Network Capability Incentive Parameter Action Plan (2017-22).

1.7 Efficiency benefit sharing scheme parameters

The values for the efficiency benefit sharing scheme (EBSS) parameters that are to apply to AusNet Services in the 2017–22 regualtory control period, subject to adjustments required by the EBSS, are set out in Table 1-7.

Table 1-7 AER's decision on AusNet Services' forecast opex for the EBSS ($ million, 2016–17)

	2017-18	2018-19	2019-20	2020-21	2021-22
Total forecast opex	226.9	227.4	228.0	228.5	229.0
Less debt raising costs	–1.6	–1.6	–1.6	–1.6	–1.5
Less easement land tax	–135.0	–135.0	–135.0	–135.0	–135.0
Target opex for the EBSS	90.3	90.8	91.4	91.9	92.4

Source: AER analysis.

Note: Total forecast opex for easement land tax and debt raising costs. Forecast opex does not include AIS rebates or priority projects under the STPIS network capability function.

In calculating EBSS carryover amounts, we will exclude the following costs from the EBSS:

- debt raising costs
- easement land tax.

In addition to these excluded cost categories we will also:

- adjust forecast opex to add (subtract) any approved revenue increments (decrements) made after the 2017–22regulatory determination. This may include approved pass through amounts.
- adjust actual opex to add capitalised opex that has been excluded from the RAB
- exclude categories of opex not forecast using a single year revealed cost approach for the regulatory control period beginning in 2022 where doing so better achieves the requirements of clause 6A.6.5 of the NER.

When calculating actual opex under the EBSS we will adjust reported actual opex for the 2017–22 period to reverse any movements in provisions.

1.8 Application of the capital expenditure sharing scheme

Version 1 of the CESS, as set out in the capital expenditure incentive guideline, will apply to AusNet Services in the 2017–22 regulatory control period.[11] The guideline provides for the exclusion from the CESS of capex the service provider incurs in delivering a priority project approved under the network capability component of the STPIS.[12]

[11] AER, *Capex incentive guideline*, November 2013, pp. 5–9; NER, cl 6A.6.5A(e).

[12] AER, *Capex incentive guideline*, November 2013, p. 6.

1.9 Commencement and length of the regulatory control period

The regulatory control period will be five years, commencing on 1 April 2017 and ending on 31 March 2022.

1.10 Depreciation for establishing the regulatory asset base as at the commencement of the next regulatory control period

The forecast depreciation approach (that is, based on forecast capital expenditure) will apply to the 2017–22 regulatory control period and is to be used to establish AusNet Services' RAB at the commencement of the regulatory control period from 1 April 2022.

2 Negotiating framework

AusNet Services must comply with its negotiating framework and its NTSC (see Section 3 of this determination) when it is negotiating the terms and conditions of access for negotiated transmission services to be provided to a person.[13]

AusNet Services's negotiating framework sets out the procedure to be followed during negotiations between AusNet Services and any person who wishes to receive a negotiated transmission service from AusNet Services, as to the terms and conditions of access for provision of the service.[14]

The negotiating framework in Attachment A to this determination must be adopted by AusNet Services for the regulatory control period covered by this determination.

[13] NER, clause 6A.9.2(a); 6A.9.3. AusNet Services must also comply with chapters 4, 5 and 6A of the NER.

[14] NER, clause 6A.9.5(a).

3 Negotiated transmission service criteria (NTSC)

AusNet Services must comply with its negotiating framework (see section 2 of this determination) and its NTSC when it is negotiating the terms and conditions of access for negotiated transmission services to be provided to a person.[15]

AusNet Services's NTSC sets out the criteria that are to be applied:[16]

- by AusNet Services in negotiating:
    - the terms and conditions of access for negotiated transmission services, including the prices that are to be charged for the provision of those services by AusNet Services for the regulatory control period
    - any access charges which are negotiated by AusNet Services during the regulatory control period
- by a commercial arbitrator in resolving any dispute, between AusNet Services and a person who wishes to receive a negotiated transmission service, in relation to:
    - the terms and conditions of access for the negotiated transmission service, including the price that is to be charged for the provision of that service by AusNet Services
    - any access charges that are to be paid to or by AusNet Services.

The following NTSC will apply to AusNet Services for the regulatory control period covered by this determination.

National Electricity Objective

1. The terms and conditions of access for a negotiated transmission service, including the price that is to be charged for the provision of that service and any access charges, should promote the achievement of the National Electricity Objective.

[15] NER, clause 6A.9.2(a); 6A.9.3. AusNet Services must also comply with chapters 4, 5 and 6A of the NER.

[16] NER, clause 6A.9.4

Criteria for terms and conditions of access

Terms and conditions of access

2. The terms and conditions of access for a negotiated transmission service must be fair, reasonable and consistent with the safe and reliable operation of the power system in accordance with the NER.
3. The terms and conditions of access for negotiated transmission services, particularly any exclusions and limitations of liability and indemnities, must not be unreasonably onerous. Relevant considerations include the allocation of risk between the TNSP and the other party, the price for the negotiated transmission service and the cost to the TNSP of providing the negotiated service.
4. The terms and conditions of access for a negotiated transmission service must take into account the need for the service to be provided in a manner that does not adversely affect the safe and reliable operation of the power system in accordance with the NER.

Price of services

5. The price of a negotiated transmission service must reflect the cost that the TNSP has incurred or incurs in providing that service, and must be determined in accordance with the principles and policies set out in the Cost Allocation Methodology.
6. Subject to criteria 7 and 8, the price for a negotiated transmission service must be at least equal to the avoided cost of providing that service but no more than the cost of providing it on a stand-alone basis.
7. If the negotiated transmission service is a shared transmission service that:
    (a) exceeds any network performance requirements which it is required to meet under any relevant electricity legislation; or
    (b) exceeds the network performance requirements set out in schedule 5.1a and 5.1 of the NER
8. then the difference between the price for that service and the price for the shared transmission service which meets network performance requirements must reflect the TNSP's incremental cost of providing that service (as appropriate).
9. For shared transmission services, the difference in price between a negotiated transmission service that does not meet or exceed network performance requirements and a service that meets those requirements should reflect the TNSP's avoided costs. Schedule 5.1a and 5.1 of the NER or any relevant electricity legislation must be considered in determining whether any network service performance requirements have not been met or exceeded.
10. The price for a negotiated transmission service must be the same for all Transmission Network Users. The exception is if there is a material difference in the costs of providing the negotiated transmission service to different Transmission Network Users or classes of Transmission Network Users.

11. The price for a negotiated transmission service must be subject to adjustment over time to the extent that the assets used to provide that service are subsequently used to provide services to another person. In such cases the adjustment must reflect the extent to which the costs of that asset are being recovered through charges to that other person.
12. The price for a negotiated transmission service must be such as to enable the TNSP to recover the efficient costs of complying with all regulatory obligations associated with the provision of the negotiated transmission service.

Criteria for access charges

Access charges

13. Any access charges must be based on the costs reasonably incurred by the TNSP in providing Transmission Network User access. This includes the compensation for forgone revenue referred to in clause 5.4A(h) to (j) of the NER and the costs that are likely to be incurred by a person referred to in clause 5.4A(h) to (j) of the NER (as appropriate).

4 Pricing methodology

The pricing methodology that will apply to AusNet Services for the period of this determination is set out in Attachment B .

The role of AusNet Services's pricing methodology is to answer the question ‘who should pay how much'[17] in order for AusNet Services to recover its costs. AusNet Services's pricing methodology provides a 'formula, process or approach'[18] that when applied:

- allocates the aggregate annual revenue requirement to the categories of prescribed transmission services that a transmission business provides and to the connection points of network users[19]
- determines the structure of prices that a transmission business may charge for each category of prescribed transmission services.[20]

AusNet Services's pricing methodology relates to prescribed transmission services only.

[17] AEMC, *Rule determination: National Electricity Amendment (Pricing of Prescribed Transmission Services) Rule 2006 No. 22*, 21 December 2006, p. 1.

[18] NER, 6A.24.1(b).

[19] NER, clause 6A.24.1(b)(1).

[20] NER, clause 6A.24.1(b)(2).

5 Pass through events

A pass through event is one which entails AusNet Services incurring materially lower or higher costs in providing prescribed transmission services than it would have incurred but for that event (a negative or positive change event, respectively).[21] Where a pass through event occurs AusNet Services may seek our approval to, or we may require AusNet Services to, pass those costs through to its users.[22]

Under the NER any of the following is a pass through event for this transmission determination:[23]

- a regulatory change event
- a service standard event
- a tax change event
- an insurance event
- any other event specified in this transmission determination as a pass through event for this determination.

The first four of these pass through events are prescribed by, and defined in, the NER.[24] In addition, the following nominated pass through events will apply:

Table 5-1 Approved nominated pass through events

Proposed event	Proposed definition
Terrorism event	A terrorism event occurs if: An act (including, but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of or in connection with any organisation or government), which from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear) and which increases the costs to AusNet Services in providing prescribed transmission services. Note: In assessing a terrorism event pass through application, the AER will have regard to, amongst other things: i. whether AusNet Services has insurance against the event; ii. the level of insurance that an efficient and prudent NSP would obtain in respect of the event; and iii. whether a declaration has been made by a relevant government authority that an act of terrorism has occurred.

21 NER, Chapter 10 Glossary
22 NER, clause 6A.7.3(a), (b);
23 NER, clause 6A.7.3(1a).
24 NER, Chapter 10 Glossary

Proposed event	Proposed definition
Insurance cap event	An insurance cap event occurs if: 1. AusNet Services makes a claim or claims and receives the benefit of a payment or payments under a relevant insurance policy; 2. AusNet Services incurs costs beyond the relevant policy limit; and 3. the costs beyond the relevant policy limit materially increase the costs to AusNet Services in providing prescribed transmission services. For this insurance cap event: 4. a relevant insurance policy is an insurance policy held during the 2017–22 regulatory control period or a previous regulatory control period in which AusNet Services was registered as a TNSP for the purposes of s.11 of the NEL. Note: In making a determination on an insurance cap event, the AER will have regard to, amongst other things: i. the relevant insurance policy for the event; ii. the level of insurance that an efficient and prudent TNSP would obtain in respect of the event." iii. any assessment by the AER of AusNet Services' insurance in making its transmission determination for the relevant period.
Natural disaster event	Natural disaster event means any natural disaster including but not limited to fire, flood or earthquake that occurs during the 2017-22 regulatory control period and that increases the costs to AusNet Services in providing prescribed transmission services, provided the fire, flood or other event was not a consequence of the acts or omissions of the service provider. Note: In assessing a natural disaster event pass through application, the AER will have regard to, amongst other things: i. whether AusNet Services has insurance against the event; and ii. the level of insurance that an efficient and prudent NSP would obtain in respect of the event.
Insurer credit risk event	An insurer's credit risk event occurs if: A nominated insurer of AusNet Services becomes insolvent, and as a result, in respect of an existing, or potential, claim for a risk that was insured by the insolvent insurer, AusNet Services: 1. is subject to a materially higher or lower claim limit or a materially higher or lower deductible than would have otherwise applied under the insolvent insurer's policy; or 2. incurs additional costs associated with self-funding an insurance claim, which would otherwise have been covered by the insolvent insurer. Note: In assessing an insurer's credit risk event pass through application, the AER will have regard to, amongst other things: i. AusNet Services' attempts to mitigate and prevent the event from occurring by reviewing and considering the insurer's track record, size, credit rating and reputation; and ii. in the event that a claim would have been made after the insurance provider became insolvent, whether AusNet Services had reasonable opportunity to insure the risk with a different provider.

AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

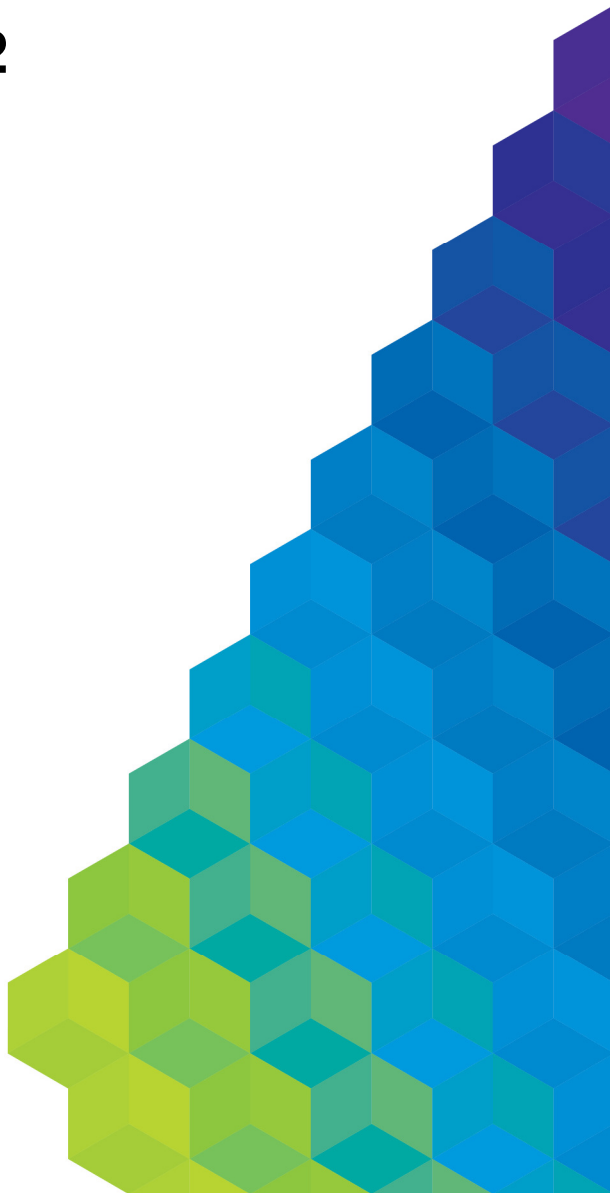
Appendix 15A: Victorian Negotiating Framework (1 April 2017 – 31 March 2022)

Submitted: 30 October 2015

Victorian Negotiating Framework

1 April 2017 – 31 March 2022

Submitted: 30 October 2015



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1. Introduction

About this negotiating framework

Clause 6A.9.5 of the National Electricity Rules requires a *Transmission Network Service Provider* to prepare a *negotiating framework* setting out the procedure to be followed during negotiations with any person who wishes to receive a *negotiated transmission service* from the *Transmission Network Service Provider*, as to the *terms and conditions of access* for the provision of the service. The *negotiating framework* must comply with and be consistent with:

- The applicable requirements of a transmission determination applying to the *Transmission Network Service Provider*; and
- The minimum requirements for a negotiating framework, which are set out in clause 6A.9.5(c) of the *Rules*.

This is the *negotiating framework* applicable to the Victorian Transmission Network, subject to the approval of the *AER* under the *Rules*. It has been prepared jointly by AEMO and AusNet Services.

This *negotiating framework* applies to AEMO and AusNet Services for the period 1 April 2017 to 31 March 2022.

Definitions

Terms appearing in italics in this document are defined in the *Rules*. Additional defined terms and abbreviations used in this document are listed below:

AEMO means the Australian Energy Market Operator Limited (ABN 94 072 010 327)

Business Day means a day that is not:

(a) a Saturday or Sunday; or

(b) observed as a public holiday in Melbourne, Victoria.

Negotiating Party – see section 3 of this *negotiating framework*.

AusNet Services means AusNet Transmission Group Pty Ltd (ABN 78 079 798 173).

TNSP means *Transmission Network Service Provider*.

Victorian Transmission Network means the declared transmission system as defined in section 33 of the *National Electricity (Victoria) Act 2005* (Vic).

What are negotiated transmission services?

A *negotiated transmission service* is defined in the *Rules* as any of the following services:

> *"(a) a shared transmission service* that*:*
>
> *(1)* exceeds *the network* performance requirements (whether as to quality or quantity) (if any) as that *shared transmission service* is required to meet under any *jurisdictional electricity legislation; or*
>
> *(2)* except to the extent that the *network* performance requirements which that *shared transmission service* is required to meet are prescribed under any *jurisdictional electricity legislation*, exceeds or does not meet the *network* performance requirements (whether as to quality or quantity) as are set out in schedule 5.1a or 5.1;
>
> *(b) connection services* that are provided to serve a *Transmission Network User*, or group of *Transmission Network Users*, at a single *transmission network connection point*, other than *connection services* that are provided by one *Network Service Provider* to another *Network Service Provider* to *connect* their *networks* where neither of the *Network Service Providers* is a *Market Network Service Provider*; or

(c) *use of system services* provided to a *Transmission Network User* and referred to in rule 5.4A(f)(3) in relation to *augmentations* or *extensions* required to be undertaken on a *transmission network* as described in rule 5.4A,

but does not include an *above-standard system shared transmission service* or a *market network service."*

2. Victorian Transmission Network Arrangements

Under the electricity transmission arrangements in Victoria, AEMO provides *shared transmission services* to users of the Victorian Transmission Network. For those purposes, AEMO procures *network* capability and related services from AusNet Services and any other party which owns and operates a part of the Victorian Transmission Network and is registered as a TNSP (also known as *declared transmission system operators*), or is exempted from registering as such by the AER.

AusNet Services is the TNSP who owns and operates the major part of the Victorian Transmission Network. AusNet Services provides and offers *connection services* to *Network Users* in respect of the major part of the Victorian Transmission Network.

Any application to *connect* to the Victorian Transmission Network will require the *Service Applicant* to enter into agreements with both *AEMO* for *shared transmission services* and AusNet Services or the relevant TNSP (as applicable) for *connection services*. Additional agreements are required if an *augmentation* of the *network* is required to facilitate the *connection*, consistent with section 50F of the *National Electricity Law* and rule 8.11 of the *Rules*. *AEMO* has primary responsibility for assessing the impact of a proposed *connection* on the Victorian Transmission Network, including its effect on other *Network Users*.

In respect of enquiries for *connection* to its *transmission network*, AusNet Services or the relevant TNSP (as applicable) has primary responsibility for assessing and advising a *Service Applicant* on the *connection assets* at the physical interface with its *transmission network* (*network exit services* and *network entry services*).

3. Application of Negotiating Framework

This *negotiating framework* applies to:

- AEMO and each *Service Applicant* who applies in writing to AEMO for the provision of *shared transmission services* which are *negotiated transmission services*; and
- AusNet Services and each *Service Applicant* who applies in writing to AusNet Services for the provision of *connection services* which are *negotiated transmission services*,

(each a **Negotiating Party** in respect of the relevant *negotiated transmission service*).

The Negotiating Parties must comply with the requirements of this *negotiating framework* in accordance with rule 6A.9.5(e).

The requirements set out in this *negotiating framework* are in addition to any requirements or obligations contained in Chapters 4, 5 and 6A and 8 of the *Rules*. In the event of any inconsistency between this *negotiating framework* and any other requirement of the *Rules*, the requirements of the *Rules* will prevail.

Nothing in this *negotiating framework* will be taken as imposing an obligation on AEMO or AusNet Services to provide any service to the *Service Applicant*.

This *negotiating framework* is intended to be capable of adoption by other *declared transmission system operators* in respect of the *connection services* they provide in Victoria, subject to *AER* approval.

4. Conduct of Negotiations

Good faith

Each Negotiating Party must negotiate in good faith the *terms and conditions of access* for the provision of the *negotiated transmission service* sought by the *Service Applicant*.

AEMO policies

AEMO may, from time to time and after public consultation, *publish* policies and associated documents relating to cost allocation and other matters relevant to the negotiation of terms and conditions for the provision of *shared transmission services*. Negotiations for the provision of those services by AEMO will be conducted in accordance with any applicable policies.

5. Timeframe for Negotiations

Chapter 5 of the *Rules* provides the framework for *connection* to the Victorian Transmission Network. Applications for *negotiated transmission services* must be commenced, progressed and finalised in accordance with the timeframes and requirements set out in Chapter 5 of the *Rules*, unless otherwise agreed between the Negotiating Parties. In addition, AusNet Services will make an offer to connect within any time period specified in its transmission licence. As at the date of this *negotiating framework*, that period is 65 Business Days after receiving all information AusNet Services reasonably requires to make the *connection* offer.

Each of AEMO and AusNet Services will give the *Service Applicant* a *preliminary program* in response to the connection enquiry as required by clause 5.3.3(b)(6) of the *Rules*, which will include reasonable milestones for provision of an offer to *connect* and for execution of a *connection agreement*.

The Negotiating Parties must use reasonable endeavours to adhere to the time periods referred to in this section, subject to section 12.

Notwithstanding any other provision of this *negotiating framework*, the timeframes referred to in this section:

- Do not commence until payment of the application fee pursuant to section 6; and
- Reset if there is a material change in the *negotiated transmission service* sought by the *Service Applicant*, unless AEMO or AusNet Services agrees otherwise.

6. Costs of Investigation and Negotiation

Prior to commencing negotiations, the *Service Applicant* must pay an application fee to AEMO and/or AusNet Services (as applicable), such amounts not being more than necessary to:

- Cover the reasonable costs of AEMO and/or AusNet Services (as applicable) anticipated to arise from investigating the *application to connect* and preparing the associated offer to *connect*; and
- Meet the reasonable costs anticipated to be incurred by other *Network Service Providers*, to the extent that their participation in the assessment of the *application to connect* will be required.

From time to time, AEMO or AusNet Services may give the *Service Applicant* a notice setting out the reasonable costs it, or any other *Network Service Provider*, incurs. If the aggregate of the costs incurred exceed the application fee and any additional amount already paid by the *Service Applicant* under this section, the *Service Applicant* must pay such excess within 20 Business Days of receipt of an invoice.

Each of AEMO and AusNet Services may require the *Service Applicant* to enter into a binding agreement with it that addresses conditions, guarantees and other matters in relation to the costs of investigation and negotiation.

7. Charges for Negotiated Transmission Services

The price (charges) for *negotiated transmission services* must be in accordance with the principles set out in clause 6A.9.1 of the *Rules*. Accordingly, an offer to *connect* will include charges which are "based on the costs incurred in providing that service, determined in accordance with the principles and policies set out in the *Cost Allocation Methodology*" (as per clause 6A.9.1(1)), and taking into account all other applicable *Negotiated Transmission Service Principles*. In relation to AEMO a reference to "*Cost Allocation Methodology*" is taken to be a reference to AEMO's published revenue methodology. As noted in section 4, AEMO may also publish (or publish amendments to) cost allocation policies applicable to *shared transmission services*.

The Negotiating Parties may agree to an alternative scope of works and price through the negotiation process.

8. Provision of Information

General commercial information

Each Negotiating Party agrees to provide to the other Negotiating Parties all such commercial information that may reasonably be required to enable those other Negotiating Parties to engage in effective negotiation for the provision of the relevant *negotiated transmission service*. The commercial information provided by AEMO or AusNet Services will include a description of the nature of the *negotiated transmission service*, including details of what AEMO or AusNet Services would provide as part of that service and the terms and conditions on which that service will be provided.

A Negotiating Party may give notice to another Negotiating Party requesting any additional commercial information that is reasonably required by the first Negotiating Party to enable it to engage in effective negotiations in relation to the provision of a *negotiated transmission service* or to clarify commercial information already provided.

A Negotiating Party who is requested to provide information under this section must use reasonable endeavours to do so within 10 Business Days of the request or as otherwise agreed by the parties.

Information about costs and charges

AEMO will identify and inform the *Service Applicant* of the reasonable costs, and/or the increase or decrease in costs (as appropriate), of providing a *negotiated transmission service* that is a *shared transmission service*.

AusNet Services will identify and inform the *Service Applicant* of the reasonable costs, and/or the increase or decrease in costs (as appropriate), of providing a *negotiated transmission service* that is a *connection service*.

AEMO or AusNet Services (as applicable) will demonstrate to the *Service Applicant*, upon request, that the charges for providing the relevant *negotiated transmission service* reflect those costs, and/or the cost increment or decrement (as appropriate).

9. Confidential Information

Commercial information required to be provided by a Negotiating Party pursuant to this *negotiating framework* does not include:

- Confidential information provided to that Negotiating Party by another person; or

- Information that the Negotiating Party is prohibited by law from disclosing.

Commercial information may be provided by a Negotiating Party subject to a condition that the other party must not provide any part of that commercial information to any other person without the consent of the party disclosing the commercial information. A Negotiating Party may require another Negotiating Party to enter into a confidentiality agreement on terms reasonably acceptable to both parties.

In processing a connection enquiry and *application to connect*:

- AEMO may be required to consult with affected *Network Service Providers* and *Transmission Network Users*; and
- AusNet Services may be required to consult with other affected *Network Service Providers*, *Transmission Network Users* and AEMO.

Having regard to these obligations the *Service Applicant* must, when providing information to AEMO or AusNet Services, specifically identify in writing any information that is not to be disclosed for the purposes of those consultations.

Unless advised to the contrary, the *Service Applicant* is taken to consent to the disclosure of its commercial information for the purposes of consultation as outlined in this section.

10. Dispute Resolution

All disputes as to the *terms and conditions of access* for the provision of a *negotiated transmission service* are to be dealt with in accordance with Part K of Chapter 6A of the *Rules*.

11. Other Network Users

In accordance with clause 6A.9.5(c)(8) of the *Rules*, AEMO and AusNet Services will determine the potential impact on other *Transmission Network Users* of the provision of the relevant *negotiated transmission service*.

AEMO and AusNet Services will notify and consult with any affected *Transmission Network Users* and ensure that the provision of the relevant *negotiated transmission service* does not result in non-compliance with any service standards or other obligations in relation to other *Transmission Network Users* under the *Rules* or a *connection agreement*.

12. Suspension of Time Periods

Any applicable timeframe for negotiation or provision of a *negotiated transmission service* as referred to in this *negotiating framework* may be suspended if:

- Within 15 Business Days of AusNet Services or AEMO (as applicable) providing the commercial information to the *Service Applicant* pursuant to section 8, the *Service Applicant* does not agree to a date for the undertaking and conclusion of commercial negotiations, until that date is agreed;
- A dispute in relation to the *negotiated transmission service* has been notified to the *AER* under clause 6A.30.1 of the *Rules*, from the date of notification of that dispute to the *AER* until the dispute is withdrawn, terminated or determined;
- Within 10 Business Days of AusNet Services requesting additional commercial information from the *Service Applicant* pursuant to section 8, the *Service Applicant* has not supplied that commercial information, until the date the information is provided;

- Without limiting the above, the *Service Applicant* does not promptly conform with any of its obligations as required by this *negotiating framework* or as otherwise agreed by the Negotiating Parties, until the date the obligations are complied with; or
- AEMO or AusNet Services has been required to consult with any affected *Network Service Providers, Transmission Network Users* (or, in the case of AusNet Services, AEMO), for the period reasonably allowed by AEMO or AusNet Services for such consultation or until the receipt of any information required from that party for the purpose of providing the *negotiated transmission service*, whichever is later.

13. Termination of Negotiations

The *Service Applicant* may elect not to continue with an application for a *negotiated transmission service* and may terminate the negotiations by giving the other Negotiating Parties written notice of its decision to do so.

AEMO or AusNet Services may terminate a negotiation under this *negotiating framework* by giving the AusNet Services or AEMO (as applicable) and the *Service Applicant* written notice of its intention to do so where:

- It is of the reasonable opinion that the *Service Applicant* will not acquire the *negotiated transmission service*;
- It believes on reasonable grounds that the *Service Applicant* is not conducting the negotiations in good faith;
- The *Service Applicant* consistently fails to comply with the obligations in this *negotiating framework*;
- The *Service Applicant* fails to pay one or more of the amounts specified in section 6; or
- An event occurs in relation to the *Service Applicant* that would be a *default event* under any of clauses 3.15.21 (a)(7) to 3.15.21(a)(15) of the *Rules* if the *Service Applicant* were a *Market Participant*.

AusNet Transmission Group Pty Ltd

Transmission Revenue Review 2017-2022

Appendix 14A: Proposed Pricing Methodology (1 April 2017 – 31 March 2022)

Submitted: 30 October 2015

Proposed Transmission Pricing Methodology

1 April 2017 – 31 March 2022

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1 Introduction

Clause 6A.10.1(a) of the National Electricity Rules (*Rules*) requires a Transmission Network Service Provider *(TNSP)* to submit a proposed *pricing methodology* to the Australian Energy Regulator (*AER*) at the same time that the provider submits its *Revenue Proposal* relating to its *prescribed transmission services*.

AusNet Services is a *TNSP* in Victoria for the purposes of the *Rules*. This document sets out AusNet Services' proposed *pricing methodology* for the period 1 April 2017 to 31 March 2022 and has been prepared in accordance with AusNet Services' obligations under the *Rules*. This pricing methodology is identical to that approved for the current regulatory control period.

It is important to note that the transmission arrangements in Victoria differ from those in other states, given the roles and responsibilities that are ascribed to AusNet Services and *Australian Energy Market Operator* (*AEMO)*. In relation to pricing matters, AusNet Services allocates its *aggregate annual revenue requirement (AARR)* to each of the *categories of prescribed transmission services*, and is also responsible for pricing *connection services*. *AEMO* is responsible for pricing *prescribed Transmission Use of System (TUOS) services* and *prescribed common transmission services*. For the purposes of clause 6A.29.1, *AEMO* is the *Co-ordinating Network Service Provider* for Victoria and allocates all relevant *AARR* within Victoria. The diagram in Appendix A shows the delineation of responsibilities between AusNet Services and *AEMO* in relation to transmission pricing under Part J of Chapter 6A of the *Rules*.

In light of the arrangements in Victoria, this proposed *pricing methodology* only addresses the pricing matters for which AusNet Services has responsibility. AusNet Services understands that AEMO will submit its own pricing methodology to the AER in accordance with the requirements of the Rules.

AusNet Services will monitor compliance with its pricing methodology, the relevant pricing principles and Part J of the NER through the established audit process conducted as part of the annual pricing process undertaken to enable AEMO to issue transmission prices. Further, AusNet Services' cost allocation methodology requires that cost reporting provides a view of cost 'outputs/outcomes' which supports pricing requirements. This is audited as part of our annual regulatory accounts process.

The remaining sections of this document are structured as follows:

- Section 2 – sets out the key requirements for pricing methodologies in the *Rules*.
- Section 3 – defines the *AARR* in accordance with the *Rules*.
- Section 4 – explains the allocation of the *AARR* to the *categories of prescribed transmission services* in accordance with clauses 6A.23.2 and 11.6.11, in order to establish the *annual service revenue requirements* (*ASRR*) for each category.
- Section 5 – explains the allocation of the *ASRR* to *transmission network connection points* in accordance with clause 6A.23.3.
- Section 6 – explains the application of the price structure principles to the charges for *connection services* in accordance with clause 6A.23.4.
- Section 7 – describes the requirements relating to information provision, and the billing arrangements in accordance with clause 6A.27.
- Section 8 – sets out AusNet Services' prudential requirements as required by rule 6A.28.

Throughout this document, terms which appear in *italics* have the meaning given to them in the *Rules*.

2 Rules Requirements

Clause 6A.24.1(b) of the *Rules* states that the pricing methodology applied by a *TNSP*:

(1) allocates the *AARR* for *prescribed transmission services* provided by that provider to:

i. the categories of *prescribed transmission services* for that provider; and
ii. transmission network connection points of Transmission Network Users; and

(2) determines the structure of the prices that a *TNSP* may charge for each of the *categories of prescribed transmission services* for that provider.

The pricing methodology must comply with the principles and guidelines established by or made under the *Rules*. Clause 6A.10.1(e) of the *Rules* requires that the proposed pricing methodology must:

(1) give effect to and be consistent with the *Pricing Principles for Prescribed Transmission Services*, which are set out in rule 6A.23; and
(2) comply with the requirements of, and contain or be accompanied by such information as is required by, the *pricing methodology guidelines* made for that purpose under rule 6A.25.

Further, under clause 6A.24.1(d), a *TNSP* must comply with the *pricing methodology* approved by the *AER* as part of a *transmission determination* that applies to that provider, and any other applicable requirements in the *Rules*, when the provider is setting the prices that may be charged for the provision of *prescribed transmission services*.

3 AusNet Services' Aggregate Annual Revenue Requirement

As required by the *Rules*, AusNet Services determines the *AARR* in accordance with rule 6A.3 and clause 6A.22.1. Clause 6A.22.1 states that for the purposes of pricing regulation, the *AARR* for *prescribed transmission services* provided by a *TNSP* is the *maximum allowed revenue* referred to in clause 6A.3.1 adjusted:

(1) in accordance with clause 6A.3.2, and

(2) by subtracting the operating and maintenance costs expected to be incurred in the provision of prescribed common transmission services.

Clause 6A.3.1 states that the revenue that a *TNSP* may earn in any regulatory year of a regulatory control period from the provision of *prescribed transmission services* is the maximum allowed revenue subject to any adjustments referred to in clause 6A.3.2, and is to be determined in accordance with:

(a) the revenue determination forming part of the applicable transmission determination; and

(b) the provisions of Part C of Chapter 6A, which relate to the regulation of revenue for *prescribed transmission services*.

The operating and maintenance costs that are subtracted from the maximum allowed revenue are determined by reference to the revenue determination operating and maintenance costs forecasts. The costs allocated to common services are those that cannot or should not be allocated to specific assets or by asset share and consist of:

- System Operation Opex;
- Non-System Opex;
- Rebates associated with the Availability Incentive Scheme;
- Land Taxes / Rates;
- Insurance and self-insurance;
- Debt and Equity Raising Costs; and
- Easement Land Tax Costs.

The effect of clause 6A.3.1 is that the *AARR* is to be determined by reference to AusNet Services' *revenue determination*. AusNet Services undertakes to ensure that the *AARR* for price setting purposes is determined in accordance with its *revenue determination* relating to the 2017-2022 *regulatory control period*.

4 Allocation of AARR to Categories of Prescribed Transmission Services

4.1 Overview of Allocation Principles

Clauses 6A.22.3, 6A.23.2 and 11.6.11 of the *Rules* provide the framework for calculating AusNet Services' *annual service revenue requirement* (*ASRR*).

Clause 6A.23.2 of the *Rules* requires the *AARR* to be allocated in accordance with the following principles:

(a) The *AARR* for a *TNSP* must be allocated to each *category of prescribed transmission services* in accordance with the *attributable cost share* for each such category of services.

(b) This allocation results in the *annual service revenue requirement* (*ASRR*) for that category of services.

(c) The allocation of the *AARR* must be such that:

  (1) every portion of the *AARR* is allocated; and

  (2) the same portion of the *AARR* is not allocated more than once.

(d) Where, as a result of the application of the *attributable cost share*, a portion of the *AARR* would be attributable to more than one *category of prescribed transmission services*, that *attributable cost share* is to be adjusted and applied such that any costs of a *transmission system* asset that would otherwise be attributed to the provision of more than one *category of prescribed transmission services*, is allocated as follows:

  (1) to the provision of *prescribed TUOS services*, but only to the extent of the *stand-alone amount* for that category of *prescribed transmission services*;

  (2) if any portion of the costs of a *transmission system* asset is not allocated to *prescribed TUOS services* under subparagraph (1), that portion is to be allocated to *prescribed common transmission services*, but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*;

  (3) if any portion of the costs of a *transmission system* asset is not attributed to *prescribed transmission services* under subparagraphs (1) and (2), that portion is to be attributed to *prescribed entry services* and *prescribed exit services*.

Clause 6A.22.3 defines *attributable cost share* as follows:

(a) For a *TNSP* for a *category of prescribed transmission services*, the *attributable cost share* for that provider for that category of services must, subject to any adjustment required under the principles in clause 6A.23.2, substantially reflect the ratio of:

  (1) the costs of the *transmission system* assets directly attributable to the provision of that *category of prescribed transmission services*; to

  (2) the total costs of all the *TNSP's transmission system* assets directly attributable to the provision of *prescribed transmission services*.

The costs of the *transmission system* assets referred to in paragraph (a) refers to optimised replacement cost or to an accepted equivalent to optimised replacement cost that is referable to values contained in the accounts of the *TNSP*.

4.2 Application of the Allocation Principles

In accordance with clause 6A.22.3(a), AusNet Services determines the *attributable cost share* for each category of *prescribed transmission services* by calculating the ratio of:

(1) the costs of the *transmission system assets* directly attributable to the provision of that *category of prescribed transmission services*; to

(2) the total costs of AusNet Services' *transmission system assets* directly attributable to the provision of *prescribed transmission services*.

In accordance with clause 6A.22.3(b), AusNet Services values its assets in accordance with an optimised replacement cost (ORC) methodology. Any optimisation will be conducted in accordance the asset valuation roll-forward methodology described in the *Rules*.

To give effect to the allocation process, the costs of *transmission system assets* must be allocated to a *category of prescribed transmission services* in accordance with clause 6A.23.2 of the *Rules*. The *categories of prescribed transmission services* to which the costs can be allocated are set out in clause 6A.23.2(d). This clause must be read together with clause 11.6.11. Clause 11.6.11 is a transitional provision which deems certain *connection services* provided to *Generators* and customers directly connected to the *transmission network* for *connections* in place or committed to be in place as at 9 February 2006 to be a *prescribed connection service*. A full description of the priority ordering methodology is provided in Appendix B to this *pricing methodology*.

The following paragraphs identify the *category or categories of prescribed transmission service* to which each of AusNet Services' asset categories (and its ORC) is allocated.

4.2.1 Lines

All lines are allocated to *prescribed TUOS services*, with the following exceptions:

- 66 kV double circuit lines between East Rowville, Cranbourne and Frankston Terminal Stations; and
- 66 kV double circuit lines between Templestowe Terminal Station and Subs DC, HB, L and WD.

The line assets listed immediately above are allocated to *prescribed exit services*, as each of the above lines is radial and connects a particular user to the *transmission network*.

4.2.2 Transformers

The main system tie transformers are allocated to *prescribed TUOS services*. Connection Transformers are allocated to *prescribed entry services* and *prescribed exit services*.

4.2.3 Switchgear

A shallow connection policy is applied in determining the allocation of switchgear. In accordance with this policy, switchgear is assigned to *prescribed entry services* and *prescribed exit services* only when those assets provide *supply* to *Network Users* connected at the *connection point*. The remainder are assigned to *prescribed TUOS services*.

4.2.4 Busbars and Rack Structures

Busbars and rack structures are not separately identified for allocation. Instead, they are included in the relevant switchgear, transformer or reactive primary bays and the establishment costs at each terminal station.

4.2.5 Reactive Compensation Plant

All reactive plant is assigned to *prescribed common transmission services* as it provides equivalent benefit to all *Transmission Network Users* with the following exceptions:

- *Reactive plant* will be assigned to *prescribed TUOS services* if the benefits of the *reactive plant* can be allocated on a locational basis, but cannot be allocated to a particular user or group of users.
- *Reactive plant* at the sub-transmission *voltage* level will be assigned to *prescribed exit services* if it is clearly evident that the plant has been provided to meet the local reactive requirements of one or more users connected at the relevant terminal station.

4.2.6 Land and Station Establishment

Land and establishment costs are apportioned between *prescribed exit services* and *prescribed TUOS services* on a case-by-case basis in accordance with the principles set out in clauses 6A.23.2 and 11.6.11.

4.2.7 Communications

All communication assets are assigned to *prescribed common transmission services*.

4.2.8 Secondary Systems

Secondary equipment is generally allocated in accordance with the allocation of the associated primary equipment.

4.2.9 Victorian Network Switching Centre

All operational costs are assigned to *prescribed common transmission services*.

4.2.10 System Spares

System spares are allocated to prescribed common transmission services.

4.2.11 Non-System Assets

Non-system assets are allocated to prescribed common transmission services.

4.2.12 Easements

Easements are allocated to prescribed common transmission services.

4.2.13 Easement Land Tax

As any land tax imposed on transmission easements in Victoria under the Land Tax Act 2005 is directly associated with the value of the easement portfolio, AusNet Services allocates this cost to *prescribed common transmission services*.

4.3 Example of the Application of the Allocation Principles

AusNet Services values its assets in accordance with an optimised replacement cost (ORC) methodology. In accordance with clause 6A.22.3(a), AusNet Services determines the *attributable cost share* for each *category of prescribed transmission services* by calculating the ratio of:

(1) the ORC of the *transmission system* assets directly attributable to the provision of that *category of prescribed transmission services*; to

(2) the total ORC of AusNet Services' *transmission system* assets directly attributable to the provision of *prescribed transmission services*.

For example, if the ORCs of the *prescribed transmission assets* have been allocated to the applicable categories of *prescribed transmission services* as shown in the table below, then the *attributable cost shares* for entry assets are calculated as shown in the formula below:

$$\text{Attributable cost share}_{Entry} = ORC_{Entry} / ORC_{Total}$$
$$= \$2{,}875{,}000 / \$104{,}460{,}000$$
$$= 0.0275$$

The *attributable cost shares* of the other categories of *prescribed transmission services* follow the same formula resulting in the *attributable cost shares* shown in the last column of the table.

Table 4.1: Step changes and zero-based costs

Category	ORC	Attributable cost share
Entry Service	2,875,000	0.0275
Exit Service	22,593,000	0.2163
TUOS Service	68,992,000	0.6605
Common Service	10,000,000	0.0957
Total	**104,460,000**	1.0000

5 Allocation of the ASRR to Transmission Network Connection Points

5.1 Overview of Allocation Principles

The next step in the *pricing methodology* is for AusNet Services to allocate the *ASRR* for each of *prescribed entry services* and *prescribed exit services* to *transmission network connection points*. This section of the proposed pricing methodology explains how that allocation is done.

It is noted that *AEMO* is responsible for allocating the *ASRR* for *prescribed TUOS services* and *prescribed common transmission services* in accordance with the *Rules*.

Clause 6A.23.3 sets out the following principles for allocating the *ASRR* to *transmission network connection points:*

(a) The whole of the *ASRR* for *prescribed entry services* is to be allocated to *transmission network connection points* in accordance with the *attributable connection point cost share* for *prescribed entry services* that are provided by the *TNSP* at that *connection point*.

(b) The whole of the *ASRR* for *prescribed exit services* is to be allocated to *transmission network connection points* in accordance with the *attributable connection point cost share* for *prescribed exit services* that are provided by the *TNSP* at that *connection point*.

Clause 6A.22.4 defines the attributable connection point cost share as follows:

(a) For a *TNSP* for *prescribed entry services* and *prescribed exit services*, the *attributable connection point cost share* for that provider for each of those categories of services must substantially reflect the ratio of:

(1) the costs of the *transmission system* assets directly attributable to the provision of *prescribed entry services* or *prescribed exit services*, respectively, at a *transmission network connection point*; to

(2) the total costs of all the *TNSP's transmission system* assets directly attributable to the provision of *prescribed entry services* or *prescribed exit services*, respectively.

(b) The costs of the *transmission system* assets referred to in paragraph (a) refer to optimised replacement cost or to an accepted equivalent to optimised replacement cost that is referable to values contained in the accounts of the *TNSP*.

5.2 Application of the Allocation Principles

In accordance with clause 6A.23.3 AusNet Services allocates the ASRR for prescribed entry services and prescribed exit services to transmission network connection points using the attributable connection point cost shares for prescribed entry services and prescribed exit services at each connection point. The attributable connection point cost shares are determined by calculating the ratio of:

(1) the costs of the *transmission system* assets directly attributable to the provision of *prescribed entry services* or *prescribed exit services*, respectively, at a *transmission network connection point*; to

(2) the total costs of all AusNet Services' *transmission system* assets directly attributable to the provision of *prescribed entry services* or *prescribed exit services*, respectively.

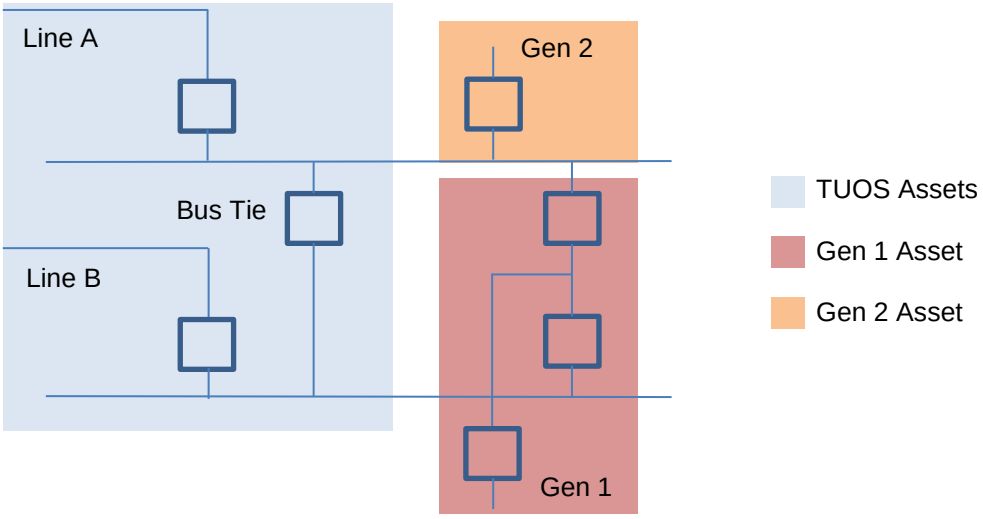
In calculating the costs used to calculate these ratios, AusNet Services values its assets in accordance with an ORC methodology. Any optimisation will be conducted in accordance with the asset valuation roll-forward methodology described in the *Rules*.

The *Rules* do not specify any principles to address the allocation of costs to multiple customers at a single terminal station. Nevertheless, AusNet Services proposes the following standard allocation methodology for multiple customers at a single terminal station with its existing customers. Customers remain free to negotiate a different methodology with AusNet Services at any time.

5.2.1 Shared Entry Services

Where more than one entry customer shares a terminal station, shared costs will be allocated by directly allocated asset optimised replacement cost (ORC) share. For example, if Generator A has been allocated dedicated assets with an ORC value of $3M and Generator B has been allocated dedicated assets with an ORC value of $1M then the remaining shared assets ORC value will be allocated with a 75%/25% split respectively. An example showing the breakdown of assets undertaken in accordance with clauses 6A.22.4 and 6A.23.3 at an entry terminal station is illustrated in the figure below.

Figure 5.1: Entry Terminal Station Example



5.2.2 Shared Exit Services

Where more than one exit customer is supplied from a terminal station, shared costs will be allocated using the following methodology:

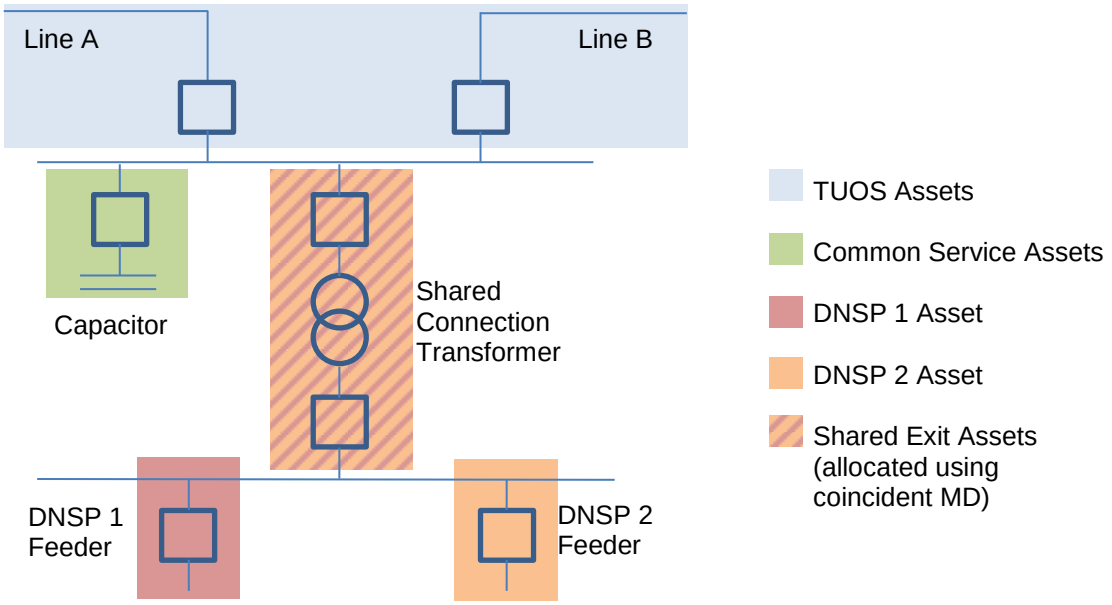
- Coincident maximum demand (average of 10 highest demand days) will be used to determine the allocation of costs between customers at shared exit terminal stations. Adjustments to the coincident maximum demand will be made where a feeder is shared between two of more customers. This information and any adjustments necessary will be agreed by all customers connected to the relevant *connection point*;
- Coincident maximum demand information provided for the allocation will be for the previous financial year. For example, in the calculation of the 2017/18 charges, data from 2016/17 would be used; and
- The proportion of shared costs allocated to a new exit customer must be calculated on the basis of a reasonable estimate of expected demand (over a period of not less than six months), consistent with the terms of the connection agreement between AusNet Services and the new exit customer.

AusNet Services will receive the required information from the relevant *Distribution Network Service Provider* as a percentage split for each shared terminal station. Non-distributor connection

customers will have identical consultation opportunities and be subject to identical allocation principles.

An example showing the breakdown of assets undertaken in accordance with clause 2.2(a)(1) of the interim arrangements at an exit terminal station is illustrated in the figure below.

Figure 5.2: Exit Terminal Station Example



5.2.3 Shared Exit and Entry Services

Where an exit customer shares a terminal station with a *Generator* or *Market Network Service Provider*, shared costs will be allocated by asset ORC share.

6 Price Structure

Clause 6A.23.4 requires a *TNSP* to develop separate prices for the recovery of the *ASRR* in accordance with the principles set out in paragraphs (b)-(i). As noted earlier, AusNet Services is responsible for the pricing of *prescribed entry services* and *prescribed exit services* only, whilst *AEMO* has responsibility for pricing *prescribed TUOS services* and *prescribed common transmission services*.

In relation to *prescribed entry services* and *prescribed exit services*, clause 6A.23.4(c) requires that prices for *prescribed entry services* and *prescribed exit services* must be a fixed annual amount. In accordance with this *Rules* requirement, AusNet Services therefore proposes that prices for *prescribed entry services* and *prescribed exit services* are fixed annual amounts.

7 Information Requirements and Billing

7.1 Compliance with Rule 6A.27

Consistent with clause 6A.27.1:

- AusNet Services will calculate the transmission service charges payable by Transmission Network Users in accordance with the transmission service prices published under clause 6A.24.2.
- AusNet Services will issue a bill to Transmission Network Users for *prescribed transmission services*.
- Where the billing for a particular financial year is based on quantities which are undefined until after the commencement of the financial year, charges will be estimated from the previous year's billing quantities with a reconciliation to be made when the actual billing quantities are known and, where the previous year's billing quantities are unavailable or no longer suitable, nominated quantities may be used as agreed between the parties.
- Where charges are to be determined for *prescribed transmission services* from metering data, these charges will be based on kW or kWh obtained from the metering data managed by *AEMO*.

AusNet Services will issue invoices to *Transmission Network Users* for *prescribed transmission services* which satisfy or exceed the minimum information requirements specified in clause 6A.27.2 on a monthly basis or as otherwise agreed in the relevant transmission *connection agreement*.

Consistent with clause 6A.27.3, a *Transmission Network User* must pay charges for *prescribed transmission services* properly charged to it and billed in accordance with this proposed *pricing methodology* by the date specified in the invoice.

As *Co-ordinating Network Service Provider* for Victoria, *AEMO* will determine the amounts of any payments payable by *TNSPs* to each other in accordance with clause 6A.27.4. Any financial transfers payable under this clause will be paid in equal monthly instalments (unless otherwise mutually agreed).

8 Prudential Requirements

8.1 Prudential requirements for prescribed transmission services

As permitted by clause 6A.28.1, AusNet Services may require a *Transmission Network User* to establish *prudential requirements* for *connection services*. These *prudential requirements* may take the form of, but need not be limited to, capital contributions, prepayments or financial guarantees.

The requirements for such *prudential requirements* will be negotiated between the parties and specified in the applicable transmission *connection agreement*.

8.2 Capital contribution or prepayment for a specific asset

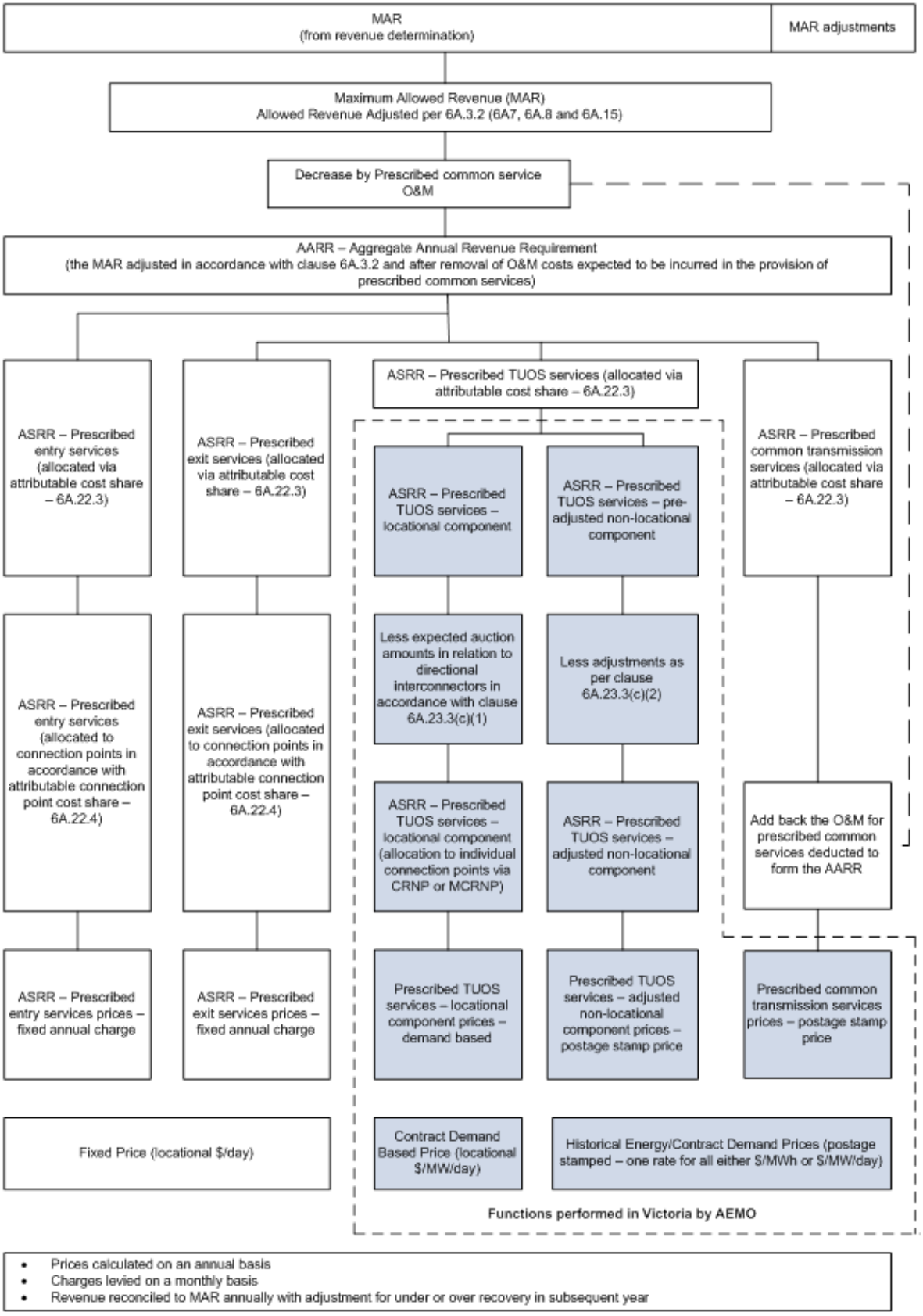
Consistent with clause 6A.28.2 of the *Rules*, where AusNet Services is required to construct or acquire specific assets to provide *prescribed connection services* to a *Transmission Network User*, AusNet Services may require the *Transmission Network User* to make a capital contribution or prepayment for all or part of the cost of the new assets installed.

In the event that a capital contribution is required, any contribution made will be taken into account in the determination of *prescribed transmission service* prices applicable to that *Transmission Network User* by way of a proportionate reduction in the ORC of the asset(s) used for the allocation of *prescribed transmission service* charges, or as otherwise negotiated between the parties.

In the event that a prepayment is required, any prepayment made will be taken into account in the determination of *prescribed transmission service* prices applicable to that *Transmission Network User* in a manner to be negotiated between the parties.

The treatment of such capital contributions or prepayments for the purposes of a *revenue determination* will, in all cases, be in accordance with the relevant provisions of the *Rules*.

Appendix A – Structure of Transmission Pricing in Victoria



Appendix B – Priority Ordering Methodology

Rules Requirements

Clause 6A.23.2 (d) of the *Rules* requires that:

Where, as a result of the application of the *attributable cost share*, a portion of the *AARR* would be attributable to more than one *category of prescribed transmission services,* that *attributable cost share* is to be adjusted and applied such that any costs of a *transmission system* asset that would otherwise be attributed to the provision of more than one category of *prescribed transmission services*, is allocated as follows:

(1) to the provision of *prescribed TUOS services*, but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*;

(2) if any portion of the costs of a *transmission system* asset is not allocated to *prescribed TUOS services*, under subparagraph (1), that portion is to be allocated to *prescribed common transmission services*, but only to the extent of the *stand-alone amount* for that *category of prescribed transmission services*; and

(3) if any portion of the costs of a *transmission system* asset is not attributed to *prescribed transmission services* under subparagraphs (1) and (2), that portion is to be attributed to *prescribed entry services* and *prescribed exit services*.

Stand-alone amount is defined as:

For a category of *prescribed transmission services*, the costs of a *transmission system* asset that would have been incurred had that *transmission system* asset been developed, exclusively to provide that *category of prescribed transmission services*.

Transitional Rule 11.6.11(c) states the following:

"For the purposes of new Chapter 6A:

(1) the costs of the *transmission system* assets that from time to time may be treated as:

  (i) directly attributable to the provision of a prescribed connection service; or

  (ii) incurred in providing a prescribed connection service,

  to a *Transmission Network User* or a group of *Transmission Network Users* at a *transmission network connection point* is limited to the costs of the eligible assets which, from time to time, provide that prescribed connection service;

(2) any costs of an existing asset or a replacement asset (or of any portion of an existing asset or a replacement asset) that:

  (i) is not an eligible asset (other than as a result of clause 11.6.11(d)); and

  (ii) is used by a *TNSP* to provide connection services to a *Transmission Network User* or a group of *Transmission Network Users* at a *transmission network connection point*,

  must be treated as costs that are directly attributable to the provision of, or are incurred in providing, *prescribed TUOS services* and, to avoid doubt, the services provided by those assets which would otherwise be *connection services* are taken to be *prescribed TUOS services*; and

(3) the *stand-alone amount* for *prescribed TUOS services* is taken to include any portion of the costs referred to in clause 11.6.11(c)(2) that has not been allocated under clause 6A.23.2(d)(1)."

This transitional provision effectively introduces a fourth step to the priority ordering requirement.

Objective and General Approach

The allocation methodology relies on the assumption that terminal station infrastructure and establishment costs are proportionate to the number of circuit breakers in the terminal station.

Based on this assumption the appropriate allocator for terminal station infrastructure and establishment costs for a stand-alone arrangement is the ratio of the number of circuit breakers in the stand-alone arrangement to the number of circuit breakers in the whole terminal station.

Proposed Methodology

Step 1: Branch Identification

Identify the branches, being the lines, *transformers*, major reactive devices and exits / entries in the terminal station which provide *prescribed TUOS services*, *prescribed common transmission services* and *prescribed exit services* or *prescribed entry services*, in the terminal station.

Step 2: Allocation of Circuit Breakers to Branches

For each *high voltage* circuit breaker in the *terminal station* identify the branches directly *connected* to it. Any circuit breaker that does not directly *connect* to a branch is excluded from allocation and all costs associated with it are added to the *terminal station* infrastructure and establishment cost.

Count the total number of circuit breakers directly *connected* to branches.

Distribution Network Service Providers (DNSPs) are classified as a *prescribed exit service* while *Generators* are classified as a *prescribed entry service*. *Negotiated transmission services* are not part of the regulated asset base and fall outside the priority ordering process detailed in clause 6A.23.2(d) of the *Rules*.

Step 3.1: Stand-alone arrangements for *prescribed TUOS services*

With reference to the number of lines providing *prescribed TUOS services* determine the number of circuit breakers required to provide *prescribed TUOS services* of an equivalent standard on a stand-alone basis. The stand-alone configuration is the simplest *terminal station* configuration (in the absence of development) had it been developed to provide a *prescribed TUOS service*. This may be done by way of a look up of typical stand-alone configurations.

Step 3.2: Stand-alone arrangements for prescribed common transmission services

With reference to the number of lines providing *prescribed TUOS services* and the devices providing *prescribed common transmission service* determine the number of circuit breakers required to provide *prescribed common transmission services* of an equivalent standard on a stand-alone basis. The stand-alone configuration is the simplest *terminal station* configuration (in the absence of development) had it been developed to provide a *prescribed common transmission service*. This may be done by way of a look up of typical stand-alone configurations.

Step 4: Allocation of terminal station infrastructure and establishment costs

Step 4.1 – Allocation of prescribed TUOS services

Allocate a portion of *terminal station* infrastructure and establishment costs to *prescribed TUOS services* according to the ratio of the *high voltage* circuit breakers identified in step 3.1 to the total number of *high voltage* circuit breakers *connected* to branches in the *terminal station* identified in step 2.

Step 4.2 – Calculation of the Unallocated Terminal station Infrastructure Costs (after prescribed TUOS service Allocation)

Calculate the unallocated terminal station infrastructure cost (after *prescribed TUOS services allocation*) by subtracting the amount calculated in step 4.1 from the total *terminal station* infrastructure amount.

Step 4.3 – Allocation of Prescribed Common Transmission Service

Allocate a portion of the *terminal station* infrastructure and establishment costs to *prescribed common transmission service*s based on to the ratio of the *high voltage* circuit breakers providing *prescribed common transmission services* identified in step 3.2 to the total number of *high voltage* circuit breakers *connected* to branches in the terminal station. If the *prescribed common transmission services* portion of *terminal station* infrastructure is greater than the unallocated costs, then the unallocated portion only is attributed to *prescribed common transmission services*. In this instance, nothing will be attributed to *prescribed entry services* and *prescribed exit services*.

Step 4.4 – Calculation of the Unallocated Terminal Station Infrastructure Costs (after prescribed common transmission service Allocation)

Calculate the unallocated *terminal station* infrastructure cost (after *prescribed common transmission services* allocation) by subtracting the amount calculated in step 4.3 from the amount calculated in step 4.2.

Step 4.5 – Allocation of Prescribed Entry and Exit Service costs to Prescribed TUOS services per 11.6.11

Allocate the remaining *terminal station* infrastructure and establishment costs (calculated in step 4.4) to each branch providing *prescribed TUOS services* based on the ratio of the *high voltage* circuit breakers providing the *prescribed TUOS services* to the branch to the total number of *high voltage* circuit breakers providing *prescribed TUOS services* or in accordance with the cost allocation process in section 4 of this Pricing Methodology as appropriate.

Notes

Costs are only allocated in step 4 until fully allocated.

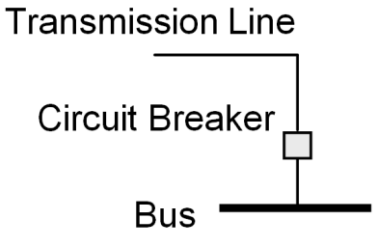
Consistent with clause 6A.23.2(d)(3) of the *Rules* it is possible that no costs will be attributed to *prescribed entry services* and *prescribed exit services*.

New and existing *negotiated transmission service* assets are excluded from the analysis as any incremental establishment costs associated with them are taken to be included in the *negotiated transmission services* charges on a causation basis.

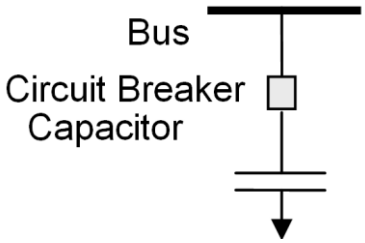
The assessment of standalone arrangements only needs to be conducted once per terminal station except where changes to the configuration of the terminal station occur.

Definition – Branches

As illustrated by the diagrams below a "Branch" is a collection of assets (e.g. lines, circuit breakers, capacitors, buses and *transformers*) that provide a *transmission service*.



Branch with Transmission Line, Bus and Circuit Breaker

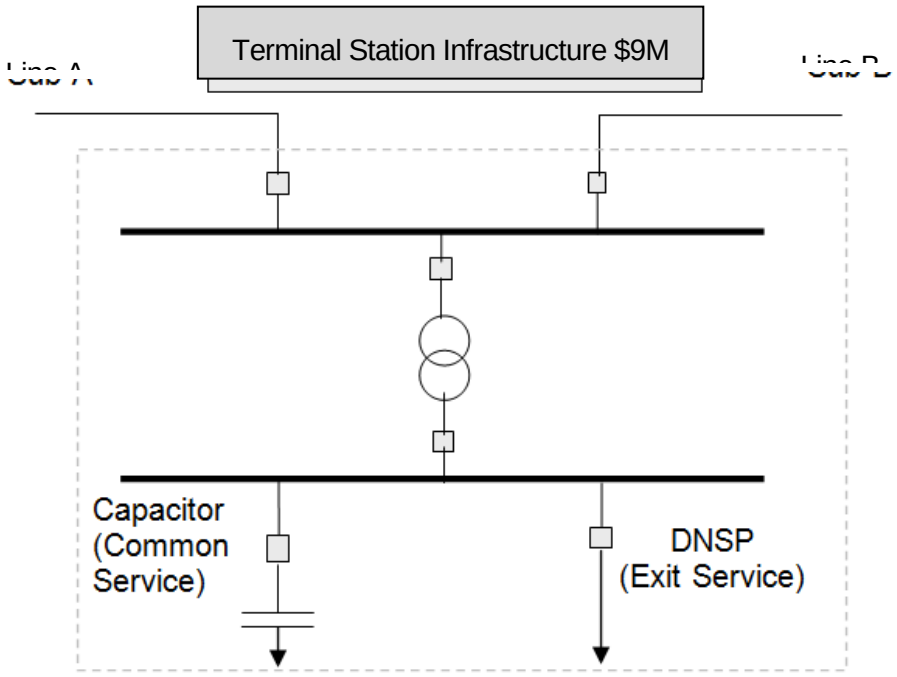


Branch with Capacitor, Circuit Breaker and Bus

Examples

A1.1 Example A

Terminal Station Configuration



Step 1: The branches are Line A, Line B, DNSP, Tie Transformer and *prescribed common transmission services*.

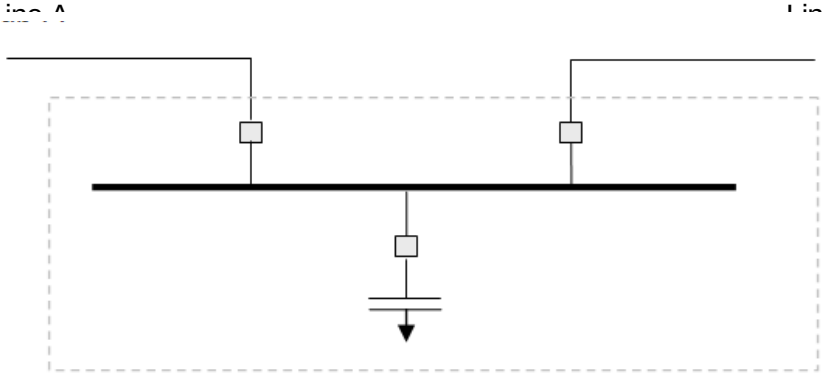
Step 2: The total number of circuit breakers directly *connected* to branches is 6.

Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS Service

Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone Prescribed Common Transmission Service



Step 4:

Assume total Infrastructure cost is $9m.

Costs are allocated to *prescribed TUOS services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to *prescribed TUOS services* = (2/6) x $9m = $3m

Unallocated Terminal Station Infrastructure Costs (after *prescribed TUOS services* allocation) = $9m - $3m = $6m

Costs are allocated to *prescribed common transmission services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to *prescribed common transmission services* = (3/6) x $9m = $4.5m

Unallocated *Terminal Station* Infrastructure Costs (after *prescribed common transmission service* allocation)

= $6m - $4.5m = $1.5m

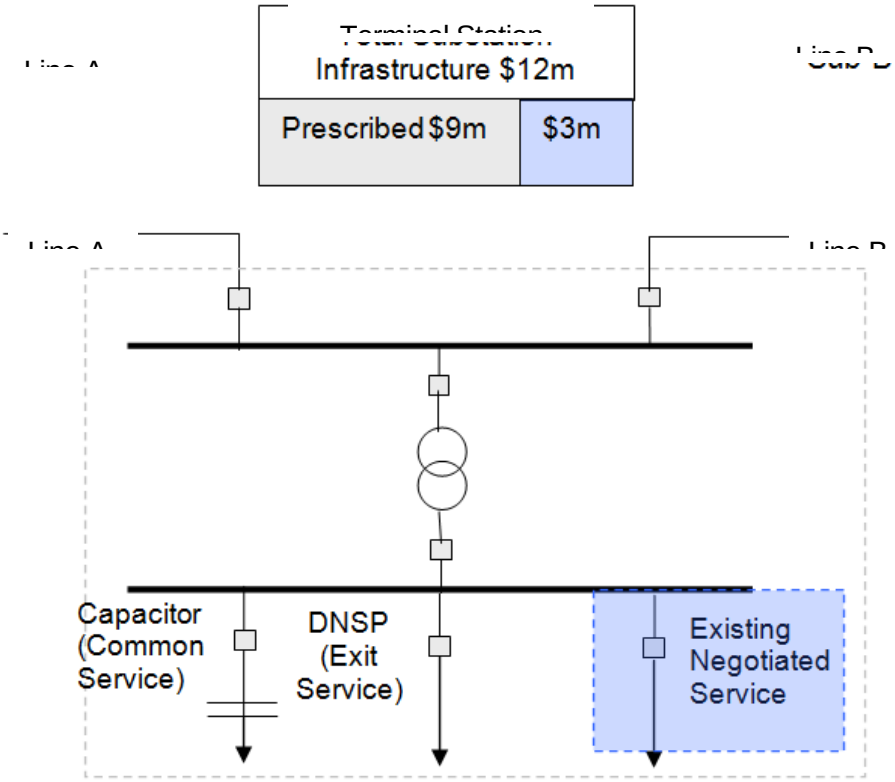
Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS services* per clause 11.6.11 of the *Rules*

Infrastructure Cost allocated to *prescribed TUOS services* = $1.5m

Item	Number	Allocation	Unallocated
Terminal station infrastructure costs		9,000,000	9,000,000
Total Breakers	6		
TUOS Stand-alone breakers	2		
Share to TUOS (a)	0.333	3,000,000	6,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.500	4,500,000	1,500,000
Share to TUOS (b)		1,500,000	
Total Share to TUOS (a) + (b)		4,500,000	
Total Share to Common Service		4,500,000	

A1.2 Example B

Terminal Station Configuration



Step 1: The branches are Line A, Line B, DNSP, Tie Transformer, *prescribed common transmission services* and an existing negotiated service.

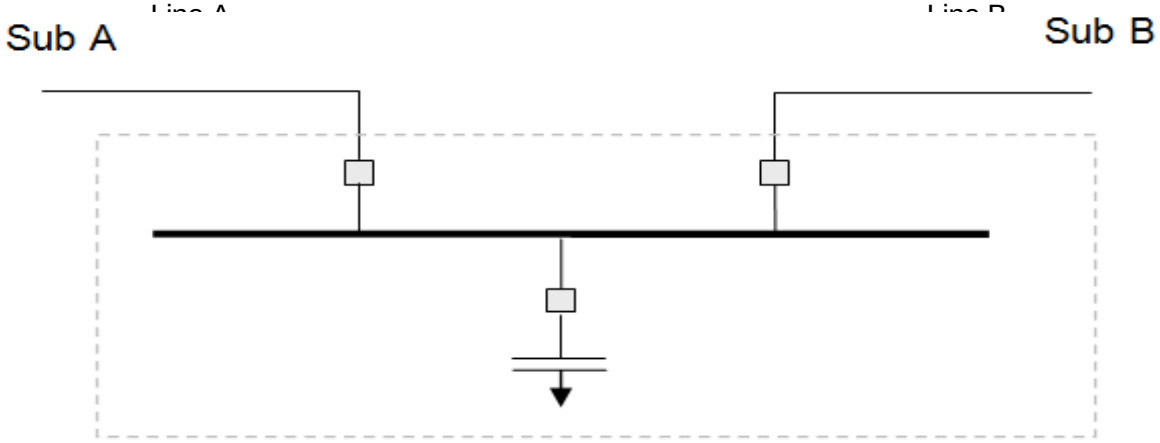
Step 2: The total number of circuit breakers directly *connected* to branches is 6 (no prescribed costs are allocated to the existing *negotiated transmission service*).

Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS Services

Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone Prescribed Common Transmission Services



Step 4:

Assume total Infrastructure cost is $12m, however $3m is for the existing *negotiated transmission service*, which does not form part of the regulated asset base and is not governed by clause 6A.23.2(d) of the *Rules*.

Costs are allocated to *prescribed TUOS services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to *prescribed TUOS services* = (2/6) x $9m = $3m

Unallocated Terminal station Infrastructure Costs (after *prescribed TUOS services* allocation) = $9m - $3m = $6m

Costs are allocated to *prescribed common transmission services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to *prescribed common transmission services* = (3/6) x $9m = $4.5m

Unallocated *Terminal Station* Infrastructure Costs (after *prescribed common transmission services* allocation)

= $6m - $4.5m = $1.5m

Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS services*.

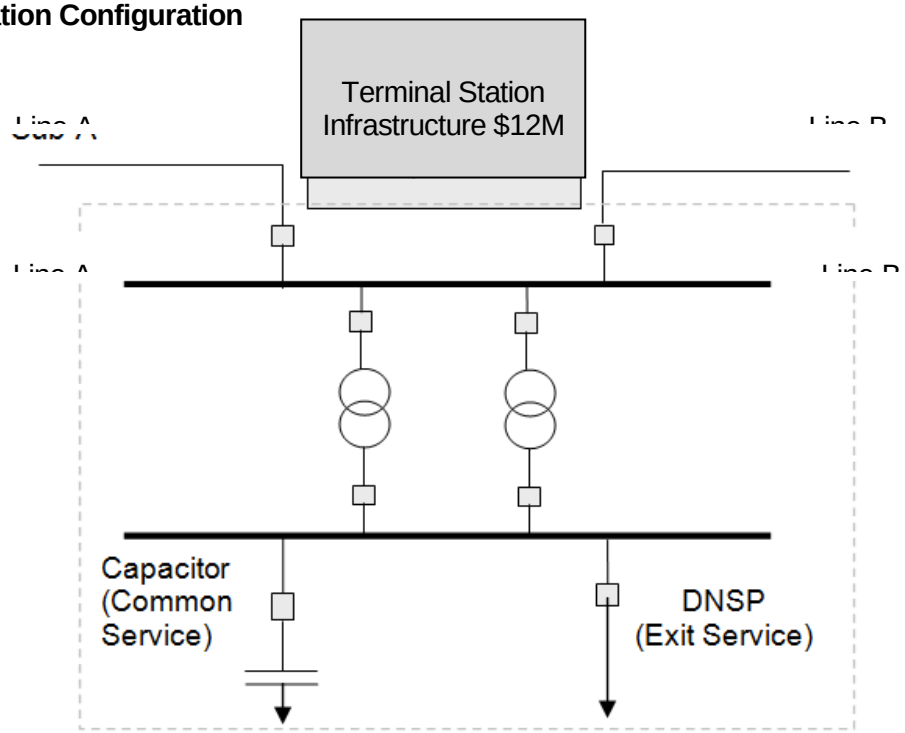
Infrastructure Cost allocated to *prescribed TUOS services* = $1.5m

Item	Number	Allocation	Unallocated
Terminal station infrastructure costs		9,000,000	9,000,000
Total Breakers	6		
TUOS Stand-alone breakers	2		

Item	Number	Allocation	Unallocated
Share to TUOS (a)	0.333	3,000,000	6,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.500	4,500,000	1,500,000
Share to TUOS (b)		1,500,000	
Total Share to TUOS		4,500,000	
Total Share to Common Service		4,500,000	

A1.3 Example C

Terminal Station Configuration

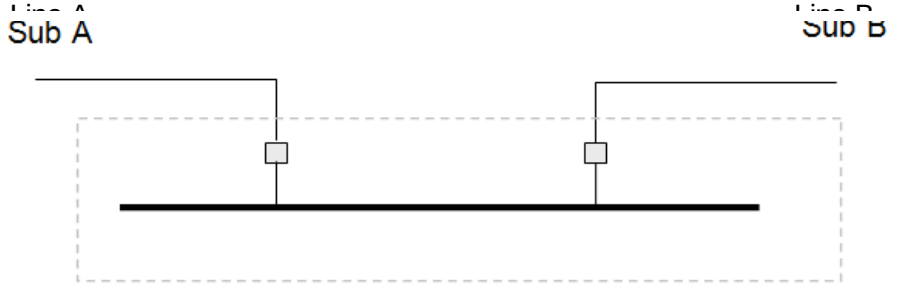


Step 1: The branches are Line A, Line B, DNSP, Tie Transformer 1, Tie Transformer 2 and *prescribed common transmission service*.

Step 2: The total number of circuit breakers directly *connected* to branches is 8.

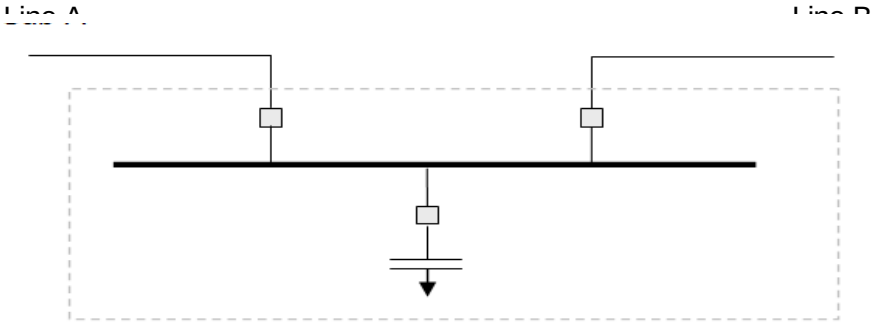
Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS services



Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone Prescribed Common Transmission Service



Step 4:

Assume total Infrastructure cost is $12m.

Costs are allocated to *prescribed TUOS services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to *prescribed TUOS services* (a) = (2/8) x $12m = $3m

Unallocated Terminal Station Infrastructure Costs (after *prescribed TUOS services* allocation) = $12m - $3m = $9m

Costs are allocated to *prescribed common transmission service* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to *prescribed common transmission services* = (3/8) x $12m = $4.5m

Unallocated Terminal Station Infrastructure Costs (after *prescribed common transmission services* allocation)

= $9m - $4.5m = $4.5m

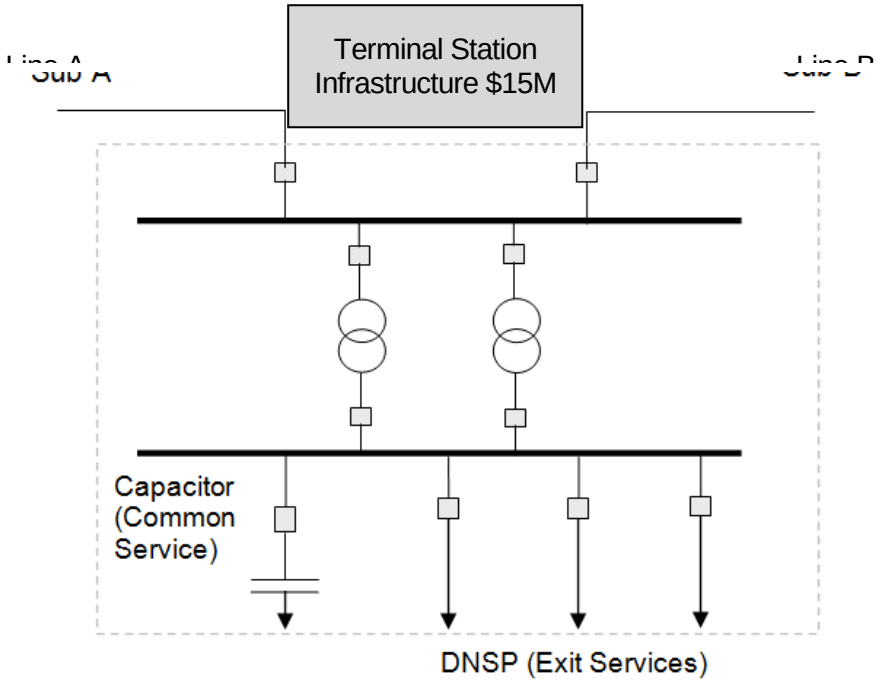
Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS services.*

Infrastructure Cost allocated to *prescribed TUOS services (b)* = $4.5m

Item	Number	Allocation	Unallocated
Terminal station infrastructure costs		12,000,000	12,000,000
Total Breakers	8		
TUOS Stand-alone breakers	2		
Share to TUOS (a)	0.250	3,000,000	9,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.375	4,500,000	4,500,000
Share to TUOS (b)		4,500,000	
Total Share to TUOS		7,500,000	
Total Share to Common Service		4,500,000	

A1.4 Example D

Terminal Station Configuration



Step 1: The branches are Line A, Line B, *DNSP*1, *DNSP*2, *DNSP*3, Tie Transformer 1, Tie Transformer 2 and PCS.

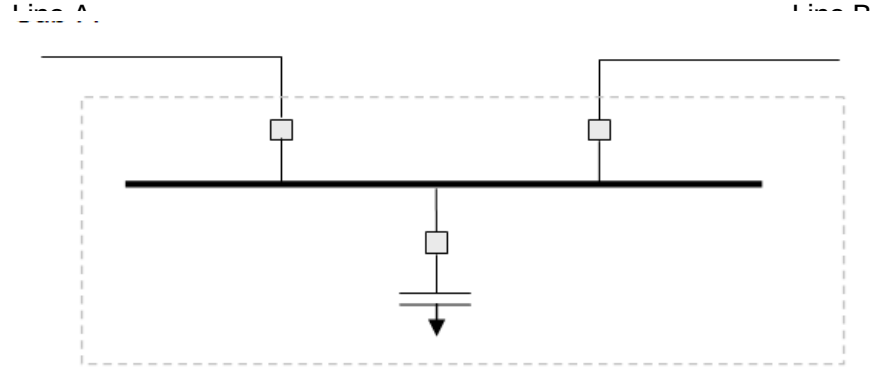
Step 2: The total number of circuit breakers directly *connected* to branches is 10.

Step 3.1: The stand-alone arrangement for the provision of *prescribed TUOS services* to an equivalent standard is shown below and consists of 2 circuit breakers.

Stand Alone Prescribed TUOS services

Step 3.2: The stand-alone arrangement for the provision of *prescribed common transmission services* to an equivalent standard is shown below and consists of 3 circuit breakers.

Stand Alone Prescribed Common Transmission Service



Step 4:

Assume total Infrastructure cost is $15m.

Costs are allocated to *prescribed TUOS services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost Allocated to *prescribed TUOS services* (a) = (2/10) x $15m = $3m.

Unallocated Terminal Station Infrastructure Costs (after *prescribed TUOS services* allocation) = $15m - $3m = $12m.

Costs are allocated to *prescribed common transmission services* in the ratio of the circuit breakers in the stand-alone arrangement to the total circuit breakers.

Infrastructure Cost allocated to *prescribed common transmission service* = (3/10) x $15m = $4.5m.

Unallocated Terminal Station Infrastructure Costs (after *prescribed TUOS services allocation*) = $12m - $4.5m = $7.5m.

Remainder of unallocated (calculated above) to be allocated to *prescribed TUOS services*.

Infrastructure Cost allocated to *prescribed TUOS services* (b) = $7.5m.

Item	Number	Allocation	Unallocated
Terminal station infrastructure costs		15,000,000	15,000,000
Total Breakers	10		
TUOS Stand-alone breakers	2		
Share to TUOS (a)	0.200	3,000,000	12,000,000
Common Service stand-alone breakers	3		
Share to Common Service	0.300	4,500,000	7,500,000
Share to TUOS (b)		7,500,000	
Total Share to TUOS		10,500,000	
Total Share to Common Service		4,500,000	

GAMMA AND THE ACT DECISION

Dr Martin Lally
Capital Financial Consultants Ltd

23 May 2016

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EXECUTIVE SUMMARY

The Australian Competition Tribunal has recently released a decision on a number of matters including the appropriate method for estimating gamma. In response, the AER has posed a series of questions to me. My principal conclusions are as follows.

Firstly, within the Officer model, theta is a weighted average over the utilization rates for imputation credits by individual investors and these utilization rates are 1 if investors can use the credits and zero otherwise. So, theta is not the market value of the credits. Transactions and administrative costs incurred by investors in dealing with these credits cannot be dealt with by reducing the estimate for theta and, if considered important (which I do not think to be the case) would have to be addressed through an extension to the Officer model. Furthermore, this extension would only matter to the extent that the firm's equity beta differed from 1. Otherwise, such costs that are reflected in the empirical estimate for the MRP that is used by the regulator would deal with this issue.

Secondly, the AER's approach to imputation credits is consistent with the post-tax framework in the NER and NGR. This framework determines the allowance for company taxes but gives discretion over the cost of equity to the AER subject to it reflecting the market situation, being nominal, and consistent with the treatment of imputation credits in the allowance for company taxes. The AER unsurprisingly chose the Officer model, and rigorous proofs of this model reveal that theta is a weighted average over the "utilization rates" of individual investors, with the utilization rate being 1 for investors who are eligible to use the credits and 0 otherwise. So, theta is not the market value of the credits and therefore does not point to sole or primary use of implied market value studies to estimate this parameter. Such studies are merely one of a number of possible approaches to this matter, consistent with the AER's approach.

Thirdly, theta when properly defined in accordance with the Officer model is not affected by personal tax rates whilst the coefficient on imputation credits in a dividend drop-off study is affected by differences in the personal tax rates on capital gains and dividends, and is therefore a deficient estimate unless a correction is made for this issue. In addition, the cost of equity pre personal tax is affected by differences in personal tax rates on capital gains,

dividends and interest but estimates obtained from the Officer model will in general fail to do so correctly because this model assumes that there are no such tax differences.

Fourthly, conditional upon recognizing the existence of foreign investors when estimating theta, this parameter could be estimated in three different ways. In estimating theta from the proportion of Australian equities held by local investors, I favour the use of all equity rather than only listed equity and therefore an estimate for theta of at least 60%. In addition, estimation errors in either direction could arise from deviations from the assumption that the terms other than the value weights on the RHS of equation (8) are uniform across investors. I do not think that the latter is a substantial issue. Accordingly, the reliability of the estimate is high. Furthermore, since any estimate of theta of this type is subject to errors in either direction, it is *not* an upper bound on an estimate of theta. In addition, a correctly measured redemption rate for credits is an upwardly biased estimator for theta because local investors would tilt towards stocks with high imputation credit yields. Furthermore, since the ATO data from which the redemption rate is estimated contains significant unexplained discrepancies, which give rise to two significantly different estimates of the redemption rate, any such estimate of theta is unreliable. In addition, since the AER chooses the lower of the two possible estimates (0.45) that have been generated from the data source it uses, and the other is 0.62, this possible underestimation of the redemption rate may exceed the upward bias resulting from local investors tilting towards stocks with high imputation credit yields. So, the AER's estimate of 0.45 for the redemption rate is *not* an upper bound on an estimate for theta. In respect of the difference between the AER's estimate of 0.45 for the redemption rate and their estimate for the local ownership proportion of local equity of about 60%, I think the most likely explanation is that the figure of 0.45 is too low. In respect of the impact of the 45 day rule, the rule constrains tax arbitrage and therefore minimizes the gap between the correctly estimated redemption rate and the proportion of Australian equities held by local investors. The rule also prevents some 'genuine' investors from obtaining the credits, and therefore drives down the redemption rate, but this downward effect is unlikely to be significant because 'genuine' investors have the option of changing the timing of their transactions and would have strong incentives to do so. Finally, in respect of dividend drop-off studies as estimators of theta, I concur with the AER's view that they warrant very limited weight for reasons identified by the AER. Accordingly, I think that the equity ownership approach (with an estimate of at least 0.60) should be given most weight because the estimate seems quite reliable, lesser weight should be given to the redemption rate (0.45 to 0.62)

because of the upward bias and the significant discrepancies within the data source used to estimate it, and minimal weight to dividend drop-off studies for reasons identified by the AER (with an estimate of 0.35 from the SFG study relied on by the ACT). So, conditional upon recognizing the existence of foreign investors when estimating theta, this evidence suggests an estimate for theta of about 0.60.

Fifthly, when estimating theta from market-based studies, the estimated coefficient on imputation credits should be corrected using the estimate of the coefficient on cash dividends, so as to remove the effect of other factors affecting the value of imputation credits.

Sixthly, since the distribution rate is a firm-specific parameter whilst theta is a market parameter, theta must be estimated using market-wide data whilst the distribution rate could be estimated using firm, industry, or sector-wide data according to which was judged to provide the best estimate for this firm-specific parameter. So, consistency is *not* essential and I therefore disagree with the AER on this point. Furthermore, pragmatic considerations point to use of sector-wide data of some sort. Since the distribution rates for listed and unlisted businesses are significantly different and (private) regulated businesses are listed or owned by listed parents, the distribution rate for regulated businesses should be estimated from that of listed equity. The choices here are ATO data on all listed equity or financial statement data on a subset of high value firms constituting a majority of the value of listed equity. Since the ATO data contains significant unresolved discrepancies, this favours the use of financial statements for a subset of high value firms and an estimate of this type is 0.83 for the top 20 such firms. Finally, Frontier's claim that firms with significant foreign operations have higher distribution rates than firms without such operations, and are therefore unsuitable for estimating the distribution rate of regulated businesses (which do not have foreign operations), appears to be false and the observed opposite pattern can be explained through the investment of profits required to finance these foreign operations. Accordingly, the effect of these firms with foreign operations being included within the set of firms used to estimate the distribution rate for the benchmark firm (with only local operations) is to underestimate rather than overestimate the distribution rate for the benchmark firm. Thus, the estimate for the distribution rate of 0.83 is likely to be too low for the benchmark firm rather than too high.

Finally, and again conditional upon recognizing the existence of foreign investors when estimating theta, coupling my estimate of the distribution rate of at least 0.83 with my estimate of theta of 0.60 yields my estimate for gamma of at least 0.50. This contrasts with the AER's estimate for gamma of 0.40.

1. Introduction

The Australian Competition Tribunal (ACT, 2016) has recently released a decision on a number of matters including the appropriate method for estimating gamma. In response, the AER has posed a series of questions to me (the TOR is in the Appendix). Before seeking to respond to those questions, I present some background discussion.

2. Background

Australian regulatory practice is to invoke the Officer (1994) valuation model for determining the allowed price or revenues in a regulatory situation. In the interests of focusing upon the crucial issue, I consider the case in which the firm is all equity financed and the expected cash flows are constant. Letting Y denote the firm's cash flows before company tax, TAX the company tax payments made by the firm, R_f the risk-free rate before personal tax and other personal costs, R_m the rate of return on the market portfolio exclusive of imputation credits and also before personal tax and other personal costs, Q_m the ratio of imputation credits attached to dividends on the market portfolio to the value of that portfolio one year earlier, β the beta for this firm, F the distribution rate for the firm's credits, and θ a parameter whose definition and value are contentious, the value now of the firm is as follows:

$$S = \frac{E(Y) - E(TAX) + E(TAX)F\theta}{R_f + [E(R_m) - R_f + E(Q_m)\theta]\beta} \qquad (1)$$

It is uncontentious that "gamma" is the product $F\theta$. Turning now to the parameter θ ("theta"), there are a range of opinions about this including the market value per $1 of distributed imputation credits.[1] One widely cited authority is clause 6.5.3 of the National Electricity Rules (AEMC, 2016), which defines gamma as the "value of imputation credits". By implication, θ must be the value per $1 of distributed credits. However, consistent with finance involving considerable recourse to mathematical formulas, the word "value" in a valuation model is capable of meaning the "numerical level" of a parameter. This has no particular market value connotations, and it would not even be true to say that "value"

[1] I will denote this parameter as theta rather than the utilization rate, because the former is a more neutral term.

ordinarily means market value in this context.[2] Even the ACT (2016, para 1010) implicitly recognizes that "value" could mean "numerical level" because it defines the distribution rate by using the word "value", by which they must mean the "numerical level" of this parameter because market value has no application here. Furthermore, the NER is not the arbiter on this matter. Nor is the ACT, despite submissions to that effect (United Energy, 2016). Instead, one must look to the relevant academic literature. This commences with Officer (1994), who implicitly assumes that the distribution rate is 1 and hence gamma and θ are equivalent. Officer (1994) initially defines gamma as the "value of the personal tax credits" (ibid, page 1). This may or may not be intended to mean market value. Subsequently, he defines it as the "proportion of tax collected from the company which gives rise to the tax credit associated with a franked dividend" (ibid, page 4), which clearly is not a market value. He then states that "gamma can be interpreted as the value of a dollar of tax credits to the shareholder" (ibid, page 4), with a footnote to this stating that

"*For example, if the shareholder can fully utilise the imputation tax credits then gamma = 1, eg a superfund or an Australian resident personal taxpayer…Where there is a market for tax credits one could use the market price to estimate the value of gamma for the marginal investor…*"

This implies that gamma is not a market price and is instead something that can be *estimated* from market prices. Furthermore, Officer provides no formal derivation of his model and therefore it is not possible to determine unambiguously how the parameter gamma is defined in his model. By contrast, papers by Monkhouse (1993) and Lally and van Zijl (2003) provide rigorous derivations of the Officer model. In particular, Lally and van Zijl (2003, section 3) provide a formal derivation of a generalisation of Officer's model (with the Officer model being a special case). In this derivation, they show that θ is a complex weighted average over the "utilization" rates for imputation credits of all investors holding risky assets, where the weights involve each investor's investment in risky assets and other terms. Letting U_i denote the utilisation rate for investor *i*

$$\theta = \sum x_i U_i \qquad (2)$$

[2] Corrs Chambers Westgarth (2015, para 93), in submissions to the ACT, states that "the word 'value' ordinarily means worth". I think this statement true in ordinary usage, but not in the present context of a valuation model.

In respect of U_i, this appears within the definition of the post-tax rate of return on asset j for investor i (R_{ji}),i.e., letting P_j denote the price of the asset at the beginning of the period, ΔP the price change over the period, D_j the cash dividend during the period, IC_j the attached imputation credits, T_i the tax rate on gross dividends received by investor i, and T_{gi} the tax rate on capital gains received by investor i, then:

$$R_{ji} = \frac{\Delta P}{P_j}(1-T_{gi}) + \frac{D_j\left(1+U_i IC_j\right)}{P_j}(1-T_{pi}) \qquad (3)$$

So, U_i is the augmentation to the cash dividend received by investor i per \$1 of imputation credit. This reflects the *eligibility* of the investor to use the credits; U_i = 1 if the investor is eligible to use the credits and 0 otherwise. So, definitionally, θ is *not* the market value per \$1 of distributed credit (although the two might match under particular circumstances). Furthermore, θ cannot be directly determined because all components of the weights in (2) are not observable. So, it must be estimated and a variety of methods have been invoked.

The ACT (2016, paras 1075-1076) dismisses the relevance of Monkhouse (1993) and Lally and van Zijl (2003) on the grounds that these papers are extensions of the Officer (1994) model, and therefore give rise to different definitions of theta. This claim is *not* correct. Although these additional papers are extensions of the Officer (1994) model, they also embrace the Officer (1994) model as a special case. Thus, the definition for theta that appears in these papers *must* also be the definition in the Officer model.

Having established what theta is, I now turn to certain assumptions that underlie equation (3). Firstly, if an investor is eligible to utilize imputation credits, a \$1 increment to IC_j is as good as a \$1 increment to D_j. Secondly, the only subtraction from the dividends received by an investor is personal tax. Thus, there are assumed to be no transactions costs, administrative costs or delays in receiving dividends or the credits. These assumptions are particularly important because these additional phenomena have been the subject of considerable debate in relation to imputation credits. One view is that these additional phenomena exist, estimates of θ derived from market prices reflect them, and this is an advantage to these estimates (see AGN, 2016, pp. 11-12). Clearly, a proponent of this view would not be

invoking equation (3). Instead they might be thought to be using (3) subject to defining U_i to be the augmentation to the dividend arising from IC_j but net of any transactions costs, administrative costs, and delays in receipt associated with the credits. So, even for an investor who is eligible to use the credits, U_i would be less than 1. However, for an investor who is eligible to use the credits, the tax rate T_i is levied on the sum of D_j and IC_j as shown in equation (3) and therefore U_i must be 1 for such an investor. So, if such costs were recognized, they would have to be recognized through an additional term in equation (3) rather than merely through the estimate for U_i. This additional term would flow through to the denominator of equation (1) and the resulting model would not be the Officer model. Furthermore, if these additional costs were recognized in respect of imputation credits, they would also have to be recognized in respect of cash dividends, and therefore a further term would have to be added to equation (3), with flow through to the denominator of equation (1). Again, this model would not be the Officer model. Letting C denote this additional term for the firm in question, and C_m its counterpart for the market portfolio, equation (3) would become

$$S = \frac{E(Y) - E(TAX) + E(TAX)F\theta - C}{R_f + [E(R_m) - R_f + E(Q_m)\theta - C_m]\beta} \tag{4}$$

In addition, the value for $E(R_m)$ would be higher to reflect the existence of these costs, and this would be reflected in the empirical estimate. Failure to explicitly recognize these costs would not matter if beta were equal to 1, because the omissions net out in the denominator and numerator of equation (4), leaving only the increment in $E(R_m)$ and this would be empirically recognized. For regulatory purposes, with a beta of 1, the allowed rate of return would include the empirical estimate of $E(R_m)$ or the MRP and therefore would allow for these costs. However, with the AER's beta of 0.70, the failure to use a formula that explicitly accounted for them would imply that 30% of these costs were not compensated for. This is not a material issue because these costs are very small (as a proportion of the cash dividend or the imputation credits as appropriate) but I have explored the theoretical implications because these costs have been the subject of so much debate in the present situation.[3]

[3] In respect of the administrative costs of the imputation credits, these consist of retaining the notice relating to the credits that accompanies the dividend payment and a few minutes additional time in the course of filling out a tax return. In respect of delays in receiving the credits, the amount is certain and therefore the appropriate discount rate would be the risk-free rate. At the current such rate for one year, the discount would be only 2% per year and 30% of this (the uncompensated part) would be only 0.3% per year. This is trivial.

In summary, within the Officer model, theta is a weighted average over the utilization rates for imputation credits by individual investors and these utilization rates are 1 if investors can use the credits and zero otherwise. So, theta is not the market value of the credits. Transactions and administrative costs incurred by investors in dealing with these credits cannot be dealt with by reducing the estimate for theta and, if considered important (which I do not think to be the case) would have to be addressed through an extension to the Officer model. Furthermore, this extension would only matter to the extent that the firm's equity beta differed from 1. Otherwise, such costs that are reflected in the empirical estimate for the MRP that is used by the regulator would deal with this issue.

3. Questions

3.1 Consistency Between the AER and the NER/NGR

The AER's first question concerns whether the AER's approach to imputation credits is consistent with the post-tax framework in the NER and NGR. In respect of the NER/NGR, clauses 6.5.2 and 6.5.3 of the NER (AEMC, 2016) specify how imputation credits are to be dealt with in the cash flows and the discount rate. In respect of the cost of equity, the only requirements are that it be nominal and consistent with the treatment of imputation credits in the cash flows. In respect of the cash flows, the required treatment is quite specific in that it specifies that company taxes net of the "value of imputation credits" should be treated as a cost. Accordingly, the framework is after company tax ("post-tax"). However, as discussed in section 2, the word "value" here does not unambiguously mean market value, the NER is not in any case the arbiter on the matter, and the actual authority on the matter is the academic literature underlying whatever model was chosen by the AER or the AEMC.

Turning now to the AER (2015), and consistent with the wording of clause 6.5.3 of the NER, they elect to use the Officer (1994) model and, consistent with that model, argue that the value of imputation credits is before personal taxes and any other costs (ibid, page 4-12). Accordingly, they consider three approaches to estimating "theta", comprising the equity ownership approach, the use of tax statistics, and implied market value studies.

I consider that the AER's approach is consistent with the NER/NGR. Having elected to use the Officer model, the AER is bound (exceptional circumstances aside) to define its parameters in accordance with the relevant literature, and the same is true of using any formula. As discussed in section 2, this literature clearly reveals that "theta" is a weighted

average over the "utilization rates" of individual investors, and the utilization rate is 1 for investors who can use the credits and 0 otherwise. Accordingly, θ is *not* the market value of the credits and therefore does not point to sole or primary use of implied market value studies to estimate the parameter. Such studies are merely one of a number of possible approaches to this matter.

The AER also raises the question of whether, under the NER/NGR, the cash flows going to capital providers (coupon payments, cash dividends, capital gains on equity and imputation credits) are the "face value", i.e., the amount before personal taxes, administrative costs, and the effect of delays. Since the AER uses the Officer model, which is consistent with the NER/NGR, as shown in equation (1) and the definitions of the terms used there, the answer to this question is yes.

The AER also raises the question of whether the fact that the costs of debt and equity are market rates implies that estimates of theta should be based only or primarily on market based studies. Both the cost of equity and theta appear in equation (1), with the cost of equity being a market rate and theta *not* being a market value. This equation arises from the set of assumptions underlying the Officer (1994) model. So, there is no inconsistency within the model. However, market costs of equity reflect the actual model used by investors to value assets. If the model chosen by the AER differs from this, then there will be an inconsistency between empirically determined estimates of the cost of equity and the model into which they are inserted. One example of this problem is administrative costs associated with using imputation credits. In the presence of imputation credits, the market cost of equity exclusive of the credits will fall in recognition of the credits. So, as the administrative costs associated with the credits rise, so too will the market cost of equity. So, any empirically determined cost of equity will reflect the extent of these costs. However, as discussed in section 2, the Officer model does not recognize these costs in the structure of the model. This is an inconsistency between the model and empirical estimates of its parameters, but as discussed in section 2 could only be resolved by an extension to the Officer model (rather than by modifying the definition of theta) and would not warrant the effort because the costs are so small and most of them are dealt with through the empirical estimate of the MRP. Furthermore, all valuation models make assumptions, many of these are not entirely realistic, and these administrative costs associated with imputation credits are likely to be one of the least important such discrepancies. A much more important discrepancy here is that market

determined costs of equity will reflect the presence of foreign investors in the Australian market whilst the Officer (1994) model assumes that the Australian equity market is segregated from other equity markets. In addition, since capital gains are taxed less heavily at the personal level in Australia than dividends, the market cost of equity is likely to reflect this differential personal tax treatment whilst the Officer (1994) model implicitly assumes that both types of income are equally taxed at the personal level.

In summary, the AER's approach to imputation credits is consistent with the post-tax framework in the NER and NGR. This framework essentially determines the numerator in equation (1) but gives discretion over the cost of equity to the AER subject to its reflecting the market situation, being nominal, and consistent with the treatment of imputation credits in the cash flows. The AER unsurprisingly chose the Officer model, and rigorous proofs of this model reveal that theta is a weighted average over the "utilization rates" of individual investors, with the utilization rate being 1 for investors who are eligible to use the credits and 0 otherwise. So, theta is not the market value of the credits and therefore does not point to sole or primary use of implied market value studies to estimate this parameter. Such studies are merely one of a number of possible approaches to this matter, consistent with the AER's approach.

3.2 Consistency Between Market Rates of Return and the Face Value of Credits

The AER's second question concerns whether the fact that the costs of debt and equity are market rates is inconsistent with theta being a face value. This issue has been addressed in the previous section. The AER has also raised the question of whether estimates of the costs of debt and equity are affected by differential personal tax rates in materially the same way as for estimates of theta from dividend drop-off studies. The important issues here are limited to the costs of equity and estimates of theta from dividend drop-off studies, and I will therefore restrict my analysis accordingly.

I start with estimates of theta from dividend drop-off studies. To focus upon the key issue, suppose that there is no risk, no transactions costs or other frictions, all investors are able to fully use imputation credits for tax relief, and all investors are taxed on capital gains at 10% and dividends at 30%. Since all investors can fully use the credits, theta is 1. Letting D denote the cash dividend, IC the imputation credits, ΔP the price change from cum to ex-div, arbitrage would ensure that

$$(D+IC)(1-.30)=\Delta P(1-.10)$$

and hence

$$\Delta P = D\left(\frac{1-.30}{1-.10}\right)+IC\left(\frac{1-.30}{1-.10}\right) \quad (5)$$

Thus, in conducting the cross-sectional regression of ΔP on D and IC, the coefficient on IC would be 0.78. Since theta is 1, this regression coefficient would underestimate theta, because capital gains are taxed less heavily than dividends. So, the correct estimate of theta is invariant to personal tax rates whereas the coefficient on imputation credits in a dividend drop-off study will reflect the difference in personal tax rates on dividends and capital gains.

Turning now to estimates of the cost of equity, these are determined from the Officer (1994) model shown in the denominator of equation (1). To focus upon the crucial issue, consider a company with a beta of zero. In this case, the cost of equity under the Officer model is the risk-free rate:

$$k_e = R_f$$

This result reflects the assumption in the Officer model that interest, dividends and capital gains are taxed at the same rate at the personal level. Thus, in the absence of systematic risk, the expected return on equity is the same as that on the risk-free asset (both pre personal tax) so as to yield the same result after personal tax. However, if capital gains were taxed less heavily than dividends and interest, as is the case in Australia, then the expected rate of return on zero beta equity pre personal tax would be less than on the risk-free rate to ensure that their expected rates of return after personal tax were the same. In particular, Lally and van Zijl (2003, equation (9)) show that under the simplifying assumptions adopted above:

$$k_e = R_f\left(\frac{1-.30}{1-.10}\right)+\frac{(D+IC)}{P}\left(\frac{.30-.10}{1-.10}\right) \quad (6)$$

So, with a gross dividend yield less than the risk-free rate, the cost of equity before personal tax is less than the risk-free rate. In the extreme case of no dividends, and therefore all equity returns are in the form of capital gains, the cost of equity in equation (5) becomes:

$$k_e = R_f\left(\frac{1-.30}{1-.10}\right) \tag{7}$$

So, the expected rate of return pre personal tax on this zero beta and zero dividend yield equity would be 78% of the risk-free rate, in order to ensure that the expected rates of return on these two assets after personal tax were the same. This matches equation (5), in principle.

The difference here in the costs of equity from the Officer (1994) and Lally and van Zijl (2003) models is alleviated as the firm's beta and expected dividend yield approach the values for the market portfolio. At this point, both the Officer (1994) and Lally and van Zijl (2003) model state that the expected rate of return on this firm's equity matches that for the market portfolio, $E(R_m)$, and the empirical estimate for the latter will reflect the actual situation. For example, equities that are zero beta and zero dividend yield will have an expected rate of return that is 78% of the risk-free rate as shown in equation (7).

The AER has also sought my comment on para 1073 of the ACT's decision (AEMC, 2016). The ACT asserts here that the pre personal tax costs of debt and equity reflect the impact of personal tax and the value of theta should be similarly affected. Clearly the ACT thinks that the appropriate estimate for theta in the example discussed above and shown in equation (5) would be 0.78. This is incorrect. As discussed in section 2, theta reflects only investor eligibility to use the credits. So, in that example, theta is 1. By contrast, the price impact of the credits is 0.78 due to differential tax. So, differences in personal tax rates on different types of income should affect the pre personal tax costs of debt and equity, they do affect the coefficient on imputation credits in a dividend drop-off study, but they should *not* affect the estimate of theta.

In summary, theta when properly defined in accordance with the Officer model is not affected by personal tax rates whilst the coefficient on imputation credits in a dividend drop-off study is affected by differences in the personal tax rates on capital gains and dividends, and is therefore a deficient estimate unless a correction is made for this issue. In addition, the cost of equity pre personal tax is affected by differences in personal tax rates on capital gains, dividends and interest but estimates obtained from the Officer (1994) model will in general fail to do so correctly because this model assumes that there are no such tax differences.

3.3 Estimation of Theta

The AER's third set of questions concern estimates of theta. The first such question is whether estimates of theta from the equity ownership approach are unreliable and/or should be limited to use as an upper bound. As shown in section 2, theta is a weighted average over the utilization rates for investors, equal to 1 for those who are eligible to use the credits and zero otherwise. Letting w_i denote the fraction of aggregate risky assets held by investor *i*, R_{Ki} the rate of return after personal tax and inclusive of imputation credits on the "tangency portfolio" chosen by investor *i*, R_{fi} the risk-free rate received by investor *i* after personal tax, and T_{gi} the tax rate on capital gains faced by investor *i*, Lally and van Zijl (2003, equation (7)) show that the weight for investor *i* in equation (2) is as follows:

$$x_i = \frac{\left[\frac{w_i}{\left(\frac{E(R_{Ki} - R_{fi}}{Var(R_{Ki}}\right)(1-T_{gi})}\right]}{\sum_{j=1}^{n}\left[\frac{w_j}{\left(\frac{E(R_{Kj} - R_{fj}}{Var(R_{Kj}}\right)(1-T_{gj})}\right]} \qquad (8)$$

The terms in the RHS of this formula other than the value weights may vary over investors and do not readily lend themselves to estimation. In view of this, one could act as if they are equal across investors, in which case equation (8) reduces to

$$x_i = \frac{w_i}{\sum_{j=1}^{n} w_j} = w_i$$

This says that the weight applied to investor *i* in equation (2) is the proportion of Australian equities held by investor *i*. Substituted into equation (2), with those investors who are eligible to use the credits designated as investor type 1 and the rest as type 2, theta becomes

$$\theta = w_1(1) + w_2(0) = w_1$$

So, theta is estimated as the proportion of Australian equities held by those investors who are able to use the credits. At this point, the question of which investors are recognized arises. The Officer (1994) model assumes that the Australian equity market is segregated from the rest of the world, which would imply no foreign investors. Accordingly, all investors would be locals and therefore theta would be 1. However, foreign investors do exist, and therefore the assumptions of the model collide with an empirical reality. One approach to this, which I favour, would be to ignore foreign investors and therefore estimate theta as 1 (Lally, 2013). However, none of the parties to the dispute considered by the ACT share this view and instead all of them consider that foreign investors should be recognized. Conditional on this view being correct, the market weight of investors who can use the credits is the market weight of local investors, i.e., the proportion of Australian equity held by local investors. This is the AER's equity ownership approach. Thus, if foreign investors are recognized and absent any information on the terms other than the value weights on the RHS of equation (8), the equity ownership approach is *not* an upper bound on theta but an unbiased estimate.

In addition to errors in this estimate arising from the assumption that the terms other than the value weights on the RHS of equation (8) are uniform across investors, errors can arise from the choice of whether to use only listed equity or all equity, and which historical time period to average results over. The AER (2015, page 4-26) presents estimates ranging from 38% to 55% if only listed equity is used, and 56% to 68% if all equity is used, with the variation within each data set representing the range of values over the 2000-2014 period (AER, 2015, Figure 4-3). The latest (2014) values of these two parameters are 47% and 61% respectively, and these values are well within the range of the recent experience. If one judged these time series to be random walks, one would estimate the future values (over the next regulatory cycle of five years) using the latest observations. Alternatively, if one judged these series to be mean reverting, the estimate would be the current observation adjusted upwards (downwards) if the current observation was unusually low (high). However, the current observations are not unusually high or low. So, even if these series are mean reverting, reasonable point estimates for the next five years would still be approximately the latest values of 47% and 61% respectively, with moderate uncertainty around these estimates. My own estimate for all equity is moderately higher, at 66% in 2013 (Lally, 2015a, page 28) versus the AER's (2015, Figure 4-3) estimate of 60% at the same point in time. So, my estimate for all equity is at least 60%.

In respect of the choice between listed and all equity, my views on this matter appear in Lally (2014, pp. 34-35). In particular, the fact that only listed equity is used to estimate the MRP and beta suggests that the same limitation be applied to the present issue. However, the limitation is only imposed for the MRP and beta because data from unlisted firms is entirely inadequate for estimating returns. Furthermore, MRP estimates are generally based on a subset of listed equity (such as the ASX200), the subsets used may vary and are sometimes never specified (in surveys), and betas are sometimes estimated from foreign returns data. All of these results could reasonably be viewed as proxies for the results that would arise from using Australian data on all equities. In addition, treating the CAPM as a model that applies to only listed equities would rule out using it to estimate the cost of equity for an unlisted company (and some regulated businesses are unlisted). Thus, in principle, I favour inclusion of unlisted equity for estimating the proportion of Australian equities held locally. Some concerns about the quality of this data seem warranted, as argued by SFG (2014, pp. 30-33), but the results showing that the local ownership proportion of unlisted equity is higher than for listed equity (Frontier, 2016, Table 4) are entirely plausible (because foreigners would be expected to favour listed equity due to its higher liquidity).

In summary, conditional upon recognizing the existence of foreign investors when estimating theta, in estimating theta from the proportion of Australian equities held by local investors, I favour the use of all equity rather than only listed equity and therefore an estimate for theta of at least 60%. In addition, estimation errors in either direction could arise from deviations from the assumption that the terms other than the value weights on the RHS of equation (8) are uniform across investors. I do not think that the latter is a substantial issue. Accordingly, the reliability of the estimate is high. Furthermore, since any estimate of theta of this type is subject to errors in either direction, it is *not* an upper bound on an estimate of theta.

The next question is whether estimates of theta from tax statistics (the redemption rate) are unreliable and/or should be limited to use as an upper bound. To explore this question, let IC_1 denote the imputation credits issued to local investors over a one-year period, IC_2 those to foreign investors, and TR the total credits redeemed over the same period. Accordingly the redemption rate is

$$R = \frac{TR}{IC_1 + IC_2}$$

Assuming (reasonably) that all (or virtually all) imputation credits that are issued to locals are redeemed, and that none (or virtually none) of those issued to foreigners are redeemed, it follows that

$$R = \frac{IC_1}{IC_1 + IC_2}$$

Assuming further that local investors choose Australian stocks with the same ratio of imputation credits to equity value (V) as do foreign investors, and hold them over the full one-year period in question, it follows that

$$R = \frac{V_1}{V_1 + V_2}$$

So, under these assumptions, the redemption rate is equal to the proportion of Australian equities held by local investors, which matches the result from the equity ownership approach. However, the last two assumptions described above are unrealistic. Firstly, tax arbitrage is likely to involve Australian investors temporarily buying shares from foreigners (rather than vice versa), and this would raise the redemption rate over the market weight of local investors. Secondly, even without tax arbitrage, local investors are likely to tilt towards stocks with high IC/V ratios because only they can use the credits and the valuation of these credits is unlikely to fully reflect their full face value because the influence of foreign investors is significant; this too would raise the redemption rate over the market weight of local investors. Thus, since there are no grounds to consider that the market weight of local investors is too high an estimate of theta, the redemption rate would be biased up. The effect of tax arbitrage may not be substantial because the legislative rules that discourage such behaviour are extensive and are likely to have significantly constrained such activity.[4] However, even without tax arbitrage, local investors would be very likely to tilt towards stocks with high imputation credits, and the upward bias from this could be significant.

[4] These rules comprise the "holding period rule" (requiring investors who can utilize the credits to hold the shares for at least 45 days around the dividend ex-day as a condition of receiving the benefit from the credits), the 30% delta rule (requiring investors who can utilize the credits and hold shares around the dividend ex-day to be at least 30% exposed to movements in the stock as a condition of receiving the benefit from the credits), and the "related payments rule" (proscribing certain classes of transactions between investors who can and cannot utilize the credits), as discussed in Beggs and Skeels (2006, Appendix A).

Turning now to the reliability of the redemption rate as an estimate of theta, the AER (2015, page 4-28) estimates this at 0.45 from NERA (2015, section 4.2), who use ATO tax data on all Australian companies from 2004-2012. However, using the same type of data from 2004-2011, Hathaway (2013, section 1.3) estimates this proportion at 0.62 or 0.44, with the variation arising from two possible approaches (ATO dividend data and ATO tax data) whose results should match and the divergence cannot be reconciled. This variation casts doubt on all estimates using ATO data, and this problem with the ATO data alleged by Hathaway is generally accepted (NERA, 2013, pp. 5-6; Handley, 2014, section 6; Frontier, 2016, para 97; AGN, 2016, page 10; ACT, 2016, para 1092).

In summary, the redemption rate if correctly measured is an upwardly biased estimator for theta because local investors would tilt towards stocks with high imputation credit yields. Furthermore, the ATO data from which the redemption rate is estimated contains significant unexplained discrepancies, which give rise to two significantly different estimates of the redemption rate. Accordingly, any estimate of theta of this type is unreliable. In addition, since the AER chooses the lower of the two possible estimates (0.45) that have been generated from the data source it uses, and the other is 0.62, this possible underestimation of the redemption rate may exceed the upward bias resulting from local investors tilting towards stocks with high imputation credit yields. So, the AER's estimate of 0.45 for the redemption rate is *not* an upper bound on an estimate for theta.

The next question is that of what might be causing differences between estimates of theta from the equity ownership approach and the redemption rate. Implicit in this question is that the AER's estimate for the redemption rate on all equity is 0.45 and an estimate for the market weight for local investors on all equity is about .60. One possibility raised by the AER is that of local investors not being able to use the credits due to the 45 day holding rule. This rule constrains tax arbitrage, and therefore reduces the uplift to the redemption rate arising from this activity. So, this cannot explain why the AER's estimate for the redemption rate is *below* its estimate for the market weight of local investors. The 45 day rule also prevents some 'genuine' investors from obtaining the credits, and therefore drives down the redemption rate whilst not affecting the market weight of local investors. So, this could explain at least part of the difference in question here. However, I doubt if this downward effect is significant because 'genuine' investors have the option of changing the timing of their transactions, the timing change would not be material, and they would have strong

incentives to do so. For these reasons, I do not think that the 45 day rule could explain much of the difference presented by the AER.

Another possibility raised by the AER is that investors do not value the credits at their face value. For example, the market value of the credits is lowered by administrative costs or personal taxes on capital gains being less than on dividends. Since the value of the credits would tilt Australian investors towards local stocks with such credits, anything that lowers the value of the credits would incline Australian investors to tilt more towards foreign equities, due to their diversification benefits, but this tilt would have the same downward effect on the proportion of Australian equities held by locals and the redemption rate. Another possible explanation is offered by Frontier (2016, section 4.2.4), involving investors failing to redeem credits that they receive due to the administrative burden, thereby reducing the redemption rate but not the proportion of Australian equities held by local investors. This is possible, but presumably only for small investors whose lethargy would presumably exert little effect upon the result. Another possible explanation is offered by Frontier (2016, section 4.2.2), involving errors in the ABS data from which the equity ownership data is drawn. However the most obvious explanation for the difference in estimates from these two approaches is that the AER's estimate for the redemption rate is too low. If the correct figure is more like 0.62, as discussed above, then even a moderate deduction to account for local investors tilting towards stocks with high imputation credit yields would be compatible with the estimate for the equity weight of local investors of about 0.60. Furthermore, even Frontier (2016, para 97) accepts that estimates of the redemption rate from ATO data are problematic.

The next question is whether the 45 day rule could be expected to affect estimates of theta. As discussed above, the rule constrains tax arbitrage and therefore reduces the uplift to the redemption rate arising from this activity. Since the rules in this area strongly discourage tax arbitrage, the downward impact on the redemption rate may be significant, but even if so this would merely help to better align the redemption rate with the proportion of Australian equities held by local investors. In addition, as discussed above, the rule also prevents some 'genuine' investors from obtaining the credits, and therefore drives down the redemption rate. However, I doubt if this downward effect is significant because 'genuine' investors have the option of changing the timing of their transactions, the timing change would not be material, and they would have strong incentives to do so.

The next question is whether it is reasonable to give most weight to estimates of theta from the equity ownership approach, less to the redemption rate, and the least to dividend drop-off studies. My views on the relative merits of the first two of these methods are presented above. The redemption rate estimates come from a data source that contains significant unexplained errors, which damages the credibility of all parameter estimates drawn from this source. They are also biased up as estimates of theta. No such problems afflict estimates of the proportion of equity owned by local investors. So, the estimate of theta from the equity ownership approach warrants much higher weight than the redemption rate. In respect of dividend drop-off studies, my views on the merits of this approach appear in Lally (2013, section 3.5) and they are highly adverse. In particular, the results from such studies are subject to considerable statistical uncertainty, to the tax positions and transactions costs incurred by arbitrageurs who may be quite unrepresentative of investors in general, the contentious question of which model to use, data filtering rules, deletion of outliers, the choice of the "tuning constant" in robust regression models, the wide divergence in results from other types of studies using market evidence, the wide range of evidence on anomalous behavior around ex-days, and the need to correct the estimated coefficient on imputation credits for the difference in the tax rate on capital gains and dividends. Collectively, these drawbacks are so severe as to warrant giving the lowest weight on the results from these studies. So, when estimating theta from the equity ownership approach, the redemption rate, and dividend drop-off studies, I consider the first method warrants the highest weight, followed by the second, and then the third.

The last question is whether the AER's reasons for giving limited weight to market-based studies are reasonable. The AER (2015, pp. 4-29 to 4-30) offers five reasons for doing so. These reasons largely correspond to the list in Lally (2013, section 3.5) and I therefore concur with the AER on this point.

In summary, conditional upon recognizing the existence of foreign investors when estimating theta, this parameter could be estimated in three different ways. In estimating theta from the proportion of Australian equities held by local investors, I favour the use of all equity rather than only listed equity and therefore an estimate for theta of at least 60%. In addition, estimation errors in either direction could arise from deviations from the assumption that the terms other than the value weights on the RHS of equation (8) are uniform across investors. I

do not think that the latter is a substantial issue. Accordingly, the reliability of the estimate is high. Furthermore, since any estimate of theta of this type is subject to errors in either direction, it is *not* an upper bound on an estimate of theta. In addition, a correctly measured redemption rate for credits is an upwardly biased estimator for theta because local investors would tilt towards stocks with high imputation credit yields. Furthermore, since the ATO data from which the redemption rate is estimated contains significant unexplained discrepancies, which give rise to two significantly different estimates of the redemption rate, any such estimate of theta is unreliable. In addition, since the AER chooses the lower of the two possible estimates (0.45) that have been generated from the data source it uses, and the other is 0.62, this possible underestimation of the redemption rate may exceed the upward bias resulting from local investors tilting towards stocks with high imputation credit yields. So, the AER's estimate of 0.45 for the redemption rate is *not* an upper bound on an estimate for theta. In respect of the difference between the AER's estimate of 0.45 for the redemption rate and their estimate for the local ownership proportion of local equity of about 60%, I think the most likely explanation is that the figure of 0.45 is too low. In respect of the impact of the 45 day rule, the rule constrains tax arbitrage and therefore minimizes the gap between the correctly estimated redemption rate and the proportion of Australian equities held by local investors. The rule also prevents some 'genuine' investors from obtaining the credits, and therefore drives down the redemption rate, but this downward effect is unlikely to be significant because 'genuine' investors have the option of changing the timing of their transactions and would have strong incentives to do so. Finally, in respect of dividend drop-off studies as estimators of theta, I concur with the AER's view that they warrant very limited weight for reasons identified by the AER. Accordingly, I think that the equity ownership approach (with an estimate of at least 0.60) should be given most weight because the estimate seems quite reliable, lesser weight should be given to the redemption rate (0.45 to 0.62) because of the upward bias and the significant discrepancies within the data source used to estimate it, and minimal weight to dividend drop-off studies for reasons identified by the AER (with an estimate of 0.35 from the SFG study relied on by the ACT). So, conditional upon recognizing the existence of foreign investors when estimating theta, this evidence suggests an estimate for theta of about 0.60.

3.4 Correction for the Effect of Personal Taxes

The AER's fourth question is whether estimates of the coefficient on imputation credits in market-based studies should be corrected using the estimate of the coefficient on cash dividends, in order to obtain an estimate of theta.

To address this question, I return to the analysis in section 3.2, in a world in which there is no risk, no transactions costs or other frictions, all investors are able to fully use imputation credits for tax relief, and all investors are taxed on capital gains at 10% and dividends at 30%. Under such conditions, arbitrage would ensure that the price change from cum to ex-div (ΔP) would be related to the cash dividend (D) and the imputation credits (IC) as follows:

$$\Delta P = D\left(\frac{1-.30}{1-.10}\right) + IC\left(\frac{1-.30}{1-.10}\right)$$

Relaxing the assumptions relating to risk, transactions costs and other frictions (which would also affect cash dividends and imputation credits), the relationship would then become

$$\Delta P = \delta D + \delta(IC) + \varepsilon$$

where δ reflects the effect of the personal tax differential, risk, transactions costs and other frictions, and ε reflects noise in the data. Further recognizing that some investors cannot use the credits then leads to insertion of theta into the model (because this is the only factor that theta can account for, in accordance with the definition of this parameter):

$$\Delta P = \delta D + \delta\theta(IC) + \varepsilon$$

So, when regressing ΔP on D and IC, the estimated coefficient on IC is not θ but $\delta\theta$, and therefore the estimated coefficient on IC must be divided by that on D to obtain an estimate of θ. This corresponds to the AER's approach. Accordingly, I agree with the AER's approach.

3.5 Estimation of the Distribution Rate

The AER's final set of questions relates to the distribution rate. The first such question is whether estimates of the distribution rate should be based upon the same data set as that for

theta. As discussed in section 1, the distribution rate is a firm-specific parameter whilst theta is a market parameter. Thus, theta must be estimated using market-wide data whilst the distribution rate could be estimated using firm, industry, or sector-wide data according to which was judged to provide the best estimate for this firm-specific parameter. In short, consistency is *not* essential but nor is it precluded. So, on this point, I disagree with the AER (2015, section 4.4.1). Handley (2015b, pp. 7-8) discusses this issue and first acknowledges that the distribution rate is firm-specific whilst theta is not firm-specific, but then goes on to say that both parameters must be estimated from "consistent data sets which relate to the same market". This seems contradictory.

As argued in Lally (2013, section 4.2), estimates of the distribution rate for a firm based only on its data are subject to the difficulty that, if the firm's dividends are fully franked, then it will be able to manipulate (raise) its price or revenue cap by reducing its dividends (so as to reduce its distributed credits, which lowers its distribution rate and therefore raises its cost of capital estimated from the Officer model used by regulators). An alternative would then be some kind of industry average, and the relevant industry is regulated businesses. However many of them are publicly owned and do not pay dividends. Another alternative would then be to examine a set of large private-sector Australian firms that contain significant regulated businesses. However the set of firms is not large and therefore the choice of whether or not to include certain marginal cases is likely to materially affect the resulting estimate. All of this points to the use of some type of sector-wide data. However there is considerable variation in the distribution rate across firms (see Lally, 2014, Table 2) and therefore any sector-wide average could be a poor indicator of the situation for any industry. This issue could be framed as a trade-off between statistical reliability (greater from a sector-wide estimate) versus potential bias (worse from a sector-wide estimate).[5] The same point arises in estimating the asset beta and the leverage of the benchmark firm. Since regulators use industry rather than market averages in these cases, consistency might suggest the same decision in respect of the distribution rate. However the proper choice depends upon the severity of the bias and statistical reliability problems in each of these areas, and different decisions might be warranted.

[5] Bias will arise if industry or market-level data are used because the parameter value varies over firms. Industry-level data is likely to be less biased because firms within the same industry are likely to be less variable than firms in general.

Turning to sector-wide averages, the principal choice here is between all equity or only listed equity. This matters because the difference in distribution rates is quite substantial: Frontier (2016, Table 4) reports estimates of about 50% for unlisted firms and 75% for listed firms, and Lally (2014, Table 2) estimates the rate at 84% for the largest 20 listed firms in Australia. Since it is always sensible to distribute credits if possible, and the only restriction on doing so is the size of the firm's cash dividends, the presumed cause of the difference in distribution rates between listed and unlisted firms is lower dividend payout rates in unlisted companies. Handley (2014, page 28) argues that unlisted equity should be ignored because such companies "by definition are financed in entirely different ways". Handley does not elaborate on this comment. However, he may be alluding to the fact that listed companies are generally widely held, and therefore most shareholders have very little knowledge of the actual state of affairs within these companies. Accordingly, dividends can be used to credibly signal the true state of affairs and the higher the dividend the stronger the signal of the firm's profits (Copeland et al, 2005, Ch. 16). These considerations are much less pronounced for unlisted companies, which might explain the lower payout rate and hence the lower distribution rate for imputation credits. Furthermore, since privately-owned regulated businesses in Australia are typically listed firms or subsidiaries of listed firms, the appropriate set of firms to use to estimate the distribution rate of regulated businesses would seem to be listed firms.

The second question is whether the top 20 firms should be excluded from the set of firms used to estimate the distribution rate, when sector-wide data is used. The source of this issue is an analysis by Lally (2014, Table 2) of the distribution rates of the 20 largest listed companies in Australia, leading to an estimate of 0.84, with further analysis in Lally (2015b, Table 1) yielding 0.83.[6] Frontier Economics (2016, section 2.3) argues that such firms should be excluded because they have foreign-sourced profits that elevate their distribution rate for credits (by raising their dividends and hence the maximum credits they can attach but not the imputation credits that they create), and foreign-sourced profits are not a feature of the

[6] Lally (2014, section 8.1) describes the problems in the ATO data and why these problems are avoided by use of financial statement data. In particular, financial statement data has three features that virtually guarantees protection against the problems in the ATO data: the financial statement data is audited, the researcher is able to personally identify the source data (the figures of interest for particular firms) rather than having to rely upon the aggregation exercise carried out by the ATO (and is therefore protected against double-counting and other aggregation problems), and the financial statement data is internally consistent, i.e., there are no unexplained discrepancies in the financial statement data whereas there are major inconsistencies in the ATO data (which casts doubt on all of it).

benchmark firm that the AER is regulating (a pure play regulated energy network business operating within Australia). Furthermore, Frontier (2016, Table 4) estimates the distribution rate for listed equity in aggregate at 0.75 rather than the 0.83 figure in Lally (2015, Table 1). Implicitly, Frontier attributes the difference between 0.75 and 0.83 to these foreign operations, but does not empirically assess the question. In response to Frontier's argument, Handley (2015a, page 21) argues that dividend policies are affected by many factors, but again he does not elaborate, and the AER cites his comment.

Frontier's claim can be empirically assessed. Amongst the 20 firms examined by Lally (2015, Table 1), the seven with the largest tax payments to the ATO account for 79% of the taxes paid to the ATO by this set of 20 firms, and I will therefore focus upon these seven. Table 1 below shows their distribution rates for credits (from Lally, 2015, Table 1), an estimate of the proportion of profit from their foreign operations (from the 2015 Annual Report), and the payout rate (dividends to cash flow from operations, from the Cash Flow Statement in the 2015 Annual Report).[7] The proportion of profit from foreign operations is monotonically decreasing in the distribution rate, which is in the opposite direction to that claimed by Frontier, and the correlation between the two variables is the very striking figure of -0.95. Furthermore, the payout rate is positively correlated with the distribution rate (0.50).

A possible explanation for these results is as follows. Firms with a large proportion of their profit from foreign operations (like BHP and Rio Tinto) retain a larger proportion of their cash flow in order to finance such operations, which reduces dividends and hence the distribution rate by more than the profits from these operations raise dividends in the same year, at least for many years. This can be modelled with a simple example. Suppose a firm has pre-tax profit of $100 (all from Australia), pays tax to the ATO of $30, and pays the $70

[7] The data sources are BHP (2015), Telstra (2015), Westpac (2015), CBA (2015), NAB (2015), ANZ (2015), and Rio Tinto (2015). For BHP, the profit share from foreign operations is proxied by the proportion of foreign employees, shown on page 47 of the Annual Report, and averaged over the last three years. For Telstra, the profit share from foreign operations is proxied by the proportion of foreign customers, shown on page 97 of the Annual Report, and averaged over the last two years. For Westpac, the profit share from foreign operations (NZ) is provided on page v of the Annual Report, for the latest year. For CBA, the profit share from foreign operations (NZ and IFS) is shown on page 10 of the Annual Report, and averaged over the last two years. For NAB, the profit share from foreign operations (NZ and UK) is shown on page 6 of the Annual Report, and averaged over the last two years. For ANZ, the profit share from foreign operations (NZ) is shown on pp. 24-27 of the Annual Report, and averaged over the last two years. For Rio Tinto, the profit share from foreign operations is proxied by the proportion of foreign employees, shown on page 158 of the Annual Report, and averaged over the last three years.

residue as a dividend. All $30 of the credits created can then be attached to the dividend, and therefore the distribution rate for the credits is 1. Now suppose the firm retains 30% of the after-tax profit every year to invest in foreign operations, and every such $1 invested generates an increment to pre-tax profit of $0.1 per year thereafter. The firm's distribution rate will then initially fall to 70% as follows:

$$F = \frac{Dist}{TAX(ATO)} = \frac{DIV(3/7)}{TAX(ATO)} = \frac{\$70(.7)(3/7)}{\$30} = .70$$

The denominator here will remain fixed over time whilst the pre-tax profits (and hence the numerator here) will rise at 2.1% per year (0.70*0.30*0.10). So, the distribution rate will rise over time at the same rate, and will take 17 years to recover to the original level of 1. So, Frontier's claim seems to be false and an explanation for the opposite pattern is readily apparent.

Table 1: Distribution Rates and Foreign Operations

Company	*F*	Foreign Ops	Payout
BHP	0.64	0.50	0.26
Telstra	1.00	0.06	0.43
Westpac	0.94	0.12	0.56
CBA	0.98	0.12	0.50
NAB	0.93	0.19	0.41
ANZ	0.98	0.15	0.24
Rio Tinto	0.26	0.60	0.29

In summary, since the distribution rate is a firm-specific parameter whilst theta is a market parameter, theta must be estimated using market-wide data whilst the distribution rate could be estimated using firm, industry, or sector-wide data according to which was judged to provide the best estimate for this firm-specific parameter. So, consistency is *not* essential and I therefore disagree with the AER on this point. Furthermore, pragmatic considerations point to the use of sector-wide data of some sort. Since the distribution rates for listed and unlisted businesses are significantly different and (private) regulated businesses are listed or owned by

listed parents, the distribution rate for regulated businesses should be estimated from that of listed equity. The choices here are ATO data on all listed equity or financial statement data on a subset of high value firms constituting a majority of the value of listed equity. Since the ATO data contains significant unresolved discrepancies, this favours the use of financial statements for a subset of high value firms and an estimate of this type is 0.83 for the top 20 such firms. Finally, Frontier's claim that firms with significant foreign operations have higher distribution rates than firms without such operations, and are therefore unsuitable for estimating the distribution rate of regulated businesses (which do not have foreign operations), appears to be false and the observed pattern can be explained through the investment of profits required to finance these foreign operations. Accordingly, the effect of these firms with foreign operations being included within the set of firms used to estimate the distribution rate for the benchmark firm (with only local operations) is to underestimate rather than overestimate the distribution rate for the benchmark firm. Thus, the estimate for the distribution rate of 0.83 is likely to be too low for the benchmark firm rather than too high.

4. Conclusions

My principal conclusions are as follows. Firstly, within the Officer model, theta is a weighted average over the utilization rates for imputation credits by individual investors and these utilization rates are 1 if investors can use the credits and zero otherwise. So, theta is not the market value of the credits. Transactions and administrative costs incurred by investors in dealing with these credits cannot be dealt with by reducing the estimate for theta and, if considered important (which I do not think to be the case) would have to be addressed through an extension to the Officer model. Furthermore, this extension would only matter to the extent that the firm's equity beta differed from 1. Otherwise, such costs that are reflected in the empirical estimate for the MRP that is used by the regulator would deal with this issue.

Secondly, the AER's approach to imputation credits is consistent with the post-tax framework in the NER and NGR. This framework determines the allowance for company taxes but gives discretion over the cost of equity to the AER subject to it reflecting the market situation, being nominal, and consistent with the treatment of imputation credits in the allowance for company taxes. The AER unsurprisingly chose the Officer model, and rigorous proofs of this model reveal that theta is a weighted average over the "utilization

rates" of individual investors, with the utilization rate being 1 for investors who are eligible to use the credits and 0 otherwise. So, theta is not the market value of the credits and therefore does not point to sole or primary use of implied market value studies to estimate this parameter. Such studies are merely one of a number of possible approaches to this matter, consistent with the AER's approach.

Thirdly, theta when properly defined in accordance with the Officer model is not affected by personal tax rates whilst the coefficient on imputation credits in a dividend drop-off study is affected by differences in the personal tax rates on capital gains and dividends, and is therefore a deficient estimate unless a correction is made for this issue. In addition, the cost of equity pre personal tax is affected by differences in personal tax rates on capital gains, dividends and interest but estimates obtained from the Officer model will in general fail to do so correctly because this model assumes that there are no such tax differences.

Fourthly, conditional upon recognizing the existence of foreign investors when estimating theta, this parameter could be estimated in three different ways. In estimating theta from the proportion of Australian equities held by local investors, I favour the use of all equity rather than only listed equity and therefore an estimate for theta of at least 60%. In addition, estimation errors in either direction could arise from deviations from the assumption that the terms other than the value weights on the RHS of equation (8) are uniform across investors. I do not think that the latter is a substantial issue. Accordingly, the reliability of the estimate is high. Furthermore, since any estimate of theta of this type is subject to errors in either direction, it is *not* an upper bound on an estimate of theta. In addition, a correctly measured redemption rate for credits is an upwardly biased estimator for theta because local investors would tilt towards stocks with high imputation credit yields. Furthermore, since the ATO data from which the redemption rate is estimated contains significant unexplained discrepancies, which give rise to two significantly different estimates of the redemption rate, any such estimate of theta is unreliable. In addition, since the AER chooses the lower of the two possible estimates (0.45) that have been generated from the data source it uses, and the other is 0.62, this possible underestimation of the redemption rate may exceed the upward bias resulting from local investors tilting towards stocks with high imputation credit yields. So, the AER's estimate of 0.45 for the redemption rate is *not* an upper bound on an estimate for theta. In respect of the difference between the AER's estimate of 0.45 for the redemption rate and their estimate for the local ownership proportion of local equity of about 60%, I

think the most likely explanation is that the figure of 0.45 is too low. In respect of the impact of the 45 day rule, the rule constrains tax arbitrage and therefore minimizes the gap between the correctly estimated redemption rate and the proportion of Australian equities held by local investors. The rule also prevents some 'genuine' investors from obtaining the credits, and therefore drives down the redemption rate, but this downward effect is unlikely to be significant because 'genuine' investors have the option of changing the timing of their transactions and would have strong incentives to do so. Finally, in respect of dividend drop-off studies as estimators of theta, I concur with the AER's view that they warrant very limited weight for reasons identified by the AER. Accordingly, I think that the equity ownership approach (with an estimate of at least 0.60) should be given most weight because the estimate seems quite reliable, lesser weight should be given to the redemption rate (0.45 to 0.62) because of the upward bias and the significant discrepancies within the data source used to estimate it, and minimal weight to dividend drop-off studies for reasons identified by the AER (with an estimate of 0.35 from the SFG study relied on by the ACT). So, conditional upon recognizing the existence of foreign investors when estimating theta, this evidence suggests an estimate for theta of about 0.60.

Fifthly, when estimating theta from market-based studies, the estimated coefficient on imputation credits should be corrected using the estimate of the coefficient on cash dividends, so as to remove the effect of other factors affecting the value of imputation credits.

Sixthly, since the distribution rate is a firm-specific parameter whilst theta is a market parameter, theta must be estimated using market-wide data whilst the distribution rate could be estimated using firm, industry, or sector-wide data according to which was judged to provide the best estimate for this firm-specific parameter. So, consistency is *not* essential and I therefore disagree with the AER on this point. Furthermore, pragmatic considerations point to use of sector-wide data of some sort. Since the distribution rates for listed and unlisted businesses are significantly different and (private) regulated businesses are listed or owned by listed parents, the distribution rate for regulated businesses should be estimated from that of listed equity. The choices here are ATO data on all listed equity or financial statement data on a subset of high value firms constituting a majority of the value of listed equity. Since the ATO data contains significant unresolved discrepancies, this favours the use of financial statements for a subset of high value firms and an estimate of this type is 0.83 for the top 20 such firms. Finally, Frontier's claim that firms with significant foreign operations have

higher distribution rates than firms without such operations, and are therefore unsuitable for estimating the distribution rate of regulated businesses (which do not have foreign operations), appears to be false and the observed opposite pattern can be explained through the investment of profits required to finance these foreign operations. Accordingly, the effect of these firms with foreign operations being included within the set of firms used to estimate the distribution rate for the benchmark firm (with only local operations) is to underestimate rather than overestimate the distribution rate for the benchmark firm. Thus, the estimate for the distribution rate of 0.83 is likely to be too low for the benchmark firm rather than too high.

Finally, and again conditional upon recognizing the existence of foreign investors when estimating theta, coupling my estimate of the distribution rate of at least 0.83 with my estimate of theta of 0.60 yields my estimate for gamma of at least 0.50. This contrasts with the AER's estimate for gamma of 0.40.

APPENDIX 1: Terms of Reference

Gamma Request for Quote

Background

Service providers have submitted that the AER should follow the recently released Tribunal decision. The AER requests limited advice on a number of disputed matters including:

- The post-tax framework in the NER/NGR (which appears to be based on Officer's 1994 work) and if the AER's approach to estimating gamma is consistent with this framework
- If the AER's use of estimates of the utilisation value from the equity ownership (EO) approach and tax statistics are valid approaches for estimating the utilisation value
- If it is reasonable to place more weight on estimates from the EO approach than estimates from tax studies and is it reasonable to place the least weight on estimates from market based studies
- If the estimates from market based studies, and in particular SFG's dividend drop off study, require adjustment for the apparent impact of differential personal taxation impacts apparent in the estimates of the value of cash dividends
- If in estimating the value for gamma as the product of the distribution rate and the utilisation value it is reasonable to combine estimates of the utilisation value and distribution rate estimated from consistent data sets
- If the use of the SLCAPM, which does not explicitly take into account imputation credits (noting the MRP is adjusted for their value), means that estimates from the equity EO or tax statistics should not be used in preference to market base studies (e.g. dividend drop off studies)

The AER expects the consultant to read the following material in considering the above points and in providing the services required:

- The Australian Competition Tribunal decision for JGN released on 26 February 2016 (and to the extent necessary the AER decision underpinning this)
- The gamma proposal from Australian Gas Networks (AGN).
  We note the proposals of all service providers with decisions to be released this month by the AER (Ausnet DX, CitiPower, Powercor, United Energy, JEN, AGN, Amadeus, and ActewAGL Gas Network) are all substantively the same. These are also largely the same as those that were before the tribunal (only a few incremental additions to arguments). Given this, we have attached the AGN proposal and are happy for the consultant to just read this proposal (we will check and let the consultant know if they should read anything in any other proposals – however even if there is something else to read it will not be material).
- The new consultants' reports from the Frontier economics on gamma submitted with the revised regulatory proposals on 6 January 2016: Frontier economics: *The appropriate use of tax statistics when estimating gamma.*
- Associate Professor Handley's advice to the AER received in September 2014 and 2015 as it relates to the questions in this brief
- Submission from parties on gamma on the current decisions, with a particular focus on any late submissions made on the recently released Tribunal decision

- AER drafting on the consistency of parameter estimates in the rate of return framework and why an adjustment to the dividend drop off studies is requited to make the estimate pre-personal tax. (for review)
- Officer's 1994 paper, *The cost of capital of a company under an imputation tax system*

The consultant should read more broadly to the extent they consider it necessary to provide the services required.

Service required

The consultant is required to write a short report that answers the following questions in light of the decision by the Australian Competition Tribunal handed down on 26 February 2016. In answering each question the consultant should give a brief explanation on why they hold their view.

Where relevant to a given question, the consultant should express a view on whether they consider the Tribunal view and reasoning is correct (or not) and why they hold this view.

Where they consider it desirable, the consultant is free to add commentary on others matters they consider of relevance to the question of whether the AER's approach to estimating gamma (including reasoning for approaches and their relative weighing) appears reasonable.

The consultant will be required to provide a draft report for comment of AER staff and a final report taking into account AER staff comments. The consultant is only required to take into account AER staff comments to the extent the consultant thinks this is warranted (noting the AER expects and wants the consultant to provide their honest expert opinion).

The consultant is also required to review a short piece of drafting by AER staff with respect to both logic and clarity.

Questions for the consultant

(1) Is the AER's approach to estimating the value of imputation credits consistent with the post-tax framework in the National electricity rules (NER)/National gas rules (NGR)? For clarity, please also explain:
    a. What does post-tax mean in the NER/NGR
    b. What are the cash flows going to capital providers under the post-tax framework in NER/NGR, and do the cash flows going to capital providers of the firm under this framework effectively include:
        i. The face value (FV) of coupon payments on debt
        ii. The FV of principal repayments on debt
        iii. The FV of distributed dividends
        iv. The FV of realisable capital gains
        v. The FV of claimed imputation credits
    c. Is the AER approach to gamma, effectively based on the assumption that imputation credits with a face value of $1 have a post-tax value of $1 when utilised, consistent with the post-tax framework in the NER/NGR? In this context:

i. Does the fact estimates of the utilisation value from the equity ownership approach and tax statistics are not "market values" derived from observable prices invalidate estimates from these approaches.

ii. Does the fact the estimate of the required returns on debt and equity are derived from market prices invalidate the use of estimates of the utilisation value from the equity ownership approach or tax statistics?

iii. Does the fact estimates of the required return on debt and equity are derived from market prices mean estimates of the utilisation value from dividend drop off (or other "market" based studies) should be used in preference to estimates from the equity ownership approach and from taxation statistics?

In answering the above question and to the extent you consider it relevant, please have regard to the relevant formulas and definition of cash flows for the post tax vanilla WACC in Officer's 1994 paper *The cost of capital of a company under an imputation tax system*.

(2) Does the AER's estimation of rate of return parameters (that utilise the market value of shares and bonds) combined with the estimation of a utilisation value (largely based on the face value of distributed imputation credits expected to utilised) appear reasonable? In this sense, are their different methods of estimation (mixture of market value and face value) consistent?

In answering this question please consider whether estimates of the required return on debt and equity are likely to be impacted by differential personal taxes in materially the same was as estimates of the utilisation value from dividend drop off studies. Also please consider the Tribunals comments at paragraph 1073.

(3) With respect to different estimates of the utilisation rate:

a. Can the equity ownership approach produce a valid point estimate for the utilisation value? In considering this, please consider if:

i. estimates from the equity ownership approach should be limited to use as an upper bound for the utilisation rate?

ii. there is any reason the estimate is likely to be unreliable?

b. Can Tax Statistics provide a valid point estimate for the utilisation value? In considering this, please consider if:

i. estimates from tax statistics should be limited to use as an upper bound for the utilisation rate?

ii. there is any reason the estimate is likely to be unreliable?

c. Can you briefly explain what may be driving the difference between the estimates of the utilisation value form the equity ownership approach and from taxation statistics? In considering this, please consider if the difference is likely to be driven by:

i. domestic investors not being able to utilise imputation credits (I.e. the 45 day holding rule)

ii. investors not valuing imputation credits at their full face value

iii. Data issues with the different estimates

d. Would the 45 day holding rule be expected to be having a material impact on the utilisation of imputation credits relative to estimates derived from the equity ownership approach?

e. Is it reasonable to give the most weight to estimates of the utilisation value from the equity ownership approach, less weight to estimates from taxation statistics, and the least weight to estimates from dividend drop off studies?

f. Are the AER reasons for giving limited weight to market based studies reasonable?

(4) To the extent market based studies are used to estimate the utilisation value, should an adjustment be made to the estimated utilisation value from a study where the study estimates the value of cash dividends at less than its face value? If yes, what adjustment is likely to be required? Is the AER's approach appropriate?

(5) Should the utilisation value and the distribution rate be estimated on a consistent data set? In answering this please consider:

a. If it is reasonable to combine estimates of the distribution rate and utilisation value from a consistent date set (e.g. to combine a listed equity distribution rate with a listed equity utilisation value)?

b. If it is reasonable to conclude the top 20 firms should not be excluded from the estimate of the distribution rate for listed firms?

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Dividend drop-off estimate of theta

Final Report

Re: Application by Energex Limited (No 2) [2010] ACompT 7

21 March 2011

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Overview and executive summary

1. SFG Consulting has been engaged jointly by Energex Limited (ACN 078 849 055), Ergon Energy Corporation Limited (ACN 078 646 062) and ETSA Utilities (ABN 13 332 330 749) to undertake a dividend-drop off study, further to reasons for decision published by the Australian Competition Tribunal on 13 October 2010. The study has been performed in accordance with the Terms of Reference that are attached as Appendix 1 to this report.

2. In accordance with the directions of the Tribunal, a draft version of this report (dated 21 February 2011) was distributed to the AER and the Applicants for comment. The comments from the AER and the Applicants, and our responses to them, are attached to this report as Appendices 2 and 3, respectively. A number of the comments from the parties have led us to perform some additional analyses and to revise the report. This additional work is also noted in our responses to each comment in the appendices.

3. For the reasons set out in detail in this report, we conclude that the appropriate estimate of theta from the dividend drop-off analysis that we have performed is 0.35 and that this estimate is paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90.

Construction of data set

Raw data

4. Raw data was initially compiled by taking every dividend event for every ASX-listed stock in the DatAnalysis database from 1 July 2000 to 30 September 2010. Paragraph 1 of the ToR requires data to be used up to 31 December 2009. It is our view that a larger dataset provides for more robust and statistically reliable results, so we have used the most recent data that was available at the time we commenced the study. DatAnalysis is operated by Aspect Huntley, which is a wholly-owned subsidiary of Morningstar Inc. It is commonly used as the basis for papers published in the academic and practitioner literature relating to empirical finance.[1]

5. We then removed all observations for which:

   a. Any of the required data items is unavailable; or

   b. The company in question conducted a stock split, bonus issue, or other capitalisation change within five trading days of the ex-dividend date; or

   c. The observation involved multiple dividends being paid by the same company and having the same exercise date (e.g., an ordinary and special dividend with the same ex-date). For these observations we removed the multiple observations and replaced them with a single observation that records the total dividend paid; or

   d. The stock did not trade on the cum-dividend day or the ex-dividend day; or

   e. The company in question had a market capitalisation that was less than 0.03% of the market capitalisation of the All Ordinaries index at the time of the ex-dividend date; or

   f. The security in question falls into any one of the following categories: stapled securities; shares whose primary listing is overseas; CHESS depositary interests; CHESS units of foreign securities; or exchange-traded funds.

6. For each observation, the following data items were recorded:

   a. ASX Code;

   b. Ex-dividend date;

   c. Cum dividend (closing) share price;

   d. Ex-dividend (closing) share price;

   e. Dividend amount;

   f. Franking credit amount;

[1] DatAnalysis and FinAnalysis are part of the same database package. FinAnalysis provides a graphical user interface and is useful when manually extracting data for individual companies. DatAnalysis contains all of the dividend events required for this study and is the version of the database that is more amenable to extraction of data for a large number of companies. DatAnalysis will also format the extracted data into a file ready for further processing and analysis. That is, DatAnalysis and FinAnalysis have similar coverage, but DatAnalysis provides the more convenient extraction interface for the exercise at hand.

g. Trading volume on each of the cum-dividend and ex-dividend days;

h. Return on the stock (i.e., the percentage return, measured in the standard way) on each of the cum-dividend and ex-dividend days;

i. Return on the All Ordinaries index on each of the cum-dividend and ex-dividend days;[2] and

j. The mean and standard deviation of the daily excess stock return over the year ending six business days prior to the ex-dividend day.

7. One of the scaling variables that is used in some versions of Generalised Least Squares estimation below is the daily stock return volatility of the company in question. This requires the calculation of the mean and standard deviation of daily excess stock returns over a recent historical period. We use a period of one year, ending six days prior to the ex-dividend date, so that this historical period does not overlap with the ±5 day window around the ex-dividend date. The mean excess stock return was measured over the trading days beginning one year and six days prior to the ex-dividend day and ending six days prior to the ex-dividend day. The excess stock return for each day is defined as the stock return for a particular company *i* less the return on the All Ordinaries index. Formally, the mean excess stock return for company *i* at time *t* is defined as:

$$\overline{er}_{i,t} = \frac{1}{N}\sum_{j=1}^{N} er_{i,t-5-j}$$

where

$$er_{i,t} = r_{i,t} - r_{m,t},$$

and N represents the number of trading days over the relevant year-long period.

8. Similarly, the volatility of excess stock returns was computed as the standard deviation of the excess stock return, measured over the same period. Formally, the volatility of excess stock returns for company *i* at time *t* is defined as:

$$\sigma_{i,t} = \sqrt{\frac{1}{N}\sum_{j=1}^{N}\left(er_{i,t-5-j} - \overline{er}_{i,t}\right)^2}.$$

9. The raw data, compiled as set out in Paragraphs 4 and 5 and consisting of the data items set out in Paragraphs 6-8, is contained in the **DataFinal** worksheet in the attached spreadsheet file.

Cross referencing and manual compilation of data

10. As set out in the paragraphs below, stock prices were cross-referenced between Datastream and FinAnalysis, company announcements were cross referenced between SIRCA, FinAnalysis and the ASX web site, dividend information was cross referenced between DatAnalysis and company

[2] In all cases the All Ordinaries Accumulation Index was used. For a discussion of (a) why the Accumulation Index is conceptually appropriate and the Price Index is inappropriate for the purposes of this study, and (b) why the choice of index is immaterial in practice, see Paragraph 109 below.

announcements from the ASX web site, and capitalisation changes were cross-referenced between Datastream and company announcements on FinAnalysis and the ASX web site. As explained below, in the small number of cases when there was any discrepancy, we adopted the information from the primary source – the detailed company announcement.

11. For every observation that was manually checked, we manually entered data for all relevant variables.[3] In terms of prices, we manually entered information from FinAnalysis for 1,041 observations that were checked and 801 of these observations appear in the final sample of 3,107 observations. Hence, there are manually checked price entries for 26% of the observations which appear in the final sample. Of these, there are 20 observations in which either the cum- or ex-dividend prices differ between the two data bases, with the average difference between the percentage change over the ex-dividend period being 1.2%. In these cases, we have adopted the stock price recorded in FinAnalysis.

12. We manually entered dividend information (from actual company announcements published on the ASX web site) for 866 observations, and 707 observations of these observations appear in the final sample of 3,107 observations. Hence, there are manual dividend entries for 23% of the observations that appear in the final samples. Of these 707 observations there are 40 observations for which the manual dividend entry did not match the dividend compiled from DatAnalysis. However, 38 of these differences are due to dividends denominated originally in a foreign currency. We have observed that the data in DatAnalysis was more likely to contain dividend errors when dividends were denominated in foreign currencies so we manually compiled all dividends which were originally denominated in foreign currencies, and performed manual conversion to Australian dollars using the exchange rate on the relevant date reported by the Reserve Bank of Australia. This leaves just two observations in which there is a discrepancy between the dividends in DatAnalysis and the manually-compiled dividends or 0.3% of the final sample, and we have reviewed the ASX announcements to verify that our manual compilations are correct in those instances.

13. The ex-dividend date is usually (but not always) four trading days prior to the record date for the relevant dividend. (The record date is the day the share registry determines which shareholders are to be paid the dividend.) We manually entered a value for the date four trading days prior to the record date for 849 observations, and 691 of these observations appear in the final sample of 3,107 observations. Hence, there are manual entries for this date for 22% of observations which appear in the final sample. Of these 691 observations there are 13 instances (1.9%) in which the ex-dividend date from DatAnalysis is not precisely four business days prior to the record date. We have checked these observations against the relevant company announcement and have used the ex-dividend date from the announcement.

14. In accordance with Paragraph 3(e) of the ToR, we used the relevant company annual report and/or company description on FinAnalysis to determine whether the security on which the dividend was paid falls into any one of the following categories: stapled securities; shares whose primary listing is overseas; CHESS depositary interests; CHESS units of foreign securities; or exchange-traded funds. If it did, the observation was removed from the sample.

15. In order to determine whether there was a capitalisation change, in accordance with Paragraph 3(b) of the ToR, we performed two steps:

    a. We computed the percentage change in the adjusted closing price and the unadjusted closing price from Datastream over the period beginning five trading days prior to the ex-

[3] If our manual check revealed that the observation was to be excluded from the data set (e.g., due to a capitalisation change, or the security being a stapled security) we did not record data for every field as the observation was clearly not going to be used.

dividend date and ending five trading days after the ex-dividend date. The adjusted closing price is computed after taking account of capitalisation changes. In the absence of any capitalisation changes these two percentage changes would be equal, but for rounding errors due to the fact that prices are only recorded to either two or three decimal places.

b. Where the difference in the two percentage changes in price was greater than or equal to 0.5% (our tolerance for rounding errors) this was an indication of a likely capitalisation change. We then reviewed the company announcements associated with this observation to confirm that there had in fact been a capitalisation change and ascertained the reason for any capitalisation change.[4] In addition, where we observed ASX announcements around the ex-dividend date which were indicative of a capitalisation change, even in the absence of any difference in percentage changes of adjusted and unadjusted prices, we reviewed those announcements to determine whether there has been a capitalisation change which is likely to have affected the pricing of the shares around the ex-dividend date. This would be the case, for example, where the company announces a capital raising, applicable to shareholders at the current or prior date, which the data provider has not incorporated into adjusted share prices during the time period around the ex-dividend date.

If this process confirmed that a capitalisation change had taken place within the ±5 day window, the observation was removed from the dataset.[5]

16. In accordance with Paragraphs 3(a) and (c) of the ToR, we removed all observations for which there was insufficient information. In accordance with Paragraph 3(d) of the ToR, we removed all observations for which the firm did not meet the required size threshold.

Manual checking for data errors

17. A subset of the observations that are contained in the **DataFinal** worksheet were subjected to further manual checking on an ex ante basis. The following observations were further checked:

a. All observations in the top and bottom 2.5 per cent based on dividend drop-off ratio;

b. All observations in the top and bottom 2.5 per cent based on dividend amount; and

c. All observations in the top and bottom 2.5 per cent based on grossed-up dividend yield.[6]

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[4] Capitalisation changes due to the exercise of options occur on a regular basis amongst listed companies. Changes in the number of shares on issue due to option exercise were not considered to be capitalisation changes for two reasons. First, the market will already be aware of the existence of the options and will likely have incorporated the expected capitalisation change associated with option exercise into the share price. Second, capitalisation changes of this nature typically increase the number of shares on issue by less than 1%, and also involve the payment of the exercise price, which mitigates against the dilutive impact of the option exercise.

[5] We provide more details in relation to the approach used to identify capitalisation changes in Paragraph 112 below.

[6] Due to time constraints, we began performing the checks set out in Paragraphs 3 and 4 of the ToR as soon as the preliminary data set had been compiled. That is, rather than perform the checks in Paragraphs 3 and 4 sequentially, we performed them concurrently. We first note that all of the checks set out in Paragraph 3 of the ToR were performed as required. The ToR then requires the checks in Paragraph 4 to be applied to the top and bottom 2.5% of observations by various criteria (e.g., dividend drop-off). Because the Paragraph 4 checks were performed concurrently with the Paragraph 3 checks, we could not be sure what the exact sample size would be after the Paragraph 3 checks had been completed, and consequently we could not be sure about precisely how many observations should be checked under the Paragraph 4 criteria. For this reason we checked a larger number of observations than the 2.5% criteria required. The result is that the Paragraph 3 and Paragraph 4 checks were performed in accordance with the ToR, except for the fact that the Paragraph 4 checks were applied to more than the top and bottom 2.5% of observations that the ToR requires. That is, our process of manually checking observations is more thorough than the ToR requires.

d. Other observations which empirical analysis suggested were most likely to have been affected by errors in raw data. These additional observations were manually checked in the same way that observations identified in (a) to (c) above were checked. These additional checks were performed to ensure that the influential observations were confirmed to be correct in all respects. Also, if any errors did remain in the dataset after the checks in (a) to (c) above had been performed:

    i. If those errors were material and likely to affect the estimate of theta, it is likely that they would be uncovered by the additional checks; and

    ii. If those errors were immaterial and unlikely to affect the estimate of theta, they are of little concern.

    The identification of outliers and influential observations was not used as the basis for exclusion of observations, only as the basis for performing a detailed manual check to ensure the correctness of the observation.

18. The additional observations that were checked were identified as follows:

    a. Observations that were among the 25 most upwardly or the 25 most downwardly influential observations identified by the stability analysis set out following Paragraph 79 below;

    b. Observations that were identified as outliers as a by-product of the robust regression estimation set out following Paragraph 71 below; and

    c. Observations for companies that appeared multiple times in the set of observations to be checked. For example, if several observations for a particular company appeared in one of the top and bottom 2.5% samples, or in the set of robust regression outliers, we checked the entire set of observations for that company.

19. For the most extreme observations we generally reviewed observations for the entire company because stocks with certain characteristics, namely high volatility, low-dividend stocks are most-likely to be identified as outliers. For example, Computershare appears 21 times in the dataset, it has a median dividend yield of 0.9% (compared to 2.0% for the full sample), a standard deviation of drop-off ratio of 8.3 (compared to 1.7 for the full sample) and a median standard deviation of daily returns of 2.2% (compared to 1.7% for the full sample). It is also the company associated with the minimum and maximum drop-off ratios of –25.0 and +24.5, respectively.

20. This process resulted in approximately 900 observations being manually compiled from a base of 4,064 observations.[7] In every case, the observation was checked by:

    a. Locating the formal ASX announcement of the dividend and reading that announcement to confirm that the raw data contains the correct:

        i. Dividend amount;

[7] In Table 1 we state that 4,076 observations had a market capitalisation which was at least 0.03% of the market capitalisation of the All Ordinaries Index. 11 observations were removed from this set because volume on the ex-dividend day or cum-dividend day was recorded as zero. The remaining set of 4,064 observations was the set used for manual compilation, of which a further 109 observations were excluded because no trades were recorded on either of these dates. The figure of 130 (the sum of 11 and 119) appears in Table 1.

ii. Franking percentage; and

iii. Ex-dividend date;[8] and

b. Recording the unadjusted price and trading volume of each security (both obtained from the Datastream database) on the ex-dividend date and the two prior business days (as reported by the FinAnalysis database) and confirming that these details are consistent with the observations in the raw data.

21. The input file **review.csv** (provided with this report) contains entries for each item which was manually entered as part of this checking of observations. Where an entry appears in this input file it will either override an entry from the prior data compilation, or insert data which was missing from the prior data compilation. Specifically, the checked observations were either:

a. Confirmed to be correct and retained in the sample; or

b. Corrected and then retained in the sample.

22. Aside from this input file for observations that were checked, we made manual corrections to 18 observations relating to seven companies which had dividends incorrectly recorded in foreign currencies in the raw database. These corrections are made prior to incorporating the **review.csv** inputs and are individually identified by ASX code and ex-dividend date in the SAS program used to conduct the analysis.

Manual review for price-sensitive announcements

23. The observations that remain in the data set after performing the manual checks set out in Paragraphs 17 to 22 were then further checked in relation to price sensitive announcements. For this check we used the SIRCA company announcement file to identify observations where a market announcement is made by the company in question on either the cum-dividend or the ex-dividend day and where that announcement is flagged as a price-sensitive announcement on the ASX company announcements platform. While performing the manual checks set out above, we identified a number of announcements that were flagged as being price sensitive, but which were not included in the SIRCA company announcement file. We added these announcements to the set of announcements to be further examined. Hence, in our final dataset we have a complete set of data that lists whether the company made an announcement which the ASX has flagged as being price sensitive.

24. The full sample of observations that were identified as having ASX-flagged price sensitive announcements were then reviewed to confirm whether the announcement(s) made on the cum-dividend or the ex-dividend days would reasonably be expected to have had a material effect on the price or value of the securities concerned.

25. There are two reasons why an announcement might not have a material effect on the price or value of the securities concerned on the day that announcement was made:

[8] In some instances, the ASX announcement of the dividend does not explicitly disclose the ex-dividend date, but simply reports the record date. ASX rules provide that the ex-dividend date occurs four business days prior to the record date (see www.asx.com.au/research/dividends.htm). In instances where the ex-dividend date is not disclosed, we document the record date and the date four business days prior to the record date and confirm that these dates are consistent with the ex-dividend date in the raw data. Where inconsistencies arise between the ex-dividend date contained in the raw data and the date four days prior to the record date, we relied upon the ex-dividend date contained in the raw data as the best available evidence of the true ex-dividend date.

a. Although being flagged as price sensitive by the ASX analyst, the substance of the announcement is unlikely to have had a material effect on prices. (For example, some announcements that have been labelled as being price sensitive are simple corrections to an aspect of a previous announcement); or

b. The effect of the announcement might have already been incorporated into the stock price prior to the formal announcement being made to the ASX.

26. On the other hand, we readily observe announcements which are not flagged as price-sensitive but which, after having observed the share price change in association with that announcement, would be reasonably considered to have provided relevant information to the market. For example, on the ex-dividend date of 24 September 2010, Cabcharge Ltd announced that it had finalised proceedings in a litigation matter with the ACCC. This announcement was not labelled as price-sensitive by the ASX analyst but on that day the company's share price rose by 10.6%, while the market return was –0.5% and the dividend yield was 3.2%.

27. It should be noted that the labelling of announcements as price-sensitive or not is conducted prior to the release of that information to market participants. Hence, it simply represents the analyst's judgement as to the extent to which the announcement conveys new information to market participants, which does not necessarily coincide with the true information content of the announcement.

28. When investigating the effect that important price-sensitive announcements have on stock prices, researchers typically use a methodology known as an *event study*. When performing an event study, the researcher obtains a sample of a similar type of announcements. For example, in a review of event study research, MacKinlay (1997) provides the example of earnings announcements, where those announcements are separated into three groups:

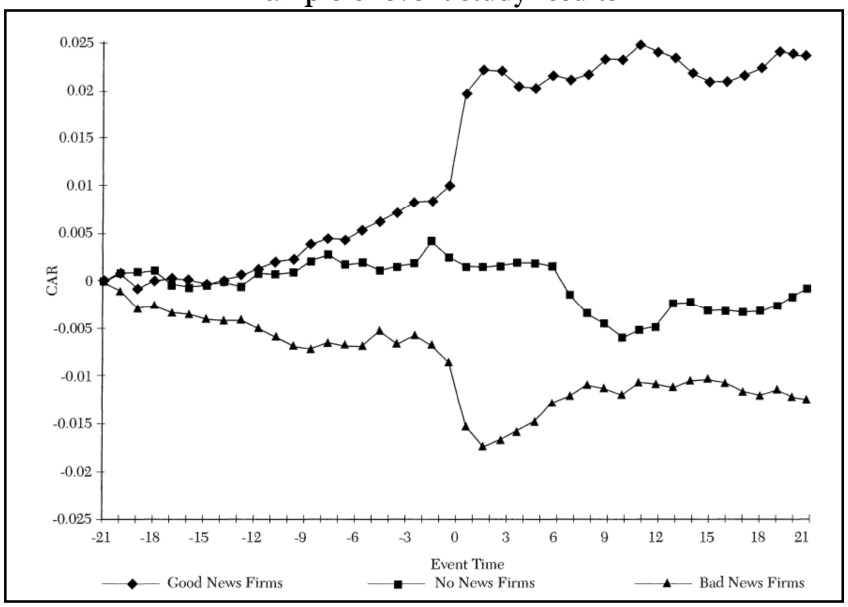
a. Positive announcements (better than forecasts);

b. Neutral announcements (in line with forecasts); and

c. Negative announcements (below forecasts).

29. The event study methodology then compares the average excess returns for each group over the period immediately before and after the announcement. Excess returns are computed as the return on each stock minus an adjustment for broad market movements, such as that set out in Paragraph 7 above. A very common result in event studies is that most of the accumulated excess return occurs *before* the formal announcement is made. This is also the case in the example of MacKinlay (1997), which is reproduced as Figure 1 below. In that figure, Day 0 is defined to be the announcement date. There is clearly a positive reaction (positive cumulative excess returns) to good news announcements and a negative reaction to bad news announcements. Much of the announcement effect occurs prior to the announcement itself and there is relatively little effect after the announcement. This is a common finding in event studies whether the announcement relates to earnings, dividends, takeovers, or other news events. Indeed, for other types of announcements there tends to be an even greater proportion of the reaction prior to the formal announcement and even less "drift" after the announcement.

Figure 1
Example of event study results



Source: MacKinlay (1997) Figure 2a, p. 25.

30. This analysis of event studies is relevant to the present drop-off study insofar as it illustrates that the stock price effect of an important corporate announcement can occur over many days and is certainly not limited to the day on which the announcement is made. Indeed, not only *can* the effect of the announcement occur over many days, on average it *does* occur over many days. Whereas the largest one-day price movement tends to occur on the day of the announcement itself, it is possible that even announcements about matters that are unambiguously price sensitive may not cause a material stock price reaction on the day of the announcement or on the day following the announcement – if the substance of the announcement is anticipated by the market. In summary, it is impossible to read the text of an announcement and to then make a conclusion, on the basis of the subject matter therein, about the extent to which that announcement will have affected the stock price on or about the announcement day.

31. What is required for the present study is the determination of whether a particular announcement would reasonably be expected to have had a material effect on the price or value of the securities concerned over the ex-dividend period. This cannot be determined by simply reading the text of the announcement because it is possible that some or most or all of any price impact may have occurred prior to the formal release of the announcement or because the subject matter was not particularly price sensitive despite the fact that it had been flagged so by the ASX analyst.

32. Rather, to determine whether a particular announcement would reasonably be expected to have had a material effect on the price or value of the securities concerned over the ex-dividend period, we begin by comparing the excess stock return on the cum- and ex-dividend days, with the excess stock return on the same stock over the previous year. The excess stock return is defined as the percentage return on a particular stock minus the percentage return on the All Ordinaries index on the same day, as set out in Paragraph 7 above. If the excess stock return on a particular day is unremarkable, relative to the excess stock return (for the same company) on other days, it is unlikely that an announcement on that particular day has had a material effect on the price of the stock on that day.

33. To formalise this process, we determined the standard deviation of excess stock returns for every observation in the manner set out in Paragraphs 7 and 8. We then identified every observation

for which the company made an announcement that was classified as being price sensitive on either the cum- or ex-dividend days. For all of these observations, we compared the excess stock return on each of the cum- and ex-dividend days with the standard deviation of excess stock returns for that observation. Specifically, for each of the cum- and –ex-dividend days, we divided the excess stock return on the relevant day by the standard deviation of the excess stock return over the previous year, as follows:

$$z_{i,t} = \frac{er_{i,t}}{\sigma_{i,t}}.$$

34. We note that under a normal distribution, approximately 95% of observations occur within two standard deviations of the mean. In this case, the mean excess stock return is set to zero on the basis that firms, on average, are not expected to systematically out- or under-perform the broad market. From this, we conclude that if the $z_{i,t}$ statistic for a particular observation has a magnitude of less than 2.0, the change in the stock price on the particular day is quite unremarkable – it is not significantly different from the amount by which the price of that stock would be expected to change on an average day.

35. Consequently, we conclude that if the $z_{i,t}$ statistic has a magnitude of less than 2.0, any announcement that may have been made on (or near) the particular day is not likely to have had a material effect on the price of the stock on the day in question. Such observations are retained in the sample. This means that observations are only omitted from the sample for reasons of price sensitive announcements if:

    a. The company in question made an announcement to the ASX on the cum- or ex-dividend day (or both) where that announcement was labelled as price sensitive; and

    b. The $z_{i,t}$ statistic on either the cum- or ex-dividend day has a magnitude greater than 2.0, indicating that the stock price on one of those days has moved more than would be expected of that stock on an average day.

36. In summary, we do not omit any observations based on our own subjective judgment. We omit observations only if:

    a. The ASX labels the relative announcement as being price sensitive; and

    b. The market moves the price of the stock significantly more than would have been expected on an average day.

37. As part of our sensitivity and robustness checks, we also perform our analyses after:

    a. having removed all observations for which there was an announcement labelled as price sensitive on either the cum- or ex-dividend day and for which the $z_{i,t}$ statistic on either the cum- or ex-dividend day has a magnitude greater than 1.0;

    b. having removed all observations for which there was an announcement labelled as price sensitive on either the cum- or ex-dividend day, regardless of the market reaction on that day;

c. having removed none of the observations for which there was an announcement labelled as price sensitive on either the cum- or ex-dividend day, regardless of the market reaction on that day; and

d. having removed all observations for which the $z_{i,t}$ statistic on either the cum- or ex-dividend day has a magnitude greater than 2.0, regardless of whether there was an announcement labelled as price-sensitive on the cum- or ex-dividend days.

Final sample

Summary of sample construction

38. In summary, we begin with the data set contained in the worksheet **Data1** and perform a number of steps to incorporate share prices, trades and the data required to exclude observations on the basis of market capitalisation, the release of price-sensitive announcements, historical volatility and particular classes of securities. We then manually compile data for approximately a quarter of the sample, which results in either verification or changes. The resulting sample of observations is the final sample, which is contained in the worksheet **DataFinal**.

39. Table 1 below summarises the compilation of the final dataset, detailing the number of observations available after each step. The final column in Table 1 documents the worksheet in the attached spreadsheet that contains each subset of the data set.

Table 1
Construction of final sample

Criteria	ToR reference	N	Worksheet[9]
Ex-dividend events available on DatAnalysis from 1 July 2000 to 30 September 2010		11,292	Data1
Missing ex-date, currency, exchange rate or where franking >100% or dividend<=0 [Note a]	3a	1,207	
		10,085	Data2
Aggregation of multiple dividends from the same firm on the same ex-date		295	
		9,790	Data3
Share price or market capitalisation data not available	3a	583	
		9,207	Data4
Market capitalisation <0.03% of All Ordinaries Index market capitalisation	3d	5,131	
		4,076	Data5
No trades recorded on either the ex-date or cum-date	3c	130	
		3,946	Data6
Stapled securities, exchange-traded funds or CDIs.	3e	735	
		3,211	Data7
Capitalisation change within 5 days of ex-date	3b	32	
		3,179	Data8
Announcement labelled as "price-sensitive" and excess return on ex- or cum-date greater than 2 standard deviations of historical excess return	5-7	71	
		3,108	Data9
Exclusion of Coal and Allied (28 February 2008) as an extreme observation		1	
		3,107	**DataFinal**

Note a: These observations are omitted because the information in relation to the dividend is incomplete or clearly erroneous.

Removal of outlier

40. The last row of Table 1 notes that we have removed one observation as an extreme outlier. Coal and Allied Limited (CNA) paid a 25 cent fully franked dividend with an ex-dividend date of 28 February 2008. On that day, the stock price increased from $82 to $100 per share. This produces a raw drop-off ratio of –72, which is orders of magnitude greater than all other observations. When the stock price movement is adjusted for broad market movements on the ex-dividend day (as described in Paragraph 12 of the attached Terms of Reference), the drop-off ratio becomes –78.5. As a benchmark, the average drop-off ratio in dividend drop-off studies is approximately 1.0. This observation was identified as part of the checking procedure outlined above, however it passes all criteria set out in the Terms of Reference. Nevertheless, it is our view that this observation should be removed for the following reasons:

    a. The drop-off ratio is extremely large and unusual relative to other data points. Specifically, the range for all other adjusted drop-off ratios in the sample is –25.0 to +24.5 implying that the magnitude of the drop-off ratio from the next point in the sample is as large as the drop-off ratio from the minimum to the maximum of all other points;

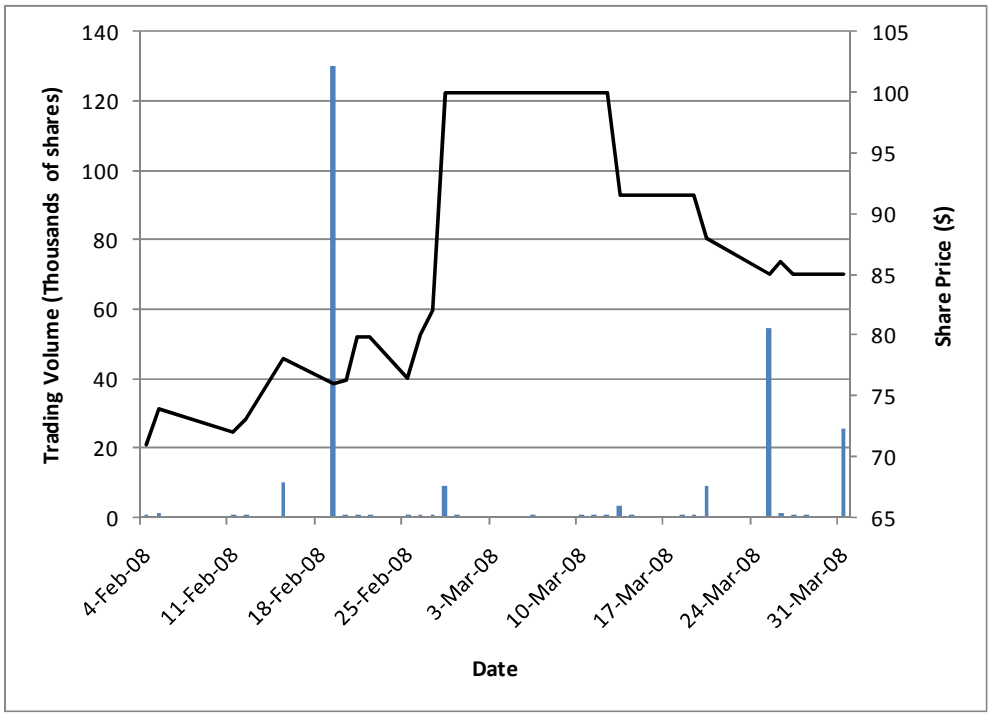
[9] All of the files referred to have been made available to the parties.

b. The trading volume in this stock is generally very small as it is largely held by Rio Tinto Ltd. and volume over the relevant period was particularly small. Just 9,000 shares were traded on the ex-dividend day, 1,000 shares were traded on the cum-dividend day and around 100 shares were traded on the prior day; and

c. The sharp increase in the stock price that occurred on the ex-dividend day (causing the large negative drop-off ratio) was maintained exactly (i.e., the stock price remained at exactly $100) for several days before returning to a lower price. This is set out in Figure 2 below.

41. If this observation is added back into the sample, the result is a lower estimate of theta. This is because there is a large negative drop-off associated with a fully-franked dividend.[10]

Figure 2
Coal and Allied (CNA) stock price and trading volume February-March 2008



Source: Commsec.

Announcements labelled as price sensitive

42. Table 2 contains more detailed information about the treatment of observations for which the company made an announcement that was labelled as being price sensitive. The majority of firms made no price sensitive announcement on either the cum- or ex-dividend days. There were 150 cases in which there was a price sensitive announcement made on the cum-dividend day but not on the ex-dividend day, another 145 cases in which there was a price-sensitive announcement made on the ex-dividend day but not the cum-dividend day and a further 37 cases in which there was an announcement labelled as price sensitive on both the cum- and ex-dividend days.

[10] A comparison of theta estimates with and without Coal and Allied Ltd in the sample is set out in Table 12 in the Appendix below.

43. In our sample, there are 409 observations where the excess return on the stock was outside the range of ±2 standard deviations of the excess return of that stock measured over the previous year. These are observations where the price movement on the cum- or ex-dividend day is relatively large. Of these, the majority (338) were not associated with a price sensitive announcement. For only 71 observations (29 + 33 + 9) was there an announcement that was labelled as price sensitive *and* a relatively large movement in the stock price on either the cum- or ex-dates.

Table 2
Summary of observations with price sensitive announcements

	None	Cum-dividend day announcement	Ex-dividend day announcement	Both	Total
Full sample	2,846	150	145	37	3,178[11]
Excess return on ex- or cum-date greater than 2 standard deviations of historical excess return	338	29	33	9	409

Summary statistics

44. A number of summary statistics for the final sample are set out in Table 3 below. The median drop-off ratio is 1.02 for fully-franked dividends, 0.98 for partially-franked dividends and 0.87 for unfranked dividends. The median dividend yield (per dividend event, not per year) is approximately 2.0%, which matches the median stock price decline on the ex-dividend date. That is, consistent with prior studies, the stock price falls by the amount of the cash dividend on the ex-date in the typical case. The majority of observations are fully-franked dividends. The median-sized firm has a market capitalisation of $1.3 billion. For all of these summary statistics, there are a range of values across the sample. Even after the application of the various filters and manual checks, the drop-off ratio ranges from –25 to +24 and the percentage change in stock price ranges from –13% to +16%. Because of this variation, it is important that the regression diagnostics examine the extent to which a small number of the more extreme observations might influence the estimates.

[11] The figure of 3,178 corresponds to the figure of 3,179 in Table 1, minus the exclusion of the Coal and Allied outlier.

Table 3
Summary statistics for final sample

	Drop-off ratio (adjusted)	Ex-day stock return (decline, adjusted)	Dividend yield	Grossed-up dividend yield	Franking percentage	Market cap ($millions)	Volatility of excess returns (daily)	*N*
All								
Mean	0.8515	0.0198	0.0217	0.0289	77	4,764	0.0193	3107
Median	0.9848	0.0198	0.0201	0.0270	100	1,308	0.0177	
Standard deviation	1.6693	0.0233	0.0119	0.0159	39	11,629	0.0079	
Minimum	-25.0277	-0.1339	0.0006	0.0009	0	184	0.0057	
Maximum	24.4784	0.1643	0.1667	0.2074	100	137,868	0.0735	
Fully franked								
Mean	0.8594	0.0200	0.0214	0.0307	100	5,201	0.0193	2240
Median	1.0197	0.0200	0.0200	0.0287	100	1,202	0.0177	
Standard deviation	1.6561	0.0236	0.0113	0.0162	0	13,118	0.0073	
Minimum	-25.0277	-0.1125	0.0006	0.0009	100	188	0.0057	
Maximum	24.4784	0.1643	0.1369	0.2074	100	137,868	0.0725	
Partially franked								
Mean	0.9273	0.0193	0.0211	0.0255	48	5,946	0.0197	322
Median	0.9775	0.0192	0.0200	0.0241	50	3,383	0.0181	
Standard deviation	1.0542	0.0202	0.0090	0.0112	21	8,664	0.0078	
Minimum	-3.2609	-0.0527	0.0026	0.0031	3	219	0.0067	
Maximum	5.1228	0.1052	0.0551	0.0720	92	68,523	0.0533	
Unfranked								
Mean	0.7740	0.0189	0.0235	0.0235	0	2,270	0.0189	545
Median	0.8749	0.0188	0.0203	0.0203	0	1,098	0.0159	
Standard deviation	1.9889	0.0239	0.0154	0.0154	0	3,415	0.0099	
Minimum	-19.3595	-0.1339	0.0015	0.0015	0	184	0.0071	
Maximum	13.6553	0.1308	0.1667	0.1667	0	33,395	0.0735	

The drop-off ratio (adjusted) is defined as the change in stock price from the close of the cum-dividend day to the close of the ex-dividend day (divided by 1 + the market return) divided by the amount of the dividend. The percentage change in stock price (adjusted) is defined as the change in stock price from the close of the cum-dividend day to the close of the ex-dividend day (divided by 1 + the market return) divided by the stock price at the close of trading on the cum-dividend day. The dividend yield is defined as the amount of the dividend divided by the stock price at the close of trading on the cum-dividend day. The grossed-up dividend yield is defined as the dividend plus the associated franking credit dividend by the stock price at the close of trading on the cum-dividend day. The franking percentage is the proportion of the dividend that is franked. Market cap is the market capitalisation of the firm paying the dividend on the ex-dividend day. Volatility of excess returns is computed as set out in Paragraph 5. *N* represents the number of observations in each sample.

Potential data errors

45. It is important to note that even the thorough checking of data points set out above cannot guarantee that every data point in the sample is completely error-free. Every financial database contains some erroneous data points and where there is a discrepancy between two databases it is often difficult to determine which is the correct entry. In addition, in a dataset of over 3,000 observations compiled from a number of sources, plus thousands of manual entries, there will be residual errors in the data, which is a challenge confronted by every empirical study in finance. Furthermore, even if every data point was a valid observation under the criteria we have applied, that criteria provides no guarantee that the resulting data will generate a precise analysis of the issue at hand. For example, our criteria would not have excluded the observation for Coal and Allied. But the alternative to applying a set of objective criteria is to have the analysis clouded by imposing the researcher's subjective assessment of what is "correct" which impedes comparison of studies amongst researchers. For these reasons it is standard empirical procedure to:

a. Use a data set that is as large as possible so that the influence of each single data point is reduced; and

b. Identify observations most likely to generate a spurious result and analyse the impact of including or excluding these observations.

46. We follow this practice by beginning with all ex-dividend observations in the period from July 1 2000 onwards to maximise the size of the data set, by estimating different variations of the econometric model (defining the independent variable in terms of dividend drop-off and stock return, using OLS and GLS estimation), and by performing a range of sensitivity analyses and robustness checks (including robust regression estimation and stability analysis).

Econometric analysis

Econometric models to be estimated

47. In accordance with Paragraph 12 of the Terms of Reference (attached as an appendix to this report) we estimated the parameters of the following model:

$$\frac{P_{i,t-1} - P^*_{i,t}}{D_i} = \delta + \theta \frac{FC_i}{D_i} + \varepsilon_i \qquad (1)$$

where $P_{i,t-1}$ is the cum-dividend stock price for observation i; $P^*_{i,t} = \frac{P_{i,t}}{1+r_{m,t}}$ is the market-adjusted ex-dividend stock price (where $r_{m,t}$ is the return on the All Ordinaries index on day t); D_i is the amount of the dividend for observation i; and FC_i is the amount of franking credits associated with observation i.

48. The two parameters to be estimated are δ and θ where:

a. δ represents the estimated market value of cash dividends as a proportion of their face value; and

b. θ represents the estimated market value of distributed franking credits as a proportion of their face value.

49. The econometric model in Equation (1) was estimated using regression analysis applied to the final sample. It was estimated using ordinary least squares, generalised least squares and robust regression methods.

50. Generalised least squares estimation involves multiplying all terms in the original econometric model by the same variable.[12] This would be done if the researcher was concerned about a potential relationship between the variance of the residuals (ε_i) and a particular variable. Suppose, for example, that there is a potential relationship between the variance of the residuals in Equation (1) and dividend yield, $\frac{D_i}{P_{i,t-1}}$, such that the variance of residuals is inversely related to dividend yield. This would be the case if the model in Equation (1) provided a closer fit to the data and generally smaller residuals for observations with a higher dividend yield. If this were actually the case, the coefficient estimates in Equation (1) would be consistent and unbiased, but the usual procedures for conducting statistical inference (e.g., *t*-statistics) may be inaccurate.

51. Generalised least squares estimation is designed to eliminate any relationship between the variance of residuals and the variable in question. This is done by scaling every term in the original model by the variable in question. If, for example, all terms in Equation (1) are multiplied by dividend yield, $\frac{D_i}{P_{i,t-1}}$, then Equation (1) becomes:

[12] A detailed discussion of the statistical motivation for GLS estimation is set out in Paragraph 143 below.

$$\frac{P_{i,t-1}-P_{i,t}^{*}}{D_i}\times\frac{D_i}{P_{i,t-1}}=\delta\times\frac{D_i}{P_{i,t-1}}+\theta\frac{FC_i}{D_i}\times\frac{D_i}{P_{i,t-1}}+\varepsilon_i\times\frac{D_i}{P_{i,t-1}}$$

which is equivalent to:

$$\frac{P_{i,t-1}-P_{i,t}^{*}}{P_{i,t-1}}=\delta'\frac{D_i}{P_{i,t-1}}+\theta'\frac{FC_i}{P_{i,t-1}}+\varepsilon_i'. \quad (2)$$

52. The idea behind generalised least squares estimation in this example is that if the variance of the original residuals (ε_i) is inversely related to dividend yield, the scaled residuals (ε_i') are not related to the dividend yield, and standard statistical inference can be performed (i.e., the *t*-statistics will be correct).

53. Consequently, Equation (2) can be thought of as GLS estimation of Equation (1), where the scaling variable is dividend yield, or as OLS estimation of a model in which the percentage stock return is regressed on dividend yield and franking credit yield.

54. The prior literature (e.g., Michaely, 1991; Bellamy and Gray, 2004) identifies dividend yield and stock return volatility as variables that might be related to the variance of the residuals in Equation (1) and we are not aware of any dividend drop-off analysis that uses GLS scaling variables other than dividend yield and stock return volatility. It is possible that Equation (1) provides a better fit to the data for observations from low-volatility stocks. Other things equal, the magnitude of the residuals may be greater for high-volatility stocks because stock price changes tend to be greater for these stocks. In this case, the relevant GLS adjustment would be to scale by the inverse of the volatility of stock returns for the company in question. This adjustment would produce the following econometric specification:

$$\frac{P_{i,t-1}-P_{i,t}^{*}}{D_i\sigma_i}=\delta''\frac{1}{\sigma_i}+\theta''\frac{FC_i}{D_i\sigma_i}+\varepsilon_i''. \quad (3)$$

55. If both GLS adjustments are applied, the econometric specification is:

$$\frac{P_{i,t-1}-P_{i,t}^{*}}{P_{i,t-1}\sigma_i}=\delta'''\frac{D_i}{P_{i,t-1}\sigma_i}+\theta'''\frac{FC_i}{P_{i,t-1}\sigma_i}+\varepsilon_i'''. \quad (4)$$

56. In accordance with the Terms of Reference (Paragraphs 12 and 14), we estimate the four model specifications set out in Equations (1) to (4) above using OLS regression analysis, noting that the models in Equations (2) to (4) can be thought of as GLS estimates (with different scaling adjustments) of the basic model in Equation (1). In summary, we estimate each of the four models that are set out in Table 4 below. Even though we refer to the four specifications as "Models" 1 to 4 for convenience, we note that they are actually just different econometric specifications of the one model in which cash dividends and franking credits are posited as the only systematic factors in driving the ex-dividend day change in stock prices.

Table 4
Econometric models to be estimated

Model	Specification	Interpretation
Model 1	$\frac{P_{i,t-1} - P_{i,t}^*}{D_i} = \delta + \theta \frac{FC_i}{D_i} + \varepsilon_i$	Basic model.
Model 2	$\frac{P_{i,t-1} - P_{i,t}^*}{P_{i,t-1}} = \delta' \frac{D_i}{P_{i,t-1}} + \theta' \frac{FC_i}{P_{i,t-1}} + \varepsilon_i'$	GLS estimation of (1) with weighting variable dividend yield, $\frac{D_i}{P_{i,t-1}}$.
Model 3	$\frac{P_{i,t-1} - P_{i,t}^*}{D_i \sigma_i} = \delta'' \frac{1}{\sigma_i} + \theta'' \frac{FC_i}{D_i \sigma_i} + \varepsilon_i''$	GLS estimation of (1) with weighting variable inverse stock return volatility, $\frac{1}{\sigma_i}$.
Model 4	$\frac{P_{i,t-1} - P_{i,t}^*}{P_{i,t-1} \sigma_i} = \delta''' \frac{D_i}{P_{i,t-1} \sigma_i} + \theta''' \frac{FC_i}{P_{i,t-1} \sigma_i} + \varepsilon_i'''$	GLS estimation of (1) with weighting variables dividend yield, and inverse stock return volatility.

57. Another reason for using the dividend yield scaling variable is that it converts the basic Model 1 (which is in the form of dividend drop-off ratios) into Model 2 (which is in the form of ex-day stock price returns). During the process of finalising the ToR, the AER submitted that its preferred specification was in the form of ex-day stock returns, such as in Model 2. That is, the AER's preferred specification involves scaling by dividend yield. The inverse stock return volatility was also discussed as a potential GLS scaling variable at the meeting with the AER to discuss the ToR that was held in Melbourne on 18 November 2011.

58. Finally, there is also statistical support for the choice of dividend yield and stock return volatility as GLS scaling variables in the estimation results below. We show below that the potential relationship between the variance of residuals and each of the two proposed scaling variables (i.e., the relationships that have been documented in papers in the prior literature and have drawn other authors to adopt the same two GLS scaling variables) is also present in our sample.

Estimation results

59. The results of our estimations are set out in Table 5 below. The key results are:[13]

a. The point estimate of the value of a dollar of cash dividends ranges from 80 cents to 91 cents;

b. The point estimate of the value of a dollar of imputation credits ranges from 16 cents to 41 cents; and

c. The point estimate of the value of the package of a one dollar cash dividend and the associated 43 cent franking credit ranges from 87 cents to 105 cents.

60. We use two methods to estimate standard errors:

[13] Paragraph 127 below demonstrates that the results are immaterially different if the data period is restricted to 31 December 2009.

a. The White method for computing heteroscedasticity-consistent standard errors (which allows for unspecified heteroscedasticity in the residuals); and

b. A method that allows for clustering at the firm level (i.e., allows for the variance of residuals to differ by firms).[14]

61. The two methods produce standard error estimates that are similar in magnitude and generally indicate that the estimates of the value of cash dividends are significantly less than one and franking credits are significantly greater than zero. The standard errors for the estimated value of a fully-franked dividend (i.e., the package of cash dividend and the associated franking credit) are considerably lower than the standard errors for the estimated values of cash or franking credits separately, meaning there is reliable evidence that the value of one dollar of a fully-franked dividend is approximately one dollar. These three results from the regression analysis are consistent with the descriptive statistics, which showed a median drop-off ratio of 1.02 for fully-franked dividends, 0.98 for partially-franked dividends and 0.87 for unfranked dividends.

62. The R^2 statistics measure how much of the variation in the dependent variable is explained by variation in the independent variables. For Models (2) and (4), the R^2 statistics are substantial – 58% and 70% (respectively) of the variation in the ex-day percentage price change can be explained by variation in the cash dividend and franking credit.[15]

63. For Models (1) and (3), however, the explanatory power of the cash dividend is moved from the right-hand side of the regression to the left-hand side – the cash dividend appears only on the left-hand side as part of the dependent variable. For these models, the R^2 statistic must be interpreted as a measure of the extent to which the franking percentage is able to explain the ex-day price change – beyond that which can be explained by the cash dividend.

64. That is, for Models (2) and (4) the R^2 statistic measures the combined explanatory power of the cash dividend and the franking credit. For Models (1) and (3) it measures only the incremental explanatory power of the franking credits – the cash dividend is effectively given full opportunity to explain whatever it can of the ex-day price change and the R^2 statistic measures only what the franking credit can explain beyond this. Consequently, it would be wrong to compare R^2 statistics across models or to use them as a basis for selecting a preferred model.

65. To illustrate this point we ran regression Models (2) and (4) after excluding the franking credit variable (i.e., we regressed percentage change in price against dividend yield). For the OLS regression the coefficient on dividend yield was 0.9376 (clustered standard error = 0.0210) and the R^2 statistic was 57.70%. Hence, incorporating franking credits into the regression increased the R^2 statistic by 0.38%. For the GLS regression the coefficient on dividend yield was 1.0062 (clustered standard error = 0.0159) and the R^2 statistic was 70.23%. In this instance, incorporating franking credits into the regression increased the R^2 statistic by 0.26%.

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[14] As mentioned previously we have reason to believe that standard errors vary systematically with firm characteristics, namely higher standard errors for volatile stocks with low dividend yields. We observe a number of firms appearing multiple times in examination of outliers. Hence, this is our preferred technique for estimating standard errors but we present White's (1984) adjusted standard errors for completeness. For a review of estimation techniques for standard errors refer to Petersen (2009).

[15] We refer to the *R*-squared statistic throughout, rather than the adjusted *R*-squared statistic, because the robust regression analysis considered later only generates an *R*-squared statistic and we want to present explanatory power on a consistent basis throughout.

Table 5
Estimation results: OLS/GLS estimation

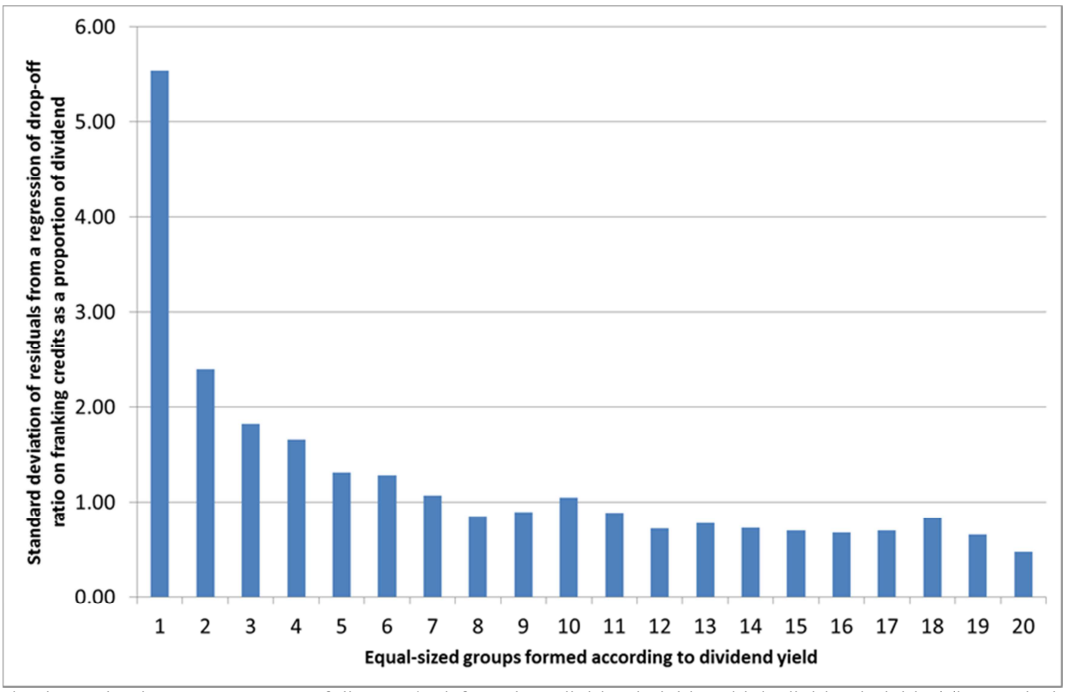
Model 1			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.7964	0.0738	0.0673
Franking credits	0.1640	0.1946	0.1808
Package	0.8667	0.0339	0.0322
R-squared	0.0003		
Adjusted R-Squared	0.0000		
N	3107		
Model 2			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.8070	0.0370	0.0333
Franking credits	0.4096	0.0970	0.0945
Package	0.9826	0.0182	0.0223
R-squared	0.5808		
Adjusted R-Squared	0.5806		
N	3107		
Model 3			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.8861	0.0373	0.0352
Franking credits	0.1936	0.1040	0.1018
Package	0.9690	0.0228	0.0232
R-squared	0.0009		
Adjusted R-Squared	0.0006		
N	3107		
Model 4			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.9129	0.0222	0.0232
Franking credits	0.3113	0.0653	0.0696
Package	1.0463	0.0161	0.0183
R-squared	0.7049		
Adjusted R-Squared	0.7047		
N	3107		

Cash represents the estimated value of a one dollar cash dividend; *Franking credits* represents the estimated value of a one dollar franking credit; *Package* represents the estimated combined value of a one dollar cash dividend plus the associated 43 cent franking credit. The *package* value is estimated as the sum of the *cash* coefficient and 0.43 times the *franking credits* coefficient. The standard error for the *package* estimate is computed as a function of the standard errors of the *cash* and *franking credits* coefficients, and the correlation between them.

GLS scaling variables

66. To assess the appropriateness of the variables that have been proposed for GLS scaling, we examine whether the residuals from Model (1) are related to dividend yield and stock return volatility. To do this, we first rank all observations in our sample by dividend yield and form 20 equal-sized groups ranging from low to high dividend yield. For each group, we compute the standard deviation of the residuals from Model (1). We then plot the relationship between the standard deviation of residuals and dividend yield in Figure 3.

Figure 3
Standard deviation of residuals and dividend yield

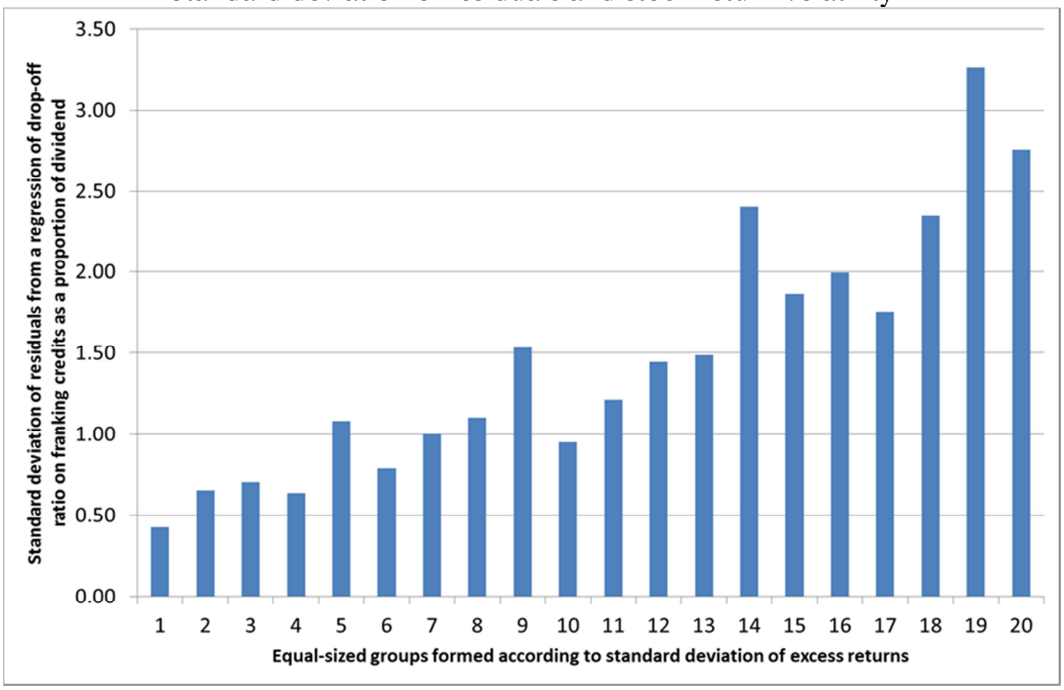


The horizontal axis sets out 20 portfolios ranked from low dividend yield to high dividend yield. The vertical axis shows the standard deviation of residuals from Model (1) for each of the 20 groups.

67. Figure 3 shows that there is a clear negative relationship between dividend yield and the standard deviation of the residuals. Observations with high dividend yields are more likely to have residuals that are relatively smaller in magnitude. This provides some justification for scaling by dividend yield as one of the GLS adjustments in Table 4.

68. We then perform a similar exercise whereby we rank all observations by the standard deviation of excess stock returns over the year prior to the ex-dividend date. Again, we form 20 equal-sized groups ranging from low to high volatility. For each group, we compute the standard deviation of the residuals from Model (1). We then plot the relationship between the standard deviation of residuals and stock return volatility in Figure 4.

Figure 4
Standard deviation of residuals and stock return volatility



The horizontal axis sets out 20 portfolios ranked from low stock return volatility to high stock return volatility. The vertical axis shows the standard deviation of residuals from Model (1) for each of the 20 groups.

69. Figure 4 shows that there is a clear positive relationship between stock return volatility and the standard deviation of the residuals. Observations from high-volatility stocks are more likely to have residuals that are relatively larger in magnitude. This provides some justification for scaling by stock return volatility as one of the GLS adjustments in Table 4.

Sensitivity analysis and robustness checks

70. In this section, we report the results of a number of sensitivity analyses and robustness checks.

Robust regression estimation

71. In accordance with the Terms of Reference (Paragraphs 12 and 14), we estimate the four models set out in Equations (1) to (4) above using robust regression analysis. Robust regression analysis uses automated statistical adjustments to down-weight the influence of extreme data points or outliers. We use the SAS procedure ROBUSTREG to implement the MM robust regression method. The MM method was developed by Yohai (1987) and accounts for imprecision in the dependent and independent variables. Of the four alternative techniques available in the ROBUSTREG procedure it provides the most comprehensive analysis of outliers.[16] The application of these methods in the SAS package is explained in detail in Chen (2002).

72. When implementing the MM robust regression method in SAS, the user is able to over-ride default values and impose values for certain parameters. For example, the INEST option allows the user to impose a prior expectation for the values of the regression coefficients, rather than using values from a first stage estimation procedure. In our implementation, we use the default (neutral) values for all options.

[16] Additional detail on the selection of the MM robust regression procedure is set out in Paragraph 121 below.

73. The results of our estimation using the ROBUSTREG-MM procedure are summarised in Table 6 below. The estimates of theta are generally very similar to those reported in Table 5 above. The only material difference between the point estimates of theta arises for Model 1. In the OLS specification, there is no down-weighting of "noisy" observations (i.e., those observations for which the "signal" from the dividend yield is low and the extraneous "noise" from volatility in the returns of the particular stock, unrelated to the dividend, is high). The robust regression procedure does down-weight those noisy observations, and that is what drives the difference between the estimates for Specification 1. For the other specifications, the GLS weighting procedure and the robust regression procedure tend to have much the same effect – both procedures tend to down-weight the noisy observations, and this leads to similar estimates across the two approaches.

74. The ROBUSTREG procedure available in SAS does not permit the calculation of White heteroscedastic-consistent standard errors or standard errors based on firm clustering. The procedure only allows for estimates of the standard covariance matrix of parameters, albeit that four different techniques are available to perform this estimation. The result is that the "regular" standard errors in Table 6 are lower than the heteroscedastic-consistent and firm clustering standard errors reported in Table 5. This should not be seen as an improvement in the precision of estimates, but rather that a different definition of standard error is being reported.

Table 6
Estimation results: Robust regression

Model 1		
	Estimate	**Std Err**
Cash	0.8593	0.0341
Franking credits	0.3392	0.0903
Package	1.0047	0.0176
R-squared	0.0028	
N	3107	
Model 2		
	Estimate	**Std Err**
Cash	0.8897	0.0255
Franking credits	0.3839	0.0688
Package	1.0542	0.0145
R-squared	0.5104	
N	3107	
Model 3		
	Estimate	**Std Err**
Cash	0.9080	0.0220
Franking credits	0.2653	0.0611
Package	1.0217	0.0137
R-squared	0.0028	
N	3107	
Model 4		
	Estimate	**Std Err**
Cash	0.9323	0.0152
Franking credits	0.3713	0.0444
Package	1.0914	0.0112
R-squared	0.6480	
N	3107	

Cash represents the estimated value of a one dollar cash dividend; *Franking credits* represents the estimated value of a one dollar franking credit; *Package* represents the estimated value of a one dollar cash dividend plus the associated 43 cent franking credit.

Screening of market sensitive announcements

75. Our approach to market sensitive announcements, set out above, is to eliminate an observation only if:

a. On either the cum- or ex-dividend day the company made an announcement that was labelled as being price sensitive; and

b. The price on either the cum- or ex-dividend day moved significantly relative to the variation in stock prices observed on average over the year prior to five days before the ex-dividend day.

76. In the analysis above, a significant stock price movement is defined in terms of the $z_{i,t}$ statistic (as defined in Paragraph 33) having a magnitude greater than 2.0. We re-estimate the results set out in Table 5 using a data set that:

a. Eliminates observations where the $z_{i,t}$ statistic has a magnitude greater than 1.0;

b. Eliminates all observations for which the firm made an announcement that was labelled as being price sensitive, regardless of the observed stock market reaction on the cum- or ex-dividend days; and

c. Eliminates none of the observations for which the firm made an announcement that was labelled as being price sensitive.

77. We report the relevant estimates of theta in Table 7 below.[17] It is clear that the estimates of theta are not sensitive to choices about whether price sensitive announcements are included or excluded from the sample.

Table 7
Sensitivity to treatment of market-sensitive announcements

	None removed	*z*>2 removed	*z*>1 removed	All removed
Number removed	0	71	177	332
OLS/GLS Theta estimates				
Model 1	0.21	0.16	0.13	0.14
Model 2	0.48	0.41	0.42	0.43
Model 3	0.24	0.19	0.17	0.16
Model 4	0.33	0.31	0.32	0.32
Robust Regression Theta estimates				
Model 1	0.36	0.34	0.34	0.32
Model 2	0.40	0.38	0.39	0.39
Model 3	0.28	0.27	0.25	0.23
Model 4	0.38	0.37	0.38	0.38

78. We also perform the regression analyses on a sample that excludes all observations for which the cum- or ex-day excess return was more than two standard deviations of historical excess returns, regardless of whether the firm made any announcement or not. This excludes those observations for which there was a significant movement in the stock price, beyond what would be expected

[17] Full information about standard errors and confidence intervals is available in the attached pdf files and the computer code can be used to reproduce these standard errors and confidence intervals.

given the dividend and movements in the broad market – even if the firm did not make an announcement that was labelled as price sensitive. We summarise the point estimates of theta from those regressions in Table 8. The OLS point estimate of theta from Model (1) is somewhat lower than the corresponding estimates in Table 7, but all other estimates are very similar and further corroborate the results presented above.

Table 8
Sensitivity to treatment of market-sensitive announcements

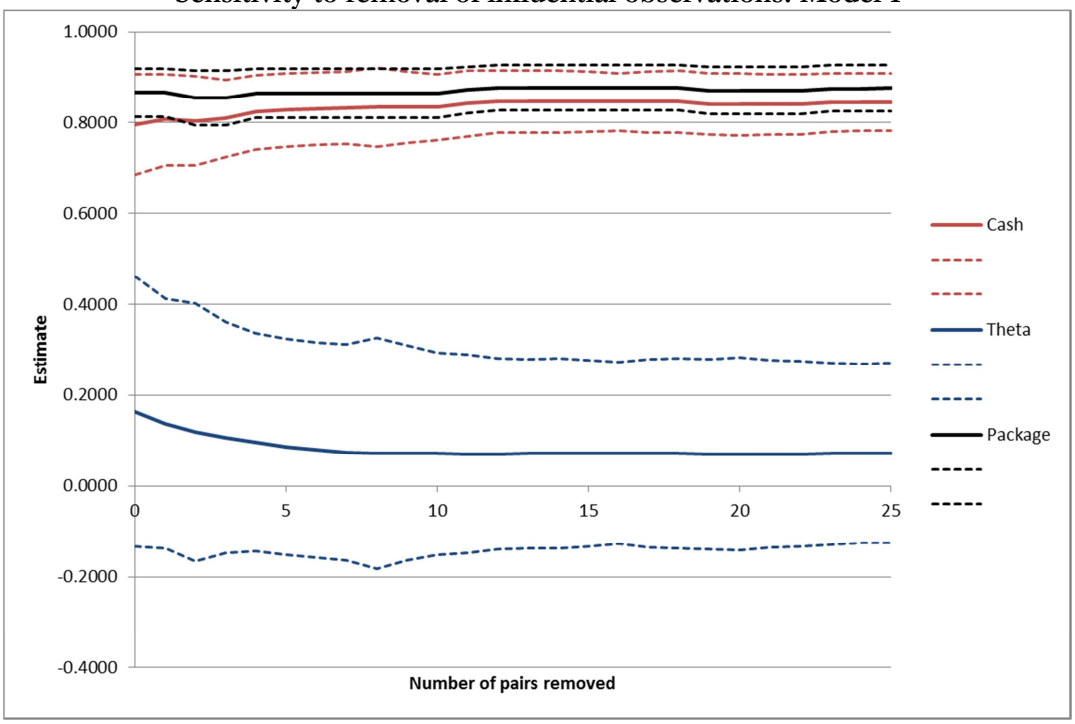
	OLS		Robust regression	
Number removed	409		409	
	Cash dividends	**Theta**	**Cash dividends**	**Theta**
Model 1	0.88	0.08	0.89	0.29
Model 2	0.85	0.38	0.91	0.35
Model 3	0.93	0.20	0.93	0.27
Model 4	0.92	0.34	0.94	0.36

Stability analysis: Robustness to influential observations

79. The ex-ante screening and checking of data required by the Terms of Reference is designed to eliminate outlier data points that are erroneous in some respect and which are likely to have had a disproportionate influence on the estimate of theta. Even after having performed this screening and checking process, it is inevitable that some of the remaining data points will be more influential than others. Consequently, we have quantified the sensitivity of our estimates of theta to influential observations by conducting a stability analysis. We do this by first determining which single observation, if removed, would result in the greatest increase in our estimate of theta. We then determine which single observation, if removed, would result in the greatest decrease in our estimate of theta. We then remove both observations and re-estimate theta. We then repeat this process by removing another pair of observations. We continue in this manner, removing pairs of observations, until 25 pairs have been removed.

80. The results of applying this process to Model 1 are summarised in Figure 5. The solid lines represent the estimates of the value of cash dividends, the value of theta, and the value of the combined package, as indicated. In each case, the corresponding dashed lines represent the 95% confidence interval around the point estimate.

Figure 5
Sensitivity to removal of influential observations: Model 1



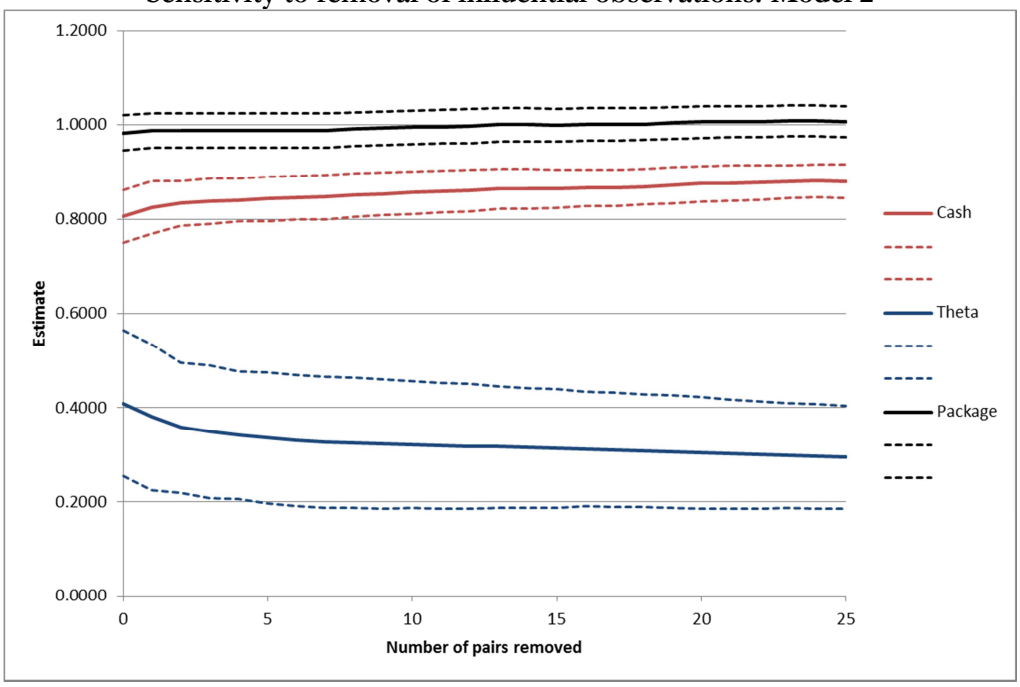
81. Figure 5 shows that the original point estimate of theta from Model 1 was 0.16. When the first pair of observations (i.e., one observation that would maximally increase the estimate of theta and one that would maximally decrease the estimate of theta) is removed, the point estimate of theta falls to 0.14. As further pairs of observations are removed, the point estimate of theta falls more marginally before levelling off at approximately 0.07.

82. The point estimates of the value of cash dividends move in the opposite direction. As pairs of influential observations are removed, the estimate increases slightly before settling at approximately 0.85.

83. The combined value of dividend plus franking credit is stable throughout, taking a constant value whether the influential observations are included or excluded.

84. The result of applying the same process of removing pairs of influential observations to Model 2 is summarised in Figure 6 below. These results are similar to those for Model 1 above. The point estimate of theta falls slightly as the first pairs of influential observations are removed before stabilising at a constant level – approximately 0.3 in this case.

Figure 6
Sensitivity to removal of influential observations: Model 2



85. The stability analysis for Models 3 and 4 are set out in Figure 7 and Figure 8 respectively.

Figure 7
Sensitivity to removal of influential observations: Model 3

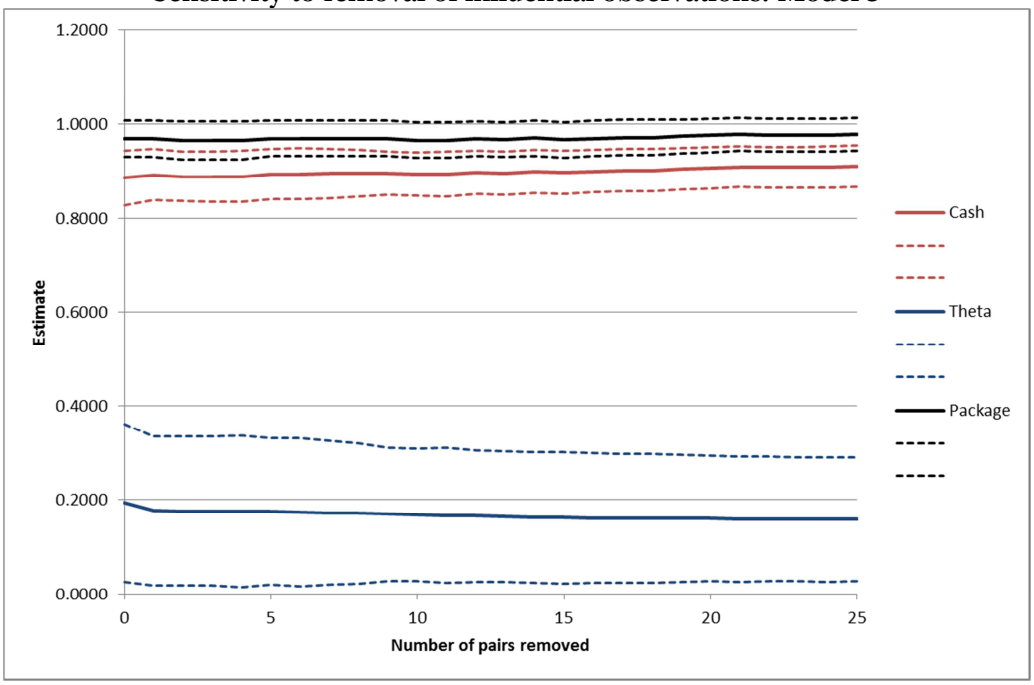
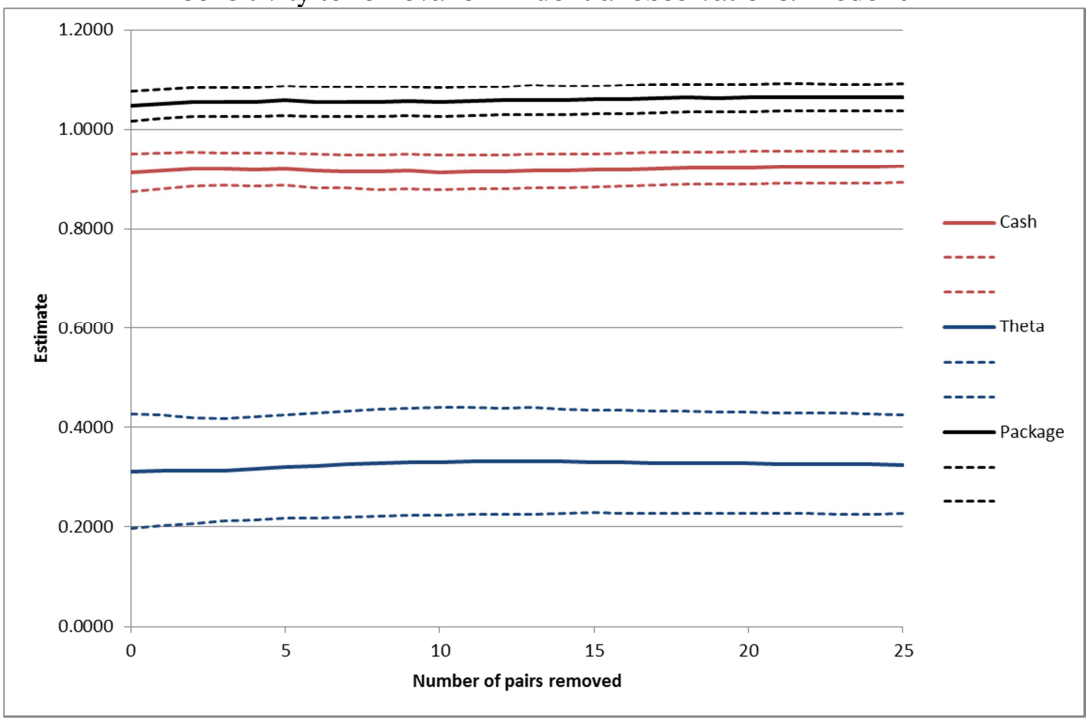


Figure 8
Sensitivity to removal of influential observations: Model 4



86. The stability analysis for Model 4, in Figure 8 above, shows that the estimates of the value of cash dividends, the value of theta, and the value of the combined package are very stable and robust to the removal of pairs of influential data points. That is, the estimates from Model Specification 4 are less sensitive to the effects of influential observations.

87. In summary, the stability analyses demonstrate that the estimates of theta are either maintained or lowered when pairs of influential observations are removed from the data set.

Additional sensitivity analyses and robustness checks suggested by the parties

88. In their comments on the draft version of this report, the parties suggested a number of additional robustness checks. We have performed all of these checks, and set out the results in the item-by-item responses to the parties' comments in the appendices below. The main additional checks that we perform are:

a. We re-estimate the models with and without five observations that involve cash distributions that are deemed to be "return of capital" (see Table 9 below);

b. We re-estimate the models using different robust regression techniques (see Table 10 below);

c. We re-estimate the models using a sample period that ends on 31 December 2009 (see Table 11 below); and

d. We re-estimate the models with and without the CNA outlier observation (see Table 12 below).

89. None of these additional tests produces a set of estimates that is materially different from those reported above.

Conclusions and recommendations

90. Our conclusion is that the appropriate estimate of theta from the dividend drop-off analysis that we have performed is 0.35 and that this estimate is paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90. The reasons for this conclusion are set out in the remainder of this section of the report.

Elimination of factors that have an immaterial effect on estimates

91. The first step in forming a conclusion is to eliminate factors that have an immaterial effect on the final estimates. In this report we prepare a range of estimates that vary across a number of dimensions. The sensitivity and robustness analyses that we have conducted lead us to conclude that the results are insensitive to a number of factors:

a. The results are insensitive to whether the sample period ends on 31 December 2009 or 30 September 2010. Restricting the sample period to 31 December 2009 generally results in slightly lower estimates of theta, but none of the differences are statistically significant;

b. The results are insensitive to the treatment of price sensitive announcements. Whether these observations are included, excluded, mostly included or mostly excluded, the estimates of theta are immaterially different;

c. The results are insensitive to which of the four robust regression techniques are used;

d. The results are insensitive to whether the CNA outlier is included or excluded. To the extent that adding back the CNA outlier does result in different estimates, it generally results in a decrease in the estimate of theta; and

e. The results are insensitive to whether the five observations that involve cash distributions that are deemed to be "return of capital" are included or excluded.

Greater weight assigned to more precise and more stable estimates

92. The estimates from some model specifications and some estimation techniques are more stable than for others. For example, the estimates of theta for Model Specification 1 vary more across estimation techniques and have larger standard errors than is the case for Model Specification 4. The robust regression estimates of theta vary less across model specifications than do the OLS estimates. In this regard, we note that the GLS weighting procedure in Model 4 and the robust regression procedure both tend to down-weight the observations that are most affected by noise – observations for which the dividend yield is low and stock return volatility is high. It is precisely these observations for which the effect of the dividend is most likely to be "lost" among large changes in the stock price caused by exogenous factors. Applying a lower weighting to these observations results in more stable and reliable results in our data set.

93. In determining a final recommended point estimate, we assign more weight to the results of estimates of Model Specification 4 and to the results of robust regression estimation. This is because those results are the most stable and consistent across the range of sensitivity analysis and robustness checks that we have performed. In this regard, we note that:

a. The average of the robust regression estimates of theta in Table 6 is 0.34; and

b. The average of the estimates of theta from Model Specification 4 across Tables 5 to 8 is 0.35.

Results to be considered in total

94. In our view, the most appropriate estimate must be consistent with (or corroborated by) the different versions of the estimation that have been performed. Even though it is appropriate to afford some model specifications and some estimation techniques greater weight than others, an estimate that is consistent with a whole range of different specifications and different estimation techniques is more robust and reliable.

95. That is, we do not recommend the adoption of a single estimate that is based on a single specific choice of:

a. Model specification;

b. Estimation technique;

c. Sample period;

d. Treatment of corporate announcements; and

e. Treatment of outliers,

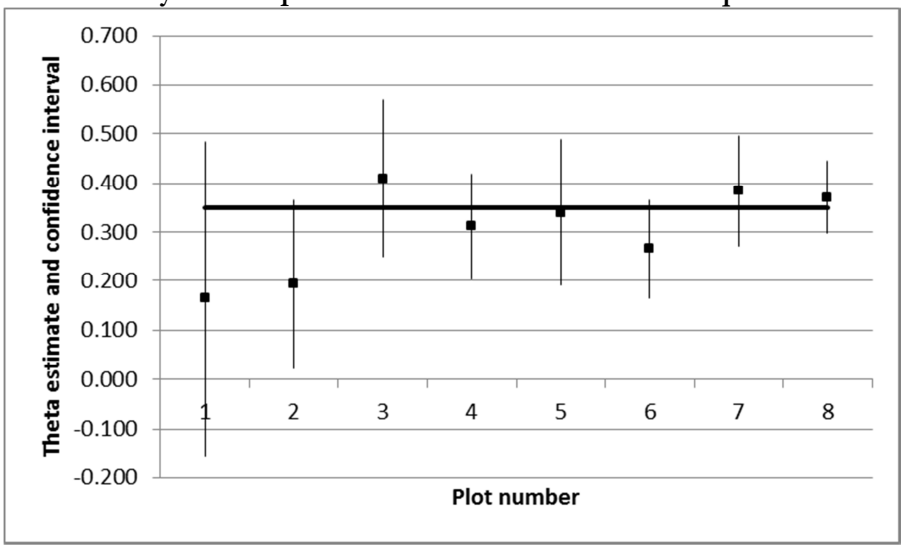
but rather examine whether the proposed estimate is consistent with a whole range of different estimations.

0.35 is consistent with results from different model specifications and estimation techniques

96. We note that 0.35 lies within the standard statistical 95% confidence interval for all the estimations we have performed. We illustrate this in Figure 9 to Figure 12 below. Each of those figures plots the point estimates and 95% confidence intervals for a range of estimations, and demonstrates that the proposed estimate of 0.35 is within the confidence interval for every estimation.

97. Figure 9 plots estimates for Model Specifications 1-4 estimated by OLS/GLS (Plots 1-4 in the figure) and then the corresponding robust regression estimates (Plots 5-8 in the figure). For none of these estimations can the proposed estimate of 0.35 be statistically rejected.

Figure 9
Summary of point estimates and confidence intervals for theta by model specification and estimation technique



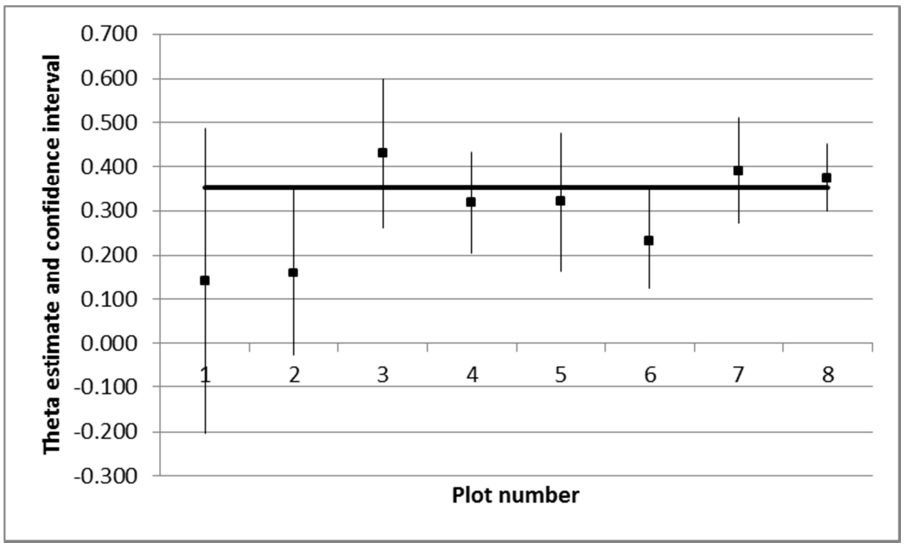
For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35. For all models, the announcement threshold is set to two standard deviations.

Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with results from different treatment of market sensitive announcements

98. Figure 10 is structured in the same way as Figure 9, but displays estimates for the case where *all* observations involving a market sensitive announcement are removed. Again, for none of these estimations can the proposed estimate of 0.35 be statistically rejected.

Figure 10
Summary of point estimates and confidence intervals for theta with removal of market sensitive announcements

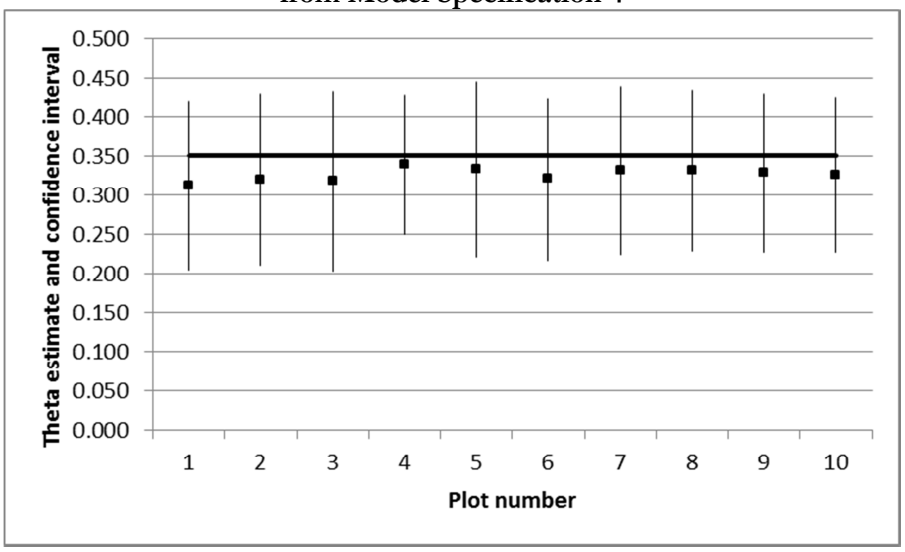


For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35. For all models, all observations for which the firm made a "market sensitive" announcement are removed.
Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with all of the results from Model Specification 4, which is given relatively higher weight

99. Figure 11 plots a range of estimates for Model Specification 4. Plots 1-5 in the figure vary the treatment of market sensitive announcements, and Plots 6-10 vary the treatment of influential observations. This figure shows that the estimates from Model Specification 4 are highly consistent and have relatively narrow confidence intervals. That is, these estimates are stable and precise. The figure also shows that the estimate of 0.35 is close to (within 0.05) of the point estimates from all of these estimations.

Figure 11
Summary of point estimates and confidence intervals for theta from Model Specification 4



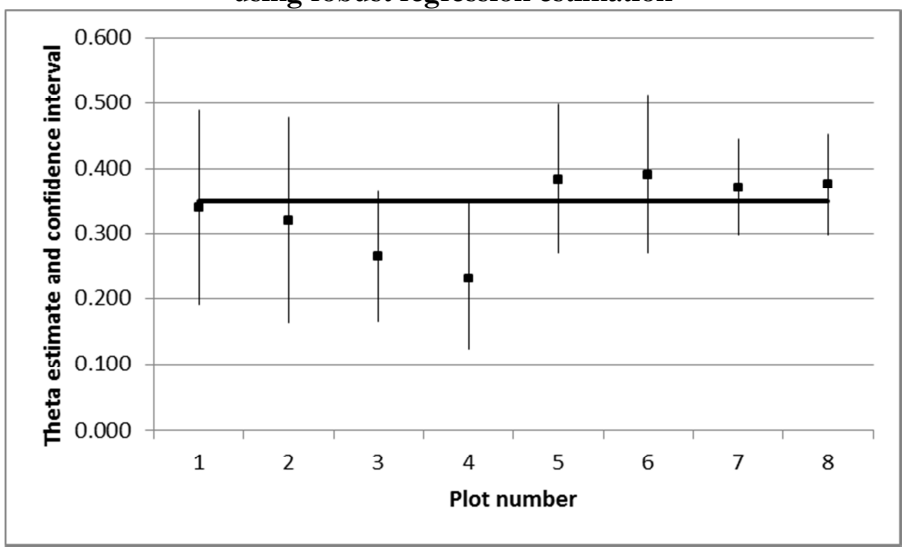
For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35. All estimates relate to Model Specification 4.

Plot 1: OLS estimation, announcement threshold=2; Plot 2: OLS estimation, announcement threshold=1; Plot 3: OLS estimation, all announcements removed; Plot 4: OLS estimation all returns>2 std dev removed; Plot 5: OLS estimation, no announcements removed; Plot 6: Same as Plot 1, with 5 influential pairs removed; Plot 7: Same as Plot 1, with 10 influential pairs removed; Plot 8: Same as Plot 1, with 15 influential pairs removed; Plot 9: Same as Plot 1, with 20 influential pairs removed; Plot 10: Same as Plot 1, with 25 influential pairs removed.

0.35 is consistent with all of the robust regression results, which are given relatively higher weight

100. Figure 12 plots a range of robust regression estimates. These are all estimates using the MM robust regression technique, but applied to the four model specifications and across different treatments of market sensitive announcements. The odd numbered plots are for Model Specifications 1-4 where market sensitive announcement observations are only removed if the cum- or ex-dividend day excess return was greater than two standard deviations of historical excess returns, and the even numbered plots show the corresponding results when all market sensitive observations are removed. This figure shows that the robust regression estimates are relatively consistent and have relatively narrow confidence intervals. The figure also shows that the estimate of 0.35 is slightly above four of the point estimates and very slightly below the other four point estimates.

Figure 12
Summary of point estimates and confidence intervals for theta using robust regression estimation



For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35. All estimates are computed using robust regression.

Plot 1: Model 1, announcement threshold=2; Plot 2: Model 1, all announcements removed;
Plot 3: Model 2, announcement threshold=2; Plot 4: Model 2, all announcements removed;
Plot 5: Model 3, announcement threshold=2; Plot 6: Model 3, all announcements removed;
Plot 7: Model 4, announcement threshold=2; Plot 8: Model 4, all announcements removed.

Final conclusion

101. In our view, considering all of the evidence set out above, an appropriate point estimate for theta based on dividend drop-off analysis is 0.35.

102. Finally, it is important to note that dividend drop-off analysis produces estimates of two parameters: theta and the value of cash dividends. That is, the estimates from drop-off analysis come in pairs. The point estimate of 0.35 for theta is not independent of the estimated value of cash dividends. Rather the estimate of 0.35 for theta corresponds with an estimate in the range of 0.85 to 0.90 for the value of cash dividends.

103. *AER Issue 1: The correct references should be paragraphs 5 and 6 respectively.*

Corrected in Final Report.

104. *AER Issue 2a: Data should be sourced from the databases specified in the ToR and cross-referenced and reconciled as required by the ToR.*

Paragraph 3 of the Draft Report notes that:

> DatAnalysis is operated by Aspect Huntley, which is a wholly-owned subsidiary of Morningstar Inc. It is commonly used as the basis for papers published in the academic and practitioner literature relating to empirical finance.

DatAnalysis and FinAnalysis are part of the same database package. FinAnalysis provides a graphical user interface and is useful when manually extracting data for individual companies. DatAnalysis contains all of the dividend events required for this study and is the version of the database that is more amenable to extraction of data for a large number of companies. DatAnalysis will also format the extracted data into a file ready for further processing and analysis. That is, DatAnalysis and FinAnalysis have similar coverage, but DatAnalysis provides the more convenient extraction interface for the exercise at hand.

Data was sourced from the Datastream, SIRCA, and DatAnalysis databases, in accordance with Paragraph 1 of the ToR (noting that the ToR refers to *Fin*Analysis whereas we have used the *Dat*Analysis data extraction tool). Datastream was used as our primary source of stock prices and stock and market return data, SIRCA was used as our primary source of company announcement data, and DatAnalysis was used as our primary source of dividend information.

105. As set out in the paragraphs below, stock prices were cross-referenced between Datastream and FinAnalysis, company announcements were cross referenced between SIRCA, FinAnalysis and the ASX web site, dividend information was cross referenced between DatAnalysis and company announcements from the ASX web site, and capitalisation changes were cross-referenced between Datastream and company announcements on FinAnalysis and the ASX web site. As explained below, in the small number of cases when there was any discrepancy, we adopted the information from the primary source – the detailed company announcement.

106. For every observation that was manually checked, we manually entered data for all relevant variables.[18] In terms of prices, we manually entered information from FinAnalysis for 1,041 observations that were checked and 801 of these observations appear in the final sample of 3,107 observations. Hence, there are manually checked price entries for 26% of the observations which appear in the final sample. Of these, there are 20 observations in which either the cum- or ex-dividend prices differ between the two data bases, with the average difference between the percentage change over the ex-dividend period being 1.2%. In these cases, we have adopted the stock price recorded in FinAnalysis.

[18] If our manual check revealed that the observation was to be excluded from the data set (e.g., due to a capitalisation change, or the security being a stapled security) we did not record data for every field as the observation was clearly not going to be used.

107. We manually entered dividend information (from actual company announcements published on the ASX web site) for 866 observations, and 707 observations of these observations appear in the final sample of 3,107 observations. Hence, there are manual dividend entries for 23% of the observations that appear in the final samples. Of these 707 observations there are 40 observations for which the manual dividend entry did not match the dividend compiled from DatAnalysis. However, 38 of these differences are due to dividends denominated originally in a foreign currency. We have observed that the data in DatAnalysis was more likely to contain dividend errors when dividends were denominated in foreign currencies so we manually compiled all dividends which were originally denominated in foreign currencies, and performed manual conversion to Australian dollars using the exchange rate on the relevant date reported by the Reserve Bank of Australia. This leaves just two observations in which there is a discrepancy between the dividends in DatAnalysis and the manually-compiled dividends or 0.3% of the final sample, and we have reviewed the ASX announcements to verify that our manual compilations are correct in those instances.

108. The ex-dividend date is usually (but not always) four trading days prior to the record date for the relevant dividend. (The record date is the day the share registry determines which shareholders are to be paid the dividend.) We manually entered a value for the date four trading days prior to the record date for 849 observations, and 691 of these observations appear in the final sample of 3,107 observations. Hence, there are manual entries for this date for 22% of observations which appear in the final sample. Of these 691 observations there are 13 instances (1.9%) in which the ex-dividend date from DatAnalysis is not precisely four business days prior to the record date. We have checked these observations against the relevant company announcement and have used the ex-dividend date from the announcement.

This information appears in the Final Report at Paragraphs 10 to 14.

The parties have been provided with all manually compiled information in the file **review.csv** which has been updated for the final report. We re-iterate that no researcher in empirical finance can attest that every data item from tens of thousands is free from error. What researchers can do is implement procedures designed to minimise the chance that data errors generate a spurious result, namely the review of extreme data points for compilation errors, and presentation of the relative impact of including or excluding potentially contaminating observations. We have not been provided with information from the parties to suggest that any particular data point is in error, or that our review procedures are likely to have resulted in a dataset which over- or under-states the value of imputation credits.

109. *AER Issue 2b: The All Ordinaries Index price index should be used, in accordance with the To*R.

The difference between the All Ordinaries Price Index and the All Ordinaries Accumulation Index is that the Accumulation Index includes the returns that come from dividends whereas the Price Index does not.

The index is primarily used in the study to adjust the ex-day price for the effects of market movements. For example, if the market return over the ex-dividend day (as measured by the percentage change in the market index) is +1%, the study effectively assumes that the price of the stock whose dividend is being examined would have risen by 1% in the absence of the dividend. If the price of that stock then falls by 1.5% on the ex-dividend day, the study would conclude that a fall of 2.5% can be attributed to the dividend (there would have a been a 1% rise without the dividend, but there turned out to be a 1.5% fall with the dividend).

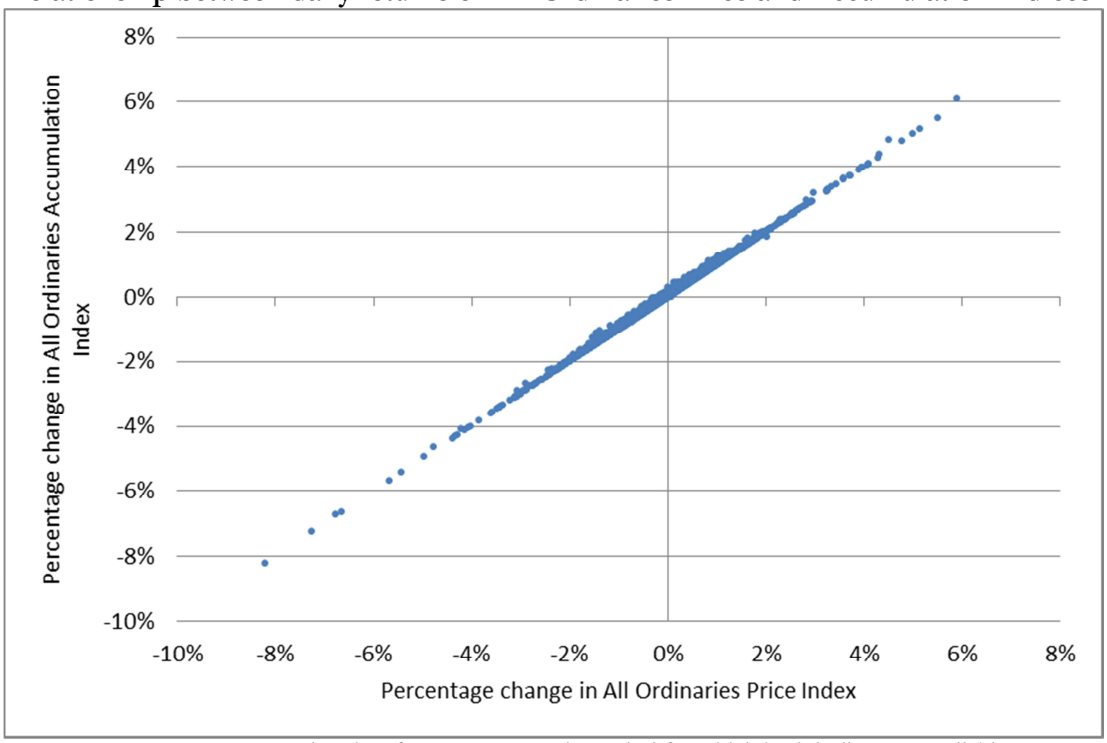
Conceptually, it is the Accumulation Index, as used in the study, that should be used to adjust ex-day stock returns. To see this, consider a conceptual example in which every company in the market pays a 2% dividend on a particular day that is completely neutral from a news perspective (i.e., there is no news either good or bad so the market is perfectly flat that day). Also suppose that the payment of the 2% dividend on a flat day results in the stock prices of every company falling by 2%. That is, but for the dividend there is no change to stock prices as there is no news to move them, so the prices simply fall to reflect the separation of the dividend from the shares. In this case the return on the Price Index would be -2% and the return on the Accumulation Index would be 0% (as the dividends are added back when calculating the Accumulation Index).

Now consider a particular observation in the study. This company, like all of the others in the market in this example, pays a dividend of 2% and the stock price falls by 2%. If the Accumulation Index is used in the market adjustment step, we would say that but for the dividend a return of 0% would have been expected – so when we see a 2% decline in the share price we attribute all of that to the dividend, which is clearly correct.

By contrast, if the Price Index is used in the market adjustment step, we would say that but for the dividend a return of -2% would have been expected – so when we see a 2% decline in the share price we would conclude that the dividend had no effect on this stock, which is clearly incorrect.

Conceptually, the Accumulation Index should be used for the purposes of the study and that is what has been used. In practice, however, it makes no material difference. This is because ex-dividend dates are spread throughout the year so that on any given day a relatively small number of companies have an ex-dividend event. Consequently, the daily returns on the Price Index and the Accumulation Index are virtually identical, as illustrated in Figure 13 below.

Figure 13
Relationship between daily returns on All Ordinaries Price and Accumulation Indices



Source: Datastream, using data from June 1992, the period for which both indices are available.

We have added Footnote 2 to the Final Report in relation to the choice of which All Ordinaries Index should be used.

110. *AER Issue 3a: SFG should confirm that the sample includes all companies and trusts listed on the ASX that have distributed cash dividends over the specified time period.*

From DatAnalysis we extracted dividend information for all companies and trusts that have distributed cash dividends over the specified time period.

111. *AER Issue 3b: Capital distribution events should be removed from the sample. Furthermore, SFG should remove any cash dividend event if the security in question has a capital distribution within five trading days of the ex-dividend day, as per paragraph 3(b) of the ToR.*

This comment appears to confuse the concepts of a capital distribution and a capitalisation change. Paragraph 3(b) of the ToR refers to capitalisation changes. For example, if a firm conducts a 2:1 stock split, its equity capital base may change from having 1 billion shares at a price of $20 each to 2 billion shares at a price of $10 each. If such a capitalisation change occurred on the ex-dividend day, it could clearly distort the drop-off analysis as the effect of the potentially very large stock price change would be attributed to the dividend. Consequently, our data set has removed all observations for which there was a capitalisation change on the ex-date or within five days of the ex-date (to guard against any possibility that the effects of the capitalisation change on the stock price could spill over to nearby days).

By contrast, a capital distribution is not a capitalisation change, but is rather the payment of a cash distribution that is defined to be a "return of capital" rather than a "dividend." In both cases, the company makes a payment of cash to the equity holder. The reason that some dividends, and some parts of some dividends, are defined to be a return of capital rather than an ordinary dividend can generally be tied to the legal structure of the particular entity making the distribution. For example, corporate dividends can be paid to shareholders out of profits generated in the current financial year and out of retained profits generated in earlier years. For a trust structure, however, a "dividend" can only be paid out of current year trust income. Any distribution of non-assessable income, such as a distribution of free cash flow in excess of accounting profit in the particular year (e.g., out of retained profits) is treated as a return of capital under CGT event E4.[19]

The key point here is that whether part of the cash distribution is formally defined to be a "dividend" paid out of retained profits or a "return of capital" paid out of retained profits, if it is a cash distribution in either case it should be retained in the sample. This is for the same reason that dividends should be retained in our sample whether they are defined to be "interim," or "final," or "special." In all cases, a cash payment is made from the company to the equity holder.

Our initial data set contained 115 observations that were classified as a "Capital Return" in DatAnalysis. All but five of these observations were filtered out of the data set in accordance with the checks performed under the ToR (many of these observations were for stapled securities). We have re-estimated coefficients where the remaining capital returns are excluded from the data set and we report the results in Table 9 below. We conclude that there is no valid reason to exclude the five capital return observations from the analysis, and that even if those observations were excluded our conclusions would not change.

[19] Income Tax Assessment Act 1997 (Cth), s 104-70(1).

Table 9
Estimates including and excluding five "return of capital" observations

Estimation method	OLS/GLS		Robust regression	
Return of capital	**Included**	**Excluded**	**Included**	**Excluded**
Model 1				
Cash dividend	0.80	0.80	0.86	0.86
Franking credit	0.16	0.17	0.34	0.34
Model 2				
Cash dividend	0.81	0.81	0.89	0.89
Franking credit	0.41	0.41	0.38	0.39
Model 3				
Cash dividend	0.89	0.89	0.91	0.91
Franking credit	0.19	0.19	0.27	0.27
Model 4				
Cash dividend	0.91	0.91	0.93	0.93
Franking credit	0.31	0.31	0.37	0.37

112. *AER Issue 4a: Secondary data filters should be applied in accordance with the ToR.*

Paragraph 3b of the ToR requires that an observation must be eliminated from the sample if:

> The company in question conducted a stock split, bonus issue, or other capitalisation change within five trading days of the ex-dividend date.

Our method for determining whether the company in question conducted a stock split, bonus issue, or other capitalisation change is set out in Paragraph 11 of the Draft Report. This approach is to first identify any observation for which there *may* have been a capitalisation change by comparing the "adjusted" and "unadjusted" prices in the Datastream database, where the adjusted prices take account of any changes in the number of outstanding shares and the unadjusted prices do not. A difference between these two figures does not necessarily indicate that a capitalisation change has occurred. For example, the number of outstanding shares may have increased slightly due to the exercise of a small number of executive stock options. That is, a difference between the two price series only indicates that a capitalisation change *may* have occurred.

If this check revealed that there may have been a capitalisation change, we manually checked the relevant company announcements to determine definitively whether a capitalisation change had been made, and if so, what the terms of that change were.

In our view, this is the most thorough and accurate method of implementing the requirement of Paragraph 3b in the ToR.

We have included Footnote 5 in the Final Report in relation to this issue.

113. *AER Issue 4b: The code should be corrected to account for public holidays.*

The computer code for our Draft Report removed all observations for which there was a capitalisation change within five week days (Monday to Friday) of the ex-dividend date. We have revised to code to account for public holidays so that the window becomes five trading days rather than five week days. This resulted in no change to the sample as there were no observations for which there was a capitalisation change in the marginal day or two that was added due to the consideration of public holidays in the ±5 day window.

In our computation of the standard deviation of historical excess returns we also adjusted our computations to exclude public holidays. This made no material difference to these standard deviation estimates, as it simply removes a small number of zero return observations from approximately 240 – 250 trading days in the year

114. *AER Issue 4c: Query whether SFG intended to refer to the (trading) day prior to the cum-dividend day. The exclusion of dividend events without a trade on the day prior to the cum-dividend day is not consistent with the ToR. As SFG's method for reviewing ASX-flagged price sensitive observations is also inconsistent with the ToR, the AER does not accept that stocks that do not trade on the day prior to the cum-date should be excluded.*

The reference to "the day before the ex-dividend day" should have been a reference to "the day before the cum-dividend day." This reference has now been removed as we no longer exclude any observations on the basis of non-trading prior to the cum-dividend day.

A total of 20 observations were eliminated from the sample on the basis that they had no trade on the day before the cum-dividend day and eleven of those observations were eliminated due to the stapled security filter or the capitalisation change filter. We have added the remaining observations back into the sample for all estimates that appear in the Final Report. The inclusion of these additional observations has no material effect on the estimates of theta.

For the purposes of Table 7 in the Final Report, the observations for which there is no trade on the day prior to the cum-dividend day are treated as not having a return on the cum-dividend day that is materially different from the average daily return on the particular stock over the previous year.

115. *AER Issue 5a: The selection of observations for further manual checking should occur after the application of secondary filters, in accordance with the ToR.*

The manual checking of an observation in the data set is a labour-intensive task that takes a significant amount of time. Because we had a limited amount of time available, we began performing the checks set out in Paragraphs 3 and 4 of the ToR as soon as the preliminary data set had been compiled. That is, rather than perform the checks in Paragraphs 3 and 4 sequentially, we performed them concurrently.

We first note that all of the checks set out in Paragraph 3 of the ToR were performed as required. The ToR then requires the checks in Paragraph 4 to be applied to the top and bottom 2.5% of observations by various criteria (e.g., dividend drop-off). Because the Paragraph 4 checks were performed concurrently with the Paragraph 3 checks, we could not be sure what the exact sample size would be after the Paragraph 3 checks had been completed, and consequently we could not be sure about precisely how many observations should be checked under the Paragraph 4 criteria. For this reason we checked a larger number of observations than the 2.5% criteria required.

The result is that the Paragraph 3 and Paragraph 4 checks were performed in accordance with the ToR, except for the fact that the Paragraph 4 checks were applied to more than the top and bottom 2.5% of observations that the ToR requires. That is, our process of manually checking observations is more thorough than the ToR requires.

We have included Footnote 6 in the Final Report in relation to this issue.

116. *AER Issue 5b: This step does not accord with the ToR. The AER also notes that the criteria applied by SFG are unspecified or unclear. Furthermore, it is not clear from the SFG data files which observations have been identified on this basis.*

In addition to the manual checking required by Paragraphs 3 and 4 of the ToR, we also performed the same manual checks on observations that were identified as being influential or outliers. These additional observations were manually checked in the same way that observations identified in accordance with Paragraphs 3 and 4 of the ToR were checked. These additional checks were performed to ensure that the influential observations were confirmed to be correct in all respects. Also, if any errors did remain in the dataset after the Paragraph 3 and 4 checks had been performed:

a. If those errors were material and likely to affect the estimate of theta, it is likely that they would be uncovered by the additional checks; and

b. If those errors were immaterial and unlikely to affect the estimate of theta, they are of little concern.

The identification of outliers and influential observations was not used as the basis for exclusion of observations, only as the basis for performing a detailed manual check to ensure the correctness of the observation.

The additional observations that were checked were identified as follows:

a. Observations that were among the 25 most upwardly or the 25 most downwardly influential observations identified by the stability analysis;

b. Observations that were identified as outliers as a by-product of the robust regression estimation; and

c. Observations for companies that appeared multiple times in the set of observations to be checked. For example, if several observations for a particular company appeared in one of the top and bottom 2.5% samples, or in the set of robust regression outliers, we checked the entire set of observations for that company.

The file **review.csv** provides all information resulting from our manual review of individual data points. The information set out in this response appears in Paragraphs 17 and 18 of the Final Report.

117. *AER Issue 5c: FinAnalysis was used for further manual checking of unadjusted price and trading volumes data. However, SFG does not appear to take any procedures for resolving any discrepancies between Datastream and FinAnalysis price and volume data that were identified through manual checking. SFG should verify and correct the error where there is a discrepancy between the data sources.*

This point is dealt with in our response in Paragraph 104 above. With respect to trading volume, the volume recorded in Datastream has been adjusted to account for capitalisation changes but the volume entered from FinAnalysis was the unadjusted volume which appears on the same screen as unadjusted prices. There is no reconciliation of volume differences because we only wanted to observe volume to ensure that a trade had in fact occurred on that day. The volume number itself is not used in the study.

118. *AER Issue 6: The manual review of ASX-flagged announcements is to be done by having regard to the terms of the announcement, with the dividend observation to be excluded from the dataset only where the reviewer concludes (contrary to the ASX's assessment) that the announcement in question would not reasonably be expected to be materially price sensitive.*

Paragraph 6 of the ToR requires a consideration of:

> whether the announcement(s) made on the cum-dividend or the ex-dividend days would reasonably be expected to have had a material effect on the price or value of the securities concerned.

Paragraph 7 of the ToR requires:

> an explanation of the criteria and the methodology that have been applied

and a listing of:

> a. all observations which have been identified by the automatic screening process; and
>
> b. all of those observations which it is determined would not be expected to have been materially price-sensitive and the basis for each such determination.

The Draft Report notes that there are 330 observations (332 in the Final Report) for which the company made an announcement that was labelled as price sensitive on the cum- or ex-dividend day.

The Draft Report also explains the procedure for determining whether the announcement "had a material effect on the price." This was done by comparing the magnitude of the price change on the cum- and ex-dividend days with the magnitude of price changes over the previous year. An announcement is "likely to have had a material effect on the price" if the magnitude of the cum-day or ex-day price changes is large relative to the usual magnitude of price changes over the previous year. By contrast, if there was a particular announcement and the price did not move on either the cum- or ex-day, it is unlikely that the particular announcement had a material effect on the price.

For the reasons set out in the Draft Report, it is generally not possible to determine from simply reading the text of the announcement whether that announcement is likely to have had a material effect on the price.

The Draft Report examines four different tolerance levels for the exclusion of announcements that have been labelled as market sensitive:

a. removing only those for which the magnitude of the cum- or ex-day price change is more than two times the standard deviation of daily price changes in that stock over the previous year;

b. removing only those for which the magnitude of the cum- or ex-day price change is more than one times the standard deviation of daily price changes in that stock over the previous year; and

c. removing all observations for which a market sensitive announcement was made.

The results show that the estimate of theta is almost identical for all three cases. This applies whether OLS/GLS or robust regression methods are used. That is, the estimate of theta is not sensitive to the way in which the "market sensitive" announcements are handled.

To further explore the sensitivity of the results to different treatments of the "market sensitive" announcements, the Final Report includes an additional column in Table 7 that reports estimates for the case where *no* observations are removed on this basis. Again, the estimates of theta are generally almost indistinguishable from those in the three previous columns.

From the results on this issue in the Final Report, it seems clear that the estimates of theta are not sensitive to whether all market sensitive announcements are included, all are excluded, most are included, or most are excluded. The announcements that are labelled as being market sensitive have an immaterial impact on the estimate of theta.

119. *AER Issue 7: Errors in the table should be rectified.*

All tables have been updated for the Final Report.

120. *AER Issue 8a: The AER does not accept that there is broad support in the prior literature for weighting by dividend yield and/or by inverse stock return variance. SFG should review the literature to identify potential weighting variables.*

A number of papers in the relevant literature use the same two GLS scaling variables that are examined in the Draft Report. For example:

- Michaely, R., 1991, "Ex-Dividend Day Stock Price Behavior: The Case of the 1986 Tax Reform Act", *Journal of Finance*, 46, 3, 845-859.

- Bellamy, D., and S. Gray, (2004), "Using Stock Price Changes to Estimate the Value of Dividend Franking Credits," Working Paper, University of Queensland, Business School.

We are not aware of any dividend drop-off analysis that uses GLS scaling variables other than dividend yield and stock return volatility.

Another reason for using the dividend yield scaling variable is that it converts the basic Model 1 (which is in the form of dividend drop-off ratios) into Model 2 (which is in the form of ex-day stock price returns). During the process of finalising the ToR, the AER submitted that its preferred specification was in the form of ex-day stock returns, such as in Model 2. That is, the AER's preferred specification involves scaling by dividend yield. The inverse stock return volatility was also discussed as a potential GLS scaling variable at the meeting with the AER to discuss the ToR that was held in Melbourne on 18 November 2011.

In addition, the Draft Report examines the relationship between the variance of residuals and each of the scaling variables. That is, there is also a statistical motivation for examining models with these two scaling variables. See Paragraph 143 below for further details about the selection and use of GLS scaling variables. We have expanded the discussion of GLS estimation and the selection of GLS scaling variables in Paragraphs 54 to 58 in the Final Report.

121. *AER Issue 8b: SFG should provide detailed description and further justification for using MM robust regression method in SAS and consider other suitable robust regression methods.*

Detailed documentation on the MM robust regression method in SAS is attached as an appendix to the Final Report.

Paragraph 71 of the Draft Report notes that:

> Of the four alternative techniques available in the ROBUSTREG procedure it provides the most comprehensive analysis of outliers.

Chen (2010, p.1) summarises the qualities of the four robust regression methods as follows:

> 1. M estimation was introduced by Huber (1973), and it is the simplest approach both computationally and theoretically. Although it is not robust with respect to leverage points, it is still used extensively in analyzing data for which it can be assumed that the contamination is mainly in the response direction.
>
> 2. Least Trimmed Squares (LTS) estimation is a high breakdown value method introduced by Rousseeuw (1984). The breakdown value is a measure of the proportion of contamination that a procedure can withstand and still maintain its robustness.
>
> 3. S estimation is a high breakdown value method introduced by Rousseeuw and Yohai (1984). With the same breakdown value, it has a higher statistical efficiency than LTS estimation.
>
> 4. MM estimation, introduced by Yohai (1987), combines high breakdown value estimation and M estimation. It has both the high breakdown property and a higher statistical efficiency than S estimation.

We have adopted MM estimation on the basis that it is effectively a combination of the earlier and more basic methods and has a higher statistical efficiency than the other methods. We retain the MM robust regression estimates in the Final Report. In Table 10 below, we compare and contrast estimates from the four methods applied to the base case sample in the Final Report. We conclude from this that our choice of robust regression method has no material impact on the results. We have included Footnote 16 in the Final Report in relation to this issue.

Table 10
Estimates using different robust regression techniques

Estimation method	MM	M	LTS	S
Model 1				
Cash dividend	0.86	0.85	0.88	0.87
Franking credit	0.34	0.33	0.42	0.35
Model 2				
Cash dividend	0.89	0.87	0.95	0.90
Franking credit	0.38	0.39	0.36	0.38
Model 3				
Cash dividend	0.91	0.91	0.88	0.92
Franking credit	0.27	0.30	0.42	0.31
Model 4				
Cash dividend	0.93	0.93	0.94	0.94
Franking credit	0.37	0.36	0.37	0.38

122. *AER Issue 8c: Notwithstanding SFG's footnote 7, adjusted R^2 statistics should also be reported wherever they are generated.*

We have included adjusted R^2 statistics in Table 5. Because the analysis uses a large sample size and has a small number of coefficients to estimate, the R^2 and adjusted R^2 statistics are almost indistinguishable (in all cases, the fourth decimal point changes by either 2 or 3). For this reason, we continue to report R^2 statistics in the other tables to allow for comparability across tables.

123. *AER Issue 8d: The 'package' is not a variable modelled on the right hand side of any of the regression equations. SFG should make it clear in reporting this computed variable.*

The precise definition of every regression equation was specified in the Draft Report. We have also now added a specific note to Table 5 in the Final Report in line with the AER's comment above.

124. *AER Issue 9: The AER notes that the sensitivity analysis performed is not specified in the ToR.*

We performed this sensitivity analysis as part of the regression output and diagnostics that are referred to in Paragraph 14 of the ToR. We consider the sensitivity analysis to be a useful and informative diagnostic, so have retained it in the Final Report.

125. *AER Issue 10: All raw data files, computer codes and output files should be made available in text or Excel format (as appropriate). SFG has not made the SAS program output files (e.g., SAS log file in text format) available as part of the study. The AER requests that these output files be provided.*

We have already provided all raw data files in Excel or .csv format (.csv files can be opened directly in Excel).

The computer code was provided in SAS format so that it could be easily executed directly in SAS. The SAS files are not "black box" executable files, but are program files that set out every line of code and every command that is to be executed. The SAS program files can be easily saved in text format by opening them in SAS and then saving as text, but they cannot be executed from text format, which is why we provided them in SAS format. We have now saved them in text format and have provided these to the parties.

All of the output from the SAS programs is created by running the programs. All data files and all programs have been provided to the parties. The "log" files that have been requested by the AER contain system information such as the time taken to run the program and the amount of CPU memory that was used in the execution of the program.

Accompanying the Final Report are pdf versions of the results files and pdf versions of the log files associated with the compilation of those results files.

126. *Applicants Issue 1.1a-b: Please specify which databases were used to compile the dataset and the way in which each database was used. To the extent the databases of Datastream, SIRCA and / or FinAnalysis were not used, please provide an explanation as to why these databases were not used and any potential implications of this on the conclusions contained the report. Please confirm that the process of cross-referencing between the three databases (referred to in paragraph 2 of the terms of reference) was undertaken. Please also set out the results of this process in your report, in the manner described in paragraph 2 of the terms of reference. To the extent that the cross-referencing between the three databases was not undertaken, please provide an explanation as to why and any potential implications of this on the conclusions contained in the report.*

This point is dealt with in our response in Paragraph 104 above.

127. *Applicants Issue 1.1c: Please provide reasons for the decision to use data up to 30 September 2010, rather than up to 31 December 2009 as set out in the ToR. If it is your opinion that, in the relevant circumstances, a larger dataset provides for more robust "state-of-the-art" estimates of theta, please state this in your report. Please set out any potential implications of using data up to 30 September 2010 (as opposed to 31 December 2009) on the conclusions contained in the report.*

It is our view that a larger dataset does provide for more robust and statistically reliable results. Consequently, we have used the most recent data that was available to us. We note this in Paragraph 4 of the Final Report.

We have also computed a set of estimates using data up to 31 December 2009 only. Table 11 below shows that the extension of the data period does not have a material impact on the estimates of theta. We refer to this result in Footnote 13 in the Final Report.

Table 11
Estimates using different sample end points

Estimation method	OLS/GLS		Robust regression	
Sample end date	30/09/2010	31/12/2009	30/09/2010	31/12/2009
Model 1				
Cash dividend	0.80	0.82	0.86	0.89
Franking credit	0.16	0.14	0.34	0.30
Model 2				
Cash dividend	0.81	0.82	0.89	0.90
Franking credit	0.41	0.39	0.38	0.38
Model 3				
Cash dividend	0.89	0.91	0.91	0.92
Franking credit	0.19	0.17	0.27	0.27
Model 4				
Cash dividend	0.91	0.92	0.93	0.94
Franking credit	0.31	0.31	0.37	0.38

128. *Applicants Issue 1.1d: Please provide reasons for the aggregation of dividends described in Paragraph 4(c) of the Draft Report. Please explain what impact this aggregation has, if any, on the conclusions contained in the Draft Report.*

For some of the observations in the sample, a single company simultaneously paid an ordinary and a special dividend. For example, a company may pay an ordinary dividend of 10 cents per

share and a special dividend of 5 cents per share, with both having the same ex-dividend date. This is treated as a single dividend of 15 cents per share because it involves the company paying 15 cents of cash to the equity holder. The appropriate measurement for dividend drop-off analysis is the amount of cash that the company pays to the equity holders. The terminology that is applied to components of that total cash amount (e.g., whether some of it is labelled as "ordinary" and some is labelled as "special" is irrelevant).

In practice, when a company pays a 15 cent dividend, the share price falls by approximately 15 cents on the ex-dividend date. This occurs whether that dividend is labelled as ordinary, special, or some mixture.

If the "special" part of the dividend were ignored in the analysis, the 10 cent ordinary dividend in the example above would be compared with a 15 cent stock price decline, and this would distort the results of the drop-off analysis.

If all observations that included a special dividend were omitted altogether, the sample size would be reduced unnecessarily and this would have a detrimental effect on statistical reliability. This would also be inconsistent with the ToR.

In summary, the only impact that the aggregation of ordinary and special dividends has on the results is to properly align the dividend amount and the stock price effect. Any other treatment would either introduce bias or reduce statistical reliability.

129. *Applicants Issue 1.1e: Please report the number of observations (if any) excluded due to missing data items listed in Paragraphs 5(h), (i) and (j) of the Draft Report.*

A number of observations were excluded because stock prices were missing on the cum- or ex-dividend days, as summarised in Table 1 of the report. There were no incremental observations removed because historical or market returns were unavailable. In other words, if we could observe prices on the cum- and ex-dividend dates, we could also observe historical returns and market returns.

130. *Applicants Issue 1.1f: Please explain why the mean excess stock return is calculated over trading days beginning one year and six days prior to the ex-dividend day and ending six days prior to the ex-dividend day.*

We have included some additional explanation on this point in Paragraph 7 of the Final Report.

131. *Applicants Issue 1.1g: Please confirm that the Equation in Paragraph 6 is accurate.*

We have made changes to the formulas in Paragraph 7 and 8 of the Final Report to clarify that stock return volatility was computed over a one-year period ending six days before the relevant ex-dividend date.

132. *Applicants Issue 1.2a: Please provide further explanation of the process described in Paragraph 9(d), including how you identified "outliers" and why you considered this process to be necessary.*

This is explained in Paragraph 116 above. The Final Report also contains a more detailed discussion of this process at Paragraph 17.d.

133. *Applicants Issue 1.2b: In Footnote 3, please state how many observations had inconsistencies between the ex-dividend date contained in the raw data and the data four days prior to the record date.*

We identified 20 observations for which the ex-dividend date in DatAnalysis was not exactly four days prior to the record date. These observations were checked against the relevant company announcement and the date reported in the announcement was used.

134. *Applicants Issue 1.2c,d: Please explain why the process in Paragraph 10(b) is necessary in light of the exclusion set out in Paragraph 4(f). Please confirm that the filter for capitalisation changes is applied to the entire sample as implied by Paragraph 4(b). It is unclear from Paragraph 11 whether this filter is only applied to the approximately 900 "top and bottom" observations. If the filters in Paragraphs 4(b) and 11 are different, then please explain how.*

The filter for stapled securities; shares whose primary listing is overseas; CHESS depositary interests; CHESS units of foreign securities; or exchange-traded funds was applied to the entire sample. Every observation that we identified to be one of the types listed above was removed from the sample.

Paragraph 10(b) of the Draft Report explained in more detail how this filter was implemented. The reason for the application of these manual steps is that we are unaware of a field in DatAnalysis which identifies whether a company is an exchange-traded fund, a stapled security, has a primary listing overseas or is a CHESS Depository Instrument. Hence, we manually-compiled this information by reviewing company disclosures and information from the ASX.

The filter for capitalisation changes is also applied to the entire sample. Every observation for which we identified a capitalisation change within the ±5 day window was removed from the sample.

Paragraph 11 of the Draft Report explained in more detail how this filter was implemented. The reason for the application of the filter in this manner is explained further in Paragraph 112 above.

We have clarified these issues in the Final Report.

135. *Applicants Issue 1.2e: If the process in Paragraph 11 confirms that a capitalisation change has taken place, does this result in removal of the observation? If so, please clearly state this.*

It does – if any capitalisation change is identified within the ±5 day window, the observation is removed from the dataset. Paragraph 15 in the Final Report documents that this is the case.

136. *Applicants Issue 1.3(a): The Draft Report states that SFG identified a number of additional announcements that had been flagged as price sensitive by the ASX but which were not included in the SIRCA file. If you are aware of an explanation as to how this may occur please provide this explanation and set out why it was appropriate to further examine these announcements.*

The SIRCA database contains a company announcement file that contains a record of corporate announcements to the ASX. This file contains information including the company's ticker symbol (e.g., ANZ, BHP), the date of the announcement and a flag for announcements that were labelled as price sensitive.

The FinAnalysis database and the ASX web site contain the full text of every announcement and detailed information about the time of the announcement and its classification by the ASX.

In performing the various manual checks required under the ToR, we read the text of many announcements within the ±5 day window of ex-dividend dates. This led us to identify some detailed announcements in the FinAnalysis database that were classified by the ASX as being

price sensitive, but which did not appear in the SIRCA summary file. These observations were treated in exactly the same manner as all other observations with price sensitive announcements.

We could not identify any systematic characteristic of the omissions from the SIRCA summary file, so we are unable to comment on why they might have occurred.

137. *Applicants Issue 1.3(b): The Draft Report uses a methodology called "event study" to manually review announcements for price sensitivity. Please explain whether this methodology captures price sensitive announcements which cause a drop in the price and if so, how. If not, please explain how negative price sensitive announcements can be assessed.*

The discussion about event studies in the Draft Report was included as an illustration of how the price impact of important corporate announcements can occur over a number of days. The role of this discussion was set out in Paragraph 23 of the Draft Report:

> This analysis of event studies is relevant to the present drop-off study insofar as it illustrates that the stock price effect of an important corporate announcement can occur over many days and is certainly not limited to the day on which the announcement is made. Indeed, not only *can* the effect of the announcement occur over many days, on average it *does* occur over many days.

It is not correct to say that the Draft Report uses the event study methodology. Rather, the Draft Report discusses the event study literature by way of illustrating one reason why there may be little stock price reaction on the day that an announcement is made, even though that announcement contains text that might sound as though it is relevant to the price of the stock.

The approach that is adopted in relation to price sensitive announcements was set out in Paragraphs 22-28 of the Draft Report, with additional sensitivity analysis in Paragraphs 64-67. The discussion in Paragraph 118 of this Final Report is also relevant.

The Applicants also ask whether the methodology that has been employed in relation to price sensitive announcements symmetrically captures the effects of "negative" announcements that might be expected to result in a decline in the stock price. It does. We examine the magnitude of the change in stock price on the cum-and ex-dividend days and compare the *magnitude* of those price changes to the distribution of daily price changes over the previous year. The *direction* of the price change is not relevant to this consideration – positive and negative price changes that are, say, 2.5 times the standard deviation of price changes over the previous year are treated symmetrically. This should be clear from Paragraphs 34 and 35 of the Final Report.

138. *Applicants Issue 1.3(c): Were any observations materially affected by price sensitive announcements able to be corrected (per Paragraph 8 of the ToR) or were all these observations excluded?*

Paragraph 8 of the ToR states that if the check that is performed as a result of there being an announcement that was labelled as price sensitive happens to uncover a data error (e.g., the dividend amount or ex-dividend date were in error) then that error can be corrected if it is possible to do so. This is independent of the materiality of the price sensitive announcement.

In practice, none of our checks in relation to price sensitive announcements led us to find an observation that was in error. All of the observations that were in error and were either corrected or eliminated from the dataset were identified from other (prior) checks. Consequently Paragraph 87 of the ToR had no substantive effect.

This means that the observations with price sensitive announcements were retained in, or eliminated from, the sample on the basis of the materiality of their effect on the stock price. It is not the case that they were all excluded, as the Applicants' question might imply. Table 7 of the Final Report contains a range of estimates according to different treatments of observations with price sensitive announcements. Only one version of the estimates involves the elimination of all observations with price sensitive announcements.

139. *Applicants Issue 1.4(a)(i): In Table 1, Please confirm that the sample size numbers are correct, including those for Data4 and Data5.*

We have updated the sample size numbers in Table 1 of the Final Report.

140. *Applicants Issue 1.4(a)(ii): In Table 1, Please explain why observations were excluded where "franking >100% or dividend <=0" (Table 1 first line). If this was to correct for obvious data errors, please clearly state this.*

These observations were excluded to remove obvious data errors. We have made this clear in a note to Table 1 in the Final Report.

141. *Applicants Issue 1.4(a)(iii): In Table 1, The removal of observations for stock splits and bonus issues (referred to in Paragraph 4(b)) is not identified. Similarly, the removal of observations for CHESS units of foreign securities and shares listed overseas (referred to in Paragraph 4(f)) is not identified. Please clearly identify the point at which all of these exclusions occur.*

Observations for which there was a stock split or bonus issue are recorded in Table 1 of the Draft Report as "Capitalisation change within 5 days of ex-date." Stock splits and bonus issues are types of capitalisation change.

In Table 1 of the Draft Report, foreign securities of any form are eliminated along with stapled securities, exchange traded funds and CHESS depository instruments. In the Final Report, we expand the descriptions in Table 1 to be clearer about the point at which various filters are applied.

142. *Applicants Issue 1.4(b): In relation to Paragraph 32 it is stated that the inclusion of Coal and Allied leads to a lower estimate of theta. Please specify the materiality of this impact.*

When Coal and Allied is included in the sample, the estimates of theta are uniformly lower. We set out the relevant estimates of theta with and without Coal and Allied in the sample in Table 12 below, and include a reference to this table in Paragraph 41 of the Final Report.

Table 12
Summary of estimates with and without Coal and Allied Ltd

	Excluding CNA		Including CNA	
	Estimate	Std Err (Firm clustering)	Estimate	Std Err (Firm clustering)
Model 1				
Cash	0.7964	0.0673	0.7976	0.0673
Franking credits	0.1640	0.1808	0.0846	0.1980
Package	0.8667	0.0322	0.8338	0.0464
R-squared	0.0003		0.0000	
N	3107		3108	
Model 2				
Cash	0.8070	0.0333	0.8070	0.0333
Franking credits	0.4096	0.0945	0.4084	0.0945
Package	0.9826	0.0223	0.9820	0.0223
R-squared	0.5808		0.5691	
N	3107		3108	
Model 3				
Cash	0.8861	0.0352	0.8865	0.0352
Franking credits	0.1936	0.1018	0.1656	0.1063
Package	0.9690	0.0232	0.9575	0.0265
R-squared	0.0009		0.0004	
N	3107		3108	
Model 4				
Cash	0.9129	0.0232	0.9129	0.0232
Franking credits	0.3113	0.0696	0.3108	0.0696
Package	1.0463	0.0183	1.0462	0.0183
R-squared	0.7049		0.6997	
N	3107		3108	

Cash represents the estimated value of a one dollar cash dividend; *Franking credits* represents the estimated value of a one dollar franking credit; *Package* represents the estimated combined value of a one dollar cash dividend plus the associated 43 cent franking credit. The *package* value is estimated as the sum of the *cash* coefficient and 0.43 times the *franking credits* coefficient. The standard error for the *package* estimate is computed as a function of the standard errors of the *cash* and *franking credits* coefficients, and the correlation between them.

143. *Applicants Issue 2.1(a): Please provide further explanation of why each of the functional forms in Table 4 is used, including:*

i. *Why Model 1 is specified in the way that it is (besides the fact that this form was prescribed in the ToR);*
ii. *Why dividend yield is used as a scaling variable in Model 2;*
iii. *Why inverse stock return variance is used in Model 3 and Model 4.*

Where relevant, please include explanations of relevant theoretical concepts and/or graphical illustrations of observed patterns in residuals.

Model 1 is the standard dividend drop-off equation. The left-hand-side variable is the ex-dividend day stock price change

The selection of potential GLS scaling variables is drawn from the relevant literature, as discussed in Paragraph 120 above. These two scaling variables are also motivated by the pattern in the residuals from Model 1, as set out in Figure 3 and Figure 4 of the Draft Report.

One of the assumptions of OLS regression analysis is that the residuals are homoscedastic. This means that all of the residuals have the same variance. This in turn means that there should be

no relationship between the variance of the residuals and any relevant variable. Whether such a relationship exists can be determined by dividing the sample into groups ranked on the variable in question and computing the variance of the residuals for each group. If there is a clear relationship between the variable in question and the resulting variances, the residuals are not homoscedastic and one of the assumptions of regression analysis is violated. This can be remedied by dividing all terms in the regression equation by the variable in question.

Mathematically, the residuals are homoscedastic if they all have the same variance:

$$var(\varepsilon_i) = \sigma^2 \; for \; all \; observations \; i.$$

But suppose the variances of the residuals are a function of some variable X_i:

$$var(\varepsilon_i) = \sigma^2 X_i^2 \; for \; all \; observations \; i,$$

where σ^2 is a constant. If we then divide all terms in the regression equation by X_i, the new residual term is:

$$\varepsilon_i' = \frac{\varepsilon_i}{X_i}$$

in which case:

$$var(\varepsilon_i') = var\left(\frac{\varepsilon_i}{X_i}\right) = \frac{1}{X_i^2} \; var(\varepsilon_i) = \frac{1}{X_i^2} \; \sigma^2 X_i^2 = \sigma^2.$$

That is, the variance of the residuals, after all terms are scaled by X_i is a constant. Consequently, the residuals of the scaled equation are homoscedastic, satisfying the relevant assumption of regression analysis.

Figure 3 and Figure 4 of the Draft Report show that there is a relationship between the variance of the residuals and dividend yield and stock return volatility, respectively. Specifically, the variance of the residuals is higher for observations with low dividend yield and for observations with high stock return volatility. This occurs because, for both types of observation, the dividend is small relative to other factors that might cause the stock price to change on the ex-dividend date.

We have expanded the discussion of GLS estimation and the selection of GLS scaling variables in Paragraphs 54 to 58 in the Final Report.

144. *Applicants Issue 2.1(b): Please clarify which of the functional forms in Table 4 are OLS estimations and which are GLS.*

This is set out in the right-hand column of Table 1. The regression equations in the centre column are all estimated using OLS regression. Regression Equation (1) estimated using GLS with dividend yield as the scaling variable is econometrically identical to the estimation of Equation (2) using OLS, and so on.

145. *Applicants Issue 2.1(c): To the extent that you may expect any of the functional forms in Table 4 to be more stable than others, please state this a priori expectation and your reasons for it.*

We have no *a priori* expectation about the relative stability of the functional forms in Table 4 of the Draft Report. This is determined statistically, depending on the particular dataset that is being analysed.

Our experience with this particular data set is that the estimates from Model 4 are more stable and more resistant to influence from outliers than the estimates from other models.

146. *Applicants Issue 2.2(a): In the Notes to Table 9, reference is made to "significant excess returns." Please explain this term, and whether it is related to the event study analysis in Paragraphs 19-27.*

Column E of the table explains that we investigated datasets that excluded observations for which observations with significant excess returns on the cum- or ex-dividend days can be removed, whether or not the company makes an announcement that is labelled as price sensitive. For these datasets, "significance" is defined as the magnitude of the excess return on either the cum-or ex-dividend day exceeding two standard deviations of excess returns computed over the previous year, as set out in Column D of the same table. We have augmented the note to the table to make this clear.

147. *Applicants Issue 2.2(b): Please confirm the accuracy of "0.86 for unfranked dividends" reported in Paragraph 50.*

All figures have been updated in the Final Report.

148. *Applicants Issue 2.2(c): Please provide reasons for your conclusion in Paragraph 80 that an appropriate estimate for theta is 0.35. Is this based on the range of values produced by Model 4? Would there be one particular estimate from Model 4 that should be preferred over the others, such as the estimate from robust regression (Table 6)?*

We have expanded our discussion of the reasoning behind our conclusions in Paragraphs 90 to 102 of the Final Report.

149. *Applicants Issue 2.2(d): Other than the statistical reasons stated in Paragraph 79, are there any other reasons why Model 4 might be preferred over the others? Is there any theoretical or other explanation why this model produces more stable estimates?*

See our response in Paragraph 145 above. There is no *a priori* theoretical reason to prefer Model 4, only the statistical reasoning referred to above – there is a relationship between the variance of residuals and both dividend yield and stock return volatility, and Model 4 effectively accounts for this relationship. The effect of Model 4 is to down-weight observations for which dividend yield is very low or stock return volatility is very high. That is, it down-weights observations that have the highest degree of noise, either because the effect being examined is small (small dividend yield) or because extraneous effects are large (high stock return volatility). The down-weighting of noisy observations is likely to improve the stability of the results.

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White, H. (1984), "A heteroskedasticity-consistent covariance matrix estimator and a direct test of heteroskedasticity," *Econometrica,* 48, 817-38.

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Appendix 1: Terms of reference

Terms of reference for dividend drop-off analysis

Re: Application by Energex Limited (No 2) [2010] ACompT 7

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Introduction

SFG Consulting has been engaged jointly by Energex Limited (ACN 078 849 055), Ergon Energy Corporation Limited (ACN 078 646 062) and ETSA Utilities (ABN 13 332 330 749) to undertake a dividend-drop off study (the **Study**) further to reasons for decision published by the Australian Competition Tribunal on 13 October 2010. The terms of reference for the Study are set out below.

Construction of data set

Raw data source

1. Raw data will be compiled using data from Datastream, SIRCA, and FinAnalysis (the **Databases**) relating to cash dividend distribution events over the period commencing 1 July 2000 and ending 31 December 2009 for companies and trusts listed on the Australian Stock Exchange (**ASX**). The data required for each observation is:

   a. ASX Code;

   b. Ex-dividend date;

   c. Cum dividend (closing) share price;

   d. Ex-dividend (closing) share price;

   e. Dividend amount;

   f. Franking credit amount;

   g. Trading volume on each of the cum-dividend and ex-dividend days; and

   h. Return on All Ordinaries price index on ex-dividend day.

In addition, all data necessary to perform the data filtering and checking described below will also be obtained.

The raw data from the Databases, all computer code written for performing data reconciliation, filtering and checking and the corresponding output files (in text or Excel format, as appropriate) will be made available as part of the Study.

Ex-ante data reconciliation, filters and checking

2. The raw data items will be cross-referenced between the Databases and any discrepancies between the Databases will be manually investigated. Where a discrepancy between databases cannot be resolved, the observation will be removed. The Study will identify:

   a. all data for which a discrepancy was identified;

   b. if the discrepancy was able to be resolved, how it was resolved; and

   c. if the discrepancy was unable to be resolved, a summary list of the observations which were removed.

3. The resulting data set will be subjected to secondary filters. Specifically an observation will be omitted if:

   a. Any of the required data items is unavailable; or

   b. The company in question conducted a stock split, bonus issue, or other capitalization change within five trading days of the ex-dividend date; or

   c. The stock did not trade on either the cum-dividend or the ex-dividend day; or

   d. The company in question has a market capitalization that is less than 0.03% of the market capitalization of the All Ordinaries index at the time of the ex-dividend date; or

   e. The security in question falls into any one of the following categories: stapled securities; shares whose primary listing is overseas; CHESS depositary interests; CHESS units of foreign securities; or exchange-traded funds.

Manual checking for data errors

4. A subset of the observations that remain in the sample after the application of the secondary filters will be subjected to further manual checking on an ex ante basis.
The following observations will be further checked:

   a. All observations in the top and bottom 2.5 per cent based on dividend drop-off ratio;

   b. All observations in the top and bottom 2.5 per cent based on dividend amount; and

   c. All observations in the top and bottom 2.5 per cent based on grossed-up dividend yield.

   The manual check that will be performed is to examine whether there is an apparent error in a relevant observation.

   If an apparent error is identified in a relevant observation and the observation can be corrected on a verifiable basis, the observation will be corrected and retained. If an apparent error is identified and the observation cannot be corrected on a verifiable basis, the observation will be removed.

   The Study will also identify each observation that has been checked manually, and indicate the basis for the correction or omission of any checked observation.

Screening and manual review for price-sensitive announcements

5. The remaining data will be screened automatically to identify observations where a market announcement is made in respect of the company in question on either the cum-dividend or the ex-dividend day that is flagged as a price-sensitive announcement on the ASX company announcements platform. Company announcement information will be obtained from the SIRCA company announcement file.

6. The observations identified by the automatic screening for ASX-flagged price sensitive announcements will then be manually reviewed to confirm whether the announcement(s) made on the cum-dividend or the ex-dividend days would reasonably be expected to have had a material effect on the price or value of the securities concerned.

7. Observations identified by the automatic screening step in paragraph 5 will be omitted from the data set, unless it is determined on the manual review in paragraph 6 that the relevant announcement(s) would not reasonably be expected to have been materially price-sensitive. The Study will include an explanation of the criteria and the methodology that have been applied in manually reviewing announcements for price-sensitivity, and will indicate:

   a. all observations which have been identified by the automatic screening process; and

   b. all of those observations which it is determined would not be expected to have been materially price-sensitive and the basis for each such determination.

8. For clarity, any apparent data errors identified during the manual review in paragraph 6 will be treated in the manner set out in paragraph 4.

9. The raw company announcement data and all computer code written for performing automatic screening will also be made available as part of the Study.

Final sample

10. The set of observations resulting from the processes set out in paragraphs 2 to 7 above will be referred to as the *final sample*. For clarity, special dividends will be included unless one of the processes set out in paragraphs 2 to 7 has resulted in its exclusion.

The final sample will be made available as part of the Study.

Econometric analysis

11. The Tribunal has stated (Paragraph 148) that:

> The Tribunal would expect that, unless compelling reasons to the contrary are adduced: The dependant variable will be the share price drop-off ratio rather than the drop-off itself.

12. In accordance with the Tribunal's statement, and there being no compelling reason not to use the drop-off ratio as the dependent variable, the model to be estimated is of the following form:

$$\frac{P_{i,t-1} - P^*_{i,t}}{D_i} = \delta + \theta \frac{FC_i}{D_i} + \varepsilon_i \qquad (1)$$

where $P_{i,t-1}$ is the cum-dividend stock price for observation i; $P^*_{i,t} = \frac{P_{i,t}}{1+r_{m,t}}$ is the market-adjusted ex-dividend stock price (where $r_{m,t}$ is the return on the All Ordinaries index on day t); D_i is the amount of the dividend for observation i; and FC_i is the amount of franking credits associated with observation i.

13. The two parameters to be estimated are δ and θ where:

   a. δ represents the estimated market value of cash dividends as a proportion of their face value; and

b. θ represents the estimated market value of distributed franking credits as a proportion of their face value.

14. The econometric model in Equation (1) will be estimated using regression analysis applied to the final sample. The econometric model will be estimated using ordinary least squares, generalised least squares and robust regression methods. The standard set of outputs, statistical tests and regression diagnostics will be presented.

15. All computer code written for performing econometric analysis and the corresponding output files (in text format) will be made available

Appendix 2: Research Team

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Professor of Finance at UQ Business School, University of Queensland
Director of Strategic Finance Group (SFG)

Responsible for development of the Terms of Reference and study design. Involved in all aspects throughout the study. Author of final report.

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Detailed computer coding and statistical analysis. Manual checking of data items.

Mr. David Costello
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Manual checking of data items, under instruction and supervision.

Updated dividend drop-off estimate of theta

Report for the Energy Networks Association

Professor Stephen Gray

7 June 2013

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1. Executive summary

Background and context

1. In the Australian regulatory setting, the regulator requires an estimate of a parameter that reflects the implied market value of dividend imputation tax (or "franking") credits at the time those credits are created by the payment of corporate tax. This parameter is known as "gamma." Gamma, in turn, is a function of two other parameters. One of these is the implied market value of imputation credits at the time they are distributed to shareholders – a parameter known as "theta."

2. One method of estimating theta is known as "dividend drop-off analysis." This is an econometric (statistical) technique that estimates the value of distributed imputation credits (theta) by observing the change in stock prices around ex-dividend events (days when the dividend and imputation credit separate from the share).

3. In a recent case, the Australian Competition Tribunal (the **Tribunal**) directed that a "state of the art" dividend drop-off study should be performed to assist with its deliberations[1]. That study was performed by SFG Consulting (**SFG**) and concluded that the best estimate of theta was 0.35. The Tribunal endorsed and adopted[2] that estimate. Since the date of that decision, the AER has consistently set theta to 0.35.

Instructions

4. I have been retained by the Energy Networks Association (**ENA**) to update the "state-of-the-art" dividend drop-off estimate of theta. I have applied the same econometric methodologies and applied the same statistical, diagnostic and robustness tests as in the study performed for the Tribunal. I have updated the data set from September 2010 to October 2012.

Summary of conclusions

5. The conclusion from the 2011 SFG study was that:

> For the reasons set out in detail in this report, we conclude that the appropriate estimate of theta from the dividend drop-off analysis that we have performed is 0.35 and that this estimate is paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90.[3]

6. In my view, the conclusions from that earlier study remain valid when tested against the updated data set.

[1] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 146.
[2] Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9 (24 December 2010).
[3] SFG (2011), Paragraph 3.

2. Background and context

Effect of dividend imputation tax credits and the role of gamma

7. In a dividend imputation tax system, such as has operated in Australia since 1987, dividends paid by Australian companies out of profits that have been taxed in Australia have tax credits attached to them. For example, a company that earns a profit of $100 and pays $30 corporate tax and then distributes the remaining $70 as a dividend to shareholders, can attach $30 of dividend imputation tax credits to the $70 dividend. Those tax credits can be used by resident investors to reduce their personal tax obligations by $30, but cannot be used by non-resident investors under the dividend imputation legislation.

8. The "gamma" parameter has an important effect on the grossing up for corporate tax. Continuing the example above, suppose a regulator determines that shareholders require a return of $70. In the absence of dividend imputation, a pre-tax profit of $100 would be required. The firm would then pay $30 in corporate tax and distribute the remaining $70, as required.

9. In an imputation system, however, the $70 dividend comes with $30 of tax credits attached to it. The gamma parameter effectively acknowledges that those tax credits have a potential value. This is a market value, that is, how much the market price of a share will increase as a result of the credits attached to the dividend stream. Suppose, for example, that the regulator determines that the $30 of tax credits have a value of $7.50.[4] In that case, the shareholders would have received a $70 cash dividend and tax credits with a value of $7.50, and would therefore have been over-compensated.

10. In this case, the firm's pre-tax revenue requirement should have been set at $90.32, in which case the firm would pay tax of $27.10 (30%) and pay a cash dividend of $63.23 (its after tax profit). Attached to that cash dividend would be $27.10 of tax credits (equal to the amount of corporate tax paid), which I continue to assume are valued by the regulator at 25% of face value – $6.77. The total of the cash dividend ($63.23) and the assumed value of the tax credits ($6.77) provides shareholders with the $70 return that they require.[5]

Estimation

11. In the regulatory setting, gamma is estimated as the product of two components:

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

where F is the distribution ratio (the proportion of created imputation credits that are distributed to shareholders) and θ is the value of a distributed credit. Imputation credits are created whenever a firm pays a dollar of Australian corporate tax. But to distribute all of the imputation credits it creates, a firm would have to distribute 100% of its (Australian) profits as dividends. The average firm does not do this, because it retains some profits to finance future capital expenditure.

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[4] That is, imputation credits are assumed to be valued at 25% of face value.

[5] The revenue requirement is calculated by back-solving from the return requirement. Let the revenue requirement be X. For a corporate tax rate of 30%, the cash dividend that can be paid out of pre-tax profit of X is X(1-0.30). The amount of imputation credits that are created by the payment of corporate tax is 0.30X. At 25% of their face value, these imputation credits are valued at 0.25(0.30)X. The sum of the cash dividend and the imputation credit must provide shareholders with the $70 they require. Hence: X(1-0.30)+0.25(0.30)X=70, and the implied value of X is 90.32.

12. If firms distribute 70% of the imputation credits they create and if those credits are each valued at 35% of face value, then gamma would be:

$$\gamma = F \times \theta = 0.7 \times 0.35 = 0.25.$$

13. This would mean that 25% of the corporate tax that the firm pays is assumed to flow back to shareholders, so the grossing up for corporate tax would be reduced accordingly, as in the example above.

14. In summary, the regulatory setting requires estimates of the distribution ratio (F) and the value of a distributed credit (θ).

Australian Competition Tribunal review – background

15. Prior to the last process for setting the AER's Statement of Regulatory Intent (**SoRI**), the long-standing regulatory precedent was to set gamma equal to 0.5. In its SoRI in May 2009, the AER set gamma to 0.65. This estimate was based on:

    a) Setting F to 100%. The AER's consultant on this issue proposed that F should be set on the basis of theoretical assumption rather than market evidence; and

    b) Setting θ to 0.65 as the mid-point of two estimates:

        i) A dividend drop-off estimate of 0.57 whereby one compares the prices of shares immediately before the ex-dividend date with the prices of the same shares immediately after, as a means of inferring the implied value of dividends and the tax credits that are attached to them[6]; and

        ii) An estimate based on ATO tax statistics about the proportion of imputation credits that are redeemed.[7]

16. The first three businesses to be regulated under the AER's SoRI estimate of 0.65 were ENERGEX, Ergon Energy and ETSA Utilities, all of whom sought a review by the Australian Competition Tribunal (the **Tribunal**). This review took place under the National Electricity (Distribution) Rules and has become known as the *Gamma Case*[8].

Issues and Tribunal findings

Estimating the distribution rate

17. Recall that the distribution rate (F) is the ratio of (a) the total amount of franking credits distributed to shareholders in a given year, to (b) the total amount of franking credits created in a given year. In the

[6] Beggs, D.J., and C.L. Skeels, 2006. "Market arbitrage of cash dividends and franking credits," *The Economic Record,* 82 (258), 239 – 252.
[7] Handley, J.C., and K. Maheswaran, 2008. "A measure of the efficacy of the Australian imputation tax system," *The Economic Record,* 84 (264), 82 – 94.
[8] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010).

Gamma Case[9], the AER abandoned its contention that F should be set to 100% before the Tribunal hearing. In its submissions to the Tribunal prior to the hearing, the AER then acknowledged that an estimate above 0.7 was unsupportable, as there was no evidence for it, and therefore that the distribution rate should be set to 0.7. In summarising the AER's position on this issue, the Tribunal stated that:

> The AER accepts that on the material presently before the Tribunal, there is no empirical data that is capable of supporting an estimated distribution ratio higher than 0.7. The AER therefore accepts that it is open to the Tribunal to adopt a substitute distribution ratio of 0.7.[10]

18. The Tribunal then concluded and ordered that:

> In light of these submissions and the material before the Tribunal, the Tribunal concludes that the distribution ratio is 0.7 for the calculation of gamma.[11]

Estimating Theta

19. The theta parameter estimates the value, to the relevant shareholder, of a dollar of franking credits that has been distributed to them. Different shareholders will place a different value on the franking credits that are distributed to them. Resident shareholders can use franking credits to reduce their personal tax obligations, whereas non-resident shareholders obtain no benefit from franking credits. Theta represents the extent to which trading among all market participants results in some value in relation to franking credits being impounded into the stock price.

20. Two techniques for empirically estimating theta were considered by the Tribunal:

    a) Tax statistics about the proportion of distributed imputation tax credits that had been redeemed by shareholders, obtained from the Australian Taxation Office (**ATO**); and

    b) Dividend drop-off analysis, whereby the implied value of imputation tax credits is inferred from the price change that occurs over ex-dividend days.

21. The Tribunal held that the ATO tax statistic approach did not produce an estimate of market value and that the AER was wrong to have interpreted tax statistic estimates in that way. In particular, the Tribunal held that the ATO tax statistic approach provides no more than an upper bound check on estimates of theta obtained from the analysis of market prices, and that the AER was wrong to have interpreted such an estimate as a point estimate rather than as an upper bound:

> The AER accepted that utilisation rates derived from tax statistics provide an upper bound on possible values of theta. Setting aside the manner in which the AER derived a value from the tax statistics study, it correctly considered that information from a tax statistics study was relevant. However, its relevance could only be related to the fact that

[9] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010).
[10] Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9 (24 December 2010), Paragraph 2.
[11] Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9 (24 December 2010), Paragraph 4.

> it was an upper bound. No estimate that exceeded a genuine upper bound could be correct. Thus the appropriate way to use the tax statistics figure was as a check.[12]

22. The Tribunal also held that the AER was wrong to take upper bound estimates from two different sub-periods and then interpret their average as a point estimate:

> But this simple averaging adjustment has no logic to it and fails to accord each Handley and Maheswaran (2008) estimate its correct interpretation as an upper bound applying to a period…[13]

and that:

> …any downward adjustment to a properly derived upper bound would be inappropriate as a means of deriving an estimate of theta.[14]

23. This left the Tribunal with dividend drop-off analysis. On this point, the AER had sought to rely entirely on a single study by Beggs and Skeels (2006)[15]. The Tribunal held[16] that the AER was wrong to rely on an out-dated and methodologically unsound dividend drop-off study. The Tribunal then directed that a "state-of-the-art" dividend drop-off study should be conducted to assist the Tribunal.[17] The Tribunal also directed that the dividend drop-off study to be performed by SFG "should employ the approach that is agreed upon by SFG and the AER as best in the circumstances."[18]

24. In summary, the Tribunal ruled that:

    a) The AER had erred in using tax statistics estimates for any purpose other than as an upper bound;

    b) The AER had erred in its reliance on the Beggs and Skeels (2006) dividend drop-off estimate of theta; and

    c) SFG should be retained to prepare a "state-of-the-art" dividend drop-off analysis with terms of reference to be agreed with the AER.

The SFG "state-of-the-art" dividend drop-off study

25. After agreement could not be reached between the parties, the Tribunal ruled that:

    a) The four variations of the econometric specification of dividend drop-off analysis drawn by SFG from the literature should be used; and

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[12] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 91.
[13] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 95.
[14] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 95.
[15] Beggs, D. J. and Skeels, C.L., (2006), "Market arbitrage of cash dividends and franking credits," Economic Record, 82 (258), 239 – 252.
[16] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraphs 66, 145.
[17] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 146.
[18] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 147.

b) The results for the full updated period should be used rather than sub-periods.

26. SFG then conducted the dividend drop-off study and circulated a draft report to all parties. The AER and the regulated businesses that were parties to the *Gamma Case*[19] provided detailed comments on the draft report and these were taken into account in a revised report that was provided to all parties and to the Tribunal.

27. Although the AER submitted[20] that the SFG study had departed from the Terms of Reference, the Tribunal disagreed and accepted the estimates from the SFG dividend drop-off study:

> The Tribunal is satisfied that the procedures used to select and filter the data were appropriate and do not give rise to any significant bias in the results obtained from the analysis. Nor was that suggested by the AER.[21]
>
> In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG's reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG's report has been subjected, and SFG's comprehensive response, gives the Tribunal confidence in those conclusions. [22]

28. The Tribunal went on to conclude that:

> The Tribunal is satisfied that SFG's March 2011 report is the best dividend drop-off study currently available for the purpose of estimating gamma in terms of the Rules.[23]

and

> The Tribunal finds itself in a position where it has one estimate of theta before it (the SFG's March 2011 report value of 0.35) in which it has confidence, given the dividend drop-off methodology. No other dividend drop-off study estimate has any claims to be given weight vis-à-vis the SFG report value.[24]

Final estimate of Gamma

29. Having determined that the appropriate distribution rate is 70% and that the best dividend drop-off estimate of theta is 0.35, the Tribunal multiplied these two estimates together to obtain a gamma estimate of 0.25:

> Taking the values of the distribution ratio and of theta that the Tribunal has concluded should be used, viz 0.7 and 0.35, respectively, the Tribunal determines that the value of gamma is 0.25.[25]

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[19] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010).
[20] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 16.
[21] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraphs 18-19.
[22] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 22.
[23] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 29.
[24] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 38.
[25] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 42.

30. In every subsequent case where the AER has had to determine a value for gamma, it has adopted a value of 0.25.

31. In the remainder of this report, I update the work that was provided to the Tribunal in the *Gamma case*.

3. Compilation of data

Initial data set

32. I begin with the sample of ex-dividend events that was used in the 2011 SFG Final Report for the Tribunal.[26] This sample consists of 3,107 observations from the period of July 2001 to September 2010. The construction of the sample is explained in detail in the 2011 SFG report.

Extend sample of ex-dividend events

33. I extend the sample of ex-dividend events from September 2010 to October 2012. To do this, I begin by identifying all ex-dividend events in each of two independent data bases – DatAnalysis and Thompson Reuters Tick History (**TRTH**). DatAnalysis is operated by Aspect Huntley, which is a wholly-owned subsidiary of Morningstar Inc. It is commonly used as the basis for papers published in the academic and practitioner literature relating to empirical finance. The TRTH database is compiled by Reuters and made available by the Securities Industry Research Centre of Asia-Pacific (**SIRCA**). This data is also commonly used as the basis for papers published in the academic and practitioner literature relating to empirical finance.

34. From each data base, I obtain records of all ex-dividend events for all firms listed on the Australian Securities Exchange (**ASX**). Information obtained includes the following fields:

    a) Company name;

    b) ASX ticker symbol (three digit code used by the ASX);

    c) Dividend amount;

    d) Currency in which the dividend was paid;

    e) Franking percentage (the proportion of the dividend that was franked);

    f) Ex-dividend date; and

    g) Type of dividend:

        i) Ordinary (interim, final, quarterly, or monthly);

        ii) Special-cash;

        iii) Special-scrip; or

        iv) Return of capital.

[26] See SFG (2011), Table 1, p. 14.

Apply preliminary screens and conversions

35. I then apply a number of preliminary screens, as follows:

    a) I eliminate observations where the dividend amount is missing (or set to zero) or where the ex-date is missing;

    b) I eliminate observations for which the ticker symbol has more than three letters, as this indicates that the security is not an ordinary share;

    c) I eliminate dividends that are defined to be a capital return or a special scrip dividend;

    d) I eliminate dividends with a currency defined to be "PCT." This indicates "per cent" rather than a currency and is used for in specie distributions rather than cash dividends;

    e) I eliminate all duplicate records. The TRTH database in particular contains a number of duplicated observations; and

    f) I eliminate all observations for which there was a corporate event/capitalisation change (such as a rights or bonus issue or other issuance or cancellation of shares) within five days of the ex-dividend event identified in the DatAnalysis Corporate Events file.

36. I convert all foreign currency dividends into Australian dollars using exchange rates provided by the Reserve Bank of Australia.[27] I retain a record of the dividend currency so that the drop-off analysis can be applied to samples that include, and exclude, foreign currency dividends.

37. In cases where a database indicates that the same company paid two different dividends with the same ex-date, I add those dividends to obtain a single record for each ex-date for each company. For example, if a company paid a 15 cent fully franked dividend and a 5 cent unfranked special dividend with the same ex-date, a single record is retained with:

    a) Dividend amount set to 20 cents; and

    b) Franking percentage set to $\frac{15}{20}\times 100+\frac{5}{20}\times 0=75$.

38. I retain a record of observations that have been summed in this manner so that the drop-off analysis can be applied to samples that include, and exclude, these summed observations.

Match ex-dividend events across databases

39. I then seek to match ex-dividend events from the two data bases on the following four fields:

    a) ASX ticker symbol/company identifier;

    b) Ex-dividend date;

[27] http://www.rba.gov.au/statistics/hist-exchange-rates/index.html?accessed=2013-06-07-12-31-03.

c) Australian dollar dividend amount; and

d) Franking percentage.

40. A number of observations match on ASX ticker symbol, ex-dividend date and dividend amount, but not franking percentage. In most of these cases, the franking percentage is missing in one of the databases. In these cases, I manually checked the ASX web site and company annual reports for franking percentage information. In cases where I was able to find two independent sources that agreed on the franking percentage, I treated the observation as a match.

41. Those observations that matched across databases were allocated to my "Matched" sample. Other observations were allocated to the "Unmatched DatAnalysis" or the "Unmatched TRTH" samples if data is available on the following fields:

a) ASX ticker symbol/company identifier;

b) Ex-dividend date;

c) Australian dollar dividend amount; and

d) Franking percentage,

otherwise they are eliminated from the sample.

Add ASX share price data

42. All observations in all three subsamples were then supplemented with additional data sourced from Datastream, which is commonly used as the basis for papers published in the academic and practitioner literature relating to empirical finance. The following data items were added to each observation:

a) The closing cum-dividend day stock price;

b) The closing cum-dividend day trading volume;

c) The closing ex-dividend day stock price;

d) The closing ex-dividend day trading volume;

e) The total return on the All Ordinaries Accumulation Index over the ex-dividend day;

f) The market capitalisation for the firm on the ex-dividend day;

g) The total market capitalisation for the All Ordinaries index on the ex-dividend day;

h) The mean of the daily excess returns (total stock return less All Ordinaries Accumulation Index return) computed over the year ending six trading days before the ex-dividend day; and

i) The standard deviation of the daily excess returns (total stock return less All Ordinaries Accumulation Index return) computed over the year ending six trading days before the ex-dividend day.

43. The mean and standard deviation of daily excess returns were calculated in the same way as in the 2011 SFG report:

    a) **Mean excess return**: I use a period of one year, ending six days prior to the ex-dividend date, so that the historical period does not overlap with the ±5 day window around the ex-dividend date. The mean excess stock return was measured over the trading days beginning one year and six days prior to the ex-dividend day and ending six days prior to the ex-dividend day. The excess stock return for each day is defined as the stock return for a particular company *i* less the return on the All Ordinaries index. Formally, the mean excess stock return for company *i* at time *t* is defined as:

$$\overline{er}_{i,t} = \frac{1}{N}\sum_{j=1}^{N} er_{i,t-5-j}$$

    where

$$er_{i,t} = r_{i,t} - r_{m,t},$$

    and N represents the number of trading days over the relevant year-long period.

    b) **Standard deviation of excess returns**: The volatility of excess stock returns was computed as the standard deviation of the excess stock return, measured over the same period. Formally, the volatility of excess stock returns for company *i* at time *t* is defined as:

$$\sigma_{i,t} = \sqrt{\frac{1}{N}\sum_{j=1}^{N}\left(er_{i,t-5-j} - \overline{er}_{i,t}\right)^2}.$$

Add other data fields

44. I then augment each observation with the following fields:

    a) An indicator of whether the dividend was an ordinary or special dividend. In cases where a company paid an ordinary and special dividend with the same ex-date, the dividend is classified as special;

    b) An indicator of whether the company made any announcement to the ASX on the cum-dividend day or the ex-dividend day that was classified as price sensitive. I obtain information about announcements and the classification of price sensitivity from the SIRCA company announcement file, which is a direct feed from the ASX;

    c) A field that indicates whether the ASX classifies the security as:

        i) ordinary shares of company;

        ii) a listed fund;

        iii) a real estate investment trust (REIT); or

iv) a stapled security; and

d) A field that indicates whether there was any capitalisation change for the firm within five days of the ex-dividend date, sourced from the SIRCA "dilutions" (capitalisation change) file.

4. Econometric methods

Primary data set

45. Our primary data set is compiled as follows:

    a) I begin with my matched sample – a set of ex-dividend events for which all relevant items are consistent across the two independent data bases;

    b) I eliminated observations where the stock did not trade on the cum-dividend day or the ex-dividend day;

    c) I eliminated observations where there was a capitalisation change within five days of the ex-dividend date;

    d) I eliminated observations where the company made an announcement that was classified as price sensitive on the cum-dividend day or the ex-dividend day;

    e) I eliminated observations where the company in question had a market capitalisation that was less than 0.03% of the market capitalisation of the All Ordinaries index at the time of the ex-dividend date; and

    f) I eliminated observations where the security in question falls into any one of the following categories: stapled securities; shares whose primary listing is overseas; CHESS depositary interests; CHESS units of foreign securities; or exchange-traded funds.

46. In compiling the primary data set in this manner, I am following the procedures adopted in the 2011 SFG study. The rationale for compiling the primary data set in this manner is to ensure that the required data exists and is timely and reliable and uncontaminated by material events that are unrelated to the payment of the dividend. The objective of this process is to produce a final estimate of theta that is as statistically reliable and precise as possible.

Robustness tests and sensitivity analysis

47. In addition to my primary data set, I also examined the following variations:

    a) Different definitions of stock return volatility (variance and standard deviation) for the purposes of GLS estimation;

    b) Including and excluding dividends paid in a foreign currency;

    c) Including and excluding observations where the firm made an announcement that was classified as being price sensitive;

    d) Including and excluding observations that appear in the DatAnalysis sample but did not match the TRTH sample (and which pass the other requirements set out above); and

    e) Including and excluding observations that appear in the TRTH sample but did not match the DatAnalysis sample (and which pass the other requirements set out above).

Econometric models

48. As in the 2011 SFG study (and in accordance with Paragraph 12 of the 2011 Terms of Reference of that study) I estimated the parameters of the following model:

$$\frac{P_{i,t-1} - P_{i,t}^*}{D_i} = \delta + \theta \frac{FC_i}{D_i} + \varepsilon_i \quad (1)$$

where $P_{i,t-1}$ is the cum-dividend stock price for observation i; $P_{i,t}^* = \frac{P_{i,t}}{1 + r_{m,t}}$ is the market-adjusted ex-dividend stock price (where $r_{m,t}$ is the return on the All Ordinaries index on day t); D_i is the amount of the dividend for observation i; and FC_i is the amount of franking credits associated with observation i.

49. The two parameters to be estimated are δ and θ where:

    a) δ represents the estimated market value of cash dividends as a proportion of their face value; and

    b) θ represents the estimated market value of distributed franking credits as a proportion of their face value.

50. The econometric model in Equation (1) was estimated using regression analysis applied to the final sample (and subsequently to the samples used for the purposes of robustness checks and sensitivity analysis). It was estimated using ordinary least squares, generalised least squares and robust regression methods.

51. Generalised least squares estimation involves multiplying all terms in the original econometric model by the same variable. This would be done if the researcher was concerned about a potential relationship between the variance of the residuals (ε_i) and a particular variable. Suppose, for example, that there is a potential relationship between the variance of the residuals in Equation (1) and dividend yield, $\frac{D_i}{P_{i,t-1}}$, such that the variance of residuals is inversely related to dividend yield. This would be the case if the model in Equation (1) provided a closer fit to the data and generally smaller residuals for observations with a higher dividend yield. If this were actually the case, the coefficient estimates in Equation (1) would be consistent and unbiased, but the usual procedures for conducting statistical inference (e.g., *t*-statistics) may be inaccurate.

52. Generalised least squares estimation is designed to eliminate any relationship between the variance of residuals and the variable in question. This is done by scaling every term in the original model by the variable in question. If, for example, all terms in Equation (1) are multiplied by dividend yield, $\frac{D_i}{P_{i,t-1}}$, then Equation (1) becomes:

$$\frac{P_{i,t-1} - P_{i,t}^*}{D_i} \times \frac{D_i}{P_{i,t-1}} = \delta \times \frac{D_i}{P_{i,t-1}} + \theta \frac{FC_i}{D_i} \times \frac{D_i}{P_{i,t-1}} + \varepsilon_i \times \frac{D_i}{P_{i,t-1}}$$

which is equivalent to:

$$\frac{P_{i,t-1} - P_{i,t}^*}{P_{i,t-1}} = \delta' \frac{D_i}{P_{i,t-1}} + \theta' \frac{FC_i}{P_{i,t-1}} + \varepsilon_i' . \quad (2)$$

53. The idea behind generalised least squares estimation in this example is that if the variance of the original residuals (ε_i) is inversely related to dividend yield, the scaled residuals (ε_i') are not related to the dividend yield, and standard statistical inference can be performed (i.e., the *t*-statistics will be correct).

54. Consequently, Equation (2) can be thought of as GLS estimation of Equation (1), where the scaling variable is dividend yield, or as OLS estimation of a model in which the percentage stock return is regressed on dividend yield and franking credit yield.

55. The prior literature (e.g., Michaely, 1991; Bellamy and Gray, 2004) identifies dividend yield and stock return volatility as variables that might be related to the variance of the residuals in Equation (1) and I am not aware of any dividend drop-off analysis that uses GLS scaling variables other than dividend yield and stock return volatility. Other things equal, the magnitude of the residuals may be greater for high-volatility stocks because stock price changes tend to be greater for these stocks. In this case, the relevant GLS adjustment would be to scale by the inverse of the volatility of stock returns for the company in question. This adjustment would produce the following econometric specification:

$$\frac{P_{i,t-1} - P_{i,t}^*}{D_i \sigma_i} = \delta'' \frac{1}{\sigma_i} + \theta'' \frac{FC_i}{D_i \sigma_i} + \varepsilon_i'' . \quad (3)$$

56. If both GLS adjustments are applied, the econometric specification is:

$$\frac{P_{i,t-1} - P_{i,t}^*}{P_{i,t-1} \sigma_i} = \delta''' \frac{D_i}{P_{i,t-1} \sigma_i} + \theta''' \frac{FC_i}{P_{i,t-1} \sigma_i} + \varepsilon_i''' . \quad (4)$$

57. In accordance with the Terms of Reference for the 2011 SFG study (Paragraphs 12 and 14), I estimate the four model specifications set out in Equations (1) to (4) above using OLS regression analysis, noting that the models in Equations (2) to (4) can be thought of as GLS estimates (with different scaling adjustments) of the basic model in Equation (1). In summary, I estimate each of the four models that are set out in Table 1 below. Even though I refer to the four specifications as "Models" 1 to 4 for convenience, I note that they are actually just different econometric specifications of the one model in which cash dividends and franking credits are posited as the only systematic factors in driving the ex-dividend day change in stock prices.

Table 1
Econometric models to be estimated

Model	Specification	Interpretation
Model 1	$\frac{P_{i,t-1} - P_{i,t}^*}{D_i} = \delta + \theta \frac{FC_i}{D_i} + \varepsilon_i$	Basic model.
Model 2	$\frac{P_{i,t-1} - P_{i,t}^*}{P_{i,t-1}} = \delta' \frac{D_i}{P_{i,t-1}} + \theta' \frac{FC_i}{P_{i,t-1}} + \varepsilon_i'$	GLS estimation of (1) with weighting variable dividend yield, $\frac{D_i}{P_{i,t-1}}$.
Model 3	$\frac{P_{i,t-1} - P_{i,t}^*}{D_i \sigma_i} = \delta'' \frac{1}{\sigma_i} + \theta'' \frac{FC_i}{D_i \sigma_i} + \varepsilon_i''$	GLS estimation of (1) with weighting variable inverse stock return volatility, $\frac{1}{\sigma_i}$.
Model 4	$\frac{P_{i,t-1} - P_{i,t}^*}{P_{i,t-1}\sigma_i} = \delta''' \frac{D_i}{P_{i,t-1}\sigma_i} + \theta''' \frac{FC_i}{P_{i,t-1}\sigma_i} + \varepsilon_i'''$	GLS estimation of (1) with weighting variables dividend yield, and inverse stock return volatility.

Estimation results

58. The results of my estimations are set out in Table 2 below. The key results are:

    a) The point estimate of the value of a dollar of cash dividends ranges from 81 cents to 91 cents;

    b) The point estimate of the value of a dollar of imputation credits ranges from 14 cents to 38 cents; and

    c) The point estimate of the value of the package of a one dollar cash dividend and the associated 43 cent franking credit ranges from 87 cents to 104 cents.

59. I use two methods to estimate standard errors:

    a) The White method for computing heteroscedasticity-consistent standard errors (which allows for unspecified heteroscedasticity in the residuals); and

    b) A method that allows for clustering at the firm level (i.e., allows for the variance of residuals to differ by firms).[28]

60. The two methods produce standard error estimates that are similar in magnitude and generally indicate that the estimates of the value of cash dividends are significantly less than one and franking

[28] As mentioned previously I have reason to believe that standard errors vary systematically with firm characteristics, namely higher standard errors for volatile stocks with low dividend yields. I observe a number of firms appearing multiple times in examination of outliers. Hence, this is my preferred technique for estimating standard errors but I present White's (1984) adjusted standard errors for completeness. For a review of estimation techniques for standard errors refer to Petersen (2009).

credits are significantly greater than zero. The standard errors for the estimated value of a fully-franked dividend (i.e., the package of cash dividend and the associated franking credit) are considerably lower than the standard errors for the estimated values of cash or franking credits separately, meaning there is reliable evidence that the value of one dollar of a fully-franked dividend is approximately one dollar.

61. The R^2 statistics measure how much of the variation in the dependent variable is explained by variation in the independent variables. For Models (2) and (4), the R^2 statistics are substantial – 59% and 71% (respectively) of the variation in the ex-day percentage price change can be explained by variation in the cash dividend and franking credit.[29]

62. For Models (1) and (3), however, the explanatory power of the cash dividend is moved from the right-hand side of the regression to the left-hand side – the cash dividend appears only on the left-hand side as part of the dependent variable. For these models, the R^2 statistic must be interpreted as a measure of the extent to which the franking percentage is able to explain the ex-day price change – beyond that which can be explained by the cash dividend.

63. That is, for Models (2) and (4) the R^2 statistic measures the combined explanatory power of the cash dividend and the franking credit. For Models (1) and (3) it measures only the incremental explanatory power of the franking credits – the cash dividend is effectively given full opportunity to explain whatever it can of the ex-day price change and the R^2 statistic measures only what the franking credit can explain beyond this. Consequently, it would be wrong to compare R^2 statistics across models or to use them as a basis for selecting a preferred model.

[29] I refer to the *R*-squared statistic throughout, rather than the adjusted *R*-squared statistic, because the robust regression analysis considered later only generates an *R*-squared statistic and I want to present explanatory power on a consistent basis throughout.

Table 2
Estimation results: OLS/GLS estimation

Model 1			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.8133	0.0580	0.0729
Franking credits	0.1405	0.1546	0.1912
Package	0.8735	0.0298	0.0288
R-squared	0.0002		
Adjusted R-Squared	0.0000		
N	3,642		
Model 2			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.8193	0.0261	0.0311
Franking credits	0.3815	0.0704	0.0868
Package	0.9828	0.0164	0.0195
R-squared	0.5971		
Adjusted R-Squared	0.5968		
N	3,642		
Model 3			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.9098	0.0399	0.0480
Franking credits	0.1381	0.1080	0.1263
Package	0.9690	0.0200	0.0206
R-squared	0.0004		
Adjusted R-Squared	0.0002		
N	3,642		
Model 4			
	Estimate	**Std Err (White)**	**Std Err (Firm clustering)**
Cash	0.9136	0.0203	0.0209
Franking credits	0.3044	0.0557	0.0645
Package	1.0440	0.0139	0.0157
R-squared	0.7193		
Adjusted R-Squared	0.7192		
N	3,642		

Cash represents the estimated value of a one dollar cash dividend; *Franking credits* represents the estimated value of a one dollar franking credit; *Package* represents the estimated combined value of a one dollar cash dividend plus the associated 43 cent franking credit. The *package* value is estimated as the sum of the *cash* coefficient and 0.43 times the *franking credits* coefficient. The standard error for the *package* estimate is computed as a function of the standard errors of the *cash* and *franking credits* coefficients, and the correlation between them.

Robust regression estimates

64. In accordance with the Terms of Reference (Paragraphs 12 and 14) for the 2011 SFG study, I also estimate the four models set out in Equations (1) to (4) above using robust regression analysis. Robust regression analysis uses automated statistical adjustments to down-weight the influence of extreme data points or outliers. I use the SAS procedure ROBUSTREG to implement the MM robust regression method. The MM method was developed by Yohai (1987) and accounts for imprecision in the dependent and independent variables. Of the four alternative techniques available

in the ROBUSTREG procedure it provides the most comprehensive analysis of outliers. The application of these methods in the SAS package is explained in detail in Chen (2002).

65. When implementing the MM robust regression method in SAS, the user is able to over-ride default values and impose values for certain parameters. For example, the INEST option allows the user to impose a prior expectation for the values of the regression coefficients, rather than using values from a first stage estimation procedure. In my implementation, I use the default (neutral) values for all options.

66. The results of my estimation using the ROBUSTREG-MM procedure are summarised in Table 3 below. The estimates of theta for Models 2 and 4 are very similar to those reported in Table 2 above. The robust regression estimates of theta for Models 1 and 3 are higher than the estimates in Table 2, and more consistent with the estimates from Models 2 and 4.

67. The ROBUSTREG procedure available in SAS does not permit the calculation of White heteroscedastic-consistent standard errors or standard errors based on firm clustering. The procedure only allows for estimates of the standard covariance matrix of parameters. The result is that the "regular" standard errors in Table 3 are lower than the heteroscedastic-consistent and firm clustering standard errors reported in Table 2. This should not be seen as an improvement in the precision of estimates, but rather that a different definition of standard error is being reported.

Table 3
Estimation results: Robust regression

Model 1		
	Estimate	**Std Err**
Cash	0.8747	0.0309
Franking credits	0.2876	0.0820
Package	0.9980	0.0159
R-squared	0.0021	
N	3,642	
Model 2		
	Estimate	**Std Err**
Cash	0.8932	0.0234
Franking credits	0.3488	0.0630
Package	1.0427	0.0131
R-squared	0.5218	
N	3,642	
Model 3		
	Estimate	**Std Err**
Cash	0.9111	0.0213
Franking credits	0.2418	0.0580
Package	1.0147	0.0124
R-squared	0.0023	
N	3,642	
Model 4		
	Estimate	**Std Err**
Cash	0.9297	0.0150
Franking credits	0.3516	0.0420
Package	1.0804	0.0093
R-squared	0.6567	
N	3,642	

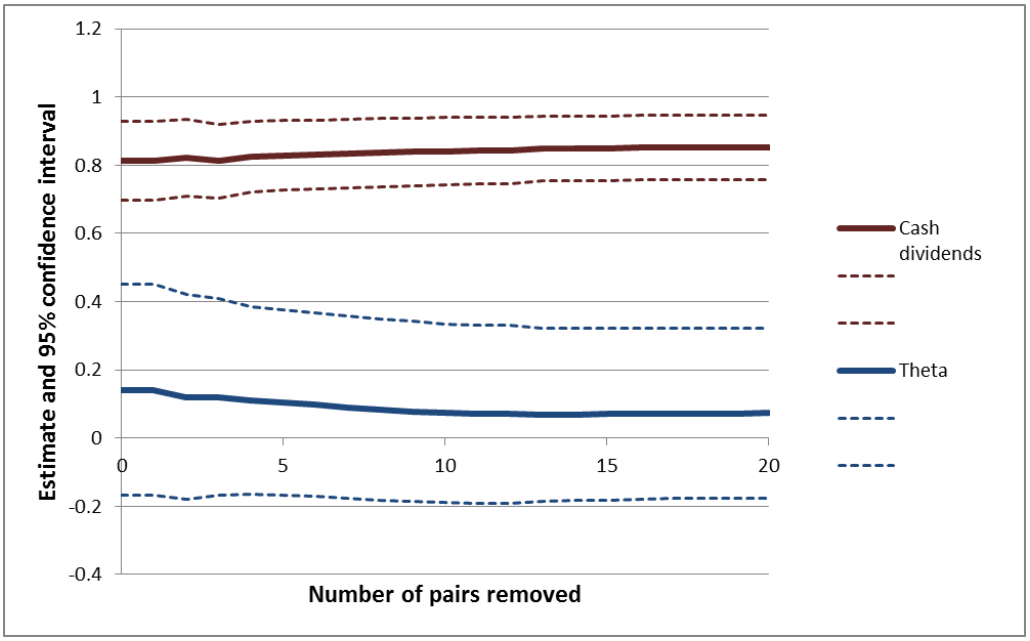
Cash represents the estimated value of a one dollar cash dividend; *Franking credits* represents the estimated value of a one dollar franking credit; *Package* represents the estimated value of a one dollar cash dividend plus the associated 43 cent franking credit.

Stability analysis: Robustness to influential observations

68. Our data compilation methods (e.g., eliminating from the sample very small firms or firms that do not trade on the cum-dividend and ex-dividend dates) are designed to eliminate outlier data points that are erroneous in some respect and which are likely to have a disproportionate influence on the estimate of theta. Even after having performed this screening and checking process, it is inevitable that some of the remaining data points will be more influential than others. Consequently, I have quantified the sensitivity of the estimates of theta to influential observations by conducting a stability analysis. I do this by first determining which single observation, if removed, would result in the greatest increase in the estimate of theta. I then determine which single observation, if removed, would result in the greatest decrease in the estimate of theta. I then remove both observations and re-estimate theta. I then repeat this process by removing another pair of observations. I continue in this manner, removing pairs of observations, until 20 pairs have been removed.

69. The results of applying this process to Model 1 are summarised in Figure 1. The solid lines represent the estimates of the value of cash dividends and theta, as indicated. In each case, the corresponding dashed lines represent the 95% confidence interval around the point estimate.

Figure 1
Sensitivity to removal of influential observations: Model 1



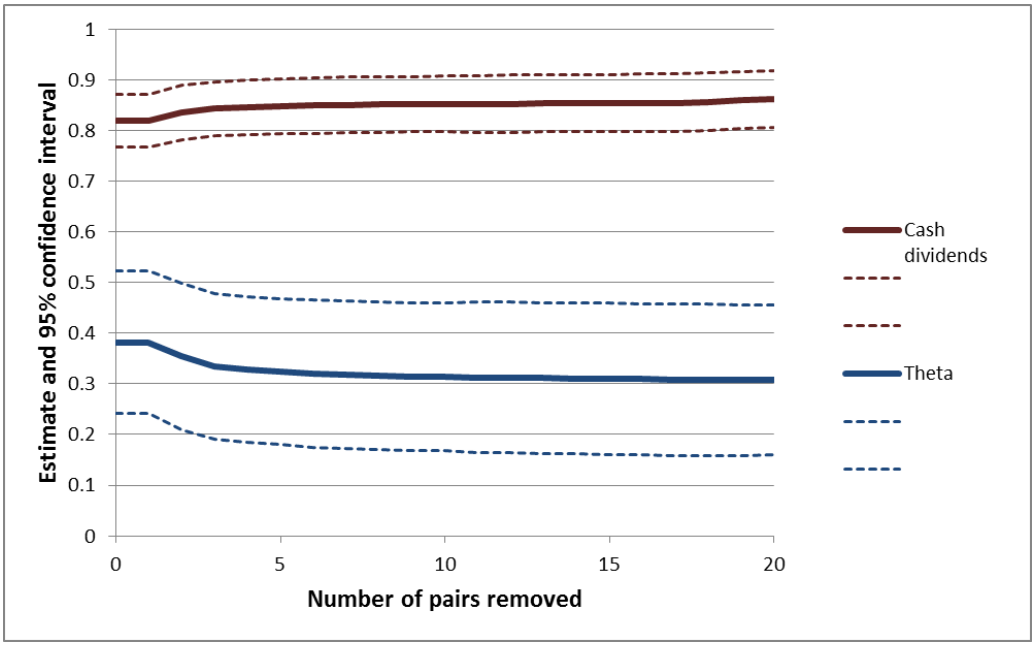
70. Figure 1 shows that the original point estimate of theta from Model 1 was 0.14. When the first pair of observations (i.e., one observation that would maximally increase the estimate of theta and one that would maximally decrease the estimate of theta) is removed, there is a negligible change in the point estimate of theta. As further pairs of observations are removed, the point estimate of theta falls marginally before levelling off at approximately 0.07.

71. The point estimates of the value of cash dividends move in the opposite direction. As pairs of influential observations are removed, the estimate increases slightly before settling at approximately 0.86.

72. The combined value of dividend plus franking credit is stable throughout, taking a constant value (between 0.873 and 0.883) whether the influential observations are included or excluded.

73. The result of applying the same process of removing pairs of influential observations to Model 2 is summarised in Figure 2 below. These results are similar to those for Model 1 above. The point estimate of theta falls slightly as the first pairs of influential observations are removed before stabilising at a constant level – approximately 0.31 in this case.

Figure 2
Sensitivity to removal of influential observations: Model 2



74. The stability analysis for Models 3 and 4 are set out in Figure 3 and Figure 4 respectively.

Figure 3
Sensitivity to removal of influential observations: Model 3

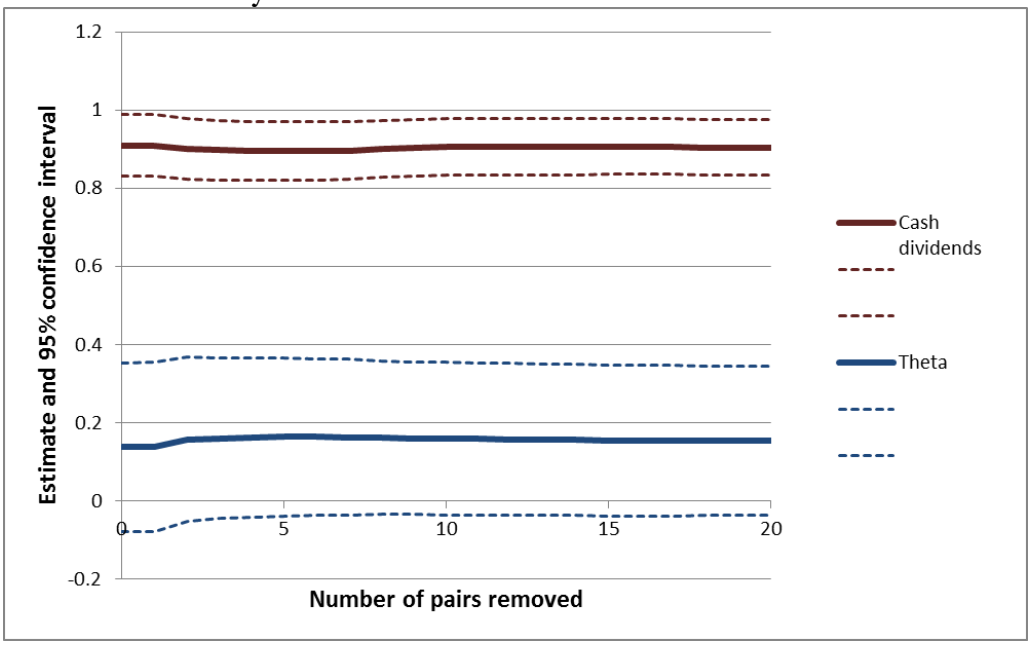
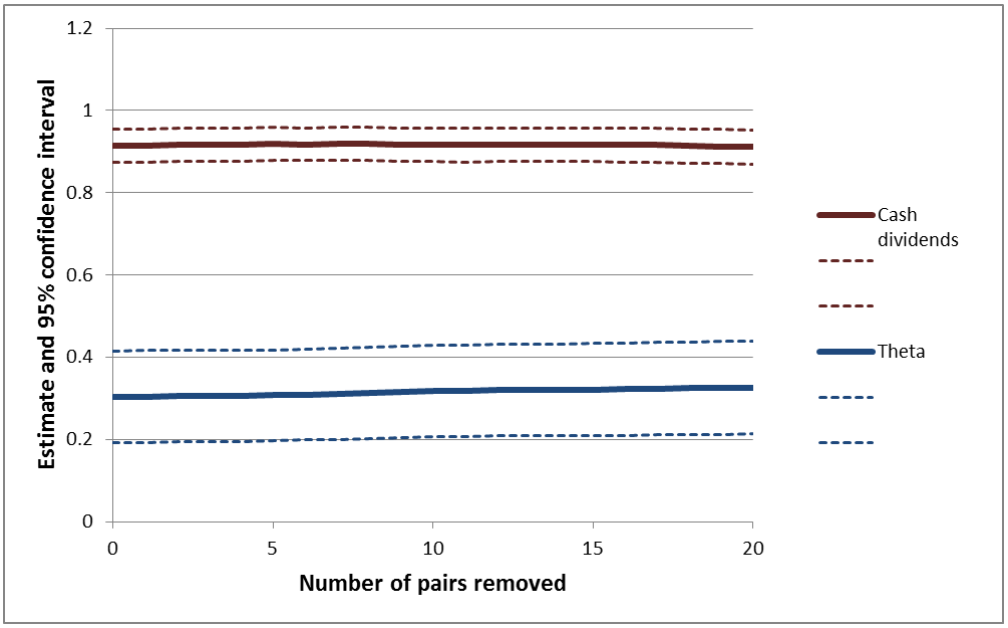


Figure 4
Sensitivity to removal of influential observations: Model 4



75. The stability analysis for Model 4, in Figure 4 above, shows that the estimates of the value of cash dividends, the value of theta, and the value of the combined package are very stable and robust to the removal of pairs of influential data points. That is, the estimates from Model Specification 4 are less sensitive to the effects of influential observations.

76. In summary, the stability analyses demonstrate that the estimates of theta are either maintained or slightly lowered when pairs of influential observations are removed from the data set.

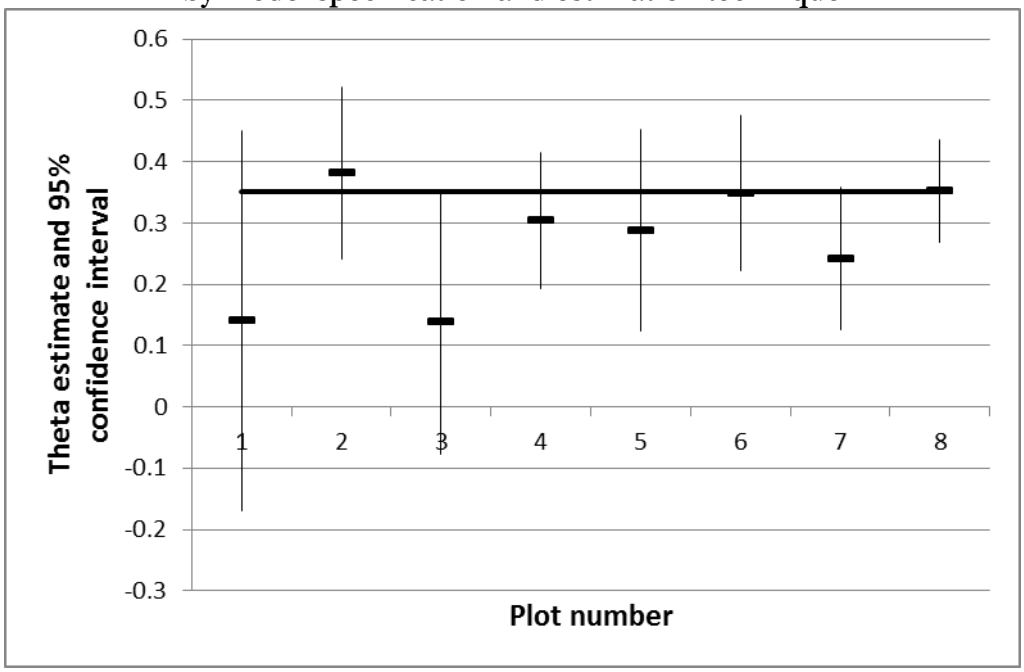
Sensitivity analysis

77. In this section, I examine the sensitivity of the results to variations in the model specifications, estimation methods, and construction of the data sets. In each case, I compare the theta estimate of 0.35 from the 2011 SFG study with the updated results.

0.35 is consistent with results from different model specifications and estimation techniques

78. I note that 0.35 lies within the standard statistical 95% confidence interval for all the estimations I have performed. I illustrate this in Figure 5 below, which shows that the 2011 SFG estimate of 0.35 is within the 95% confidence interval for every estimation. Figure 5 plots estimates for Model Specifications 1-4 estimated by OLS/GLS (Plots 1-4 in the figure) and then the corresponding robust regression estimates (Plots 5-8 in the figure). For none of these estimations can the proposed estimate of 0.35 be statistically rejected.

Figure 5
Summary of point estimates and confidence intervals for theta by model specification and estimation technique



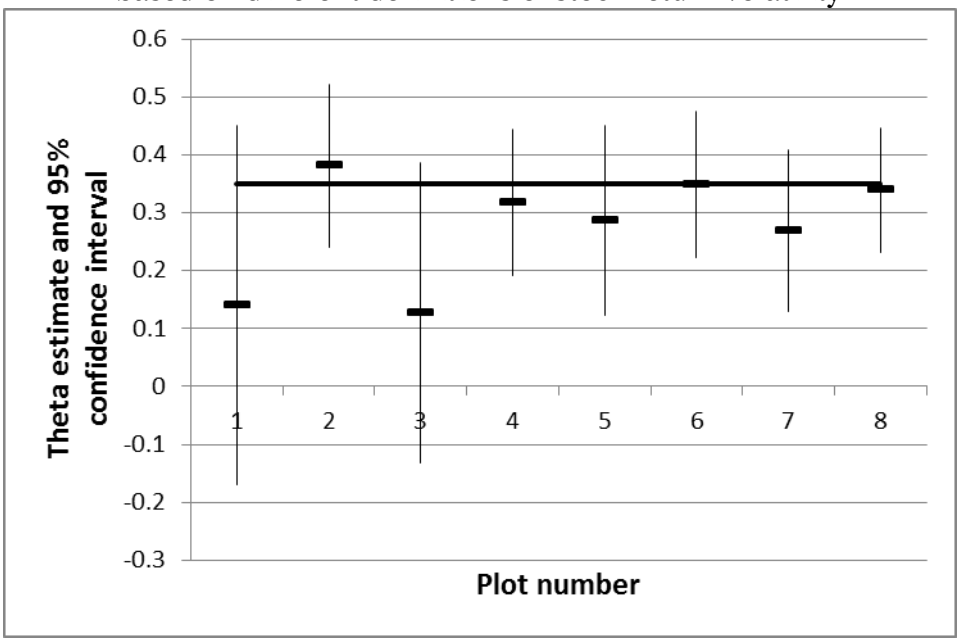
For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.

Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with results from different measures of volatility

79. Model specifications 3 and 4 involve scaling by stock return volatility as part of the GLS estimation methodology. Volatility can be defined in terms of the standard deviation of stock returns or the variance of stock returns. Figure 6 shows that the estimates of theta are largely insensitive to the definition of volatility that is used – the estimates of theta from a particular model are immaterially different across definitions of volatility.

Figure 6
Summary of point estimates and confidence intervals for theta based on different definitions of stock return volatility

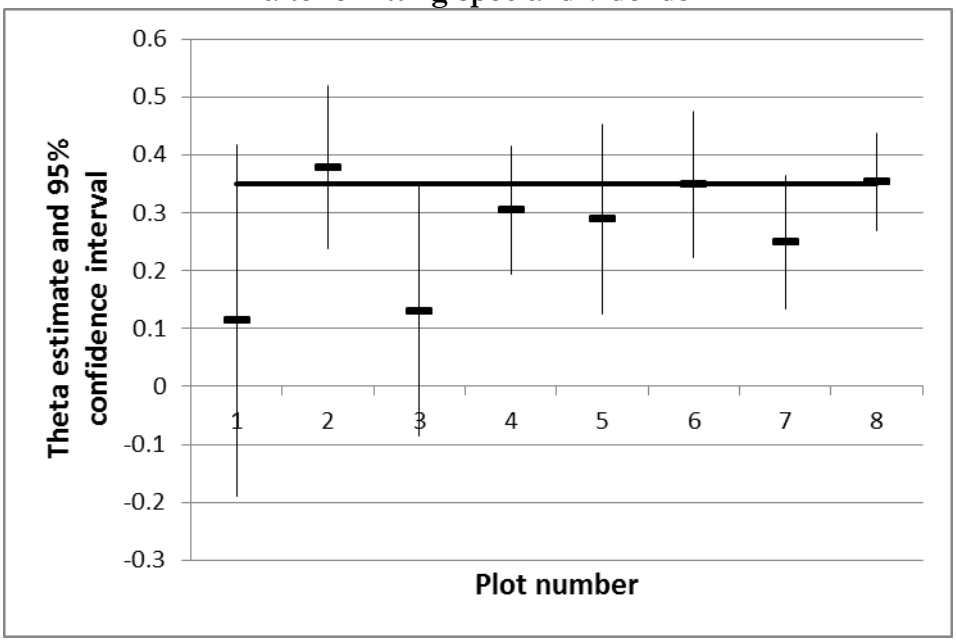


For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35. For all models, all observations for which the firm made a "market sensitive" announcement are removed.
Plot 1: Model specification 3, OLS, variance; Plot 2: Model specification 4, OLS variance;
Plot 3: Model specification 3, OLS standard deviation; Plot 4: Model specification 4, OLS, standard deviation;
Plot 5: Model specification 3, RR, variance; Plot 6: Model specification 4, RR, variance;
Plot 7: Model specification 3, RR standard deviation; Plot 8: Model specification 4, RR, standard deviation.

0.35 is consistent with results when special dividends are omitted

80. In my view, there is no conceptual reason to omit special dividends from the analysis, however the AER has previously expressed concern about their inclusion. Figure 7 shows that the estimates of theta are largely insensitive to the inclusion or exclusion of special dividends.

Figure 7
Summary of point estimates and confidence intervals for theta after omitting special dividends



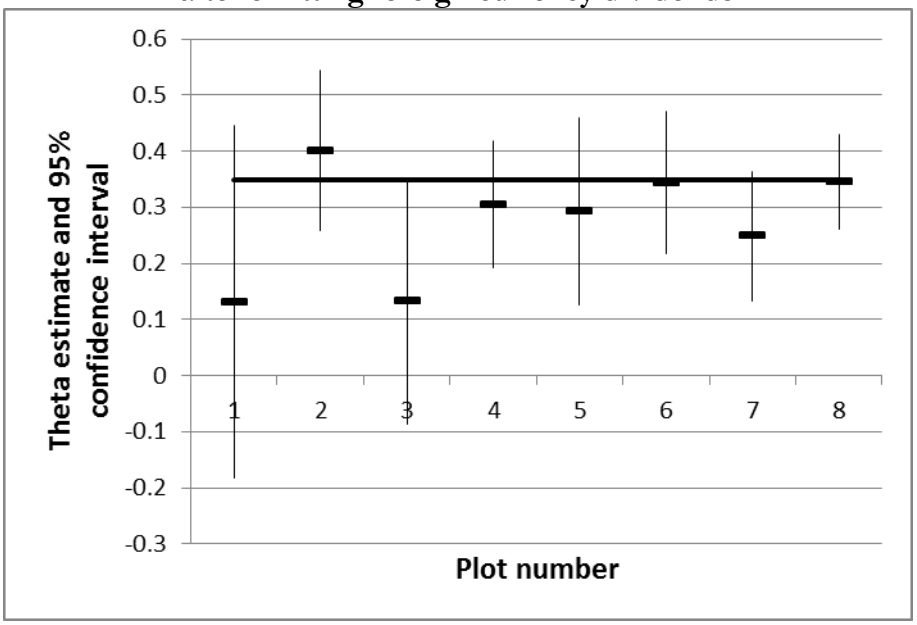
For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.

Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with results when foreign currency dividends are omitted

81. Figure 8 shows that the estimates of theta are largely insensitive to the inclusion or exclusion of foreign currency dividends. The exclusion of 56 foreign currency dividends has no material effect on the estimates of theta.

Figure 8
Summary of point estimates and confidence intervals for theta after omitting foreign currency dividends



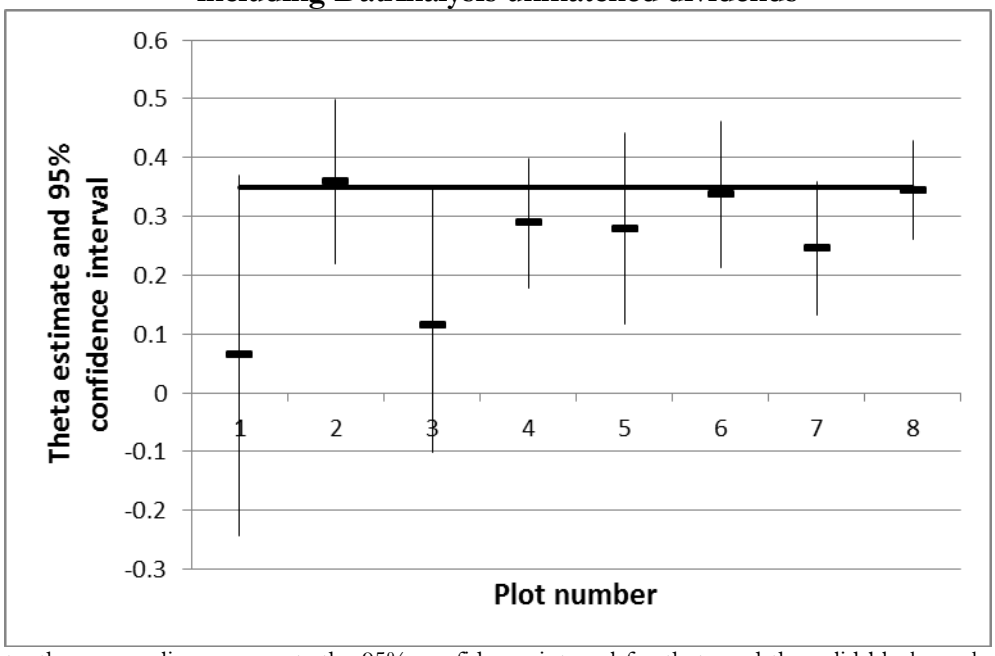
For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.

Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with results when unmatched DatAnalysis dividend events are included

82. To ensure that the results are robust to the process used to identify ex-dividend events, I perform an analysis that includes the dividend events that appear in the DatAnalysis database, but which do not match a dividend event in the TRTH database. The inclusion of these 80 observations has no material effect on the results. Figure 9 shows that the estimates of theta are largely insensitive to the inclusion or exclusion of unmatched DatAnalysis dividend events.

Figure 9
Summary of point estimates and confidence intervals for theta including DatAnalysis unmatched dividends

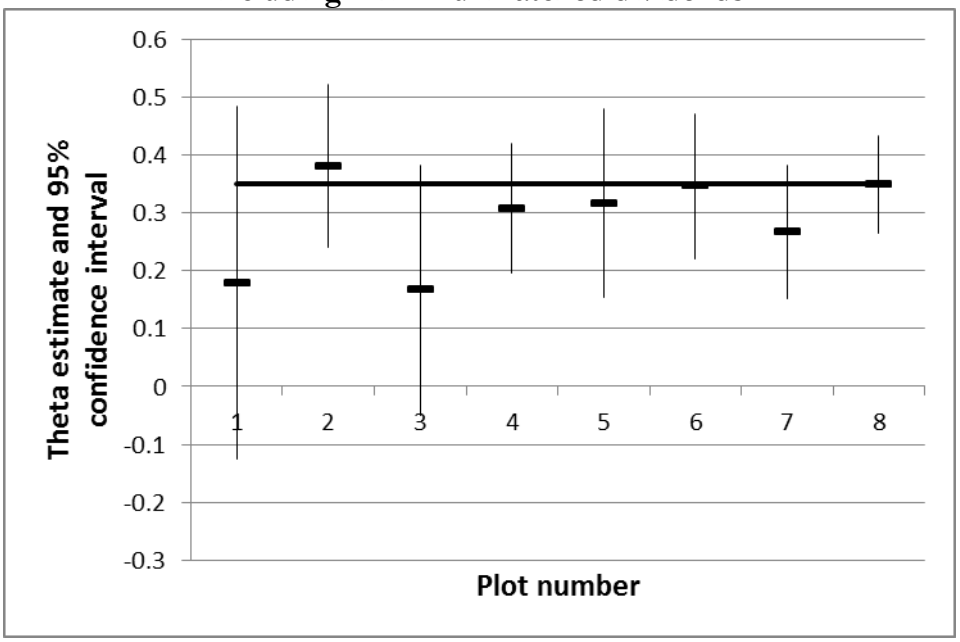


For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.
Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with results when unmatched TRTH dividend events are included

83. To ensure further that the results are robust to the process used to identify ex-dividend events, I also perform an analysis that includes the dividend events that appear in the TRTH database, but which do not match a dividend event in the DatAnalysis database. The inclusion of these 113 observations has no material effect on the results. Figure 9 shows that the estimates of theta are largely insensitive to the inclusion or exclusion of unmatched TRTH dividend events.

Figure 10
Summary of point estimates and confidence intervals for theta including TRTH unmatched dividends



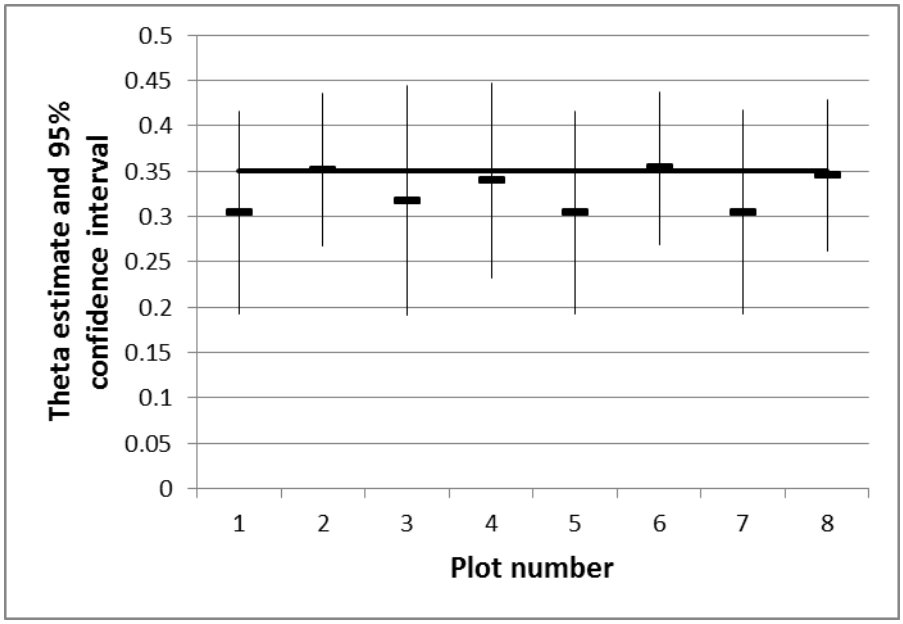
For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.

Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

0.35 is consistent with results for Model 4

84. The 2011 SFG report noted that the theta estimates from Model 4 tended to be the most stable across different sensitivity analyses and to have relatively smaller standard errors. Consequently, I collated those estimates into a single figure (Figure 11 in the 2011 SFG report). I follow that same practice with the updated data set and display the results in Figure 11 below, which shows that the proposed estimate of 0.35 is squarely within the confidence interval, and close to the point estimate of theta, in all cases.

Figure 11
Summary of point estimates and confidence intervals for theta for Model 4



For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.

Plot 1: Base case, OLS estimation; Plot 2: Base case, RR estimation;
Plot 3: Vol=Standard deviation, OLS estimation; Plot 4: Vol=Standard deviation, RR estimation;
Plot 5: No specials, OLS estimation; Plot 6: No specials, RR estimation;
Plot 7: No foreign currency dividends, OLS estimation; Plot 8: No foreign currency dividends, RR estimation.

5. Conclusions

85. The conclusion from the 2011 SFG study was that:

> For the reasons set out in detail in this report, we conclude that the appropriate estimate of theta from the dividend drop-off analysis that we have performed is 0.35 and that this estimate is paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90.[30]

86. In my view, the conclusions from the earlier study remain valid when tested against the updated data set.

87. This report has been authored by Professor Stephen Gray. I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld.

[30] SFG (2011), Paragraph 3.

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An appropriate regulatory estimate of gamma

Report for Jemena Gas Networks, ActewAGL, APA, Networks NSW (Ausgrid, Endeavour Energy and Essential Energy), ENERGEX, Transend, TransGrid and SA Power Networks

13 May 2014

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1. Background and conclusions

Overview and instructions

1. SFG Consulting (**SFG**) has been retained by Jemena Gas Networks, ActewAGL, APA, Networks NSW (Ausgrid, Endeavour Energy and Essential Energy), ENERGEX, Transend, TransGrid and SA Power Networks to provide our views on the estimation of the gamma parameter in the context of regulatory weighted-average cost of capital (**WACC**) estimation.

2. In particular, we have been asked to:

    a) Describe the conceptual economic / finance basis for accounting for the value of imputation credits when estimating the cost of corporate income tax as part of a post-tax building block revenue framework where the building blocks are as set out in rule 76 (for gas distribution and transmission), clause 6A.5.4(a) (for electricity transmission), and clause 6.4.3(a) (for electricity distribution);

    b) Assess each of the methods identified by the AER for estimating the value of imputation credits in the Rate of Return Guideline, as well as any other methods we consider to be relevant, in terms of:

        i) their suitability for estimating the value of imputation credits within the building block revenue framework, in light of the conceptual economic / finance basis for this parameter; and

        ii) the reliability and robustness of estimates produced by each method;

    c) Provide our opinion on the best method, or combination of methods, for estimating the value of imputation credits within the building block revenue framework; and

    d) Provide an estimate of the value of imputation credits, based on the recommended method, or combination of methods.

3. Our instructions are set out in Appendix 1 to this report.

4. This report has been authored by Professor Stephen Gray, Professor of Finance at the UQ Business School, University of Queensland and Director of SFG Consulting, a specialist corporate finance consultancy. I have Honours degrees in Commerce and Law from the University of Queensland and a PhD in Financial Economics from Stanford University. I teach graduate level courses with a focus on cost of capital issues, I have published widely in high-level academic journals, and I have more than 15 years' experience advising regulators, government agencies and regulated businesses on cost of capital issues. A copy of my curriculum vitae is attached as Appendix 2 to this report.

5. My opinions set out in this report are based on the specialist knowledge acquired from my training and experience set out above.

6. I have read, understood and complied with the Federal Court of Australia Practice Note CM7 *Expert Witnesses in Proceedings in the Federal Court of Australia.*

Summary of conclusions

7. Our primary conclusions are set out below.

The economic role of gamma in the regulatory process

8. Gamma represents the value of imputation credits to investors. It determines the proportion of the return to shareholders that is assumed to come from imputation credits.[1]

9. The parameter estimates set out in the Guideline imply that the allowed revenue should be set so that the firm is able to provide 82% of the total return that is required by shareholders, the other 18% being assumed to come from the value of imputation credits. That is, the allowed return on equity is reduced by 18% in relation to the assumed value of imputation credits.

10. If shareholders value imputation credits less than the 18% reduction in their allowed return, they will be under-compensated for the risk they bear.

The economic role of theta in the regulatory process

11. Gamma is estimated as the product of the distribution rate (F) and the value of distributed credits (theta). This is standard regulatory practice.[2]

12. Theta represents the value (to the market) of a distributed imputation credit. It represents the extent to which a distributed credit is reflected in the share price.

The distribution rate

13. Our main conclusions in relation to the distribution rate are:[3]

    a) The accepted empirical approach consistently produces an estimate of 0.7;

    b) Standard Australian regulatory practice is to adopt a distribution rate of 0.7;

    c) All stakeholders have proposed a distribution rate of 0.7;

    d) The Lally small sample approach should receive no weight because:

        i) It produces highly variable estimates over time, including materially different recommendations two days apart, whereas the accepted approach produces stable estimates;

        ii) The Lally approach is motivated only by unspecified problems with the ATO data. Whereas there are known to be problems with ATO dividend flow data, no issues have been raised in relation to the franking account balance data that is used to estimate the distribution rate; and

        iii) The small sample of firms used in the Lally approach are not indicative of either the average firm or the benchmark regulated firm; and

    e) For the reasons set out above, we concur with the distribution rate of 0.7 that is proposed in the Guideline.

[1] See Section 2 of this report.
[2] See Section 2 of this report.
[3] See Section 3 of this report.

Value vs. redemption

14. Investors are likely to value imputation credits at less than their face value for a number of reasons:[4]

    a) Credits that are not redeemed (because they are distributed to non-residents, or they are excluded by the 45-day rule, or any other reason) are clearly of no value;

    b) The redemption of credits requires certain administrative costs;

    c) The redemption of credits involves a material time delay before payment is made;

    d) Like dividends, imputation credits are taxed at the shareholder's marginal rate; and

    e) The acquisition of imputation credits comes at the cost of foregone diversification opportunities.

15. If the redemption rate is used in the regulatory setting, and if the redemption rate is greater than the value of credits, this must lead to investors being under-compensated. This is because the reduction in the allowed return, which is based on the redemption rate, exceeds the value of the imputation credits that are received by shareholders.

The use of redemption rates via the equity ownership approach and ATO tax statistics

16. Our conclusions in relation to redemption rate estimates of theta are as follows:

    a) The redemption rate is the ratio of redeemed credits to distributed credits and can be estimated in two ways:

        i) Using aggregate tax statistics published by the ATO relating to the distribution and redemption of imputation credits; and

        ii) By estimating the proportion of Australian shares that are held by resident investors, and assuming that those resident investors will redeem any imputation credit they receive;

    b) If theta is interpreted as the value of a distributed credit, redemption rates cannot be used to estimate theta. The Tribunal has ruled that redemption rates cannot be used to estimate the value of a distributed credit;

    c) ATO tax statistics are unable to produce a precise estimate of the redemption rate due to data quality issues. However, this data suggests a range of 44% to 62%;

    d) Equity ownership estimates of the redemption rates are also highly unreliable. In particular, the 70% domestic ownership estimate that appears in the Guideline should not be relied upon because it is based on data from 2007, when the foreign ownership of Australian shares was at a temporary ebb. The same ABS data source that produced the 2007 estimate now produces an estimate of 55% domestic ownership. This estimate has been confirmed in ASX estimates of the proportion of domestic ownership in 2011 and again in 2013.[5]

[4] See Section 2 of this report.
[5] The ASX reports an estimate of 54% domestic ownership.

Empirical estimates using observed prices from the market

Dividend drop-off studies

17. The AER concludes that the most relevant dividend drop-off studies are those by SFG (2011, 2013) and Vo et al (2013), and that the most relevant results from Vo et al are those that apply the standard market correction. SFG report a theta estimate of 0.35. The Vo et al estimate (using the standard market correction) is 0.34.

18. In our view, to the extent to which there is any difference between the two studies, there are two reasons to prefer the SFG studies to the Vo et al study:

    a) The SFG approach has been subjected to intense scrutiny. All data and computer code was supplied to the AER. All issues that the AER has identified have been considered by the Tribunal. And the Tribunal has endorsed and adopted the results. By contrast, the Vo et al study has not been subjected to such scrutiny;[6] and

    b) The SFG theta estimates have been shown to be stable and reliable in the face of a battery of stability and robustness checks, whereas Vo et al express concerns about the stability and reliability of its own results.

19. In any event, there is little evidence to support the Vo et al mid-point estimate of 0.45 from within its range of 0.35 to 0.55:

    a) The Vo et al estimates are overwhelmingly below 0.45 and a significant proportion of those estimates are below 0.35;

    b) The Vo et al study reports a theta estimate of 0.34 when the standard ex-day market correction is applied;

    c) The Vo et al estimate increases only to 0.4 when the standard ex-day market correction is removed; and

    d) The SFG (2013) estimates indicate that, if anything, the 0.35 estimate is towards the upper end of the reasonable range.

20. In our view, there is no reasonable basis for adopting a dividend drop-off estimate of theta above 0.35.

Other empirical evidence

21. In all of the alternative market value studies over the last five years, the authors have concluded that the evidence supports an estimate of theta between 0 and 0.35.[7]

The "conceptual goalposts" test

22. The "conceptual goalposts" test posits that the allowed return on equity should be set between two theoretical extremes:

[6] Although we understand that the Vo et al (2013) study has been submitted to an academic journal for publication.
[7] See, for example, the list of studies set out in AER Rate of Return Guideline, Explanatory Statement, Appendix H, Table H.8, pp. 173-174.

a) The allowed return on equity in a perfect segmentation world; and

b) The allowed return on equity in a perfect integration world.

23. Implementation of the conceptual goalposts test requires estimates of all return on equity parameters as they would be under perfect segmentation and under perfect integration. The task of estimating these parameters in the real world, where observable data is available, is involved and complex. The task of estimating what these parameters *would be* if no foreign investment was allowed, and what they *would be* if markets were perfectly integrated is impossible.

24. Setting aside the estimation problems, one of the most important aspects of the conceptual goalposts test is the assumption that the risk-free rate would not change in a segmented market. That is, the government bond yield would remain the same if all foreign investors (who currently own 80% of all Australian government bonds) were banned from investing. In our view, this assumption is untenable.

25. Moreover, if the perfect segmentation risk-free rate is increased by just 1% above the perfect integration risk-free rate, the empirical estimates based on market data pass the conceptual goalposts test.

26. In our view, the conceptual goalposts test is not fit for any purpose, let alone the purpose of excluding all of the available empirical evidence.

Estimates of theta and gamma

27. As set out above, neither redemption rates nor the conceptual goalposts test can be used to estimate theta. The only appropriate way to estimate theta is via the empirical analysis of observed market prices (the same way all other WACC parameters are estimated).

28. The empirical methods produce estimates of theta in the range of 0 to 0.35. We adopt an estimate of 0.35, based primarily on the results of the SFG (2011, 2013) studies that use an accepted methodology that has been accepted by the Tribunal.

29. Relative to the alternative market value studies, dividend drop-off analysis has a longer history, has been subjected to a higher level of scrutiny (especially the SFG 2011 study), and the strengths and weaknesses of the approach, and the econometric issues, are better understood. Consequently, we maintain a theta estimate of 0.35 – from dividend drop-off analysis – in this report noting that this is a conservative estimate in that the other relevant evidence produces lower estimates.

30. In our view the 70% estimate of the distribution rate is uncontroversial.

31. The product of these two components produces an estimate of gamma of 0.25. In our view, this remains the best available estimate of gamma.

Market practice

32. There is clear evidence that the dominant market practice is to make no adjustment for imputation credits, but rather to consider that the firm must generate the entire return that investors require and that there is no reduction due to imputation credits.

33. If one disregards this evidence on the basis that there is a "conventional" or "classical" approach that can be used to estimate the ex-imputation required return on equity without requiring an estimate of gamma, the estimate from that other approach should at least be compared with the corresponding

estimate from the regulatory approach. Good regulatory practice would then involve the regulator explaining why its estimate of the ex-imputation required return on equity (which forms the basis of the allowed revenue) differed from the "conventional" estimate.

Conceptual definition of theta

34. On the issue of the conceptual definition of theta, we conclude that:

    a) The AER is alone in its conceptual interpretation of theta:

        i) Prior to the current Guideline, the practice of all regulators was to interpret theta[8] as the value (to the market) of distributed imputation credits;

        ii) This remains the practice of all other regulators;

        iii) The AER now proposes to refer to theta as "the utilisation rate" and to conceptualise it as "the extent to which investors can use the imputation credits they receive to reduce their personal tax"[9];

    b) None of the AER's proposed reasons for its conceptual redefinition of theta are valid, or supported by the advice that it has received:

        i) The AEMC Rule change (which now specifically defines gamma to be "the value of imputation credits") does not support the AER's new conceptual definition. It seems clear that the intention of the AEMC was simply to tidy up the Rule to properly reflect the longstanding regulatory practice of adopting a market value interpretation of theta and gamma. The Rule change is quite inconsistent with the notion that the longstanding *value* interpretation should be replaced by a different interpretation;

        ii) McKenzie and Partington (2013) identify two possible interpretations for theta – the standard value interpretation and the AER's utilisation interpretation. They express no opinion about which interpretation is correct or which should be preferred. However they do note that the "standard practice has been to measure the market value of theta"[10] and in a subsequent report they have stated that "theta is the value to the investor of the imputation credits distributed."[11];

        iii) Handley (2008) has advised the AER that his redemption rate study provides a reasonable estimate of the utilisation of imputation credits, but that the utilisation of credits cannot be used to produce an appropriate estimate of gamma. Handley advises that since theta represents the value (to the market) of imputation credits, and since redemption rates provide only an upper bound for that value, they can only be used to produce an upper bound and not a point estimate;

        iv) Officer (1994) refers to theta in terms of both value to shareholders and utilisation. However, the formulas and numerical calculations show, unambiguously, that gamma has a *value* interpretation whereby gamma represents the increase in the *value* of equity due to imputation credits, expressed as a proportion of the face value of imputation credits;

[8] Or whatever term is used for "the parameter that must be multiplied by F to obtain gamma."
[9] AER Rate of Return Guideline, Explanatory Statement, p. 159.
[10] McKenzie and Partington (2013), p. 32.
[11] McKenzie and Partington (2013), p. 31.

v) The AER cites part of a paragraph of Hathaway and Officer (2004) as supporting its proposed interpretation of theta. However, the AER has misconstrued the point that was being made, which is simply that gamma is the product of the distribution rate and theta. The remainder of the same paragraph endorses the standard value interpretation of theta: "Gamma is not the value of distributed credits alone. It is the compounding of two factors – the fraction of tax distributed as credits multiplied by the *value of distributed credits*."[12]; and

vi) Lally (2013a) advises the AER that theta can be estimated as the weighted-average utilisation rate *only under certain assumptions*, which do not hold in the AER's framework. Indeed, Lally is highly critical of the AER for continuing to estimate theta as the weighted-average utilisation rate even though it departs from the assumptions that are required for that result to hold.

[12] Hathaway and Officer (2004), p. 7.

2. The role of gamma in the regulatory process

The definition of gamma under the Rules

35. The National Gas Rules and National Electricity Rules define gamma to be the value of imputation credits:

> γ is the value of imputation credits.[13]

Gamma determines the allowed return to shareholders

36. Under the Australian regulatory framework, the gamma parameter plays the role of determining:

    a) What proportion of the total return to equity must come from allowed revenues; and

    b) What proportion of the total return to equity is assumed to come from dividend imputation tax credits.

37. In particular, the proportion of the total return that is assumed to come from allowed revenues is:

$$\frac{1-T}{1-T(1-\gamma)}$$

where T is the corporate tax rate, the balance being assumed to come from the value of imputation credits.

38. By way of example, the Guideline proposes that $\gamma = 0.50$, which (together with a corporate tax rate of 30%) implies that 82%[14] of the total return to equity comes from allowed revenues and 18% is assumed to come from imputation credits. For example, suppose that the total required return on equity is 10%. The parameter estimates set out in the Guideline imply that the allowed revenue should be set so that the firm is able to provide a return of 8.2% to its shareholders, the other 1.8% being assumed to come from the value of imputation credits.

39. That is, every dollar of value that is ascribed to imputation credits reduces the regulatory allowed return to equity by a dollar. For example, consider a regulated firm with $100 of equity capital in its regulatory asset base (RAB) and an allowed return on equity of 10%. This implies that equity holders require a return of $10. If the regulator determines that the imputation credits received by shareholders are valued at $1.80 (consistent with the parameter values proposed in the Guideline), the regulator will allow the firm to charge prices that enable it to pay a return of $8.20 to shareholders.

40. In this case, shareholders lose $1.80 of value from the return provided by the firm, but are assumed to gain $1.80 of value from the imputation credits that they receive. That is, shareholders are assumed to be indifferent between:

    a) Receiving a return of $10 from the firm; or

    b) Receiving $8.20 from the firm and imputation credits that they value at $1.80.

[13] NER cls. 6.5.3, 6A.6.4 (current since version 53); NGR r. 87A(1) (current since version 14).

[14] $\frac{1-T}{1-T(1-\gamma)} = \frac{1-0.3}{1-0.3(1-0.5)} = 0.82$.

41. In summary, the role of gamma in the regulatory process is to determine the *value* of imputation credits, such that this value can be deducted from the return that the regulated firm is able to pay to its shareholders.

42. By way of analogy, a casual fruit shop employee may be indifferent between receiving a $100 wage or a $90 wage and fruit that is worth $10 to them. They are unlikely to be indifferent between a $90 wage and 10 *grams* of fruit, or 10 *pieces* of fruit, or even a fruit basket that has a marked price of $10 but which is not worth $10 to *them*. If their pay is being reduced by $10, they will need as compensation something that has equivalent monetary *value* to them.

43. The same applies in the regulatory setting. The estimate of gamma determines the amount of reduction in the monetary return that is paid to shareholders. It should be set to equate the monetary *value* of imputation credits with the monetary reduction in the allowed return that is paid to shareholders. Thus, the regulatory task is to determine the monetary value of imputation credits and to then reduce the allowed return on equity by that same monetary value.[15]

44. In our view, the relevant task in the regulatory setting is to:

    a) Determine the required return on equity having regard to all relevant evidence and the prevailing conditions in the market for equity funds; and to then

    b) Determine how much of that required return can be obtained from imputation credits, having regard to all relevant evidence and the prevailing conditions in the market for equity funds; and to then

    c) Set allowed prices so that the firm will be able to pay to its shareholders a return that is equal to the difference between (a) and (b) above.

45. In other words, gamma determines the *price* that shareholders would be prepared to pay to buy imputation credits. In the example above, shareholders are assumed to be willing to pay $1.80 (by receiving a return that is $1.80 lower than it would otherwise be) for the imputation credits that they receive. The regulator needs to determine the dollar value that shareholders would ascribe to imputation credits, and then reduce the return that they receive from the regulated firm by that amount. If the regulator reduces the allowed return by more than the true value of the credits, shareholders will end up being under-compensated. Conversely, if the regulator reduces the allowed return by less than the true value of the credits, shareholders will end up being over-compensated. Neither of these outcomes is appropriate.

46. In our view, it is clear that gamma represents the value (or worth or price) that shareholders ascribe to imputation credits. The only question then is how to best estimate that value.

General framework

47. The standard approach is to estimate gamma as the product of two parameters:

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

[15] The ENA (2013) submission contains a detailed explanation of this issue, including a fully-worked numerical example. See ENA (2013), *Response to the Draft Rate of Return Guideline of the Australian Energy Regulator*, 11 October, pp. 137-140.

where F represents the distribution rate and θ (**theta**) represents the value of a distributed imputation credit.[16]

48. Australian companies generate imputation credits via the payment of Australian corporate tax. Every dollar of corporate tax payment creates a dollar of imputation credits. These credits can then be distributed to shareholders by attaching them to dividends in the ratio of $\frac{T}{1-T}$ credits for every dollar of dividends, where T is the corporate tax rate. At the current 30% tax rate, 43 cents of credits can be attached to every dollar of dividends.[17]

49. To distribute all of the credits that are created in a given year, the firm would have to pay out 100% of its Australian profits as a dividend. For example, a company that earned a pre-tax profit of $100 would pay $30 of corporate tax, thus creating $30 of imputation credits. If it then paid out the entire post-tax profit of $70 as a dividend, it could attach $\frac{0.3}{1-0.3} \times 70 = \$30$ of credits.

50. Of course, companies do not generally distribute 100% of their post-tax profits as dividends – they retain some profits for purposes such as financing future capital expenditure. In this case, some of the credits that are created will not be distributed. The distribution rate (F) represents the proportion of created credits that are distributed. We show in Section 3 of this report that there is widespread agreement that an appropriate estimate of this parameter is 70% – on average 70% of the credits that are created are attached to dividends and distributed to shareholders and 30% are not distributed.

51. The second parameter, theta, represents the value that shareholders place on those credits that *are* distributed. We expand upon the definition of the "value" of distributed imputation credits in the remainder of this section below. At this point, we simply note by way of example that if 70% of created credits are distributed, and if those distributed credits are valued at, say, 35% of their face value, the appropriate estimate of gamma would be:

$$\gamma = F \times \theta = 0.7 \times 0.35 = 0.25.$$

52. Defining gamma to be the product of two sub-parameters in this way is generally accepted. This approach was adopted by the AER in its 2009 WACC Review, it is consistent with the approach currently used by other regulators.

The role and definition of theta

Theta determines the extent to which imputation credits are reflected in stock prices

53. In a dividend imputation tax system, investors receive three potential benefits from owning shares:

    a) Dividends;

    b) Capital gains; and

    c) Imputation credits.

[16] This standard approach is also adopted in the Guideline. See AER Guideline, p. 23. The Guideline refers to F as the "payout ratio" and to theta as the "utilisation rate."

[17] $\frac{0.3}{1-0.3} = 0.43.$

54. For example, an investor who bought a share today could sell it after one year at the market price at that time, and would also receive the benefits of any dividends and imputation credits that were paid during the course of the year. In this setting, the current stock price can be written as the present value of:

    a) The expected stock price at the end of the year;

    b) Any dividends paid during the year; and

    c) The value of imputation credits distributed during the year.

55. For example, in his recent report for the AER, Lally (2013)[18] notes that the current stock price can be written as the present value (over the next year) of dividends, imputation credits and the end-of-year stock price:[19]

$$S_0 = \frac{Div_1 + \theta \times IC_1 + S_1}{1 + r_e}$$

    where IC_1 represents the (per share) imputation credits that are distributed to shareholders.

56. This expression makes it clear that θ represents the extent to which the value of distributed imputation credits is reflected in the current stock price. That is, theta represents the extent to which the *value* of the stock price is higher as a result of the imputation credits that are to be distributed: Theta is the extent to which distributed imputation credits are capitalised into the stock price. For example, if the firm distributed a $1 imputation credit, and if the pending receipt of this credit caused the stock price to be 35 cents higher than it would otherwise have been, theta is 0.35.

57. Moreover, we show in Appendix 3 to this report that the proportion of the firm's equity market capitalisation that is due to imputation credits is:[20]

$$\frac{\theta T}{1 - T(1-\theta)}.$$

58. For example, the parameter values proposed in the Guideline suggest that approximately one quarter of the value of the entire Australian market (more than $300 billion of the $1.5 trillion total market capitalisation) is attributable to imputation credits:

$$\frac{\theta T}{1 - T(1-\theta)} = \frac{0.7 \times 0.3}{1 - 0.3(1-0.7)} = 23\%,$$

[18] Lally, M., 2013, *The Estimation of Gamma*, Report for the AER, 23 November.

[19] See Lally (2013a), Equation 3, p. 10. Note that we use θ rather than *U* and r_e rather than $R_f + \phi\beta_e$. We also define the post-tax cash flow to shareholders to be "dividends" so that $Div_1 = Y_1 - TAX_1$.

[20] To see this, note that for every dollar of dividends (which are assumed to be fully reflected in the stock price under the assumption that cash dividends are valued at 100% of face value), there will be $\frac{T}{1-T}$ dollars of imputation credits, which are valued at $\$\theta$ each. Thus, for every dollar of dividends, there are imputation credits that have a value of $\frac{\theta T}{1-T}$. Consequently, the imputation credits account for a relative proportion of $\frac{\theta T/1-T}{1+\theta T/1-T} = \frac{\theta T}{1-T(1-\theta)}$. A more formal derivation of this expression is set out in Appendix 3 to this report.

which is too high to be considered plausible.

Regulatory practice

59. The practice that has always been adopted by Australian regulators is consistent with theta representing the value of distributed imputation credits – the extent to which they are capitalised into the stock price.

60. For example, in its 2009 WACC Review, the AER stated that:

> θ (theta) is the per dollar value of a distributed credit.[21]

61. In its current Guideline materials the AER notes that it has previously:

> adopted the market value definition of the utilisation rate[22]

and evaluated all evidence:

> relative to the market value approach.[23]

62. Interpreting theta as the market value of a distributed credit is also the approach that is currently adopted by all other regulators. For example, in its recent Guideline under the NER and NGR, the ERA defines theta to be:

> …the market value of imputation credits distributed as a proportion of their face value (θ).[24]

noting that:

> This approach is widely accepted by Australian regulators.[25]

63. In addition, in its recent WACC Review IPART stated that:

> imputation credits have *value* to equity owners and this *value* is reflected in our revenue determination process.[26]

64. IPART also stated that the proportion of the total return that is assumed to come from allowed revenues is:

$$\frac{1-T}{1-T(1-\gamma)}$$

[21] AER 2009 WACC Review Final Determination, p. 414.
[22] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 139.
[23] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 139.
[24] ERA Rate of Return Guideline, Explanatory Statement, Paragraph 922.
[25] ERA Rate of Return Guideline, Explanatory Statement, Paragraph 922.
[26] IPART 2013 WACC Review, p. 17, emphasis added.

with the balance being assumed to come from the value of imputation credits.[27]

The difference between the redemption rate and the value of distributed credits

65. There are a number of reasons why the value of distributed imputation credits that is reflected in share prices may be less than the face value of those credits, including:

    a) Some of the credits that are distributed to shareholders are never redeemed. There are, in turn, a number of reasons why a distributed credit might not be redeemed, including:

        i) Credits distributed to non-resident investors cannot be redeemed under the dividend imputation legislation;

        ii) Credits distributed to resident investors who sell the shares within 45 days of their purchase cannot be redeemed;[28] and

        iii) Some credits distributed to resident investors are not redeemed because some investors fail to keep the required records and simply do not claim them. For example, Handley and Maheswaran (2008) report that, on average 8% of the credits distributed to resident individuals are never redeemed.[29]

    b) There is a time delay in obtaining any benefit from imputation credits. Whereas dividends are available to the investor as soon as they are paid, the imputation credits that are attached to that dividend only have value after the investor's end-of-year tax return is filed and processed. This time delay can be in the order of two years for a credit that is distributed directly from a company to an individual shareholder. The time delay can be even greater when credits are distributed through other companies or trusts;

    c) There are administrative costs involved in the redemption of imputation credits. The investor must maintain records of all credits that are received and redeem them by preparing the necessary schedules for the investor's tax return. This involves time and expenses such as accountant fees. By contrast, when an investor buys shares, they provide bank account details and all dividends are automatically transferred into that account without any action required of the investor. That is, it is more costly to convert imputation credits into value;

    d) Imputation credits are taxed as income in the same way that dividends are taxed. When an investor receives a franked dividend, their taxable income is increased by the amount of the dividend plus the face value of the credit. Both components are then taxed at the investor's marginal tax rate; and

    e) If dividend imputation leads resident investors to hold more domestic dividend-paying shares than they otherwise would (because they are attracted by the possibility of receiving imputation credits) their portfolios will become more concentrated and the resulting loss of diversification comes at a cost. A rational investor would continue to increase the concentration of their portfolio until the marginal benefit of the last imputation credit

[27] IPART 2013 WACC Review, p. 17.

[28] The so-called "45 day Rule" took effect in July 1997. It prevents resident investors from redeeming imputation credits unless they own the shares for 45 days around the payment of the relevant dividend.

[29] This figure includes credits that are not redeemed due to the 45-day Rule and credits that are not redeemed because the shareholder has taxable income below the tax-free threshold. The latter is likely to be immaterial as it is unlikely that a material proportion of shares are owned by residents whose income is below the tax-free threshold.

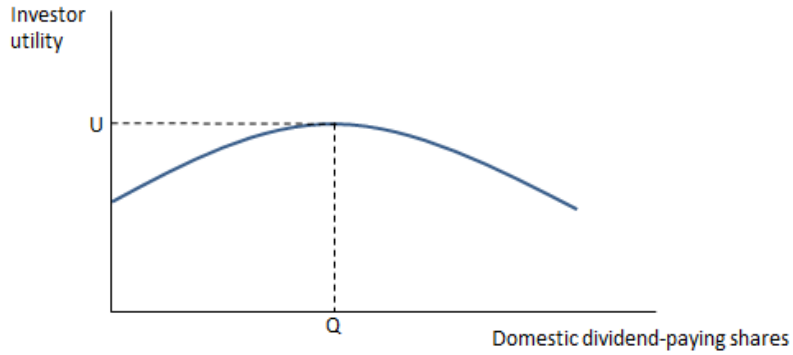
equalled the marginal cost of losing diversification. That is, the last imputation credit would be of no net benefit.[30]

66. This last point about portfolio diversification is particularly important and has been recognised by Lally (2013) and other regulators:

> The ERA (2013, page 5) goes even further and asserts that even domestic investors would value franking credits less than their face value because they must incur risk, pay transaction costs, and sacrifice international diversification opportunities by purchasing Australian stocks with imputation credits.[31]

67. To explore the portfolio diversification point in more detail, first consider Figure 1 below in a market with no dividend imputation. That figure shows the utility[32] of a particular investor as a function of the proportion of their wealth that is invested in domestic dividend-paying shares (as opposed to domestic shares that do not pay dividends, international shares, or other assets such as real property, term deposits, bank balances and so on). Figure 1 shows that the optimal investment in domestic dividend-paying shares is at Q, because this maximises the investor's utility at U.

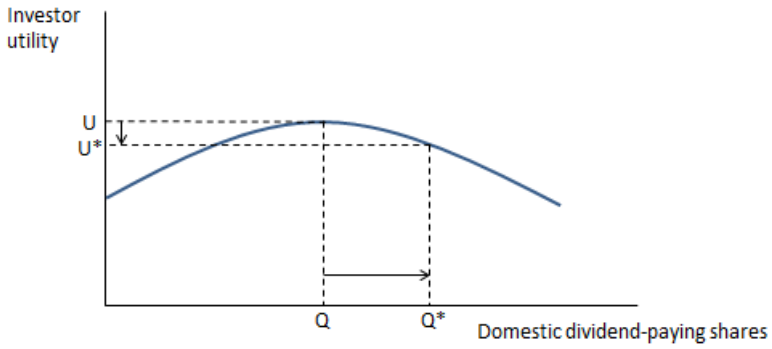
Figure 1
Optimal portfolio holding of domestic dividend-paying shares



68. If the investor moved away from their optimal investment in domestic dividend-paying shares (Point Q), the result would be a loss of utility, in which case the investor would be worse off. This is illustrated in Figure 2 below, which shows that an over-investment in domestic dividend-paying shares (at Q*) leads to a reduction in utility (U*).

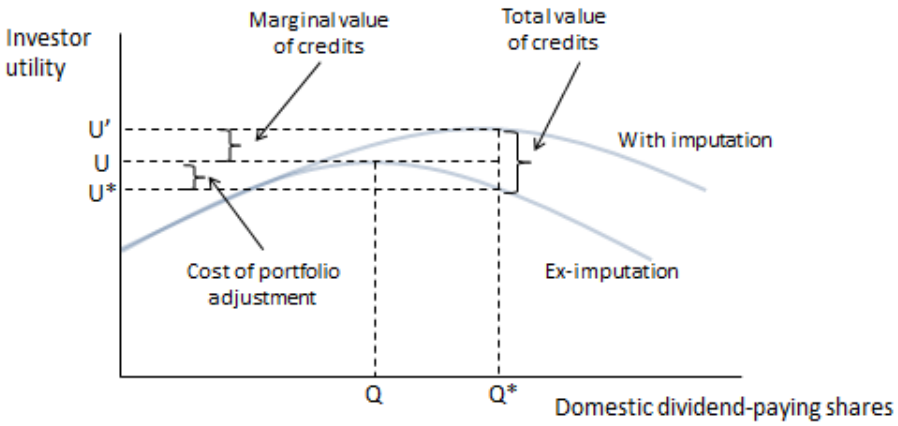
[30] This effect is explained in more detail in Paul Lajbcygier and Simon Wheatley (2012), "Imputation credits and equity returns," *The Economic Record*, 88, 283, 476-494.
[31] Lally (2013), p. 16. The reference to ERA (2013) appears to be a reference to Vo, Gellard and Mero (2013).
[32] Utility is the economic concept of well-being or satisfaction. The basis of most economic models is the notion that individuals will act to maximise their utility.

Figure 2
Sub-optimal portfolio holding of domestic dividend-paying shares



69. Now suppose that imputation is introduced into this market, as illustrated in Figure 3 below. The domestic investor is likely to alter their portfolio by increasing their investment in domestic dividend-paying shares. This causes the investor to move away from their optimal portfolio, which comes at a cost – reducing utility from U to U*. However, that cost is more than compensated by the value that the investor receives from imputation credits. When the value of imputation credits is included, the curve shifts and the optimal investment in domestic dividend-paying shares is at Q*, producing utility of U'. This optimum occurs at the point where the marginal benefit of the next imputation credit is exactly offset by the marginal cost of further concentration of the investor's portfolio. That is, the last dollar of imputation credits that the investor receives has a negligible marginal benefit.

Figure 3
Australian government bond yields and the proportion of domestic ownership



70. Figure 3 also shows clearly that the net benefit that this investor receives from imputation credits is to increase utility from U to U'. This net benefit is obtained by subtracting the cost of portfolio adjustment from the total value of the credits. In summary, the value that the investor obtains from imputation credits comes at a cost – the cost of concentrating the investor's portfolio into domestic dividend-paying shares.

Regulatory implementation

71. It is generally accepted that there is a difference between the redemption rate (the proportion of distributed credits that are redeemed by investors) and the value of those credits to investors. "Value" is likely to be less than "redemption" for a number of reasons, including those set out above. In other words, redemption might be considered to be an upper bound for value.

72. Suppose, for the purposes of this example, that the weighted-average redemption rate of distributed credits is 70% and the value of distributed credits is 35%. That is, of every dollar of distributed credits 70 cents is redeemed, and every dollar of distributed credits is valued by the market at 35 cents.

73. Now suppose a regulator reduces the allowed return to equity by 70 cents for every dollar of imputation credits that the benchmark firm would be able to distribute. This means that shareholders receive a reduction in their allowed return of 70 cents in relation to an imputation credit that is worth only 35 cents to them. Consequently, the shareholders are under-compensated – the total value of the allowed return and the imputation credits that they receive is less than the required return. This has obvious consequences for the incentive to engage in an efficient level of investment.

Empirical estimation techniques

74. Empirical estimation techniques have been developed for the purposes of estimating the weighted-average redemption rate and for the purpose of estimating the market value of distributed credits.

75. The weighted-average redemption rate can be estimated by:

    a) Estimating the proportion of credits that are distributed to resident investors and by assuming that all of those investors will redeem all of the credits that are distributed to them (the "equity ownership method"); and

    b) Using ATO tax statistic data to estimate the ratio of total credits redeemed to total credits distributed.

76. The market value of distributed credits can be estimated by:

    a) Dividend drop-off analysis, which estimates the market value of dividends and imputation credits as the difference between (a) the market value of a share including the dividend and credit, and (b) the market value of a share excluding the dividend and credit; and

    b) Simultaneous trade analysis, which estimates the market value of dividends and imputation credits as the difference between (a) the market value of a security that includes entitlement to the dividend and credit, and (b) the market value of a security that does not include entitlement to the dividend and credit.

Summary

77. The estimate of gamma determines the amount of reduction in the monetary return that is paid to shareholders. It should be set to equate the monetary *value* of imputation credits with the monetary reduction in the allowed return that is paid to shareholders. Thus, the regulatory task is to determine the monetary value of imputation credits and to then reduce the allowed return on equity by that same monetary value. Consistent with this interpretation, the Rules state that "γ is the value of imputation credits."[33]

78. Australian regulatory practice (including the practice of the AER) has always been to interpret gamma as the value (as in *market value* or *worth*) of imputation credits. All regulators other than the AER still adopt that interpretation.

[33] NER cls. 6.5.3, 6A.6.4 (current since version 53); NGR r. 87A(1) (current since version 14).

79. The standard approach is to estimate gamma as the product of two parameters:

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

where F represents the distribution rate and θ (**theta**) represents the value of a distributed imputation credit.[34]

80. Consistent with the value interpretation of gamma, theta represents the value of distributed imputation credits – the extent to which a distributed credit is capitalised into the stock price.

81. Investors are likely to value imputation credits at less than their face value for a number of reasons:

    a) Credits that are not redeemed (because they are distributed to non-residents, or they are excluded by the 45-day rule, or any other reason) are clearly of no value;

    b) The redemption of credits requires certain administrative costs and involves a material time delay before payment is made;

    c) Like dividends, imputation credits are taxed at the shareholder's marginal rate; and

    d) The acquisition of imputation credits comes at the cost of foregone diversification opportunities.

82. If the redemption rate is used in the regulatory setting, and if the redemption rate is greater than the value of credits, this must lead to investors being under-compensated. This is because the reduction in the allowed return, which is based on the redemption rate, exceeds the value of the imputation credits that are received by shareholders.

83. The weighted-average redemption rate can be estimated by the equity ownership method or by using aggregate tax statistics. The market value of distributed credits can be estimated by dividend drop-off analysis or by simultaneous trade analysis.

[34] This standard approach is also adopted in the Guideline. See AER Guideline, p. 23. The Guideline refers to F as the "payout ratio" and to theta as the "utilisation rate."

3. An assessment of the AER's approach for estimating the distribution rate

Definition

84. The distribution rate (F) is the ratio of (a) the total amount of franking credits distributed to shareholders in a given year, to (b) the total amount of franking credits created in a given year. The average distribution rate over a period can be estimated as the ratio of the total credits distributed during the period to the total credits created during that period. The Australian Tax Office (**ATO**) maintains statistics on both components of this ratio.

Current estimates

85. There is almost universal endorsement of 0.7 as an appropriate estimate of the distribution rate.[35]

Australian Competition Tribunal estimate is 0.7

86. The Australian Competition Tribunal has recently adopted a distribution rate of 0.7:

> the Tribunal concludes that the distribution ratio is 0.7 for the calculation of gamma.[36]

AER estimate is 0.7

87. The AER has reaffirmed its use of a distribution rate of 0.7 in its final Guideline. The AER uses the term "payout ratio" and states that:

> The payout ratio would be estimated using the cumulative payout ratio approach. The cumulative payout ratio is an estimate of the average payout rate from 1987, when the imputation system began, to the latest year for which tax data is available. Based on current evidence, this leads to an estimate of 0.7.[37]

88. The AER also states that some of the advantages of this accepted approach for estimating the distribution rate are that it:

> is simple and intuitive, uses long-term, published data, and is supported by stakeholders and an expert review from Lally.[38]

The ERA estimate is 0.7

89. In its final Guideline, the ERA also proposes to use an estimate of 70% for the distribution rate, or "payout ratio" as the ERA refers to it.[39]

McKenzie and Partington estimate is 0.7

90. In their recent report for the QRC, McKenzie and Partington (2013) use the term "access fraction" and state that:

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[35] The only current estimate that differs from 0.7 is the Lally (2013) back-of-the-envelope estimate based on a sample of only 10 firms. That estimate, and the reasons for assigning no weight to it, are set out in Appendix 4 to this report.
[36] Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9 (24 December 2010), Paragraph 4.
[37] AER Rate of Return Guideline, p. 23.
[38] AER Rate of Return Guideline, Explanatory Statement, p. 160.
[39] ERA, Rate of Return Guideline, p. 9.

> There is less debate about the magnitude of the access fraction as this can be measured reasonably well from taxation statistics and a value of 70% is widely accepted as the proportion of credits created that are distributed.[40]

Conclusions and recommendations

91. Our main conclusions in relation to the distribution rate are:

    a) The accepted empirical approach consistently produces an estimate of 0.7;

    b) The standard Australian regulatory practice is to adopt a distribution rate of 0.7;

    c) All stakeholders have proposed a distribution rate of 0.7;

92. For the reasons set out above, we concur with the distribution rate of 0.7 that is adopted in the Guideline.

[40] McKenzie and Partington, p. 31.

4. An assessment of the AER's approach for estimating theta

The interpretation of theta in the Guideline

93. The Guideline refers to theta as the "utilisation rate" which is defined to be:

> the complex weighted average (by value and risk aversion) of individual investors' utilisation rates. In turn, these reflect each investor's expected ability to use imputation credits to reduce their tax (or get a refund).[41]

94. Thus, the utilisation rate[42] is defined to be the weighted-average of the extent to which investors are able to use imputation credits to reduce their tax or obtain a refund.

95. That is, the Guideline defines theta to be the aggregate proportion of distributed imputation credits that investors are able to redeem. This proportion is known as the *redemption rate* or *redemption ratio*. The Guideline materials note that this differs from the AER's previous approach, which was to define theta to be the value (as in *market value* or *worth*) of distributed credits.

96. The Guideline materials are not suggesting that the redemption rate can be used to estimate the value of imputation credits. Rather, the Guideline materials propose that the appropriate task is not to estimate the value of distributed credits at all, but that the appropriate task is to estimate the proportion of distributed credits that investors are able to redeem.

97. Appendix 5 and Appendix 6 to this report review the "re-evaluation of the conceptual task"[43] that led to the redefinition of theta in the Guideline. The general conclusions from these appendices is that none of the proposed reasons for the conceptual redefinition of theta that are set out in the Guideline materials are valid, or supported by advice or evidence.

Value vs. redemption

98. Section 2 of this report demonstrates why theta must be interpreted as the value of distributed imputation credits – the extent to which distributed credits are reflected in the stock price. By contrast, the Guideline materials propose that the appropriate task is not to estimate the value of distributed credits at all, but that the appropriate task is to estimate the proportion of distributed credits that investors are able to redeem – the redemption rate.

99. Section 2 of this report also sets out a number of reasons why the value of distributed credits (capitalised into the stock price) is likely to be materially lower than the redemption rate (the proportion of distributed credits that are redeemed).

100. In our view, theta represents the value of distributed imputation credits. Consequently, we require empirical methods for estimating that value – for estimating the extent to which distributed credits are reflected in the stock price.

Estimation approaches in the Guideline

101. The Guideline sets out four estimation approaches:[44]

[41] AER Rate of Return Guideline, Explanatory Statement, p. 159, Footnote 530.
[42] Or "theta" or "the parameter that must be multiplied by F to obtain gamma."
[43] AER Rate of Return Guideline, Explanatory Statement, p. 160.
[44] AER Rate of Return Guideline, Explanatory Statement, p. 159.

a) The equity ownership approach;

b) Tax statistics studies;

c) Implied market value studies; and

d) The "conceptual goalposts" approach.

102. The first two of these approaches are designed to provide estimates of the redemption rate. The equity ownership approach estimates the proportion of Australian shares that are owned by resident investors, and then assumes that all imputation credits distributed to those resident investors will be redeemed. The tax statistic studies use ATO data to estimate the ratio of (a) the quantity of imputation credits redeemed in a given year, to (b) the quantity of imputation credits distributed in that year. Both of these methods are designed to estimate the redemption rate. The Guideline materials conclude that the evidence from these two approaches supports a redemption rate of 70% – that 70% of the credits that are distributed end up being redeemed by resident investors.[45]

103. Implied market value studies are designed to estimate the value of distributed imputation credits – the extent to which the value of distributed credits is capitalised into stock prices. These approaches all use stock price data – to determine the extent to which the value of imputation credits is reflected in the stock price. The AER concludes that this evidence supports a value of distributed credits of 0-50% of their face value.[46]

104. The conceptual goalposts approach is based on the Lally (2013) report commissioned by the AER. This approach constrains the estimate of theta by requiring it to produce an allowed return on equity that lies between (a) an estimate of the return on equity that investors would require if Australia was perfectly segmented from world capital markets, and (b) an estimate of the return on equity that investors would require if world capital markets were perfectly integrated. The Guideline materials conclude that estimates "in the range 0.8 to 1.0 meet this test."[47]

105. The AER has "less regard"[48] to the market value studies and conceptual goalposts approaches because these approaches do not produce estimates of the redemption rate, which the Guideline defines to be the correct interpretation of theta. The Guideline materials simply note that:

> the former suggests the utilisation rate might be lower than 0.7, and the latter suggests it might be higher than 0.7. In view of the limitations of these final two approaches, and the offsetting directional implications, we consider our estimate [of 0.7 from the two approaches for estimating the redemption rate] is reasonable.[49]

106. In relation to the use of these four approaches, we conclude that:

a) If theta is defined in the standard way as representing the value of distributed imputation credits, the only relevant evidence comes from the implied market value studies; and

[45] AER Rate of Return Guideline, Explanatory Statement, p. 160.
[46] AER Rate of Return Guideline, Explanatory Statement, p. 168.
[47] AER Rate of Return Guideline, Explanatory Statement, p. 160.
[48] AER Rate of Return Guideline, Explanatory Statement, p. 160.
[49] AER Rate of Return Guideline, Explanatory Statement, p. 160.

b) If theta is re-defined to represent the redemption rate, the only relevant evidence comes from the equity ownership approach and tax statistics studies – both of which provide estimates of the redemption rates.

107. In our view, there is no valid basis for mixing point estimates of entirely different things.

Issues with the estimation approaches in the Guideline

Overview

108. As set out above, we adopt the standard definition that theta represents the value of distributed imputation credits. Consequently, our view is that the implied market value studies provide the only relevant evidence – the other approaches do not purport to estimate the value of distributed credits, so they are not relevant in our view. We review and summarise the relevant market value studies in the subsequent section of this report.

109. The remainder of this sub-section of the report summarises a range of issues relating to the implementation of the other three approaches that are set out in the Guideline. That is, our view is that:

a) The equity ownership, tax statistic and conceptual goalposts approaches should not be considered because they are irrelevant – they purport to estimate something other than the value of distributed credits, so they cannot be used to estimate theta; and

b) Even if those approaches were to be considered, their implementation is so fraught with difficulty that the resulting estimates are likely to be unreliable.

The equity ownership approach

110. The equity ownership approach seeks to estimate the redemption rate by first estimating the proportion of Australian shares that are owned by resident investors, and then by assuming that all imputation credits distributed to those resident investors will be redeemed. Thus, the key requirement is an estimate of the proportion of Australian shares that are owned by resident investors. The Guideline adopts a final estimate of 70% based on data from a 2007 report produced by the Australian Bureau of Statistics (ABS).

111. The key problem with this estimate is that it is so dated that it is no longer relevant. In particular, that estimate is based on data from 2007, when the foreign ownership of Australian shares was at a temporary ebb. In recent years, the proportion of domestic ownership has been around 55%, not 70%. The same ABS data source that produced the 2007 estimate now produces an estimate of 55% domestic ownership. This estimate has been confirmed in ASX estimates of the proportion of domestic ownership in 2011 and 2013.[50]

112. These issues are addressed in more detail in Appendix 8 to this report.

Tax statistics studies

113. The equity ownership approach seeks to estimate the redemption rate by using ATO data to estimate the ratio of (a) the quantity of imputation credits redeemed in a given year, to (b) the quantity of imputation credits distributed in that year. There are a number of problems with estimates using this approach:

[50] The ASX reports an estimate of 54% domestic ownership.

a) Implementation of this approach requires the use of two separate ATO databases that are inconsistent in the amount of $87.5 billion;

b) Hathaway (2013) has used the tax statistic method in previous papers but now concludes that:

> I would caution anyone…against relying on those parts of my earlier reports which focused on ATO statistics;[51]

c) Lally (2013) notes the concerns that have been expressed in relation to the reliability of the tax statistics data and concludes that:

> the best that can be said of all this is that the redemption rate is uncertain;[52]

d) The ATO data does not discriminate between public and private companies. Many micro businesses are structured as private companies that routinely distribute all imputation credits to their owners who redeem them all. Thus, the redemption rate for these businesses will be higher than for the average exchange-listed business. In this regard, we note that all other WACC parameters are estimated with reference to exchange-listed businesses (and not private micro and small businesses) because exchange-listed businesses are more reflective of the efficient benchmark entity.

114. These issues are addressed in more detail in Appendix 8 to this report.

Conceptual goalposts approach

115. The conceptual goalposts approach constrains the estimate of theta by requiring it to produce an allowed return on equity that lies between (a) an estimate of the return on equity that investors would require if Australia was perfectly segmented from world capital markets, and (b) an estimate of the return on equity that investors would require if world capital markets were perfectly integrated. The main problems with the implementation of this approach are:

a) It requires estimates of what each WACC parameter would be in each of those theoretical scenarios, which is an impossible task.[53] For example, it is difficult to obtain precise estimates of beta and MRP as they are in the real world, where relevant data is available. The conceptual goalposts approach further requires estimates of what beta and MRP *would be* if no foreign investment was allowed, and what they *would be* if markets were perfectly integrated;

b) Even if it was possible to derive point estimates of beta and MRP as they would be in these theoretical scenarios, the reasonable ranges (or confidence intervals) around the point estimates would be so wide as to render the resulting estimates of no use whatsoever;

c) All of the Lally (2013) calculations are based on a mechanistic implementation of the Sharpe-Lintner CAPM where MRP is estimated solely from the historical arithmetic mean of excess stock returns, which is inconsistent with the Guideline's approach of having regard to other relevant evidence;

[51] Hathaway (2013), Paragraph 12.
[52] Lally (2013), p. 15.
[53] See Lally (2013a), Section 3.9.

d) The key assumption of the conceptual goalposts approach is that the risk-free rate would be the same in a perfect segmentation world as in a perfect integration world. In our view, the notion that the government bond yield would be unchanged if all foreign investment were withdrawn is implausible. If the perfect segmentation risk-free rate is increased by just 1% above the perfect integration risk-free rate, all of the empirical estimates based on market data satisfy the conceptual goalposts test. That is, even setting aside all of the other problems with such a test, none of the market-based empirical estimates are ruled out unless one assumes that government bond yields would be identical whether or not foreign investors are admitted; and

116. Moreover, the Guideline's 0.7 estimate of theta fails the conceptual goalposts test. According to Lally (2013), every estimate of theta fails the test other than his own theoretically reasoned estimate of 1. The Guideline materials cite Lally (2013, pp. 46-47) as supporting the conclusion that estimates "in the range 0.8 to 1.0 meet this test."[54] However, Lally (2013) makes no such conclusion. He never even considers an estimate of 0.8. Rather, his conclusion is that estimates "that are significantly less than 1 fail this test in virtually every case examined, and are therefore deficient"[55] and that "the only sensible estimate…is at or close to 1."[56]

117. The Guideline materials conclude that the conceptual goalposts test supports the proposed estimate of theta (0.7) on the basis that this estimate fails the test less severely than some standard empirical estimates. In our view, there are three difficulties with this conclusion:

a) The fact that the Guideline estimate fails the test would generally mean that the test does *not* support the Guideline estimate; and

b) Using the conceptual goalposts test to rule out the standard empirical estimates requires one to believe that:

i) It is not possible to reliably estimate the extent to which investors value imputation credits in the real world; but

ii) It is possible to reliably estimate (to three decimal places) the total return on equity that investors would require from the benchmark firm in a world where Australia was perfectly segmented from global capital markets, and in a world where Australia was perfectly integrated into global capital markets; and

c) The test requires that the government bond yield would remain unchanged whether or not foreign investors (who currently own 80% of those bonds) are excluded from the market.

118. These issues are addressed in more detail in Appendix 8 to this report.

Summary and conclusions

119. Our view is that:

a) The equity ownership, tax statistic and conceptual goalposts approaches should not be considered because they are irrelevant – they purport to estimate something other than the value of distributed credits, so they cannot be used to estimate theta; and

[54] AER Rate of Return Guideline, Explanatory Statement, Footnote 533, p. 160.
[55] Lally (2013), pp. 46-47.
[56] Lally (2013), pp. 46-47.

b) Even if those approaches were to be considered, their implementation is so fraught with difficulty that the resulting estimates are likely to be unreliable.

120. In our view, theta represents the value of distributed credits and consequently it is only empirical estimates of the value of distributed credits that are relevant. We consider this evidence in the subsequent section.

5. Empirical estimates of the value of distributed imputation credits

Dividend drop-off analysis

121. Dividend drop-off analysis is the approach that is most commonly used to estimate the value of distributed imputation credits – specifically, the extent to which the value of distributed credits is reflected in the stock price. This approach involves a comparison of the price of a stock immediately before an ex-dividend date (which reflects the value of the dividend and the associated imputation credit) with the price immediately after the ex-dividend date (which no longer reflects the value of the dividend and the associated imputation credit). The difference in value reflects the implied value of the dividend and the associated imputation credit – in particular, the extent to which they were capitalised into the stock price.

122. As set out in Section 2 above, Lally (2013) shows that the current stock price can be written as the present value (over the next year) of dividends, imputation credits and the end-of-year stock price:[57]

$$S_0 = \frac{Div_1 + \theta \times IC_1 + S_1}{1 + r_e}$$

where IC_1 represents the (per share) imputation credits that are distributed to shareholders.

123. The rationale for dividend drop-off analysis can be explained with reference to the above equation. In particular, a simple rearrangement of that equation yields:

$$\frac{S_0(1 + r_e) - S_1}{Div_1} = 1 + \theta \frac{IC_1}{Div_1}$$

where the left hand side of that equation is the dividend drop-off ratio, which is regressed on the ratio of credits to dividends to obtain an estimate of theta – the extent to which imputation credits have been capitalised into the stock price.[58]

Current dividend drop-off estimates

124. The studies that provide recent dividend drop-off estimates of the value of distributed imputation credits are as follows:

a) The SFG (2011) study that was accepted by the Tribunal in the *Gamma* case;[59]

b) An updated study performed by SFG (2013) and recently submitted to the AER;[60] and

c) A drop-off analysis performed by ERA staff, Vo et al (2013).[61]

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[57] See Lally (2013a), Equation 3, p. 10. Note that we use θ rather than U and r_e rather than $R_f + \phi\beta_e$. We also define the post-tax cash flow to shareholders to be "dividends" so that $Div_1 = Y_1 - TAX_1$.

[58] There are a range of methodological specifications for dividend drop-off analysis. The purpose here is not to derive all of them in detail, but simply to demonstrate how the basic structure of drop-off analysis falls out of the framework of Lally (2013a).

[59] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 29.

[60] SFG (2013), Updated dividend drop-off estimate of theta, 7 June 2013.

[61] Vo et al (2013).

125. In relation to dividend drop-off analysis, the Guideline materials conclude that "the most relevant dividend drop off studies" are those "by SFG and Vo et al."[62]

126. The SFG study that was accepted by the Tribunal and the updated version of that study both recommend a point estimate of 0.35 from within a range of point estimates around 0.35.

127. The ERA study performed by Vo et al (2013) concludes that:

> The appropriate range suggested by this study is between 0.35 and 0.55.[63]

Guideline conclusions

128. The Guideline materials conclude that the dividend drop-off evidence supports a range of 0.35 to 0.55. In our view, the Guideline is inconsistent in forming its range from the aggregation of:

a) A *range* from the Vo et al study, and

b) A *point estimate* (from within the reasonable range) from the SFG studies.

129. The SFG studies report a range of estimates with a confidence interval around each estimate. The final point estimate of 0.35 was selected from within a reasonable range. If the results of the two studies are to be combined, consistency would require either that the final point estimates from each study should be combined, or that the reasonable ranges from each study should be combined. Clearly, any combined reasonable range would extend below 0.35.

130. In our view, the SFG studies should be preferred to the Vo et al study for a number of reasons that are set out below.

The merits of the SFG studies

131. The SFG studies arose out of a direction from the Australian Competition Tribunal in what has become known as the *Gamma* Case. In that case, the AER had sought to rely on a dividend drop-off study by Beggs and Skeels (2006)[64]. The Tribunal held[65] that the AER was wrong to rely on an out-dated and methodologically unsound dividend drop-off study. The Tribunal then directed that a "state-of-the-art" dividend drop-off study should be conducted to assist the Tribunal.[66] The Tribunal also directed that the dividend drop-off study to be performed by SFG "should employ the approach that is agreed upon by SFG and the AER as best in the circumstances."[67]

132. After agreement could not be reached between the parties, the Tribunal ruled that:

a) The four variations of the econometric specification of dividend drop-off analysis drawn by SFG from the literature should be used; and

b) The results for the full updated period should be used rather than a number of sub-periods.

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[62] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 174.
[63] Vo et al (2013), Abstract.
[64] Beggs, D. J. and Skeels, C.L., (2006), "Market arbitrage of cash dividends and franking credits," *Economic Record*, 82 (258), 239 – 252.
[65] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraphs 66, 145.
[66] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 146.
[67] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 147.

133. SFG then conducted the dividend drop-off study and circulated a draft report to all parties. The AER and the regulated businesses that were parties to the *Gamma Case*[68] provided detailed comments on the draft report and these were taken into account in a revised report that was provided to all parties and to the Tribunal.

134. The Tribunal accepted the estimates from the SFG dividend drop-off study:

> The Tribunal is satisfied that the procedures used to select and filter the data were appropriate and do not give rise to any significant bias in the results obtained from the analysis. Nor was that suggested by the AER.[69]
>
> In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG's reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG's report has been subjected, and SFG's comprehensive response, gives the Tribunal confidence in those conclusions.[70]

135. The Tribunal went on to conclude that:

> The Tribunal is satisfied that SFG's March 2011 report is the best dividend drop-off study currently available for the purpose of estimating gamma in terms of the Rules.[71]

and

> The Tribunal finds itself in a position where it has one estimate of theta before it (the SFG's March 2011 report value of 0.35) in which it has confidence, given the dividend drop-off methodology. No other dividend drop-off study estimate has any claims to be given weight vis-à-vis the SFG report value.[72]

136. The SFG study concluded that:

> For the reasons set out in detail in this report, we conclude that the appropriate estimate of theta from the dividend drop-off analysis that we have performed is 0.35 and that this estimate is paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90.[73]

137. The SFG (2013) study employs the same methodology as the SFG (2011) study, but extends the data set through to the end of 2012. The conclusion from that study is that:

> the conclusions from that earlier study remain valid when tested against the updated data set.[74]

Problems with the ERA approach

138. Vo, Gellard and Mero (2013) from the Economic Regulation Authority of Western Australia (**ERA**) have recently produced a drop-off study that essentially follows the methodology of the SFG studies.

[68] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010).
[69] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraphs 18-19.
[70] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 22.
[71] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 29.
[72] Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9 (12 May 2011), Paragraph 38.
[73] SFG (2011), Paragraph 3.
[74] SFG (2013), Paragraph 6.

One important deviation from the SFG methodology is that the ERA study also presents results that are based on analysis that omits the standard market adjustment. The standard approach in dividend drop-off studies is to assume that, but for the dividend, the stock price would have followed the movement in the broad market over the ex-dividend day. That is, if the broad market index increases by 2% over the ex-dividend day, it is assumed that, but for the dividend, the particular stock would also have increased by 2%.

139. We are unaware of any recent paper in a peer-reviewed journal that does not make such an adjustment. It is not surprising, therefore, that the ERA would have to make the adjustment to "enable a comparison of results to those from other studies." [75]

140. However, the ERA study also reports results in the absence of this standard market adjustment on the basis that, but for the dividend, a particular stock price might have moved (over the ex-dividend day) by somewhat more or less than the market. For example, it is possible that when the broad market increases by 2%, a particular stock might have moved (but for the dividend) by 1.8% or by 2.2%.

141. Omitting the market adjustment entirely is certain to be an inferior estimate on average. Whereas individual stocks might have moved by somewhat more or less than the broad market, on average stocks will move exactly in accordance with the market index, by definition.[76] That is, the standard market adjustment produces estimates of "but for the dividend" stock price movements that are unbiased on average – in the sense that it is equally likely that (but for the dividend) the stock might have moved somewhat more or somewhat less than the broad market index. Omitting the market adjustment entirely is to assume that (but for the dividend) the stock price would not have moved at all. Such an omission creates a bias. If the broad market increased by 2% over the ex-dividend day, the assumption that the stock price would have been 0% is clearly likely to be a material under-estimate, on average.

142. The reason the ERA authors provide for reporting results that omit the standard market correction is that "applying the market correction is an unnecessary complication to an already complex econometric task." [77] However, the correction is necessary to produce unbiased and reliable estimates and it is *not* difficult to implement. Indeed the ERA has already implemented the standard approach in its own study. In fact, the only new information provided by the ERA study is to also show how the results would have looked if a non-standard and inferior methodology had been employed. For these reasons, our view is that the subset of the results in the ERA paper that are based on analysis that omits the standard market adjustment should receive no weight.

143. We note that the Guideline materials appear to agree with our submission on this point when concluding that:

> We consider the most relevant results from the Vo et al study relate to regressions with the market adjustment.[78]

144. When the standard market adjustment is performed, the ERA study confirms the results from the SFG studies. In particular, the SFG studies conclude that an appropriate value for theta is 0.35. The ERA study reports that, when the standard market correction is applied, the average estimate of theta

[75] ERA Rate of Return Guideline, Explanatory Statement, Paragraph 956.
[76] This is because the market portfolio is an average taken over all stocks.
[77] Vo, Gellard and Mero (2013), p. 32.
[78] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 174.

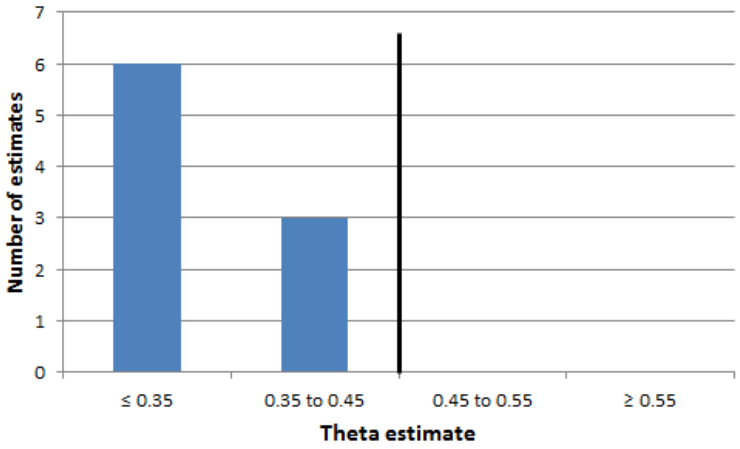
is 0.34. The estimate using robust regression and Model Specification 4 (which the ERA considers to be the most reliable estimate) is 0.33.[79]

145. Figure 4 below shows the distribution of all theta estimates where the market correction has been applied (except for the OLS estimates, which the ERA deems to be inappropriate.)[80] That figure also shows the mid-point of the proposed range, marked as a line. All of the estimates are below the mid-point and the majority are below the lower bound of the proposed range. From this, the Guideline materials conclude that:

> We consider the most relevant results from the Vo et al study relate to regressions with the market adjustment. From this basis, the sensitivity analysis (including different forms of the regression calculation) in the Vo et al paper still provides grounds to select an equity beta (sic) in the range 0.35–0.55, contrary to the ENA's submission.[81]

146. In our view, there is no basis for such a conclusion.

Figure 4. Distribution of ERA theta estimates: With market correction

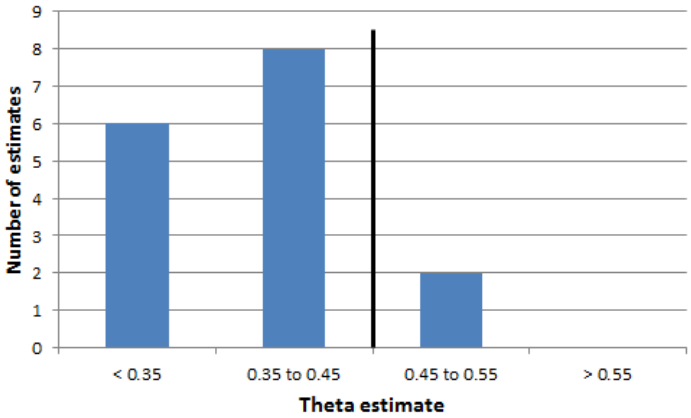


Source: Vo et al (2013), Table 5.

147. Even when no market correction is applied, Vo et al reports an average theta estimate of 0.40 and a robust regression estimate from Model Specification 4 of 0.32. In fact, there is very little evidence to support the Vo et al mid-point estimate of 0.45 at all. The Vo et al estimates of theta, with and without the market adjustment, are summarised in Figure 5 below. The figure shows that the vast majority of estimates fall below the ERA's mid-point estimate (marked as a line). Moreover, whereas a material number of estimates fall below the bottom of the range (less than 0.35) there are no estimates above the top end of the range (0.55).

[79] Vo, Gellard and Mero (2013), Table 5.
[80] Vo et al (2013), p. 9.
[81] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 174.

Figure 5. Distribution of ERA theta estimates



Source: Vo et al (2013), Table 5.

148. Finally, the ERA's sensitivity analysis (which is considered in some detail below) would seem to be irrelevant to the AER's Guideline given that the AER concludes that the relevant results are those that apply the standard market correction,[82] and the ERA's sensitivity analysis is applied exclusively to the results that do *not* apply the standard market correction.

Issues raised in relation to dividend drop-off analysis

149. The Guideline materials raise several issues in relation to dividend drop-off analysis, each of which is addressed in turn below.

Effect of additional trading around the ex-dividend event

150. The Guideline materials note that trading volumes tend to increase around ex-dividend dates and that dividend drop-off studies will estimate the value of imputation credits to those investors who are active in the market, in which case:

> By largely reflecting the abnormal trading conditions on the two relevant trading days, dividend drop off studies may not identify the market value for the representative investor.[83]

151. The ENA submission on the draft Guideline contained a detailed discussion on this point,[84] none of which has been addressed or acknowledged in the final Guideline materials. In that discussion, the ENA demonstrated that the empirical evidence shows that the increase in trading volume around ex-dividend dates is driven by a subset of investors who value imputation credits highly. These investors purchase shares to capture the dividend and imputation credit, causing a run-up in the cum-dividend price.[85]

152. To the extent that this effect is material, it results in the dividend drop-off being higher than it would otherwise be, which in turn results in the estimate of theta being higher than it would otherwise be.

[82] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 174.
[83] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 170.
[84] ENA Submission, 11 October 2013, Section 7.9, pp. 119-123.
[85] The same point is made by McKenzie and Partington (2011), pp. 9-10.

That is, to the extent that the increase in trading volume around the ex-dividend date has an effect, it is likely to result in an over-estimate of theta.

153. In our view, this evidence is relevant to the proper empirical estimation of theta.

Trading by "low valuation" shareholders.

154. The Guideline materials state that:

> if short term traders are highly involved in trading around the cum-dividend/ex-dividend dates, dividend drop off studies would underestimate the value of dividends and franking credits to those traders. This is because transaction costs are relatively higher as a proportion of expected returns for short term traders.[86]

155. The argument here is that short-term traders face relatively higher transactions costs and may therefore be willing to pay less for an imputation credit. If such traders dominate trading around the ex-dividend day, it can result in drop-off analyses underestimating theta.

156. The ENA submission on the draft Guideline contained a detailed discussion on this point,[87] none of which has been addressed or acknowledged in the final Guideline materials. In that discussion, the ENA demonstrates that:

a) This argument is illogical. Suppose there was a set of "low value" investors who were willing to pay a lower price to buy shares cum-dividend. Why would anyone sell to them? Why wouldn't trades occur between sellers and those investors who were willing to pay a higher price?; and

b) It is inconsistent with the relevant evidence. Whereas the low-value investor conjecture would lead to cum-dividend prices being depressed, there is evidence of a cum-dividend price run-up.[88]

157. In our view, this evidence is relevant to the proper empirical estimation of theta.

Allocation

158. The Guideline materials note that:

> Dividend drop off studies only 'directly' identify the combined value of dividends and the attached imputation credit. In order to determine an estimate of the utilisation rate, this combined value of dividends and attached imputation credits must be allocated between the two components. This is called 'the allocation problem' and is a critical issue with dividend drop off studies.[89]

159. The ENA submission on the draft Guideline contained a detailed discussion on this point,[90] none of which has been addressed or acknowledged in the final Guideline materials. In that discussion, the ENA establishes that the empirical literature has established a very consistent result – the combined

[86] AER Rate of Return Guideline, Explanatory Statement, Appendix H. p. 170.
[87] ENA Submission, 11 October 2013, Section 7.9.3, pp. 121-122.
[88] See, for example, McKenzie and Partington (2011), pp. 9-10.
[89] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 167.
[90] ENA Submission, 11 October 2013, Section 7.10, pp. 123-127.

value of a one dollar dividend and the associated imputation credit is one dollar. The ENA submission shows that this result is reported by the dividend drop-off studies of SFG (2011), SFG (2013), Vo et al (2013), the futures studies of Cannavan, Finn and Gray (2004), Cummins and Frino (2008) and SFG (2013), and with the hybrid securities study of Feuerherdt, Gray and Hall (2010).

160. Moreover, in its 2009 WACC Review, the AER concluded that the relevant evidence at the time supported a combined value of one dollar.[91]

161. By contrast, the Guideline materials state that "dividends should be worth their face value"[92] and that "[a]ll Australian regulators assume that dividends are at face value within calculation of the cost of equity."[93] Thus, a $1 dividend is assumed to be valued at $1. Attached to that $1 dividend will be a 43 cent imputation credit that the AER assumes to be valued at 70% of its face value. The combined value is therefore $1 + 0.7 \times 0.43 = 1.30$. This combined value is materially higher than, and contradicted by, every empirical estimate of the combined value.

162. In our view, this evidence is relevant to the proper empirical estimation of theta.

163. Moreover, the ENA submission notes that the allocation of the combined value of one dollar between the dividend and the associated imputation credit is of little moment so long as it is applied consistently throughout a determination:

> For example, if the regulator determines that a particular value of cash dividends should be used, that value should be applied consistently throughout the determination. The value of theta that should be used is then that value that would result in the combined value being $1 – consistent with all of the available evidence.[94]

Stability and the effect of influential observations

164. The Guideline materials note that, whereas the SFG estimates have been shown to be stable and robust to the removal of influential observations, Vo et al (2013) report that:

> the estimate of theta is highly sensitive to the choice of the underlying sample of dividend events. Removing just 30 observations from a sample of 3309 can result in a dramatically different estimate of theta.[95]

165. The SFG (2011) study contained an extensive section on stability analysis[96] whereby observations are removed in pairs consisting of the observations that have the most influential upward and downward effects on the estimate of theta, respectively. As pairs of observations are removed, theta is re-estimated to determine the sensitivity of the theta estimate to influential observations. The result is a figure such as that replicated below for Model Specification 4.[97]

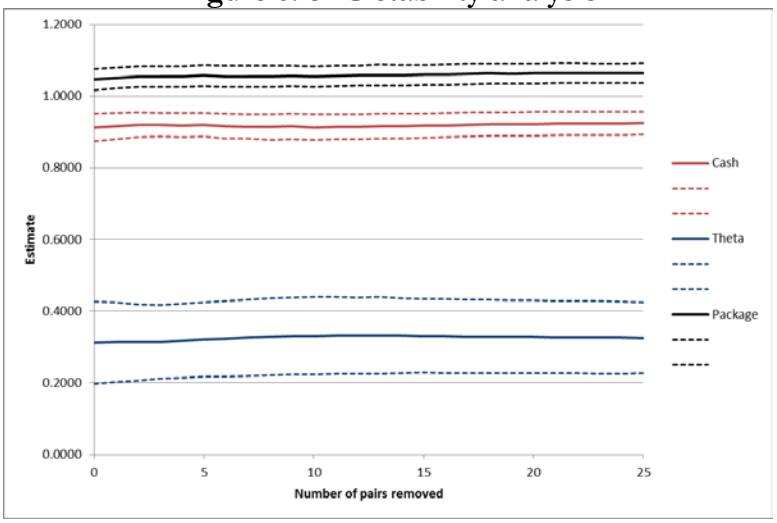
166. SFG (2011) conclude, on the basis of this stability analysis, that:

[91] AER 2009 WACC Review, Final Determination, p. 461.
[92] AER Draft Rate of Return Guideline, Explanatory Statement, p. 123.
[93] AER Draft Rate of Return Guideline, Explanatory Statement, p. 123, Footnote 338.
[94] ENA Submission, 11 October 2013, Section 7.10, p. 127.
[95] Vo et al (2013), p. 30.
[96] SFG (2011), pp. 28-32.
[97] This appeared as Figure 8, p. 31 in SFG (2011).

> The stability analysis for Model 4, in Figure 8 above, shows that the estimates of the value of cash dividends, the value of theta, and the value of the combined package are very stable and robust to the removal of pairs of influential data points…In summary, the stability analyses demonstrate that the estimates of theta are either maintained or lowered when pairs of influential observations are removed from the data set.[98]

167. SFG (2013) conduct a similar stability analysis for the updated data set and reach the same conclusion.

Figure 6. SFG stability analysis



Source: SFG (2011), Figure 8, p. 31.

168. Because the stability of theta estimates is clearly a key issue for Vo et al (2013) and for the AER's Guideline we conduct an even more extensive stability analysis, reporting the results in Appendix 9 to this report. The additional stability analyses corroborate the results from SFG (2011) and SFG (2013) – the SFG estimates of theta are stable and robust to the removal of influential outliers and even to the removal of up to 5% of the data sample.

Other econometric issues

169. The Guideline materials state that:

> There are a number of other well documented econometric problems with dividend drop off studies.[99]

and then proceeds to set out a bullet point list.

170. Every one of these issues was specifically addressed point-by-point in the ENA submission on the draft Guideline,[100] but none of that response has been addressed or acknowledged in the final Guideline materials. In our view, the ENA submission establishes that none of the issues set out in the Guideline materials are a cause for concern, and they certainly do not provide a basis for effectively disregarding the entire body of dividend drop-off evidence when estimating theta.

[98] SFG (2011), p. 31.
[99] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 168.
[100] ENA Submission, 11 October 2013, Section 7.11, pp. 127-132.

Difference between Lally and van Zijl (2003) "utilisation" and theta

171. Lally (2013, pp. 20-21) notes that asset pricing models such as Lally and van Zijl (2003) allow for dividends and capital gains to be differentially valued by investors. Specifically, these models provide for the possibility that dividends are relatively less valuable, in which case high-dividend-paying stocks require higher returns, other things being equal.

172. One reason why dividends may be less valuable than capital gains is that they are taxed more heavily for some investors. In a dividend imputation system, imputation credits are taxed in the same way as dividends – the dividend and the imputation credit are both included in taxable income and taxed at the investor's marginal rate. That is, to the extent that personal taxes result in dividends being less valuable than capital gains, the same would apply to imputation credits.

173. Of course there are many reasons why imputation credits would be even less valuable to investors than dividends, as set out in Section 2 above. These reasons include the fact that imputation credits are worthless to non-resident investors, there is a time delay in receiving them, there are administrative costs in redeeming them and there are portfolio diversification costs in acquiring them.

174. In summary, there are three categories of reasons why imputation credits are likely to have a value (as in "worth" or "price") that is less than their face value:

    a) Reasons that also apply to dividends (e.g., the possible effects of personal taxes);

    b) The fact that not all credits will be utilised; and

    c) Other reasons (e.g., there is a time delay in receiving them, there are administrative costs in redeeming them and there are portfolio diversification costs in acquiring them).

175. Dividend drop-off estimates of theta reflect the combined effect of all three categories. Models such as Lally and van Zijl (2003) separate out the first category of reasons when they specifically provide for the possibility that dividends might be less valuable than their face value. In these models, the value of dividends is defined to be δ. Lally (2013a, pp. 20-21) proposes that a similar disaggregation should be performed in the current setting whereby the dividend drop-off estimate of theta is disaggregated into two components:

$$\theta = \delta \times U .$$

176. For example, if theta is estimated to be 0.35 and if δ is estimated to be 0.875, the implied estimate of U is 0.40.[101] In this case, imputation credits are estimated to be worth 35% of their face value, part of which (0.875) is for reasons that are common to dividends and part of which (0.40) is for reasons that are unique to imputation credits.

177. Lally (2013a) recognises that if an estimate of theta (which already includes the effect of δ) is inserted into the model of Lally and van Zijl (2003), it would be multiplied by δ again (because such models separately deal with the reasons that are common to dividends), resulting in double-counting.

178. However, the Australian regulatory practice, and the approach that is proposed in the Guideline, is to use a model that does *not* separate theta into various components. The Guideline does not consider models such as Lally and van Zijl (2003) that allow for dividends to be valued at less than their face value. Rather,

[101] See Lally (2013), p. 21.

the Guideline approach is to make a single all-encompassing adjustment for the extent to which imputation credits are valued at less than face value.

179. In summary, whereas the model of Lally and van Zijl (2003) requires separate estimates of δ and U, the Guideline approach requires only a single combined estimate of theta. The Australian regulatory framework that is adopted in the Guideline determines gamma as $\gamma = F \times \theta$. It is exactly such an all-encompassing estimate of theta that is produced by dividend drop-off analysis.

180. Lally (2013a) proposes that U should be set to 1 by "ignoring foreigners."[102] This theoretically assumed utilisation rate could then be multiplied by an estimate of δ to obtain the estimate of theta that is required for implementation of the Australian regulatory framework that is adopted in the Guideline – whereby gamma is determined as $\gamma = F \times \theta$.

Conclusions in relation to dividend drop-off analysis

181. The Guideline materials conclude that the most relevant dividend drop-off studies are those by SFG and Vo et al, and that the most relevant results from Vo et al are those that apply the standard market correction. SFG report a theta estimate of 0.35. The Vo et al estimate (using the standard market correction) is 0.34.

182. In our view, to the extent to which there is any difference between the two studies, there are two reasons to prefer the SFG studies to the Vo et al study:

    a) The SFG approach has been subjected to intense scrutiny. All data and computer code was supplied to the AER. All issues that the AER has identified have been considered by the Tribunal. And the Tribunal has endorsed and adopted the results. By contrast, the Vo et al study has not been subjected to such scrutiny;[103] and

    b) The SFG theta estimates have been shown to be stable and reliable in the face of a battery of stability and robustness checks, whereas Vo et al express concerns about the stability and reliability of its own results.

183. In any event, there is little evidence to support the Vo et al mid-point estimate of 0.45 from within its range of 0.35 to 0.55:

    a) The Vo et al estimates are overwhelmingly below 0.45 (see Figure 5 above), and a significant proportion of those estimates are below 0.35;

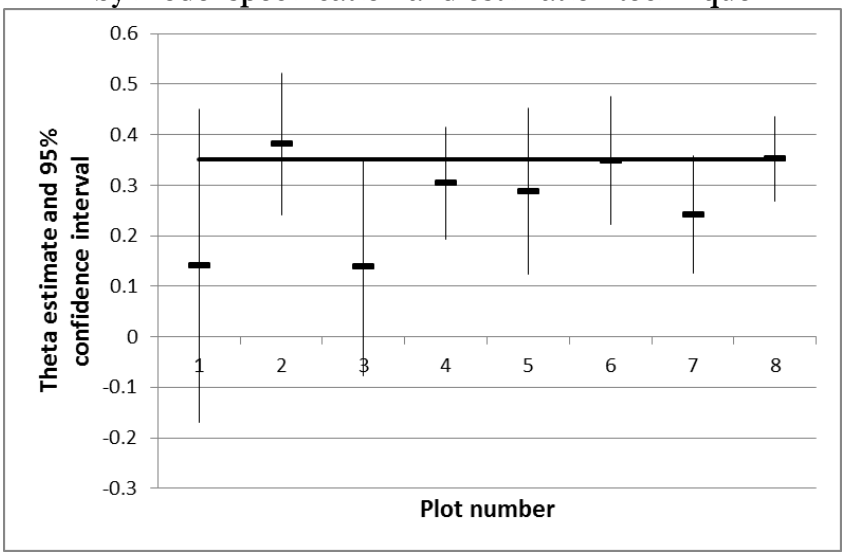
    b) The Vo et al study reports a theta estimate of 0.34 when the standard ex-day market correction is applied;

    c) The Vo et al estimate increases only to 0.4 when the standard ex-day market correction is removed; and

184. The SFG (2013) estimates indicate that, if anything, the 0.35 estimate is towards the upper end of the reasonable range. See for example Figure 7 below, which is reproduced from SFG (2013), Figure 5.

[102] Lally (2013), p. 3.
[103] Although we understand that the Vo et al (2013) study has so far been submitted to two academic journals.

Figure 7
Summary of point estimates and confidence intervals for theta by model specification and estimation technique



For each estimate, the narrow line represents the 95% confidence interval for theta and the solid black marker represents the point estimate. The solid black horizontal line represents the recommended point estimate of 0.35.
Plot 1: Model specification 1, OLS estimation; Plot 2: Model specification 2, OLS estimation;
Plot 3: Model specification 3, OLS estimation; Plot 4: Model specification 4, OLS estimation;
Plot 5: Model specification 1, RR estimation; Plot 6: Model specification 2, RR estimation;
Plot 7: Model specification 3, RR estimation; Plot 8: Model specification 4, RR estimation.

185. In our view, there is no reasonable basis for adopting a dividend drop-off estimate of theta above 0.35.

Other empirical evidence

186. In addition to the dividend drop-off studies above, there are a number of studies that employ alternative methodologies to estimate the value of distributed imputation credits. Like dividend drop-off studies, these studies also seek to determine the extent to which the value of imputation credits is capitalised into stock prices.

187. Dividend drop-off studies estimate the capitalised value of imputation credits by observing how stock prices change around ex-dividend events. The pre-dividend price reflects the value of the dividend and the associated credit whereas the ex-dividend price does not, so the change in price reflects the extent to which the dividend and imputation credit were capitalised into the stock price.

188. Simultaneous price studies compare the prices of securities that entitle the holder to receive dividends and imputation credits (such as ordinary shares) with the simultaneous prices of securities on the same firm that do not entitle the holder to receive any dividends or imputation credits (such as futures contracts). SFG (2013) report an estimate of 0.13 using this approach.

189. Two more recent studies test whether (other things being equal) firms with higher imputation credit yields are valued more highly by investors. Both find that they are not. This implies that equilibrium stock prices are independent of the amount of imputation credits that they generate, which leads the authors to conclude that theta is not materially different from zero, in equilibrium.[104]

[104] Labcygier and Wheatley (2012) and Siau, Sault and Warren (2013).

190. In all of the alternative market value studies over the last five years, the authors have concluded that the evidence supports an estimate of theta between 0 and 0.35.[105]

191. We note that, relative to these alternative market value studies, dividend drop-off analysis has a longer history, has been subjected to a higher level of scrutiny (especially the SFG 2011 study), and the strengths and weaknesses of the approach, and the econometric issues, are better understood. Consequently, we maintain a theta estimate of 0.35 – from dividend drop-off analysis – in this report noting that this is a conservative estimate in that the other relevant evidence produces lower estimates.

[105] See, for example, the list of studies set out in AER Rate of Return Guideline, Explanatory Statement, Appendix H, Table H.8, pp. 173-174.

6. Market practice

Evidence of market practice

Survey evidence and independent expert reports

192. When determining an appropriate value for gamma, one of the relevant pieces of evidence is the practice of market professionals. This section reviews the most recent regulatory analysis of market practice in relation to gamma.

193. As part of its consideration of the gamma parameter during its 2009 WACC Review, the AER considered a range of evidence about the practice of market professionals. That evidence showed that:

a) The great majority of independent expert valuation reports make no adjustment at all to either cash flows or discount rates to reflect any assumed value of franking credits (Lonergan, 2001[106]; KPMG, 2005[107]);

b) The great majority of CFOs of major Australian companies (who between them account for more than 85% of the equity capital of listed Australian firms) make no adjustment at all to either cash flows or discount rates to reflect any assumed value of franking credits (Truong, Partington and Peat, 2008[108]);

c) Published Queensland Government Treasury valuation principles require government entities to make no adjustment at all to either cash flows or discount rates to reflect any assumed value of franking credits (OGOC, 2006[109]); and

d) Credit rating agencies make no adjustments in relation to franking credits to any quantitative metric that they compute when developing credit ratings for Australian firms.

194. In a recent report for the ENA, SFG (2013)[110] reviewed independent expert reports from 2008 to 2013 and concluded that:

> None of the reports in our sample make any adjustment in relation to dividend imputation. No adjustments of any kind were made to any cash flows and no adjustments of any kind were made to any discount rates.[111]

195. This confirms that the long-established practice of independent expert valuation professionals making no adjustment in relation to imputation credits remains the current practice.

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[106] Lonergan, W., 2001. "The Disappearing Returns: Why Imputation Has Not Reduced the Cost of Capital," *JASSA*, Autumn 1, 1–17.

[107] KPMG, 2005. "The Victorian Electricity Distribution Businesses Cost of Capital - Market practice in relation to imputation credits Victorian Electricity Distribution Price Review 2006 – 10."

[108] Truong, G., G. Partington, and M. Peat, 2008. "Cost of Capital Estimation and Capital Budgeting Practice in Australia," *Australian Journal of Management,* 33, 95 – 121.

[109] Queensland Government Treasury, 2006, "Government owned corporations – Cost of capital guidelines," www.ogoc.qld.gov.au.

[110] http://www.aer.gov.au/sites/default/files/Report%204%20-%20Use%20of%20Independent%20Expert%20Reports%20%28Final%29%20-%2026%20June.pdf.

[111] SFG (2013), p. 2.

196. By contrast, Lally (2013a) concludes that "there is a trend amongst practitioners towards explicit adjustments for imputation credits."[112] This appears to be based on a small survey conducted by KPMG (2013), which includes responses from six banks, six professional services firms, and six infrastructure funds.[113] No information is provided about which organisations responded to the survey, what the response rate was, which individuals within each organisation completed the survey or their qualifications or roles within the organisation. It is difficult to imagine that any survey could fare worse when compared against the criteria set out by the Tribunal for the use of survey information.[114]

197. Moreover, the largest group in the survey was infrastructure funds, who reported that they account for imputation credits in cash flows. Of course, the cash flows of any regulated infrastructure asset *are* adjusted for imputation credits – according to the regulator's estimate of gamma. To ignore this adjustment would be to misestimate the allowed cash flows. Consequently, it is far from clear that these responses should be treated as independent evidence.

198. In our view, there is strong evidence to support the notion that market practitioners generally make no adjustments in relation to imputation credits.

Equity imputation funds

199. Lally (2013a) notes that the AER has recently highlighted the existence of managed funds that focus on firms with high imputation credit payout rates. He concludes that "the existence of the funds implies that U is positive."[115]

200. The AER's Draft Explanatory Statement refers to an "informal survey"[116] that identifies the existence of a number of managed funds with a focus on investing in firms with a high imputation credit payout ratio. The Explanatory Statement does not indicate how many of these funds the AER has identified, the dollar volume of assets under management, the proportion of all funds that have an imputation yield focus, or any quantitative information whatsoever. The questions were not disclosed before the survey was conducted to enable comments from interested parties to be considered. Moreover, the Explanatory Statement does not indicate whether this evidence about the existence of imputation funds would cause its estimate of theta (or gamma) to be higher or lower than it would otherwise be, and by how much.

201. The existence of such funds suggests nothing more than that there exists a group of investors who value imputation credits higher than the value that is incorporated into market prices. A theta of 1 would imply that the full face value of imputation credits is capitalised into share prices, in which case shareholders would have to pay for the full face value of imputation credits when buying the shares. In this scenario, there would be zero demand for an imputation-focused fund. By contrast, a theta of 0 would imply that imputation credits are not reflected in stock prices at all, in which case it is investors (rather than firms) who benefit from imputation. In this scenario, an individual investor who valued imputation credits may benefit from investing in a fund that focused on firms with high imputation yields. That is, the demand for imputation-focused funds will be inversely related to theta – a higher theta means that more of the value of imputation credits is already capitalised into the stock price, in which case investors would be paying for the benefit that they might receive from those credits.

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[112] Lally (2013a), p. 32.
[113] http://www.kpmg.com/AU/en/IssuesAndInsights/ArticlesPublications/valuation-practices-survey/Documents/valuation-practices-survey-2013-v3.pdf.
[114] Application by Envestra Ltd (No 2), ACompT 3, Paragraphs 162-163.
[115] Lally (2013a), p. 37.
[116] AER Draft Rate of Return Guideline, Explanatory Statement, p. 136.

202. The mere fact that we observe that a number of imputation funds exist tells us nothing more than that there exists a group of investors who value imputation credits higher than the equilibrium value that is incorporated into market prices. It is not clear that anything can be concluded from this evidence, other than that theta must not be equal to 1.

Dividend washing

203. The AER's Draft Explanatory Statement refers to the change in tax policy to prevent certain investors from being able to effectively double the amount of imputation credits they receive via a process known as "dividend washing." The AER notes that some investors did engage in the practice of dividend washing, which "suggests that imputation credits are significantly valuable to these particular investors."[117] Of course, this tells us nothing at all about the equilibrium value of imputation credits, just that a very small subset of investors[118] have some positive valuation.

Summary

204. In relation to market practice, our view is that the clear evidence is that the majority of market practitioners do not make any adjustment for the value of imputation credits.

Regulatory consideration of market practice

205. In its 2009 WACC Review Final Decision, the AER concluded that:

> The AER agrees that the clear evidence is that the majority of market practitioners do not make any adjustment for the value of imputation credits.[119]

206. However, the AER concluded that there are at least two reasons why market professionals might not make any adjustment in relation to imputation credits:

a) No adjustment would be observed if market professionals considered that imputation credits had no material effect on the equilibrium stock price or on the equilibrium cost of equity; or

b) No adjustment would be observed if market professionals were using an approach that enabled them to bypass the need to estimate gamma.

207. The second alternative was raised in Handley (2008), a report commissioned by the AER.[120] Handley notes that the ultimate task of the regulator is to estimate the ex-imputation required return on equity, defined as:

$$r_e^* = r_e\left[\frac{1-T}{1-T(1-\gamma)}\right]$$

208. For example, if the total required return on equity is estimated to be $r_e = 10\%$ and if $T = 30\%$ and $\gamma = 0.5$, the ex-imputation required return is $r_e^* = 8.2\%$. In this case, shareholders require a total

[117] AER Draft Rate of Return Guideline, Explanatory Statement, p. 136.
[118] The AER Draft Rate of Return Guideline, Explanatory Statement (p. 136) notes that the total effect is anticipated to be only $20 million per year.
[119] AER 2009 WACC Review, Final Decision, p. 407.
[120] Handley, J., 2008." A note on the value of imputation credits," December, www.aer.gov.au/content/index.phtml/itemId/722190.

return of 10%, but the regulator sets prices or revenues so that the firm can provide a return of 8.2%, with the remaining 1.8% assumed to come from the value of imputation credits.

209. The regulatory approach for estimating r_e^*, the ex-imputation required return on equity (which determines the regulated firm's revenue allowance), involves two steps. First, the regulator estimates r_e, the total return on equity, including imputation credits. The AER's proposed approach is to estimate r_e using the Sharpe-Lintner CAPM with an estimate of MRP that is grossed-up to incorporate the assumed value of imputation credits. Then, the regulator removes the assumed effect of imputation credits via the adjustment formula set out above.[121]

210. Handley (2008) advised the AER that market professionals may be using what he called the "conventional" or "classical" approach to estimate r_e^* directly, without the need for an estimate of gamma at all. Under the SL CAPM, for example, r_e^* could be estimated directly in a single step by simply using an estimate of MRP that had not been grossed-up to reflect the assumed value of imputation credits.

211. In summary, the regulated firm's revenue requirement must be set so that the firm is able to pay a return of r_e^* to its shareholders. According to Handley (2008), there are two ways to estimate r_e^*:

    a) Use the two-step regulatory approach to estimate r_e^*; or

    b) Use the direct conventional (or classical) approach to estimate r_e^* that is used by market professionals.

212. In its 2009 WACC Review, the AER accepted the advice of Handley (2008), concluding that:

> On this basis the AER considers it is clear that there is a valid valuation framework (i.e. the classical approach) that would avoid the need to directly estimate gamma. It is quite possible and plausible that market practitioners are consciously choosing to adopt this simpler approach to estimating the cost of equity. To reiterate, as the NER require the AER to estimate gamma in calculating the tax building block (i.e. the 'assumed utilisation of imputation credits'), the classical valuation approach is not available.[122]

213. The AER approach has been to estimate r_e^* using only the two-step approach set out above. Information about the conventional or classical approach for estimating r_e^* has been used only for the purpose of explaining away the evidence about the dominant market practice being to make no adjustment for imputation credits.

214. In our view, the AER should at least compare its estimate of r_e^* with the estimate of r_e^* that would be obtained using the conventional or classical approach. It would not be appropriate for a regulator to raise the existence of the conventional or classical approach for the purpose of explaining away

[121] It is well known that the effect of the Australian regulatory framework is to reduce the allowed return to equity according to the formula above. This reduction in return is implemented by adjusting the taxation component of the revenue requirement.
[122] AER 2009 WACC Review, Final Decision, p. 409.

evidence of market practice, but then to not compare its own estimate of r_e^* with the corresponding estimate obtained under the conventional or classical approach.

215. Lally (2013) also addresses this point. He confirms that the conventional approach is to use an ex-imputation required return on equity (defined as r_e^* above) that market professionals may estimate directly and that the regulatory approach is to first gross-up this required return to include the assumed value of imputation credits and to then remove their assumed value when calculating the regulated revenue requirement.[123]

216. Again, the conclusion is that the AER should at least compare its estimate of r_e^* with the estimate of r_e^* that would be obtained using the conventional or classical approach.

Conclusions in relation to market practice

217. There is clear evidence that the dominant market practice is to make no adjustment for imputation credits – to consider that the firm must generate the entire return that investors require and that there is no reduction due to imputation credits.

218. If the AER disregards this evidence on the basis that there is a "conventional" or "classical" approach that can be used to estimate the ex-imputation required return on equity without requiring an estimate of gamma, the estimate from that approach should at least be compared with the corresponding estimate from the regulatory approach. Good regulatory practice would then involve the AER explaining why its estimate of the ex-imputation required return on equity (which forms the basis of the allowed revenue) differed from the "conventional" estimate.

[123] Lally (2013), p. 27.

7. Conclusions and recommendations

219. As set out in Section 3 of this report, our view is that the best available estimate of the distribution rate is 0.7.

220. As set out in Section 4 of this report, our view is that the best available estimate of theta (from dividend drop-off analysis) is 0.35 and that that this is a conservative estimate in that the other relevant evidence (which has not yet been subjected to the same degree of scrutiny) suggests lower estimates.

221. Consequently, it is our view that the best available estimate of gamma at the current time is 0.25:

$$\gamma = F \times \theta = 0.7 \times 0.35 = 0.25.$$

Declaration

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

Professor Stephen Gray

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Appendix 1: Instructions

Expert Terms of Reference

Estimating the value of imputation credits

Jemena Gas Networks
2015-20 Access Arrangement Review

AA15-570-0054

Version B – 7 May 2014

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A	Draft	07/02/14	E Grace-Webb		
B	Final	07/05/14	E Grace-Webb		E Grace-Webb

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1 Background

Jemena Gas Networks (**JGN**) is the major gas distribution service provider in New South Wales (**NSW**). JGN owns more than 25,000 kilometres of natural gas distribution system, delivering approximately 100 petajoules of natural gas to over one million homes, businesses and large industrial consumers across NSW.

JGN is currently preparing its revised Access Arrangement proposal (**Project**) with supporting information for the consideration of the Australian Energy Regulator (**AER**). The revised access arrangement will cover the period 1 July 2015 to 30 June 2020 (July to June financial years).

As with all of its economic regulatory functions and powers, when assessing JGN's revised Access Arrangement under the National Gas Rules and National Gas Law, the AER is required to do so in a manner that will or is likely to contribute to the achievement of the National Gas Objective, which 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."

For electricity networks, the AER must assess regulatory proposals under the National Electricity Rules and the National Electricity Law in a manner that will or is likely to achieve the National Electricity Objective, as stated in section 7 of the National Electricity Law.

The AER must also take into account the revenue and pricing principles in section 24 of the National Gas Law when exercising a discretion in relation to those parts of JGN's revised Access Arrangement relating to reference tariffs. The revenue and pricing principles include the following:

> "(2) 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.
>
> (3) 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…
>
> […]
>
> (5) A reference tariff should allow for a return commensurate with the regulatory and commercial risks involved in providing the reference service to which that tariff relates.

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(6) Regard should be had to the economic costs and risks of the potential for under and over investment by a service provider in a pipeline with which the service provider provides pipeline services."

Some of the key rules that are relevant to an access arrangement and its assessment are set out below.

Rule 74 of the National Gas Rules, relating generally to forecasts and estimates, states:

"(1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.

(2) A forecast or estimate:

(a) must be arrived at on a reasonable basis; and

(b) must represent the best forecast or estimate possible in the circumstances."

Rule 76 of the National Gas Rules sets out how total revenue for a regulated service provider is to be calculated adopting a "building block approach". it provides:

"Total revenue is to be determined for each regulatory year of the *access arrangement period* using the building block approach in which the building blocks are:

(a) a return on the projected capital base for the year (See Divisions 4 and 5);

(b) depreciation on the projected capital base for the year (See Division 6);

(c) the estimated cost of corporate income tax for the year (See Division 5A);

(d) increments or decrements for the year resulting from the operation of an incentive mechanism to encourage gains in efficiency (See Division 9); and

(e) a forecast of operating expenditure for the year (See Division 7)."

The equivalent National Electricity Rules are in clauses 6A.5.4(a) (for electricity transmission) and 6.4.3(a) (for electricity distribution).

Rule 87 of the National Gas Rules, relating to the allowed rate of return, states:

(1) Subject to rule 82(3), the return on the projected capital base for each regulatory year of the access arrangement period is to be calculated by applying a rate of return that is determined in accordance with this rule 87 (the allowed rate of return).

(2) The allowed rate of return is to be determined such that it achieves the allowed rate of return objective.

(3) The allowed rate of return objective is that 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

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degree of risk as that which applies to the service provider in respect of the provision of reference services (the allowed rate of return objective).

(4) Subject to subrule (2), the allowed rate of return for a regulatory year is to be:

(a) a weighted average of the return on equity for the access arrangement period in which that regulatory year occurs (as estimated under subrule (6)) and the return on debt for that regulatory year (as estimated under subrule (8)); and

(b) determined on a nominal vanilla basis that is consistent with the estimate of the value of imputation credits referred to in rule 87A.

(5) In determining the allowed rate of return, regard must be had to:

(a) relevant estimation methods, financial models, market data and other evidence;

(b) the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and

(c) any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

Return on equity

(6) The return on equity for an access arrangement period is to be estimated such that it contributes to the achievement of the allowed rate of return objective.

(7) In estimating the return on equity under subrule (6), regard must be had to the prevailing conditions in the market for equity funds.

[Subrules (8)–(19) omitted].

The equivalent National Electricity Rules are in clauses 6A.6.2 (for electricity transmission) and 6.5.2 (for electricity distribution).

Rule 87A of the National Gas Rules, relating to the estimated cost of corporate income tax, states:

"The estimated cost of corporate income tax of a service provider for each regulatory year of an access arrangement period (ETC_t) is to be estimated in accordance with the following formula:

$ETC_t = (ETIt \times r_t)(1 - \gamma)$

Where

ETI_t is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of reference services if such an entity, rather than the service provider, operated the business of the service provider;

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r_t is the expected statutory income tax rate for that regulatory year as determined by the AER; and

γ is the value of imputation credits."

The equivalent National Electricity Rules are in clauses 6A.6.4 (for electricity transmission) and 6.5.3 (for electricity distribution).

In this context, the independent opinion of SFG, as a suitably qualified independent expert (**Expert**), is sought on the value of imputation credits (γ or gamma) to be applied in estimating the cost of corporate income tax. JGN seeks this opinion on behalf of itself, ActewAGL, APA, Energex, Networks NSW, Transend, TransGrid, and SA PowerNetworks.

2 Scope of Work

The Expert will provide an opinion report that:

1. Clearly describes the conceptual economic / finance basis for accounting for the value of imputation credits when estimating the cost of corporate income tax as part of a post-tax building block revenue framework where the building blocks are as set out in rule 76 (for gas distribution and transmission), clause 6A.5.4(a) (for electricity transmission), and 6.4.3(a) (for electricity distribution);

2. Assesses each of the methods identified by the AER for estimating the value of imputation credits in the rate of return guidelines, as well as any other methods the Expert may consider to be relevant, in terms of:

   (a) their suitability for estimating the value of imputation credits within the building block revenue framework, in light of the conceptual economic / finance basis for this parameter; and

   (b) the reliability and robustness of estimates produced by each method;

3. Provides the Expert's opinion on the best method, or combination of methods, for estimating the value of imputation credits within the building block revenue framework; and

4. Provides an estimate of the value of imputation credits, based on the recommended method, or combination of methods.

In preparing the report, the Expert will:

A. consider possible alternative positions to what measure is sought to be captured in the gamma parameter, in particular the position of the AER in the rate of return guidelines;

B. consider possible alternative methods and approaches to estimating the value of imputation credits, including those previously considered by the AER and other regulators;

C. consider the theoretical and empirical support for each of the possible approaches;

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D. consider any comments raised by the AER and other regulators, and experts engaged by those regulators on (a) the appropriateness of alternative methods for estimating the value of imputation credits; and (b) the statistical reliability of the estimates produced by those approaches; and

E. use robust methods and data in producing any statistical estimates.

3 Information to be Considered

The Expert is also expected to consider the following information:

- such information that, in Expert's opinion, should be taken into account to address the questions outlined above;
- relevant literature on the value of imputation credits;
- the AER's Rate of Return Guideline, including explanatory statements and supporting expert material;
- material submitted to the AER as part of its consultation on the Rate of Return Guidelines; and
- previous decisions of the AER, other relevant regulators and the Australian Competition Tribunal on the value of imputation credits and any supporting expert material.

4 Deliverables

At the completion of its review the Expert will provide an independent expert report which:

- is of a professional standard capable of being submitted to the AER;
- is prepared in accordance with the Federal Court Practice Note on Expert Witnesses in Proceedings in the Federal Court of Australia (CM 7) set out in Attachment 1, and includes an acknowledgement that the Expert has read the guidelines [1];
- contains a section summarising the Expert's experience and qualifications, and attaches the Expert's curriculum vitae (preferably in a schedule or annexure);
- identifies any person and their qualifications, who assists the Expert in preparing the report or in carrying out any research or test for the purposes of the report;
- summarises JGN's instructions and attaches these term of reference;
- includes an executive summary which highlights key aspects of the Expert's work and conclusions; and

[1] Available at: http://www.federalcourt.gov.au/law-and-practice/practice-documents/practice-notes/cm7.

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- (without limiting the points above) carefully sets out the facts that the Expert has assumed in putting together his or her report, as well as identifying any other assumptions made, and the basis for those assumptions.

The Expert's report will include the findings for each of the five parts defined in the scope of works (Section 2).

5 Timetable

The Expert will deliver the final report to Jemena Regulation by **9 May 2014**.

6 Terms of Engagement

The terms on which the Expert will be engaged to provide the requested advice shall be:

- as provided in accordance with the Jemena Regulatory Consultancy Services Panel arrangements applicable to the Expert.

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ATTACHMENT 1: FEDERAL COURT PRACTICE NOTE

Practice Note CM 7

EXPERT WITNESSES IN PROCEEDINGS IN THE FEDERAL COURT OF AUSTRALIA

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[2], 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[3]

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.

2. The Form of the Expert's Report[4]

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

---

[2] 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].

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

[4] Rule 23.13.

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(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[5]; 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[6].

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[7].

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

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

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

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

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Appendix 2: Curriculum vitae of Professor Stephen Gray

Stephen F. Gray

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Academic Qualifications

1995 Ph.D. (Finance), Graduate School of Business, Stanford University.
Dissertation Title: Essays in Empirical Finance
Committee Chairman: Ken Singleton
1989 LL.B. (Hons), Bachelor of Laws with Honours, University of Queensland.
1986 B.Com. (Hons), Bachelor of Commerce with Honours, University of Queensland.

Employment History

2000-Present Professor of Finance, UQ Business School, University of Queensland.
1997-2000 Associate Professor of Finance, Department of Commerce, University of Queensland and Research Associate Professor of Finance, Fuqua School of Business, Duke University.
1994-1997 Assistant Professor of Finance, Fuqua School of Business, Duke University.
1990-1993 Research Assistant, Graduate School of Business, Stanford University.
1988-1990 Assistant Professor of Finance, Department of Commerce, University of Queensland.
1987 Specialist Tutor in Finance, Queensland University of Technology.
1986 Teaching Assistant in Finance, Department of Commerce, University of Queensland.

Academic Awards

2006 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.
2002 Journal of Financial Economics, All-Star Paper Award, for Modeling the Conditional Distribution of Interest Rates as a Regime-Switching Process, JFE, 1996, 42, 27-62.
2002 Australian University Teaching Award – Business (a national award for all university instructors in all disciplines).
2000 University of Queensland Award for Excellence in Teaching (a University-wide award).
1999 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.
1999 KPMG Teaching Prize, Department of Commerce, University of Queensland.
1998 Faculty Teaching Prize (Business, Economics, and Law), University of Queensland.
1991 Jaedicke Fellow in Finance, Doctoral Program, Graduate School of Business, Stanford University.
1989 Touche Ross Teaching Prize, Department of Commerce, University of Queensland.
1986 University Medal in Commerce, University of Queensland.

Large Grants (over $100, 000)

- Australian Research Council Linkage Grant, 2008—2010, Managing Asymmetry Risk ($320,000), with T. Brailsford, J.Alcock, and Tactical Global Management.
- Intelligent Grid Cluster, Distributed Energy – CSIRO Energy Transformed Flagship Collaboration Cluster Grant, 2008-2010 ($552,000)
- Australian Research Council Research Infrastructure Block Grant, 2007—2008, Australian Financial Information Database ($279,754).
- Australian Research Council Discovery Grant, 2006—2008, Capital Management in a Stochastic Earnings Environment ($270,000).
- Australian Research Council Discovery Grant, 2005—2007, Australian Cost of Equity.
- Australian Research Council Discovery Grant, 2002—2004, Quantification Issues in Corporate Valuation, the Cost of Capital, and Optimal Capital Structure.

- Australian Research Council Strategic Partnership Grant, 1997—2000, Electricity Contracts and Securities in a Deregulated Market: Valuation and Risk Management for Market Participants.

Current Research Interests

Benchmark returns and the cost of capital. Corporate Finance. Capital structure. Real and strategic options and corporate valuation. Financial and credit risk management. Empirical finance and asset pricing.

Publications

Gray, S., I. Harymawan and J. Nowland, (2014), "Political and government connections on corporate boards in Australia: Good for business?" *Australian Journal of Management,* forthcoming.

Brailsford, T., S. Gray and S. Treepongkaruna, (2013), "Explaining the bid-ask spread in the foreign exchange market: A test of alternate models," *Australian Journal of Management,* forthcoming.

Faff, R., S. Gray and M. Poulsen, (2013), "Financial inflexibility and the value premium," *International Review of Finance,* forthcoming.

T. Fitzgerald, S. Gray, J. Hall and R. Jeyaraj, (2013), "Unconstrained estimates of the equity risk premium" *Review of Accounting Studies,* 18, 560-639.

Gray, S. and J. Nowland, (2013), "Is prior director experience valuable?" *Accounting and Finance,* 53, 643-666.

Chen, E. T., S. Gray and J. Nowland, (2012), "Family representatives in family firms" *Corporate Governance: An International Review*, 21(3), 242-263.

Treepongkaruna, S., R. Brooks and S. Gray, (2012), "Do Trading Hours Affect Volatility Links in the Foreign Exchange Market?" *Australian Journal of Management*, 37, 7-27.

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Teaching

Fuqua School of Business, Duke University, Student Evaluations (0-7 scale):

- Financial Management (MBA Core): Average 6.5 over 7 years.
- Advanced Derivatives: Average 6.6 over 4 years.
- Empirical Issues in Asset Pricing: Ph.D. Class

1999, 2006 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.

UQ Business School, University of Queensland, Student Evaluations (0-7 scale):

- Finance (MBA Core): Average 6.6 over 10 years.
- Corporate Finance Honours: Average 6.9 over 10 years.

2002 Australian University Teaching Award – Business (a national award for all university instructors in all disciplines).
2000 University of Queensland Award for Excellence in Teaching.
1999 Department of Commerce KPMG Teaching Prize, University of Queensland.
1998 Faculty Teaching Prize, Faculty of Business Economics and Law, University of Queensland.
1998 Commendation for Excellence in Teaching, University-wide Teaching Awards, University of Queensland.
1989 Touche Ross Teaching Prize, Department of Commerce, University of Queensland.

Board Positions

2002 - Present: Director, Financial Management Association of Australia Ltd.
2003 - Present: Director, Moreton Bay Boys College Ltd. (Chairman since 2007).
2002 - 2007: External Risk Advisor to Board of Enertrade (Queensland Power Trading Corporation Ltd.)

Consulting

Managing Director, Strategic Finance Group: www.sfgconsulting.com.au.

Consulting interests and specialties, with recent examples, include:

- **Corporate finance**
  - ⇒ **Listed multi-business corporation:** Detailed financial modeling of each business unit, analysis of corporate strategy, estimation of effects of alternate strategies, development of capital allocation framework.

- **Capital management and optimal capital structure**
  - ⇒ **State-owned electricity generator:** Built detailed financial model to analyze effects of increased leverage on cost of capital, entity value, credit rating, and stability of dividends. Debt of $500 million issued.

- **Cost of capital**
  - ⇒ **Cost of Capital in the Public Sector:** Provided advice to a government enterprise on how to estimate an appropriate cost of capital and benchmark return for Government-owned enterprises. Appearance as **expert witness** in legal proceedings that followed a regulatory determination.
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony on issues relating to the cost of capital of a cable TV business.
  - ⇒ **Regulatory Cost of Capital:** Extensive work for regulators and regulated entities on all matters relating to estimation of weighted-average cost of capital.

- **Valuation**

⇒ **Expert Witness:** Produced a written report and provided court testimony. The issue was whether, during a takeover offer, the shares of the bidding firm were affected by a liquidity premium due to its incorporation in the major stock market index.

⇒ **Expert Witness:** Produced a written report and provided court testimony in relation to valuation issues involving an integrated mine and refinery.

- **Capital Raising**
  - ⇒ Produced comprehensive valuation models in the context of capital raisings for a range of businesses in a range of industries including manufacturing, film production, and biotechnology.

- **Asset pricing and empirical finance**
  - ⇒ **Expert Witness:** Produced a written report on whether the client's arbitrage-driven trading strategy caused undue movements in the prices of certain shares.

- **Application of econometric techniques to applied problems in finance**
  - ⇒ **Debt Structure Review:** Provided advice to a large City Council on restructuring their debt portfolio. The issues involved optimisation of a range of performance measures for each business unit in the Council while simultaneously minimizing the volatility of the Council's equity in each business unit.
  - ⇒ **Superannuation Fund Performance Benchmarking:** Conducted an analysis of the techniques used by a large superannuation fund to benchmark its performance against competing funds.

- **Valuation of derivative securities**
  - ⇒ **Stochastic Volatility Models in Interest Rate Futures Markets:** Estimated and implemented a number of models designed to predict volatility in interest rate futures markets.

- **Application of option-pricing techniques to real project evaluation**
  - ⇒ **Real Option Valuation:** Developed a framework for valuing an option on a large office building. Acted as arbitrator between the various parties involved and reached a consensus valuation.
  - ⇒ **Real Option Valuation:** Used real options framework in the valuation of a bio-tech company in the context of an M&A transaction.

Appendix 3: The conceptual interpretation of gamma and theta

223. In this appendix, we consider a standard dividend imputation setting in which a company generates profits in Australia, pays corporate tax, and then distributes franked dividends to its shareholders. We follow the standard notation in defining F to be the proportion of created credits that are distributed to shareholders and θ to be the equilibrium value of distributed credits. We also follow the standard approach of defining gamma to be the product if these two parameters:

$$\gamma = F \times \theta \quad (1)$$

224. In our initial example, we consider a simple case in which the company distributes all of the credits that it creates (in which case $F = 1$) and where 50% of the face value of distributed credits are reflected in the stock price. In this case:

$$\gamma = F \times \theta = 1 \times 0.5 = 0.5.$$

225. We also consider a company with an initial stock price of $S_0 = 100$ and required return on equity of $r_e = 10\%$.

226. Officer (1994) shows that, in this setting, the proportion of the required return on equity that is due to dividends is:[124]

$$G = \frac{1-T}{1-T(1-\gamma)} \quad (2)$$

and that the proportion of the required return on equity that is due to imputation credits is:

$$(1-G) = \frac{\gamma T}{1-T(1-\gamma)} \quad (3)$$

where T is the corporate tax rate, which we set to 30% in this example.

227. In this case, the proportion of the required return from dividends is:

$$\frac{1-T}{1-T(1-\gamma)} = \frac{1-0.3}{1-0.3(1-0.5)} = 82.4\%$$

and the proportion from imputation credits is:

$$\frac{\gamma T}{1-T(1-\gamma)} = \frac{0.5 \times 0.3}{1-0.3(1-0.5)} = 17.6\%.$$

228. Since the total required return on equity is 10% in this case, a return of 8.24% is required from dividends and the remaining 1.76% will come from imputation credits. Note that there are no capital gains in this constant perpetuity setting – post-tax profit is the same every year in perpetuity and all of this profit is paid out in full as a dividend.

[124] We define this term to be G to simplify the following derivations.

229. That is, in equilibrium, every year the $100 stock generates a dividend of $8.24 and imputation credits that have a value of $1.76. The stream of dividends and imputation credits are both level perpetuities in this framework, so their present value can be written as:

$$\frac{8.24}{0.1}+\frac{1.76}{0.1}=82.4+17.6=100.$$

230. In this case, dividends represent 82.4% of the value of equity and the remaining 17.6% is due to imputation credits.

231. To fund the required streams of dividends and imputation credits, the company must generate pre-tax profit (Y_1) of:

$$Y_1=\frac{Gr_eS_0}{1-T}=\frac{0.824\times 0.10\times 100}{1-0.3}=11.77. \quad (4)$$

232. That is, the company generates pre-tax profit of $11.77 and pays tax of $3.53,[125] leaving $8.24 to be paid out as a dividend. The corporate tax payment generates imputation credits with a face value of $3.53. These credits are distributed to shareholders who value them at half their face value (because $\theta=0.5$), which is $1.76.

233. In this case, the current stock price will be equal to the sum of the present values of the dividend, imputation credits, and end-of-year stock price:

$$S_0=\frac{Div_1+\theta\times Tax_1+S_1}{1+r_e}=\frac{8.24+0.5\times 3.51+100}{1.10}=100. \quad (5)$$

234. Now consider the case where some fraction of the post-tax profit is retained within the firm. In particular, we consider the case where the firm distributes 70% of its post-tax profit as a dividend to shareholders. This also implies that the firm will distribute 70% of the imputation credits that are created by the payment of corporate tax. In this example, we assume that 70% of the face value of imputation credits are reflected in the stock price, in which case we have:

$$\gamma=F\times\theta=0.7\times 0.7=0.49.$$

235. In this case, we have:

$$G=\frac{1-0.3}{1-0.3(1-0.49)}=0.826. \quad (6)$$

236. We also assume that the 30% of post-tax profits that are reinvested back into the firm will earn the normal return of 10% p.a.

237. In this case, the required pre-tax profit is:

$$Y_1=\frac{Gr_eS_0}{1-T}=\frac{0.826\times 0.10\times 100}{1-0.3}=11.81$$

and the dividend paid is equal to a fraction of post-tax profit:

[125] 30% of 11.77 is 3.53.

$$Div_1 = Y_1(1-T)F = 11.81(1-0.3)0.7 = 5.79. \quad (7)$$

238. Also note that the amount of post-tax profit that is reinvested is $Y_1(1-T)(1-F)$. Since this reinvestment is assumed to earn a normal return, it will have a value equal to the amount invested. Consequently, the end-of-year stock price will be:

$$S_1 = S_0 + Y_1(1-T)(1-F) = 100 + 11.77(1-0.3)(1-0.7) = 102.48. \quad (8)$$

239. The amount of imputation credits that are created equals the amount of corporate tax that is paid (30% of 11.81 is 3.54). However, only proportion F of this corporate tax is distributed as imputation credits:

$$IC_1 = Y_1TF = 11.81 \times 0.3 \times 0.7 = 2.48. \quad (9)$$

240. Since $\theta = 0.7$, 70% of the face value of imputation credits is incorporated into the stock price – $0.7 \times 2.48 = 1.74.$

241. The current stock price can be written as the present value of the dividends, imputation credits and end-of-year stock price:

$$\begin{aligned} S_0 &= \frac{Y_1(1-T)F + \theta \times Y_1TF + S_1}{1+r_e} \\ &= \frac{11.81(1-0.3)0.7 + 0.7 \times 11.81 \times 0.3 \times 0.7 + 102.48}{1.10} = 100. \end{aligned} \quad (10)$$

242. Now, substituting the expression for pre-tax profit in Equation (4) into Equation (8) yields:

$$S_1 = S_0 + \frac{Gr_eS_0}{1-T}(1-T)(1-F) = S_0(1+Gr_e(1-F)). \quad (11)$$

243. That is, the growth rate in the stock price is:

$$g = Gr_e(1-F). \quad (12)$$

244. This same growth rate will also apply to dividends and the amount of imputation credits that are distributed each year. In this case, the growth rate is:

$$g = 0.826 \times 0.10(1-0.7) = 2.48\%.$$

245. With this constant growth rate, the present value of dividends can be written as:

$$PV(Divs) = \frac{Div_1}{r_e - g}. \quad (13)$$

246. Substituting the expression for growth in Equation (12) and the expression for Div_1 in Equation (7) into Equation (13) yields:

$$PV(Divs) = \frac{Div_1}{r_e - g} = \frac{Y_1(1-T)F}{r_e - Gr_e(1-F)} = \frac{5.79}{0.10 - 0.248} = 76.92. \quad (14)$$

247. Substituting the expression for pre-tax profit in Equation (4) into Equation (14) yields:

$$PV(Divs) = \frac{\frac{Gr_e S_0}{1-T}(1-T)F}{r_e - Gr_e(1-F)} = \frac{GF}{1-G(1-F)}S_0. \quad (15)$$

248. Now, substituting the expression for G in Equation (2) into Equation (15) yields:

$$PV(Divs) = \frac{GF}{1-G+GF}S_0 = \frac{\frac{1-T}{1-T(1-\gamma)}F}{\frac{\gamma T}{1-T(1-\gamma)} + \frac{1-T}{1-T(1-\gamma)}F}S_0 = \frac{(1-T)F}{\gamma T + (1-T)F}S_0 \quad (16)$$

249. Finally, substituting in the expression for gamma in Equation (1) into Equation (16) yields:

$$PV(Divs) = \frac{(1-T)F}{F\theta T + (1-T)F}S_0 = \frac{1-T}{1-T(1-\theta)}S_0. \quad (17)$$

250. That is, the proportion of the stock price that is due to dividends is $\frac{1-T}{1-T(1-\theta)}$. In this case we have:

$$PV(Divs) = \frac{1-T}{1-T(1-\theta)}S_0 = \frac{1-0.3}{1-0.3(1-0.7)}100 = 0.769 \times 100 = 76.9.$$

251. A similar derivation shows that the proportion of the stock price that is due to imputation credits is:

$$1 - \frac{1-T}{1-T(1-\theta)} = \frac{\theta T}{1-T(1-\theta)}.$$

252. In this case we have:

$$PV(IC) = \frac{\theta T}{1-T(1-\theta)}S_0 = \frac{0.7 \times 0.3}{1-0.3(1-0.7)}100 = 0.231 \times 100 = 23.1.$$

253. Another way to see the results set out above is to note that the total required return on equity is composed of dividends, capital gains and imputation credits:

$$r_e = r_{divs} + r_{cap\ gains} + r_{IC} \quad (18)$$

254. Now, note that for every F dollars of dividends, there are $1-F$ dollars of capital gains. This implies that for every dollar of dividends there are $\frac{1-F}{F}$ dollars of capital gains, in which case:

$$r_{cap\ gains} = \frac{1-F}{F}r_{divs}.$$

255. Also note that there are $\frac{T}{1-T}$ imputation credits attached to every dollar of dividends, each of which has an equilibrium value of θ. This implies that for every dollar of dividends there are imputation credits worth $\frac{\theta T}{1-T}$, in which case:

$$r_{IC} = \frac{\theta T}{1-T} r_{divs}.$$

256. Substituting these results into Equation (18) yields:

$$\begin{aligned} r_e &= r_{divs} + \frac{1-F}{F} r_{divs} + \frac{\theta T}{1-T} r_{divs} \\ &= \left(1 + \frac{1-F}{F} + \frac{\theta T}{1-T}\right) r_{divs} \\ &= \left(\frac{1-T+F\theta T}{F(1-T)}\right) r_{divs} \\ &= \left(\frac{1-T(1-\gamma)}{F(1-T)}\right) r_{divs}. \end{aligned}$$

257. That is, each year the proportion of the return that is due to dividends is:

$$\frac{r_{divs}}{r_e} = \frac{F(1-T)}{1-T(1-\gamma)}.$$

258. It follows that the proportion of the return that is due to capital gains is:

$$\frac{r_{cap\ gains}}{r_e} = \frac{1-F}{F}\left(\frac{F(1-T)}{1-T(1-\gamma)}\right) = \frac{(1-F)(1-T)}{1-T(1-\gamma)},$$

in which case the proportion of the return that is due to dividends and capital gains collectively is:

$$\frac{r_{divs+cap\ gains}}{r_e} = \frac{(1-T)}{1-T(1-\gamma)}.$$

259. Similarly, the proportion of the return that is due to imputation credits is:

$$\frac{r_{IC}}{r_e} = \frac{\theta T}{1-T}\left(\frac{F(1-T)}{1-T(1-\gamma)}\right) = \frac{\gamma T}{1-T(1-\gamma)}.$$

260. Now note that the current stock price can be written as:

$$S_0 = PV(Divs) + PV(IC).$$

261. Since every dollar of dividends is accompanied by imputation credits with an equilibrium value of $\frac{\theta T}{1-T}$, we have:

$$S_0 = PV(Divs) + \frac{\theta T}{1-T} PV(Divs) = \frac{1-T+\theta T}{1-T} PV(Divs)$$

262. This implies that the proportion of the current stock price that is due to the future stream of dividends is:

$$\frac{PV(Divs)}{S_0} = \frac{1-T}{1-T+\theta T}.$$

263. Consequently, the proportion of the current stock price that is due to the future stream of imputation credits is:

$$\frac{PV(IC)}{S_0} = \frac{\theta T}{1-T} \frac{1-T}{1-T+\theta T} = \frac{\theta T}{1-T+\theta T}.$$

264. These expressions for the relative proportions of annual returns and the relative proportions of the current stock price can be reconciled by noting that the capital gains reflect the fact that reinvested funds will result in a future increase in the amount of both dividends and imputation credits. That is, some of the capital gain reflects the increase in future dividends and some reflects the increase in future imputation credits – in the ratio of $1:\frac{\theta T}{1-T}$. Assigning the annual capital gain in this proportion, reconciles the annual return calculations with the current stock price calculations above.

Appendix 4: The Lally (2013) estimate of the distribution rate

An empirical estimate based on observable data

265. In relation to the distribution rate, Lally (2013a,[126] pp. 53-54) discusses why the 100% value that the AER adopted in its 2009 WACC review, based on advice from Handley (2008), is flawed and unsupportable. This simply confirms the view of the Tribunal and indeed the AER's own submissions to the Tribunal in the *Gamma* Case. Lally concludes that:

> the various theory-based arguments (all for a distribution rate of 1) are not justified, and therefore an empirical estimate is warranted.[127]

266. We agree with the conclusion that an empirical estimate is warranted and note that it is consistent with regulatory practice and with the views of other expert advice to the AER.

267. The advice from Handley (2008), on which the AER relied for its 2009 WACC Review, was that undistributed credits should be treated as though they were distributed on the basis that they may be distributed at some time in the future. Lally (2013a) specifically rejects that argument, concluding that the observed payout rate in the historical data should be used:

> Since there is no reasonable basis for estimating what proportion of these undistributed credits will ever be distributed, and it seems unlikely that most of them will ever be, I recommend that the historical data be used to estimate the distribution rate.

268. We also agree with the conclusion that the distribution rate should be estimated as the observed payout rate in the historical data and we note that there is general agreement on this point.

269. In summary, Lally (2013a) concludes that the distribution rate should be estimated empirically using observable data about the proportion of imputation credits that are actually distributed in practice. We agree with this conclusion and note that it has consistent with regulatory practice and with the views of other expert advice to the AER.

Empirical estimates of the distribution rate

270. Lally (2013a) has regard to two empirical estimates of the distribution rate:

    a) The 70% estimate that is based on Australian Tax Office data and which is generally accepted, as set out above; and

    b) His own analysis of a sample of ten companies, which produces an estimate that "would appear to be over 90%."[128]

271. As set out above, the widely accepted empirical estimate is 0.7. This is based on what NERA (2013) refers to as the "cumulative payout ratio." In fact, the AER's Draft Rate of Return Guideline Explanatory Statement explicitly sets out that approach and notes that its estimate of the distribution rate will be based on that approach. In relation to the implementation of that approach, and the data required for it, the AER concludes that:

[126] Lally, M., 2013, *The Estimation of Gamma*, Report for the AER, 23 November.
[127] Lally (2013a), p. 54.
[128] Lally (2013a), p. 52.

> We consider this is a reasonable approach to estimate the payout ratio. In particular, we consider it is simple, fit for purpose, transparent, replicable and based on reliable and publicly accessible data sets.[129]

272. Lally (2013a) questions the reliability of the data and the resulting estimates. For example, he states that:

> The ATO data suggests a figure of 70% but NERA (2013a) identifies some difficulties in the underlying data.[130]

273. This leads Lally (2013) to seek to produce his own estimate of the distribution rate by extrapolating payout ratios from a sample of ten companies. Nowhere does he explain what "concerns" or "difficulties" he might have with the ATO data that forms the basis of the estimate that is used by everyone else.[131]

274. Moreover, NERA (2013) note that their estimate of the distribution rate may, if anything, be *upwardly* biased. In particular, the data is available in the form of end-of-year franking account balances. Consequently, if the franking account balance is not reported for a particular firm, the credits in that firm's previous franking account are treated as having been distributed during the year. However, some firms simply neglect to report the franking account balance. In addition, any firm that becomes bankrupt during the year will no report a franking balance, and in those cases the franking credits are generally never distributed.[132]

Lally approach produces unstable estimates, relative to the standard approach

275. In his report for the QCA's 2004 WACC review, Lally (2004) refers to his estimate of the distribution rate for eight companies and recommends that the distribution rate should be set to 100% on the basis of that analysis.[133] The QCA rejected that recommendation in 2004. In a recent report for the QCA, Lally (2013b)[134] extends the sample of firms from 8 to 10 and the estimate falls from 100% to 85%.

276. Lally (2013a) himself notes that estimates from the accepted approach (by a range of authors) have been 0.69, 0.71, 0.69, and 0.70 and that "the consistency in these estimates encourages confidence in them."[135] Clearly, they are much more consistent than the estimates produced by his own small sample approach. In our view, the stable estimates from the accepted approach should not be rejected on the basis of unstated "concerns" or "difficulties."

277. Another relevant consideration is the role of foreign sourced profits. Suppose the average company distributes 70% of its profits as dividends. In general, a company with 30% or more of its profits from overseas operations will be able to distribute all of the imputation credits that it creates. Very large companies (such as the ten that Lally (2013a,b) examines) are unlikely to be representative of the broader market. For example, they more likely to have more overseas profits than the average firm – and certainly more overseas profits than the benchmark regulated firm. Consequently, it is not

[129] AER Draft Rate of Return Guideline, Explanatory Statement, p. 236.
[130] Lally (2013a), p. 51.
[131] Whereas a number of concerns have been raised in relation to the quality of the ATO data on the *redemption* of imputation credits, no material concerns have been raised in relation to the data on the *distribution* of imputation credits.
[132] NERA (2013), p. 5.
[133] Lally (2004), p. 40.
[134] Lally, M., 2013, *Estimating Gamma*, Report for the QCA, 25 November.
[135] Lally (2013a), p. 50.

clear that the Lally approach is capable of producing an appropriate estimate of the distribution rate in any event.

Lally recommendations on the distribution rate

278. In his recent report for the AER, Lally (2013a) recommends:

> an estimate for the distribution rate of at least 70%.[136]

279. In his report for the QCA (dated two days later and based on the same set of evidence) Lally (2013b) recommends that:

> the estimated market-level distribution rate is 85%.[137]

Conclusions and recommendations

280. We conclude that the Lally small sample approach should receive no weight because:

a) It produces highly variable estimates over time, including materially different recommendations two days apart, whereas the accepted approach produces stable estimates;

b) The Lally approach is motivated only by unspecified problems with the ATO data. Whereas there are known to be problems with ATO redemption rate data, no issues have been raised in relation to the distribution rate data; and

c) The small sample of firms used in the Lally approach are not indicative of either the average firm or the benchmark regulated firm.

[136] Lally (2013a), pp. 5, 54.
[137] Lally (2013b), p. 5.

Appendix 5: The conceptual definition of theta

Terminology: "Utilisation rate" and "theta"

281. When discussing the conceptual role of theta, the first issue to address is one of terminology. In its 2009 WACC Review, the AER used the terms "theta" and "utilisation rate" interchangeably. For example, the AER referred to:

> the utilisation rate (commonly referred to as 'theta')[138]

and:

> Recent estimates of the utilisation rate (theta).[139]

282. The rationale for equating the terms "utilisation rate" and "theta" is set out in Lally (2013a). He uses U to represent the utilisation rate and proposes that:

$$\theta = \delta \times U$$

where δ represents the implied value of a dollar of cash dividends. Since the AER fixes $\delta = 1$ throughout its process for determining the allowed return on equity, it follows that the terms "utilisation rate" and "theta" are equivalent under the AER framework. Lally (2013a) suggests that the AER should consider more complex models for determining the allowed return on equity that do not require that the value of cash dividends be fixed at $\delta = 1$. Examples include Lally (1992) and Lally and van Zijl (2003). However, the AER has maintained its approach of fixing $\delta = 1$ throughout its current Guideline

283. As set out in Section 2 above, it is generally accepted that gamma must be estimated as the product of two components: $\gamma = F \times \theta$. The fact that the Rules define gamma to be "the value of imputation credits"[140] would seem to imply that theta must be interpreted as "the value of distributed imputation credits." Moreover, from the discussion above, it does not matter whether the second parameter is called "theta" or "utilisation rate" or "the parameter that must be multiplied by F to obtain gamma." It also does not matter what symbol is used for this parameter – the point is that under the Rules that second parameter must be interpreted as "the value of distributed imputation credits."[141]

284. The only question then is what is meant by "the value of distributed imputation credits." Prior to the current Guideline, the AER interpreted value to mean "worth" or "price" – the value to the market. This remains the interpretation adopted by every other regulator. The Guideline now proposes a materially different interpretation that is examined in detail below.

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[138] AER 2009 WACC Review Final Determination, p. 398.
[139] AER 2009 WACC Review Final Determination, Table 10.4, p. 399.
[140] NER cls. 6.5.3, 6A.6.4 (current since version 53); NGR r. 87A(1) (current since version 14).
[141] This interpretation is also consistent with the Revenue and Pricing Principles, which require that "a reference tariff should allow for a return commensurate with the regulatory and commercial risks involved" and that "a service provider should be provided with a reasonable opportunity to recover at least the efficient costs the service provider incurs." In the regulatory setting, the regulator first determines the required return on equity, then sets the allowed revenues so that the sum of the allowed return on equity and the assumed value of imputation credits equals the required return on equity. If the regulator over- or under-estimates the value of franking credits, investors will be under- or over-compensated. In such a case, the return that equity holders receive is not commensurate with the regulatory and commercial risks involved or with the efficient costs the service provider incurs.

The Guideline's "re-evaluation of the conceptual task"[142]

Overview of the conceptual re-evaluation

285. In its 2009 WACC Review the AER interpreted theta as:

> the per dollar value of a distributed credit.[143]

286. The AER further proposed that redemption rates could be used to estimate that "per dollar value of a distributed credit." However, the Tribunal ruled that redemption rates cannot be used to estimate theta (at least insofar as theta is interpreted as the per dollar value of a distributed credit). Specifically, the Tribunal held that redemption rates do not produce an estimate of value. In particular, the Tribunal held that redemption rates provide no more than an upper bound check on estimates of theta obtained from the analysis of market prices, and that it is wrong to interpret such an estimate as a point estimate rather than as an upper bound:

> The AER accepted that utilisation rates derived from tax statistics provide an upper bound on possible values of theta. Setting aside the manner in which the AER derived a value from the tax statistics study, it correctly considered that information from a tax statistics study was relevant. However, its relevance could only be related to the fact that it was an upper bound. No estimate that exceeded a genuine upper bound could be correct. Thus the appropriate way to use the tax statistics figure was as a check.[144]

287. As part of its recent Guideline process, the AER has conducted a "conceptual re-evaluation" of the task and now interprets theta as the redemption rate (the average proportion of distributed credits that shareholders are able to redeem):

> the extent to which investors can use the imputation credits they receive to reduce their personal tax.[145]

288. By way of analogy, consider the task of determining the greatest ever one-day international (ODI) cricketer. There would be a range of views about what method should be employed to answer this question. One proposal might be that the greatest ever one-day cricketer is estimated as the person who captained his team for the longest period. However, it seems likely that any expert tribunal would reject that approach as an inappropriate estimate because it completely ignores the wealth of relevant empirical data that is available. This problem for the proponent of that method is not solved by the proponent conducting a conceptual re-evaluation and concluding that "best" actually meant "longest captaining" all along (if only you think about it carefully enough) – providing a means of reviving the approach that has already been rejected.[146]

Summary of the conceptual re-evaluation

289. In conducting its conceptual re-evaluation, the AER begins with the definition of the relevant market, concluding that the definition that it adopted for its 2009 WACC Review remains appropriate:

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[142] AER Rate of Return Guideline, Explanatory Statement, p. 160.
[143] AER 2009 WACC Review Final Determination, p. 414.
[144] Application by Energex Limited (No 2) [2010] ACompT 7 (13 October 2010), Paragraph 91.
[145] AER Rate of Return Guideline, Explanatory Statement, p. 159.
[146] For completeness, this technique would produce an "estimate" of Stephen Fleming, who captained New Zealand between 1997 and 2007, averaging 32.4 at a strike rate of 71.5.

	AER 2009 WACC Review	AER 2013 Guideline
Market definition	"the AER has adopted a conceptual framework that defines 'the market' as the domestic Australian capital market with foreign investors recognised to the extent they invest in that market."[147]	"we propose that the defined market is an Australian domestic market that recognises the presence of foreign investors to the extent they invest in the Australian market."[148]

290. The AER also concludes that its specification of a representative investor as being a weighted-average across all investors remains appropriate:

	AER 2009 WACC Review	AER 2013 Guideline
Representative investor	"a weighted average of all investors in the market (i.e. the 'representative investor')."[149] "the task is to determine the valuation of the 'representative investor', which is the weighted average valuation of all investors in the market."[150]	"the representative investor [i]s the weighted average of investors within the defined market, where the weightings reflect market participation (equity ownership value) and risk aversion."[151]

291. In its 2009 WACC Review, the AER concluded that the relevant regulatory task was to take a weighted-average of the value that each investor applied to distributed credits. In its recent Guideline, the AER has removed any reference of value to investors:

	AER 2009 WACC Review	AER 2013 Guideline
Regulatory task	"the value of imputation credits is best considered a weighted average valuation of all investors (both domestic and foreign investors) in the defined market."[152]	"The value of imputation credits is calculated as a weighted average across investors in the defined market."[153]

292. In its 2009 WACC Review, the AER defined theta in the standard way to be the value of a distributed credit. In its recent Guideline, the AER has defined theta to be the average redemption rate – the amount of distributed credits that end up being redeemed:

	AER 2009 WACC Review	AER 2013 Guideline
Definition of theta	"θ (theta) is the per dollar value of a distributed credit."[154]	"The utilisation rate is the before-personal-tax reduction in company tax per one dollar of imputation credits that the representative investor receives." [155] "…the utilisation rate, which is the extent to which investors can use the imputation credits they receive to reduce their personal tax."[156]

147 AER 2009 WACC Review Final Determination, pp. 425-426.
148 AER Rate of Return Guideline, Explanatory Statement, p. 161.
149 AER 2009 WACC Review Final Determination, p. 423.
150 AER 2009 WACC Review Final Determination, p. 425.
151 AER Rate of Return Guideline, Explanatory Statement, p. 142.
152 AER 2009 WACC Review Final Determination, pp. 425-426.
153 AER Rate of Return Guideline, Explanatory Statement, p. 161.
154 AER 2009 WACC Review Final Determination, p. 414.
155 AER Rate of Return Guideline, Explanatory Statement, p. 165.
156 AER Rate of Return Guideline, Explanatory Statement, p. 159.

Reasons for the Guideline's re-definition of theta

293. The Guideline materials provide several reasons why it has changed its interpretation of theta from "the per dollar value of a distributed credit"[157] to "the extent to which investors can use the imputation credits they receive."[158] In this section, we evaluate each of the reasons that have been put forward in the Guideline materials.

Interpretation of the recent AEMC Rule change

294. The Guideline materials note that prior to the latest change the Rules stated that:

> γ is the assumed utilisation of imputation credits.[159]

295. At the time of the latest Rule change, all regulators (including the AER) had always interpreted this provision to require an estimate of the *value* of imputation credits, where "value" was interpreted as "value to the market". In this context, the AEMC amended the Rules to state that:

> γ is the value of imputation credits.[160]

296. In our view, the clear intention of the AEMC was to clarify that the prevailing regulatory practice (and the practice that is still adopted by all regulators other than the AER) should be continued. That practice is to estimate the *value* (as in "worth") of imputation credits. It seems highly unlikely that the AEMC could have had any other intention given that the wording in the new Rule accords precisely with the standard practice of all regulators at the time the Rule change was made.

297. Moreover, there are two reasons why it would seem to be quite fanciful to suggest that the intention of the AEMC was to *change* the interpretation of gamma *away* from the standard practice of all regulators at the time:

a) The AEMC inserted the word "value," the ordinary meaning of which corresponds precisely to the practice of all regulators at the time of the change; and

b) The AEMC did not provide a detailed explanation about why such as change was necessary in its Final Determination. This is consistent with a mere tidying up of a Rule to properly reflect the existing practice, but inconsistent with an intention to fundamentally change the Rules away from the adopted practice.

298. By contrast, the Guideline materials now conclude that the Rule which states that "gamma is the value of imputation credits" should not be interpreted as affirming the existing regulatory practice. In particular, the Guideline materials now contend that the term "value" in the Rules should not be interpreted as taking its common meaning of "worth" or "price," but rather as "the number used"[161] where the "number used" is determined on the basis of utilisation/redemption rates.

299. In our view, this is clearly inconsistent with the apparent intention of the AEMC given the context of the Rule change set out above. Moreover, if the AEMC had really intended "value" to mean "the

[157] AER 2009 WACC Review Final Determination, p. 414.
[158] AER Rate of Return Guideline, Explanatory Statement, p. 159.
[159] NER cls. 6.5.3, 6A.6.4 (as at version 52).
[160] NER cls. 6.5.3, 6A.6.4 (current since version 53); NGR r. 87A(1) (current since version 14).
[161] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 150.

number used" it would surely have stated that γ is the value *for* imputation credits rather than the value *of* imputation credits.[162]

300. In summary, our view is that the AEMC Rule change does not support the new conceptual definition that is set out in the Guideline. Rather the change appears to be a mere tidying up of a Rule to properly reflect the longstanding regulatory practice.

McKenzie and Partington (2011)

301. The Guideline materials also refer to advice from McKenzie and Partington (2011) as supporting the new interpretation of theta. In its Guideline materials, the AER states that the McKenzie and Partington report that it commissioned during the *Gamma* case "raised fundamental questions over the framework."[163]

302. In that report, McKenzie and Partington (2011) state that there are two possible interpretations of theta:

> the market value of franking credits distributed[164]

and:

> the franking credits redeemed as a percentage of franking credits distributed…known as the utilisation ratio.[165]

303. That is, McKenzie and Partington (2011) are clear about the fact that one must choose between a *value* interpretation and a *utilisation* interpretation. In our view, it is this exact distinction that the AEMC sought to clarify in its Rule change. The standard regulatory practice has always been to estimate the *value* of imputation credits and this remains the practice of all regulators other than the AER. The Rule change clarifies that the *value* interpretation that has always been used is the correct one.

304. McKenzie and Partington (2011) are also clear about the fact that:

a) Empirical studies such as dividend drop-off analysis provide an estimate of the *value* of imputation credits; whereas

b) Redemption rates provide an estimate of the *utilisation* of credits.[166]

305. Nowhere in their report do McKenzie and Partington (2011) state their view about which of the value or utilisation interpretations is the appropriate one in the regulatory/valuation setting, although they do note that the general consensus is that the value interpretation should be used:

> The literature subsequent to Officer has tended to view both gamma and theta as market values.[167]

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[162] NER cls. 6.5.3, 6A.6.4 (current since version 53); NGR r. 87A(1) (current since version 14).
[163] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 149.
[164] McKenzie and Partington (2011), p. 2.
[165] McKenzie and Partington (2011), p. 2.
[166] McKenzie and Partington (2011), p. 2.
[167] McKenzie and Partington (2011), p. 3.

306. In a more recent report, McKenzie and Partington (2013) clarify their view as follows:

> Theta (θ) is the value to the investor of the imputation credits distributed, expressed as a fraction of face value,[168]

and:

> The standard practice has been to measure the market value of theta.[169]

307. McKenzie and Partington (2013) then state that:

> The question then is how to measure the market value of the imputation credits[170]

and the balance of their report considers various empirical estimates of the value of imputation credits, without any further discussion of utilisation/redemption rates.

308. In summary, the advice from McKenzie and Partington does not recommend that the utilisation/redemption interpretation of theta should be adopted. Rather, McKenzie and Partington simply state that if such an interpretation *is* to be adopted, redemption rates provide an estimate of the *utilisation* of credits. Certainly McKenzie and Partington never suggest that when estimating theta redemption rates should be used to the exclusion of market value estimates, or even in preference to market value estimates.

309. In our view, the advice from McKenzie and Partington (2011, 2013) does not support the Guideline's reliance on redemption rates to estimate theta.

Handley (2008)

310. During its 2009 WACC Review, Handley (2008) provided the same advice in a report commissioned by the AER. One issue that was addressed in the Handley report was the appropriate interpretation of the utilisation/redemption rate estimates reported by Handley and Maheswaran (2006). Handley (2008) advised the AER that the Handley and Maheswaran study estimated utilisation/redemption rates, rather than the value of distributed credits. Handley further advised that it would be inappropriate to use a utilisation/redemption rate interpretation of theta for the purposes of estimating gamma. He advised the AER that a utilisation/redemption rate estimate of theta will not produce an appropriate estimate of gamma – at best, it will produce an upper bound for gamma.

311. In particular, Handley (2008) advised the AER that an estimate of gamma based on the utilisation/redemption rate interpretation:

> may be interpreted as a reasonable upper bound on the value of gamma.[171]

312. At the Roundtable convened by the AER in October 2008, Handley further addressed the concept of an estimate of gamma that was based on a utilisation/redemption rate (rather than on a market value

[168] McKenzie and Partington (2013), p. 31.
[169] McKenzie and Partington (2013), p. 32.
[170] McKenzie and Partington (2013), p. 33.
[171] Handley (2008), p.8.

estimate of theta). He again stated clearly that the utilisation/redemption rate interpretation does not provide an appropriate estimate of gamma:

> Well, that's not our estimate of gamma therefore we haven't said that's our estimate of gamma. In some ways, what you could do is you could certainly say that is perhaps an upper bound for what gamma is.[172]

313. In summary, the author of the main utilisation/redemption rate study that the AER relied upon at its last WACC Review has advised the AER that the study estimates the utilisation/redemption rate and not theta, and that utilisation/redemption rates cannot be used to provide an appropriate estimate of gamma. Handley's point is that his redemption rate study provides a reasonable estimate of the utilisation of imputation credits, but that the utilisation of credits cannot be used to produce an appropriate estimate of gamma.

314. In our view, the advice from Handley (2008) does not support the Guideline's primary reliance on redemption rates to estimate theta.

Officer (1994)

315. In its Guideline materials, the AER points out that Officer (1994) defines gamma to be both:

a) The value of a dollar of tax credit to the shareholder; and

b) The proportion of company tax that is rebated against personal tax.[173]

316. In their report for the AER, McKenzie and Partington (2011) also note this apparent inconsistency, describing it as "a potential source of confusion" [174] and "ambiguity."[175]

317. Logically, there are two paths through the confusion and ambiguity caused by the drafting of the text in Officer (1994):

a) Conclude that Officer means gamma to have a *value* interpretation and that words suggesting a *utilisation* interpretation were poorly drafted (i.e., the reference to utilisation should be read as simply identifying the source of value); or

b) Conclude that Officer means gamma to have a *utilisation* interpretation and that words suggesting a *value* interpretation were poorly drafted.

318. In our view, the first interpretation is plausible and the second is not. To see this, first consider the following passage from Officer (1994):

> Where there is a market for tax credits one could use the market price to estimate the value of γ for the marginal shareholder, i.e. the shareholder who implicitly sets the price of the shares and the price of γ and the company's cost of capital at the margin, but where there is only a covert market, estimates can only be made through dividend drop-off rates.[176]

[172] AER Roundtable transcript, 10 October 2008, p. 18.
[173] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 138.
[174] McKenzie and Partington (2011), p.2.
[175] McKenzie and Partington (2011), p.3.
[176] Officer (1994), p. 5.

319. In our view, it is inconceivable that anyone who so clearly refers to the "market price" and "value" and who specifically references dividend drop-off analysis could possibly be of the view that the value interpretation was the one that was incorrect. Such explicit statements are unlikely to have been made by accident. It is far more likely that the references to "the proportion of tax collected from the company which gives rise to the tax credit associated"[177] have simply been poorly drafted.

320. Second, one can bypass the ambiguous language in Officer (1994) altogether and go directly to the mathematical equations and numerical examples to see precisely how gamma *is* interpreted in his paper. For example, consider the calculations in Officer's worked example. In particular, consider the calculations relating to the vanilla definition of WACC labelled "III" on p. 17 of Officer (1994). That example adopts the parameters set out in Table 1 below.

Table 1
Parameters for Officer (1994) worked example

Parameter	Symbol	Estimate
Corporate tax rate	T	39%
Gamma	γ	0.5
Cost of equity	r_e	17.70%
Cost of debt	r_d	14.32%

Source: Officer (1994)

321. The cash flows and imputation credits from that example are summarised in Table 2 below.

Table 2
Cash flows and imputation credits for Officer (1994) worked example

	Symbol	$ (millions)
Pre-tax profit	X_O	39.96
Interest	X_D	5.14
Taxable income	X_O-X_D	34.82
Corporate tax	TAX	13.58
Face value of imputation credits	IC	13.58

Source: Officer (1994)

322. In general, the annual cash flow to equity is:

$$\begin{matrix}\text{Cash Flow}\\ \text{to Equity}\end{matrix} = \begin{matrix}\text{Pre}-\text{tax}\\ \text{Profit}\end{matrix} - \text{Interest} - \begin{matrix}\text{Corporate}\\ \text{Tax}\end{matrix} + \begin{matrix}\text{Value of}\\ \text{Imputation Credits}\end{matrix}$$

which can be expressed as:

$$CF(\text{Equity}) = X_O - X_D - TAX + \gamma \times IC.$$

323. Consequently, the annual cash flow to equity in this case is:[178]

[177] Officer (1994), p. 5.
[178] Since, in this example, all of the profits after interest and tax are paid as a dividend to the shareholders, we can also write $CF(\text{Equity}) = \text{Dividend} + \gamma \times IC = 21.24 + 0.5 \times 13.58 = 28.03.$

$$\begin{aligned} CF(Equity) &= X_O - X_D - TAX + \gamma \times IC \\ &= 39.96 - 5.14 - 13.58 + 0.5 \times 13.58 \\ &= 28.03. \end{aligned}$$

324. Since, in this example, all cash flows are perpetuities the value of equity is given by: [179]

$$E = \frac{X_O - X_D - TAX + \gamma \times IC}{r_e} = \frac{39.96 - 5.14 - 13.58 + 0.5 \times 13.5}{0.177} = 158.362\,.$$

325. This expression unambiguously shows that gamma represents the extent to which imputation credits are capitalised into the stock price. Gamma shows the effect that imputation credits have on the *value* of the shares. In the absence of imputation credits, the value of the firm's equity would be:

$$E_{ex-IC} = \frac{X_O - X_D - TAX}{r_e}.$$

326. Gamma then represents the increase in the *value* of equity due to imputation credits, expressed as a proportion of the face value of imputation credits:

$$\gamma = \frac{E_{with-IC} - E_{ex-IC}}{IC}.$$

327. This shows, unambiguously, that gamma has a *value* interpretation.

328. Finally, we note that McKenzie and Partington (2011) have advised the AER that:

> The literature subsequent to Officer has tended to view both gamma and theta as market values.[180]

329. We suggest that the foregoing discussion explains why it is that the standard practice is to view gamma and theta as market values. We also suggest that the literature subsequent to Officer has *uniformly* viewed gamma and theta as market values. Even the authors of utilisation/redemption rate studies view gamma and theta as market values, such that redemption rates can only provide an upper bound.

330. In our view, Officer (1994), properly and holistically interpreted, does not support the Guideline's reliance on redemption rates to estimate theta.

Hathaway and Officer (2004)

331. The Guideline materials present a quote from Hathaway and Officer (2004) that is claimed to be "supporting the cash flow interpretation of the value of imputation credits."[181] However, the Guideline materials have misconstrued the point that Hathaway and Officer are making. The point

[179] Similarly the value of debt is given by $D = \frac{5.14}{0.14316} = 35.903$ in which case the value of the firm is $V = E + D = 194.265$ as set out in Officer (1994, p. 17).
[180] McKenzie and Partington (2011), p. 3.
[181] AER, Rate of Return Guideline, Explanatory Statement, Appendix H, p. 143, emphasis added.

being made is simply that estimates of the value of distributed credits are not estimates of gamma, but of theta. They need to be multiplied by the distribution rate (*F*) to obtain an estimate of gamma.

332. Indeed the Guideline materials quote only the first half of the relevant paragraph. In the second half of that same paragraph, Hathaway and Officer (2004) state that:

> Gamma is not the *value* of distributed credits alone. It is the compounding of two factors – the fraction of tax distributed as credits multiplied by the *value* of distributed credits. In this sense it is the *value* of all possible credits, that is, the *value* of all tax payments giving rise to the creation of credits.[182]

333. Moreover, the primary purpose of the Hathaway and Officer (2004) study was to present the results of a dividend drop-off analysis, which is clearly relevant only to the standard *value* interpretation of theta. Hathaway and Officer also present some statistics relating to redemption rates, but that analysis has been retracted by Hathaway who has since stated that it should not be relied upon.[183]

334. In our view, Hathaway and Officer (2004) does not support the Guideline's reliance on redemption rates to estimate theta.

Lally (2013a)

335. In his report for the AER, Lally (2013a) considers a theoretical framework in which, under certain assumptions, the weighted-average utilisation rate will equal the equilibrium value of distributed imputation credits. Under this set of assumptions, theta can be estimated either by estimating the weighted-average utilisation rate or by using market value studies to estimate the effect that imputation credits have on stock prices – because the market value must be equal to the weighted-average utilisation rate under those special assumptions.

336. Lally (2013a) recommends to the AER that they adopt a set of assumptions whereby all Australian equities are owned by resident investors who fully redeem all imputation credits that are distributed to them and who value a redeemed imputation credit equal to a dollar of cash dividends. Under these special assumptions, theta will be equal to the weighted-average utilisation rate, which is 100%. Thus, Lally recommends that the AER should set theta equal to 1.

337. The AER has rejected that advice on the basis that the special assumptions that are required to support it are clearly violated in practice.[184] In particular, Australian equities are not owned entirely by resident investors. Indeed, the estimates of all other WACC parameters reflect the effect of foreign investors, so the estimate of theta should also reflect the effect of foreign investors.

338. This leads the AER to depart from the set of assumptions under which theta will be equal to the weighted-average utilisation rate. That is, the Guideline adopts a framework in which the pre-conditions for that result do not hold. Yet the Guideline continues to estimate theta as the weighted-average utilisation rate even though it departs from the assumptions that are required for that result to hold.

339. This position is supported by quoting various passages from Lally (2013a). However, those passages from Lally (2013a) indicate that theta will be equal to the weighted-average utilisation rate *only under certain assumptions*, which are departed from in the Guideline framework. Indeed, Lally is critical of the

[182] Hathaway and Officer (2004), p. 7.
[183] Hathaway (2013), Paragraph 12.
[184] AER Rate of Return Guideline, Explanatory Statement, p. 178.

AER for continuing to estimate theta as the weighted-average utilisation rate even though it departs from the assumptions that are required for that result to hold.

340. The Lally (2013a) advice to the AER on this issue is identical to the submission from the ENA (2013). However, the AER's Guideline materials do not reference the ENA submission on this issue and they interpret Lally (2013a) as actually endorsing the approach that is proposed in the Guideline. Consequently we devote a separate appendix of this report to an explanation of this important issue, below.

Summary and conclusions

341. On the issue of the conceptual definition of theta, we conclude that:

a) The Guideline is alone in its conceptual interpretation of theta:

i) Prior to the current Guideline, the practice of all regulators was to interpret theta[185] as the value (to the market) of distributed imputation credits;

ii) This remains the practice of all other regulators;

iii) The Guideline now proposes to refer to theta as "the utilisation rate" and to conceptualise it as "the extent to which investors can use the imputation credits they receive to reduce their personal tax"[186];

b) None of the proposed reasons for the conceptual redefinition of theta that are set out in the Guideline materials are valid, or supported by advice or evidence:

i) The AEMC Rule change (which now specifically defines gamma to be "the value of imputation credits") does not support the new conceptual definition. It seems clear that the intention of the AEMC was simply to tidy up the Rule to properly reflect the longstanding regulatory practice of adopting a market value interpretation of theta and gamma. The Rule change is quite inconsistent with the notion that the longstanding *value* interpretation should be replaced by a different interpretation;

ii) McKenzie and Partington (2011) identify two possible interpretations for theta – the standard value interpretation and the Guideline's utilisation interpretation. They express no opinion about which interpretation is correct or which should be preferred. However they do note that the "standard practice has been to measure the market value of theta"[187] and in a subsequent report they have stated that "theta is the value to the investor of the imputation credits distributed;"[188]

iii) Handley (2008) has advised the AER that his redemption rate study provides a reasonable estimate of the utilisation of imputation credits, but that the utilisation of credits cannot be used to produce an appropriate estimate of gamma. Handley advises that since theta represents the value (to the market) of imputation credits, and since redemption rates provide only an upper bound for that value, they can only be used to produce an upper bound and not a point estimate;

[185] Or whatever term is used for "the parameter that must be multiplied by F to obtain gamma."
[186] AER Rate of Return Guideline, Explanatory Statement, p. 159.
[187] McKenzie and Partington (2013), p. 32.
[188] McKenzie and Partington (2013), p. 31.

iv) Officer (1994) refers to theta in terms of both value to shareholders and utilisation. However, the formulas and numerical calculations show, unambiguously, that gamma has a *value* interpretation whereby gamma represents the increase in the *value* of equity due to imputation credits, expressed as a proportion of the face value of imputation credits;

v) The Guideline materials cite part of a paragraph of Hathaway and Officer (2004) as supporting its proposed interpretation of theta. However, the Guideline materials misconstrue point that was being made, which is simply that gamma is the product of the distribution rate and theta. The remainder of the same paragraph endorses the standard value interpretation of theta: "Gamma is not the value of distributed credits alone. It is the compounding of two factors – the fraction of tax distributed as credits multiplied by the *value of distributed credits*."[189]; and

c) Lally (2013a) advises the AER that theta can be estimated as the weighted-average utilisation rate *only under certain assumptions*, which do not hold in the Guideline's framework. Lally is critical of the AER for continuing to estimate theta as the weighted-average utilisation rate even though it departs from the assumptions that are required for that result to hold.

[189] Hathaway and Officer (2004), p. 7.

Appendix 6: The advice from Lally (2013a)

Theoretical framework

342. Lally (2013a) considers a class of models that includes Monkhouse (1993) and Lally and van Zijl (2003). These models all consider a setting in which there is a single market in which the *m* investors jointly own all of the *n* assets. In these models there is a closed system – there are no assets outside the market that are available to the *m* investors inside the market and there are no investors outside the market who can buy any of the *n* assets inside the market. That is, these models only apply in a closed system where the *m* investors collectively own all of the *n* assets and nothing else.

343. The models then derive an equilibrium by solving a market clearing condition. This involves noting that:

    a) All of the *m* investors must invest all of their wealth across the *n* assets and nothing else; and

    b) All of the *n* assets must be owned entirely by the *m* investors and no one else.

344. Each of the *m* investors will hold a different amount of each of the *n* assets according to their wealth, their risk aversion and their tax status. Other things equal, wealthy investors will hold more of each asset than poor investors, highly risk averse investors will tend to hold safer portfolios, and investors who are eligible to redeem imputation credits will hold relatively more of the stocks that distribute larger amounts of those credits.

345. Because there is a closed system in which the *m* investors collectively own all of the *n* assets and nothing else, it is possible to derive the relative amount of each asset that each investor will want to hold. This will be a function of the investor's relative wealth, risk aversion and tax status. The relative demand for each asset will determine its equilibrium price and the equilibrium return that investors will require for holding it. Again, it is very important to emphasise that none of these equilibrium calculations can be performed unless the system is closed such that the *m* investors collectively own all of the *n* assets and nothing else.

346. A by-product of these equilibrium calculations is an estimate of the equilibrium value of the imputation credits that are distributed by each firm. This is a derived figure for the extent to which imputation credits will be capitalised into the equilibrium stock price. In these models, the equilibrium value of imputation credits (capitalised into the stock price) turns out to be a weighted-average of the extent to which each investor is able to redeem imputation credits, weighted by wealth and risk aversion. That is, under the assumptions of these models (including the assumption that a dollar of redeemed credit is equal in value to a dollar of cash dividends) the market value of imputation credits (i.e., the extent to which the credits are capitalised into stock prices) will be equal to the weighted-average redemption rate. Under the assumptions of these models, the market value of imputation credits can be estimated as the weighted-average of the utilisation rates of the *m* investors.

347. That is, in an economy where the prerequisite conditions hold (i.e, there is a closed system in which the *m* investors collectively own all of the *n* assets and nothing else) and where all of the assumptions of the model hold (including the assumption that redeemed credits and cash dividends are equally valued), it must be the case that the market value of imputation credits is equal to the weighted-average utilisation rate. In this case, there is equality between:

    a) The extent to which imputation credits are capitalised into stock prices; and

    b) The weighted-average redemption rate.

That is, there are two equivalent ways of determining the value of imputation credits, but only if the pre-requisite conditions and assumptions of the model hold.

Specific cases of a closed system

348. Lally (2013a) considers an extreme case where:

a) There are *m* investors who collectively own all of the *n* assets and nothing else;

b) All of the *m* investors value a dollar of redeemed credits equal to a dollar of cash dividends, and

c) All of the *m* investors can redeem 100% of the imputation credits that are distributed to them (i.e., there are no foreign investors).

349. He notes that (a) and (b) above establish the pre-conditions that are required for theta to be equal to the weighted-average utilisation rate. He also notes that from (c) above the weighted-average utilisation rate will be 100%. In this special case, 100% of the face value of the distributed credits will be capitalised into the stock price and theta will be equal to 1. Lally (2013a) recommends that the AER should adopt the assumptions set out above and set theta to 1.

350. Of course, if theta is to be estimated not as it actually *is* in the market for equity funds, but as it *would be* in a world with no foreign investors, consistency requires that all WACC parameters must be estimated on the same basis. Lally (2013a) presents some calculations to show how one might go about estimating beta and MRP as they *would be* in such a world.

351. Lally (2013a) also considers the case of perfectly integrated capital markets where:

a) The *m* investors consist of all global investors; and

b) The *n* assets consist of all global equities.

352. This is also a closed system in which the *m* investors collectively own all of the *n* assets and nothing else. Consequently, an equilibrium exists in which the value of imputation credits capitalised into the stock price is equal to the weighted-average of the utilisation rates over the *m* investors. In this case, only a small proportion of the *m* investors are eligible to redeem imputation credits (commensurate with the small proportion of Australian investors in the global market), in which case theta will be negligibly small.

353. By contrast, the Guideline proposes a setting in which:

a) The *m* investors consist of all Australian investors and those foreign investors who own some Australian shares; and

b) The *n* assets consist of all Australian equities.

354. This is not a closed system because it is not the case that the *m* investors collectively own all of the *n* assets and nothing else. Consequently, no market clearing equilibrium can be derived and it will not be the case that an equilibrium exists in which the value of imputation credits capitalised into the stock price is equal to the weighted-average of the utilisation rates over the *m* investors.

355. In the context of these equilibrium models, if foreign investors are included, foreign assets must also be included. Alternatively, if foreign assets are not included, then foreign investors must be assumed away. If neither of these assumptions is made, no equilibrium model will apply and the weighted-average utilisation rate cannot be used as an estimate of theta.

356. By way of analogy, consider two children's birthday parties being held side by side in a park. The objective is to determine whether the food has been fairly distributed among the children (having regard to their different ages and taste preferences etc.). If each child is only allowed to take food from their party's table, fairness can be assessed by observing what each child takes relative to the total food available from that table. That is, each table is a closed system. If, however, children are allowed to take food from either table, fairness can only be assessed by observing the total amount of food taken by each child relative to the total amount of food available from both tables. That is, there is a single closed system consisting of all of the food and all of the children.

357. Note that, in the latter case, it is impossible to determine anything by observing only the food that each child takes from one of the tables because there is no information about whether that child has taken a little or a lot from the other table. In this case, a single table is not a closed system, so we can infer nothing from observing just that table. The only setting in which one can infer anything from observing a single table is in the former case where there are no "foreign investors" at all.

358. In the case where the prerequisite conditions for the model do not hold, the weighted-average redemption rate will not tell us anything about the equilibrium value of imputation credits (in the same way that observing how much food each child takes from one table will tell us nothing about whether or not each child has a fair proportion of the food overall). In this case, the weighted-average redemption rate cannot be used to estimate the value of imputation credits, leaving empirical estimation from observed stock prices as the only available method.

Lally's advice to the AER on the application of equilibrium models

359. Lally (2013a) has advised the AER that the weighted-average utilisation rate that comes out of equilibrium models such as Lally and van Zijl (2003) only applies in a closed system where the m investors collectively own all of the n assets and nothing else. That is, the model is only relevant if certain pre-conditions hold. If those pre-conditions do not hold, the model will not apply, and any attempt to apply the model will be likely to mislead.

360. However, the equity ownership approach used in the Guideline involves the attempted implementation of an equilibrium model where the pre-conditions for such a model clearly do not apply. The Guideline approach uses a result that applies only in closed systems in a system that is clearly not closed. This approach remains in the Guideline even after Lally (2013a) has advised that it is incorrect. In fact, as set out below, Lally is critical of the AER's claims that a result that applies only in a closed system can still be used in a setting where there is no closed system.

Lally's "endorsement" of the AER approach

361. The AER engaged Lally (2013a) to undertake a critical review of the imputation credit related sections of the draft Guideline and concludes that the Lally review supports its theta estimate of 0.7:

> The expert advice from Associate Professor Lally suggests that our determination of a utilisation rate of 0.7 is reasonable, based on the evidence currently available.[190]

[190] AER Rate of Return Guideline, Explanatory Statement, p. 170.

362. However, what Lally (2013a) actually concludes is that theta should be set to 1 by "ignoring foreigners."[191] That is, Lally recommends that we should *assume* that all Australian equities are owned entirely by Australian residents who can fully utilise imputation credits, despite clear evidence to the contrary.

363. Associate Professor Lally has recommended this approach to Australian regulators for at least 10 years[192] and none of them have ever adopted it.

364. Lally (2013a) goes on to consider other approaches for estimating theta. He ranks each of the other approaches in terms of how close they are to his favoured "ignoring foreigners" estimate of 1. The Guideline's estimate of 0.7 ranks second because it is closest to Lally's favoured estimate of 1.

365. Indeed Lally concludes that the Guideline's approach produces estimates that are implausible,[193] as do all approaches other than his "ignoring foreigners" approach.

366. Lally (2013a) goes on to state that the only redeeming feature of the Guideline's equity ownership approach is that, even though it is an estimate of the wrong thing, it is at least a statistically precise one,[194] but even that is disputed in Section 0 of this report.

367. In the remainder of this appendix, we review each of the criticisms of the Guideline approach that are set out by Lally (2013a).

Inconsistency of Guideline approach

368. As set out above, Lally's main criticism of the Guideline's proposed approach is that it applies the result of a model (theta is equal to the weighted-average utilisation rate) where the pre-conditions for that result (a closed system) do not apply.[195] He clearly advises that the theoretical result (theta is equal to the weighted-average utilisation rate) will only apply where the pre-conditions for the model are satisfied, namely either:

    a) A perfectly segmented market in which all Australian equities are owned by Australian investors, who own nothing else; or

    b) A perfectly integrated market that includes all global equities and all global investors.

369. The Guideline's proposed framework is neither of these cases, so the theoretical result (theta is equal to the weighted-average utilisation rate) does not apply. The Guideline considers a more realistic case in which Australian investors own some foreign assets and foreign investors own some Australian assets, as that would be commensurate with the market for equity funds. But Lally notes that equilibrium results can only be obtained if we assume that markets are perfectly segmented, in which case:

> foreign investors, who by definition can hold both Australian and foreign risky assets, have no place in such a model[196]

or if we assume that markets are perfectly integrated, in which case:

[191] Lally (2013a), p. 3.
[192] See, for example, Lally (2004).
[193] Lally (2013a), p. 4.
[194] Lally (2013a), pp. 3-4.
[195] Lally (2013a), p. 14.
[196] Lally (2013a), p. 14.

> if Australian investors have access to foreign assets, the appropriate CAPM will reflect that fact and the equilibrium prices of Australian assets will differ. [197]

370. Lally (2013a) also notes that:

> The ENA (2013, section 7.4.6) makes the same point

and we include the relevant section of that submission as Appendix 7 to this report.

371. Lally (2013a) comments further on the inconsistency of using a theoretical result in a setting where the pre-conditions for that theoretical result are not satisfied. He says that:

> By contrast, Handley (2008, section 2.2) appears to believe that there is no inconsistency and believes that all CAPMs start by defining the "market", from which the "relevant" set of investors follows. Thus, if the market is Australian equities, then the relevant set of investors includes foreigners to the extent they invest in Australian equities. I do not agree. CAPMs do not start with a definition of the "market" but a set of assumptions about investor behaviour and institutional features, and the particular assumptions imply which market portfolio and set of investors are relevant. Some versions of the CAPM assume complete segmentation of equity markets, in which case the relevant investors are Australian residents and the relevant market portfolio is all Australian risky assets (assets that can be purchased by Australian residents in a world in which there is complete segmentation of risky asset markets). Other versions of the CAPM assume complete integration, in which case the relevant investors are those throughout the world and the relevant market portfolio would be all risky assets throughout the world.[198]

372. Copeland (2014) also makes the same point:

> Equilibrium under the CAPM requires that all investors in the market collectively own all of the assets in the market. This is a direct consequence of two-fund separation and the fact that aggregate borrowing equals aggregate lending, as I have indicated above. Having an investor from outside the market owning some of the assets inside the market would mean that a CAPM equilibrium could not be obtained.[199]

Circularity of Guideline approach

373. Lally (2013a) also concludes that the "equity ownership" approach has no proper basis:

> The AER (2013, page 237) also defines the utilisation rate as the proportion of distributed credits that investors redeem. This is not correct; the redemption rate is merely an estimation method.[200]

374. Here, Lally is referring to the AER's Draft Explanatory Statement, which simply defines that theta is equal to the redemption rate:

[197] Lally (2013a), p. 14.
[198] Lally (2013a), pp. 14-15.
[199] Copeland (2014), p. 5.
[200] Lally (2013a), p. 13.

> The utilisation rate is the proportion of distributed credits that investors redeem to reduce their tax liabilities.[201]

375. Lally's point here can be summarised as follows:

    a) A number of different methods have been proposed for estimating theta;

    b) One of the methods that has been proposed is the imputation credit redemption rate, which can be estimated either:

        i) By using ATO redemption data; or

        ii) By estimating the proportion of Australian equities that are owned by residents, and assuming that residents will redeem all credits that are distributed to them;

    c) The Guideline defines that theta is equal to the redemption rate; and

    d) The Guideline then gives primary weight to its redemption rate estimates of theta on the basis that they "accord with the AER's interpretation" of theta.[202]

376. That is, Lally's point is one of basic logic – the Guideline's approach is entirely circular in the way that it defines theta in terms of one of the estimation methods and then concludes that estimation method must receive most weight because it best accords with the Guideline's definition.

377. We agree with Lally's criticism of the circularity of this approach and with his conclusion that the Guideline approach is "not correct" in the way that it defines theta (or the "utilisation rate.")

378. This criticism of the proposed approach is not addressed anywhere in the Guideline. Rather, the Guideline materials conclude that Lally actually supports the proposed approach:

> In his review, Lally considers that this estimation technique aligns with our conceptual framework.[203]

379. Of course the AER's favoured estimation technique aligns with their conceptual framework. Lally's whole point is that the AER's conceptual framework is simply to define theta in terms of the favoured estimation technique. The fact that that estimation technique then aligns with the conceptual framework is entirely circular.

380. Lally (2013a) is very clear about this point when he points out that the equity ownership approach for estimating theta:

> follows directly from the AER's definition of *U*.[204]

Guideline approach has "perverse" effects

381. Lally (2013a) also notes that the Guideline's equity ownership approach:

[201] AER Draft Rate of Return Guideline, Explanatory Statement, p. 237.
[202] AER Rate of Return Guideline, p. 24.
[203] AER Rate of Return Guideline, Explanatory Statement, p. 172.
[204] Lally (2013a), p. 16.

> has a potentially perverse effect upon the estimated cost of equity. In particular, as national equity markets become increasingly integrated, foreign ownership of Australian equities will rise, and any estimate of U that is consistent with its definition will fall. If this has the effect of raising the estimated cost of equity capital using the Officer model and the true cost of equity actually falls as markets become more integrated (because investors will be holding more well diversified portfolios) then the effect of defining U to include foreign investors will be entirely perverse.[205]

382. That is, as barriers to foreign investment fall, the supply of foreign equity capital will tend to rise, having the effect of reducing the cost of equity for Australian firms (a simple supply/demand effect). This will also result in a fall in the equity ownership estimate of theta, and a consequential increase in the regulatory estimate of the allowed return on equity, which Lally correctly describes as "entirely perverse."

383. Indeed the equity ownership approach implies that Qantas (and all Australian firms) should be arguing for a *tightening* of foreign ownership restrictions as this would increase the proportion of resident ownership and consequently reduce the required return on equity, which is also entirely perverse.

Summary of advice from Lally (2013a)

384. The key points to be drawn from the Lally (2013a) discussion of the conceptual framework for theta are as follows:

a) Lally has advised that under certain special conditions and assumptions, theta will equal the weighted-average utilisation rate. And when those conditions and assumptions do not hold, theta will not equal the weighted-average utilisation rate;

b) The Guideline proposes to estimate theta as the weighted-average utilisation rate in a setting where those special conditions and assumptions do not hold – the real-world Australian equity market, which has been "contaminated" by foreign investment. Lally advises that it is wrong to apply a theoretical result in a setting where the pre-conditions for that theoretical result are not satisfied;

c) Lally advises that the Guideline's approach is circular and "not correct" in the way that it defines theta in terms of one of the estimation methods and then concludes that estimation method must receive most weight because it best accords with its own definition;

d) Lally advises that the application of the Guideline approach produces results that are "entirely perverse." As barriers to foreign investment fall, the supply of foreign equity capital will tend to rise, having the effect of *reducing* the cost of equity for Australian firms. This will also result in a fall in the equity ownership estimate of theta, and a consequential *increase* in the allowed return on equity.

[205] Lally (2013a), pp. 15-16.

Appendix 7: ENA submission cited by Lally (2013a)

385. The Explanatory Statement cites a number of studies that derive representative investor models in the context of a dividend imputation tax system. Those studies include Lally (1992), Lally and van Zijl (2003), and Monkhouse (1993). Those papers are all based on the basic CAPM framework and/or the after-tax CAPM framework that was originally developed by Brennan (1970).[206]

386. In the 2009 WACC Review, the discussion of representative investor models converged on a setting in which there is a single market consisting of *n* risky assets held collectively by *m* investors. The AER stated that:

> …the starting point for the Sharpe CAPM (and all subsequent versions of the CAPM) is to assume a given set of assets (n risky assets and a risk-free asset) and a given set of investors (m) who collectively determine the prices of those assets.[207]

387. In his advice to the AER on this issue, Handley (2009) also set out part of the derivation of the CAPM where there is a single market consisting of *n* risky assets held collectively by *m* investors.[208]

388. A crucial aspect of these models is that:

a) The *m* investors must, between them, hold 100% of the *n* assets; and

b) The *m* investors own nothing other than the *n* assets.

389. That is:

a) None of the *m* investors can hold any assets outside the model; and

b) There can be no investors outside of the model who can possibly buy any of the *n* assets inside the model.

390. In other words, the derivation of the CAPM and subsequent models that are based on it, require a closed system. A model in which investors who are inside the system are able to invest in assets outside the system, or where investors outside the system are able to invest in assets inside the system is very different from the CAPM or any subsequent model based on it. None of the CAPM derivations hold in such a case and the CAPM pricing equation (which is used to estimate the required return on equity) does not hold.

391. To see this, consider the derivation presented by Brennan (2008)[209] as cited by Handley (2009).[210] Here every investor maximises their end-of-period utility:

[206] Brennan, M.J., (1970), Taxes, Market Valuation and Corporate Financial Policy, National Tax Journal, 23, 417–427.
[207] AER 2009 WACC Review Final Decision, p. 424.
[208] Handley (2009), "Further comments on the valuation of imputation credits," pp. 13-14.
[209] Brennan, M.J., "Capital asset pricing model," in "The New Palgrave Dictionary of Economics," Eds. Steven N. Durlauf and Lawrence E. Blume, Palgrave Macmillan, 2008, The New Palgrave Dictionary of Economics Online, Palgrave Macmillan. 23 September 2013, DOI:10.1057/9780230226203.0190.
[210] Handley (2009), *Further comments on the value of imputation credits*, April, www.aer.gov.au. We adopt the full notation, as set out in Brennan (1992).

$$\underset{z_{ij}}{Max} V_i\left(\overline{W}_i, S_i^2\right)$$

subject to :

$$\overline{W}_i = \sum_{j=1}^{n} z_{ij}\overline{P}_{j1} - R\sum_{j=1}^{n}\left(z_{ij} - \overline{z}_{ij}\right)\overline{P}_{j0}$$

$$S_i^2 = \sum_{j=1}^{n}\sum_{k=1}^{n} z_{ij} z_{ik}\omega_{jk}$$

392. The first of these equations says that all investors maximise their end-of-period expected utility over their total portfolio. Utility is increasing in wealth (and hence expected returns), $\overline{W}_i$, and decreasing in variance, S_i^2. z_{ij} represents the weight that investor *i* invests in each of the *n* assets. The second equation says that investor *i* must invest all of his wealth among the assets within the market. Expected end-of-period wealth is the expected payoff on each of the *n* risky assets inside the system plus the return on the amount invested in the risk-free asset. The last equation is the expression for the variance of the returns of the investor's portfolio, all of which has been invested among the *n* assets inside the market.

393. Brennan (2008) goes on to note that market clearing requires that $\sum_{i=1}^{m}\mathbf{z_i} = \mathbf{1}$. This market clearing condition requires that, for each asset *j*, the sum of the demands of all investors must equal the supply of the asset.

394. The budget constraint above requires that every investor has invested 100% of their initial wealth allocation among the *n* risky assets (and the risk-free asset) in the market.

395. In summary, the derivation of the equilibrium requires that:

a) The *m* investors must, between them, hold 100% of the *n* assets in the market; and

b) The *m* investors own nothing other than the *n* assets (and a residual position in the risk-free asset).

396. That is:

a) None of the *m* investors can hold any assets outside the market; and

b) There can be no investors outside of the market who can possibly buy any of the *n* assets inside the market.

397. If these requirements for market clearing are not met, no equilibrium can be derived, no representative investor can be determined, and the CAPM pricing relation cannot be obtained.

398. Now consider the case where each of the *m* investors inside the system is able to invest in n_1 assets inside the system and n_2 assets outside the system, this optimisation becomes:

$$\underset{z_{ij}}{Max} V_i\left(\overline{W_i}, S_i^2\right)$$

subject to :

$$\overline{W_i} = \sum_{j=1}^{n_1+n_2} z_{ij}\overline{P}_{j1} - R\sum_{j=1}^{n_1+n_2}\left(z_{ij} - \overline{z}_{ij}\right)\overline{P}_{j0}$$

$$S_i^2 = \sum_{j=1}^{n_1+n_2}\sum_{k=1}^{n_1+n_2} z_{ij} z_{ik}\omega_{jk}.$$

399. That is, the end-of-period utility of each investor depends on the value of his investments inside the system plus the value of his investments outside the system and the relationship (covariance) between those two holdings. This optimisation has the obvious implication that investors in CAPM-type models maximise the utility of their total portfolios. When considering the return that they require from a particular investment, investors consider the returns that are available from alternative investments and the relationship between the particular investment and the rest of the investor's portfolio.

400. The ENA submits that (a) if the standard requirements for market clearing are not met, no equilibrium can be derived, no representative investor can be determined, and the CAPM pricing relation cannot be obtained, and (b) the standard market clearing conditions are not met in the "representative investor" framework set out in the Explanatory Statement.

Appendix 8: Implementation issues for alternative definitions of theta

Overview

401. This appendix examines implementation issues in relation to the equity ownership, tax statistic and conceptual goalposts approaches. The focus is on the quality of the available data and the reliability of the estimate. The issue of whether these approaches provide an estimate that is consistent with the appropriate definition of theta is addressed in the body of the report.

Reliability of equity ownership data

402. Implementation of the equity ownership approach is fraught with difficulty. This is best demonstrated by the facts that:

a) Lally (2012) concludes that "the proportion of Australian equities held by Australians" is 54%[211] whereas Lally (2013a) puts the figure at 70%[212] based on a data source that pre-dates the earlier estimate by four years; and

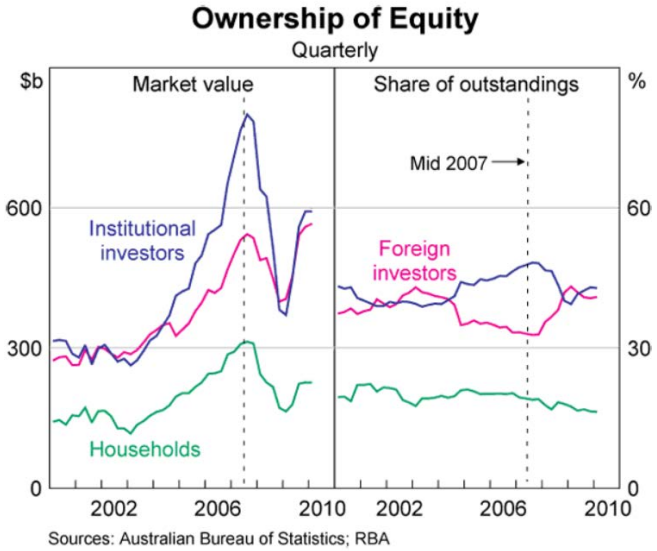
b) The Australian Bureau of Statistics has posted a data quality warning in relation to the data that has been relied upon by Lally (2103a) and the AER.[213]

Updated estimates of equity ownership

403. The AER and Lally (2013a) both refer to an estimate of "the proportion of Australian shares that are held by Australians" of 70%.[214] The original source of this figure is the AER Draft Guideline Explanatory Statement, which in turn refers to a 2007 estimate from the Australian Bureau of Statistics (**ABS**).[215] A more recent RBA paper shows that the 2007 ABS estimate of the proportion of foreign equity ownership is materially lower than previous and subsequent estimates. That is, the 2007 estimate happens to produce the lowest estimate of foreign equity ownership (and consequently the highest estimate of theta) of any point in the last 10 years – as illustrated in Figure 8 below.

[211] Lally (2012), p. 6.
[212] Lally (2013a), p. 16.
[213] See the ABS feature article that first explains the foreign ownership calculations at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5306.0Feature%20Article150Jun%201992?opendocument&tabname=Summary&prodno=5306.0&issue=Jun%201992&num=&view=.
[214] See Lally (2013a), p. 16.
[215] AER Draft Guideline Explanatory Statement, Footnote 367, p. 130 cites the source of the 70% figure as being Australian Bureau of Statistics, *Feature article: Foreign ownership of equity*, Available at: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5302.0Feature%20Article10Sep%202007?opendocument&tabname=Summary&prodno=5302.0&issue=Sep%202007&num=&view.

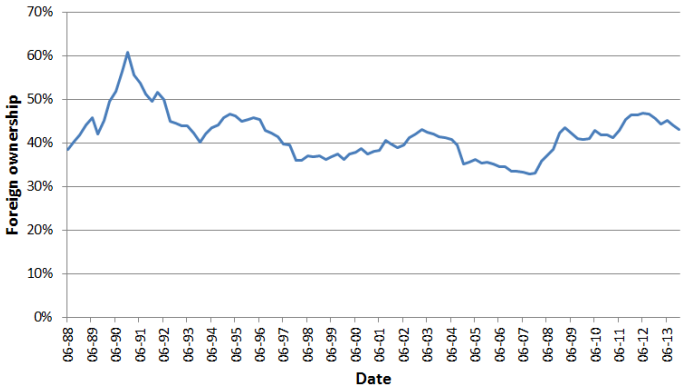
Figure 8
RBA estimates of the ownership of Australian equity



Source: Black and Kirkwood (2010), RBA.

404. If the ABS aggregate equity ownership estimate is to be used, the 2007 estimate should not be preferred to the updated estimates – which show materially higher levels of foreign investment. Figure 9 below shows the time series of foreign ownership percentages using the ABS data that was the source of the 30% estimate adopted in the Guideline and of Black and Kirkwood (2010). This figure shows that more recent estimates of foreign ownership are in the order of 45%.[216]

Figure 9
Updated ABS estimates of the ownership of Australian equity



Source: ABS Series 5232.0 Australian National Accounts: Financial Accounts, Table 32.

Consistency with ASX estimates

405. The updated estimates set out above are consistent with those reported by the Australian Securities Exchange (ASX). The ASX presents foreign ownership estimates for privately-owned equity only. Lally (2012) refers to the ASX (2011) estimate of 46% foreign ownership and concludes that "the

[216] These figures are computed as ABS Series A3425417X divided by the sum of ABS Series A3366544F, A3364525L, A3364528V, A3545235F, A3372154L, A3367456X, A3545239R, A3358849V, A3359968C, A3361015J, A3545244J, A3545245K, and A3369589R.

proportion of Australian equities held by Australians" is 54%.[217] ASX (2013) provide the most recent estimate of the proportion of privately-owned equity that is owned by foreign investors, concluding that the best estimate remains at 46%.[218]

Lally (2012, 2013a, 2013b) estimates of redemption rates

406. In his recent reports for the QCA and AER, Lally provides a number of estimates of "the proportion of Australian equities owned by Australians." In his November (2012) report to the QCA, Lally (2012) states that:

> the proportion of Australian equities held by Australians is 54%.[219]

407. The source of this estimate is ASX (2012), which is based on data through to the end of 2011.

408. In his November 2013 report to the QCA, Lally (2013b) cites two estimates. Both of these pre-date the estimate he used in his earlier report and both of them are higher than the estimate he used in his earlier report. He provides no indication of why these superseded estimates should now be preferred to the more recent estimate used in his 2012 report. He simply refers to the task of estimating the proportion of Australian equities owned by Australians and states that:

> In respect of listed equity, this is currently about 60% (Black and Kirkwood, 2010, page 2). If unlisted equity were included, with valuations based upon accounting values, the result is (unsurprisingly) higher at about 70% (Australian Bureau of Statistics, 2007).[220]

409. Throughout the remainder of the latter report, Lally (2013b) states that the proportion of Australian equities held by Australians is "about 0.70"[221] without providing any indication of why that estimate should be preferred among the two (superseded) estimates that are cited.

410. In his November 2013 report to the AER, Lally (2013a) confirms that he has adopted the AER estimate that is based on the 2007 ABS data, without any reference to any other estimates:

> Drawing upon data from the Australian Bureau of Statistics (2007), the estimate is 70%.[222]

411. In summary, between his 2012 and 2013 reports, Lally has increased his equity ownership estimate materially by relying on data that is four years older and which includes approximations in relation to unlisted equity that is the subject of data quality warnings from the ABS – without any explanation or even any reference to his earlier estimate that was based on more current data.

Use of unlisted equity

412. The 45% foreign ownership figure in Figure 9 above is based on listed equity. In our view, this is the appropriate calculation given that all other WACC parameters are estimated with reference to exchange-listed businesses because they are more reflective of the efficient benchmark entity.

[217] Lally (2012), p. 6.
[218] ASX (2013), p. 2. The ASX figures are based on ABS series 5232.0, Table 32 for the September quarter 2012.
[219] Lally (2012), p. 6.
[220] Lally (2013b), p. 13.
[221] Lally (2013b), pp. 3, 38, 53.
[222] Lally (2013a), p. 16.

Consequently, the reference to calculations including unlisted equity above (Paragraph 408 above) is not relevant.

413. Moreover, the ABS warns that its estimates in relation to unlisted equity are unreliable. In particular, the ABS warns that:

> The estimated market value of equity issued by some sectors is considered to be of poor quality. In particular, estimates of the market value of the amount issued by private corporate trading enterprises are considered poor because they are largely built up from counterpart and other information obtained from ABS Surveys of Foreign Investment and Balance Sheet Information. This sector covers equity issued by both listed and unlisted private corporate trading enterprises, of which there are over half a million.
>
> In terms of the analysis undertaken here, errors in the estimated market value of equity on issue will impact on the accuracy of estimates of the proportion of that equity owned by non-residents.
>
> A further concern relates to valuation. While both financial accounts and international investment statistics (from which the rest of the world data are sourced) are on a market value basis in principle, collection and estimation methods differ between the two sets of statistics…Because of the differences in the methodologies used, it is possible that there could be more variability in the market value estimates of equity held by the rest of the world than in the estimated market value of the equity on issue, thus causing some variation in the foreign ownership series derived from these data.[223]

Reliability of ATO redemption rate data

414. The ATO maintains two separate databases that relate to imputation credits:

a) The ATO franking account balance (FAB) data; and

b) The ATO dividend flow data.

415. The FAB data is used when estimating the distribution rate, *F*. Companies record any undistributed credits in their franking account balance. Consequently, the estimation of the distribution rate over any particular period is a relatively straightforward calculation since:

a) The total amount of credits created is equal to the total amount of corporate tax collected; and

b) The total amount of credits that are not distributed is equal to the increase in the aggregate FAB over the period.

416. Consequently, the distribution rate can be estimated as:

$$1 - \frac{Increase\ in\ FAB}{Total\ corporate\ tax\ paid}.$$

[223] See the ABS feature article that first explains the foreign ownership calculations at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5306.0Feature%20Article150Jun%201992?opendocument&tabname=Summary&prodno=5306.0&issue=Jun%201992&num=&view=.

417. This method of estimating the distribution rate consistently produces estimates close to 70%. See, for example, NERA (2013, p. 5).

418. Estimation of the redemption rate requires the use of the ATO dividend flow data. The redemption rate can be estimated as the ratio of redeemed credits to distributed credits. The ATO dividend flow data includes information about both of these components. However, a series of calculations are required to determine the amount of distributed credits because some credits are distributed to other companies, and will be added to the recipient company FAB to be distributed to shareholders at a later point.

419. Hathaway (2013) shows that the ATO dividend flow data indicates that between 2004 and 2011 $204.7 billion of credits were distributed and $127.6 billion were redeemed. This suggests that 62.3% of the distributed credits were redeemed.

420. However, the ATO dividend flow data does not reconcile with the ATO FAB data. Whereas the former suggests that $204.7 billion of credits were distributed, the latter suggests that $292.2 billion were distributed. The discrepancy is obviously material and leads Hathaway (2013) to conclude that:

> I would caution anyone…against relying on those parts of my earlier reports which focused on ATO statistics.[224]

421. If the redeemed credits of $127.6 billion are expressed as a percentage of the $292.2 billion of credits that were distributed according to the FAB data, the resulting estimate of the redemption rate is only 44%. In summary, the Hathaway (2013) calculations indicate that the ATO supports an estimate of the redemption rate in the range of 44% to 62%.[225]

422. The Guideline concludes that the ATO data supports a redemption rate in the range of 0.4 to 0.8, where the upper bound is based on an estimate reported by Handley and Maheswaran (2006) for data over the 2000-2004 period. Hathaway (2013) strongly criticises several aspects of the methodology used by Handley and Maheswaran (2006).[226] Even setting aside these methodological criticisms, the Handley-Maheswaran data is now 10 years out of date and pre-dates the Hathaway (2013) sample period entirely. Moreover, Hathaway (2013) explains that he restricts his analysis to the post-2004 period because the pre-2004 data is unreliable:

> The ATO has had a lot of trouble deciding on the appropriate data for the period 2001-2003. The past data has been revised numerous times, both up and down in the years since then. In these circumstances, I have confined my analysis to the changes in levels from 2004 onwards.[227]

423. In our view, there is no reasonable basis for any continued reliance on estimates from Handley and Maheswaran (2006). Rather, the best estimate that can be obtained from the ATO data is the range of 44% to 62% from Hathaway (2013).[228]

[224] Hathaway (2013), Paragraph 12.
[225] See Hathaway (2013), Paragraphs 23-25 and AER Rate of Return Guideline, Explanatory Statement, Appendix H, Table H.3, p. 153.
[226] See Hathaway (2013), pp. 42-43.
[227] Hathaway(2013), Paragraphs 17-18, p. 7.
[228] See Hathaway (2013), Paragraphs 23-25 and AER Rate of Return Guideline, Explanatory Statement, Appendix H, Table H.3, p. 153.

424. Lally (2013) notes the concerns that Hathaway (2010, 2013) expresses in relation to the reliability of the tax statistics data and concludes that:

> the best that can be said of all this is that the redemption rate is uncertain[229]

425. Moreover, Lally (2013) also suggests that, even if the redemption rate could be reliably estimated, it is likely to "overestimate the utilisation rate" due to the possibility of foreign investors being able to effectively transfer some credits to domestic investors.[230]

426. Also, in a report for the AER, McKenzie and Partington (2011)[231] question whether redemption rates are even fit to be used as an upper bound for theta (even assuming they could be reliably estimated). Consequently, redemption rates (whether estimated directly from ATO aggregate tax statistics or indirectly by estimating the aggregate proportion of domestic ownership and assuming that domestic shareholders will redeem) can, at most, be used as an upper bound for theta.

427. Another potential problem with this data stems from the fact that it does not discriminate between public and private companies. Many micro businesses are structured as private companies that routinely distribute all imputation credits to their owners who redeem them all. Thus, the redemption rate for these businesses will be higher than for the average exchange-listed business. In this regard, we note that all other WACC parameters are estimated with reference to exchange-listed businesses (and not private micro and small businesses) because exchange-listed businesses are more reflective of the efficient benchmark entity.

428. Finally, we note that if theta is defined (wrongly, in our view) to be the redemption rate, the ATO data could be used to estimate gamma directly, without the need to separately estimate the distribution rate and theta, as follows:

$$\begin{aligned}\gamma &= F \times \theta \\ &= \frac{Credits\ distributed}{Total\ corporate\ tax\ paid} \times \frac{Credits\ redeemed}{Credits\ distributed} \\ &= \frac{Credits\ redeemed}{Total\ corporate\ tax\ paid}.\end{aligned}$$

429. That is, the discrepancy in the amount of credits distributed can be circumvented entirely by simply taking the ratio of credits redeemed to total corporate tax paid – which is 30% (127.6/421.5).[232] In our view, this is not a valid point estimate of gamma because theta is properly interpreted as the value of distributed credits not the redemption rate. However, this figure might be used as an upper bound check on the final estimate of gamma.

Conclusions and recommendations in relation to the use of redemption rates

430. Our conclusions in relation to redemption rate estimates of theta are as follows:

a) The redemption rate is the ratio of redeemed credits to distributed credits and can be estimated in two ways:

[229] Lally (2013), p. 15.
[230] Lally (2013), p. 15.
[231] McKenzie and Partington, (2011), p. 6.
[232] See Hathaway (2013), Figure 1, p. 8.

i) Using aggregate tax statistics published by the ATO relating to the distribution and redemption of imputation credits; and

ii) By estimating the proportion of Australian shares that are held by resident investors, and assuming that those resident investors will redeem any imputation credit they receive;

b) If theta is interpreted as the value of a distributed credit, redemption rates cannot be used to estimate theta. Consistent with this view, the Tribunal has ruled that redemption rates cannot be used to estimate the value of a distributed credit;

c) ATO tax statistic estimates of the redemption rate are so unreliable that no sound conclusion can be drawn from them. However, the best estimate of the redemption rate that can be obtained from ATO data is the range of 44% to 62% from Hathaway (2013);

d) Equity ownership estimates of the redemption rates are also highly unreliable. In particular, the AER's 70% (domestic ownership) estimate should not be relied upon because it is:

i) Based on data from 2007 that has been superseded;

ii) Includes equity in GOCs, general government and the Reserve Bank;

iii) Includes equity in unlisted entities;

iv) Is inconsistent with the ASX estimate of domestic ownership of Australian equities; and

v) Is subject to a warning from the ABS about data problems and inaccuracies.

The best available updated estimate of domestic equity ownership is 55%.

The "conceptual goalposts test"

The rationale for the "conceptual goalposts" test

431. The Guideline materials define "the market" to reflect the impact of foreign investors to the extent that they have chosen to invest in Australian shares:

> Consistent with the 2009 WACC review, we propose to define the market as an Australian domestic market that recognises the presence of foreign investors to the extent they invest in the Australian market. This definition reflects the realities of capital markets, and sits in between the purely theoretical definitions of a 'full segregated' market and a 'fully integrated' market. This definition has critical implications for the value of imputation credits.[233]

432. In this context, Lally (2013a) notes that the weighted-average utilisation rate can only be used to estimate theta in settings where the required pre-conditions apply. In particular, those conditions only apply if Australia is assumed to be a perfectly segmented market, or a perfectly integrated market. Those conditions do not apply in the hybrid case adopted in the Guideline.

433. Lally (2013a) goes on to argue that the reasonableness of any estimate of theta can be tested by determining whether the allowed return on equity based on that estimate of theta lies between:

[233] AER (2013), Draft Rate of Return Guideline, Explanatory Statement, p. 120.

a) The allowed return on equity in a perfect segmentation world; and

b) The allowed return on equity in a perfect integration world.

434. As set out in Section 2 above, the allowed return on equity is computed as the total required return on equity less an adjustment for the value of imputation credits.

Implementation of the "conceptual goalposts" test

435. The test of whether a particular estimate of theta produces an allowed return on equity that is between the allowed return in a theoretical full segregation scenario and a theoretical full integration scenario requires estimates of what each WACC parameter would be in each of those theoretical scenarios.[234]

436. Lally (2013a) undertakes the estimation task by starting with estimates of WACC parameters from the real world and making adjustments to determine what those parameter values would be if markets were perfectly segmented and what they would be if markets were perfectly integrated. In our view, this is an impossible task. Estimating beta and MRP in the real world (reflecting the actual observable impact that foreign investors have on observable asset prices) is extremely difficult and a matter of great controversy, thousands of pages of expert submissions, and almost continual litigation. The task of estimating what beta and MRP *would be* if no foreign investment was allowed, and what they *would be* if markets were perfectly integrated is impossible.[235]

437. Even if it was possible to derive point estimates of beta and MRP as they would be in these theoretical scenarios, the reasonable ranges (or confidence intervals) around the point estimates would be very wide indeed – reflecting not just statistical estimation error, but also the extent to which the theoretical adjustments to convert estimates from their real world values to their theoretical world values might not be perfectly accurate. Indeed properly constituted ranges would likely be so wide as to render the resulting estimates of no use whatsoever.

438. However, Lally (2013a) produces point estimates of the required return on equity in these theoretical worlds to three decimal places and uses these point estimates to rule out all estimates of theta other than his own theoretically reasoned value of 1. He does not consider the possibility of *any* estimation error or of *any* model error in converting real-world estimates to their theoretical world values.[236]

439. In addition to this, all of Lally's calculations are based on a mechanistic implementation of the Sharpe-Lintner CAPM where MRP is estimated solely from the historical arithmetic mean of excess stock returns, which is inconsistent with the Guideline's approach of having regard to other relevant evidence.

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[234] See Lally (2013a), Section 3.9.

[235] For example, to properly estimate what the market risk premium would be in a world where foreign investment was banned would require the implementation of the Guideline procedure under the assumption that no foreign investment was allowed. This would require an estimate of what historical stock returns would have been had no foreign investment been allowed. It would also require a parameterisation of the DGM under the assumption that no foreign investment is allowed. This, in turn, would require an estimate of what the market dividend yield would be in the absence of foreign investment and an estimate of what growth forecasts analysts would be using if no foreign investment was allowed, and an estimate of what long-run GDP growth would be if no foreign investment was allowed. In our view, this is an impossible task.

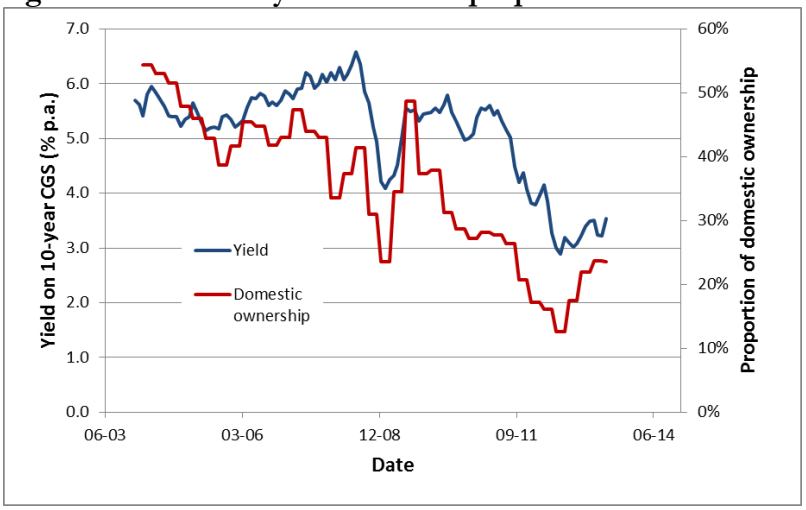
[236] Lally (2012, 2013) does consider different values for certain parameters that are used to convert from the real world to the theoretical worlds, but he assumes that his approach for converting between worlds is perfectly accurate.

The key assumption of the "conceptual goalposts" test

440. One of the most important aspects of the Lally "test" is the assumption that the risk-free rate would not change in a segmented market. In our view, this assumption is untenable. The Reserve Bank reports that more than 80% of all Australian government bonds are currently owned by foreign investors. If that demand were removed from the market entirely, the price of government bonds would surely be lower and the yield would surely be higher.[237] Yet the Lally test is based on the risk-free rate being the same in a perfect segmentation world as in a perfect integration world. Lally (2013a) uses this assumption to rule out all of the empirical evidence on theta in favour of his theoretically reasoned value of 1.

441. Given that at any point in time there is a fixed supply of Commonwealth government bonds, basic supply/demand dynamics indicate that the material reduction in demand caused by the withdrawal of all foreign ownership would result in a reduction in the price of government bonds and a consequential increase in yields. The relationship between foreign ownership and government bond yields is illustrated in Figure 10 and Figure 11 below.

Figure 10
Australian government bond yields and the proportion of domestic ownership



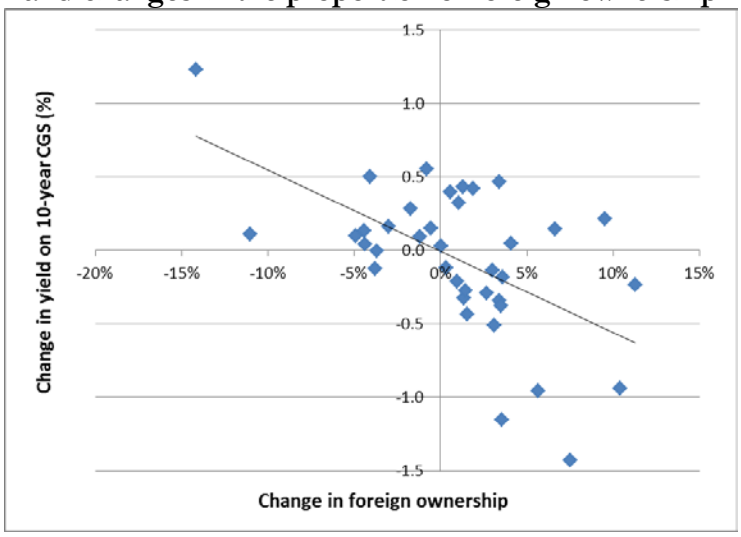
Source: RBA Statistical Tables E3 and F2.

442. Figure 10 shows that, over the last ten years, movements in government bond yields have closely mirrored movements in the proportion of domestic ownership. When the proportion of foreign investment increases (causing a reduction in domestic ownership) yields tend to fall. Conversely, when foreign investment falls, yields tend to rise. This is consistent with increases in foreign investment bidding up the price of government bonds and lowering yields.

443. Figure 11 shows the relationship between changes in government bond yields and changes in the proportion of foreign ownership over the last ten years. Increases in foreign investment are associated with decreases in government bond yields and the relationship is statistically and economically significant.[238]

[237] Given that the foreign ownership of Australian government bonds is greater than Australian ownership of foreign government bonds.
[238] *T*-statistic is -3.97, *p*-value is less than 1%, *R*-squared value is 33%.

Figure 11
The relationship between changes in Australian government bond yields and changes in the proportion of foreign ownership



Source: RBA Statistical Tables E3 and F2

444. Of course CGS yields vary for many reasons in addition to changes in the demand from foreign investors and correlation does not imply causation. However, the data from the last ten years is consistent with the basic economic principle that (other things being equal) a reduction in demand leads to a reduction in price. By contrast, the notion that the government bond yield would be unchanged if all foreign investment were withdrawn is inconsistent with basic economic principles and with the empirical data.

445. Lally (2013a) explains that his "test" is based on the assumption that government bond yields would remain the same even if all foreign investment were withdrawn on the basis that:

> CAPMs treat the risk free rate as exogenously determined, and therefore the same empirically observed rate applies to both the Officer and Solnik models.[239]

446. This simply means that the CAPM is silent on how the risk-free rate is determined. The risk-free rate is determined by the demand/supply dynamics of government bonds. The CAPM then takes the resulting risk-free rate as an exogenously determined input. However, this does not imply that the same risk-free rate should be used independent of the demand for government bonds. In a setting where there is high demand, the exogenously determined risk-free rate would be low and a low figure would be employed in the CAPM. In a setting where there is low demand, the exogenously determined risk-free rate would be high and a high figure would be employed in the CAPM. Logically, it does not follow that because the risk-free rate is exogenously determined the same value should be used in materially different settings.

447. By analogy, suppose we have a model for estimating the winning time in a marathon race. The weather conditions would be an obvious exogenous input variable – analogous to the risk-free rate in the CAPM.[240] But this does not imply that we should assume the same weather conditions for the Boston and Brisbane marathons. That is, "exogenous" means "determined by factors outside the model" – it does not mean "equal in all circumstances."

[239] Lally (2013a) Footnote 20, p. 40.
[240] Like the risk-free rate, weather conditions are relevant and they are exogenous in the sense that they are independently determined. For example, the number or quality of runners in the race does not affect what sort of weather might eventuate.

448. Moreover, if the perfect segmentation risk-free rate is increased by just 1% above the perfect integration risk-free rate, the empirical estimates based on market data pass the Lally test. In particular, Lally (2013a) concludes that the plausible range for the cost of equity is 6.8% to 7.7%.[241] The upper bound is based on calculations for the "complete segmentation" world. If the risk-free rate for the complete segmentation world was set to 1% above the risk-free rate for the complete integration world, the upper bound would be 8.7%.[242] In this case, the estimate of the cost of equity, based on theta being set to 0.35, would be squarely within the "conceptual goalposts" at 8.4%.

449. That is, even setting aside all of the problems with such a test, none of the market-based empirical estimates are ruled out unless one assumes that government bond yields would be identical whether or not foreign investors are admitted.

The results of the "conceptual goalposts" test

450. As set out above, there are two key features of the "conceptual goalposts" test that are difficult to accept:

a) It requires accurate estimates of what the required return on equity would be if Australia was a perfectly segmented market and what it would be if Australia was part of a perfectly integrated world market; and

b) It requires that the government bond yield would remain unchanged whether or not foreign investors (who currently own 80% of those bonds) are excluded from the market.

451. In our view, these features render the conceptual goalposts test useless and it should be given no weight whatsoever. If, however, one accepts these features, the next step would be to consider the result of the test. The result is that the proposed estimate of theta in the Guideline fails the test.[243] Indeed every estimate of theta generally fails the test – other than Lally's theoretically reasoned estimate of 1.

452. Moreover, the Guideline's 0.7 estimate of theta fails the conceptual goalposts test. According to Lally (2013), every estimate of theta fails the test other than his own theoretically reasoned estimate of 1. The Guideline materials cite Lally (2013, pp. 46-47) as supporting the conclusion that estimates "in the range 0.8 to 1.0 meet this test."[244] However, Lally (2013) makes no such conclusion. He never even considers an estimate of 0.8. Rather, his conclusion is that estimates "that are significantly less than 1 fail this test in virtually every case examined, and are therefore deficient"[245] and that "the only sensible estimate…is at or close to 1."[246]

453. The Guideline materials conclude that the conceptual goalposts test supports the proposed estimate of theta (0.7) on the basis that this estimate fails the test less severely than some standard empirical estimates. In our view, there are three difficulties with this conclusion:

a) The fact that the Guideline estimate fails the test would generally mean that the test does *not* support the Guideline estimate; and

[241] Lally (2013a), p. 43.
[242] Lally (2013a), p. 43.
[243] Specifically, Lally (2013a), p. 45 concludes that the QCA theta estimate of 0.625 fails the test.
[244] AER Rate of Return Guideline, Explanatory Statement, Footnote 533, p. 160.
[245] Lally (2013), pp. 46-47.
[246] Lally (2013), pp. 46-47.

b) Using the conceptual goalposts test to rule out the standard empirical estimates requires one to believe that:

   i) It is not possible to reliably estimate the extent to which investors value imputation credits in the real world; but

   ii) It is possible to reliably estimate (to three decimal places) the total return on equity that investors would require from the benchmark firm in a world where Australia was perfectly segmented from global capital markets, and in a world where Australia was perfectly integrated into global capital markets; and

c) The test requires that the government bond yield would remain unchanged whether or not foreign investors (who currently own 80% of those bonds) are excluded from the market.

Summary and recommendation on the conceptual goalposts test

454. In our view, the AER should not use the "conceptual goalposts" test as the basis for setting aside all of the empirical evidence based on market data in favour of a theoretically assumed theta. That test requires estimates of point estimates of what CAPM parameters would be in theoretical perfect segmentation and perfect integration worlds, it ignores estimation error, and it invokes the assumption that government bond yields would be the same in these two worlds. Such a test is not fit for any purpose, let alone the purpose of effectively excluding all available empirical evidence in favour of a theoretically assumed value. Moreover, the Guideline estimate of theta fails that test in any event.

Appendix 9: Additional dividend drop-off stability analysis

Stability and the effect of influential observations

455. The Guideline materials note that, whereas the SFG estimates have been shown to be stable and robust to the removal of influential observations, Vo et al (2013) report that:

> the estimate of theta is highly sensitive to the choice of the underlying sample of dividend events. Removing just 30 observations from a sample of 3309 can result in a dramatically different estimate of theta.[247]

456. Vo et al (2013) claim that the sensitivity of their results to the removal of influential observations is due to multicollinearity,[248] and variously refers to multicollinearity as being "strong," [249] "extreme" [250] and "severe."[251] However, no test for multicollinearity is ever performed.[252] The conclusions about multicollinearity are apparently drawn from informal observations about the correlation between dividends and imputation credits which is a necessary but insufficient condition for the estimates to have been affected by multicollinearity. Moreover, in Model Specification 2, there is only one independent variable, in which case multicollinearity is clearly impossible.

457. That is, any suggestion that there should be some a priori reason to have statistical concerns about the estimates appears to be unfounded.

458. Nevertheless, it is always useful to consider the stability of the estimates and to consider how the estimates might have been affected by influential observations.

459. For example, the SFG (2011) study contained an extensive section on stability analysis[253] whereby observations are removed in pairs consisting of the observations that have the most influential upward and downward effects on the estimate of theta, respectively. As pairs of observations are removed, theta is re-estimated to determine the sensitivity of the theta estimate to influential observations. The result is a figure such as that replicated below for Model Specification 4.[254]

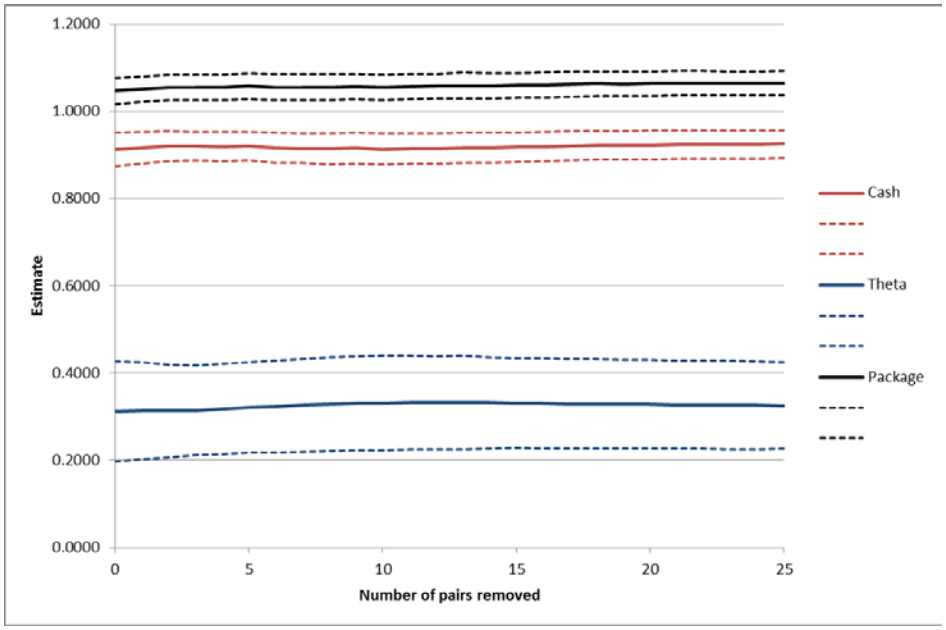
460. SFG (2011) conclude, on the basis of this stability analysis, that:

> The stability analysis for Model 4, in Figure 8 above, shows that the estimates of the value of cash dividends, the value of theta, and the value of the combined package are very stable and robust to the removal of pairs of influential data points…In summary, the stability analyses demonstrate that the estimates of theta are either maintained or lowered when pairs of influential observations are removed from the data set.[255]

461. SFG (2013) conduct a similar stability analysis for the updated data set and reach the same conclusion.

[247] Vo et al (2013), p. 30.
[248] Vo et al (2013), p. 13.
[249] Vo et al (2013), p. 32.
[250] Vo et al (2013), p. 32.
[251] Vo et al (2013), p. 19.
[252] Vo et al (2013), p. 26.
[253] SFG (2011), pp. 28-32.
[254] This appeared as Figure 8, p. 31 in SFG (2011).
[255] SFG (2011), p. 31.

Figure 12. SFG stability analysis



Source: SFG (2011), Figure 8, p. 31.

462. Vo et al (2013) implement a stability analysis known as the DFBETAS approach. This approach differs from the SFG stability analysis in two primary ways:

    a) Influential observations are removed one at a time, rather than in pairs; and

    b) The stability analysis is only applied in relation to the non-standard approach whereby prices are not corrected for market movements over the ex-dividend day.

463. The results based on the ERA's non-standard approach are likely to be more variable and less reliable than standard estimates and this may be manifest in the stability analysis. Also recall that the Guideline materials state that "the most relevant results from the Vo et al study relate to regressions with the market adjustment."[256]

464. Given that:

    a) The stability of theta estimates is clearly a key issue for Vo et al (2013) and for the AER's Guideline; and

    b) The only stability analysis performed by Vo et al (2013) is in relation to the non-standard approach of making no correction for market movements over the ex-dividend day,

    we apply two additional types of stability analysis using the standard Tribunal-approved methodology and the updated SFG (2103) data set.

Additional SFG stability analysis

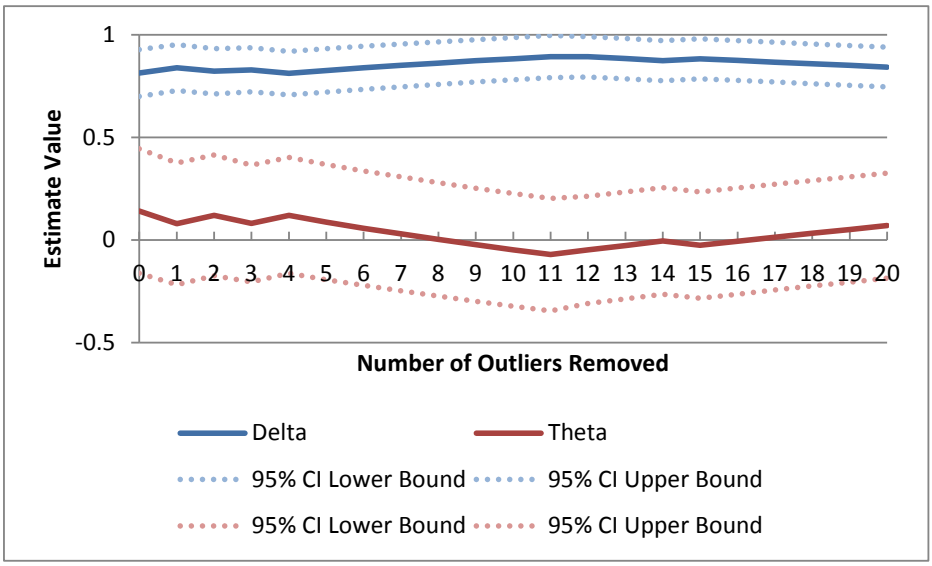
465. First, we apply the one-at-a-time influential observation (DFBETAS) approach that Vo et al (2013) employed, but using the standard ex-day market correction and our updated data set.

[256] AER Rate of Return Guideline, Explanatory Statement, Appendix H, p. 174.

466. In general, we conclude that the estimates of theta are robust to the removal of influential observations – particularly in relation to Model Specification 4, which we consider to produce the most reliable estimates.

467. Figure 13 below shows that the estimates of delta (the market value of cash dividends) and theta from Model 1 (basic model estimated via OLS) are relatively insensitive to the removal of influential observations. Even with the removal of the twenty most influential observations the estimates do not deviate markedly from their original values.

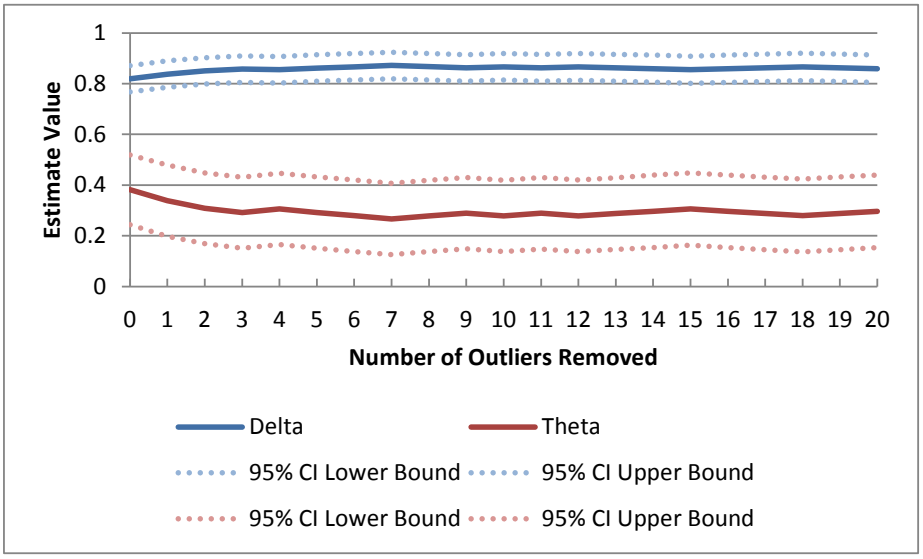
Figure 13. Sensitivity of Model 1 Delta and Theta estimates to the removal of influential observations



Source: SFG Consulting.

468. Next we examine the sensitivity of Model 2 (basic model estimated with GLS with dividend yield as the weighting variable) to the removal of the most influential observations. Again, we remove the most influential observation one at a time. Figure 14 below shows that the estimate of theta does not alter materially, although it does decline slightly.

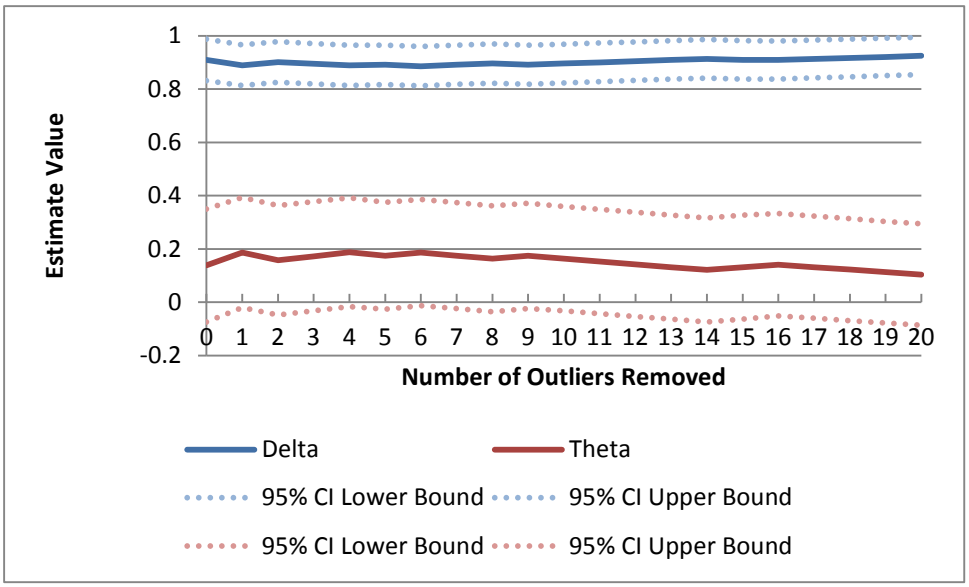
Figure 14. Sensitivity of Model 2 Delta and Theta estimates to the removal of influential observations



Source: SFG Consulting.

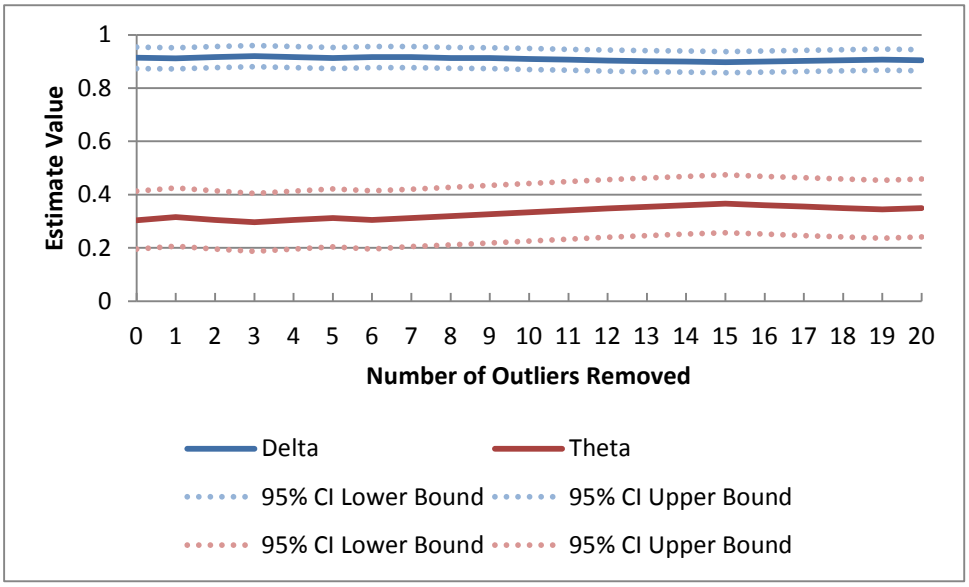
469. Next we examine the sensitivity of Model 3 (the basic model estimated with GLS with inverse stock return volatility used as the weighting variable) estimates to the removal of influential observations using the same procedure as before. Figure 15 shows, consistent with the findings for the other models, that the estimates of theta remain relatively stable.

Figure 15. Sensitivity of Model 3 Delta and Theta estimates to the removal of influential observations



470. Finally, we examine the sensitivity of Model 4 (the basic model estimated with GLS with dividend yield and inverse stock return volatility used as the weighting variables) to the removal of the influential observations. Again, we find that the estimates are not materially affected by the removal of the influential observations, as illustrated in Figure 16.

Figure 16. Sensitivity of Model 4 Delta and Theta estimates to the removal of influential observations



471. One important result that comes from the sensitivity analysis is that none of the theta estimates (for any model specification or for any number of outliers removed) reaches the 0.45 mid-point of the Vo et al range of 0.35-0.55. Overall, the estimates are stable and do not deviate markedly from the estimates prior to the removal of any influential observations. In our view, these results confirm our earlier conclusion that 0.35 represents the best available dividend drop-off estimate of theta.

Bootstrap removal of 5% of data set

472. To further test the stability of the SFG (2013) theta estimates, we conduct a randomised bootstrapping analysis. To do this, we randomly eliminate five per cent of the sample and re-estimate each of the models using the remaining data. We then repeat this procedure (on the original full sample) another 999 times, yielding 1,000 estimates of theta – each computed after a different 5% of the sample has been removed. This analysis is designed to show how sensitive the estimate of theta might be to removal of 5% of the sample observations.

473. The results from this procedure also lead us to conclude that the SFG estimates of theta are stable and robust to the removal of even 5% of the sample observations. In all cases, the 90% confidence interval is relatively narrow and close to, or below, the SFG point estimate of 0.35. Again, this is particularly the case for model specification 4, which we consider to be the most reliable.

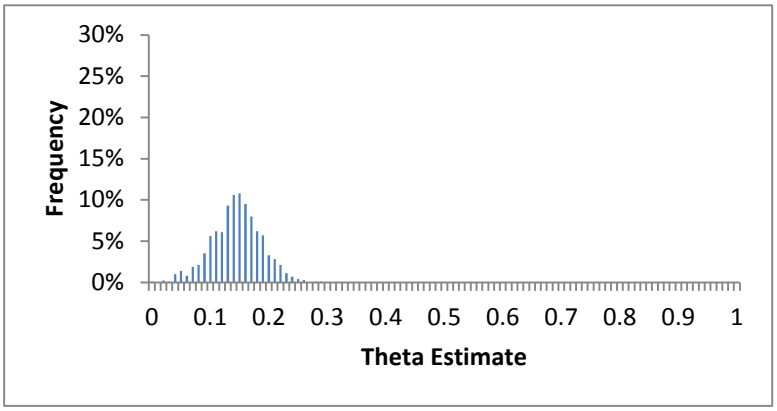
474. The results of this bootstrap test for Model 1 (basic model estimated via OLS) are set out in Table 3 below. The average theta estimate of 0.14 is consistent with the estimate when model specification 1 is applied to the full sample. The 90% confidence interval is from 0.7 to 0.21.

Table 3. Bootstrap re-sampling summary statistics for Model 1

Statistic	Theta Estimate
Average	0.140
Minimum	-0.018
Maximum	0.288
5th Percentile	0.067
95th Percentile	0.208

Source: SFG calculations

Figure 17. Histogram of theta estimates from simulation of Model 1



Source: SFG calculations

475. Figure 17 above shows that even under the relative extreme procedure of removing 5% of the sample there tends to be relatively little deviation from the mean theta estimate of 0.14.

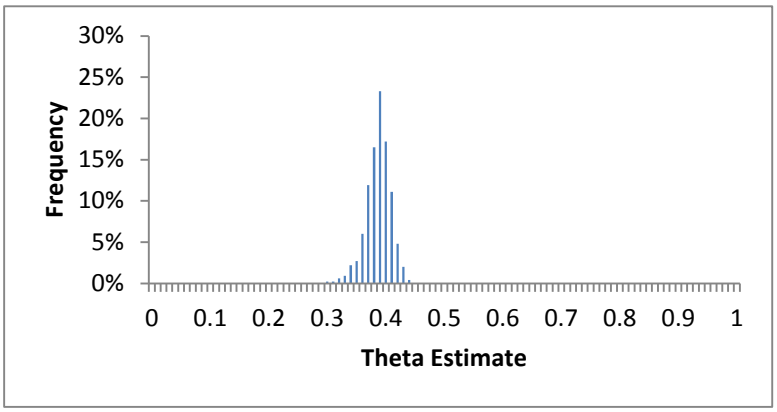
476. The results from running the bootstrap analysis for Model 2 (basic model estimated with GLS with dividend yield as the weighting variable) are set out in Table 4 below. The mean estimate is 0.38 within a narrow 90% confidence interval of 0.35 to 0.41.

Table 4. Bootstrap re-sampling summary statistics for Model 2

Statistic	Theta Estimate
Average	0.382
Minimum	0.293
Maximum	0.440
5th Percentile	0.346
95th Percentile	0.413

Source: SFG calculations

Figure 18. Histogram of theta estimates from simulation of Model 2



Source: SFG calculations

477. Figure 18 above shows the narrow distribution of theta estimates for Model Specification 2.

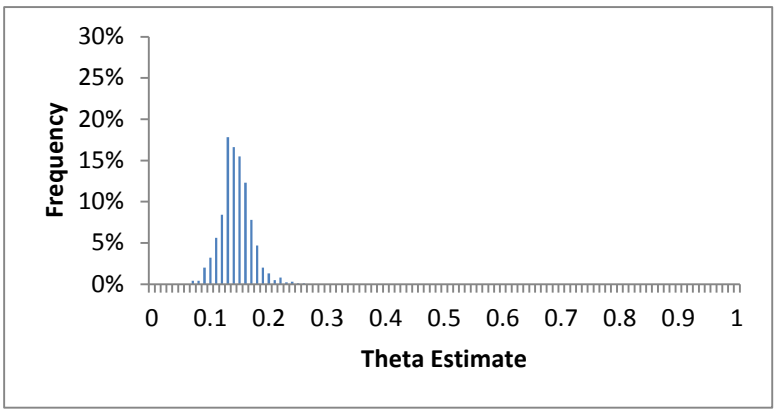
478. The results of the bootstrap re-sampling procedure for Model 3 (the basic model estimated with GLS with inverse stock return volatility used as the weighting variable) are set out in Table 5 below. The mean estimate of 0.14 is from a 90% confidence interval of 0.10 to 0.18.

Table 5. Bootstrap re-sampling summary statistics for Model 3

Statistic	Theta Estimate
Average	0.139
Minimum	0.062
Maximum	0.252
5th Percentile	0.097
95th Percentile	0.181

Source: SFG calculations

Figure 19. Histogram of theta estimates from simulation of Model 3



Source: SFG calculations

479. Figure 19 above shows that the range of estimates is similar to that for Model Specification 1, which is similar in its specification to Model 3.

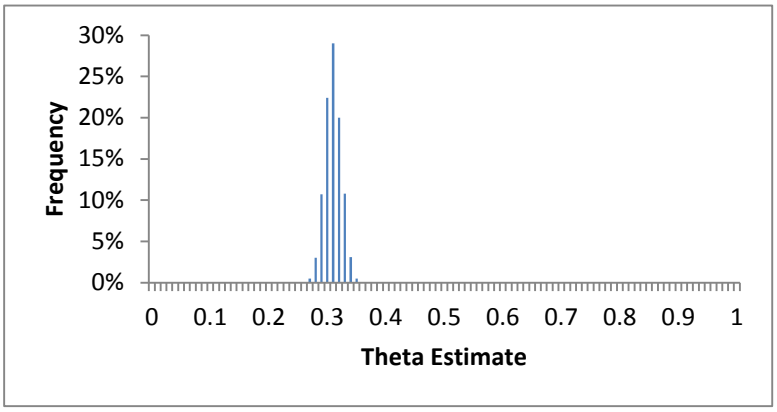
480. The results of the bootstrap re-sampling procedure for Model 4 (the basic model estimated with GLS with dividend yield and inverse stock return volatility used as the weighting variables) are set out in Table 6 below. The mean estimate of 0.31 is from a 90% confidence interval of 0.28 to 0.33.

Table 6. Bootstrap re-sampling summary statistics for Model 4

Statistic	Theta Estimate
Average	0.305
Minimum	0.262
Maximum	0.344
5th Percentile	0.282
95th Percentile	0.328

Source: SFG calculations

Figure 20. Histogram of theta estimates from simulation of Model 4



Source: SFG calculations

481. Figure 20 above shows a tightly clustered group of theta estimates centred on 0.30. The simulations provide evidence that the theta estimate from Model Specification 4 is insensitive to the removal of even 5% of the data sample.

482. As with the results obtained from the one-at-a-time removal of the most influential observations, the estimates from the resampling procedure are very stable and do not deviate materially from the estimates from the full sample. Again, as with the one-at-a-time removal, *none* of the models has an estimate value for *any* of the 1,000 simulations that is above the 0.45 mid-point of the Vo et al range of 0.35-0.55.

Conclusions in relation to SFG stability analysis

483. The additional stability analyses corroborate the results from SFG (2011) and SFG (2013) – the SFG estimates of theta are stable and robust to the removal of influential outliers and even to the removal of up to 5% of the data sample.

AUSTRALIAN COMPETITION TRIBUNAL

Applications by Public Interest Advocacy Centre Ltd and Ausgrid

[2016] ACompT 1

Citation:	Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1
Review from:	Australian Energy Regulator
Applicant:	**PUBLIC INTEREST ADVOCACY CENTRE LTD** **AUSGRID**
File number:	ACT 1 of 2015 ACT 4 of 2015
Tribunal:	**MANSFIELD J, PRESIDENT** **MR R DAVEY, MEMBER** **DR D ABRAHAM, MEMBER**
Interveners in ACT 1 of 2015 ACT 4 of 2015:	AusNet Services (Distribution) Pty Ltd AusNet Services (Transmission) Ltd Australian Gas Networks Ltd Citipower Pty Ltd Powercor Australia Ltd SA Power Networks United Energy Distribution Pty Ltd Ergon Energy Corporation Ltd Minister for Resources, Energy and Northern Australia
Interveners in ACT 1 of 2015:	Ausgrid
Interveners in ACT 4 of 2015:	Public Interest Advocacy Centre Ltd
Date of Determination:	26 February 2016
Catchwords:	**ENERGY AND RESOURCES** – applications under s 71B of the National Electricity Law (NEL) for review of a distribution determination by the AER – consideration of the legislative background to the NEL and the National Electricity Rules (NER) – amendments to the NER made in 2012 by the Australian Energy Market Commission (AEMC) – amendments to the NEL made in 2013 – role of the AER - national electricity objective (NEO) - consultation and notification obligations under s 16(1)(b) –

interrelationship of constituent components and preferable reviewable regulatory decision by the AER under s 16(1)(c), and (d) – role of the Tribunal on review - interrelationship of constituent components and materially preferable NEO decision under s 71P(2a), and (2b) – conduct of consultation process under s 71R(1) – topics for review – operating expenditure (opex) – X-factor – efficiency benefit sharing scheme (EBSS) – return on equity – return on debt – gamma – metering services

ENERGY AND RESOURCES – operating expenditure (opex) – use of econometric benchmarking – comparability of RIN data – comparability of overseas data – adjustments the AER made to the outcomes of the econometric benchmarking – operating environment factors - lowering of the efficiency target comparison points – efficiency of vegetation management costs – efficiency of labour costs – transition path

ENERGY AND RESOURCES – efficiency benefit sharing scheme (EBSS) – whether the AER was correct in adjusting the provisions expense reported - exclusion of allowances for efficiency gains as a result of movements in provisioning – whether there was retrospective exclusion of particular cost categories

ENERGY AND RESOURCES – return on equity – achievement of the rate of return objective - efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to a service provider - requirement that regard be had to relevant estimation methods, financial models, market data and other evidence - foundation model approach - adjustment of parameters to reflect other models

ENERGY AND RESOURCES – return on debt - transition between methods of deciding the return on debt– transition to trailing average approach - efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to a service provider - features of a benchmark efficient entity – whether the NER provide for more than one benchmark efficient entity – actual historical debt financing practices of network service providers – features of the individual regulated service provider

ENERGY AND RESOURCES – gamma – significance of the substitution of “the value of imputation credits” for “the assumed utilisation of imputation credits” in the definition of gamma – interpretation of “the value of

imputation credits"– interpretation consistent with the NER – relevance of "market value" - proper use of equity ownership data, tax statistics and market studies - calculation of distribution rate

ENERGY AND RESOURCES – metering services - use of multi-year averaging to calculate metering opex

Legislation:

National Electricity Law

National Gas Law

National Electricity Rules

National Gas Rules

Energy Services Corporations Act 1995 (NSW)

National Electricity (South Australia) Act 1996 (SA)

National Electricity (South Australia) (New National Electricity Law) Amendment Act 2005 (SA)

Australian Energy Market Commission Establishment Act 2004 (Cth)

Trade Practices Act 1974 (Cth)

Competition and Consumer Act 2010 (Cth

National Electricity (South Australia) National Electricity Law (Miscellaneous Amendments) Amendment Act 2007 (SA)

National Electricity (South Australia) (National Electricity Law – Australian Energy Market Operator) Amendment Act 2009 (SA)

Statutes Amendment (National Electricity and Gas Laws – Limited Merits Review) Act 2013 (SA)

National Electricity (South Australia) National Electricity Law (Miscellaneous Amendments) Act 2007 (SA)

Fair Work Act 2009 (Cth)

Cases cited:

Applications by Public Interest Advocacy Centre Ltd, Ausgrid, Endeavour Energy and Essential Energy [2015] ACompT 2

Application by ActewAGL Distribution [2015] ACompT 3

Application by Jemena Gas Networks (NSW) Limited [2015] ACompT 4

Application by ElectraNet Pty Limited (No 3) [2008] ACompT 3

Application by Envestra Limited (No 2) [2012] ACompT 3

East Australian Pipeline Pty Ltd v Australian Competition and Consumer Commission (2007) 233 CLR 229

Tillmans Butcheries Pty Ltd v Australian Meat Industry Employees Union (1979) 27 ALR 367

Monroe Topple & Associates Pty Ltd v Institute of Chartered Accountants (2002) 122 FCR 110

Seven Network Limited v News Limited (2009) 182 FCR 160

Australian Gas Light Co v ACCC (2003) 137 FCR 317

Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14

Application by EnergyAustralia [2009] ACompT 8

Application by WA Gas Networks (No 3) [2012] ACompT 12

Commissioner of Stamps (SA) v Telegraph Investment Co Pty Ltd (1995) 184 CLR 453

Applications by Public Interest Advocacy Centre Ltd and Endeavour Energy [2016] ACompT 2

Applications by Public Interest Advocacy Centre Ltd and Essential Energy [2016] ACompT 3

Application by ActewAGL Distribution [2016] ACompT 4

Application by Jemena Gas Networks (NSW) Ltd [2016] ACompT 5

Toyota Motor Corporation Australia Limited v Marmara [2014] 222 FCR 152

Teys Australia Beenleigh Pty Ltd v Australasian Meat Industry Employees Union [2015] 317 ALR 636

Re East Australian Pipeline Limited [2004] ACompT 8

Wellington International Airport Limited & Ors v Commerce Commission [2013] NZHC 3289

Paciocco v Australia and New Zealand Banking Group Limited [2015] FCAFC 50

SPI Electricity Pty Ltd v Australian Competition Tribunal (2012) 208 FCR 151

Rathbone v Abel (1964) 38 ALJR 293

R v Hunt; Ex parte Sean Investment Pty Ltd (1979) 180 CLR 322

Turner v Minister for Immigration and Ethnic Affairs (1981) 35 ALR 388\

Australian Broadcasting Tribunal; Ex p 2HD Pty Ltd (1979) 144 CLR 45 AER

Application by Jemena Gas Networks (NSW) Ltd (No 3) [2011] ACompT 6 *Application by AAPT Allgas Energy Ltd (No 2)* [2012] ACompT 5

Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9

Dates of hearing:	21-25 September 2015; 28-30 September 2015 1-2 October 2015; 6-9 October 2015
Place:	Darwin (via video link to Sydney, Melbourne, Brisbane and Adelaide)
Number of paragraphs:	1230
Counsel for the Public Interest Advocacy Centre Ltd:	S Horgan QC with T Clarke
Solicitor for the Public Interest Advocacy Centre Ltd:	Public Interest Advocacy Centre Ltd
Counsel for Endeavour Energy:	C Moore SC with K Morgan, A Hochroth and C Dermody
Solicitor for Endeavour Energy:	Herbert Smith Freehills
Counsel for the Australian Energy Regulator:	S Lloyd SC and M O'Bryan QC with S Balafoutis, A Mitchelmore, J Arnott, T Phillips, D Tucker and F St John
Solicitor for the Australian Energy Regulator:	Corrs Chambers Westgarth
Counsel for the Commonwealth Minister for Resources, Energy and Northern Australia:	T Howe QC and B Lim
Solicitor for the Commonwealth Minister for Resources, Energy and Northern Australia:	Australian Government Solicitor
Counsel for AusNet Services (Distribution) Pty Ltd, AusNet Services (Transmission) Ltd, Australian Gas Networks Ltd, Citipower Pty Ltd, Powercor Australia Ltd, SA Power Networks and United Energy Distribution Pty Ltd:	P Brereton SC with R Higgins
Solicitor for AusNet Services	Jones Day

(Distribution) Pty Ltd, AusNet Services (Transmission) Ltd, Australian Gas Networks Ltd, Citipower Pty Ltd, Powercor Australia Ltd, SA Power Networks and United Energy Distribution Pty Ltd:

Counsel for Ergon Energy Corporation Ltd	T Bradley QC with A Coulthard and E Hoiberg
Solicitor for Ergon Energy Corporation Ltd	Minter Ellison

IN THE AUSTRALIAN COMPETITION TRIBUNAL

ACT 4 of 2015

RE:	**APPLICATIONS UNDER S 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO AUSGRID PURSUANT TO RULE 6.11.1 OF THE NATIONAL ELECTRICITY RULES**
BY:	**AUSGRID**
TRIBUNAL:	**MANSFIELD J, PRESIDENT** **MR R DAVEY, MEMBER** **DR D ABRAHAM, MEMBER**
DATE OF DETERMINATION:	**26 FEBRUARY 2016**
WHERE MADE:	**DARWIN (VIA VIDEO LINK TO SYDNEY, MELBOURNE, BRISBANE AND ADELAIDE)**

THE TRIBUNAL DETERMINES THAT:

1. Pursuant to s 71P(2)(c) of the *National Electricity Law*, the *Final Decision Ausgrid distribution determination 2015-16 to 2018-19*, April 2015, including attachments, (the Final Decision) is set aside and remitted to the Australian Energy Regulator (AER) to make the decision again in accordance with the following directions:

   (a) the AER is to make the constituent decision on opex under r 6.12.1(4) of the *National Electricity Rules* in accordance with these reasons for decision including assessing whether the forecast opex proposed by the applicant reasonably reflects each of the operating expenditure criteria in r 6.5.6(c) of the *National Electricity Rules* including using a broader range of modelling, and benchmarking against Australian businesses, and including a "bottom up" review of Ausgrid's forecast operating expenditure;

   (b) the AER is to make the constituent decision on return on debt in relation to the introduction of the trailing average approach in accordance with these reasons for decision;

(c) the AER is to make the constituent decision on estimated cost of corporate income tax (gamma) in accordance with these reasons for decision, including by reference to an estimated cost of corporate income tax based on a gamma of 0.25; and

(d) the AER is to consider, and to the extent to which it considers appropriate to vary the Final Decision in such other respects as the Australian Energy Regulator considers appropriate having regard to s 16(1)(d) of the *National Electricity Law* in the light of such variations as are made to the Final Decision by reason of (a)-(c) hereof.

IN THE AUSTRALIAN COMPETITION TRIBUNAL

ACT 1 of 2015

RE:	**APPLICATIONS UNDER S 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO PUBLIC INTEREST ADVOCACY CENTRE LTD PURSUANT TO RULE 6.11.1 OF THE NATIONAL ELECTRICITY RULES**
BY:	**PUBLIC INTEREST ADVOCACY CENTRE LTD**

ACT 4 OF 2015

RE:	**APPLICATION UNDER S 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO AUSGRID PURSUANT TO RULE 6.11.1 OF THE NATIONAL ELECTRICITY RULES**
BY:	**AUSGRID**

TRIBUNAL:	**MANSFIELD J, PRESIDENT** **MR R DAVEY, MEMBER** **DR D ABRAHAM, MEMBER**
DATE:	**26 FEBRUARY 2016**
PLACE	**DARWIN (VIA VIDEO LINK TO SYDNEY, MELBOURNE, BRISBANE AND ADELAIDE)**

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INTRODUCTION

1 These reasons relate to two of seven applications made to review decisions of the Australian Energy Regulator (AER) made on 30 April 2015 under the *National Electricity Law* (NEL). The issues relating to those decisions, and to a further decision of the AER made on 3 June 2015 under the *National Gas Law* (NGL) have been heard together.

2 That is because a number of the issues arising in relation to these two applications are common to issues in relation to the six other review applications referred to below, although there are a few issues particular to one or more of the applications, and in some respects the matters raised on certain issues differed slightly. It was common ground that the substantial commonality of issues raised in the eight applications made it preferable for them to be heard together.

3 These reasons deal only with the applications to review the AER decision concerning Ausgrid. They will serve as the "lead" reasons insofar as the Tribunal's general considerations, on the significant matters of common concern, and its consideration of aspects of particular topics may not need to be repeated in full by the Tribunal in its consideration of the other applications.

4 All the applications were made in respect of a regulatory decision-making process by the AER and a regulatory review process by the Tribunal which were each significantly different from the regulatory decision-making process and the review process previously existing. The parties understandably spent considerable time addressing those differences and their significance. These reasons contain the Tribunal's consideration of those submissions. Where appropriate that consideration will be incorporated by reference into its determinations in relation to the other applications, rather than be repeated.

The Distribution Determinations

5 On 30 April 2015, the AER published a distribution determination final decision under r 6.11.1 of Chapter 6 of the *National Electricity Rules* (NER) in relation to each of Ausgrid, Endeavour Energy (Endeavour) and Essential Energy (Essential). Each of the final decisions include an overview and attachments, the overviews being entitled: *Final Decision Ausgrid distribution determination 2015-16 to 2018-19, Overview*, April 2015; *Final Decision Endeavour Energy distribution determination 2015-16 to 2018-19*, Overview, April 2015; and *Final Decision Essential Energy distribution determination 2015-16 to 2018-19, Overview*, April 2015. Ausgrid, Endeavour and Essential are State owned corporations incorporated under the *Energy Services Corporations Act 1995* (NSW) and are referred to collectively as Networks NSW. Each is the owner and operator of a monopoly electricity distribution network in New South Wales.

6 On the same day, the AER published a distribution determination final decision including an overview and attachments under the same provision in relation to ActewAGL Distribution (ActewAGL): *Final Decision ActewAGL distribution determination 2015-16 to 2018-19 Overview*, April 2015. ActewAGL is the owner of the electricity distribution network in the Australian Capital Territory.

7 The AER determined as follows:

(1) Ausgrid can recover $6576.4m ($ nominal) from its customers over the 2015-2019 regulatory control period.

(2) Endeavour can recover $3182.8m ($ nominal) from its customers over the 2015-2019 regulatory control period.

(3) Essential can recover $3826.1m ($ nominal) from its customers over the 2015-2019 regulatory control period.

(4) ActewAGL can recover $590.9m ($ nominal) from its customers over the 2015-2019 regulatory control period.

Each of those entities may be referred to as a Distribution Network Service Provider (DNSP).

8 Distribution charges represent a significant component of the annual bill for customers of the DNSPs and so for consumers of electricity in their respective distribution areas. The AER estimated that its decisions would (noting that it was providing estimates only and that there

are other factors that will affect a consumer's electricity bill, such as the wholesale price of electricity) have the following estimated impact:

( ) Ausgrid: For residential customers, a reduction in their average annual electricity bills by $165 (or 8 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period. For small business customers, a reduction in their average annual electricity bills by $264 (or 8 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period.

(a) Endeavour: For residential customers, a reduction in their average annual electricity bills by $106 (or 5.3 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period. For small business customers, a reduction in their average annual electricity bills by $152 (5.3 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period.

(b) Essential: For residential customers, a reduction in their average annual electricity bills by $313 (or 11.9 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period. For small business customers, a reduction in their average annual electricity bills by $528 (or 11.9 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period.

(c) ActewAGL: For residential customers, a reduction in their average annual electricity bills by $112 (or 5.8 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period. For small business customers, a reduction in their average annual electricity bills by $168 (or 5.8 percent) in 2015-16 and remaining relatively stable over the rest of the regulatory control period.

The Access Arrangement Decision

9 On 3 June 2015, the AER published a full access arrangement final decision in relation to Jemena Gas Networks (NSW) Ltd (JGN), pursuant to rr 62 and 64 of the *National Gas Rules* (NGR): *Final Decision – Jemena Gas Networks (NSW) Ltd Access Arrangement 2015-20 Overview,* June 2015, which, like the final distribution decisions mentioned above, includes a number of attachments.

10 By that decision, the AER determined that JGN could recover $2,229.0m ($ nominal) from its customers over five years commencing 1 July 2015.

11 As with the DNSPs, the revenue that the AER determined affects the distribution component of a consumer's final gas bill. For residential and small business customers, the AER estimated that:

(a) average annual gas bills would fall by around 9.2 percent in 2015-16, translating into a $96 reduction in bills for residential customers and a $462 reduction for small business customers;

(b) bills will continue to fall over the following three years; and

(c) there would be a small increase of 1 percent in 2019-20.

The Review Applications

12 Each of the distribution determinations that the AER made on 30 April 2015 is a "reviewable regulatory decision" within the meaning of subcl (a) of the definition of that term in s 71A of the NEL. The AER's access arrangement decision in relation to JGN is also a "reviewable regulatory decision" within the meaning of subcl (d) of the definition in s 244 of the NGL. It is convenient to refer to each of those five decisions as a Final Decision.

13 The term "Final Decision" is used to distinguish between the separate decision-making stages specified in the Rules. Under the NEL and NER a network service provider is required to submit to the AER a regulatory proposal that the AER must consider. The AER must then publish a draft decision, allowing the network service provider the opportunity to submit a revised regulatory proposal that the AER must consider. The AER must then publish a draft decision, allowing the network service provider the opportunity to submit a revised regulatory proposal prior to a Final Decision being made. A like process must be followed under the NGL and NGR by a service provider submitting, and the AER considering, an access arrangement revision proposal prior to a Final Decision being made. In respect of each of Networks NSW, ActewAGL and JGN, it is convenient to refer to each of those proposals and draft decisions as a "Regulatory Proposal", "Draft Decision" or "Revised Regulatory Proposal" respectively.

14 By applications made on 21 May 2015 pursuant to s 71B of NEL, ActewAGL and Networks NSW applied to the Tribunal for leave to review the AER's respective Final Decisions concerning them. The Public Interest Advocacy Centre Ltd (PIAC) also applied for leave to review each of the AER's three Final Decisions relating to Networks NSW. On 24 June 2015, JGN filed an application for leave to review the AER's Final Decision concerning it.

15 It is convenient hereafter to refer collectively to Networks NSW, ActewAGL and JGN as the Network Applicants from time to time.

16 On 17 July 2015, the Tribunal granted leave in respect of each of the applications relating to the four Final Decisions made on 30 April 2015: *Applications by Public Interest Advocacy Centre Ltd, Ausgrid, Endeavour Energy and Essential Energy* [2015] ACompT 2 and *Application by ActewAGL Distribution* [2015] ACompT 3. On 4 August 2015, the Tribunal granted leave in relation to the Final Decision relating to JGN: *Application by Jemena Gas Networks (NSW) Limited* [2015] ACompT 4.

17 In addition to their applications for review, PIAC and Networks NSW sought and were each granted leave to intervene in the other respective review applications concerning the AER's Final Decisions relating to Networks NSW. There were other interveners granted leave to appear before the Tribunal in the review applications generally, clearly in the case of other DNSPs because regulatory review determinations were in the process of being made by the AER. A list of the interveners is:

- PIAC (in relation to the Networks NSW applications);
- Networks NSW (in relation to the PIAC applications);
- AusNet Services (Distribution) Pty Ltd, AusNet Services (Transmission) Ltd, Australian Gas Networks Ltd, Citipower Pty Ltd, Powercor Australia Ltd, SA Power Networks and United Energy Distribution Pty Ltd (Vic/SA Network Interveners);
- Ergon Energy Corporation Ltd (Ergon); and
- the Commonwealth Minister for Industry and Science. On 21 September 2015, the title of the Commonwealth Minister with responsibility for energy matters changed from the Minister for Industry and Science to the Minister for Resources, Energy and Northern Australia. For consistency, hereafter he is referred to as the Minister.

The Minister's intervention was confined to making submissions on the proper construction and application of the relevant provisions of the NEL, the NER, the NGL and the NGR. Although the Ministers of participating jurisdictions are entitled to intervene, and were notified by the Tribunal of the several applications for review of the Final Decisions (once leave to apply for review had been given), none of the relevant Ministers did intervene.

The Legislative Background

18 The national electricity market was established following the enactment of the *National Electricity (South Australia) Act 1996* (SA), in broad terms providing for the competitive trading and regulation of the generation, transmission, distribution and supply of electricity (then) in south-eastern Australia. The national electricity market was to be a competitive wholesale market comprising a comprehensive set of trading arrangements. The initial version of the NEL was a schedule to that Act.

19 It is clear enough, from that legislation, its context, and the events preceding it, that it was a consequence of the competition policy reforms and the pro-competitive policy mindset following the Hilmer reforms in the early 1990s. It was designed, wherever possible, to introduce competition into the provision of electricity to consumers through structural reform, by ensuring that government enterprises competed in an appropriate form, and in the case of monopoly infrastructure to provide for regulated access to monopoly infrastructure with independent authorities to oversee prices. That Act was amended by the *National Electricity (South Australia) (New National Electricity Law) Amendment Act 2005* (SA), substituting the current version (since amended) of the NEL, and providing for the conferral of functions and powers in respect of the national electricity governance on the Australian Energy Market Commission (AEMC) (established under the *Australian Energy Market Commission Establishment Act 2004* (Cth)) and upon the AER (established under the *Trade Practices Act 1974* (Cth) (now the *Competition and Consumer Act 2010* (Cth)). It was at the time contemplated, and it has now been effected, that the AER would operate as the economic regulator of both electricity and gas transmission and distribution networks for all jurisdictions other than Western Australia. The previous State based regulatory structure was removed.

20 The *National Electricity (South Australia) National Electricity Law (Miscellaneous Amendments) Amendment Act 2007* (SA) really introduced the present structure under which, subject to amendments to the NER and to the NGR by the AEMC in 2012 and to legislative amendments to the NEL and the NGL in 2013, the AER and the Tribunal are conducting their present functions.

21 The Act referred to in the preceding paragraph set out to establish a single national regulatory framework for electricity networks, and introduced important changes to the AER's powers, including the prescription of the national electricity objective (the NEO), and the revenue and

pricing principles (RPP), to guide the AER in making regulatory decisions, and in other respects. It also introduced new merits review provisions under which the Tribunal (also a creation of the then *Trade Practices Act 1974*) was given the responsibility of reviewing certain decisions of the AER.

22 It was said in the Second Reading Speech by the Minister for Mineral Resources and Development (South Australia) that the proposed Act would lower the barriers to competition: Legislative Council, South Australia, 16 October 2007 Hansard p 883. It was specifically noted (Hansard p 886) that the NEO did not extend to "broader social and environmental objectives". The Minister's Second Reading Speech said:

> The purpose of the National Electricity Law is to establish a framework to ensure the efficient operation of the national electricity market, efficient investment in, and the effective regulation of electricity networks. As previously noted, the national electricity objective also guides the Australian Energy Market Commission and the Australian Energy Regulator in performing their functions. This should be guided by an objective of efficiency that is in the long term interests of consumers. Environmental and social objectives are better dealt with in other legislative instruments and policies which sit outside the National Electricity Law.

23 It was the same legislation which introduced the RPP, which, it was said (p 887) are fundamental to ensuring achievement of the intention of enhancing efficiency in the national electricity market. The principles were said to maintain a framework for an efficient network investment irrespective of the evolution of the regulatory regime (by changes to the NER). The same was proposed for the new NGL and the national gas objective (NGO).

24 The AEMC from July 2005 was responsible for developing the NER. Similarly, it later became responsible for developing the NGR.

25 As noted, that legislation introduced also the limited merits review by the Tribunal of certain regulatory decisions under the NEL (and contemplated under the NGL). It was intended that network service providers, users and consumer associations could seek review of primary transmission and distribution determinations made by the AER. The review was confined to specified grounds of review, but more importantly there were two elements limiting the scope of review: the review could only address issues which were raised and addressed previously to the AER, and secondly the review could only address those issues on the material presented to the AER. There was to be no review of an AER decision on arguments not made to, or on material not presented to, the AER.

26 At about the same time, extensive amendments to Chapter 6 of the NER were introduced by the AEMC to guide the AER.

27 The *National Electricity (South Australia) (National Electricity Law – Australian Energy Market Operator) Amendment Act 2009* (SA) then effected further amendments by which the Australian Energy Market Operator (AEMO) came to be the national energy market operator for both the electricity and gas markets, so as to reinforce the national character of energy market governance. It is not necessary to discuss in detail the effect of those amendments.

28 It is within that structure that, for present purposes, it can fairly be said that the first regulatory cycle (2008-13) of decision making by the AER became the subject of determinations for transmission and distribution networks under the NEL, and under the NGL, by the AER. Given the complexity of the task, it is hardly surprising that the Standing Committee on Energy and Resources (SCER) and the AEMC determined that significant reforms to the provisions of the NEL and the NER (and in turn the NGL and the NGR) should be introduced in the light of that initial experience.

The 2012 Rule Amendments

29 On 15 November 2012, the AEMC published its *Final Position Paper National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 National Gas Amendment (Price and Regulation of Gas Services) Rule 2012* (the Final Postiion Paper). On 29 November 2012, the AEMC published its *Rule Determination National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule* (the 2012 Rule Amendments). It will be necessary to refer to those particular amendments in the course of considering particular matters raised on this and the related applications. It should be noted, however, that the 2012 Rule Amendments required the AER to publish guidelines specifying the approach that the AER proposed to use to assess forecasts of operating expenditure (opex) and capital expenditure (capex), and to set out the methodologies that it proposed to use in estimating the allowed rate of return, and the methods, financial models, market data and other evidence that it proposed to take into account in estimating the return on equity and the return on debt. This requirement resulted in the AER's *Better Regulation Rate of Return Guideline*, December 2013, (the RoR Guideline) and its *Better Regulation Rate of Return Guideline Explanatory Statement*, December 2013 (the RoR Explanatory Statement). Significant amendments were made to r 6.5.2 of the NER which are discussed in relation to

the topics of return on debt and return on equity which were each the subject of matters of debate in the course of this application and the related applications. Similarly significant amendments were made to r 6.5.6 in relation to how the AER should address the opex factors and capex factors.

30 To allow for a transition to the new rules, the Savings and Transitional Rules in Division 2 of Part ZW of Chapter 11 of the NER provided for a two stage process for the regulation of ACT and NSW DNSPs over the five year period commencing on 1 July 2014 (the 2014-19 period), comprising:

(a) the transitional regulatory control period from 1 July 2014 and ending on 30 June 2015 (transitional regulatory control period); and

(b) the subsequent regulatory control period from 1 July 2015 and ending on 30June 2019 (subsequent regulatory control period).

The 2013 Legislative Amendments

31 In addition, the *Statutes Amendment (National Electricity and Gas Laws – Limited Merits Review) Act 2013* (SA) (the 2013 Legislative Amendments) refined the responsibility of the AER under s 16(1)(b) of the NEL and amended the Limited Merits Review Regime in Pt 6, Div 3A, of the NEL by facilitating the participation of "reviewable regulatory decision process participants". It also, in a complementary way, added s 16(1)(c) and 16(1)(d) to the NEL to ensure the AER had a focus on the NEO and the NGO and s 71P (and related provisions) modifying the Tribunal's power to vary or set aside a determination to circumstances where a substituted decision would, or would be likely to, better serve the NEO or the NGO. The detailed nature of those amendments is set out below so far as they are relevant.

32 As observed above, during 2013, the AER in response to those changes adopted its RoR Guideline which it described in some detail in its Final Decision in relation to Ausgrid (see the Overview at pp 55-56) and in its other Final Decisions. It consulted widely with stakeholders to develop a number of guidelines as required. The guidelines included the Expenditure Forecast Assessment Guideline (EFA Guideline), concerning a networks forecast opex proposal, and the RoR Guideline referred to above. The process of producing the Better Regulation guidelines involved active consultation with interested entities,

including with PIAC which (as noted above) has itself sought to review the three Networks NSW decisions of the AER.

33 The NEL was substantially amended by the 2013 Legislative Amendments. Relevant to the role of the AER, apart from having a definition of "constituent components" in s 2(1) of the NEL, for present purposes the significant alteration was made by the substitution of s 16(1)(b) and the addition of s 16(1)(c) and, perhaps more importantly, the addition of s 16(1)(d).

34 Section 16(1)(b) requires extensive consultation and notification obligations to be fulfilled by the AER for the purposes of interested persons (including network service users or prospective users of the relevant services, and user or consumer associations that have an interest in the determination) being given an opportunity to address the issues being considered by the AER, and s 16(1)(c) requires the AER to specify in its decision the manner in which the constituent components of the decision relate to each other and how that inter-relationship has been taken into account.

35 Section 16(1)(d) provides that the AER must:

> if the AER is making a reviewable regulatory decision and there are 2 or more possible reviewable regulatory decisions that will or are likely to contribute to the achievement of the national electricity objective –
>
> (i) make the decision that the AER is satisfied will or is likely to contribute to the achievement of the national electricity objective to the greatest degree (the *preferable reviewable regulatory decision*); and
>
> (ii) specify reasons as to the basis on which the AER is satisfied that the decision is the preferable reviewable regulatory decision.

36 That obligation on the AER in exercising its economic regulatory power was of particular relevance to the three applications by PIAC.

37 Effectively, like obligations were prescribed under the NGL by the deletion and substitution of s 28(1) of the NGL.

38 In relation to the Tribunal, and merits review under Div 3A of the NEL, there were also extensive and presently relevant amendments. Section 71A was amended by inserting some additional definitions (to which it will be appropriate to refer as necessary having regard to the substantive amendments).

39 Section 71C, specifying the grounds for review, did not change.

40 However, the additional recognition of the need for the regulatory decision, whether by the AER or on review by the Tribunal, to reflect the "materially preferable NEO decision" (as defined in s 71P(2a)), and the desirability of ensuring that the long term of interests of consumers are properly identified and addressed through the consumer groups was reinforced. It is worth repeating s 71C(1) setting out the (unchanged) grounds of review, and reciting s 71C(1a). They provide:

> (1) An application under s 71B(1) may be made only on 1 or more of the following grounds:
>
> (a) the AER made an error of fact in its finding of facts, and that error of fact was material to the making of the decision;
>
> (b) the AER made more than 1 error of fact in its findings of facts, and that those errors of fact, in combination, were material to the making of the decision;
>
> (c) the exercise of the AER's discretion was incorrect, having regard to all the circumstances;
>
> (d) the AER's decision was unreasonable, having regard to all the circumstances.
>
> (1a) An application under section 71B(1) must also specify the manner in which a determination made by the Tribunal varying the reviewable regulatory decision, or setting aside the reviewable regulatory decision and a fresh decision being made by the AER following remission of the matter to the AER by the Tribunal, on the basis of 1 or more grounds raised in the application, either separately or collectively, would, or would be likely to, result in a materially preferable NEO decision.

41 Section 71E prescribes the circumstances in which the Tribunal must not grant leave to apply for review. Those circumstances were extended by adding the additional criterion that it must appear to the Tribunal that the applicant for review has established a prima facie case that any decision or determination by the Tribunal varying the reviewable regulatory decision or setting it aside and remitting the matter back to the AER to make the decision again, on the basis of one or more grounds of review raised in the application:

> ... either separately or collectively, would, or would be likely to, result in a materially preferable NEO decision.

42 Section 71M was amended by adding s 71M(1a) requiring an intervener who raises a new ground of review to provide appropriate particulars of that ground, including how, if accepted or made out, it would, or would be likely to, result in a materially preferable NEO decision.

43 Section 71O was deleted and substituted in its entirety. It deals with the matters that may or not be raised in a review. It firstly ensures that the AER is not confined in a review application so as to prevent it from raising issues which might be considered under s 71P(2a) and (2b). It provides that the applicant, if it is a regulated network service provider, may only raise for review matters that have been raised and maintained in submissions to the AER. The same restriction applies to a regulated network service provider whose commercial interests might be materially affected by that decision. Any other affected or interested person or body may not raise in relation to an issue a matter that was not raised by that body in submissions to the AER (the requirement of having been raised and maintained is not precisely adopted).

44 Section 71O(2)(d) provides that, subject to those restrictions, the applicant or an intervener who has raised a new ground of review under s 71M is also entitled to raise any matter relevant to the issues to be considered under s 71P(2a) and (2b) (set out below) and otherwise any person or body may not raise any matter relevant to those issues unless it is in response to a matter raised by the AER, the applicant or an intervener.

45 The obligation of the Tribunal to make a determination under s 71P has also been substantially refined. It is necessary to set out ss 71P(2a) and (2b) in full to understand their significance. Those provisions in broad terms mirror the obligations imposed upon the AER by s 16(1)(d), and there are parallel obligations upon the Tribunal as upon the AER imposed by s 71P(2c) requiring the Tribunal to explain how it has taken into account the inter-relationship between constituent components of the reviewable regulatory decision and why it has proceeded to make the order which it has determined to make in that light.

46 Section 71P(1)-(2b) provides:

> (1) If, following an application, the Tribunal grants leave in accordance with section 71B(1), the Tribunal must make a determination in respect of the application.
>
> **Note –**
>
> See section 71Q for the time limit which the Tribunal must make its determination.

(2) Subject to subsection (2a), a determination under this section may –

(a) affirm the reviewable regulatory decision; or

(b) vary the reviewable regulatory decision; or

(c) set aside the reviewable regulatory decision and remit the matter back to the AER to make the decision again in accordance with any direction or recommendation of the Tribunal.

(2a) Despite subsection (2), the Tribunal may only make a determination –

(a) to vary the reviewable regulatory decision under subsection (2)(b); or

(b) to set aside the reviewable regulatory decision and remit the matter back to the AER under subsection (2)(c).

if –

(c) the Tribunal is satisfied that to do so will, or is likely to, result in a decision that is materially preferable to the reviewable regulatory decision in making a contribution to the achievement of the national electricity objective (a *materially preferable NEO decision*) (and if the Tribunal is not so satisfied the Tribunal must affirm the decision); and

(d) in the case of a determination to vary the reviewable regulatory decision – the Tribunal is satisfied that to do so will not require the Tribunal to undertake an assessment of such complexity that the preferable course of action would be to set aside the reviewable regulatory decision and remit the matter to the AER to make the decision again.

(2b) In connection with the operation of subsection (2a) (and without limiting any other matter that may be relevant under this Law) –

(a) the Tribunal must consider how the constituent components of the reviewable regulatory decision interrelate with each other and with the matters raised as a ground for review; and

(b) without limiting paragraph (a), the Tribunal must take into account the revenue and pricing principles (in the same manner in which the AER is to take into account these principles under section 16); and

(c) the Tribunal must, in assessing the extent of contribution to the achievement of the national electricity objective, consider the reviewable regulatory decision as a whole; and

(d) the following matters must not, in themselves, determine the question about whether a materially preferable NEO decision exists:

(i) the establishment of a ground for review under section 71C(1);

(ii) consequences for, or impacts on, the average annual

regulated revenue of a regulated network service provider;

(iii) that the amount that is specified in or derived from the reviewable regulatory decision exceeds the amount specified in section 71F(2).

47 As noted above, the review by the Tribunal of any decision of the AER was, and in broad terms still is, confined in the following ways:

- the requirement of the Tribunal to be satisfied of certain pre-conditions before leave to apply for review is given by it;
- the limitation upon the material which the Tribunal may have regard to in making its determination as to whether a ground of review has been made out on the material that was before the AER; and
- the requirement that the issue before the Tribunal upon which a ground of review is sought to be established was properly advanced before the AER.

Those pre-conditions have been maintained, and to a degree refined.

48 In relation to the second of those matters, s 71R defined and still defines review related matter in the same way. In one significant respect, the material relevant to a review has been extended to include matters arising as a result of the consultation required by s 71R(1)(b). That obliges the Tribunal, before making a determination, to take reasonable steps to consult with network service users of the relevant services, and any user or consumer associations or user or consumer interest groups that the Tribunal considers to have an interest in the determination (excluding a user or consumer association or interest group that is a party to the review). In addition, the opportunity for the Tribunal to seek additional information relevant to the relief which it might otherwise contemplate granting has been extended by amendments to s 71R(3) and by the addition of ss 71R(5a) and (5b).

49 In substance, parallel amendments were made to the merits review of AER determinations under the NGL under Part 5 of the NGL, including the extension of the required circumstances in which leave to review may be given under s 248, and by the insertion of s 259(4a) and (4b) equating to s 71P(2a) and (2b) of the NEL, and the deletion and substitution of s 261(1) and insertion of s 261(3a) and (3b) equating to s 71R(1) and s 71R(5a) and (5b) of the NEL.

The Consultation Process

50 The consultation process referred to in s 71R(1)(b) of the NEL and s 261(1)(b) of the NGL is an additional procedural step which the Tribunal must take and, ideally, be accommodated within the target time prescribed by s 71Q of the NEL and s 260 of the NGL. The Tribunal, having given leave to apply for review in these and the related matters on 17 July 2015 (other than the JGN application where leave to apply for review was given on 30 July 2015) sought information from the AER as to all of the interest groups or persons who might have an interest in the review by the Tribunal under s 71R(1)(b) of the NEL and s 261(1)(b) of the NGL.

51 The Tribunal then conducted an extensive communication process directly with each of those entities or persons to invite them to indicate whether they wished to consult with the Tribunal in relation to any of the Final Decisions, as to the nature of their proposed participation, and as to how the consultation might best be carried out. In the light of that material, the Tribunal consulted with all of those persons on 6 and 7 August 2015. To ensure a satisfactory process, the Tribunal issued a Consultation Agenda under which it provided for those who wished to speak to the Tribunal on that occasion either personally or on behalf of an organisation, to do so. It arranged for the speakers to be listed randomly, so that there was no bias in the sequence of presenting particular perspectives, other than (of course) endeavouring to accommodate the personal circumstances and convenience of each of the proposed participants. During those consultations, members of the Tribunal sought clarification, and sometimes supplementation of comments or submissions or further development in the views expressed so that they were better understood or appreciated by the Tribunal. The transcript of that consultation process has been included by the Tribunal on its website relating to each of these applications. A list of those persons or entities who chose to make submissions, during the consultation process or in writing as a complement or supplement to oral submissions, or only by making written submissions or comments is also listed on the Tribunal's website.

52 In the course of the consultation process, a number of significant issues of concern to consumers and consumer interests were identified. It is fair to say that price was a significant concern. It is also fair to say that there were a number of persons who participated, and whose concern was to ensure the quality, safety, reliability and security of the supply of electricity either because of their particular circumstances or their particular geographical

location, or for other reasons. The balance, as the submissions exposed, is a very difficult one.

53 The applicants to the several applications (including PIAC), the AER and the interveners did not participate in the consultation process. That was appropriate, of course, because they each participated in the hearing before the Tribunal. The matters which emerged in the course of the consultation process, apart from informing the Tribunal about the concerns or views expressed, also provided the foundation for matters the Tribunal raised with the applicants, the AER and the interveners during the hearing. They also served as the focus for questions of the Minister, during the hearing, as to how the various concerns or matters raised were to be taken into account by the Tribunal in reaching its decisions on the several applications. Those matters are addressed later in these reasons for decision.

54 It is a mark of the sophistication of the participants in the consultation process that the range of matters discussed was not extensive. Of course, many focused on the price of electricity and the impact of the present and potential price and the ability of the less well-off in the community either to afford access to the electricity network at all, or at least to do so only at considerable personal cost. There was material showing the number of disconnections over time. The issue of price was not simply raised by consumers or representatives of consumers in a lower socio-economic setting, but by some smaller commercial enterprises, primary producers and others.

55 The Tribunal does not intend to do injustice to the process by listing, without setting out in detail, the views presented.

56 It is, in the view of the Tribunal, helpful to note the broad themes presented during the consultation process as they were identified by the Tribunal. That list was then circulated to the participants for comment. As it was not then suggested that it was inaccurate or incomplete, it is set out below:

- Consumer engagement and understanding
    - The Tribunal's approach to engagement
    - Consumer education and access to information
    - Participation in the AER processes
- Impact of electricity prices on consumers

  - General consumer impact
  - Vulnerable customers
  - Rural and regional customers
  - Price stability (including pace of any change)
  - Long-term interests of consumers relating to price
- The regulatory framework
  - Success of previous regimes
  - Policy observations regarding the framework
- Balancing the NEO and NGO for the long-term interests of consumers
  - The meaning of “long term interests of consumers”
  - The price and reliability trade off
  - The disconnection 'death spiral'
- Operating expenditure
  - AER benchmarking approach
  - Adherence to operating expenditure guidelines
  - Impact of industrial agreements
  - Vegetation management and bushfire risks
- Rate of return
  - Adherence to the Guideline
  - Estimation of return on debt
  - Estimation of return on equity
  - Ultimate pricing impact of the rate of return
- Demand and energy forecasts

- Inflation of demand and energy forecasts

- Demand management and innovation
  - Expenditure on innovation

- Materially preferable NEO/NGO decision

57 As noted, the price of electricity was the most significant issue raised during the consultation, but there were also significant numbers of consumers whose emphasis was more on the reliability of the supply of electricity in their particular circumstances.

58 In the matters concerning the Final Decisions of the AER regarding the Networks NSW businesses, in large measure (and as set out later in these reasons) the role of PIAC was a particularly helpful one. Its three applications sought to have the relevant AER Final Decisions set aside, and to have substituted determinations through the Tribunal which would substantially lessen the amounts recoverable by the Networks NSW businesses over the regulatory period 2015-19, as well as presenting the viewpoint that the matters raised by Networks NSW to have the recoverable amounts increased were erroneous. Many of the views put forward by those on the consultation process were therefore reflected or represented by the contentions of PIAC during the hearing.

59 There is one particular feature of the consultation process views which it is appropriate to comment on at this point.

60 The Tribunal was assisted in the course of the hearing by the intervention of the Minister. It was appropriate, of course, for the Minister to intervene, given the significant changes to the legislation so far as they relate to the Tribunal's role. The Tribunal is appreciative of those submissions.

61 The Minister, consistently with the submissions of the AER and of the interveners, took the view that the "consumers" referred to in the NEO and the NGO must be treated as a generic group, so that the Tribunal could not and should not address the particular circumstances of particular consumers or consumer interests. The Tribunal adopts that approach. When the *National Electricity (South Australia) National Electricity Law (Miscellaneous Amendments) Act 2007* (SA) was first introduced, the point was then made that the objective of the national electricity market generally was to achieve an efficient and so far as possible competitive market for the supply and consumption of electricity and where that could not be achieved

that the regulatory structure for access to monopoly services should endeavour to reflect that structure. It was noted (see [22] above) that social and environmental objectives should be a matter of separate policy of the legislature reflected in different ways. The Tribunal, as the Minister submitted, should take, and does take, that view.

62 Nevertheless, the consultation process did identify and inform the Tribunal significantly as to the matters of concern to significant sections of the consumer community and how some consumer representatives regarded the long-term interests of consumers were best served.

63 As also noted, in relation to this decision (and those concerning Essential and Endeavour), the Tribunal has had the benefit of the applications by PIAC and its helpful submissions. That has enabled the Tribunal to be acutely aware of its obligation ultimately to ensure that its decisions in relation to these applications are those which, in its view, best serve the long-term interests of consumers in terms of the NEO. It has also, by the grounds of review raised by PIAC alleging error on the part of the AER, led to a focus on those particular matters where, it is said, the AER itself has failed to respond appropriately to s 16(1)(d) of the NEL or has otherwise fallen into error to the detriment of consumers. The particular errors asserted by PIAC are addressed in the course of this decision, and to the extent to which they require separate consideration, in the course of considering the reviews of the Final Decisions of the AER in relation to Essential and Endeavour.

64 Given the role of PIAC, and the relevance of its submissions to the Tribunal's functions and responsibilities under the legislation, the Tribunal has not needed in these matters to address separately the matters which emerged in the course of the consultation process. The role and submissions of PIAC have encompassed those matters.

The Materially Preferable NEO/NGO Decision

65 At this point in the reasons of the Tribunal, it is not appropriate to discuss except in a conceptual way how it should approach the question of whether, in the event of finding error on the part of the AER, that is that a ground of review or grounds of review are made out, how it should address the requirements of s 71P(2a) and (2b) in the NEL or s 259(4a) and (4b) of the NGL.

66 It is clear enough from those legislative provisions that, if it is established that in one or more respects the AER has fallen into reviewable error, that is that a ground or grounds of review have been made out, it will not be a materially preferable decision simply to provide for the

correction of that ground of review. Section 71P(2b)(d)(i) and s 259(4b)(d)(i) respectively make that plain.

67 It will be necessary to address how the constituent components of the reviewable regulatory decision inter-relate. To the extent to which they inter-relate, and in the light of the revenue and pricing principles, it would be necessary to determine whether, then, the materially preferable decision is to allow the decision of the AER to stand, or to vary it, or to remit the matter to the AER to address a particular aspect or aspects further.

68 To identify how constituent components of a reviewable regulatory decision do inter-relate, the Tribunal will routinely have the benefit of submissions from the AER, and in this instance has had the benefit also of the submissions of PIAC, the Minister as well as the DNSPs. It is clear that several of the issues raised by the parties giving rise to grounds of review do inter-relate, so that the Tribunal, if it finds for instance that significant grounds of review are made out in relation to the allowance for opex, would have to consider the nature and extent to which, if at all, there are consequences for other elements of the AER decision concerning the Service Target Performance Incentive Scheme (STPIS), the Efficiency Benefit Sharing Scheme (EBSS) and the X-factor (those terms are described below), and possibly metering services. Those factors are, to some extent (as acknowledged by all parties) inter-related. There is also some scope for an asserted inter-relationship between the allowance for capex and the allowance for opex, and perhaps more obviously some scope for inter-relationship between the allowance for return on equity and the allowance for return on debt, as they combine to estimate the rate of return. Those inter-relationships were not significantly developed in the course of submissions, except in a general way.

69 The Tribunal would expect that, routinely, if there were direct and measurable relationships between elements making up the AER determination, the AER would indicate how the adjustment of one would or should lead to the adjustment of the other. The AER in each of its decisions has not, and did not need to, explain those inter-relationships in detail although it has made in its general "Overview" section some comments about what might be seen to have been allowances made with some generosity towards the particular DNSP (and about which PIAC has complained) and which in a general sense might be set off against any error or a ground of review which might be exposed by a DNSP.

70 The Tribunal, when it has come to consider this aspect, has primarily looked to the inter-relationships as they have been identified and quantified by the AER, PIAC and in other

submissions. It has, in addition, sought to step back and to look at the wider picture where there is no such obvious inter-relationship and no direct evidence quantifying the respective way in which one element of the building blocks as prescribed by the NER or NGR affect other elements. It is in that light, as discussed at the end of these reasons, that the Tribunal has proceeded.

71 In that context, it is also appropriate to observe that the task imposed on the AER is a protean one.

72 It has referred to that task in its written submissions. Following the 2013 Legislative Amendments, the AER in exercising its regulatory function under the NER or the NGR is required to "perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of" the NEO or the NGO: see s 16(1) of the NEL and s 28(1) of the NGL.

73 In relation to a reviewable regulatory decision under the NEL or the NGR, the AER is required, inter alia (see s 16(1)(b) to (d) of the NEL and s 28(1)(b) of the NGL):

(a) to specify the manner in which the constituent components of the decision relate to each other, and the manner in which that interrelationship has been taken into account in the making of the decision; and

(b) if there are 2 or more possible reviewable regulatory decisions that will or are likely to contribute to the achievement of the NEO or NGO:

  (i) make the decision that the AER is satisfied will or is likely to contribute to the achievement of the NEO or NGO "to the greatest degree" (the preferable reviewable regulatory decision (in the case of the NEL) or the preferable designated reviewable regulatory decision (in the case of the NGL)); and

  (ii) specify reasons as to the basis on which the AER is satisfied that the decision is the preferable reviewable regulatory decision or the preferable designated reviewable regulatory decision.

74 The NEO is set out in s 7 of the NEL:

> The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –
>
> (a) price, quality, safety, reliability and security of supply of electricity; and

(b) the reliability, safety and security of the national electricity system.

75 The NGO is set out in s 23 of the NGL:

> 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.

76 Apart from the NEO and the NGO, the AER is required to take into account, in the prescribed circumstances, the RPP which are set out in s 7A of the NEL (RPP), and s 24 of the NGL respectively: s 16(2) of the NEL and s 28(2) of the NGL. None of those provisions, nor the NEO or the NGL, were amended by the 2013 Legislative Amendments.

77 The ultimate objective reflected in the NEO and NGO is to direct the manner in which the national electricity market and the national natural gas market are regulated, that is, in the long term interests of consumers of electricity and natural gas respectively with respect to the matters specified. The provisions proceed on the legislative premise that their long term interests are served through the promotion of efficient investment in, and efficient operation and use of, electricity and natural gas services. This promotion is to be done "for" the long term interests of consumers. It does not involve a balance as between efficient investment, operation and use on the one hand and the long term interest of consumers on the other. Rather, the necessary legislative premise is that the long term interests of consumers will be served by regulation that advances economic efficiency.

78 In broad terms, it can be said that the economic foundations of the regulatory regime are well understood. In *Application by ElectraNet Pty Limited (No 3)* [2008] ACompT 3 at [15], the Tribunal said:

> The national electricity objective provides the overarching economic objective for regulation under the Law: the promotion of efficient investment in the long term interests of consumers. Consumers will benefit in the long run if resources are used efficiently, i.e. resources are allocated to the delivery of goods and services in accordance with consumer preferences at least cost. As reflected in the revenue and pricing principles, this in turn requires prices to reflect the long run cost of supply and to support efficient investment, providing investors with a return which covers the opportunity cost of capital required to deliver the services.

79 As noted above, reference to the Second Reading Speech on the introduction of the *National Electricity (South Australia) (New National Electricity Law) Amendment Bill* (South Australian House of Assembly Hansard, 9 February 2005, p 1451) states (at p 1452):

> The national electricity market objective in the new National Electricity Law is to

> promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity, and the safety, reliability and security of the national electricity system. The market objective is an economic concept and should be interpreted as such. For example, investment in and use of electricity services will be efficient when services are supplied in the long run at least cost, resources including infrastructure are used to deliver the greatest possible benefit and there is innovation and investment in response to changes in consumer needs and productive opportunities. The long term interests of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised. 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. ... Applying an objective of economic efficiency recognises that, in a general sense, the national electricity market should be competitive, that any person wishing to enter the market should not be treated more or less favourably than persons already participating in the market, and that particular energy sources or technologies should not be treated more or less favourably than other energy technologies.

80 Thus, in *Application by Envestra Limited (No 2)* [2012] ACompT 3 (*Envestra (No 2)*), the Tribunal summarised with approval certain submissions by the AER, which were not challenged in that case (at [183]):

> The AER submitted that rule 91 requires the AER to permit service providers a reasonable opportunity to recover what the AER considers "legitimate costs". Legitimacy, according to the AER is informed by the NGO and, in particular, means costs that would be incurred in a "workably competitive market". The requirement for replication of a workably competitive market outcome is said to be derived from the intent of the regulatory framework. This phrase appears to come from the Australian Energy Market Commission, Rule Determination, National Electricity Amendment (the Economic Regulation of Transmission Services) Rule 2006 No. 18, published on 16 November 2006. In this determination, the Australian Energy Market Commission, at page 93, describes the fundamental objective of regulation as being:
>
> > to reproduce, to the extent possible, the production and pricing outcomes that would occur in a workably competitive market in circumstances where the development of a competitive market is not economically feasible...

81 A similar point was made in the High Court with respect to a very similar progenitor under the then applicable gas regime, in *East Australian Pipeline Pty Ltd v Australian Competition and Consumer Commission* (2007) 233 CLR 229 at [18] (*East Australian Pipeline*):

> The context and purpose of the Code is well understood, not least because the objectives of the legislation are articulated in the legislation itself in considerable detail. The Code as a whole provides for a regulatory regime of a kind which is "a surrogate for the rewards and disciplines normally provided by a competitive market". Competitive pressures in a market stimulate efficiency of production and resource allocation, they stimulate efficient investment decisions and they minimise costs. No party disputed the fact that the regulatory process set out in the legislation

> was directed to eliminating monopoly pricing whilst nevertheless providing a rate of return to pipeline owners, commensurate with a competitive market.

82 Those references have a particular significance in this matter as appears in the Tribunal's consideration of the issues concerning rate of return on debt.

83 It is convenient, at this point, to note how the AER, in the Overview section of its Final Decision, explained how it had sought to fulfil its obligation under s 16(1)(d) of the NEL and s 28(1)(b)(iii) of the NGL to make the decision it is satisfied will or is likely to contribute to the achievement of the NEO/NGO to the greatest degree, that is to make the preferable designated reviewable regulatory decision, and to specify its reasons for doing so. Of course, there is further relevant discussion in the various Attachments to its Final Decisions.

84 In the Overview to the Ausgrid Final Decision, Section 1.2 "Contribution to the achievement of the NEO", the following first appears (at p 10):

> We are satisfied that the total revenue approved in our final decision contributes to the achievement of the NEO to the greatest degree. This is because our total revenue reflects the efficient, sustainable costs of providing network services in Ausgrid's operating environment and the key drivers of efficient costs facing Ausgrid. Our decision will promote the efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers, as required by the NEO. We set out our reasons below and in our attachments.

85 There follows a description of the key drivers of costs facing a network service provider, acceptance that the key drivers may change from one regulatory period to the next, the most important factors impacting on Ausgrid's costs in the 2015-2019 regulatory control period, and its overall conclusion. The AER says that the two constituent components of its decision which drive most of the differences between Ausgrid's proposed revenue and its Final Decision are rate of return (equity and debt), and opex. Those two differences are then explained in some detail.

86 Section 1.4 "Assessment of options under the NEO" (at pp 19-20) returns to the legislative requirement. It attracted considerable attention, particularly by PIAC in it submissions. It is desirable to set it out in full:

> The NER recognises that there may be several decisions that contribute to the achievement of the NEO. Our role is to make a decision that we are satisfied contributes to the achievement of the NEO to the *greatest* degree.
>
> For at least two reasons, we consider that there will almost always be several decisions that contribute to the achievement of the NEO. First, the NER requires us

to make forecasts, which are predictions about unknown future circumstances. As a result, there will likely always be more than one plausible forecast. Second, there is substantial debate amongst stakeholders about the costs we must forecast, with both sides often supported by expert opinion. As a result, for several components of our decision there may be several plausible answers or several point estimates within a range. This has the potential to create a multitude of potential overall decisions. In this decision we have approached this from a practical perspective, accepting that it is not possible to consider every possible permutation specifically. Where there are several plausible answers, we have selected what we are satisfied is the best outcome, under the NEL and NER.

In many cases, our approach results in an outcome towards the end of the range of options materially favourable to Ausgrid (for example, our choice of equity beta). While it can be difficult to quantify the exact revenue impact of these individual decisions, we have identified where we have done so in our attachments. Some of these decisions include:

- selecting at the top of the range for the equity beta
- setting the return on debt by reference to data for a BBB broad band credit rating, when the benchmark is BBB+
- the cash flow timing assumptions in the post-tax revenue model
- the point at which we have set the benchmark for opex
- the allowances we have made for operating environment factors in our benchmarking analysis.

We set out our detailed reasons in the attachments. They demonstrate that the constituent components of our decision comply with the NER's requirements. At an overall level our decision reflects the key reasons set out above, which indicate that Ausgrid should recover less revenue than it has proposed or recovered in recent years. Our decision reflects these at both the constituent component and overall revenue levels.

Given our approach, we are satisfied that our decision will or is likely to contribute to the achievement of the NEO to the greatest degree.

The Tribunal's Role on Review

87 The legislative and regulatory background referred to above highlights the complex task of the Tribunal since the 2013 Legislative Amendments.

88 Although the Minister submitted that the 2013 Legislative Amendments may have required a reconstruction of certain provisions of the NEL and the NGR, even unamended provisions, the Tribunal did not discern from the Minister's submissions that it was necessary to refine or re-define the way the earlier and unamended provisions of the NEL or the NGR have been applied or construed.

89 Rather, it can be accepted, the 2013 Legislative Amendments:

(a) clarify or emphasise the alignment of both the decision making role of the AER by s 16(1)(d)(i) of the NEL and s 28(1)(b)(iii)(A) of the NGL and the decision making role of the Tribunal by s 71P(2a)(c) of the NEL and s 259(4a)(c) of the NGL, with the achievement of the NGO and the NGL objectives; and

(b) require the Tribunal, when deciding whether to vary the AER decision under review or to remit it to the AER for further consideration to do so only if it is satisfied that that will result in an improved decision fulfilling better the NEO or the NGO in the long term interests of consumers. The Minister's submission, which the Tribunal accepts, is that a regulatory regime such as the NEL and NGL serves as a "surrogate for the rewards and disciplines normally provided by a competitive market" (as originally cited at [81] above in *East Australian Pipeline* (2007) 233 CLR 229 at [18]). As a surrogate, of course, it can only approximate those rewards and disciplines.

90 As the AER and the Minister point out, this feature of the regulatory regimes acknowledges the existence of a range of possible decisions which equally, or approximately equally, promote economic efficiency. But that is not to say that such decisions will equally, or even approximately equally, promote the long term interests of consumers. As was said in introducing the 2013 Legislative Amendments:

> The national electricity objective and national gas objective explicitly target economically efficient outcomes that are in the long term interests of consumers, but the nature of decisions in the energy sector are such that there may be several possible economically efficient decisions, *with different implications for the long term interests of consumers.* (emphasis added)

See: South Australia, House of Assembly, Hansard, 26 September 2013 at 7172 (The Hon J R Rau).

91 Consequently, the correction of error or errors in a decision under review will not necessarily lead to a materially preferable decision. Whether there is a preferable decision to the decision made by the AER depends upon an assessment of the decision as a whole, and a *comparison* of that decision with a putative alternative decision; it does not depend simply on an assessment of errors in individual components of the decision under review. That reflects the Minister's comments that the 2013 Legislative Amendments:

> Require the [Tribunal] to undertake a holistic assessment of whether the setting aside or varying of the reviewable regulatory decision, or remission of the matter back to the original decision maker, will or is likely to deliver a materially preferable outcome in the long term interests of consumers.

See: South Australia, House of Assembly, Hansard, 26 September 2013 at 7173 (The Hon J R Rau).

92 The 2013 Legislative Amendments reflect a deliberate policy decision to change the NEL and NGL and, in particular, to change the scope of the Tribunal's limited merits review function. They introduce a series of steps which require the Tribunal, even if it is satisfied of one or more grounds of review arising from one particular aspect of the AER's decision, to consider whether and how the potential consequences of that ground being established may be reduced, counterbalanced or rendered immaterial following the processes mandated by ss 71P(2a), 71P(2b)(a) and 71P(2b)(c) of the NEL and ss 259(4a), 259(4b)(a) and 259(4b)(c) of the NGL.

93 Nevertheless, as the Minister said, it is axiomatic in the principles of regulatory economics, that promoting allocative, productive and dynamic efficiency generally serves the long term interests of consumers. However, the 2013 Legislative Amendments contemplate that there can be more than one available decision that is economically efficient – and certainly more than one available decision that is roughly so, having regard to the unavoidable approximations involved.

94 The role of the AER and the Tribunal in giving effect to the NEO and NGO is to promote the "long term interests of consumers" with respect to the matters stipulated. This will always involve an attempt to promote efficient investment in, and operation and use of, services, but will also require taking into account other factors as appropriate. The Minister gave emphasis to taking into account the appropriate "long term" character of the consumer interests that are to be promoted. He also said that it may also, in an appropriate case, require taking into account the *distribution* to consumers of the benefits of efficiencies, even though this may not bear on the economic efficiency of the decision. Of course, the benefits of efficiencies are to be awarded to consumers – that is, to use the Minister's word "axiomatic". The Tribunal has previously acknowledged that "in some circumstances" it may, in effect, be preferable for the benefits of economic efficiencies to be passed to consumers in their long term interests rather than wholly retained or captured by the regulated entity: *Envestra (No 2)* [2012] ACompT 3 at [265].

95 It is nevertheless accepted that the decision which is to be made must comply with, or meet, the requirements of the relevant Rules – whether the NER or the NGR. The AEMC has specified the means by which the AER (and the Tribunal) is to reach its decision. An "holistic" assessment of the AER decision by the Tribunal cannot entitle it to ignore the relevant Rules or the RPP in s 7A of the NEL or s 24 of the NGL which inform proper application of the relevant Rules made by the AEMC. They are made precisely because, in both the national electricity network and the national gas network, the underlying objective is the establishment and maintenance of competition in the long term interests of consumers. Where there is monopoly infrastructure (such as the transmission and distribution networks), the regulatory process is to reach an outcome by the relevant Rules set down by the AEMC, and then by the AER applying the Rules as appropriate to simulate as best as can be done under the relevant Rules the outcome for the DNSPs by its reviewable regulatory decisions which would reflect the outcome of a competitive market.

96 The AER made that point in its submissions. It pointed out that, in a workably competitive market, an inefficient business with higher costs than its efficient competitors still receives the market price which is set by the efficient competitors. As all businesses in workably competitive markets receive the market price, an inefficient business will only be able to obtain a price which is lower than its costs. It could not ask its customers to pay higher prices (generally, even for a transitional period) to fund the costs of it moving away from inefficient practices and, accordingly, will be unable to achieve the same returns to shareholders as an efficient business.

97 It is desirable to say something about the expression "will, or is likely to, result in ...." in s 71P(2a)(c).

98 The submissions acknowledge that the word "likely" may be given a range of, or shades of, meaning: see eg *Tillmans Butcheries Pty Ltd v Australian Meat Industry Employees Union* (1979) 27 ALR 367 per Deane J at 380.

99 As the Minister has noted, if the words "is likely to" are used in contradistinction to the preceding word "will", they connote a lower standard of satisfaction than "will". Several provisions of the *Competition and Consumer Act 2010* (Cth), directed to proscribing restrictive trade practices, are enlivened in relation to conduct that "has, or is likely to have, the effect of substantially lessening competition" (ss 45 and 47) or "have the effect, or be likely to have the effect, of substantially lessening competition" (s 50). A number of cases

suggest that "likely", in this context, connotes a "real chance" – something more than a mere possibility, but less than a likelihood on the balance of probabilities: see especially *Monroe Topple & Associates Pty Ltd v Institute of Chartered Accountants* (2002) 122 FCR 110; *Seven Network Limited v News Limited* (2009) 182 FCR 160 at [750]; *Australian Gas Light Co v ACCC* (2003) 137 FCR 317 at [348].

100 In the present context, the legislature has identified a particular goal – the regulatory decision that advances to the greatest degree the NEO or NGO (s 16(1)(d) of the NEL and s 28(1)(b)(iii)(A) of the NGL). It has charged the AER with responsibility to achieve that goal, and empowered the Tribunal to set aside or vary the AER's attempt only if "satisfied" that to do so will or is likely to result in a materially preferable decision.

101 In that context, the Tribunal considers it appropriate to proceed on the basis that the phrase "will, or is likely to" should be construed as a compendious expression of a standard of likelihood that is equivalent to "more likely than not". It considered that that approach best achieves the purpose or object of the NEL and NGL. It reflects consistency in the intended standard of satisfaction on the part of the Tribunal with the standard which the AER was required to apply. It is also consistent with the Second Reading Speech referred to above, in which the amendments were explained as being directed towards "ensur[ing] that the limited merits review only results in changes to decisions under review where the [Tribunal] concludes that there is a materially preferable decision in the long term interests of consumers".

The Grounds of Review

102 Understandably, both at the stage of considering whether leave to apply for review and on the reviews, there was considerable debate about the character of the available grounds of review and whether, in the particular circumstances a ground of review had been made out. Concern was expressed by the AER about the breadth of expression adopted by the various DNSPs to invoke the grounds of review.

103 With one qualification, the Tribunal considers that it is preferable to defer addressing that debate until the point of considering separately the particular issues which the various applicants raised, and how the asserted error was then described. It did not discern, in the course of the three intense weeks of competing submissions, that ultimately the respective applicants had expressed their contentions in a way which caused any surprise or unfairness to the AER. That is so, even though in some instances, the relevant applicant sought to

engage one or more of the available grounds of review as applicable to a particular contention of error. It is preferable to deal with those matters as they come to arise in their context.

104 As will be seen, the Tribunal is well alive to the terms of s 71C of the NEL and s 246 of the NGL. The onus is on a particular applicant to satisfy the Tribunal that the AER determination, in the respect being debated, is in error within one or more of the available grounds: *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14 at [483]-[486]. See also the Tribunal's remarks in *Application by EnergyAustralia* [2009] ACompT 8 at [70]; *Application by WA Gas Networks (No 3)* [2012] ACompT 12 at [22] (*WA Gas Networks*).

105 The one possible reservation to those comments is by PIAC's submission that s 16(1)(d) of the NEL as introduced by the 2013 Legislative Amendments has widened the grounds of review available under s 71C(1) of the NEL.

106 It may be accepted that the amendment of one provision in an Act may impliedly alter the meaning of an unamended provision of that Act: *Commissioner of Stamps (SA) v Telegraph Investment Co Pty Ltd* (1995) 184 CLR 453 at 463.

107 However, the Tribunal does not consider that s 16(1)(d) expands in any way the grounds of review in s 71C(1) of the NEL. There is no textual or contextual reason why it should do so, and the extraneous material to which it is permissible to refer does not suggest that that was intended.

108 The PIAC submissions focused upon particular steps in the AER decision making process to demonstrate, in the terms of s 71C, the ground of review being made out. Whilst there is clearly a heavy responsibility on the AER to make the decision which contributes to the NEO "to the greatest degree", the PIAC contention that it had not done so was not at large, but in the context of the particular asserted grounds of review. A ground or grounds of review, if made out, enlivens the further steps to be addressed by the Tribunal under s 71P of the NEL. The Tribunal has not found it either necessary or helpful, in considering whether PIAC has made out the grounds of review for which it contends, to give any expanded meaning to the available grounds of review. It has taken them as they appear, and as they have been explained in other decisions. On the other hand, the Tribunal has not taken the view that the satisfaction of the AER that it has met the requirement of s 16(1)(d) precludes the Tribunal from itself having to address those steps in s 71P once it has been satisfied that a ground or

grounds of review have been made out. If, as a result of that process, the Tribunal determines (as it has done in some respects) to set aside the AER determination and to remit the matter to the AER, it has not needed to separately conduct a qualitative assessment of the AER's satisfaction under s 16(1)(d) because (it has been satisfied) that its assessment was in part the product or consequence of the error now exposed by the established ground of review.

The Structure of the Decision

109 The review applicants (variously supported by the interveners) take issue with aspects of the following building blocks in the AER's decisions:

- Opex: PIAC; Networks NSW; ActewAGL
- X-factor: Networks NSW
- Efficiency Benefit Sharing Scheme (EBSS): Networks NSW
- Service Target Performance Incentive Scheme (STPIS): ActewAGL
- Return on equity: PIAC; Networks NSW; ActewAGL; JGN
- Return on debt: PIAC; Networks NSW; ActewAGL; JGN
- Gamma: Networks NSW; ActewAGL; JGN
- Metering services - opex: ActewAGL
- Metering classification: ActewAGL
- Metering services: Ausgrid
- Market Expansion Capital Expenditure (ME Capex): JGN

110 The Tribunal has approached each review application in that sequence (where it applies to a particular applicant or applicants for review).

111 Under the transitional arrangements, the AER was required to make placeholder distribution determinations for the ACT and NSW DNSPs for the transitional regulatory control period which would apply for one year, from 2014-15 to 2015-16. The AER was then required to carry out a full regulatory determination process and make distribution determinations for the ACT and NSW DNSPs for the subsequent regulatory control period, from 2015-16 to 2018-19.

112 Due to the substantial commonality of issues raised, it was common ground that it would be appropriate for the applicants to prepare common written submissions in relationto those

issues or topics which it had substantially in common with other applicants. On this basis, and pursuant to the Tribunal's directions of 5 August 2015:

(a) the Network Applicants prepared common written submissions on the issues of return on equity and the value of imputation credits;

(b) Networks NSW and ActewAGL prepared common written submissions on return on debt; and

(c) Networks NSW prepared common written submissions on framework, opex, X-factor, EBSS, the application of s 71O of the NEL and materially preferable NEO decision.

113 The applicants were also represented during the hearing by common counsel in respect of those issues or topics which it had in common with the other applicants. Relevantly, common counsel appeared on behalf of each of the Network Applicants in relation to return on equity and gamma, on behalf of Networks NSW and ActewAGL in respect of return on debt and on behalf of each of Networks NSW in relation to framework, opex, X-factor, EBSS, s 71O of the NEL and materially preferable NEO decision. In addition, during the course of the hearing the Network Applicants and the interveners adopted the submissions of other parties where it was appropriate to do so.

114 As noted above, where there is a "shared" issue or topic, the Tribunal has endeavoured to incorporate by reference the general or common consideration or matters addressed above. The particular aspects of the application are of course separately addressed. The Tribunal's reasons so far as they relate to the particular aspects of the six applications not specifically addressed here are outlined in *Applications by Public Interest Advocacy Centre Ltd and Endeavour Energy* [2016] ACompT 2; *Applications by Public Interest Advocacy Centre Ltd and Essential Energy* [2016] ACompT 3; *Application by ActewAGL Distribution* [2016] ACompT 4 and *Application by Jemena Gas Networks (NSW) Ltd* [2016] ACompT 5.

OPERATING EXPENDITURE (OPEX)

INTRODUCTION

115 This topic occupied a substantial part of the hearing, and a considerable volume of the very extensive documentary material in the review-related material: s 71R of the NEL (and s 261 of the NGL).

116 Before turning to the particular opex issues, it is helpful to note more broadly the structure of Ch 6 of the NER, relating to the economic regulation of distribution services. Section 6.1 deals with introductory matters. Rule 6.1.1 affirms that the AER is responsible for the economic regulation of distribution services.

117 Of general relevance is that the structure of Ch 6 set out in r 6.12 includes that Part C sets out the building block approach to the regulation of services of the character provided by Networks NSW and ActewAGL. Part B amongst other things, obliges the AER to make a distribution determination for each DNSP: r 6.2.4. Rule 6.2.8 requires the AER to make and publish, amongst others, the RoR Guideline and the EFA Guidelines. It does not oblige the AER to adhere to those guidelines, but it must explain in its relevant decision why it has departed from them: r 6.2.8(c).

118 Part C of Ch 6 is of immediate and direct relevance. Rule 6.3 defines a building block determination as a component of a distribution determination. The procedure to get to that point is contained in Part E of Ch 6, including for each DNSP to submit a building block proposal as prescribed.

119 Rule 6.3.2 prescribes the contents of a building block determination. Rule 6.4.3 says that the building block generally are, for each regulatory year of a regulatory control period, to provide (as relevant to the present applications) for:

(1) indexation of the regulatory asset base: see r 6.5.1;

(2) a return on capital for that year: see r 6.5.2 – within r 6.5.2 both the return on equity and the return on debt, as well as the RoR Guideline, are addressed;

(3) the estimated cost of corporate income tax of the DNSP for that year: r 6.5.3;

(4) the revenue increments or decrements for that year (relevantly) from the EBSS and the STPIS: rr 6.5.8, 6.5.8A and 67.6.2;

(5) the forecast opex for that year: r 6.5.6.

120 Those, and the other elements of the building blocks, including the forecast capex for the regulatory control period: r 6.5.7, are then detailed and cross-referenced to the relevant rules, as referred to in r 6.5.

121 As indicated, these reasons generally deal only with the application to review the AER's Final Decision relating to Ausgrid. The following focuses on the attachment to that decision

(Attachment 7 – Operating expenses) which provides an overview of the AER's assessment of Ausgrid's opex and, in appendixes to the attachment, an analysis of its assessment of that opex.

122 However, because much of the AER's reasons for not accepting Ausgrid's forecast opex is common to its decisions in relation to the opex forecasts of the other two Networks NSW businesses, namely Essential and Endeavour, and to ActewAGL, it is convenient to consider their challenges along with those of PIAC and Ergon which also address the principal issue under this heading. It is noted that, as well as the three Networks NSW applications (and the ActewAGL application), PIAC separately challenged the opex allowance for the Networks NSW businesses in its three applications. JGN did not raise this issue.

The Opex Issues

The principal issue

123 The principal issue that may be drawn from the following overview of the parties' challenges is whether the AER's application of what the parties referred to as the EI model discharged its obligations under rr 6.5.6 and 6.12.1(4).

124 That issue was expanded by Mr O'Bryan QC for the AER as follows:

> It's said that the AER has not complied with the regulatory rules; and if made out, that would involve an incorrect exercise of discretion, and it's also said principally that the EI model that was used by the AER, both in assessing the DNSPs proposed opex and also in estimating required opex was flawed. And that argument is properly characterised as either the AER incorrectly exercising its discretion or making an unreasonable decision. Broadly, it will be necessary for the Tribunal to determine whether the AER's approach is compliant with the regulatory framework and whether the decision had a reasonable basis.
>
> … … …
>
> …all econometric models are an approximation, they're a simplification of the real world. They can never reflect absolutely all the on-the-ground features of the real world and that must be recognised. That being recognised, a regulator will take steps, or ought to take steps, acting reasonably, to make allowances for what's not revealed by the model, and so the question then becomes as what the AER has done in its estimation, has it taken sufficient reasonable steps to make those allowances.

Overview of the parties' challenges

Networks NSW

125 The three Networks NSW DNSPs challenge the AER's estimate (made under r 6.12.1(4)) of their required opex because, in their contention, the AER's estimates were too low. The figures in this part of the reasons are presented by the parties, some of which did not specify whether they are nominal or real figures. Networks NSW estimate the negative impact on each of its DNSPs to be: Ausgrid $731m, Endeavour $264m and Essential $737m.

126 It is Networks NSW view that the opex actually incurred by a DNSP is the best source of information for the AER of its required opex. Networks NSW submits that the AER has, however, ignored that information and instead relied on an unsound and untested econometric model (developed by Economic Insights Pty Ltd (EI) and which the parties refer to as the EI model) to estimate opex for each of the three Networks NSW DNSPs by reference to other businesses against which they were benchmarked. The Tribunal will adopt the term EI model as used by the parties.

127 Networks NSW also submits that the issue is not whether the EI model is better than alternative models but whether, having regard to the data limitations and other matters, any of the models are fit to be given 100 percent weight in assessing an appropriate level of opex.

ActewAGL

128 ActewAGL also challenges the AER's estimate of its required opex because, in its view, the AER's estimate is too low. The AER's decision to not accept ActewAGL's opex forecast resulted in a $130.6m ($2013-14) reduction in the forecast.

129 ActewAGL identifies what it perceives as three broad areas of deficiency in the AER's decision.

130 First, the AER's methodology is inconsistent with the methodology prescribed by rr 6.5.6(c) and 6.12.1(4) of the NER, and thus contrary to law.

131 Secondly, the AER's benchmarking has such serious technical deficiencies that it has no value as a means of assessing ActewAGL's efficient costs.

132 Thirdly, the AER is in error by confining itself in its consideration of the question whether ActewAGL's forecast opex reasonably reflects the efficient costs of a prudent operator, having regard only to exogenous considerations (ie matters that are beyond the control of a

DNSP, such as the weather and geography). That is to say, in making its decision the AER has assumed that the NER prohibits it from taking into account the real world consequences of its decision on consumers and others to the extent that those consequences arise from endogenous considerations (ie matters within the control of ActewAGL, such as its previous business decisions). This, ActewAGL submits is:

(a) wrong as a matter of law; and

(b) having regard to what it describes as the serious impact of the AER's decision on ActewAGL's ability to deliver safe and reliable supplies of electricity, is a matter that the AER should have considered.

PIAC

133 PIAC challenges the AER's estimates of the three Networks NSW DNSPs required opex because, in its view, the AER's estimate of opex for each of them is too high: by $365m for Ausgrid, $196m for Endeavour and $291 for Essential.

134 PIAC generally endorses the AER's benchmarking methodology but takes issue with the AER's adjustments to the EI model that are, in the words of PIAC, "arbitrary and illogical". It submits that the adjustments "disguised a very substantial further relaxation from a position that, at the draft decision stage, the AER had already described as "cautious" and "conservative".

135 It is PIAC's submission that the "relaxation" results in the Networks NSW DNSPs receiving opex allowances:

(a) well in excess of the efficient opex requirements of a prudent operator; and

(b) substantially higher,

than if the AER had applied the results of its benchmarking techniques in an internally logical manner and without a quantitative basis in favour of the DNSPs.

Ergon

136 Ergon (as an intervener in these matters) challenges the decisions because the AER used a flawed model to arrive at its estimates of opex.

137 Further particulars of what the parties perceive as deficiencies in the EI model, the AER's application of it and the AER's benchmarking methodology generally appear below.

Background

Opex in the context of the NEL and the NER

138 As observed, the NEL and the NER regulate the revenue that a DNSP may derive from the provision of electricity distribution services and the NEL provides that the AER is responsible for the economic regulation of electricity distribution services, including determination of the DNSP's annual revenue requirements.

139 The annual revenue requirement for a DNSP for each year of a regulatory control period must be determined using a building block approach. One of those building blocks is the forecast opex for that year (r 6.4.3(a)(7)).

140 Rule 6.4.3(b)(7) provides that a DNSP's opex for the year is its forecast opex as accepted or substituted by the AER in accordance with r 6.5.6.

141 The parties' submissions focused on:

(a) whether the AER's substitution of forecast opex was in accordance with the requirements of r 6.5.6 which, as a result of the 2012 Rule Amendments, is in a form different from that previously applied by the AER in determining a DNSP's opex allowance; and

(b) the significance of the 2012 Rule Amendments *vis á vis* r 6.5.6.

Rule 6.5.6 and the 2012 Rule Amendments

Rule 6.5.6

142 Briefly, rule 6.5.6 requires that:

(a) a DNSP's building block proposal must include the total forecast opex it considers is required to achieve each of four opex objectives in r 6.5.6(a)(1)-(4);

(b) the AER must accept the DNSP's forecast if it is satisfied that it reasonably reflects each of three opex criteria in r 6.5.6(c)(1)-(3);

(c) if the AER is not so satisfied, it must not accept the forecast: r 6.5.6(d);

(d) in deciding whether it is satisfied that a DNSP's forecast reasonably reflects each of three opex criteria, the AER must have regard to eleven opex factors in r 6.5.6(e): r 6.5.6(c).

143 Rule 6.12.1 provides that a distribution determination is predicated on a number of "constituent decisions" by the AER that are specified in that rule. Rule 6.12.1(4) specifies that one of those constituent decisions is a decision in which the AER either:

(a) acting in accordance with r 6.5.6(c), accepts the DNSP's forecast opex (ie is satisfied that it reasonably reflects each of the three opex criteria: r 6.12.1(4)(i); or

(b) acting in accordance with r 6.5.6(d), does not accept the DNSP's opex forecast, in which case the AER must set out its reason for its decision and an estimate of the total the DNSP's required opex that the AER is satisfied reasonably reflects the three opex criteria in r 6.5.6(c) taking into account the eleven opex factors in r 6.5.6(e): r 6.12.4(ii).

The 2012 Rule Amendments vis á vis rule 6.5.6

144 The relevant 2012 Rule Amendments *vis á vis* r 6.5.6 as identified in the parties' respective submissions may be summarised as follows:

(a) a change to r 6.5.6(c)(2) which, in effect, changed the focus of the rule from the costs that a prudent operator in the circumstances of the relevant DNSP (ie the DNSP whose opex forecast is being assessed by the AER) to the costs of a prudent operator *per se*;

(b) the deletion of what was opex factor 6.5.6(e)(4) (benchmark opex that would be incurred by an efficient DNSP) and the insertion of a new opex factor 6.5.6(e)(4) (the most recent annual benchmarking report published by the AER under r 6.27 and the benchmark opex that would be incurred by an efficient DNSP);

(c) the insertion of opex factor 6.5.6(e)(7) (the substitution possibilities between opex and capital expenditure);

(d) the insertion of opex factor 6.5.6(e)(12) (any other factor that the AER considers relevant and which it has notified the DNSP prior to the DNSP submitting its revised regulatory proposal);

(e) the deletion of r 6.12.3(f) which constrained the AER's discretion in developing a substitute estimate under 6.12(4)(ii) by providing, in effect, that if the AER refused to approve an estimate, the substitute estimate must be:

(i) determined on the basis of the DNSP's regulatory proposal; and

(ii) amended from that basis only to the extent necessary to enable it to be approved in accordance with the NER; and

(f) the amendment of r 6.2.8(a)(1) and the introduction of r 6.4.5 requiring the AER to develop and publish EFA Guidelines specifying the approach that the AER proposes to use to assess a DNSP's opex and capex forecasts.

The EI model

145 The substance of what the parties referred to as the EI model as it was applied by the AER appears in two reports that EI prepared for the AER, namely:

(a) the First EI Report: *Economic Benchmarking Assessment of Operating Expenses for NSW and ACT Electricity DNSPs*, 17 November 2014; and

(b) the Second EI Report: *Economic Insights, Response to Consultants' Reports on Economic Benchmarking of Electricity DNSPs*, April 2015, prepared by EI in response to the DNSPs' criticism of the AER's reliance on the First EI Report in its draft decisions.

The First EI Report

146 The release of the First EI Report:

(a) on 18 November 2014 pre-dated the AER's publication of its draft decisions for the Networks NSW DNSPs and ActewAGL on 27 November 2014 by but nine days; and

(b) constituted the first signal of EI's reliance on overseas data in its model and the AER's acceptance of such data.

147 It appears from the First EI Report that the AER engaged EI to assist it with the application of economic benchmarking and to advise it on:

(a) whether the AER should make adjustments to base opex for Networks NSW and ActewAGL based on the results from economic benchmarking models; and

(b) the productivity change to be applied to forecast opex for these DNSPs.

148 To that end, EI developed:

(a) three econometric benchmarking models; and

(b) two Productivity Index Number (PIN) benchmarking models.

149 An econometric model seeks to:

(a) estimate a relationship between opex and output or explanatory variables, such as those used in the EI model (as explained below, customer numbers, circuit length, maximum ratcheted demand and the proportion of underground circuits); and

(b) use the variation in costs not explained by the output or explanatory variables to derive an estimate of inefficiency for each benchmarked DNSP.

150 An econometric model will produce only an estimate of the relationships between opex and the specified output variables. Thus, taking Ausgrid as an example and using its customer numbers, circuit length, maximum ratcheted demand and share of undergrounding for a particular year, the output of an econometric model would not exactly equal Ausgrid's actual opex for that year.

151 As observed by the Productivity Commission: *Electricity Network Regulatory Frameworks*, Vol 1, 9 April 2013, p.182:

> Benchmarking models do not actually estimate inefficiency, although this is how they are generally interpreted. The results of any benchmarking model show the extent to which the model fails to explain performance … That is, the inefficiency of any business is the difference between the business's observed performance and that predicted by a set of cost drivers. This can reflect missing cost drivers, data errors, incorrect estimation methods, and invalid assumptions about the functional form and error distributions.

152 Reasons why an econometric model's estimate of a DNSP's inefficiency may differ from its actual inefficiency include:

(a) the data used is not accurate (eg suffer from some measurement error or are not comparable);

(b) the sample used may be too small to produce accurate estimates;

(c) the variables included in the model may be either inappropriate or incomplete (in the sense they do not reflect all the relevant drivers of opex); or

(d) the assumptions underpinning the econometric model are inappropriate.

153 As noted in in a report prepared by Pacific Economics Group Research LLC (PEG), *Statistical Benchmarking for NSW Distributors*, 19 January 2015 (the Second PEG Report) for Networks NSW at p 18:

> Some of these sources of error may not be detectable based on the model results alone, and therefore must be guarded against through the careful application of economic theory and sector-specific knowledge.

(This report is referred to as "the Second PEG report" because prior to the draft determinations, the AER retained PEG to compile a US data set for the AER which, in the event, it did not use.)

154 The three econometric benchmarking models developed by EI are:

(a) a Cobb Douglas stochastic frontier analysis (CD SFA) opex cost function model (EI selected this CD SFA model as its preferred econometric model. It is, as noted by the AER at p 7-26 of Attachment 7 to the Ausgrid Final Decision and elsewhere, its "preferred model" and is the model the parties refer to as the EI model);

(b) a Cobb Douglas least squares econometric (LSE): an econometric opex cost function using the Cobb Douglas functional form; and

(c) a translog LSE: an econometric opex cost function using the translog functional form.

155 The PIN benchmarking models developed by EI are:

(a) a multilateral total factor productivity (MTFP) model (which assesses the productivity of all inputs, opex and capital, relative to total output); and

(b) a multilateral partial factor productivity (MPFP) model (which assesses the productivity of opex as an input relative to total output).

The use of overseas data in the EI model

156 While EI derived its MTFP and MPFP scores using only the Australian DNSPs' responses to the AER's regulatory information notices (RINs), each of EI's econometric models used data derived from 68 DNSPs as follows:

(a) all 13 Australian DNSPs' responses to the AER's RINs;

(b) 18 New Zealand DNSPs; and

(c) 37 Ontario DNSPs.

As a result, 19 percent of the data for the EI model was derived from Australian DNSPs, 26 percent from New Zealand and 54 percent from Ontario DNSPs.

157 EI's explanation for its use of what it described as: "… comparable regulators' data from New Zealand and Ontario" appears in the First EI Report at pp 28-29 as follows:

> After a careful analysis of the economic benchmarking RIN data we concluded that there was insufficient variation in the data set to allow us to reliably estimate even a simple version of an opex cost function model.
> … … …
> We thus concluded that to obtain robust and reliable results from an econometric opex cost function analysis we needed to look to add additional cross sectional observations which meant drawing on overseas data, provided largely comparable DNSP data were available.

158 EI's First Report emphasised that the reason for its inclusion of the overseas data was to increase the sample size to obtain what it described as:

(a) more robust estimates of the slope coefficients in the cost function; and

(b) more robust opex efficiency comparisons among the Australian DNSPs.

159 Benchmarking the Australian DNSPs against their international counterparts was not, it said, one of its objectives. Thus, it explained at p 31, it included country-level dummy variables (for New Zealand and Ontario) in its cost functions to:

> … control for possible cross-country differences/inconsistencies in accounting definitions, price measures, regulatory and physical operating environments, etc. As a consequence, all cost efficiency scores obtained are relative to Australian best practice and NOT relative to international best practice.

Country dummy variables

160 As EI could not be certain it had exactly the same opex coverage across the three countries it included country dummy variables for New Zealand and Ontario to pick up differences in opex coverage (as well as systematic differences in operating environment factors such as the impact of harsher winter conditions in Ontario). As explained by EI in the First EI Report at p 31, the country dummy variables also pick up differences in conversion factors not adequately captured by its use of the Organisation for Economic Cooperation and

Development's (OECD) gross domestic product (GDP) purchasing power parities to convert financial variables to Australian dollars.

161 Thus, in very simplified terms, drawing on EI's explanation:

(a) a country dummy variable for Ontario may be implemented by, say, a value of 1 being assigned to a DNSP based in Ontario and 0 otherwise and will be the coefficient representing the percentage by which a DNSP's opex is higher or lower if it is located in Ontario, all other things being equal;

(b) while the inclusion of a dummy variable in an econometric model will change the 'intercept', it will not change the 'slope' of the model, ie where a dummy variable is used (here to indicate the different countries in which a DNSP may be located) for each DNSP the slope coefficient of the relationship (customer numbers, ratcheted maximum demand etc) remains the same. So in the case of the EI Model, the addition of dummy variables for Ontario and New Zealand assumes that the underlying relationship between, say, customer numbers and opex is the same for a DNSP regardless of the country in which it is located.

162 Relying on the Second EI Report, the AER submissions provide the following examples of what the country dummy variables correct for:

(a) differences in opex coverage (eg the inclusion or exclusion of opex associated with very high voltage assets);

(b) differences in DNSP activity coverage (eg whether the DNSP performs meter reading);

(c) operating environment differences, such as the impact of harsher winter conditions in Ontario;

(d) regulatory environment differences;

(e) accounting differences, such as different definitions of reporting categories; and

(f) differences in currency conversion factors not adequately captured by the use of OECD GDP purchasing power parities.

EI's outputs specification criteria

163 EI's selection of outputs are based on three criteria referred to in the First EI Report at p 10. First, that the output aligns with the rule 6.5.6 opex objectives.

164 Secondly, that the output reflects a service provided to a customer rather than an activity undertaken by a DNSP which does not directly affect what the customer receives. As explained by EI, if an activity is undertaken by a DNSP which does not directly affect what its customers receive is included as an output, there is a risk that the DNSP would have an incentive to over-engage in the activity and not concentrate sufficiently on meeting its customers' needs at an efficient cost.

165 Thirdly, that the output is significant. That is, as explained by EI, while a DNSP has a wide range of outputs, its costs are dominated by a few key outputs and only those key outputs should be included to keep the analysis manageable and to be consistent with the high level nature of economic benchmarking (eg a call centre's operations are not normally a large part of a DNSP's costs and so the centre's performance is not normally included as an output in a DNSP economic benchmarking study).

The MTFP and MPFP outputs

166 Attachment 7 to the Ausgrid Draft Decision, provides (at pp 7-56 and 7-59) the following explanation (without footnotes) for EI's selection of output specifications for its MTFP and MPFP models to which the AER had regard its Final Decision:

> Economic Insights' preferred output specification for the MTFP and MPFP includes:
>
> - Customer numbers
> - Ratcheted maximum demand
> - Circuit line length
> - Energy throughput
> - Reliability (measured as total customer minutes off supply).
>
> … this specification takes into account the operating environment variable of customer density by including both customers and line length as outputs. It similarly includes some allowance for differences in energy density and demand density by including energy delivered and a measure of maximum demand as outputs. Further this specification includes reliability as an output.
>
> The MTFP analysis uses opex and capital as inputs. In this analysis capital is split into five distinct components – subtransmission overhead lines, distribution overhead lines, subtransmission underground cables, distribution underground cables and transformers and other. Each input is measured in terms of its physical quantity. This measure of inputs aligns with Economic Insights' preferred input specification which is justified in our explanatory statement to our Guideline.

> Several submissions on our draft benchmarking report said that we did not allocate an appropriate weight to line length. Economic Insights consider that the weighting for overhead lines is appropriate because it has been developed through a Leontief estimation of the cost function.
>
> Some submissions also noted that Economic Insights' lines and cables input index for MTFP analysis might be multiplicative in nature placing a greater weighting on high voltage lines than is warranted. Economic Insights addressed this concern by creating separate input indexes for subtransmission and distribution lines. The weighting given to high voltage lines will not influence our alternative assessment techniques that examine the productivity of opex. These techniques, unlike MTFP, are not sensitive to the weighting given to individual capital inputs.
>
> … … …
>
> In addition to accounting for these factors in the model specification, Economic Insights tested the effect of the following operating environment factors on the MPFP scores in a second-stage regression analysis:
>
> - customer numbers (to check whether additional scale effects are significant)
> - customer, energy and demand network densities
> - the share of underground cable length in total circuit kilometres
> - the share of single stage transformation capacity in single stage plus the second stage of two stage transformation capacity at the zone substation level, and
> - system average interruption duration index (SAIDI)146.
>
> Economic Insights found, using these tests, that none of these variables are statistically significant in their effect on the MPFP scores. This indicates that the MPFP results have appropriately captured the effects of these variables.

The EI model's specifications

167 Having regard to EI's three output specification criteria outlined above and to output specifications used by PEG's research in work for the Ontario Energy Board, EI selected the following outputs for the EI model:

(a) customer numbers;

(b) circuit length; and

(c) maximum ratcheted demand (as explained by EI in the First EI Report at p 11, this variable is simply the highest value of peak demand observed in the period up to the year in question for each DNSP which recognises the capacity that has actually been used to satisfy demand and gives the DNSP credit for this capacity in subsequent years, even though annual peak demand may be lower in subsequent years.);

168 The EI model also specifies the proportion of the DNSP circuits that are underground as opposed to aboveground, not as an output variable, but as an operating environment variable. As EI explained it:

> Undergrounding: by including an operating environment variable for the proportion of underground cables in total line and cable length in our cost functions, we explicitly allow for the impact of this factor.

169 The following explanation (without footnotes) of the EI model's specifications appears at p 7-26 of Attachment 7 to the Ausgrid Draft Decision:

> **Model specifications**
>
> The opex cost functions incorporate the significant output variables of customer numbers, circuit length, and ratcheted maximum demand. Unlike the MTFP model the opex cost function models do not include energy delivered and reliability. Economic Insights excluded energy delivered because it was highly correlated with ratcheted maximum demand. The estimated coefficients of either energy delivered or ratcheted maximum demand were generally insignificant in these models. Economic Insights found that the correlation coefficient between these two variables was larger than 0.99 and the behaviour of their coefficients was almost certainly a consequence of multicollinearity problems.
>
> Hence Economic Insights excluded energy delivered. As energy delivered is highly correlated with ratcheted maximum demand the model will pick up the effect of energy delivered.
>
> Reliability was not included because consistent reliability data is not available for the international distributors. We are comfortable with Economic Insights not including reliability in the econometric models. A primary driver of reliability performance is capital expenditure. Expenditure on maintenance may prevent outages. However, individual network outages lead to opex associated with rectifying the outages.
>
> The opex cost function models also include the proportion of underground circuits as an operating environment factor. This is consistent with the MTFP analysis which has separate input indexes for overhead and underground lines. As expected the coefficient of this variable is negative. Underground cables will require less ongoing maintenance than overhead cables. Further, underground cables do not incur vegetation management costs.

The Second EI Report

170 The Second EI Report was commissioned by the AER to assist it with its application of economic benchmarking and to advise:

(a) whether the AER should make adjustments to base year opex for New South Wales, Australian Capital Territory and Queensland DNSPs based on the results from economic benchmarking models; and

(b) the productivity change to be applied to forecast opex for the NSW, ACT and Queensland DNSPs.

171 Referring to the First EI Report, the Second EI Report notes at p iv:

> After choosing a conservative efficiency target based on the weighted average performance of the five top performing DNSPs and making additional allowance for factors not included in the econometric models, downwards adjustments were recommended for the base year opex of each of the NSW and ACT DNSPs.
>
> The NSW and ACT DNSPs' revised regulatory proposals included a number of supporting consultants' reports critiquing the analysis in … [the First EI Report] …. These included reports by Pacific Economics Group Research, Frontier Economics, Cambridge Economic Policy Associates (CEPA), Advisian and Huegin. A number of consultants' reports were also submitted by the Queensland DNSPs including ones by Frontier Economics, Huegin and Synergies.
>
> We have reviewed both the critiques presented by the consultants and the alternative models presented in detail and have found no reason to change the approach adopted in … [the First EI Report] … benchmarking analysis. We do, however, consider there is a case for revising the opex efficiency target. And updated and more detailed information on the impact of operating environment factors not explicitly included in the opex cost function model is now available.

172 Expanding on the observation that there is a case for revising the opex efficiency target, the Second EI Report stated at p x:

> … we are of the view there may be a case for setting an even more conservative target than that used in …[the First EI Report] … . This is particularly the case given that this is the first time economic benchmarking is being used as the primary basis for an Australian regulatory decision.
>
> … … …
>
> Incorporating the more conservative efficiency target and updated information on the impact of operating environment factors not included in the econometric models produces the base year opex reductions listed in table A for the NSW, ACT and Queensland DNSPs. Since Endeavour Energy is already exceeding its (conservatively set) target, no adjustment to its base year opex is required.

173 Table A, as it appeared in the Second EI Report, is reproduced below:

Table A NSW, ACT and Queensland DNSP opex efficiency scores, adjusted efficiency targets and base year opex adjustments to reach the target

DNSP	Efficiency score	Target allowing for additional OEFs	Reduction to base year opex
Ausgrid	44.7%	68.7%	24.0%
Endeavour	59.3%	68.0%	0.0%

Essential Energy	54.9%	69.4%	26.4%
ActewAGL	39.9%	62.4%	32.8%
Energex	61.8%	65.6%	15.5%
Ergon Energy	48.2%	61.7%	10.7%

174 In a nutshell, the Second EI Report resulted in no change to the AER's application of the EI model and benchmarking methodology other than the AER's (contentious):

(a) lowering of the comparison point for determining the AER's alternative estimate of base opex in the EI model from Citi Power to AusNet; and

(b) further adjustments to operating environment factors (OEFs) as outlined below.

The lowering of the comparison point and the further OEF adjustments did result in the AER increasing its opex allowances for the DNSPs. While the increases were not enough to satisfy the DNSPs, they were, in PIAC's submission, overly generous.

The AER's lowering of the EI model's comparison point

175 In its Draft Decisions, the AER used as the benchmark comparison point (ie each DNSP's efficiency target) the weighted average of the top quartile of opex efficiency scores generated by the EI model for all DNSPs. This was the average of the efficiency scores of the five most efficient DNSPs, each of which was over 0.75.

176 In its Final Decisions, based on advice from EI, the AER used as a benchmark comparison point the opex efficiency score of the DNSP whose score was at the bottom of the upper third of the scores of all DNSPs (ie the DNSP with the lowest opex efficiency score above 0.75). This, as may be seen by reference to Table 7.4 that is reproduced below, is AusNet. It reduced the benchmark comparison point from 0.86 to 0.77.

177 The AER's lowering of the comparison point is a matter of some controversy from PIAC's perspective and is also criticised by the DNSPs as pointing to weaknesses in the AER's approach to benchmarking. The controversy and criticism are canvassed below.

The AER's operating environment factors (OEFs) adjustments

178 At page 7-180 of Attachment 7 to the Ausgrid Final Decision, the AER notes (without footnotes):

> It is important to recognise that service providers do not operate under exactly the same operating environment factors (OEFs). OEFs may have a significant impact on measured efficiency through their impact on a service provider's opex. It is desirable to adjust for material OEF differences to ensure that when comparisons are made across service providers, we are comparing like with like to the greatest extent possible. By identifying the effect of OEFs on costs one can determine the extent to which cost differences are exogenous or due to inefficiency.
>
> Some key OEFs are directly accounted for in Economic Insights' SFA model. Where this has not been possible, we have considered the quantum of the impact of the OEF on the NSW service providers' opex relative to the comparison firms. We have then adjusted the SFA efficiency scores based on our findings on the effects of OEFs.

Like paragraphs also appear in Attachment 7 to the other Final Decisions in issue in the DNSPs applications.

179 In its post-modelling adjustment process, the AER assessed the effects of 65 OEFs, being potential differences between DNSPs that were not directly accounted for in the model specification. This included factors nominated by the AER during the decision process and factors put forward by DNSPs following the issue of the Draft Decisions.

180 The assessment was undertaken in two stages. First, the AER assessed each OEF against three OEF criteria, namely, exogeneity, materiality, and duplication as explained by the AER in the following paragraphs.

181 The first, exogeneity, is that an OEF should be outside the control of a DNSP because adjusting for an OEF that a DNSP can control itself may mask inefficient investment or expenditure.

182 Although, as explained further below, a collective adjustment was made for individually immaterial factors, the second criterion, materiality, is that an OEF should create a material difference in a particular DNSP's opex. An OEF was considered to be material where it would affect a DNSP's opex by 0.5 percent or more.

183 To avoid double-counting the effects of an OEF, the third criterion, duplication, is that the OEF should not have been accounted for elsewhere.

184 Where an OEF satisfied all three criteria in relation to a particular DNSP, the AER made an adjustment to the DNSP's target opex to allow for its effects.

185 The second stage involved the AER providing an additional single adjustment for each DNSP to account for factors that satisfied the exogeneity and duplication criteria but did not independently have a material effect on opex.

186 In order to determine whether an OEF was likely to have a material effect on a DNSP's opex, the AER assessed all available information, including information provided by the DNSPs.

187 The AER identified four OEFs that fulfilled all three of the material OEF criteria for the Networks NSW DNSPs: subtransmission configurations, licence conditions, occupational health and safety regulations and termite exposure.

188 For ActewAGL, the OEFs that satisfied the materiality criteria were backyard reticulation, capitalisation practices, occupational health and safety regulations and standard control services connections.

189 The AER made adjustments to each DNSP's target efficiency scores to take account of the above mentioned material OEFs.

190 The AER then estimated the collective effect of the OEFs that had been found to be exogenous and non-duplicative, but not individually material (immaterial OEFs).

191 Where the AER considered that an immaterial OEF was likely to disadvantage a DNSP, or where it was uncertain whether the OEF would advantage or disadvantage a DNSP (directionally ambiguous OEFs), the AER allowed 0.5 percent in the DNSP's favour. Where an immaterial OEF was likely to advantage the DNSP, the AER subtracted 0.5 percent. There was one exception to this procedure: where the AER was able to quantify the effect of an immaterial OEF, it made an adjustment only for that amount.

192 The AER then made a further adjustment to each DNSP's target efficiency scores to account for the collective effects of the immaterial OEFs.

193 *Table A 6 Summary of final decision on OEF adjustments* in Attachment 7 to the Ausgrid Final Decision details the OEF adjustments made to each of the Networks NSW DNSPs' target opex and is reproduced below:

Table A. 6 Summary of final decision on OEF adjustments

Factor	Ausgrid	Endeavour	Essential	Reasons against OEF criteria[551]
Subtransmission	5.2%	4.9%	3.1%	• The boundary between distribution and transmission is not determined by service providers • Data from Ausgrid's regulatory accounts suggest that subtransmission assets are up to twice as costly to operate as distribution assets. • Economic Insights' SFA model does not include a variable that accounts for subtransmission assets.
Licence conditions	1.2%	0.7%	1.2%	• The network planning requirements in the NSW service providers licence conditions are not determined by service providers. • Category analysis and economic benchmarking RIN data suggest that the increased transformer capacity to meet the 2005 and 2007 change in licence conditions may lead to a material increase in maintenance expenditure. • Economic Insights' SFA model does not include a variable that accounts for changes in licence conditions.
OH&S regulations	0.5%	0.5%	0.5%	• OH&S regulations are not set by service providers. • Data from the ABS and a PwC report commissioned by the Victorian Government suggest that differences in OH&S regulations may materially affect service provider's opex. • Economic Insights' SFA model does not include a variable that accounts for differences in OH&S legislation.
Termite Exposure	0.0%	0.2%	0.6%	• The prevalence of termites in a geographic area is beyond service providers' control. • Data on Powercor's termite management costs and data from the CSIRO on the range of termites suggest that the Essential Energy may have a material cost disadvantage due to termite

				exposure. • Economic Insights' SFA model does not include a variable that accounts for differences in termite exposure.
Immaterial factors	4.7%	6.7%	5.4%	There are various exogenous, individually immaterial factors not accounted for in Economic Insights' SFA model that may affect service providers' costs relative to the comparison firms. While individually these costs may not lead to material differences in opex, collectively they may.
Total	11.7%	12.9%	10.7%	

The AER said in its footnote to that Table that its OEF criteria exogeneity, materiality, and duplication, are explained in detail in its section on its approach to OEFs.

194 *Table A 8 Summary of individually immaterial OEF adjustment* in Attachment 7 to the Ausgrid Final Decision provides a summary of the quantification of the effect of immaterial factors on each of the three Networks NSW DNSPs. It is also reproduced below:

Table A 8 Summary of individually immaterial OEF adjustment

Factor	Ausgrid	Endeavour	Essential
Asset lives	0.5%	0.5%	-0.5%
Building regulations	0.5%	0.5%	0.5%
Bushfires	-0.5%	-0.5%	-0.5%
Capitalisation Practices	-0.5%	0.5%	-0.5%
Corrosive environments	0.5%	0.5%	0.5%
Cultural heritage obligations	0.5%	0.5%	0.5%
Environmental Regulations	0.5%	0.5%	0.5%
Environmental variability	-0.5%	-0.5%	0.5%
Extreme weather events	0.5%	0.5%	0.5%
Grounding conditions	0.5%	0.5%	0.5%
Network access	-0.1%	0.5%	0.4%
Planning regulations	0.5%	0.5%	0.5%
Proportion of 11kV and 12kV lines	0.5%	0.5%	0.5%
Rainfall and humidity	0.5%	0.5%	0.5%
Specialised skills	0.5%	0.5%	0.5%
Solar uptake	-0.5%	-0.5%	-0.5%
Topography	0.5%	0.5%	0.5%
Traffic management	0.5%	0.5%	0.5%
Transformer capacity owned by customers	-0.2%	0.1%	0.0%

Division of vegetation management responsibility	0.5%	0.5%	0.5%
Total	4.7%	6.7%	5.4%

Source: AER analysis
The totals do not reconcile entirely due to rounding

195 *Table A.6 Summary of final decision on OEF adjustments* in Attachment 7 to the ActewAGL Final Decision details the OEF adjustments made to its target opex and is reproduced below.

Table A. 6 Summary of final decision on OEF adjustments

Factor	Adjustment	Reasons against OEF criteria
Capitalisation Practices	8.5%	• Although capitalisation practices are the result of management decisions, differences in capitalisation practices can lead to material differences that are unrelated to efficiency. • ActewAGL's capitalisation practices, with regard to vehicle and IT costs, provide it with a material cost disadvantage relative to the comparison firms. • Economic Insights' SFA model does not include variables that account differences in capitalisation practices between the NEM service providers.
Backyard reticulation	5.6%	• Backyard reticulation has been required by ACT planning approaches. • ActewAGL has provided evidence that backyard reticulation materially increases its costs. • Economic Insights' SFA model does not include variables that account for backyard reticulation between the NEM service providers.
Standard control services connections	4.0%	• The AER determines service providers' service classifications. • Standard control services connections opex accounts for a material amount of ActewAGL's standard control services opex. • Economic Insights' SFA uses network services data. Connection services are not included in network services.
		• OH&S regulations are not set by service providers. • Data from the ABS and a PwC report commissioned by the

OH&S regulations	0.5%	Victorian Government suggest that differences in OH&S regulations may materially affect service provider's opex. • Economic Insights' SFA model does not include a variable that accounts for differences in OH&S legislation.
Individually immaterial factors	4.4%	There are various exogenous, individually immaterial factors not accounted for in Economic Insights' SFA model that may affect service providers' costs relative to the comparison firms. While individually these costs may not lead to material differences in opex, collectively they may.
Total	23.0%	

Source: AER analysis

The AER points out that the OEF criteria exogeneity, materiality, and duplication, are explained in detail in its section on its approach to OEFs.

196 *Table A.8 Summary of individually immaterial OEF adjustments* in Attachment 7 to the ActewAGL Final Decision details the quantified effect of immaterial factors and is reproduced below.

Table A 8 Summary of individually immaterial OEF adjustment

Factor	Adjustment
Asset lives	-0.5%
Bushfires	0.5%
Building regulations	0.5%
Corrosive environments	0.5%
Cultural heritage obligations	0.5%
Environmental regulations	0.5%
Environmental variability	-0.5%
Extreme weather events	-0.5%
Grounding conditions	0.5%
Humidity and rainfall	0.5%
Network access	-0.1%
Planning regulations	0.5%

Proportion of 11kV and 12kV lines	0.5%
Solar uptake	-0.5%
Specialised skills	0.5%
Termites	0.0%
Traffic management	0.5%
Transformer capacity owned by customer	0.1%
Topography	0.5%
Underground services	0.4%
Total	4.4%

Source: AER analysis

197 The AER's OEF adjustments are also a matter of controversy. PIAC challenges them as being too generous. The DNSPs challenging them as subjective and arbitrary. The challenges are canvassed below.

The AER's application of the benchmarking opex factor (rule 6.5.6(d)(4))

198 *Figure 7.2: Our assessment approach* in Attachment 7 to the Ausgrid Final Decision outlines the AER's five step approach to forming its alternative estimate of opex as follows:

> Step 1 –Start with service provider's opex
>
> We typically use the service provider's actual opex in a single year as the starting point for our assessment. We call this the base year. While categories of opex can vary year to year, total opex is relatively recurrent. We typically choose a recent year for our assessment.
>
> Step 2 – Assess base year opex
>
> We assess whether opex the service provider incurred in the base year reasonably reflects the opex criteria. We have a number of techniques including economic benchmarking by which we can test the efficiency of opex in the base year.
>
> Step 3 – Add a rate of change to base opex
>
> As the opex of an efficient service provider tends to change over time due to price changes, output and productivity we trend our estimate of base opex forward over the regulatory control period to take account of these changes. We refer to this as the rate of change.
>
> Step 4 – Add or subtract any step changes
>
> We then adjust base year expenditure to account for any forecast cost changes over the regulatory control period that would meet the opex criteria that are not otherwise captured in base opex or rate of change. This may be due to new regulatory obligations in the forecast period and efficient capex/opex trade-offs. We call these step changes.
>
> Step 5 – Other opex
>
> Finally we add any additional opex components which have not been forecast using

this approach. For instance, we forecast debt raising costs based on the costs incurred by a benchmark efficient service provider.

Having established our estimate of total forecast opex we can compare our alternative opex forecast with the service provider's total forecast opex. If we are not satisfied there is an adequate explanation for the difference between our opex forecast and the service provider's opex forecast, we will use our opex forecast.

The AER refer to it as a "revealed cost method" in its EFA Guideline (and sometimes refer to it as the "base-step-trend method" in its past regulatory decisions).

199 *Table 7.3: Assessment of Ausgrid's base opex* in Attachment 7 to the Ausgrid Final Decision outlines the main techniques used by the AER to test the efficiency of Ausgrid's base opex.

Table 7.3 Assessment of Ausgrid's base opex

Technique	Description of technique	Findings
Economic benchmarking	Economic benchmarking measures the efficiency of a service provider in the use of its inputs to produce outputs. The economic benchmarking techniques we used to test Ausgrid's efficiency included Multilateral Total Factor Productivity, Multilateral Partial Factor Productivity and opex cost function modelling. We compared Ausgrid's efficiency to other service providers in the NEM.	Despite differences in the techniques we used, all benchmarking techniques show Ausgrid does not perform as efficiently as most other service providers in the NEM. We consider that differences in Ausgrid's operating environment not captured in the benchmarking models do not adequately explain the different benchmarking results between Ausgrid and other service providers.
Review of labour and workforce practices	Labour costs represent a large proportion of all NSW service providers' opex. We engaged Deloitte Access Economics (Deloitte) to review the NSW service providers' labour and workforce practices.	Deloitte found that because of labour and workforce management issues, Ausgrid's base year would not likely represent efficient costs. Deloitte concludes that: • the NSW service providers have high labour costs because they have too many employees. They all engaged permanent staff in preference to contractors over the 2009–14 period for transitory capex work. Now, due to EBA restrictions on redundancies, they have stranded labour • because the NSW service providers

	employ a high proportion of their employees through EBAs (more than 75 percent) restrictive EBA clauses have a significant impact on workforce flexibility • the optimum level of outsourcing is likely to be higher than the level the NSW service providers outsourced at over the 2009–14 period; this is a key distinguishing factor from the Victorian service providers • while the NSW service provider have been implementing efficiency improvements, many efficiencies have not been realised until after the 2012–13 base year.

Source: AER analysis

The reference to Deloitte is to Deloitte Access Economics (Deloitte). A footnote to Table 7.3 cited *NSW distribution network service providers labour analysis: addendum to 2014 report*, April 2015, pp. ii–vii; and Deloitte *NSW Distribution Network Service Providers Labour Analysis*, November 2014, p. iv.

200 A like Table 7.3 appeared in each of the Attachments 7 to the AER's Endeavour, Essential and ActewAGL Final Decisions. Subject only to the name of the relevant DNSP, the "Economic benchmarking" paragraphs in each of those tables are the same. Subject to an additional bullet point in the case of Endeavour and an additional paragraph in the case of Essential, so too are the "Review of labour and workforce practices" paragraphs in each of the Endeavour and Essential tables.

201 The additional bullet point in the case of Endeavour is as follows:

> • Deloitte considered that Endeavour Energy's base year opex was likely more efficient than Ausgrid's and Essential Energy's because it had commenced implementing efficiency improvements earlier. However, all NSW service providers (including Endeavour Energy) had efficiencies they were yet to realise because the reforms they had implemented to date did not consider potential opportunities to improve efficiency outside of the three NSW businesses. That is, they compared efficiency among themselves, but not to businesses in other jurisdictions.

202 The additional paragraph in the case of Essential is as follows (without footnote):

> Further, in response to submissions in its revised proposal about the adverse impact of the dispersed nature of its network on labour costs, Deloitte found that Essential Energy could potentially achieve significant cost savings by implementing a local

service agent (LSA) model. Powercor achieved significant efficiencies from implementing an LSA model following privatisation.

203 Table 7.3 in Attachment 7 to the Essential Final Decision also had the additional following entry relating to "Vegetation management":

Technique	Description of technique	Findings
Vegetation management	Essential Energy's vegetation management costs have increased significantly over the 2009–14 period. Category analysis showed Essential Energy has very high costs compared to most of its peers and Essential Energy's regulatory proposal included a step down in vegetation management for the forecast period acknowledging that its 2009–14 practices required reform. Therefore, we decided to review Essential Energy' vegetation management practices in detail.	Our overall findings for vegetation management remain the same as those from our draft decision. That is, Essential Energy's own documentation, including a report it commissioned from Select Solutions, provide evidence that its vegetation management practices in the base year (2012–13) were inefficient.[41] Select Solutions' review found that Essential Energy must move to a "significantly more efficient" vegetation management model to reduce the impact of its expenditure on customer prices.[42] Select Solutions found several causes of inefficiency, including: • attributing too much vegetation management effort to reactive spot clearing rather than proactive cyclic maintenance • primarily engaging contractors for cutting on a demonstrably less efficient hourly rate basis • less than optimal outsourcing. We discuss our vegetation management findings in more detail in Appendix A.5.

Source: AER analysis

The footnoted references are to Essential, *Regulatory Proposal*, 2014, p. 73 and its paper Essential Energy, *Vegetation Management Strategy and Implementation Plan for Additional Expenditure – FY 2013 to 14*, February 2013; and to Select Solutions, *Review of Essential Energy Vegetation Management Strategy–Final Report*, 22 March 2013.

204 While the "Economic benchmarking" paragraphs in Table 7.3 in the ActewAGL Final Decision are the same as those in the Networks NSW DSNP's equivalent tables, the "Review of labour and workforce practices" and "Review of vegetation management" paragraphs in Table 7.3 ActewAGL are different, as reproduced below:

Technique	Description of technique	Findings
Review of labour and workforce practices	Labour costs represent a large proportion of ActewAGL's opex (approximately 80 percent). Category analysis showed ActewAGL had high labour costs relative to most of its peers and ActewAGL's regulatory proposal suggested labour costs were a reason ActewAGL overspent its opex allowance in 2012–13. Therefore, we decided, with the assistance of EMCa, to conduct a detailed review of ActewAGL's labour and workforce practices.	EMCa considered that there is evidence that ActewAGL's work practices, processes and systems in 2012–13 were ineffective. EMCa considered that this lead to inefficient use of labour in the office and field. This inefficiency is characterised by duplication of effort in work planning and scheduling, loss of field productivity through ineffective works management and through ineffective data and information management. EMCa also considered that ActewAGL's labour levels were not reasonably efficient in 2012–13, noting that ActewAGL has steadily increased its ASL based on assumed future growth scenarios and adopting an internal resourcing strategy. EMCa considered that if ActewAGL had outsourced more of its work, it would likely have benefited from increased labour flexibility and reduced operating costs. EMCa found a lack of compelling evidence to demonstrate that ActewAGL's labour costs in 2012–13 were reflective of an efficient service provider. EMCa consider this was evident by the relatively high level of internal resources used and the extent to which work was outsourced on an hourly rate bases for the urgent clearance of vegetation..
Review of vegetation management	ActewAGL's vegetation management costs have increased significantly over the 2009–14 period. Category analysis showed ActewAGL has very high costs compared to most of its peers and ActewAGL's regulatory proposal suggested vegetation management was a reason ActewAGL overspent its opex allowance in 2012–13. Therefore, we decided, with the assistance of EMCa, to review ActewAGL's vegetation management practices in	EMCa found that ActewAGL did not act prudently and efficiently to manage costs associated with increased vegetation growth that occurred prior to 2012–13 because its vegetation management practices and its strategic and tactical responses were inadequate. EMCa also found evidence of inefficient vegetation management costs in 2012–13 due to the manual processes between the office and field and the extent of clearance work that was deemed to be urgent, and which was therefore undertaken with a resultant higher cost. It is EMCa's view that a service provider acting to efficiently minimise costs would have incurred a lower level of urgent clearance work.

	detail.

Source: AER analysis.

205 It appears from Attachment 7 to the final decisions that:

(a) the AER used the EI model to adjust Ausgrid, Essential and ActewAGL's base opex to determine a starting point for a forecast that it considered would reasonably reflect the criteria; and

(b) while the AER considered that it was unable to use Ausgrid, Essential or ActewAGL's historical opex to arrive at an alternative forecast because such a forecast would not result in a forecast that would reasonably reflect the opex criteria, it was not satisfied that a forecast based on Endeavour's actual opex in 2012–13 could be regarded as materially inefficient.

206 While in relation to Endeavour, the AER concluded it was not satisfied that a forecast based on Endeavour's actual opex in 2012–13 could be regarded as materially inefficient, it formed the view that Endeavour's forecast opex involved two additional items which it analysed (but rejected) as "step changes" (ie additional expenditure not incurred by Endeavour during the base year), namely:

(a) $240.7m ($2013-14) in respect of increased vegetation management; and

(b) $17.3m ($2013-14) in redundancy costs.

207 As is illustrated by the following passage (without footnotes) from Attachment 7 to the Endeavour Final Decision at pp 7-268 to 7-269, in rejecting what it described as Endeavour's "step changes", the AER relied on the EI model:

> For Endeavour Energy's base year opex, because we are not satisfied that it contains material inefficiency it does not require an adjustment. We, therefore, consider it appropriate to use Endeavour Energy's base opex when developing our alternative forecast. This is a departure from our draft decision. Our benchmarking analysis is nevertheless relevant in our assessment of other components of Endeavour Energy's alternative total opex forecast, such as a consideration of its proposed step changes.
>
> We disagree with the service providers' submissions that advocate we should abandon our benchmarking techniques and the extent to which we rely upon our benchmarking results. Therefore, we continue to place significant weight on the results of Economic Insights' preferred [EI] model (Cobb Douglas SFA) in estimating necessary reductions in base opex.

208 More particularly, the AER rejected the increased vegetation management opex which Endeavour proposed to enable it to meet increased outsourced providers' contract prices to be incurred in targeting improvements to conform with the minimum risk standards it is obliged to meet regarding the clearance distance between its mains and vegetation across its network area.

209 In rejecting the increase the AER observed (at p 7-288 of Attachment 7 to the Endeavour Final Decision) that:

(a) Endeavour had stated that it did not face any change to the minimum risk standards with which it must comply;

(b) without persuasive evidence that a DNSP's total historical opex was too low to achieve the opex objectives, it did not consider increased contract costs to be a reason to increase the total opex forecast to meet what are unchanged regulatory obligations;

(c) Endeavour does not benchmark well when compared to other DNSPs in the national electricity market; and

(d) it would be inconsistent with the application of Endeavour's EBSS to include the vegetation management opex in the opex forecast (Endeavour proposed that it retain gains from its EBSS rather than share them with its customers).

210 The AER rejected the proposed redundancy expenditure because it considered that it was needed only because Endeavour was not currently operating as efficiently as it could. In this respect it relied on the April 2015 Deloitte report referred to above (Deloitte Access Economics, *NSW distribution network service providers labour analysis: addendum to 2014 report*, April 2015) concerning labour and workforce management issues affecting Networks NSW. That Deloitte report in turn relied on the EI Model.

211 *Table 7.4: Arriving at our alternative estimate of base opex* in the Ausgrid Final Decision outlines the steps that the AER took to arrive at Ausgrid's base opex.

Table 7.4 Arriving at our alternative estimate of base opex

	Description	Output	Calculation
Step 1 – Start with Ausgrid's average opex over the 2006 to 2013 period.	Ausgrid's network services opex was, on average, $509.3 million ($2013) over the 2006 to 2013 period.	$509.3 million ($2013)	
Step 2 - Calculate the raw efficiency scores using our preferred economic benchmarking model	Our preferred economic benchmarking model is Economic Insights' Cobb Douglas SFA model. We use it to determine all service providers' raw efficiency scores. Based on Ausgrid's customer numbers, line length, and ratcheted maximum demand over the 2006 to 2013 period, Ausgrid's raw efficiency score is 44.7 percent.	44.7 percent	
Step 3 – Choose the comparison point	For the purposes of determining our alternative estimate of base opex, we did not base our estimate on the efficient opex estimated by the model. The comparison point we used was the lowest performing service provider in the top quartile of possible scores, AusNet Services. According to this model AusNet Services' opex is 76.8 percent efficient based on its performance over the 2006 to 2013 period. Therefore to determine our substitute base we have assumed a prudent and efficient Ausgrid would be operating at an equivalent level of efficiency to AusNet Services.	76.8 percent	
Step 3 – Adjust Ausgrid's raw efficiency score for operating environment factors	The economic benchmarking model does not capture all operating environment factors likely to affect opex incurred by a prudent and efficient Ausgrid. We have estimated the effect of these factors and made a further reduction to our estimate where required. We have determined an 11.7 percent reduction to Ausgrid's comparison point based on our assessment of these factors. A material operating environment factor we considered was not accounted for in the model is the different subtransmission configurations in NSW.	68.7 percent	= 0.768 / (1 + 0.117)
Step 4 – Calculate the percentage reduction in opex	We then calculate the opex reduction by comparing Ausgrid's efficiency score with the adjusted comparison point score.	35.0 percent	= 1 – (0.447 / 0.687)
Step 5 – Calculate the midpoint efficient opex	We estimate efficient opex at the midpoint of the 2006 to 2013 period by applying the percentage reduction in opex to Ausgrid's average opex over the period. This represents our estimate of efficient opex at the midpoint of the 2006 to 2013 period.	330.9 million ($2013)	= (1 – 0.350)* 509.3 million
Step 6 – Trend midpoint efficient opex forward to 2012–13	Our forecasting approach is to use a 2012–13 base year. We have trended the midpoint efficient opex forward to a 2012–13 base year based on Economic Insights' opex partial factor productivity growth model. It estimates the growth in efficient opex based on growth in customer numbers, line length, ratcheted maximum demand and share of undergrounding. It estimated the growth in efficient opex based	359.0 million ($2013)	= 330.9 x (1 = 0.0848)

	on Ausgrid's growth in these inputs in this period to be 8.48 percent.		
Step 7 – Adjust our estimate of 2012–13 base year opex for CPI	The output in step 6 is in real 2013 dollars. We need to convert it to real 2013–14 dollars for the purposes of forming our substitute estimate of base opex. This reflects one and a half years of inflation. This is our estimate of base opex.	374.2 million ($2013-14)	= 359.0 x (1 + 0.042)

Source: AER analysis

212 As may be seen from Table 7.4 reproduced above, the AER started with Ausgrid's average opex over the period 2006 to 2013, namely, $509.3m.

213 It then, in Step 2, used the EI model to calculate a raw efficiency score of 44.7 percent.

214 The third step involved the choice of a comparison point of 76.8 percent, based on AusNet, which is at the bottom of the top quartile of possible scores using the EI model.

215 The fourth step (described as Step 3 in Table 7.4) involved an adjustment to the raw efficiency score for OEFs – the adjustment being made to the comparison point on the assumption that the comparator (AusNet) would have to contend with the same environmental factors as Ausgrid. This adjustment, made by the AER once the model had been run, lowers the comparison point to 68.7 percent.

216 The mathematical consequence of this "after-the-event" adjustment, is that the efficiency score of Ausgrid becomes 44.7 percent and, therefore, in what is described as Step 4 in Table 7.4, it is calculated that Ausgrid is, in effect, 35 percent below the comparison point.

217 Then in what is described as Step 5 in Table 7.4, the AER calculated a mid-point efficient opex (ie the average efficient opex over the 2006-13 period based on the EI model). In Step 6 adjusted that mid-point forwards to 2012-13 following that adjustment in Step 7 with an adjustment of its estimate of Ausgrid's 2012-13 base year opex for consumer price index (CPI) to arrive at a figure of $374.2m ($2013-14).

218 A table similar to the *Table 7.4: Arriving at our alternative estimate of base opex* which appeared in Attachment 7 to the Ausgrid Final Decision as reproduced above also appeared in each of the Attachments 7 to the AER's Essential and ActewAGL Final Decisions. Those tables also included two steps designated as Step 3. The table in the Essential Final Decision also included an additional Step 8 as reproduced below:

	Description	Output	Calculation
Step 8- Convert to final year estimate	The guideline specifies that we will convert our estimate of base year opex into a final year estimate. We used the formula in the guideline to determine our unadjusted estimate of opex for 2013–14. We used the 2012–13 efficient opex value in step 7 to determine what the efficiency adjustment would be for 2012–13 (–26.3%), taking into account changes to Essential Energy's service classification. To arrive at our adjusted final year estimate, we applied the efficiency adjustment to our unadjusted estimate of 2013–14 opex.	311.9 million ($2013-14)	See AER opex model for Essential Energy

Source: AER analysis

219 It may be seen from Table 7.4 in Attachment 7 to the Essential Final Decision that:

(a) the AER started with Essential's average opex over the period 2006 to 2013, namely, $352.5m ($2013);

(b) it then, in Step 2, used the EI model to calculate a raw efficiency score of 54.9 percent;

(c) the third step involved the choice of a comparison point of 76.8 percent, based on AusNet which is at the bottom of the top quartile of possible scores using the EI model;

(d) the fourth step (described as Step 3 in the table) involved an adjustment to the raw efficiency score for OEFs – the adjustment being made to the comparison point on the assumption that the comparator (AusNet) would have to contend with the same environmental factors as Essential. This adjustment, made by the AER once the model had been run, lowers the comparison point to 69.4 percent;

(e) the mathematical consequence of this "after-the-event" adjustment, is that the efficiency score of Essential is calculated in what is described as Step 4 in the table at 20.9 percent below the comparison point;

(f) then in what is described as Step 5 in the table, the AER calculated a mid-point efficient opex ie, the average efficient opex over the 2006-13 period based on the EI model. It then in Step 6 adjusted that mid-point forwards to 2012-13 following that adjustment in Step 7 with an adjustment of its estimate of Essential's 2012-2013 base year opex for CPI to arrive at a figure of $308.2m ($2013-2014); and

(g) finally, in what is described as Step 8 in the table, the AER converts its estimate of Essential's base year opex into a final year estimate of $311.9m ($2013-14).

220 As observed above, because the AER was not satisfied that a forecast based on Endeavour's actual opex could be regarded as materially inefficient, the AER did not undertake the steps taken outlined in Table7.4 to each of the Ausgrid and Essential Final Decisions to arrive at their base year opex to arrive at a base year opex for Endeavour.

221 The AER did, however, undertake those steps to arrive at ActewAGL's base year opex. It may be seen by reference to Table 7.4 in Attachment 7 to the ActewAGL Final Decision that:

(a) the AER started with ActewAGL's average opex over the period 2006 to 2013, namely, $59.9m ($2013);

(b) it then, in Step 2, used the EI model to calculate a raw efficiency score of 39.9 percent;

(c) the third step involved the choice of a comparison point of 76.8 percent, based on AusNet which is at the bottom of the top quartile of possible scores using the EI model;

(d) the fourth step (described as Step 3 in the table) involved an adjustment to the raw efficiency score for OEFs – the adjustment being made to the comparison point on the assumption that the comparator (AusNet) would have to contend with the same environmental factors as ActewAGL. This adjustment, made by the AER once the model had been run, lowers the comparison point to 62.4 percent;

(e) the mathematical consequence of this "after-the-event" adjustment, is that the efficiency score of ActewAGL is calculated in what is described as Step 4 in the table at 36.2 percent below the comparison point; and

(f) then in what is described as Step 5 in the table, the AER calculated a mid-point efficient opex (ie, the average efficient opex over the 2006-2013 period based on the EI model). It then in Step 6 adjusted that mid-point forwards to 2012-2013 following that adjustment in Step 7 with an adjustment of its estimate of ActewAGL's 2012-2013 base year opex for CPI to arrive at a figure of $45.1m ($2013-14).

222 *Table A.1: Final determination estimates of efficient base year opex ($million 2013–14)* in Attachment 7 to the Ausgrid Final Decision sets out the AER'S final determination estimates of base year opex for each Networks NSW DNSP as follows.

Table A.1 Final determination estimates of efficient base year opex ($million 2013-14)

	Ausgrid	Endeavour	Essential
Revealed base opex (adjusted)[a]	492.2	225.7	418.0
AER base opex	374.2	233.3	308.2
Difference	118.0	-7.6[b]	109.8
Percentage base opex reduction	24.0%	N/A	26.3%

Note: (a) This number is the revealed 2012–13 opex, so it differs from the starting number in Table 7.4, which is average opex over 2006–13. We have adjusted the service providers' revealed opex for debt raising costs, new CAM [cost allocation method] (if applicable) and new service classifications.
(b) Our estimate of base opex for Endeavour is slightly higher than Endeavour's because the reduced benchmark comparison point means its revealed costs are lower than the efficiency target.

Source: AER analysis.

223 In a paragraph following Table A.1 in the Ausgrid Final Decision, the AER observed at pp 7-52 to 7-53 that:

> Our reduction to Endeavour Energy's revealed opex was lower than that for Essential Energy and Ausgrid. Our analysis showed that Endeavour Energy had implemented efficiency programs earlier and to a greater extent than its two peers. However, we considered that as at 2012–13 (the base year), Endeavour Energy had further efficiency improvements to realise.

224 A like table in the ActewAGL Final Decision is reproduced below:

Table A.1 Final determination estimates of efficient base year opex ($million 2013-14)

	ActewAGL
Revealed base opex (adjusted)[a]	67.2
AER base opex	45.1
Difference	22.1
Percentage base opex reduction	32.8%

Note: (a) This number is the revealed 2012–13 opex, so it differs from the starting number in Table 7.4, which is average opex over 2006–13. We have adjusted ActewAGL's revealed opex for debt raising costs, new CAM (if applicable) and new service classifications.

Source: AER analysis.

The AER's application of the other rule 6.5.6(d) opex factors

225 *Table 7.7: Our consideration of opex factors* which appears in Attachment 7 to the Ausgrid Final Decision, reproduced below provides, a convenient summary of the AER's application of the benchmarking opex factor in r 6.5.6(e)(4) and the opex factors in rr 6.5.6(e)(5), (5A), (6), (7), (8), (9A) and (10):

Table 7.7 Our consideration of opex factors

Opex factor	Consideration
The most recent annual benchmarking report that has been published under rule 6.27 and the benchmark operating expenditure that would be incurred by an efficient Distribution Network Service Provider over the relevant regulatory control period.	There are two elements to this factor. First, we must have regard to the most recent annual benchmarking report. Second, we must have regard to the benchmark operating expenditure that would be incurred by an efficient distribution network service provider over the period. The annual benchmarking report is intended to provide an annual snapshot of the relative efficiency of each service provider. The second element, that is, the benchmark operating expenditure that would be incurred an efficient provider during the forecast period, necessarily provides a different focus. This is because this second element requires us to construct the benchmark opex that would be incurred by a hypothetically efficient provider for that particular network over the relevant period. We have used several assessment techniques that enable us to estimate the benchmark opex that an efficient service provider would require over the forecast period. These techniques include economic benchmarking, opex cost function modelling, category analysis and a detailed review of Ausgrid's labour and workforce practices. We have used our judgment based on the results from all of these techniques to holistically form a view on the efficiency of Ausgrid's proposed total forecast opex compared to the benchmark efficient opex that would be incurred over the relevant regulatory control period.
The actual and expected operating expenditure of the distribution network service provider during any proceeding	Our forecasting approach uses the service provider's actual opex as the starting point. We have compared several years of Ausgrid's actual past opex with that of other service providers to form a view about

regulatory control periods.	whether or not its revealed expenditure is sufficiently efficient to rely on it as the basis for forecasting required opex in the forthcoming period.
The extent to which the operating expenditure forecast includes expenditure to address the concerns of electricity consumers as identified by the distribution network service provider in the course of its engagement with electricity consumers.	We understand the intention of this particular factor is to require us to have regard to the extent to which service providers have engaged with consumers in preparing their regulatory proposals, such that they factor in the needs of consumers.[103] We have considered the concerns of electricity consumers as identified by Ausgrid in assessing its proposal – particularly those expressed in the consumer-focussed overview provided as an attachment to its regulatory proposal. For example, a clear theme present in this document is that customers consider electricity prices are too high.[104]
The relative prices of capital and operating inputs	We have considered capex/opex trade-offs in considering step changes for Ausgrid's head office building and for demand management expenditure. We considered the relative expense of capex and opex solutions in considering these step changes. We have had regard to multilateral total factor productivity benchmarking when deciding whether or not forecast opex reflects the opex criteria. Our multilateral total factor productivity analysis considers the overall efficiency of networks in the use of both capital and operating inputs with respect to the prices of capital and operating inputs.
The substitution possibilities between operating and capital expenditure.	As noted above we considered capex/opex trade-offs in considering step changes for Ausgrid's head office building and for demand management expenditure. We considered the substitution possibilities in considering these step changes. Some of our assessment techniques examine opex in isolation – either at the total level or by category. Other techniques consider service providers' overall efficiency, including their capital efficiency. We have relied on several metrics when assessing efficiency to ensure we appropriately capture capex and opex substitutability. In developing our benchmarking models we have had regard to the relationship between capital, opex and outputs. We also had regard to multilateral total factor productivity benchmarking when deciding whether or not forecast opex reflects the opex criteria. Our multilateral total factor productivity analysis considers the overall efficiency of networks with in the use of both capital and operating inputs. Further, we considered the different capitalisation policies of the service providers and how this may affect opex performance under benchmarking.
Whether the operating expenditure forecast is consistent with any incentive scheme or schemes that apply to the distribution network service provider under clauses 6.5.8 or 6.6.2 to 6.6.4.	The incentive scheme that applied to Ausgrid's opex in the 2009–14 regulatory control period, the EBSS, was intended to work in conjunction with a revealed cost forecasting approach. In this instance, we have forecast efficient opex based on benchmark efficient service provider. We have considered this in deciding how the EBSS should apply to Ausgrid in the 2009–14 regulatory control period and the 2014–19 period.
The extent the operating expenditure forecast is referable to arrangements with a person other than the distribution network service provider that, in our opinion, do not reflect arm's length terms.	Some of our techniques assess the total expenditure efficiency of service providers and some assess the total opex efficiency. Given this, we are not necessarily concerned whether arrangements do or do not reflect arm's length terms. A service provider which uses related party providers could be efficient or it could be inefficient. Likewise, for a service provider who does not use related party providers. If a service provider is inefficient, we adjust their total forecast opex proposal, regardless of their arrangements with related providers.
Whether the operating expenditure forecast includes an amount relating to a project that should more appropriately be included as a contingent project under clause 6.6A.1(b).	This factor is only relevant in the context of assessing proposed step changes (which may be explicit projects or programs). We did not identify any contingent projects in reaching our final decision.
The extent the distribution network service	We have not found this factor to be significant in reaching our final

provider has considered, and made provision for, efficient and prudent non-network alternatives.	decision.

Source: AER analysis

226 *Table 7.8: Other factors we have had regard to* (reproduced below) in the Ausgrid Final Decision summarises other factors that the AER considered relevant and, pursuant to r 6.5.6(e)(12), notified each DNSP of prior to the DNSP submitting its revised regulatory proposal.

Table 7.8 Other factors we have had regard to

Opex factor	Consideration
Our benchmarking data sets, including, but not necessarily limited to: **1. data contained in any economic benchmarking RIN, category analysis RIN, reset RIN or annual reporting RIN** **2. any relevant data from international sources** **3. data sets that support econometric modelling and other assessment techniques consistent with the approach set out in the Guideline** **as updated from time to time.**	This information may potentially fall within opex factor (4). However, for absolute clarity, we are using data we gather from NEM service providers, and data from service providers in other countries to provide insight into the benchmark operating expenditure that would be incurred by an efficient and prudent distribution network service provider over the relevant regulatory period.
Economic benchmarking techniques for assessing benchmark efficient expenditure including stochastic frontier analysis and regressions utilising functional forms such as Cobb Douglas and Translog.	This information may potentially fall within opex factor (4). For clarity, and consistent with our approach to assessment set out in the Guideline, we are have regard to a range of assessment techniques to provide insight into the benchmark operating expenditure that an efficient and prudent service provider would incur over the relevant regulatory control period..

Source: AER Analysis

The Parties' Submissions on the Principal Issue

227 Networks NSW and ActewAGL's main submissions addressing the principal issue whether the AER's application of the EI model discharged its obligations under rr 6.5.6 and 6.12.1(4) are addressed below under the following headings:

(a) inadequacies in the EI model's data set and comparability issues;

(b) the AER's lowering of the EI model's comparison point;

(c) the AER's OEF adjustments;

(d) the efficiency of the DNSPs' vegetation management costs; and

(e) the AER's use of the EI model as the sole determinative of opex;

228 PIAC also addressed the principal issue, contending in particular that the AER had erred in its application of the EI model by its lowering of the EI model's comparison point and in its OEF adjustments. The DNSP interveners broadly speaking supported the position taken by Networks NSW and ActewAGL, but it is noted that Ergon made a more refined criticism of the AER's use of historic costs.

229 Other opex issues identified in the AER's written opex submissions, addressed to the extent necessary having regard to the Tribunal's conclusion on the principle issue, are:

(a) did the AER fail to corroborate the EI model's results;

(b) did the AER's have proper regard to endogenous circumstances;

(c) did the AER have proper regard to the consequences;

(d) alleged errors with respect to partial performance indicators (PPIs);

(e) alleged errors with respect to labour costs; and

(f) alleged errors relating to average or current efficiency.

Inadequacies in the EI model's data set and comparability issues

230 The DNSPs' submissions under this heading address what they see as a twofold weakness in the EI model's data set. First, reliance on the Australian RIN benchmarking data. Secondly, the augmentation of the Australian RIN data with overseas data.

The RIN data

231 Networks NSW contends that the first weakness stems from the AER's failure to collect data pursuant to its RINs in a manner sufficiently rigorous to be useful for benchmarking. It submits that the RINs were unclear and the requests for eight years of data resulted in:

(a) different DNSPs recording data differently; and

(b) some DNSPs estimating and backcasting some data.

232 Responding to the submission of a lack of clarity in the RINs resulting in DNSPs recording data differently, the AER:

(a) points to the extensive consultation between it and the DNSPs to ensure that the DNSPs understood what was required of them; and

(b) contends that the process of consulting with stakeholders and making necessary clarifications was part of the AER's planned procedure for ensuring that the RINs were clear and the instructions and definitions were sufficient.

233 Support for the AER's contention is to be found in *Table A.2 Full process of the development of benchmarking data set* which appears at pp 7-101 to 7-102 of Attachment 7 to the Ausgrid Final Decision. Table A.2 summarises the development of the AER's benchmarking methodology, including the RINs, but stops short of the circulation of the EI model. The origins of the EI model does, however, appear as the final item in a three page chronology submitted by Mr O'Bryan on behalf of the AER.

234 The chronology shows that the AER's development of its benchmarking methodology commenced in November 2011 with a joint AER / Australian Competition and Consumer Commission examination of benchmarking opex and capex in energy networks. The chronology then outlines some 41 steps (including seven workshops with DNSPs, consultants and consumer groups between December 2012 and May 2013). Those steps included:

(a) papers developed by EI and issued by the AER;

(b) workshops and public forums hosted by the AER;

(c) input from the applicant DNSPs;

(d) papers reviewing different benchmarking methods and an examination of the benchmarking practices of overseas regulators;

(e) consultations between the AER and stakeholders on the development of the RIN pursuant to s 28D of the NEL for the purposes of obtaining information from each DNSP relevant to the AER's obligation under r 6.27 to prepare and publish an annual benchmarking report (the first of which was required to be published on 30 September 2013 (r 6.27(d));

(f) the AER publishing its economic benchmarking RINs (*Economic benchmarking RIN-For distribution network service providers-Instructions and Definitions -NSP Name (ACN xxx xxx xxx)*, November 2013) together with an explanatory statement and instructions and definition documents (*Better regulation - Explanatory statement - Regulatory information notices to collect information for economic benchmarking*, November 2013);

(g) the DNSPs submitting to the AER audited and certified responses to the economic benchmarking RINs on 30 April 2014;

(h) the AER publishing its first annual benchmarking report *AER, Electricity distribution network service providers–annual benchmarking report*, November 2014, (six weeks after the date specified in r 6.27(d)); and

(i) the circulation on 27 November 2014 of the First EI Report.

235 The chronology also shows that the DNSPs were given four opportunities to comment on the RIN templates before submitting their unaudited responses and then their audited RIN responses.

236 Networks NSW provides the following examples of the disparate reporting of opex in response to the RINs:

(a) some Victorian DNSPs reporting nil vegetation management;

(b) DNSPs adopting different allocations of their respective regulatory asset bases (RABs);

(c) DNSPs applying different policies in classifying their opex and capex; and

(d) DNSPs applying different policies in classifying expenditure as opex or provisions.

237 Networks NSW's submissions attribute the disparity in vegetation management reporting to an unclear definition of "vegetation management activities" in the RINs. A report by its consultant PricewaterhouseCoopers (PwC), *Ausgrid, Essential Energy and Endeavour Energy – Appropriateness of RIN data for benchmarking*, 9 January 2015 (PWC January 2015 Report), states at p 38 that:

> Most businesses found that the definitions of 'vegetation management activities' provided by the AER were unclear, deeming them unworkable.

238 The AER dismisses Networks NSW's submission on the disparity in vegetation management reporting by noting that vegetation management expenditure data was not used separately in its econometric benchmarking – the relevant opex measure being the aggregated network services opex figure.

239 It also dismisses Networks NSW's submission relating to the disparity in classification of RAB values as irrelevant because such values were not included in its econometric models and, insofar as RAB data was used to weight the volume of inputs and outputs in the MTFP model, because MTFP is an index-based benchmarking method, the outcomes of that model are less sensitive to the weighting of inputs than they will be to the quantum of the inputs. Therefore any comparability issues in the RAB data have only a minimal impact on the MTFP results.

240 The AER also summarily dismisses Networks NSW's concerns about the DNSPs classifying their opex and capex differently by observing that was adjusted, where necessary, through an OEF adjustment. This summary dismissal does not address the concern expressed by Networks NSW's consultant PwC in its January 2015 Report that:

> The capex / opex split between the businesses differs, ranging from 62% capex / 38% opex at SA Power Networks compared to 74% capex / 26% opex at CitiPower. This could be due to a range of factors including the relative age of the networks, capitalisation policies and cost allocation approaches. If there is more capitalisation, the operating expenditure reported by the business will be lower. Cost allocation methodologies and capitalisation policies affect the data provided by the DNSPs in the RIN, in particular the allocation of labour costs and overheads. This affected the AER's calculation of the opex efficiency score and the level of reductions to opex for each of the three NSW DNSPs.

241 Nor does it address the conclusion in the PwC January 2015 Report at p 37 that the AER did not meet the AEMC's necessary preconditions for benchmarking because (with emphasis as in the original):

- the benchmarking data is not *long term reliable information* as it was not provided on a like-for-like basis due to differences in capitalisation policies and approaches;

- the benchmarking data is not *high quality* due to the different cost allocation approaches undertaken by the DNSPs which impact the cost structures and expenditure incurred;

- the benchmarking data is not *consistent time series data* due to the differences in allocation of indirect costs over the last decade;
- the benchmarking data is not based on *consistent definitions* for the purpose of benchmarking.

242 The AER notes that Networks NSW's final example of the disparate reporting of opex in response to the RINs (differing policies in classifying expenditure as opex or provisions) was incorrect in implying that opex and provisions are separate cost categories. It says provisions simply affect when a DNSP records a cost (ie costs which have been incurred but will be paid in the future) and each of the examples in Networks NSW's submissions is an opex provision meaning that the cost of the provision is reflected in network services opex.

243 Expanding on its submission to the effect that weaknesses in the RINs resulted in some DNSPs estimating and backcasting some data, Networks NSW describe backcasting as involving the DNSPs creating estimates based on a set of assumptions for data points related to the past where actual results were not classified or categorised in the way the RIN required the information.

244 Expanding on its description of backcasting, Networks NSW notes that:

(a) the RINs were issued in November 2013 and required the DNSPs to supply data on the values and quantities of outputs, inputs and OEFs for an eight year period (from 2005-06 to 2012-13) within a short space of time (three months for an initial draft, and two further months for the final); and

(b) the data requested was not all kept in the ordinary course of the DNSPs' business. Accordingly, the DNSPs were required, to "backcast" the data required.

245 Networks NSW provided the following examples of backcasted data:

(a) Ausgrid and Endeavour were required to backcast data for all current opex categories for FY2006 to FY2010, as a result of a material change in the Annual Reporting Requirements by the AER in 2011; and

(b) Endeavour was required to backcast data for 2009 to 2012 for certain OEFs, including the total number of spans and the average urban and rural maintenance span cycles.

246 Networks NSW also submitted that in a significant number of instances the DNSPs did not have accurate records of the required data and had to provide an estimate in lieu thereof – in support of its submission it provided details of Ausgrid, Endeavour and AusNet estimating route line length, CitiPower estimating its overhead conductors and underground cables and referred to a number of DNSPs estimating the number of urban/rural maintenance spans.

247 Networks NSW's consultant, Frontier Economics Pty Ltd (Frontier), recognised some backcasting is, perhaps, inevitable when compiling a new dataset such as that for the purposes of the AER's annual benchmarking report. It did, however, make the point that compiling several years of RIN data at once "carries major risks." In its report *Review of AER's econometric models and their application in draft determinations for Networks NSW*, January 2015 (the Frontier Report), it illustrated (at p 78) the risks as follows:

> … if a network misinterprets how it ought to report certain data (which is very possible for the first time it reports RIN data), that mistake may be propagated through the full eight years of information reported. That, in turn, would distort comparisons with other networks not just for a single year but for all years that the data are reported. Such misreporting over the entire period would impact directly on the measures of 'inefficiency' derived by EI's modelling.

248 Having identified how RIN data errors and inconsistencies may arise, the Frontier Report noted (at p 82) that:

> Given the very real scope for data errors …, owing to the newness of the RIN data collection process and the lack of opportunity for learning and refinement, it is surprising to us that EI and the AER apparently have such confidence in the reliability of the modelling results.

249 Responding to Networks NSW's submissions that the AER failed to collect the RIN data in a manner sufficiently rigorous to be useful for benchmarking, the AER submits that those submissions "create a misleading picture" for three reasons:

(a) first, many of the illustrations of estimated data referred to concern data that was not used in the benchmarking models, eg the backcast data for rural spans as described by Networks NSW was not included in any of the AER models on which its decision was based;

(b) secondly, contrary to Networks NSW's submission, estimates were not used in "a significant number of cases", most of the Australian data in the AER benchmarking models is actual data, not estimates; and

(c) thirdly, the general assertion that estimated or backcast data used in the AER benchmarking models is unreliable is not supported by evidence.

250 The AER sought to support its second reason by reference to the results of an examination of each of the six categories of data used in its models, namely, network services opex, customer numbers, ratcheted maximum demand, circuit line length, proportion of undergrounding and system average interruption duration index (SAIDI) reliability data (the SAIDI data being used only in the MTFP and MPFP models).

251 As presented by the AER the examination shows:

(a) network services opex: 8 of the 13 DNSPs provided actual data;

(b) customer numbers: since 2006 the Australian Energy Market Operator has required the DNSPs to maintain a unique National Metering Identifier (NMI) for each customer and information for reporting data in this category was available to each DNSP – estimates only having to be made where the NMI could not identify a "de-energised" customer (ie a property not currently receiving electricity) or in respect of a very small portion of customers who are unmetered;

(c) ratcheted maximum demand: 10 of the 13 DNSPs provided actual data – the remainder estimated data in some years and actual data in the others;

(d) circuit length: 7 of the 13 DNSPs provided actual data – only one, Essential, provided an estimate for all years and the other five provided an estimate for some years and actual data in others;

(e) proportion of undergrounding: 7 of the 13 DNSPs provided actual data in every year – only one, Essential, provided an estimate for all years and the other five provided an estimate for some years and actual data in others; and

(f) SAIDI reliability data: 11 of the 13 DNSPs provided actual SAIDI data in every year – only one DNSP estimated SAIDI data in all years and the other estimated data in some years and actual data in the others.

252 While, as presented by the AER, the results of its examination of the six categories of data does show that the majority of the 13 DNSPs may have responded to the RINs with actual data, the following alternative reading of the results shows:

(a) 5 of the 13 DNSPs estimated network services opex data;

(b) 3 of the 13 DNSPs estimated ratcheted maximum demand data in some years and provided actual data in the others;

(c) 6 of the 13 DNSPs estimated circuit length – one, Essential, provided an estimate for all years and the other five provided an estimate for some years and actual data in others;

(d) 6 of the 13 DNSPs estimated their proportion of undergrounding – one, Essential, provided an estimate for all years and the other five provided an estimate for some years and actual data in others; and

(e) 2 of the 13 DNSPs estimated SAIDI reliability data – one in all years and the other in some years with actual data being provided in the others.

253 This alternative reading of the results supports Networks NSW's submission that a significant number of DNSPs estimated three categories of data used by the AER in its models. It also shows that estimates were used in another two categories (by three DNSPs in one category and by two in another).

254 Such an alternative reading should have put the AER on notice that it may, at this point in the evolution of the RIN data, have to treat the RIN data with greater caution than it did and not rely on it to the extent that it did, particularly as observed by its consultant, EI in the Second EI Report at pp x and 25:

> … this is the first time economic benchmarking is being used as the primary basis for an Australian regulatory decision."
>
> … it is important to recognise that the characteristics of the Australian RIN data make any econometric model estimated using only the RIN data insufficiently robust to support regulatory decisions.

255 Also, as ActewAGL submits, it is in light of the second of the quotations from the Second EI Report, "somewhat surprising" that EI ran a model using only RIN data to corroborate its EI model.

256 Expanding on the third reason for Networks NSW submissions on the robustness of the RIN data capture creating a misleading impression (because it is not supported by evidence), the AER submits that:

(a) where DNSPs provided estimates, they were not generally required to create a completely new series of data;

(b) in most cases, the DNSPs produced estimates by drawing together actual information from a number of different sources in their business records, eg although Essential estimated data for network services opex, circuit length and proportion of undergrounding, the estimates were based directly on information that Essential had been collecting for the whole benchmarking period; and

(c) in each case where data was estimated by a DNSP, "… the DNSP's CEO signed a statutory declaration attesting to the robustness of the data".

257 As Networks NSW points out, the statement that "… the DNSP's CEO signed a statutory declaration attesting to the robustness of the data" (which appears at p 7-128 of Attachment 7 of the Ausgrid Final Decision) is "wrong, and quite misleading." According to Networks NSW, the form of statutory declaration which CEOs were required to sign did not attest to the "robustness" of the data. Rather, it submits, each CEO attested that the actual information provided was true and accurate and, where it was not possible to provide actual information, that a best estimate had been provided along with the basis of the estimate. In fact, Networks NSW submits, many businesses pointed out that the data was not robust and could not be relied upon for the purposes for which the AER apparently sought it.

258 Likewise, ActewAGL submits in reply "[A]t no point did ActewAGL's CEO attest to the "robustness" of the data or as to its fitness for purpose in benchmarking. Rather, he attested to the fact that the data was ActewAGL's 'best estimate'."

259 The DNSPs' submissions to the effect that the AER's reliance on the RIN data point to a weakness in its benchmarking are persuasive. Support for those submissions is found in the above quoted passages from the DNSPs' consultants' reports. That support is reinforced by

the passages from their consultants' reports quoted below under the heading "The AER's use of the EI model as the sole determinative of opex".

260 Having regard to the above paragraphs under the heading "*RIN data*" and to paragraphs appearing below following the heading "The AER's use of the EI model as the sole determinative of opex", it is the view of the Tribunal that at this point in its evolution the RIN data is not data upon which the AER might rely on to the extent that it did:

(a) in its application of r 6.5.6(e)(4) to determine the benchmark opex that would be incurred by an efficient DNSP; or

(b) to corroborate the AER's use of the EI model.

Overseas data

261 Turning now to outline what the DNSPs perceive as the second weakness in the EI model's data, namely, the augmentation of the Australian RIN data with overseas data.

262 As may be observed from the following extracts from the First EI Report at p 29, ActewAGL rightly submits that it appears that EI chose to incorporate data from New Zealand and Ontario, not because the DNSPs in those countries were comparable, but because data was available that appeared to be in a similar form to the data in the RIN database.

> Given that the New Zealand database has been constructed in a largely similar fashion to the AER's economic benchmarking RIN database in terms of variable coverage, it is a prime candidate for use in supplementing the number of observations available from the RIN database.
>
> … … …
>
> The other jurisdiction that has a relatively long and consistent history of electricity DNSP productivity measurement is Ontario. Pacific Economic Group Research (PERG 2013) recently undertook … benchmarking work for the Ontario Energy Board (OEB) using a similar output specification to that used in section 3 above [ie ratcheted maximum demand, customer numbers and circuit length]. The OEB has put the database used in the public domain. While the Ontario database has similar coverage of outputs (other than reliability) to that used above and has good detail on opex, it is much more limited with regard to capital input and operating environment factor variables. Asset values are based on historic cost, for example, and, while there is data on the number of transformers, there is no data on transformer capacity. While Ontario's climate is somewhat different to Australia's, a significant attraction of the OEB database is the number of observations it offers with data for 73 DNSPs over 11 years from 2002 to 2012.

263 ActewAGL also highlights the significant disparities in size of the Australian DNSPs, on the one hand, and the overseas DNSPs, on the other, by reference to the following table which appeared in the Frontier Report at p 26:

	Australia	Ontario	New Zealand	Australian value as multiple of Ontarian value	Australian value as multiple of New Zealand value
Energy (GWh)	11,038	3,073	1,441	4	8
Maximum Demand (MW)	2,346	603	287	4	8
Ratcheted Maximum Demand (MW)	2,516	651	313	4	8
Customer Numbers	731,308	124,270	96,577	6	8
Circuit Length (kms)	56.561	5,045	6,771	11	8

264 It may be concluded from the Frontier table reproduced above that the Australian DNSPs are, on average:

(a) four times larger than the companies in Ontario when compared using energy delivered and demand, six times larger when compared using customer numbers and eleven times larger when compared using circuit length; and

(b) eight times larger than the DNSPs in New Zealand when compared against all these measures of scale.

265 Also, as may be observed from the following extracts from the First EI Report at p 11, ActewAGL rightly submits that it appears that EI's choice of output variables in the EI model (ratcheted maximum demand, customer numbers and circuit length) have been largely

determined, in a somewhat circular manner, by the data that was available between all three countries.

> … we agree with PEGR [PEG] that the four output specification covering energy throughput, ratcheted maximum demand, customer numbers and circuit length represents a useful way forward as it captures the key elements of DNSP functional output in a linear fashion and introduces an important demand side element to the measurement of system capacity outputs. Because we have reliable data on all four output variables, all four are included in our analysis.

266 ActewAGL rightly points out that:

(a) in essence both the construction of the EI models, and the data used within those models, were dictated by what was available to EI, not what was likely to give the most reliable indicator of efficient costs; and

(b) this ought to cause the Tribunal significant concern about the reliability of the output of EI's models.

267 Each of the following issues that the AER identifies as the parties raising in relation to the EI model's use of overseas data are addressed seriatim:

(a) whether the New Zealand and Ontario regulators used the overseas data for benchmarking opex;

(b) whether the parties had an adequate opportunity to verify the accuracy of the overseas data;

(c) whether the overseas data contains errors;

(d) whether there are errors in vegetation management costs which are not reported separately in New Zealand or Ontario;

(e) whether the overseas entities adopted different definitions for the purpose of collecting data – particularly in relation to maximum demand;

(f) whether there was a failure by either the AER or EI to conducted sensitivity testing in relation to potential errors in the overseas data, or inconsistencies between the overseas data and the Australian data, in order to quantify their potential impact; and

(g) whether the AER and EI were correct to ignore other potential sources of overseas data which yielded different results – particularly US data which is preferable to the Ontario data.

268 Addressing the first of those overseas data issues identified by the AER (whether the New Zealand and Ontario regulators used the overseas data for benchmarking opex) both ActewAGL and Networks NSW point to s 53P of the *Commerce Act 1986* (NZ). Part 4 of that Act establishes a regulatory regime with a number of similarities to the NEL and s 53P provides, in effect, that before the end of a regulatory period the NZ Commerce Commission must set out the starting prices, rates of change and quality standards that are to apply for the following regulatory period. However, s 53P(10) precludes the Commission from using:

> … comparative benchmarking on efficiency in order to set starting prices, rates of change, quality standards, or incentives to improve quality of supply.

269 Thus, ActewAGL submits, it cannot be inferred, that the Commission has made any attempt to ensure that the data has been recorded in a manner that makes it fit for the purpose of benchmarking.

270 As to the Ontario data, Networks NSW submit that:

(a) the regulator (the Ontario Energy Board (OEB)) has not adopted a similar model to the EI model and, perhaps, in recognition of the difficulties in classification of expenditure between opex and capex and of the legitimate trade-offs which electricity distribution entities must make, benchmarks on total expenditure (totex, ie opex plus capex); and

(b) there is therefore no particular reason to assume that the overseas data is suitable for benchmarking opex.

271 The AER rejects the implications that might be drawn from the ActewAGL and Networks NSW submissions addressing the issue whether the New Zealand and Ontario regulators use the overseas data for benchmarking opex.

272 In relation to the New Zealand data, relying on an earlier October 2014 EI report, the AER observes that the Commerce Commission:

(a) uses a total factor productivity measurement (a form of economic benchmarking), in forming a view about long-term productivity growth for New Zealand DNSPs to set their X factors in their default price paths; and

(b) measures opex productivity growth to form a view about the opex productivity growth rate to include in its DNSP opex forecasts which are used to set starting prices in its DNSP default price paths and that these productivity growth rates are industry average rates formed from the same database used in the EI's model.

273 As to the claim that the OEB does not use the Ontario data for benchmarking opex, the AER makes the points that:

(a) it does use the data as part of benchmarking total cost performance (ie opex, plus the return of and on capital);

(b) the fact that the data is combined with other data to estimate total cost is irrelevant; and

(c) the OEB is conducting benchmarking using the same opex data used in the AER econometric models.

274 While the Final Decisions do not fully address issues relating to New Zealand and Ontario regulators' respective use of the data and application of benchmarking, the AER's submissions are persuasive in answering the DNSPs' submissions on those particular issues. That is not to take the step of saying that the benchmarking by the AER is itself free of error of the character under consideration by the Tribunal.

275 The Tribunal now turns to consider the second of the issues identified by the AER as being raised against the EI model's use of overseas data, namely, whether the parties had an adequate opportunity to verify the accuracy of the data.

276 While ActewAGL does not raise what it describes as "the relative speed" by which the AER developed its benchmarking methodology as a ground of review, it rightly submits that the circumstances in which the AER developed its methodology and implemented it is:

> … an important contextual matter, and one which informs the extent to which the Tribunal can have confidence in the robustness of the AER's approach.

277 The steps taken by the AER in the development of its benchmarking methodology are outlined above.

278 The thrust of r 6.5.6(e)(4) is that the AER must have regard to the most recent annual benchmarking report that has been published under r 6.27 and the benchmark opex that would be incurred by an efficient DNSP.

279 Rule 6.27 enlivens r 8.74 in relation to the steps that the AER must take before preparing and publishing an annual benchmarking report. Those steps include consultation with the DNSP and a 30 day period to make submissions before the report is published including an opportunity to comment on material of a factual nature to be included in the report.

280 It appears from the above mentioned chronology submitted on behalf of the AER and from ActewAGL's leave application and its submissions that:

(a) on 5 August 2014, the AER provided the DNSPs with a copy of its Draft Annual Benchmarking Report;

(b) on 18 November 2014 (nine days before the Draft Decisions were published on 27 November 2014) the AER provided the DNSPs with:

(i) a copy its Annual Benchmarking Report; and

(ii) a copy of the First EI Report;

(c) the Annual Benchmarking Report was directed towards the use of a MTFP benchmarking model; and

(d) the DNSPs' submissions in the course of the consultation process leading to the publication of the Draft and Final Annual Benchmarking Report were directed to the use of a MTFP model, not the econometric EI model which was (with adjustments) adopted by the AER in its Draft Decisions and, with further adjustments, in its Final Decisions when it did not accept the DNSPs' opex forecast and made its own estimates of their required opex.

281 It is ActewAGL's view that the manner in which the AER prepared its Draft Decisions in reliance on the EI model deprived the AER of a robust exchange of views with the DNSPs and their experts. Such an exchange, it rightly submits, was:

> … particularly important in a context where the AER proposed to rely on an ambitious modelling technique, for the first time, as the sole basis on which to reach an assessment of the quantum of the DNSPs' opex allowances.

282 ActewAGL supported its submission with the following extracts from pp 104 and 105 the Frontier report:

> A key flaw of the analysis undertaken by the AER is the application of very ambitious modelling techniques, such as … [the EI model]…, to very imperfect data. Indeed, it appears that the main reason the AER has felt the need to employ overseas data, without appropriate checks for robustness and consistency, is its desire to employ sophisticated techniques such as … [the EI model].
>
> We recognise that the AER is obliged to undertake benchmarking under the National Electricity Rules (NER). However, the NER also provide the AER with considerable flexibility to choose the most appropriate benchmarking techniques and methodologies. The AER should not feel constrained to restrict itself to benchmarking using formal statistical techniques alone.
>
> Given the limitations of the Australian RIN data, and the lack of time for learning and iterative improvement of the data, we recommend that the AER rely on much simpler benchmarking techniques. We reiterate that regulators in Europe, who have had considerably more experience, and time to compile consistent data, than has the AER, typically use much simpler, and more pragmatic benchmarking techniques.
>
> The AER has applied a very narrow interpretation of benchmarking. Its Expenditure Forecast Assessment Guideline sets out a very long list of potential benchmarking techniques, all of which would be recognised in Europe and many of which are used by regulators overseas. Whilst it canvassed in its Guideline the potential use of many alternative techniques, its assessment of relative efficiency seems to drive off only one technique, … [the EI model]…, and that too in a very mechanistic fashion. Given the sensitivity of such techniques to the quality of the data, and the fact that the RIN data are very new and relatively untested, the AER should not have, in our view, placed so much reliance on statistical techniques such as … [the EI model]. Rather, in our view, the AER should have initially tried much simpler, less ambitious techniques and then aimed to build up to more complex techniques once it, and networks and customers, have greater confidence in the data and in the AER's approach to benchmarking.

283 ActewAGL is correct in its submission that having regard to the limited time between the date of publication of the Draft Decisions and the date by which the Final Decisions had to be made, the AER had little opportunity to develop an alternative methodology to estimate the required opex in accordance with r 6.12.1(4)(ii). A fortiori, it says, as the AER would need to discharge its obligations to accord procedural fairness under administrative law and s 16(1)(b) of the NEL in respect of any new methodology.

284 This, ActewAGL submits, is not to suggest that the AER did not conscientiously examine submissions received after the Draft Decisions. It is:

> … simply to recognise that the AER's decision making approach could hardly have been more unfortunate, in that it did not ensure that its methodology was exposed to an unhurried and carefully considered dialogue with all interested stakeholders, without the imminent deadline of the date by which the Final Determination had to be made.

285 ActewAGL's submission is reinforced when regard is had to the numerous DNSPs' consultants' reports critical of the AER's application of the EI model, many of which disparaged the model's use of overseas data.

286 Networks NSW submitted six such reports. Each raised issues which, in circumstances where the AER is employing a sophisticated and complex benchmarking model for the first time, would have benefited from a wider critical exposure and response through the AER's consultation procedures than just the responses by the AER and EI. The consultants (each highly qualified and well recognised experts) their reports and the issues they raised are:

(a) The Frontier Report. As fairly summarised by Networks NSW, the Frontier report is critical of the inadequacy of the RIN data, comparability and other issues associated with the use of overseas data, the failure of the EI model to consider alternative explanations of heterogeneity and the AER's deterministic application of the EI model's results.

(b) Huegin Consulting, *Huegin's response to Draft Determination on behalf of NNSW and ActewAGL - Technical response to the application of benchmarking by the AER*, 16 January 2015 (the Huegin Report). Huegin highlights the inadequacies of the AER's approach by comparing it to best regulatory practice and identifying what it perceives as errors associated with the cost drivers chosen by EI, inadequate consideration of environmental variables and the use of average results over an eight year period. Huegin also criticises EI's sensitivity analysis and questions the corroborative value of the alternative methods presented by EI.

(c) Cambridge Economic Policy Associates Ltd (CEPA), *Networks NSW - AER draft determination*, 16 January 2015 (the CEPA Report). The CEPA report observes that the author's:

> "… investigations, initially of ActewAGL, but applying more generally to all DNSPs, … cast doubt on the claim that the AER has correctly carried out the opex benchmarking, and at least has not given sufficient consideration to the limits of its opex benchmarking.

(d) The Second PEG Report. This Report provides a detailed introductory background to benchmarking, the salient considerations in the benchmarking of network services opex, reviews the practice of international regulators and critiques EI's work on behalf of the AER. It particularly identifies issues with their use of the RIN and overseas data, and the use of the results by the AER.

(e) Advisian Pty Ltd (Advisian), *Review of AER Benchmarking Networks NSW*, 16 January 2015. Advisian found that there were significant differences between the DNSPs used for benchmarking purposes, with limited meaningful consideration by the AER or EI to ensure that the benchmark data has appropriately been normalised. Advisian also identified issues with, amongst other things, the AER's benchmarking approach relating to:

(i) comparability of the DNSPs used for benchmarking purposes;

(ii) the failure to appropriately consider the effect of spatial density (customers/km^2) in addition to linear density (customers/km) on efficient opex;

(iii) the need for each DNSP to operate and maintain, in a safe and reliable manner, the assets it actually has, rather than the assets it might have had;

(iv) a failure to account for exogenous factors (such as the nature of the assets and the development history of the network) that have influenced the development of the existing asset base; and

(v) the AER's assessment of Essential's vegetation management expenditure to support its conclusion that the NSW DNSPs are inefficient.

(f) The PwC January 2015 Report reviewed the RIN data for the NSW DNSPs and five other DNSPs (CitiPower, Powercor, AusNet, United Energy and SA Power). The author identified seven issues with the RIN data where he considered a correction should be made and considered when assessing the efficiency of the DNSPs. In the author's opinion the issues are a central part of the AER's MTFP and PPI analysis and directly impact the AER's benchmarking results.

287 ActewAGL also submitted reports by CEPA, Huegin and Advisian raising similar issues to those raised in their reports on behalf of Networks NSW. In addition to those reports,

ActewAGL submitted the report by AECOM Australia Pty Ltd (*The impact of the AER's Draft Decision on ActewAGL's Service and Safety performance*, 15 January 2015 which, like its other reports and those submitted by Networks NSW, would have benefited from a wider critical exposure and response through the AER's consultation procedures than just the responses by the AER and EI. The report concluded, amongst other things:

(a) the benchmarks used by the AER have little or no relevance to a DNSP, and judgments made based on them are of limited value;

(b) that a forced reduction in ActewAGL's replacement / renewal expenditure (repex) and opex of the scale suggested by the AER would have a significant impact on the level of service it is able to provide including a potential impact on safety levels associated with its assets; and

(c) ActewAGL has experienced engineers who use all the information available to them and sophisticated analysis tools to optimise total cost of ownership for critical assets and therefore determine the optimal timing for replacement / renewal (and therefore for repex) whereas the AER relied on generic econometric models and distantly related data from other sources to over-rule ActewAGL's experienced projections, in many cases using 'average' asset lives that are almost double ActewAGL's experience-based estimates.

288 The limited opportunity afforded the DNSPs and the lack of opportunity afforded to PIAC and other interested parties to comment on the AER's application of a benchmarking methodology reliant on overseas data does not of itself give rise to a relevant ground of review. However, as the DNSPs submitted, it tends to tell strongly against the acceptance of that methodology and the resulting estimates of the DNSPs' required opex that the AER derived from it.

289 In response to the third issue identified by the AER as being raised against the EI model's use of overseas data (whether it contains errors) the AER notes that there is no evidence that suggests the data collected by the NZ Commerce Commission and the OEB is unreliable and that, contrary to the DNSPs' submissions, the Commission and the OEB do rely on the data – data, which the AER asserts, is collected and verified in a manner similar to the AER's collection and verification process.

290 In responding to Networks NSW's concerns that sudden, unexpected and unexplained changes in the overseas data appear to be the product of human error, the AER relies on the Second EI Report's conclusion that, with one exception, they are unlikely to be errors, but simply movements attributable to the small size of some of the DNSPs.

291 That response, however, gives credence to a submission by Networks NSW that a finding that the relationship between cost drivers and opex is not consistent across Australia, New Zealand and Ontario DNSPs and that it makes no sense to compare small New Zealand and Canadian DNSPs, which may experience volatile changes, to large DNSPs in Australia which do not.

292 In relation to the fourth issue on overseas data (vegetation management costs) it is Networks NSW's contention that because such costs are not reported separately in New Zealand or Ontario for the period of the RIN data, it is impossible to verify whether there are errors in relation to this category of opex. The AER dismisses this contention as irrelevant to the AER models because the input measure used in its models is total opex and vegetation management costs are not a separate input measure. Thus, in the AER's view, as long as total opex is consistent within each country, it is not necessary to review the individual components of that figure across countries.

293 Networks NSW relies on the Second PEG Report to develop its submissions on the fifth overseas data issue, whether the overseas entities adopted different definitions for the purpose of collecting data – particularly in relation to the definitions of:

(a) opex – opex in Ontario includes the costs of customer care services such as metering and billing but excludes costs of maintaining substations with incoming voltage exceeding 50kV; and

(b) ratcheted maximum demand – Australian and New Zealand DNSPs report "coincident ratcheted maximum demand" representing the peak level of demand across a DNSP's entire network at any one time whereas Ontario DNSPs report 'non-coincident ratcheted maximum demand', representing the aggregate of the peak levels of demand for the individual constituent parts of a DNSP's network (the constituent parts usually being aggregated at either the subtransmission substation level or the zone substation level).

294 It is Networks NSW's submission that non-coincident ratcheted maximum demand is generally higher than coincident ratcheted demand, because different parts of a DNSP's network may experience peak levels of demand at different times and the difference can be substantial – for the 13 Australian DNSPs during the RIN data period, in 5 cases the difference was over 10 percent and in one case over 25 percent.

295 The AER's answer to Networks NSW's overseas definition issues is that the differences do not have any material effect on the results of the EI model because the country dummy variables are explicitly designed to correct for systematic reporting differences. Networks NSW's reply to the AER's answer is a blunt, on target, "It will not."

296 The Tribunal is not of the view that the country dummy variables, in the present circumstances, correct for systematic reporting differences. As Networks NSW rightly submits, the type of country dummy used by EI assumes the relevant relationships between cost drivers and opex is the same across the three jurisdictions and cannot control for the situation where one of the relevant cost drivers has been defined differently in one jurisdiction, thereby altering the relationship between it and opex for that jurisdiction. Thus, for the same reason, the country dummy variables do not "correct" for the differences in the examples provided by the AER relying on the Second EI Report, as outlined above.

297 As observed by the following Networks NSW consultants:

(a) the CEPA Report at p 17:

> Including a dummy variable in the model specification does not necessarily control for these within and across country differences. A dummy variable only controls for level differences between datasets not cost relationship differences.

(b) the Frontier Report at p ix:

> The consequences of the significant differences in operating environment across the sample is that the business models applied by the businesses are likely to be very different – for example, an Ontarian business operating in a harsh wintry environment will have a completely different business model to achieve a given level of security of supply than a rural Australian network operating over an enormous service region. In turn, this will mean that the relationship between costs and cost drivers is quite different across the two jurisdictions, and is not amenable to being captured by a relatively small number of high level explanatory factors combined with country dummy variables (as per EI's approach).

298 Also, relying on the following extract from the CEPA Report at p 16, ActewAGL submitted that a dummy variable is entirely inapposite to adjust for differing cost relationships between jurisdictions:

> The introduction of the dummy variable takes a fixed amount of Country A's opex per network length to bring its average in line with Country B's. However, the slope of the line (the relationship between opex and network length) is not impacted by the introduction of the country dummy variable. A proper econometric analysis is more complex than this and should take account of country-specific slopes, which will require more variables to take this into account. For example, if the relative prices of labour and capital differ, then one would expect a different relationship between cost and customer numbers (e.g. higher labour costs should lead to more capex and lower maintenance costs, but higher costs of dealing with customers).

299 As seen by ActewAGL, the issue is of "significant concern". That is because most of the data used within EI's models, including the EI model, comes from overseas. Australia only accounts for 19 percent of the data points used. Accordingly, even with the use of a "dummy variable", the slopes (coefficients) estimated by the regression models will closely follow the overseas DNSPs, rather than the Australian DNSPs, because of the sheer volume of data that comes from overseas. That is, the model will reflect cost relationships between opex and drivers of opex that exist in the overseas DNSPs, rather than modelling relationships that exist in Australia.

300 The AER's response to CEPA, Frontier and PEG's concerns about the use of country dummy variables appears in Attachment 7 to the Ausgrid Final Decision at p 7-121. Noting that:

(a) while CEPA agrees that the dummy variables control for level differences between databases but considers they do not account for cost relationship differences; and

(b) similarly, Frontier and PEG submit that each service provider's costs are influenced by factors not captured by the explanatory variables in the EI model,

the AER observes that:

> In response to this, Economic Insights considers for such differences to have a material impact on the model results, significant differences in the technology to distribute electricity would need to exist. Economic Insights notes the international service providers deliver the same services using poles, wires and transformers so it does not agree that such a fundamental difference exists.

301 It is the view of the Tribunal that that observation:

(a) glosses over the multitude of differences that no doubt exist between the poles, wires and transformers of the Australian DNSPs and those of their overseas counterparts – differences due to such matters as topography, climate and regulations relating to the standards of the poles, wires and transformers; and

(b) fails to address the fact that the EI model's use of country dummy variables impugns the robustness claimed for the model by the AER.

302 Indeed, the EI model's use of country dummy variables reveals a significant weakness in the model.

303 In respect of the sixth issue, raised by Networks NSW, relating to the use of overseas data (an alleged failure by either the AER or EI to conduct sensitivity testing in relation to potential errors in the overseas data, or inconsistencies between the overseas data and the Australian data, in order to quantify their potential impact) the AER says that the allegation is not correct because EI undertook extensive sensitivity testing by creating four different economic models and PPI analysis, some of which incorporated the overseas data and some of which did not. Moreover, EI calculated each of the AER econometric models using different combinations of overseas data (the "full", "large", "medium" and "small" datasets), as well as different combinations of included outputs, different functional forms and different estimation methods. The AER submits that:

(a) as a result EI found that the modelling results were relatively insensitive to the dataset used and to small changes in specification; and

(b) EI's finding indicates the results of the AER models are robust and insensitive to possible errors of the type alleged.

304 In reply, Networks NSW asserts that the AER's submission should be rejected because the "sensitivity testing" referred to by the AER involved the following:

(a) the econometric models estimated originally by EI which contained five variables (energy throughput, customer numbers, circuit length, ratcheted maximum demand and share of undergrounding);

(b) EI subsequently dropping the energy throughput variable as it was correlated with ratcheted maximum demand causing the variables to lack statistical significance;

(c) EI running four econometric models (an LSE model with Cobb-Douglas and translog functional forms and an SFA model with Cobb-Douglas and translog functional forms) however, EI did not present the results of the translog SFA model;

(d) concerns by EI that the inclusion of very small DNSPs in the Ontario and New Zealand data sets might exert undue influence on the results, causing EI to run each of the models on different data sets with a different cut off of customer numbers. These were the Full (all DNSPs), Large (DNSPs > 10,000 customers), Medium (DNSPs > 20,000 customers) and Small (DNSPs > 50,000 customers) data sets. The preferred data set was the medium data set, containing 68 DNSPs, of which 37 were from Ontario and 18 from New Zealand and, as submitted by Networks NSW, this data set still includes a large number of DNSPs that are very small compared to the Australian businesses;

(e) EI has not presented the results from any data set aside from the medium data set.

305 Thus Networks NSW claims that the "sensitivity testing" done by EI was not sensitivity testing at all because all econometric models presented and relied upon use the same data and the same variables. Networks NSW went on to submit that the following options for genuine sensitivity testing might have been adopted by EI:

(a) using any of the data from the United States which PEG had prepared at the request of the AER (even as a cross-check);

(b) seeing what would be the effect of "normalising" the data prior to modelling by removing DNSP specific unusual expenditure (which was done by its consultant CEPA, producing substantially different results);

(c) using data envelopment analysis (DEA) – a methodology that the AER had said in its EFA Guidelines it would use;

(d) using fixed effects or random effects SFA models, which allow for heterogeneity at the DNSP level (as opposed to EI's SFA model which essentially assumes no latent heterogeneity);

(e) inclusion of any additional variables (as some of Networks NSW's consultants have done).

306 There is merit in Networks NSW's suggested options for sensitivity testing to identify potential errors in the overseas data, or inconsistencies between the overseas data and the Australian data, in order to quantify their potential impact. While it might be understandable that time constraint pressures on the AER precluded it pursuing all the options, that they were not pursued does not increase confidence in the AER's reliance on overseas data to arrive at its estimate of a DNSP's required opex.

307 The seventh and final issue relating to the use of overseas data advanced by Networks NSW (whether the AER and EI were correct to ignore other potential sources of overseas data – particularly US data compiled by PEG for the AER which is preferable to the Ontario data) is rejected by the AER because:

(a) the data was assembled from a disparate range of sources, most of which were for the purpose of financial reporting, rather than economic benchmarking, meaning that the data mainly focused on financial variables;

(b) much of the US data was derived from vertically integrated businesses, which resulted in numerous cost-allocation issues; and

(c) many quantity measures are either not reported at all or not reported consistently in the US, including fundamental variables such as line length, maximum demand and reliability.

The AER notes that:

(a) having regard to the limitations PEG was only able to assemble data for 15 United States DNSPs, consisting of only 170 observations;

(b) the sample was widely unbalanced, eg three DNSPs had 19 years of data and three DNSPs had only two years of data;

(c) the data was not generally comparable with the New Zealand and Ontario data in terms of coverage and definition, nor did it support EI's preferred specification using Australian data;

(d) the database did not have consistent coverage of the variables used in the AER econometric models and the AER's productivity models; and

(e) for these reasons, EI concluded that the US database was not fit for the purpose of being included in the AER's economic benchmarking.

308 While the AER addresses Networks NSW's submission on the seventh and final issue relating to the use of overseas data, there is significant substance to other overseas data issues raised by the DNSPs – in particular the second of those issues, namely, limitations on the opportunity to enhance the AER's reliance on overseas data by subjecting the data to greater consultation through the mandated consultation processes had it been flagged earlier in the chronology leading to the Draft Decisions. As the Tribunal has noted, the fact of a lack of opportunity to consult more fully is not itself a ground of review relied upon by the DNSPs.

The AER's lowering of the EI model's comparison point

309 As observed above, the AER lowered the efficiency target comparison point from the 0.86 in its Draft Decisions to 0.77 in its Final Decisions.

310 Attachment 7 to the Ausgrid Final Decision details (at p 7-276) the AER's reasons for lowering the comparison point as follows (without footnotes):

> We have decided, on balance, for this decision, that the appropriate benchmark comparison point is the lowest of the efficiency scores in the top quartile of possible scores rather than the average approach we used in our draft decision. This is equivalent to the efficiency score for the business at the bottom of the upper third (top 33 percent) of companies in the benchmark sample (represented by AusNet Services). Our revised comparison point is appropriate for the following reasons.
>
> First, our draft decision averaging approach produced an unusual result for service providers ranked in the top quartile of efficiency scores, but below the average of that top quartile. These service providers would require an efficiency adjustment to reach the average benchmark comparison point (because their scores are below the average) despite being efficient enough to be ranked in the top quartile and, hence, included in the average.
>
> Second, given it is our first application of benchmarking, it is appropriate to adopt a cautious approach. We have decided to increase the margin for error for modelling and data issues provided for in the draft decision (which reduced the benchmark comparison point from 0.95 to 0.86).
>
> Third, we consider this approach better achieves the NEO and RPPs. In particular we have considered:
>
> - the principle that we should provide service providers with an opportunity to recover at least their efficient costs

- we wish to create a high-powered efficiency incentive (which supports making an adjustment when it is clear there is material inefficiency in revealed costs) but we are mindful of providing sufficient stability to promote efficient investment
- our decision should allow a return that is commensurate with both regulatory and commercial risks.

> A number of service providers, representing more than a third of the NEM [national electricity market], and operating in varied environments, are able to perform at or above our benchmark comparison point. We are confident that a firm that performs below this level is, therefore, spending in a manner that does not reasonably reflect the opex criteria. An adjustment back to an appropriate threshold is sufficient to remove the material over-expenditure in the revealed costs while still incorporating an appropriately wide margin for potential modelling and data errors and other uncertainties. Economic Insights agrees that this approach is appropriate.
>
> Our approach of using benchmarking as a basis for making adjustments to opex is also consistent with Ofgem's approach.

311 There is merit in the following submissions that PIAC advances against the AER's above quoted reasons for lowering the comparison point:

(a) The AER's first reason is irrelevant to its decision to reduce the benchmark comparison point. The AER's "unusual result" is simply the consequence of deriving the benchmark comparison point as the average of any grouping of networks, rather than the score achieved by a single network. It would arise if the average were taken of the top five networks as it would if the average were taken of the top eight or nine networks.

(b) The AER's second reason is a repetition of its original explanation of why it set the benchmark comparison point below the efficiency frontier, merely reciting that it has decided to increase that downward allowance, in order to take a "cautious" approach. No explanation is provided why the AER has concluded "modelling and the data issues" justify an initial adjustment more than twice the magnitude of the reduction in the Draft Decisions.

(c) The three points comprising the AER's third reason amount to no more than unreasoned box-ticking of some, but not all, of the RPP in s 7A of the NEL.

(i) Invoking the principle of providing service providers with an opportunity to recover "at least their efficient costs" is circular: the purpose of the

benchmarking exercise is to ascertain what level of performance may be said to "reasonably reflect" the DNSPs' efficient costs.

(ii) No explanation is given of what "regulatory and commercial risks" the doubling of the initial downward adjustment is supposed to reflect.

(iii) The AER's reference to "providing sufficient stability to promote efficient investment" is wholly out of place in its consideration of whether a DNSP's proposed opex requirements reflect the efficient operating costs of a prudent network operator.

(iv) If the AER is suggesting that it had decided to reduce the benchmark comparison point to insulate the DNSPs' shareholders from the effect of an immediate reduction in their opex allowance, that suggestion is at odds with the AER's observation in Attachment 7 to the Ausgrid Final Decision that:

> If a transition is a "premium" above the efficient costs that a prudent operator would require, we cannot include that premium in our estimate of total forecast opex that we are satisfied reasonably reflects these opex criteria. Conversely, if a transition is included as part of a forecast that does reasonably reflect the opex criteria, no further premium is required or possible.

(d) Insofar as the AER relies on EI's advice to justify its further reduction, EI's own reasoning is shown to be informed by nothing more than the adoption of an even more conservative benchmark than the adjustment it described as "conservative" and "generous" at the Draft Decision stage – see the Second EI Report at p 65:

> We have previously noted that it is prudent to adopt a conservative approach to choosing an appropriate benchmark for efficiency comparisons. Adopting a conservative approach allows for general limitations of the models with respect to the specification of outputs and inputs, data imperfections and other uncertainties. While we have not found any of the criticisms made of our 2014 economic benchmarking study warrant changes to be made to our underlying approach, we are of the view there may be a case for setting a more conservative target than that used in Economic Insights (2014). This is particularly the case given that this is the first time economic benchmarking is being used as the primary basis for an Australian regulatory decision.
>
> We are of the view that instead of using the customer weighted average of efficiency scores in the top quartile of possible scores, a more conservative approach of using the lowest of the efficiency scores in the top quartile of possible scores is appropriate. This would make the average efficiency score of 0.77 achieved by AusNet Distribution the appropriate opex efficiency target, before allowance for additional operating environment factors not included in the econometric modelling. Being a predominantly rural DNSP also makes choosing AusNet Distribution's score a relatively conservative choice for the efficiency target. This change represents a 9 percentage point reduction in the opex efficiency target (from 0.86 to 0.77) and so is

> a generous additional allowance for any remaining modelling limitations, data imperfections and other uncertainties. It also represents a lower target of around the bottom of the top third of DNSPs compared to Ofgem's target of the 75th percentile DNSP. Allowance for the additional operating environment factors not included in the econometric modelling then further reduces this target again (to between 0.62 and 0.69, depending on the DNSP).

(e) Finally, PIAC contends that the AER's assertion of the approach of consistency with the UK regulator, the Office of Gas and Electricity Markets' (Ofgem) approach is, for the following reasons advanced by PIAC, inapt:

(i) Ofgem's totex benchmarking uses the upper quartile level of performance, under a weighted average of three benchmarking models. That is explained by Ofgem in the following extract from its *RIIO-ED1:* [Revenue using Incentives to deliver Innovation and Outputs-Electricity Determination 1] *Final determinations for the slow-track electricity distribution companies - overview*, 28 November 2014 set out in PIAC's opex submissions at [79]:

> 4.12. We benchmark the efficient level of totex for each DNO [distribution network operator] using the upper quartile (UQ) of the combined outputs from the three models. This addresses the risk that the combination of three separate UQ benchmarks might result in a benchmark that is tougher than any of the DNO forecasts. We use UQ rather than the frontier to allow for other factors that may influence the DNOs' costs. The UQ level of efficiency (lower quartile level of costs) is the 25th percentile in the distribution of efficiency scores.

(ii) Properly understood, the AER's approach is not a "top quartile" approach. Rather, the AER applied "the lowest of the efficiency scores in the top quartile of possible scores (represented by AusNet Services)" ie the DNSP whose EI model efficiency score was the lowest above 0.75 or the fifth most efficient of the 13 DNSPs (Attachment 7 to the Ausgrid Final Decision at p 7-721).

(iii) The AER described this as "equivalent to the efficiency score for the business at the bottom of the upper third (top 33 percent) of companies in the benchmark sample" (Attachment 7 to the Ausgrid Final Decision at p 7-721).

(iv) Yet even that understates how far the benchmark had been lowered at this initial step as AusNet lay outside the upper third of the sample. In distributional terms, AusNet sat at the 62nd percentile, which most closely approximates the cut-off

for the top three octiles, ie implying a 50 percent larger reduction than if the AER had adhered to Ofgem's "upper quartile" approach.

(v) Moreover, an important facet of Ofgem's totex benchmarking method is that, having set the benchmark at that upper quartile level, it makes only very limited allowances for what may be described as OEFs. In particular, Ofgem granted "company specific factors" allowances to only three out of 14 of its DNOs – see Ofgem's *RIIO-ED1: Final determinations for the slow-track electricity distribution companies Business plan expenditure assessment*, 28 November 2015, at [4.1] ff which explains Ofgem's approach as follows:

> 4.1. We consider whether DNO submitted data require adjustments prior to carrying out our comparative benchmarking. This is to ensure that the comparisons are on a like-for-like basis. Where we decide adjustments are appropriate, we adjust the DNO submitted costs before our totex and disaggregated assessments. These adjustments fall into four broad categories:
>
> 1. Regional labour costs. These adjustments are made as operating in certain parts of the country attracts significantly higher labour costs. These apply to the two totex models and the disaggregated model in the same way.
>
> 2. Company specific factors. These are additional costs associated with operating a particular DNO network. The size of the adjustments differs in the disaggregated model compared to the two totex models. For some activities the disaggregated analysis already factors in the special case and to apply these adjustments again would be a double count. For example, if the special case is based on the need to do more volumes of work and our disaggregated model allows all the submitted volumes, we would not make a further company specific adjustment.
>
> 3. Exclusions from totex models. These are costs that are inappropriate for comparative benchmarking because they are not adequately explained by cost drivers that are being used in the totex models or because there is a substantial change in the nature of the activity between DPCR5 and RIIO-ED1. These exclusions only apply to the totex models. This does not apply to the disaggregated analysis. At the disaggregated level each cost activity is assessed by a bespoke model which uses the most intuitive cost driver and accounts for any changes in historical and/or forecast costs.
>
> 4. Other adjustments. Three other adjustments we make are to remove costs outside the price control, to remove non-controllable costs and to account for indirect cost allocation. These apply to the two totex models and the disaggregated model in the same way.

> 4.2. Once we estimate the modelled costs for each activity and for totex, we reverse the regional labour adjustments and company specific adjustments and add back an efficient view of those cost items excluded from our benchmarking analysis.

(vi) Thus, it is PIAC's submission, that properly understood, Ofgem's "upper quartile" method involved both a smaller lowering of the benchmark comparison point from the efficiency frontier, and a considerably more selective approach to making any additional ad hoc, network-specific adjustments that would further lower the efficiency benchmark comparison point. Unlike the AER's method, Ofgem's "upper quartile" benchmarking method encompasses allowances for all but the most material variances in operating environment.

312 There is also merit in ActewAGL's submission that the AER's decision to lower the EI model's comparison point was arbitrary and that it indicates that the AER was not confident in the results of the EI model – a submission made notwithstanding that ActewAGL benefits from the lowering of the comparison point.

313 ActewAGL questions why, if EI and the AER regard the criticisms of its benchmarking methodology to be without foundation, was the shift made? What was the underlying rationale for the decision to make the shift? If the AER was confident in the EI model and its OEF adjustments, why not set ActewAGL's opex by reference to the most efficient Australian firm, as assessed by the EI model? Those questions are, ActewAGL submits, incapable of definitive answer, because the decision about where the frontier should sit does not have an analytical premise.

314 That decision, it submits, is based on nothing more than unease about the reliability of the EI model and the OEF adjustments. Setting ActewAGL's opex allowance by reference to the bottom firm of the top third of efficient firms (as per the Final Decisions) is no more defensible than setting it by reference to the average of the top third of DNSPs (as per the Draft Decisions). ActewAGL concludes its submissions on the AER's lowering of the comparison point by observing the fact that such an arbitrary choice is apparently necessary, because of deficiencies in the EI model, suggests that no reliance should be placed on the results of that model.

315 Networks NSW's submissions in relation to the AER's lowering of the comparison point are mainly directed at rebutting PIAC's submissions on the issue. To that end, Networks NSW makes two submissions:

(a) first, PIAC's contentions rest on the assumption that the EI model and the AER's application of it is valid and if the Tribunal were to uphold Networks NSW's submissions to the contrary, PIAC's submissions would fall away; and

(b) second, PIAC has put on no evidence, nor suggested any reason, why the average of the upper quartile is a more appropriate benchmark than the bottom of the upper quartile in support of its suggestion that the AER return to the average of the upper quartile.

316 The above quoted reasons advanced by the AER for lowering the comparison point make:

(a) a significant acknowledgment of general limitations in its models with respect to the specification of outputs and inputs, data imperfections and other uncertainties; and

(b) do nothing to assuage concerns about the use of such a sophisticated econometric model as the EI model where economic benchmarking is being used for the first time in Australia.

317 The submissions put by PIAC against those reasons are cogent. So too are the unanswered questions raised by ActewAGL.

The AER's OEF adjustments

318 Each of Networks NSW, ActewAGL, Ergon and PIAC submit that the AER erred in making its post modelling OEF adjustments described above.

319 As observed above, recognising that the EI model does not account for many OEFs relevant to estimating opex, the AER made *ex post* adjustments for them. For ease of reference the adjustment process detailed above may be summarised as follows:

(a) first, the AER decided whether the OEF was material or immaterial;

(b) if in the AER's opinion the OEF was material, the AER assessed its quantum *vis á vis* the DNSP under consideration;

(c) if, however, the AER was of the opinion that the OEF was individually immaterial and:

(i) it was likely to provide a cost disadvantage, it made a uniform +0.5 percent adjustment;

(ii) was, in PIAC's terms "directionally ambiguous", ie there was doubt whether it was likely to provide a cost advantage or disadvantage, it made a uniform +0.5 percent adjustment; and

(iii) it was likely to provide a cost advantage, it made a uniform –0.5 percent adjustment.

320 The results of each adjustment for the Networks NSW DNSPs and for ActewAGL appear in two tables in Attachment 7 to the relevant Final Decisions (*Table A.6 Summary of final decision on OEF adjustments*; and *Table A.8 Summary of individually immaterial OEF adjustments*, respectively) which are reproduced above.

321 PIAC notes that that the seemly inconsequential 0.5 percent adjustments in Table 6.A have a very substantial overall effect of the Networks NSW DNSPs' aggregate opex allowances over the five-year regulatory period. PIAC estimates that each individual +0.5 percent adjustment results in an increase in the base-year opex of approximately $1.7m for Ausgrid, $1.1m for Endeavour, and $1.4m for Essential. Applied across the regulatory period, PIAC estimates that each individual +0.5 percent adjustment in turn is equivalent to an increase in the nominal aggregate opex allowance of $9.8m, for Ausgrid, $6.1m for Endeavour and $8.1m for Essential. When the effect of a single +0.5 percent adjustment is multiplied by the number of directionally ambiguous OEF allowances, PIAC estimates that the overall impact of the directionally ambiguous OEF allowances is approximately $108m for Ausgrid, $73m for Endeavour and $89m for Essential. There was no submission directly controverting those arithmetical estimates.

322 ActewAGL and Networks NSW submit that the AER's OEF adjustment process was subjective and arbitrary.

323 Networks NSW also submits that the AER's OEF adjustments underscore the novelty of the AER's approach to econometric benchmarking and that the approach changed in the course

of its application by that approach. Moreover, the adjustments were, in Networks NSW's submissions:

(a) an acknowledgement by the AER that the four EI model parameters do not adequately account for differences between the DNSPs; and

(b) an "attempted bandaid on a flawed process".

324 Further submissions by Networks NSW are to the effect that the AER did not:

(a) have regard to data supplied by Essential relating to extreme weather events or corrosive environments and by Networks NSW relating to the difficulties and cost-inefficiencies associated with trying to enforce vegetation management on landowners; and

(b) make an adjustment for Networks NSW DNSPs' proportion of wooden poles.

325 Both PIAC and Networks NSW complain that they were not given the opportunity to be heard on the AER's post-draft decisions to make the OEF adjustments. As earlier noted, that is not a complaint which they translate on these applications to a complaint of failing to accord procedural fairness in a way which directly enlivens a ground of review.

326 PIAC also submits that:

(a) it was erroneous and inconsistent with the selection of a lower comparison point for the AER to ascertain each OEF's effect on opex by comparing its effect on the opex of each of the Networks NSW DNSPs to the weighted average of the effect it had on the opex of the DNSPs whose efficiency scores were equal to or above the benchmark comparison point; and

(b) the AER erred by allowing a +0.5 percent adjustment for directionally ambiguous (and immaterial) OEFs;

327 Ergon submits that the AER's OEF adjustments do not overcome the underlying error that the AER made in considering the EI model as sufficiently robust and credible to produce a forecast opex allowance for the applicant DNSPs and otherwise adopts the submission made by Networks NSW.

Were the OEF adjustments arbitrary?

328 The AER responds to the assertions that it was arbitrary in its selection of a materiality threshold for its OEF adjustments by way of a submission stating that it exercised its discretion guided by EI's and its own expertise and that the decision to use 0.5 percent was reasonable for the following reasons:

(a) the 0.5 percent threshold is substantially lower than the level (5 percent) required by accounting principles and the selection of a low materiality threshold increased the detail in which it examined the effects of OEFs, which ultimately resulted in a more accurate determination; and

(b) the same threshold was chosen for the RIN process in order to engender a high degree of confidence in the cost data applied in the RINs (DNSPs calculated the difference that their previous and current cost allocation methods would produce in reported opex and, if the figure was above 0.5 percent, they were required to backcast their costs using the current method).

329 The AER's response is more an explanation of why it choose the figure of 0.5 percent rather than a justification of its reasonableness. As Networks NSW rightly submits:

> No reasonable regulator could accept, as the AER does, that its benchmark model does not properly account for many OEFs without then seeking to take those into account.

330 ActewAGL makes a similar pertinent submission – the 23 percent OEF adjustments that the AER made to ActewAGL's efficiency score generated by the EI model demonstrates that even the AER considers there are serious comparability issues that cannot be addressed by the specification of the EI model. In that context, it submits, it is difficult to understand how the AER considers it to be reasonable to place reliance on the outcome of that model as the sole determinant of ActewAGL's opex allowance.

331 In support of its submission that the OEF adjustments are arbitrary, ActewAGL cites the following passage from, the Huegin Report (at pp 51 and 52):

> [t]here is ... no detailed analysis or explanation of the justification for deeming other variables insignificant in the draft decision to support the AER's claim that only a few of the factors have a material effect on total opex
>
> … … …

> For all the consideration of environmental variables individually in the draft decision, the adjustment amount allowed for the collective influence of these variables is merely a subjective estimate.

332 ActewAGL rightly submits that Huegin's analysis applies equally to the approach taken by the AER in the Final Decisions.

333 Moreover, even if the OEF adjustments were properly quantified, the manner in which they have been applied is flawed. As ActewAGL submits, adjustments, where required, should be made before modelling, by normalising the data set, rather than *ex post* modelling. In support of its submission it cites the following passage from the CEPA Report *Benchmarking and setting efficiency targets for the Australian DNSPs: ActewAGL Distribution*, January 2015 (CEPA ActewAGL Report), (at pp 10-11) which concludes that it would be more appropriate to make the adjustments before the modelling as inconsistent data may be affecting the modelling:

> Economic Insights has taken account of these adjustments and proposed that the frontier for AAD [ActewAGL] could be adjusted by 30% as a result. While I do not disagree that adjustments should be made where data are inconsistent, given the magnitude of the adjustments proposed by Economic Insights I consider that it would be more appropriate to make these adjustments before modelling … as the inconsistent data are likely to affect the modelling.

334 The conclusion is apt. If adopted by the AER it would bring its approach more in to line with Ofgem's as outlined in the above quoted passage from its *RIIO-ED1: Final determinations for the slow-track electricity distribution companies Business plan expenditure assessment*, 28 November 2015.

335 As submitted by ActewAGL, the difficulty with the AER's approach is that despite making post modelling OEF adjustments, the efficiency scores of the EI model have been affected by the inclusion of non-comparable data. Post modelling adjustments do not address the fact that the costs relationships within the model, including those DNSPs for which no OEF adjustments have been made, have been affected by the non-comparable data. Thus, those cost relationships are skewed by heterogeneous differences between the DNSPs. The output of the model is therefore skewed by flawed data. That skewed cost relationship cannot be corrected by post modelling OEF adjustments made to some only of the DNSPs (ie the three Networks NSW DNSPs and ActewAGL).

336 ActewAGL concluded its submission on this point noting that while EI has recognised the importance of making adjustments to data before modelling to create a comparable data set, EI failed to do so in its work for the AER leading to the Final Decisions. In ActewAGL's view, the reason that EI did not do so appears to be because it was not possible to normalise the data used within the EI model. There is, therefore, in ActewAGL's opinion, a recurring theme in EI's approach: its methodology for assessing the DNSPs opex was driven by data (and in particular, the use of international data), rather than an a priori decision about what would provide the most robust means of assessing each DNSP's opex. While ActewAGL acknowledges that is understandable at a practical level, it submits that it does not alter the fact that those practical limitations have diminished the probative value of the model to the point of non-existence.

Should directionally ambiguous OEF adjustments been made?

337 Expanding on its submission that the AER erred by allowing a +0.5 percent adjustment for directionally ambiguous adjustments, PIAC submits that the only approach reasonably open to the AER in relation to such OEFs was to make no adjustment at all.

338 It is PIAC's submission that:

(a) the possibility that a DNSP's base-year opex might be affected indiscernibly – in one direction or the other, if at all – by such an OEF is something for which the AER's lowering of the comparison point provided more than an adequate allowance; and

(b) the AER exercised its discretion incorrectly and made an unreasonable decision which does not contribute to the NEO.

339 In support of its submission PIAC cites the following extract from the transcript of the consultations held pursuant to s 71R of the NEL at p 36 which records the view of the Energy Users Association of Australia's representative, Mr Hugh Grant as follows:

> In essence, the AER's approach to those adjustments … in my view … are arbitrary, unprincipled and in many cases illogical. And it's very important to note that the NSW distributors are also challenging the logic of those adjustments, labelling them as fundamentally flawed, unreliable, unreasonable and arbitrary.

340 The AER response to PIAC's criticism of its allowance of a +0.5 percent for directionally ambiguous OEFs is that it was an appropriate conservative approach, consistent with the RPP in s 7A of the NEL, that would ensure that the DNSPs would have a reasonable opportunity

to recoup at least the efficient costs incurred as a result of those OEFs. That response is drawn from Attachment 7 to the Ausgrid Final Decision at p 7-182 where the AER observes:

> In future, as our information set improves we may reconsider our approach to immaterial OEFs.

341 There is merit in PIAC's reply to the AER's submission that the AER has not endeavoured to defend the adjustment for directionally ambiguous OEFs as an adjustment that was justified or necessary in order to ensure that it would make the decision that it was satisfied would advance the NEO to the greatest degree.

342 It is also to be noted that the AER's response is an acknowledgement by it of the immaturity of its data. An acknowledgement that should have alerted it to the vagaries of relying on the data to the extent that it did.

343 While, perhaps, the AER's citation of the Second EI Report's observation that "… more detailed and improved estimates are now incorporated for factors with small impacts" provides a partial answer to PIAC's submission that the AER's approach on directionally ambiguous OEFs was not based on a recommendation by EI, it does not address PIAC's submissions that EI's advice in the Second EI Report at p 98 and in Table 5.1 was that:

(a) any adjustment should be "positive for factors that disadvantage the DNSP being reviewed and negative for those that advantage it"; and

(b) in EI's tabulation of the OEF adjustments, the directionally ambiguous OEFs were swept up into a category titled "accumulated other factors", about which EI offered no further explanation.

344 PIAC's submission that the directionally ambiguous OEFs have an "unobservably small" impact elicits a response from the AER that that: "… the direction of the advantage of these OEFs could not be ascertained not necessarily because their effects were unobservably small, but because sufficient data about their effects had not been provided to the AER" – a response that confirms the applicants' concerns about the adequacy of the data upon which the AER founded its benchmarking. Indeed, another acknowledgement by the AER of the immaturity of its data that should have put it on notice of the consequences of relying on such data.

345 That confirmation of the applicants' concerns about the adequacy of the data is reinforced by the AER's response to PIAC's submission that the AER erred by applying an adjustment where detailed cost data was unavailable – again, the response advances "deficiencies in the information provided by DNSPs" to explain why exact quantification of the OEFs was not always possible.

346 A further flaw advanced by PIAC in its challenge to the AER's adjustments for immaterial OEFs is that:

(a) it defines the materiality threshold so as to categorise an OEF as immaterial if it produces a cost advantage / disadvantage of –0.5 percent;

(b) but in making a quantitative adjustment for each immaterial OEF, the AER applies an adjustment of ±0.5 percent of base year opex, ie at the outer bounds of the range of immaterial opex impacts

347 Thus, as PIAC correctly submits, by the AER's own definition, it is to be expected that:

(a) insofar as their direction can be ascertained, the immaterial OEFs will, on average, have an absolute opex impact of less than ±0.5 percent;

(b) the directionally ambiguous OEFs will, on average, have a zero opex impact;

(c) but the AER gives no explanation why it applied adjustments at the outer bounds of the immaterial range for immaterial OEFs that would, by definition, have absolute magnitudes only less than (or equal to) those outer bounds.

The OEF adjustments vis á vis the lower comparison point

348 Citing the following passage from submissions to the consultations held pursuant to s 71R of the NEL by the Major Energy User's representative, Mr David Headberry at transcript p 116, PIAC submits that it was reasonable for the AER to make some minor adjustment of the comparison point below the efficiency frontier, in order to make allowance for inherent limitations in the benchmarking model.

> The AER initially used an average of the highest quintile [sic] of the benchmark outcomes to set that efficient allowance … and, again, when you look at the highest quintile the firms that are in that highest quintile include South Australia Power Networks, Powercor, CitiPower, United Energy; all of which have got similar characteristics to those in the NSW networks. So if you accept that there's a problem

> that the NSW networks' opex is too high and they're not efficient, how do you go about setting the right number? And my view is that the approach that was used initially by the AER of using the average of the highest quintile is probably about right because it has a mix of the CBD, urban, regional cities and also rural and remoter areas. And when you look at the mix of the networks that are included in that top quintile they are not too bad a surrogate for what we actually see in NSW.

349 But, PIAC went on to submit, having made an adjustment to the comparison point, the AER was wrong to compare the effect the OEF had on the opex of a DNSP under consideration to the weighted average of the effect it had on the opex of the DNSPs whose efficiency scores were equal to or above the benchmark. This it submitted is inconsistent with the AER's decision to use the single efficiency score of AusNet, the DNSP at the bottom of the upper third of DNSPs as the comparison point.

350 PIAC expanded on its submissions under this heading by outlining what it saw as the following effects of lowering the comparison point:

(a) the initial reduction from the efficiency frontier (CitiPower, at 0.950) to the benchmark comparison point was more than doubled from the Draft Decision to the Final Decision:

	Efficiency frontier	**Benchmark comparison point**	**Reduction from frontier**
Draft decision	0.950	0.862	9.3%
Final decision	0.950	0.767	19.3%

(b) the new OEF unadjusted benchmark comparison point is lower than the post-OEF-adjustment comparison point used for each of the Networks NSW DNSPs in the Draft Decision, namely, 0.786.

(c) thus, when the AER made the final decision OEF adjustments, it started from a lower comparison point than when making the OEF adjustments in the Draft Decisions.

351 Responding to PIAC's submission under this heading the AER drew on Attachment 7 to the Ausgrid Final Decision (at p 7-183) to explain that:

(a) it used the average of the top five DNSPs for the OEF process because in that process it is necessary to estimate an OEF's effect on the opex of an efficient DNSP and such

effects may vary between DNSPs – it cannot be assumed that the effect of an OEF on the opex of the DNSP at the benchmark comparison point would be replicated in other efficient DNSPs;

(b) if it were to be so assumed, it could lead to OEF adjustments that unfairly advantage or disadvantage DNSPs; and

(c) thus, an average is more accurate than a comparison to a single firm.

352 Rather than challenging the premise of PIAC's submission that the AER's averaging approach artificially inflates the impact of the OEFs and improves Networks NSW DNSPs' apparent relative efficiency, the AER submitted that there is no evidence that its approach affects their efficiency scores positively rather than negatively.

353 Finally, in response to PIAC's submission that the lowering of the benchmark comparison point was sufficient to allow for any potential modelling and data uncertainties, including the immaterial OEFs, the AER repeated that it adopted its approach to immaterial OEFs in order to provide DNSPs with the opportunity to recoup at least their efficient costs, consistently with the RPP – a submission which, for reasons outlined above, was rightly exposed as tenuous by PIAC.

Other OEF issues

354 Having regard to the conclusions that may be drawn from the above considerations of the parties' submissions (particularly those of PIAC) challenging the AER's approach to determining the OEFs, it is not necessary consider the following challenges to particular OEFs , other than to note them:

(a) PIAC's claim that the AER's reduction of its estimate of the quantum of the advantage that Networks NSW DNSPs enjoyed *vis á vis* the Victorian DNSPs (from 2.4 percent in the Draft Decisions to 0.5 percent in the Final Decisions;

(b) PIAC's claim that the AER erred in applying information provided by Essential in relation to fungal decay in wooden poles to Ausgrid and Essential;

(c) claims by PIAC and by Networks NSW that they were not given an opportunity to be heard on the AER's OEF adjustments; and

(d) Networks NSW's claim that the AER erred by not making an adjustment for a DNSP's portion of wooden poles.

The efficiency of the DNSPs' vegetation management costs

355 Each of Endeavour, Essential, and ActewAGL challenge the AER's assessment that the vegetation management costs in their respective 2012-13 base year opex were not efficient.

356 The gravamen of Endeavour's challenge is premised on the AER's refusal to provide an allowance for increased vegetation management occasioned by its retendering of outsourced contracts for that purpose. Endeavour claims that the AER's refusal results in a reduction of some $240.7m in Endeavour's forecast of its vegetation management opex.

357 The essence of Essential's challenge is premised on a failure by the AER to examine whether the forecast reasonably reflects the opex criteria because it took the view that Essential's forecast of a reduction in 2014-19 vegetation management costs was an admission of past vegetation management inefficiencies. In its regulatory proposal, Essential forecast a $151m reduction based on it implementing efficiencies identified in a report by Select Solutions, *Review of Essential Energy Vegetation Management Strategy*, 22 March 2013 (the Select Solutions Report). While Essential maintained the reduction in its revised regulatory proposal, it increased its opex forecast by $67m for rectification of non-compliant clearance levels and other deficiencies identified as a result of the introduction of new technology

358 In summary, ActewAGL's challenge is directed at the AER's conclusion that a report by Energy Market Consulting associates (EMCa), *Review of ActewAGL Distribution's Labour Resourcing and Vegetation Management Practices at 2012/13*, April 2015, (the EMCa Report) confirmed a finding in the ActewAGL Draft Decision that its labour and vegetation management costs are likely drivers of its poor benchmarking performance.

Endeavour's challenge

359 It is Endeavour's contention that its vegetation management opex forecast is:

(a) required to enable it to comply with a NSW industry standard, *Industry Safety Steering Committee 3 Standard – Guidelines for Managing Vegetation Near Powerlines*, December 2005 (ISSC 3); and

(b) directed at meeting the opex objectives in r 6.5.6(a)(2), (3) and (4).

360 Endeavour claims that it has been seeking to improve its compliance with ISSC 3 since 2009 but that by 2011-12 its compliance level was only 76 percent because contrary to their contracts, some contractors were trimming vegetation only to the minimum clearances and were not making any allowance for regrowth as required by ISSC 3. Thus, commencing in 2011-12, it sought new contracts by way of competitive tender. It is Networks NSW's contention that the new contracts resulting from a tender process resulted in an increase of contractor opex from $21.3m for 2012-13 to $37.4m in 2013-14. The new contracts (together with increased opex costs attributable to internal vegetation management work, internal processes and overheads associated with those contracts) resulted in the compliance level of 92 percent in 2013-14.

361 Endeavour considers the increase in opex required to comply with the safety and reliability standards in ISSC 3 is within r 6.5.6(c)(3), ie a realistic expectation of the demand forecast and cost inputs required to achieve the opex objectives.

362 Relevantly, the opex objectives speak of the forecast opex which the relevant DNSP considers is required to achieve each of the opex objectives including:

> (1) comply with all applicable *regulatory obligations or requirements* associated with the provision of *standard control services*;
>
> (2) to the extent that there is no applicable *regulatory obligation or requirement* in relation to:
>
> (i) the quality, reliability or security of supply of *standard control services*; or
>
> (ii) the reliability or security of the *distribution system* through the supply of *standard control services*,
>
> to the relevant extent:
>
> (iii) maintain the quality, reliability and security of supply of *standard control services*; and
>
> (iv) maintain the reliability and security of the distribution system through the supply of *standard control services*;

363 In support of its vegetation management opex forecasts, Networks NSW:

(a) relied on its competitive tendering process to demonstrate efficiency in contractor costs; and

(b) provided to the AER a copy of an internal analysis (an attachment to a Networks NSW Executive Leadership Group Meeting, dated 17 October 2013) which, Networks NSW submits, confirms that there had been an increase in Endeavour's vegetation management costs due to a need to manage contractors more closely and enforce clearance standards.

364 In Attachment 7 to the Endeavour Final Decision, the AER dismissed the competitive tendering process at p 7-297 as follows:

> competitive process only helps in demonstrating the efficiency of the contracts that were tendered. Whether this amount reasonably reflects the prudent and efficient costs of complying with regulatory obligations will depend on whether the scope of works listed in the contracts reflects a prudent scope of works.

365 Attachment 7 to the Endeavour Final Decision at p 7-297 also dismissed the Networks NSW analysis as suggesting that Endeavour's:

> … vegetation management practices are too risk averse, … [and] … are contributing to relatively high vegetation management costs.

366 As observed above, the AER was not prepared to classify Endeavour's vegetation management opex forecast as a "step change" in terms of its EFA Guideline – see Attachment 7 to the Endeavour Final Decision at p 7-288ff where it sets out its reasons why it was not prepared to accept that opex forecast as a step change.

367 The 2013 EFA Guideline at pp 11 and 27 describes step changes and its approach to them in two places as follows:

> Step changes
>
> Our approach is to separately assess the prudence and efficiency of forecast cost increases or decreases associated with new regulatory obligations and capex/opex trade-offs. For capex/opex trade-off step changes, we will assess whether it is prudent and efficient to substitute capex for opex or vice versa.
>
> For step changes arising from new regulatory obligations, we will assess (among other things):
>
> - whether there is a binding (that is, uncontrollable) change in regulatory obligations that affects their efficient forecast expenditure
> - when this change event occurs and when it is efficient to incur expenditure to comply with the changed obligation
> - what options were considered to meet the change in regulatory obligations

- whether the option selected was an efficient option—that is, whether the DNSP took appropriate steps to minimise its expected cost of compliance from the time there was sufficient certainty that the obligation would become binding

- when the DNSP can be expected to make the changes to meet the changed regulatory obligations, including whether it can be completed over the regulatory period

- the efficient costs associated with making the step change

- whether the costs can be met from existing regulatory allowances or from other elements of the expenditure forecasts.

We will assess changes in regulatory obligations in the context of the core category they affect, which will ensure consistency across DNSPs. Accordingly, DNSPs must allocate step changes arising from regulatory obligations to our expenditure categories (for example, augmentation, replacement, vegetation management).

We will not allow step changes for any short-term cost to the DNSP of implementing efficiency improvements in expectation of being rewarded through expenditure incentive mechanisms such as the EBSS. We expect DNSPs to bear such costs and thereby make efficient trade-offs between bearing these costs and achieving future efficiencies.

4.3 Step changes

Step changes may be added (or subtracted) for any other costs not captured in base opex or the rate of change that are required for forecast opex to meet the opex criteria.

We will assess step changes in accordance with section 2.2 above. Step changes should not double count costs included in other elements of the opex forecast:

- Step changes should not double count the costs of increased volume or scale compensated through the output measure in the rate of change.

- Step changes should not double count the cost of increased regulatory burden over time, which forecast productivity growth may already account for. We will only approve step changes in costs if they demonstrably do not reflect the historic 'average' change in costs associated with regulatory obligations. We will consider what might constitute a compensable step change at resets, but our starting position is that only exceptional events are likely to require explicit compensation as step changes. Similarly, forecast productivity growth may also account for the cost increases associated with good industry practice.

- Step changes should not double count the costs of discretionary changes in inputs. Efficient discretionary changes in inputs (not required to increase output) should normally have a net negative impact on expenditure.

If it is efficient to substitute capex with opex, a step change may be included for these costs (capex/opex trade-offs).

368 In rejecting the increase the AER observed in the Endeavour Final Decision – Attachment 7 at p 7-288 that:

> (a) Endeavour had stated that it did not face any change to the minimum risk standards with which it must comply;
>
> (b) without persuasive evidence that a DNSP's total historical opex was too low to achieve the opex objectives, it did not consider increased contract costs to be a reason to increase the total opex forecast to meet what are unchanged regulatory obligations;
>
> (c) Endeavour does not benchmark well when compared to other DNSPs in the national electricity market; and
>
> (d) it would be inconsistent with the application of Endeavour's EBSS to include the vegetation management opex in the opex forecast (Endeavour proposed that it retain gains from its EBSS rather than share them with its customers).

369 It is Networks NSW's submission that the AER was wrong to analyse the proposed vegetation management opex in terms of it being a "step change" because it lead it to an *ex ante* view that that opex might only be accepted if it were the result of an opex / capex trade-off or new regulatory obligation whereas the correct approach was to first consider whether that opex reasonably reflected the r 6.5.6(c) opex criteria.

370 The AER's response to that submission notes that its approach to assessing step changes, as set out in the Endeavour Final Decision, adopts the approach in the 2013 EFA Guideline and cites the following passage from Attachment 7 to the Endeavour Final Decision at p 7-291:

> We only include a step change in our alternative opex forecast if we are satisfied a prudent and efficient service provider would need an increase in its opex to reasonably reflect the opex criteria.

That question, the AER submits, is precisely directed to the AER's task under r 6.5.6(c).

371 While that question may be so directed, a reading of Attachment 7 to the Endeavour Final Decision reveals that what may be described as a step change analysis was very much in the forefront of the AER's considerations of Endeavour's vegetation management opex forecast in applying its benchmarking methodology.

372 Thus, the AER did not consider the fact that outsourcing its vegetation management contracts by way of competitive tender was sufficient to demonstrate that Endeavour's vegetation management opex forecast reasonably reflects the r 6.5.6(c) opex criteria or the opex objectives. Thus too it dismissed the abovementioned internal analysis.

373 In circumstances where Endeavour:

(a) provided its abovementioned analysis to the AER; and

(b) is committed to paying contractors retained through a competitive tender process so that it may comply with an applicable regulatory obligation,

the AER's reasons for rejecting Endeavour's vegetation management opex forecast are tenuous. A fortiori, having regard to the significant adverse consequences that may flow from a failure to comply with regulatory vegetation management requirements as demonstrated by the Victorian bushfires.

374 The AER also submitted that its assessment was influenced in part by a Deloitte Report *NSW Distribution Network Service Providers Labour Analysis, Final Addendum to 2014 Report*, 28 April 2015 (the 2015 Deloitte Labour Report). The AER previously engaged Deloitte to conduct an analysis of the Networks NSW DNSPs' labour costs in the 2009-2014 regulatory period. Its report, *NSW Distribution Network Service Providers Labour Analysis*, 17 November 2014 (the 2014 Deloitte Labour Report) informed the AER's assessment of the DNSPs' 2015-2019 capex and opex forecasts, and was referenced in the Draft Decisions for each of the DNSPs.

375 The 2015 Deloitte Labour Report concluded:

> Our view remains that the NSW DNSPs have higher labour costs than their peers (driven by the number of employees rather than costs per employee) due to in [sic] restrictive EBA provisions, a high degree of unionisation and inefficient labour practices, which means that their base year opex was not efficient.

376 Insofar as the 2014 Deloitte Labour Report may have informed the AER's Draft Decision Networks NSW had an opportunity to respond to it. It is, however, Networks NSW's unchallenged submission that it was not given the opportunity to be heard in relation to the 2015 Deloitte Labour Report.

377 As noted elsewhere, of itself s 71C of the NEL does not provide as a ground of review that procedural fairness was not accorded. It is understandable that, with the range of reviewable regulatory decisions being made by the AER and the extensive refined obligations imposed on it by the 2012 Rule Amendments, the regulatory period 2015-19 presented significant administrative challenges. The timeframe in which the DNSPs and the AER must operate in relation to the commencement of the relevant regulatory control period is set out in rr 6.8 to

6.11 of the NER. Recognising those time constraints, r 6.11.1(c) imposes a "best endeavour" obligation on the AER to publish any post Draft Decision analysis for the purposes of its Final Decision.

378 There is presently no basis for thinking that the AER did not properly comply with r 6.11.1(c). It was not the focus of submissions. The DNSPs focus was to rely on the timing and quality of the analysis upon which they did not have an opportunity to comment as part of the picture on which a ground or grounds of review under s 71C(1) of the NEL are made out. Certainly, it is a matter of common sense that a report such as the 2015 Deloitte Labour Report might carry greater weight if it had been the subject of any response from Endeavour, depending of course on the terms of that response.

Essential's challenge

379 In rejecting Essential's forecast of its vegetation management opex, Attachment 7 to the Essential Final Decision states (at pp 7-160 and 7-162):

> … we consider the Select Solutions report (and Essential Energy documentation discussing it) submitted by Essential Energy with its regulatory proposal demonstrates there are inefficiencies in its vegetation management practices in the 2012–13 base year. While Essential may have since improved its practices, the evidence suggests it had not done so in 2012–13. Therefore, the costs in 2012–13 are overstated.
>
> … … …
>
> We placed most weight on the findings of the Select Solutions review, noting that Essential Energy had proposed a step down in its vegetation management opex in the forecast period (rather than in the base year). Therefore, we maintain our draft decision view that Essential Energy's performance on our economic benchmarking techniques is likely to be partly driven by its vegetation management opex.

380 It is Essential's submission that the AER:

(a) contrary to r 6.5.6, performed no analysis, and gave no consideration to, whether Essential's forecast vegetation management over the 2014-19 period, including the cost reductions proposed, was efficient or prudent;

(b) made no attempt to quantify any inefficiencies in terms of the effect on opex of the vegetation management issues identified, thus its analysis provided no probative corroboration of inefficiencies of the scale identified by the AER in reliance upon the EI Model; and

(c) did not ascribe a figure quantifying inefficiencies in Essential's vegetation management.

381 Thus, in Essential's submission:

(a) the AER's findings regarding vegetation management did not, and could not, justify a quantitative assessment of efficient opex; and

(b) the AER has conducted an abstract and superficial assessment of Essential's vegetation management practices, focused on only one year, without actually undertaking the task of identifying the amount of inefficient expenditure.

382 It is Essential's contention that any inefficiency that may be implied from Essential's forecast reductions does not amount to the inefficiency identified by the AER's benchmarking exercise. In support of its contention, Essential claims that:

(a) its proposed reduction in vegetation management costs in its regulatory proposal was approximately 16.5 percent, which drops to 9.2 percent with the increases in its revised regulatory proposal; and

(b) by comparison, the EI model identified Essential as having an efficiency score of 54.9 percent compared to a frontier (after making the OEF adjustments) of 69.4 percent, implying a 26.4 percent reduction to opex.

383 It is also Essential's contention that the AER ignored evidence before it that Essential compares favourably to most other Australian DNSPs in terms of vegetation management opex per vegetation management span (per kilometre of overhead circuit which passes through an area requiring vegetation management) because a "service provider's estimation assumptions seem to influence the data on maintenance spans" (Attachment 7 to the Essential Draft Decision at page 7-84). Essential notes in this regard that its consultant Advisian observed that: "it is not logical to simply ignore it in a detailed assessment of vegetation management".

384 Essential's challenge to the AER's vegetation management findings concludes with a submission that what data is available on vegetation management spending per vegetation management span is wholly at odds with the conclusions the AER sought to draw from the Select Solutions Report and Essential's proposed reductions.

385 Insofar as Essential's challenge is premised on a supposition that the NER requires the AER to conduct a line-by-line, bottom up review of each category of forecast expenditure, it is rejected by the AER. It is the AER's contention that:

(a) rule 6.5.6(c) requires the AER to assess whether the total of the DNSP's forecast opex reasonably reflects the opex criteria;

(b) as described in its 2013 EFA Guideline, the AER undertakes that assessment using the base-step-trend approach, the first step being an assessment whether the DNSP's base year opex reflects the opex criteria;

(c) the AER assessed Essential's base year opex using a number of assessment methods, including a review of vegetation management costs as a key category of expenditure; and

(d) the purpose of the review was to investigate whether vegetation management in the base year indicated inefficiency and supported and explained Essential's poor performance on other assessment techniques – quantification of the inefficiency was not the purpose of the review, and was not required by the AER's assessment process.

386 It appears from Attachment 7 to the Essential Final Decision that the AER's focus was on the Select Solutions Report and its 16 recommendations to improve Essential's vegetation management. At p 7-162 of the Attachment, the AER observes that Essential had noted that recommendations from the report were in the process of being implemented and concluded that:

> … they could not have been implemented in the 2012–13 base year. This year is the relevant year for determining the appropriateness of Essential Energy's revealed costs as the starting point for determining an estimate of efficient and prudent total forecast opex.

387 The AER dismisses Essential's contention based on the inconsistency between the extent of the reduction to vegetation management costs proposed by Essential (9.2 percent) and the AER's comparison to the efficient frontier (26.4 percent) as a non-sequitur.

388 The AER also dismisses Essential's submissions that it ignored evidence that Essential performs comparatively well in terms of vegetation management opex per vegetation

management span by submitting it did not ignore the evidence, it simply did not find it persuasive for the reason stated by it in Attachment 7 to the Essential Draft Decision.

389 While, as submitted by the AER, neither the NEL nor the NER mandate a line-by-line, bottom-up review of each category of forecast opex, in circumstances where benchmarking in Australia is in its infancy, sensible administration dictates that the AER should not have cast aside its previous practice of conducting bottom-up reviews in favour of the emphasis it placed on benchmarking. A fortiori, in circumstances where its preferred EI model's reliance on overseas data and the AER's final OEF adjustments could not have the benefit of full exposure to the consultation processes mandated by the NEL and the NER.

390 Viewed in that context, the AER's apparently untested conclusion that the recommendations of the Select Solutions Report could not have been implemented in the 2012–13 base year and its preference for its assessment of Essential's overall opex based on the EI model are unconvincing. Likewise, the Tribunal is not convinced by its dismissal of Essential's submission that the AER should have quantified its vegetation management inefficiencies and should not have ignored Essential's comparative vegetation management opex per vegetation management performance.

ActewAGL's challenge

391 Attachment 7 to the ActewAGL Final Decision notes (at p 7-54) that:

(a) the AER's analysis of ActewAGL's opex categories showed it had "very high" costs on labour and vegetation management metrics compared to most of its peers;

(b) because those categories account for a significant proportion of ActewAGL's opex (labour is approximately 80 percent) the AER conducted detailed reviews of labour and vegetation management opex; and

(c) the "detailed review", referred to in these reasons as the EMCa Review, found significant issues in those categories of ActewAGL's opex, which the AER considered evidence of base year inefficiency, supporting its benchmarking results.

392 ActewAGL submits that the "detailed review" does not support the AER's benchmarking, is "fundamentally flawed", and "as a 'qualitative assessment' has no utility in determining the accuracy and reliability of a quantitative assessment of ActewAGL's opex … ."

393 Expanding on its submission that the EMCa review does not support the AER's benchmarking, ActewAGL challenges the following findings by the AER in Attachment 7 to the ActewAGL Final Decision (at p 7-146 and p 7-153):

(a) ActewAGL's labour costs are "… driven by having too many employees rather than by cost per employee"; and

(b) "ActewAGL could potentially achieve efficiencies by outsourcing more"

on the basis that:

(c) the AER did not provide evidence to establish that a higher level of outsourcing would deliver more efficient expenditure; and

(d) the evidence of ActewAGL's expert, Advisian, which was submitted to the AER establishes that: "… the question of whether opex or capex tasks are carried out by internal or external labour is largely irrelevant to the efficiency of the outcome." (Advisian, *Opex cost drivers: ActewAGL*, January 2015, at p 96).

394 ActewAGL responds to the AER's finding in Attachment 7 to the ActewAGL Final Decision (at p 7-153) that due to restrictions on outsourcing in ActewAGL's Enterprise Bargaining Agreement, it does not "appear to be adopting the lowest cost option" and its conclusion (at p 7-156 based on the EMCa review) that ActewAGL's "lack of outsourcing is a key reason why its labour costs in 2012-13 are not reflective of those of a prudent and efficient service provider". It does so by citing the findings in a report by Australian Business Lawyers & Advisors Pty Ltd *Review and comparison of ActewAGL's enterprise agreement provisions against other electricity network service providers*, 13 January 2015) that:

> (a) many of the criticisms made about the operation of the ActewAGL EA [Enterprise Bargaining Agreement] are unfounded; and
>
> (b) contrary to the conclusions reached in the AER Draft Decision, the ActewAGL EA is equivalent to and in many respects demonstrably more flexible than the norm in the electricity sector by comparison to other major electricity providers' enterprise agreements.

395 ActewAGL challenges EMCa's claim (at p 11 of EMCa Review) that two reports generated by ActewAGL's consultants, support evidence of systemic issues in ActewAGL's work

practices, processes and systems that existed in 2012-2013 that have translated into material operational cost inefficiency.

396 Attachment 7 to the ActewAGL Final Decision records (at p 7-156) EMCa's findings based on the first of those reports (Marchment Hill Consulting (MHC) report *Organisation Review-ActewAGL Energy Networks*, February 2011 (the MHC Report) as follows (without footnotes):

> EMCa's review included an examination of how ActewAGL runs its business. EMCa examined the MHC report, which ActewAGL commissioned in 2011. MHC found that problems exist in all areas of ActewAGL's operations, from the way ActewAGL plans its work, through to delivery, and how it monitors and controls its performance operationally and strategically. ActewAGL advised that it had 'rolled-out' the majority of its 34 initiatives in response to the 26 issues identified by MHC in 2011.
>
> EMCa disagrees with ActewAGL's view that it could have implemented the recommendations from the MHC report, which ActewAGL consider are implicit in its forecast productivity growth. In EMCa's opinion, a service provider would require 3 to 5 years to extract the full net benefits from the recommendations of the MHC report. However, ActewAGL has indicated the time period to implement these recommendations was only 6-9 months.
>
> EMCa accept that some of the initiatives could be implemented in twelve months or less but the substantial net benefits are typically achieved over a longer time period, particularly given MHC observed that improvements were needed to all elements of ActewAGL's Operating Model – changing the organisational structure alone would not address all of the issues sustainably.
>
> EMCa considers that in the absence of compelling evidence – ActewAGL has not provided evidence of quantified efficiency gains – ActewAGL has not made significant efficiency gains quickly enough to offset the implementation costs by 2012–13.

397 It is, however, ActewAGL's submission that the primary objective of the MHC Report was to understand and address performance issues identified by ActewAGL's management over the longer term and, except for small direct salary savings, does not quantify any cost savings that would flow from an implementation of its recommendations. In support of that submission it points to a letter, dated 4 March 2015, from MHC which states (at p 3):

> A close examination of the 2011 MHC report finds no explicit references to inefficiency or poor productivity associated with that Reviews' [sic] findings.
>
> Given that the scope of MHC's review was intentionally wide ranging, if such concerns had been identified, they would have been noted.
>
> MHC considered all efficiency opportunities which might flow from the recommendations made in our earlier 2011 report. We did not state an explicit efficiency benefit as these were not directly apparent from our work.

398 Based on the MHC letter, ActewAGL rightly submits that because EMCa's analysis of the MHC review proceeds on an incorrect basis (ie that the MHC review relates to opex efficiency) there is no basis for EMCa's conclusions with respect to the MHC review or for EMCa's conclusion that ActewAGL's 2012-13 labour costs were inefficient.

399 EMCa relied on the following sentence in the in the second of the reports (Sinclair Knight Merz (SKM) report *Resource Planning to deliver ActewAGL's Program of Works for the FY 2012/13*, Final Report, 27 March 2012 at p 5 (the SKM Report)) to point to "a systemic issue with projects and program delivery":

> However, the business does not have a consolidated works management system making resource scheduling and forecasting on an ongoing basis, difficult.

400 That sentence, however, as ActewAGL submits (also rightly), appears in a context referring to its capex, not its opex: see the SKM Report at p 5. And, as ActewAGL goes on to point out, SKM's conclusion with respect to ActewAGL's opex is to the contrary, as the following extract from the SKM Report at p 7 shows:

> Finally a very high level review of the operational expenditure under the AMSP [Asset Management Strategy Plan] was conducted. This revealed that most programs involving inspection and maintenance work were being achieved within reasonable tolerances for quantity and budget.

401 Thus, ActewAGL submits (again rightly) that no significant probative value should be attached to the EMCa Report and that it does not provide any support for the AER's conclusion of inefficiencies in ActewAGL's labour practices.

402 Nor, in its submission, does the EMCa Report support the AER's finding at p 7-146 of Attachment 7 to the ActewAGL Final Decision that:

> ActewAGL's labour costs are driven by having too many employees rather than by cost per employee.

403 In support of that submission ActewAGL points to a statement in the EMCa Report that:

> staffing levels should be determined as part of comprehensive resourcing analysis

and notes that neither the AER nor the EMCa conducted such an analysis. In ActewAGL's submission, absent such an analysis, the AER erred in its conclusions regarding ActewAGL's staffing levels.

404 Noting that:

(a) in the ActewAGL Draft Decision the AER relied on analysis in the 2014 Deloitte Labour Report which, despite its requests, was not provided to ActewAGL; and

(b) while the AER excised any reference to that report in the ActewAGL Final Decision, the overall conclusions reached in the Final Decision are largely identical to those expressed in the Draft Decision from which it may be inferred that the AER continued to place reliance, or at least took into account, the contents of the report in the Final Decision,

ActewAGL submits that because it was deprived of an opportunity to review and make submissions in relation to the 2014 Deloitte Labour Report, ActewAGL was denied procedural fairness and the conclusions reached by the AER about ActewAGL's workforce practices cannot be considered to be reliable. As to procedural fairness, the Tribunal refers to its observations above. Having regard to the following paragraphs, it is not necessary for the Tribunal to decide whether the second part of that submission has merit.

405 In response to criticism from ActewAGL that the Draft Decision analysis of its vegetation management expenditure did not corroborate the AER's benchmarking results because it did not identify at least 40 percent of ActewAGL's vegetation management expenditure as inefficient, Attachment 7 to the ActewAGL Final Decision states (at p 7-158) that the AER was not applying the detailed review in the manner suggested by ActewAGL and that:

> The evidence we present in the detailed review will not necessarily explain the entire performance gap quantified in the economic benchmarking because our intention is not to examine all of opex. Economic benchmarking techniques, on the other hand, do assess opex in totality. The detailed review helps us to identify if the benchmarking results are consistent with our more detailed examinations of ActewAGL's opex.

406 The AER's submissions fail in their endeavour to defend the EMCa Report by:

(a) addressing some detail of ActewAGL's criticisms of the review; and

(b) stating that its purpose of the review was not to quantify inefficiency.

407 The EMCa Report is, in its own words at p i, no more than a "limited scope review". To put it another way, it is but a "desk top" qualitative review which, as rightly submitted by ActewAGL, relied on, but misconstrued, earlier reports commissioned by ActewAGL.

408 Where, as here, the application of a new untested benchmarking model is applied to arrive at a total opex figure, sensible administration suggests that the regulator responsible for its application would apply some form of quantitative "reasonableness check" bottom-up analysis to at least some, if not all, of the opex components. That is, however, not the case here.

Labour costs – Networks NSW's challenge

409 Networks NSW challenge the AER's findings that inefficiencies in the NSW DNSPs' labour management practices are, in part, responsible for the gap between them and the frontier DNSPs identified in the AER's economic benchmarking analysis.

410 As may be seen by reference to *Table 7.3: Assessment of Ausgrid's base opex* reproduced above and the paragraphs that follow that table, the findings in respect of the Networks NSW DNSPs are based on the 2014 and 2015 Deloitte Labour Reports – being the reports referenced above in canvassing the DNSPs' challenges to the AER's finding on their vegetation management practices.

411 The 2015 Deloitte Labour Report concluded (at p 20):

> … the NSW DNSPs have a relatively high number of employees compared to private DNSPs in the NEM [national electricity market]. Considering that labour costs represent the vast majority of opex and given that their unit labour costs do not appear to be greater than their peers', the higher number of employees in Ausgrid, Endeavour and Essential is likely the primary factor driving high opex costs per customer in NSW. Although the number of employees in NSW DNSPs is high due to historical workforce decisions, the current high number of employees is likely being sustained by restrictive EBA provisions relating to no forced redundancies and a relatively high proportion of employees employed under EBAs.

412 A footnote to the above quoted passage from the 2015 Deloitte Labour Report noted that while the "no forced redundancies" provisions is not unique to the Networks NSW DNSPs, the fact that they currently have large workforces makes the provisions more relevant as they impede any large reduction in workforce size.

413 It is Networks NSW's submission that because the vast majority of the Networks NSW DNSPs workforce are engaged pursuant to Enterprise Bargaining Agreements (EBAs) and

compliance with the EBA is a "regulatory obligation or requirement" within the meaning of r 6.5.6(a)(2), the AER's analysis of Networks NSW's labour costs do not establish that the DNSPs' revised regulatory proposals include any labour costs which do not reasonably reflect the operating expenditure criteria.

414 Rule 6.5.6(a)(2) provides:

> (a) A *building block proposal* must include the total forecast operating expenditure for the relevant *regulatory control period* which the *Distribution Network Service Provider* considers is required in order to achieve each of the following (the *operating expenditure objectives*):
>
> … … …
>
> (2) comply with all applicable *regulatory obligations or requirements* associated with the provision of *standard control services*;

415 The phrase *regulatory obligations or requirements* is relevantly defined in s 2D(b)(v) of the NEL as follows:

> an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act … that materially affects the provision, by a regulated network service provider, of electricity network services that are the subject of a distribution determination or transmission determination.

416 Networks NSW submits that the NSW DNSPs' obligations to comply with the EBAs constitute a regulatory obligation or requirement in terms of s 2D(b)(v) of the NEL as the EBAs are made pursuant to Part 2 - 4 of the *Fair Work Act 2009* (Cth) – that Act being an Act of a "participating jurisdiction" which obliges the Networks NSW DNSPs to comply with the EBAs. Networks NSW advances its submission by citing *Toyota Motor Corporation Australia Limited v Marmara* [2014] 222 FCR 152 at [97] and *Teys Australia Beenleigh Pty Ltd v Australasian Meat Industry Employees Union* [2015] 317 ALR 636 at [92] in support of its contention that the EBAs are not mere contractual agreements; they are specific instruments made under a detailed regime and enforceable only as provided by the *Fair Work Act 2009* (Cth).

417 Attachment 7 to the Ausgrid Final Decision shows that the thrust of the AER's decision to reject the EBAs as a regulatory obligation or requirement is that:

(a) they are a creature of Commonwealth law; and

(b) the Commonwealth is not a "participating jurisdiction".

418 Noting that in its Final Decisions the AER maintained the view that the Commonwealth is not a "participating jurisdiction", Networks NSW draws on the Minister's intervention in these proceedings to submit that the AER now acknowledges that status. It is, however, unnecessary to delve further into whether the Minister's intervention amounts to a concession on the part of the AER. That is because the EBAs may be reasonably regarded as:

(a) otherwise required to achieve an opex objective, namely, the r 6.5.6(a)(4) objective to: "maintain the safety of the *distribution system* through the supply of *standard control services*"; and

(b) reasonably reflecting the opex criteria in r 6.5.6(c)(3): "a realistic expectation of the demand forecast and cost inputs required to achieve the *operating expenditure objectives*."

419 That the EBAs may be so regarded may be seen in the following paragraphs (without footnotes) from Attachment 7 to the Ausgrid Final Decision (at p 7-86) in which the AER, while rejecting the EBAs as a 6.5.6(a)(2) "regulatory obligation or requirement', recognised that the EBAs may affect the Networks NSW DNSPs' provision of standard control services:

> We also disagree with the service providers' submissions that compliance with the terms of their own EBAs is a 'regulatory obligation or requirement'. For example, service providers have referred to redundancy costs 'required to be paid as a regulatory obligation'.
>
> … of the six possible (and exhaustive) categories of obligations or requirements … , EBAs could conceivably only fall with an Act or instrument made or issued that 'materially affects a service provider's provision of electricity network services'. This is because the terms of an EBA could plausibly materially affect a service provider's provision of standard control services. However, that Act or instrument must be made by a 'participating jurisdiction'. Given a participating jurisdiction must have passed a version of the NEL, an EBA made under the Commonwealth's *Fair Work Act 2009* appears to be imposed by a law other than of a participating jurisdiction. Further, the terms of an EBA itself are not contained in the *Fair Work Act 2009*.

420 Consistent with the above quoted extract from Attachment 7 to the Ausgrid Final Decision, the AER's submissions do not contend that the EBAs, and labour costs more generally, are irrelevant to its assessment of required forecast opex. Indeed, the AER submits that the opex criteria include a realistic expectation of cost inputs and labour costs are one such input.

421 The AER's recognition that the terms of an EBA "… could plausibly materially affect a service provider's provision of standard control services" enlivens Networks NSW's

submission that its opex allowances must be such as to permit them to comply with their obligations under the EBAs. This, Networks NSW submits, includes (but is not limited to) making sufficient allowance for redundancy payments that Networks NSW will be required to pay under the EBAs in relation to the forecast reductions in employee numbers expected over the 2014-19 period.

422 However, as the following extract (without footnotes) from pp 7-41ff of Attachment 7 to the Ausgrid Final Decision illustrates, the AER rejects such submissions:

> Consistent with our approach in our draft decision, we do not agree with these submissions. We are not denying the service providers the ability to transform their businesses and pay staff their entitlements. Recruitment and removal of staff are both 'legitimate costs' that the service providers would need to incur. However, we do not 'fund' the service providers for these (or any specific) activities. We assess a service provider's revealed opex in order to form a view on whether it reasonably reflects the opex a prudent and efficient (objective) service provider would require in the future to comply with its obligations. Service providers have broad discretion about all contractual arrangements and the manner in which they carry out those obligations.

423 Notwithstanding the AER's statement that: "Recruitment and removal of staff are both 'legitimate costs' that the service providers would need to incur." and its submission that labour costs are relevant to its assessment of required opex, its focus on benchmarking (in particular the EI model and its total opex outcomes) have lead it to treat the EBAs as endogenous (rather than exogenous) – an endogenous factor to be ignored in the AER's estimate of the total required opex made pursuant to r 6.12.1(4)(ii).

424 The AER's approach to endogenous factors is illustrated at p 7-184ff of Attachment 7 to the Ausgrid Final Decision where the AER observed (without footnote):

> Differences in work practices and operating techniques are endogenous. The AEMC provides guidance on what it considers to be an endogenous factor that **should not** be taken into account when benchmarking. It stated:
>
> > Endogenous factors not to be taken into account **may** include:
> >
> > - the nature of ownership of the NSP;
> > - quality of management; and
> > - financial decisions.
>
> Differences in opex due to work practices and operating techniques are a direct outcome of management decisions. Therefore we do not provide an OEF adjustment for them. In general we consider that any OEFs that are a result of the quality of management do not meet the exogeneity OEF criterion. [Emphasis added]

425 While the extract from p 113 of the 2012 Rule Amendments determination quoted by the AER in the above extract provides some support for the AER's reasoning, the AER's transformation of the AEMC's "may" to "should not" somewhat overextends the AEMC's guidance. As a preceding paragraph to the above extract from p 113 of the the 2012 Rule Amendments shows, the AEMC's view on when endogenous factors may or may not be taken into account is not an inflexible rule:

> The final rule gives the AER discretion as to how and when it undertakes benchmarking in its decision-making. However, when undertaking a benchmarking exercise, circumstances exogenous to a NSP should generally be taken into account, and endogenous circumstances should **generally** not be considered. In respect of each NSP, the AER must exercise its judgement as to the circumstances which should or should not be included. [emphasis added]

426 While the AER's submissions recognise that it is not an absolute rule, that is not how it was applied *vis á vis* the EBAs.

427 Thus, although the EBAs may lack either the NEL's s 2D jurisdictional foundation or the genus of a safety or reliability standard etc of a r 6.5.6(a)(3) "regulatory requirement or obligation", the Networks NSW DNSPs are bound by their EBAs as a matter of law. Unlike a contract, which according to its terms may be terminated, an EBA continues in force until its nominal expiry date after which it may, with the approval of the Fair Work Commission, be terminated by agreement between an employer and the employees it covers (ss 219-224 of the *Fair Work Act 2009* (Cth)). Absent agreement, an application must be made to the Fair Work Commission to terminate an EBA. Termination may only occur if the Commission is satisfied that to do so is not contrary to the public interest and is appropriate in all the circumstances (ss 225-227 of the *Fair Work Act 2009* (Cth)).

428 After reviewing the DNSPs' revised regulatory proposals, the 2015 Deloitte Labour Report found (at p 16) that the primary driver of the NSW DNSPs' labour costs being higher than their peers is the number of employees rather than cost per employee.

429 It appears from the 2015 Deloitte Labour Report that the higher number of employees is attributable to changes to Ministerial licence conditions in 2005 and in 2007 which placed considerable pressure on the NSW DNSPs during the 2009-14 regulatory period. In particular, clause 14.2 of the 1 December 2007 *Design, Reliability and Performance Licence Conditions For Distribution Network Service Providers* required that the NSW DNSPs be:

> …as compliant as reasonably practicable with the applicable design planning criteria

> in Schedule 1 in relation to all network elements by 1 July 2014; and fully compliant with the applicable design planning criteria in Schedule 1 in relation to all network elements by 1 July 2019.

430 The 2015 Deloitte Labour Report noted at p 2ff that:

> The 2014 Report set out our view that, given the licence requirement to be 'as compliant as reasonably practicable', the DNSPs acted in a manner consistent with a prudent and efficient DNSP by aiming to be largely compliant by 2014. Had they not strived to do so, and particularly had a major network incident occurred that could have been avoided had compliance with the new standards been achieved, the DNSPs would rightly have been criticised.

431 The report also agreed with the Networks NSW DNSPs' view that the EBAs as a whole are no more generous in terms of base level wages and other employee conditions than those of their peers – that agreement being qualified by a note that the EBAs contain a range of generous terms and a citation of the following passage from Essential's Revised Regulatory Proposal:

> In general we agree with the observations made in the [2014] Deloitte Report that high levels of unionisation in the electricity supply sector can result in more restrictive work practices which are difficult to remove once negotiated in enterprise agreements. This can lead to relatively inflexible, high cost and unproductive work practices once labour costs become entrenched in EBAs.

432 The 2015 Deloitte Labour Report also found (p 18) that the majority of distributors are not allowed to carry out forced redundancies as a result of provisions in their respective EBAs and that this is an important impediment to any program of reductions in workforce size, outside of natural attrition.

433 Networks NSW rightly submit that insofar as the 2014 and 2015 Deloitte Reports suggested inefficiencies in the NSW DNSPs' labour practices the reports do not quantify those inefficiencies and provide no corroboration of inefficiencies of the scale identified by the AER in reliance on the EI model.

434 As Networks NSW submit, Ausgrid, Essential and Endeavour are bound by the EBAs and remain bound by them and they should not be viewed as an endogenous managerial choice. At least not in circumstances where the AER has quite radically shifted from an itemised bottom-up approach to assessing opex to benchmarking total opex *per se* – particularly where that benchmarking has not been exposed to the rigors of the consultation the NEL and NER envisage for such a radical change.

435 The AER having flagged its approach to EBAs may be better placed to defend such an approach to an EBA when its approach to benchmarking is on a firmer footing and where there is hard information to support a finding that a DNSP's labour practices are inefficient *vis á vis* its peers. But, having regard to the 2015 Deloitte Labour Report, that is not the case here. Here the Networks NSW DNSPs are shackled with EBAs that effectively restrict their ability to efficiently reduce their workforce in the regulatory period – that restriction being attributable to an exogenous factor, namely, the *Fair Work Act 2009* (Cth).

436 It may be said that, in the view of the Tribunal, it is the policy of the legislative arm of government that, to the extent that the EBA's are (if they are) an inefficient imposition on the DNSPs, nevertheless they are a cost to be borne by the consumers of electricity. The AER may, of course, assess the extent of inefficiency reflected by the number of employees. It may review the terms upon which the number of employees may be reduced under the EBAs. It may consider the timing for the expiration of the EBAs. But, having regard to the regulatory prescriptions, the Tribunal does not accept that it may, by the use of the EI model, simply select the measurement of efficiency which it did in this respect without regard to the obligations under the EBAs as they presently exist. Over time, and probably during the new current regulatory period, any such inefficiencies as the AER considers to exist may progressively be reduced by the reduction in employee numbers to what the AER considers to be the efficient number, and any allowances under the EBAs (as they expire) which the AER considers to be inefficient may also by the same elapse of time be reduced to an efficient level.

437 It is not necessary to canvass Networks NSW's other grounds for challenging the AER's labour costs decisions as set out in [494] of its submissions, namely:

(a) there is no proper basis for Deloitte's conclusions that:

  (i) the Networks NSW DNSPs employ too many staff; or

  (ii) that their past practice of hiring permanent labour left them with too many staff;

(c) the AER failed to take into account the efficiency programs implemented by the Networks NSW DNSPs; and

(d) in relation to Essential, the AER incorrectly weighed Deloitte's view that there is a possibility Essential could realise significant cost savings by using a Local Service Agent model.

438 In that regard, however, it is proper to note that the Networks NSW's submissions assert approximately $3 billion in efficiencies in capex and opex over the 2009-14 regulatory control period and that within these savings were reductions in the number of employees.

439 In Attachment 7 to the Ausgrid Final Decision at p 7-158, and correspondingly in Attachment 7 to the Endeavour Energy and Essential Energy Final Decisions, the AER concluded that the service providers had managed to achieve significant reductions in labour costs through reducing the number of staff, and were forecasting further savings, but that most of the reductions took place after the 2012/13 base year. The AER adopted its position based on the 2015 Deloitte Labour Report which stated that the scale and speed of the reductions in staff suggested there were still cost efficiencies to be realised.

440 The AER at p 7-286 of Attachment 7 to the Ausgrid Final Decision stated that the efficiency programs represented "catch up" in productivity, and efficient distributors would not be implementing the same productivity improvements.

441 The AER at p 7-52 of Attachment 7 to its Ausgrid Final Decision noted that Endeavour's revealed opex was lower than that for Essential and Ausgrid because it had implemented its efficiency programs earlier and to a greater extent than its two peers. It still considered that there were efficiency gains to be realised in the 2012-13 base year.

442 As the 2015 Deloitte Labour Report contended that the NSW DNSPs did not have an efficient workforce in the base year and compared employee numbers across the regulatory control period with other DNSPs, the AER will have to consider how the efficiency programs implemented by the NSW DNSPs into the 2014-19 regulatory control period have been effective.

The AER's use of the EI model as the sole determinative of opex

443 It is Networks NSW's submission that the AER has used an experimental model as the sole determinant of opex, contrary to sensible regulatory practice including significant experience of modelling in other jurisdictions.

444 Networks NSW's submission is cogent. There are lessons to be learnt from overseas regulators, particularly the UK regulator, Ofgem which the AER cites in support of its approach – see for example Attachment 7 to the Ausgrid Final Decision, at p 7-60, where, noting that that Ofgem assesses totex rather than capex and opex separately, the AER states:

> Our approach of using benchmarking as a basis for making adjustments to opex is consistent with Ofgem's approach.

445 Ofgem is a regulator with over a decade's experience in benchmarking and, because of that long history, is the primary point of reference when it comes to assessing the soundness of another regulator's approach to benchmarking and its benchmarking models. As the Huegin Report observes, at p 20:

> The Productivity Commission report and the AER's Guideline and the associated documents that fed into both rely heavily on the experiences of regulators such as OFGEM.

446 It is, however, Networks NSW's submission that the AER's approach is nothing like Ofgem's. That submission is supported by the following observation by CEPA's Chairman (Professor David Newbery, who has led numerous CEPA assignments for Ofgem) (see CEPA Report at p 30):

> Using a top-down model to assess opex (or totex) is consistent with best practice in the UK as it does not enforce choices on the companies as to which activities to undertake, however, using only a single model with few explanatory variables and no bottom-up assessment is not best practice. For instance, Ofgem in its RIIO-ED1 decision stated:
>
> > Our use of three models [two top-down and one bottom-up] acknowledges that there is no definitive answer for assessing comparative efficiency and we expect the models to give different results. There are advantages and disadvantages to each approach. Totex models internalize operational expenditure (opex) and capital expenditure (capex) trade-offs and are relatively immune to cost categorisation issues. They give an aggregate view of efficiency. The bottom-up, activity-level analysis has activity drivers that can more closely match the costs being considered.

His reference is to Ofgem (2014), RIIO-ED1: *Final determinations for the slow-track electricity distribution companies: Business plan expenditure assessment*.

447 In contrast to the AER's post modelling OEF adjustments, Ofgem adjusts to the data supplied by the Distribution Network Operators (DNOs) (the UK equivalent of DNSPs) it regulates

prior to undertaking its modelling – see Ofgem's, *RIIO-ED1 Final determinations for the slow-track electricity distribution companies*, 28 November 2014, at p 41:

> We consider whether DNO submitted data require adjustments prior to carrying out our comparative benchmarking. This is to ensure the comparisons are on a like for like basis. Where we decide adjustments are appropriate, we adjust the DNO submitted costs before our totex and disaggregated assessments. These adjustments fall into four broad categories: regional labour costs; company specific factors; exclusions from totex models; and other adjustments.

448 As the Huegin Report notes at p 23:

> The OFGEM approach is … based on many years of regulatory reporting to a consistent format and common reporting timeframes which are more favourable conditions for data accuracy … [than the Australian staggered reporting and/or regulatory determination cycle]. Yet OFGEM still recognise the need to normalise the data prior to modelling. Regional and company specific factor adjustments recognise that particular locations and particular networks incur costs beyond the control of the operating business and these costs should not be included in efficiency models.

449 Frontier also comments favourably on Ofgem's approach which results in its final allowances being comprised of 25 percent of the DNOs' submitted costs and 75 percent of its benchmarking models and notes in the Frontier Report (at p 96) that this is despite the fact that:

- Ofgem uses a 'toolkit' of approaches to determine its benchmarking target, including top-down econometric models, bottom-up unit cost analysis, bottom-up engineering assessments, assessments of historic costs and assessments of forecast costs, in order to provide the scope to cross check and sense check the efficiency estimates derived by any single approach.

- The quality of data available to Ofgem is significantly better than the data available to the AER, owing to the prodigious effort that has been invested in improving the underlying data, in particular the cost data.

- There has been a significant amount of engagement with the …[DNOs] … to develop the Ofgem models in the first place, allowing them to comment on Ofgem's technique, cost driver choice, the quality of their own and other's data, cost drivers that are not adequately captured by the models, differences in business model that may be picked up as inefficiency and any circumstances otherwise unique to the company that should be adjusted for or at least understood when interpreting the results.

450 Noting that that Ofgem has undertaken a decade or more of development work in respect of its data collection, Frontier also observes at p 103, that the AER should anticipate the need to undertake a similar programme of work and that:

> We recognise that the AER has gone through a process to develop RIN templates but, set against Ofgem's experience, it would be naïve for the AER to think that the RIN data obtained to date is sufficiently free from errors and inconsistencies as to warrant the degree of confidence the AER has placed in its modelling.

451 Based on its review of the Australian data and its experience of applying benchmarking techniques across Europe, Frontier further observes that the AER is regulating a sector with an unprecedented degree of heterogeneity. It notes in that regard that the one of the largest DNSPs, Essential, serves an area significantly greater than France and another, Ergon, an area significantly greater than France, the UK and Spain combined. It is Frontier's opinion at p 104 that:

> These statistics alone ought give the AER pause to consider whether it is sensible to treat networks of such scale the same as networks that serve much smaller geographies. Yet, the AER appears to have given no particular consideration to the unique circumstances faced by these networks. Instead, the AER has relied on very crude modelling tools to capture the effects of extreme scale, rurality, and sparsity. As a result, the AER's modelling identifies these two networks as among the least efficient DNSPs in Australia. This is very surprising to us because European regulators, such as Ofgem, engage closely with networks with much less extreme characteristics than Essential Energy and Ergon Energy to understand any important factors that their modelling may have failed to capture.

452 Again drawing on its experience of practice in Europe, Frontier observes that:

> … it is common for regulators to seek to triangulate "top down" benchmarking, of the kind produced by EI, with other sources of information, e.g. review by expert engineering consultants of unit costs, volumes of work, policies and practices in order to gain a more holistic view of network performance.

453 While ActewAGL accepts that r 6.5.6(e)(4) requires the AER to have regard to the benchmark opex that would be incurred by an efficient DNSP, it submits that the NER do not require the AER to give benchmarked opex any particular weight or mandate that the AER must give benchmarking a weight that is disproportionate to its probative value. In ActewAGL's submission, the AER's benchmarking methodology is incapable of providing much, if any, guidance whether ActewAGL's forecast opex reasonably reflects the opex criteria and it is unreasonable to use it as the principal basis for the AER's decisions.

454 It is also ActewAGL's submission that:

(a) although its Final Decision contains many lengthy descriptions and diagrammatical representations of the decision making processes adopted by the AER (eg Step 1 in *Table 7.4 Arriving at our alternative estimate of base opex*, Attachment 7 to the

ActewAGL Final Decision at p 7-26), the sole basis on which the AER estimated ActewAGL's opex was the EI model and the post modelling OEF adjustments; and

(b) because that estimate was lower than ActewAGL's forecast, and the AER was not satisfied by ActewAGL's explanation of the difference, the AER adopted its own estimate based on the EI model.

455 That the AER's decision making process is as submitted by ActewAGL may be seen by reference to p 16 of the Overview to the ActewAGL Final Decision where it is stated:

> In this final decision we used our preferred benchmarking model [the EI model] as the starting point to arrive at an alternative estimate of opex that reasonably reflects an efficient base level.

456 This confirmed by reference to pp 15-16 of the Overview to the Ausgrid's Final Decision:

> In its revised proposal, Ausgrid based its opex forecast on its historical costs. … we are not satisfied that those forecasts are the appropriate starting point for forecasting its opex for 2015–19.
>
> Instead, we have used our benchmarking analysis as the starting point for assessing Ausgrid's base level of opex. We are satisfied that our resulting opex forecast reasonably reflects the opex criteria.
> … … …
> In this final decision we used our preferred benchmarking model [the EI model] as the starting point to arrive at an alternative estimate of opex that reasonably reflects an efficient base level.

457 Thus, ActewAGL rightly submits that considerable caution ought be exercised about the manner in which the Final Decisions describe the AER's decision-making processes, in particular, when claiming that the DNSPs' opex as the starting point for its estimate of the required opex pursuant to rule 6.12.1(4)(ii). It is noted that ActewAGL's submission goes further by saying that the AER's statement that it "started" with ActewAGL's forecast is "window dressing" and "meaningless" when viewed in light of the above quoted passages from the Overviews to the Final Decisions.

458 Attachment 7 to each of the Final Decisions in issue makes it plain that the AER arrived at its own estimate of opex based on the EI model that was lower than the DNSP's and, as it was not satisfied that there was an explanation for the difference, rejected the DNSP's forecast and deemed its own as the appropriate estimate. The DNSP's forecast did not otherwise play a role in the AER's decision-making process, whether as a "starting point" or otherwise.

459 In response to the submissions to the effect that it is in error in not using the DNSPs' forecasts as a starting point, the AER submits that:

(a) the NER do not stipulate that it must undertake a bottom-up engineering approach;

(b) it exposed the DNSPs' forecasts to a multitude of assessment techniques using the information contained in the DNSPs' regulatory proposals, eg

(i) category analysis disaggregated the costs in the opex forecasts and compared those costs to the DNSPs' peers; and

(ii) the reviews undertaken by the AER's consultants, Deloitte and EMCa relied upon the information contained in the regulatory proposals.

460 Responding to the applicants' submissions that it applied the EI model in a deterministic manner, the AER submits that:

(a) it considered a range of analytical methods (not limited to the EI model) before concluding that it did not accept the DNSPs' opex forecasts; and

(b) once it decided not to accept the DNSPs' opex forecasts, its task was to make its own estimate of forecast opex;

(c) it checked the results of the EI model against two other econometric models and the index based opex MPFP technique (noting that the MPFP last technique does not use overseas data and uses a different output specification); and

(d) all of the techniques produced similar results for each DNSP.

461 Viewed in light of the following acute observation by Networks NSW's expert, Frontier, in the Frontier Report at p 105, the AER's submissions are tenuous:

> … the AER appears to have put undue faith in the ability of it, and its advisers, to develop a single benchmarking model (or suite of very closely related models, all derived from the same data and missing the same wider review of factors and sense checks) that can capture very well relative inefficiency.

462 Having regard to the conclusions that may be drawn from the above considerations of the applicants' submissions challenging the AER's approach to determining the DNSPs' opex, it

is not necessary consider the following challenges to the AER's benchmarking methodology, other than to note them:

(a) the AER's failure to corroborate the results of the EI model;

(b) the AER's failure to have proper regard to the DNSPs' endogenous circumstances; and

(c) whether the AER had proper regard to the consequences of its estimates of the DNSPs' opex.

Consideration of the Principal Opex Issue

463 Conceptually, the parties submissions address the principal issue (whether the AER's application of the EI model discharged its obligations under rr 6.5.6 and 6.12.1(4)) at two levels. The first, involving the effect of the 2012 Rule Amendments, particularly the changes to r 6.5.6 and other rules relevant to its interpretation and application. The second, contingent on a DNSP establishing that the AER's application of the EI model failed to discharge its obligations, involving the effect of the 2013 Legislative Amendments, particularly, the introduction of s 71P(2a) and (2b).

464 While the DNSPs' submissions in support of their opex forecasts tend to an interpretation and application of the 2012 Rule Amendments favouring the RPP, the AER and PIAC's submissions in support of lower opex allowances tend to an interpretation and application of the 2012 Rule Amendments favouring the NEO.

465 Insofar as there is such a tendency in a party's submission it is rejected. The 2012 Rule Amendments simply do not contemplate that the NEO and the RPP are at cross purposes, or that their meaning has changed. They do not lead to a fresh policy subsidy to consumers by way of an artificially low opex figure or a bonus to a DNSP by way of an artificially high figure. Indeed, the AER (and the Tribunal on review) has a delicate task. Both must be conscious of the interests of consumers and the AER is bound to carefully scrutinise the information provided to it in support of a DNSP's opex allowance. It must also have regard to the legitimate business interests of a DNSP and should not put itself in an adversarial position in relation to the DNSP so that it may be perceived as a champion of consumers – cf: *Re East Australian Pipeline Limited* [2004] ACompT 8 at [16] and [33].

466 The 2012 Rule Amendments together with the 2013 Legislative Amendments give rise to a multifaceted regulatory regime calling for a balance between the interests of consumers on the one hand and the interests of DNSPs on the other. The observations of the High Court (per Gleeson CJ, Heydon and Crennan JJ) in *East Australian Pipeline* at [39] in relation to an earlier gas access regulatory regime are most apt in the Tribunal's consideration of the regime now before it:

> Stripped to essentials, such a regime is at least intended to allow efficient costs recovery to a service provider and at the same time ensure pricing arrangements for the consuming public which reflect the benefits of competition, despite the provision of such services by monopolies. The balancing of those objectives properly has a natural flow-on effect for future investment in infrastructure in Australia.

467 As noted above, there are a number of issues with the EI model and the AER's application of it:

- Inadequacies in the EI model's data set and comparability issues
    - the RIN data;
    - the overseas data;
    - the country dummy variables;
- the lowering of the EI model's comparison point
- the OEF adjustments;
- in circumstances where economic benchmarking is in its infancy in Australia, the reliance on qualitative analysis rather than bottom-up quantitative assessment to test issues such as those raised by the DNSPS re their vegetation management opex; and
- the AER's use of the EI model as the sole or principal determinative of opex.

468 As a first step in its consideration, the AER was required to decide whether it was satisfied that the total of the forecast opex in the Revised Regulatory Proposals of each of the DNSPs reasonably reflected each of the operating expenditure criteria set out in r 6.5.6(c). The AER's analysis of the Networks NSW and ActewAGL Revised Regulatory Proposals led to it expressing concerns about a number of components or elements of those proposals. The Tribunal is not persuaded, having regard to those concerns, that the AER's lack of satisfaction on that question exposes a ground of review. There was material upon which it could have reached that conclusion. There is no demonstrated ground of review made out in

that step, even though (not surprisingly) there is considerable debate in the submissions about a number of the matters considered by the AER.

469 Consequently, the Tribunal does not consider that the step taken by the AER under r 6.5.6(d) involved error on its part so as to enliven any grounds of review under s 71C of the NEL.

470 Rule 16.12.1(4)(ii) then obliges the AER, on making its Final Decisions in relation to each of the DNSPs, to include with its reasons for the lack of satisfaction under r 6.5.6(d) an estimate of the forecast opex for each of the DNSPs for the 2015-19 regulatory control period that the AER:

> … is satisfied reasonably reflects the operating expenditure criteria, taking into account the operating expenditure factors (see rule 6.5.6(e)).

471 As is apparent from the above, there are a number of respects in which, or reasons for, the Tribunal on these applications being of the view that one or more of the grounds of review under s 71C(1) are made out. At a general level, that is because the AER placed too much weight on the outcome of the EI model. That, in the Tribunal's view represents an exercise of the AER's discretion about the use to which the EI model should have been put which was incorrect.

472 Underlying that view are a series of concerns about the inputs to the EI model, and the OEF adjustments (including those of concern to PIAC), and including the AER's treatment of the vegetation management costs of Essential, Endeavour and ActewAGL, and further including the AER's treatment of the labour costs of the Networks NSW DNSPs. Those concerns can generally be described as errors of fact by the AER in its findings of fact, as discussed in detail above. Those errors do not simply reflect the AER's choice of competing expert views. There are underlying elements to the EI model which mean that the AER at this point (accepting that the available Australian data is not sufficiently extensive for appropriate modelling) should not have placed the weight it did on the output of the EI model. As the earlier Introduction to these reasons discuss, there may be room for debate about whether a particular step shows an error of fact in a finding of fact, or is an incorrect exercise of a discretion. It would be possible, in a number of the specific instances (in particular in relation to the OEFs) to use either description by the use of different semantics. The line between the two is often hard to draw. The Tribunal, having regard to its conclusion in the preceding paragraph, does not think it is helpful to embark on that exercise.

The 2012 Rule Amendments

473 It is desirable to add some further comments on this topic. On the one hand, the AER and PIAC perceive the 2012 Rule Amendments as shifting the emphasis in r 6.5.6 away from the individual actual circumstances of the DNSP whose opex forecast is subject to assessment to that of each DNSP's opex forecast being assessed against a benchmark entity.

474 On the other hand, the DNSPs emphasise that:

(a) each of the r 6.5.6 opex objectives, the opex criteria and the opex factors; and

(b) in particular, each of the r 6.5.6(c) three opex criteria,

should not be conflated to arrive at a one size fits all benchmark assessment of a DNSP's opex.

475 Also, the DNSPs perceive that the AER's focus on the new r 6.5.6(e)(4) (benchmark opex that would be incurred by an efficient DNSP) lead it to ignore, or give insufficient weight to, other opex factors, in particular:

(a) the actual and expected opex of the DNSP during any preceding regulatory control periods (r 6.5.6(e)(5));

(b) the substitution possibilities between opex and capex (r 6.5.6(e)(7)); and

(c) whether the DNSP's opex forecast is consistent with the r 6.5.8 EBSS or the r 6.6.2 STPIS (r 6.5.6(e)(8));

476 Furthermore, to the extent that the DNSPs acknowledge that the 2012 Rule Amendments gave some greater standing to benchmarking, the DNSPs are critical of the AER's benchmarking methodology inputs and outcomes.

477 The parties seek to advance their respective perceptions of the impact of the 2012 Rule Amendments by reference to extrinsic material within the ambit of Schedule 2 of the NEL, namely, the AEMC's Final Position Paper. Reliance was also placed on a review related material Productivity Commission's report: *Productivity Commission, Electricity network regulatory frameworks, inquiry report*, 9 April 2013.

478 As often is the outcome when one a party or another goes from the words of a section or a rule to the words of another document to seek to bolster their interpretation of the section or rule, apt words of comfort for the position of either party may be found in the extrinsic and review related material.

479 However, having regard to the Tribunal's conclusion (as to which see below) that the AER was, (because of inherent weaknesses in the EI model and the *ex post* adjustments to its outcomes) wrong to rely on the EI model to estimate the DNSPs' required opex, it is not necessary to explore and rule on:

(a) the way that the parties advance the extrinsic and the review related material in support of their interpretation of r 6.5.6; or

(b) the minutiae of the parties' lengthy submissions on how r 6.5.6 should be interpreted.

480 Suffice to say at this point that in a context where it is applying benchmarking for the first time, the AER's application of the EI model gave a discordant weight to r 6.5.6(e)(4) (benchmark opex that would be incurred by an efficient DNSP) *vis á vis* the other r 6.5.6(e) opex factors.

481 It is nevertheless appropriate to record that, as the Tribunal observed above, it does not consider that the 2013 Legislative Amendments changed the meaning of the NEO or the RPP, or their relationship. Clearly, the introduction of a "materially preferable NEO decision" and "preferable reviewable regulatory decision" and ss 16(1)(d) and 71P(2a) and (2b) in the NEL (and the complementary changes in the NGL) refined the focus of the respective decisions of the AER and the Tribunal, but if there were an intention to change ss 7 and 7A of the NEL (or ss 23 and 24 of the NGL), that would have been clearly expressed. The same general comment may be made about the 2012 Rule Amendments themselves, at least in relation to r 6.5.6 of the NER. The changes clearly refine the focus of both the AER and on review the Tribunal. But the concepts of "operating expenditure criteria" and "operating expenditure factors" pre-existed the 2012 Rule Amendments. Apart from the particular changes, some of which are clearly to accommodate the new and more sophisticated processes expected of the AER (eg in r 6.8 of the NER), and noting the amendments made to r 6.5.6(c) and (e), there is no reason to think that one or other of the opex criteria or the opex factors is intended to have a pre-eminence over that of the others.

Section 71P(2a) and (2b) of the NEL.

482 The Tribunal, having been satisfied that there are grounds of review made out in relation to the AER's opex allowance for each of the Networks NSW DNSPs, and for ActewAGL, has the power under s 71P(2) available to it. They are expressly subject to s 71P(2a) as explained in s 71P(2b). In the case of the Networks NSW DNSPs, the appropriateness of granting particular relief or indeed of granting any relief at all is a more complex one because of the findings about PIAC's application and in particular how the OEFs were addressed.

483 It is premature to deal with those questions at this point, because of the need to consider the inter-relationship of the constituent elements of the relevant Final Decisions. Where there are other elements of the four Final Decisions which are also the subject of challenge, it is appropriate at first to address those issues.

484 However, as is almost self-evident, if the Tribunal were to be satisfied in terms of s 71P(2a)(c), the Tribunal would not decide to vary the Final Decisions under s 71P(2)(b) because it is not satisfied that to do so would not require the Tribunal to undertake an assessment of such complexity that the preferable course is to set aside the Final Decisions, and remit the matters to the AER, having regard to these reasons. In short, the Tribunal is left with the options of affirming or setting aside the four Final Decisions and remitting them to the AER under s 71(2)(c).

485 That really follows from a reading of the submissions addressing the principal issue under this heading that for every competing argument there is a supporting expert or experts and given that context, the use of the phrase "materially preferable" requires the Tribunal to look through the inevitable conflict and difference of views between experts, all advocating positions which they regard as being preferable, and to determine whether an advocated materially preferable NEO decision is, indeed, materially preferable: ie a decision which, notwithstanding that divergence of views, is sufficiently compelling to be seen by the Tribunal as being "materially preferable" than that advocated by the AER: cf: *Wellington International Airport Limited & Ors v Commerce Commission* [2013] NZHC 3289 at [164].

Transition Path

486 One further matter should be mentioned. It was raised by each of Networks NSW, ActewAGL and Ergon.

487 They contended that, if the AER was correct in its conclusion that the distributors' opex forecasts did not reflect efficient costs, the AER's decision involved an incorrect exercise of discretion, or an unreasonable decision, in failing to provide a transition path for the DNSPs to reduce their opex to efficient levels (as decided by the AER) or any allowance for the costs involved in transitioning. Ergon also alleges that the AER made an error of fact in finding that a transition path was not required under r 6.5.5(c)(3).

488 Similar grounds are also raised by Networks NSW, ActewAGL and Ergon in relation to the X factor. The Tribunal's reasons in relation to those grounds are outlined in the X factor section of these reasons.

489 It is submitted that, if there is a step decrease in opex between two regulatory periods, the AER should provide an allowance over and above the AER's opex allowance, because of the time the particular DNSP would have to take, and the costs that it would have to incur, to transition its business to one that can operate at the AER's proposed opex allowance.

490 The justification for such an allowance was summarised by Networks NSW as necessary for the following reasons. First, paying redundancy expenses constitutes the efficient, prudent and realistic costs of compliance with a "regulatory obligation or requirement" within the meaning of r 6.5.6(a)(2) of the NER – namely the provisions for redundancy pay contained in the EBAs which bind the Networks NSW businesses. The reasons why Networks NSW says compliance with EBA provisions constitutes a "regulatory obligation or requirement" are set out in relation to opex above.

491 Secondly, the AER's view that the Networks NSW businesses should bear redundancy costs is predicated to a substantial extent on the proposition that the Networks NSW businesses acted inefficiently or imprudently in hiring a permanent workforce on EBAs in order to meet increased licence conditions. It is said that this is not correct and that, if those costs were prudent and efficient, the costs of reducing that workforce now that the need for labour is reduced should similarly be seen as prudent and efficient.

492 Thirdly, it is submitted that an immediate transition to a materially lower level of opex is neither prudent nor realistic, and that a smoother transition path with respect to any required opex reductions is in the long term interests of consumers. That is because, amongst other things, it would provide the relevant DNSP with a reasonable opportunity to recover at least

their efficient costs and would provide sufficient incentive for an entity to invest in a manner that will best achieve the NEO: s 7A(2) of the NEL.

493 Ergon also notes that these considerations are equally important in the context of regulatory decisions which the AER is required to make in relation to capex, as, similarly capex forecasts must reasonably reflect a DNSP's efficient costs, the costs that would be incurred by a prudent service provider and a realistic expectation of the DNSP's demand forecasts and cost inputs.

494 Due to the Tribunal's findings on opex, the Tribunal does not, in the circumstances, need to determine whether these contentions by Networks NSW, ActewAGL and Ergon are correct. When the AER revisits and redetermines the opex allowance, it will have to consider the costs involved in transitioning. It will do so at a time, and in relation to revenue streams, which will require it to make a fresh decision. The Tribunal is anxious not to inhibit the AER at this point in exercising its discretion in that regard.

Conclusion on Opex (subject to s 71P(2a) and (2b))

495 Having regard to the DNSPs and PIAC's submissions as a whole the Tribunal concludes that the AER'S reliance on the EI model failed to discharge its obligations under rr 6.5.6 and 6.12.1(4).

496 In reaching that conclusion, the Tribunal has the following matters in mind.

(a) The AER's undue reliance on the EI model as a determinative factor in the AER's estimation of each DNSP's required opex pursuant to r 6.12.1(4)(ii). That reliance being placed on the model notwithstanding that it recognised it had limitations with respect to the specification of outputs and inputs, data imperfections, and other uncertainties in a context where economic benchmarking is being used for the first time to set opex allowances – see eg: Attachment 7 to the Endeavour Final Decision, at pp 7-268 and 7-269, Attachment 7 to the Ausgrid Final Decision, at p 7-64 and Attachment 7 to the ActewAGL Final decision at p 7-250.

(b) The restricted opportunity afforded to the parties (and denied to third parties as the AER's obligation to consult was past) to test the veracity of the EI model. That is not to cast an adverse reflection on the AER. Nor is it to suggest that the AER did not conscientiously examine submissions it received after its draft decisions. It is simply to

recognise that the AER has a large and most difficult task to perform within a limited timeframe – a timeframe that did not permit it to conduct the consultation required to:

(i) adequately test the data in the EI model and the other models to which it had regard; and

(ii) expose the DNSPs' consultants reports to the rigours of examination that the AER's consultation obligations are designed to foster.

497 The Tribunal will address later in these reasons, under the heading "The Tribunal's Determination" the application of s 71P(2a) and (2b).

X FACTOR

Background

498 This issue is confined to the Networks NSW DNSPs. For reasons which will shortly be apparent, it is an element of the Final Decisions of the AER in relation to the Networks NSW DNSPs which will need to be revisited by the AER. In short, it will follow from any adjustment to be made to the opex allowances of the Networks NSW DNSPs that the X-factor will have to be re-applied.

499 It is not a matter upon which PIAC made submissions, either as an applicant in relation to those Final Decisions or as an intervener. Nor did any other intervener address submissions in relation to it.

500 It is nevertheless appropriate for the Tribunal to address it as a separate issue, because Networks NSW assert that grounds of review may be made out in relation to its application in any event.

501 One of the constituent decisions of the relevant Final Decisions concerns the control mechanism for standard control services (r 6.12.1(11)). One part for these mechanisms is the "X factor". The X factor determined for a particular year represents the real rate of change in revenues for that year that have been approved by the AER (before any annual adjustments). In effect, it operates as a "smoothing factor" for revenue over consecutive years.

502 The X factor to be used in the control mechanism is to be determined by reference to the requirements set out in r 6.5.9(b) of the NER. Rule 6.5.9(b) describes the X factor relevantly as follows:

(a) must be set by the AER with regard to the DNSP's total revenue requirement for the regulatory control period (6.5.9(b)(1));

(b) must be such as to minimise, as far as reasonably possible, variance between expected revenue for the last regulatory year of that regulatory control period and the annual revenue requirement for that last regulatory year (6.5.9(b)(2)); and

(c) must conform with (relevantly for standard control services) the X factor must be designed to equalise (in terms of net present value) the revenue to be earned by the DNSP from the provision of standard control services over the regulatory control period with the provider's total revenue requirement for the regulatory control period (6.5.9(b)(3)(i)).

503 The X factor is generally calculated so as to allow for smoothing of revenues subject to the requirement that both smoothed and unsmoothed revenues are equal in net present value (NPV) terms over a 5 year regulatory control period. Due to the transitional rules the regulatory years 2014-19 were split over two regulatory control periods, with a "transitional regulatory control period" for 2014-15 and a "subsequent regulatory control period: for 2015-19: see r 11.55.1 of the NER. For the transitional regulatory control period, the AER determined a "placeholder revenue" separately from the annual revenue requirement for 2014-15 established through the determination process.

504 In relation to each of the Networks NSW DNSPs, the "placeholder Revenue" amount was higher than the annual revenue requirement which was finally determined.

505 In effect, after making a determination about the annual revenue requirement for each year in the regulatory period and the total revenue requirement for the regulatory control period, the AER is required to adjust and "smooth" the revenue in accordance with the NER.

506 The dispute in relation to the control mechanism for standard control services concerns the AER's relative allocation of revenue for each year of the regulatory period 2014-19 and how the difference between the "placeholder revenue" amount and the annual revenue requirement, and the differences between annual revenue for each year, should be minimised or "smoothed".

The X Factor Decision

507 The following description is taken from the AER's submissions, and to a degree incorporates its explanations for the steps it took.

508 In 2014, the AER determined placeholder revenue allowances for the transitional regulatory control period. In the Draft and the Final Decisions for the years 2015-19, the AER made a full regulatory determination for each year, and accounted for any adjustment amount related to the transitional regulatory control period. As part of this process, it was required to determine annual revenue requirements for each year of the five year period (2014-19) and use a NPV neutral true-up mechanism to account for any difference between:

(a) the placeholder revenue for the transitional regulatory control period; and

(b) the annual revenue requirement for 2014-15 established through the full determination process.

509 To give effect to the true-up, the AER set each of the Networks NSW DNSP's first year expected revenue in the post-tax revenue model equal to the AER approved placeholder revenue for 2014-15: see eg Ausgrid Final Decision, Attachment 1 at p 1-14. The AER considered that this was the only practical option, as distribution and transmission prices were set for 2014-15 based on these approved placeholder amounts. This meant that the difference in revenues for 2014-15 between the transitional and Final Decisions needed to be accounted for in the 2015-19 regulatory control period. That is, the placeholder revenue for 2014-15 from the transitional determination provided a base from which the expected revenues (smoothed) for the remaining four years of the 2014-19 period were calculated, giving effect to the true-up and returning the difference to customers over the 2015-19 period.

510 In determining the X factors for the remaining four years of the regulatory control period, the AER was constrained in smoothing by the transitional year X factor: that factor was locked in as it had been used to determine 2014-15 prices that were approved. Further, as the AER determined (in its final decision) that the actual revenue requirement for 2014-15 was lower than that approved for the transitional determination, the NER's transitional requirement for a true-up in relation to 2014-15 revenues: see r 11.56.4(h)-(i), meant that there were revenues received in 2014-15 that had to be returned to customers and therefore reflected in future years' X factors.

511 By reason of these circumstances, it was difficult to apply the AER's usual smoothing approach, which aimed not only to smooth within the regulatory control period, but to minimise any step change in revenues from the end of the regulatory control period (2018-19) to the start of the next regulatory control period (2019-20). The NER's transitional requirements removed the usual requirement to avoid such step changes, but the AER

considered that as a matter of policy and consistency with the NEO it should still avoid too big a potential step change in revenues across regulatory control periods. Accordingly, the AER widened its usual tolerance limit of a +3 percent step change to as much as 10 percent for each of the Networks NSW DNSPs (Ausgrid: 10 percent for distribution and transmission; Endeavour: 10 percent; Essential: 10 percent): see Ausgrid Final Decision, Attachment 1 at p 1-15; Essential Final Decision, Attachment 1 at p 1-12; and Endeavour Final Decision, Attachment 1 at p 1-11.

512 Within these constraints (ensuring NPV neutrality, dealing with transitional year issues, and avoiding large revenue step changes at the end of the period) the AER smoothed revenues as much as it could by determining X factors that would not result in revenue falling and then rising again in subsequent years. The best profile that was achievable within the constraints required a significant revenue reduction in 2015-16 (as determined in the AER Final Decisions) which would then allow revenues to remain relatively flat for the rest of the period.

513 Between the Draft Decisions and Final Decisions, the AER made modest adjustments to the way smoothing occurred in response to concerns from the distributors, the effect of which was to allow the difference in end of period unsmoothed/smoothed revenues to be increased up to 10 percent. Although this facilitated a slightly smaller X factor for 2015-16 by increasing the 2016-17 X factor, the AER could not shift revenue reductions further into the future. A reduction to revenue in 2017-18, would require an increase in 2018-19 or, alternatively, a step change in revenue larger than 10 percent in 2019-20.

514 Hence, in the placeholder determination for the transitional regulatory control period applying to Ausgrid, Essential and Endeavour, the AER determined the annual revenue requirement for the Networks NSW DNSPs for the 2014-15 year as follows:

(a) Ausgrid (distribution): $1,956.45m;

(b) Ausgrid (transmission): $252.31m;

(c) Endeavour: $949.45m; and

(d) Essential: $1,291.72m.

515 However, in the Final Decisions in respect of the 2014-15 period, the AER determined the notional annual revenue requirements for the 2014-15 regulatory control year to be:

(a) Ausgrid (distribution): $1,546.00m;

(b) Ausgrid (transmission): $192.76m;

(c) Endeavour: $858.58m; and

(d) Essential: $976.15m.

516 As the AER says, because r 11.56.4(h) of the NER requires the AER, in the Final Decisions, to adjust the total revenue requirement for the subsequent regulatory control period to account for the difference between the placeholder annual revenue requirement determined for the transitional regulatory control period and the annual revenue requirement for the transitional regulatory control period as determined in the Final Decision, there were revenues received in 2014-15 that had to be returned to customers during 2015-19 and therefore reflected in future years X factors.

517 The result was that the AER determined the X factor for the 2015-16 regulatory year in a manner that gave immediate effect to a substantial amount of the difference between the annual revenue requirement approved in the AER's placeholder determination for the transitional regulatory control period (the 2014-15 year) and the annual revenue requirement determined for the 2015-16 regulatory year. The effect of the X factor decision is to substantially reduce revenues in the 2015-16 regulatory year, followed by modest reductions (or in the case of Essential modest increases) year on year.

518 In order to offset the over recovery of revenue in 2014-15, in all of the 2015-19 regulatory years, the annual expected revenues are below the AER's determined annual revenue requirement (except for Endeavour for the 2015-16 year, where the smoothed expected revenue is above the annual revenue requirement).

519 The expected annual revenue for the final year of the regulatory control period (2018-19) conforms with the AER's +10 percent tolerance for revenue changes between regulatory control periods and equates to a 13.5 percent nominal increase in price in the first year of the next regulatory control period.

The Grounds of Review

520 Networks NSW says that the X factor decisions involve an incorrect exercise of discretion and/or an unreasonable decision: s 71C(1) of the NEL. They say that the magnitude of the reduction in revenue between 2014-15 and 2015-16:

(a) does not promote efficient investment in, and operation of electricity services for the long term interests of consumers with respect to safety quality and reliability and is directly contrary to incentive regulation contrary to the NEO;

(b) is inconsistent with s 7A(2) of the revenue and pricing principles as the decision does not provide Networks NSW with a reasonable opportunity to recover at least its (AER's determined) efficient costs;

(c) inconsistent with s 7A(3) of the RPP as it does not promote efficient investment because it requires Networks NSW DNSPs to incur significant debt and equity investment to continue to operate given its actual costs; and

(d) gives rise to price shocks and pricing volatility which could be ameliorated if a more graduated reduction in revenue was implemented.

It is fair to observe that (a) and (b) are really formulaic.

521 Networks NSW also says that the AER's Final Decisions place the Networks NSW businesses under immediate financial strain, and amplify the other errors by the AER which relate to the reduction of revenue and place the businesses at financial risk.

Consideration

522 There is little debate about the immediate effect of the X factor decisions of the AER.

523 They give rise to significant price decreases in 2015-16, potentially followed by nominal price increases from 2016-19. Networks NSW says this leads to pricing volatility which is not in the long term interests of consumers with respect to price and not in accordance with the NEO. They also give rise to annual expected revenues in all regulatory years of the 2015-19 regulatory control period below the AER's determined annual revenue requirement for each of those years. Again, Networks NSW says that is not in the long term interests of consumers of electricity with respect to safety, quality, reliability and security of supply of electricity. They say that a more graduated reduction in annual expected revenues that permitted recovery of revenues closer to the annual revenue requirements in the earlier years of the regulatory control period would assist in providing the Networks NSW DNSPs with an opportunity to adjust to significant revenue reductions, and to improve tariff efficiency and equity without imposing unacceptable price shocks. It is argued that the decisions to impose a single real reduction in revenue requirements for 2015-16 limits their ability to deliver the long term benefit of tariff reform to customers because it is not possible to develop and

implement a full tariff reform agenda for 1 July 2015, particularly given the need to engage with customers and other stakeholders prior to any decision on tariff reform.

524 It is evident that there are significant qualitative assessments underlying the respective positions of Networks NSW and the AER.

525 As the Tables in the Networks NSW submission indicate, because of the significant over-recovery of revenue in the transitional year, the smoothing imposed by the AER will impact largely in the 2015-16 year by ($449m) distribution and ($197m) transmission in the case of Ausgrid, being in excess of 24 percent and 27 percent of the unsmoothed revenue requirement for that year, and then ranging between 6 percent and 3 percent for distribution, and at 2 percent transmission for the following years.

526 In the case of Endeavour, the reduction is over 17 percent on the 2015-16 year, and then 3 percent for each of the following years. In the case of Essential, the reduction is over 31 percent in the 2015-16 year and then insignificant (a minor increment) in the following years.

527 In each instance, obviously there is a significantly reduced cash flow in 2015-16, following the revenue allowed in 2014-15 which on the other hand was excessive because of the assessed cost levels in the current regulatory period. Such a dramatic change, not smoothed over a period of years, is said to contravene the NEO by not promoting efficient investment in, and provision of, electricity services in the long term interests of consumers. It is also said to be directly contrary to the incentive regulation structure under the NEL (as discussed in the Introduction section of these reasons).

528 As noted, they are qualitative assertions, readily understood. The AER, for its part, says it was constrained to that "smoothing" decision by the effectively shortened regulatory period; by the "true-up" requirement for the 2014-15 revenues (which was supported by Networks NSW): see *Consultation Paper on savings and transitional arrangements draft national electricity amendment (economic regulation of network service providers) rule 2012*, 25 October 2014 at pp 4-5; by achieving net present value neutrality between smoothed and unsmoothed revenues; and by avoiding large revenue step changes at the end of the regulatory control period.

529 The proposition that the AER's decision would not best contribute to the achievement of the NEO is a complex one. The AER selected smoothed later years as best contributing to the

achievement of the NEO, including (as it considered) the avoidance of significant step changes in revenues at the end of the regulatory control period.

530 The Tribunal does not need to resolve that dispute because "the AER accepts that, in the event that the Tribunal finds reviewable error in relation to any of the AER's other constituent decisions affecting revenue, the X factor will have to be reapplied by the AER on remittal". As appears later in these reasons, the Tribunal does intend to remit the Final Decisions concerning the DNSPs for reconsideration by the AER.

531 It should be noted that the parties agree on the desirability of avoiding price shocks and volatility. When raised during the consumer consultation period, the strong message from consumers, both personally and through representative bodies, was that price shocks should be avoided where possible – eg Mr G Brody representing the Consumer Law Action Centre submitted:

> … it's better for consumers to have a smooth cost of the bill. If bills go up and down and create price shocks then that can cause as much problem for an individual household as, you know, overall high costs.

532 The AER says that if the 2015-16 revenue was to be higher than was set in the Final Decisions, the subsequent three years would need to be lower than was set in the Final Decisions and that this would lead to a final year difference greater than 10 percent, in circumstances where the costs beyond the 2015-19 regulatory period were uncertain. The AER says that this would lead to a price shock at the beginning of the next regulatory period (2019-20). The Tribunal notes that the AER had considerable flexibility to spread the reduction in revenue over a longer period (without disadvantaging consumers in present value terms) and that, if there is any option once it has re-worked the opex allowance, the Tribunal has not determined that it should necessarily default to making almost the whole of any reduction in the (next) first period.

533 That also means that the Tribunal does not have to form concluded views on Networks NSW's submissions that the way the AER implemented the X factor imposed significant and inappropriate financial strains on each of them, even to the point of their respective financial viability being at risk.

534 There is one aspect of the AER's submission on this topic which the Tribunal does, however, need to address.

535 The Networks NSW submission is that the X factor decision is inconsistent with s 7A(2) of the RPP because it would mean that each of them did not have a reasonable opportunity to recover at least the efficient costs of that operator. For the reasons given, the factual proposition does not need to be resolved.

536 The AER says, in addition, that it need not act consistently with the RPP at all times. It points out that s 16(2) provides:

> In addition, the AER –
>
> (a) must take into account the revenue and pricing principles –
>
> (i) when exercising a discretion in making those parts of a distribution determination or transmission determination relating to direct control network services; or
>
> (ii) when making an access determination relating to a rate or charge for an electricity network service; and
>
> (b) may take into account the revenue and pricing principles when performing or exercising any other AER economic regulatory function or power, if the AER considers it appropriate to do so.

Hence, it says, it "may take into account" the RPP (relevantly s 7A(2)), but it is not bound to do so.

537 It may be that the difference in views between the Networks NSW and the AER is semantic. The Tribunal, of course, accepts that there are matters of judgment about *how* the RPP (or a particular element of one of the principles) should be taken into account. It does not accept that, as perhaps the AER is saying, the NEO in its application may give rise to a result which means that a DNSP is *not* given a reasonable opportunity to recover at least its efficient costs in providing the direct control network services. As the Tribunal has sought to express in its Introductory remarks, it does not regard ss 7 and 7A as other than complementary so that the NEO may give rise to a reviewable regulatory decision which in fact is inconsistent with the RPP or one of the elements of the RPP.

538 The Tribunal does not, in the circumstances, need to determine whether the basic assertion by Networks NSW is correct. When the AER revisits and re-determines the opex allowances, it will then have to apply the X factor. It will do so at a time, and in relation to revenue streams, which will require it to make a fresh decision on the X factor. The Tribunal is anxious not to inhibit the AER at this point in exercising its discretion in that regard.

EFFICIENCY BENEFIT SHARING SCHEME (EBSS)

INTRODUCTION

539 In the earlier part of these reasons for decision, there is extensive reference to the NEO and to the RPP in ss 7 and 7A of the NEL respectively. Section 7A(3) provides that:

> A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes –
>
> (a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and
>
> (b) the efficient provision of electricity network services; and
>
> (c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

540 Specifically, s 7A(3) provides that the DNSPs should be provided with effective incentives in order to promote economic efficiency in the provision of their network services. As discussed above, and as contended for by Networks NSW (and ActewAGL), it is clear that the structure of the RPP under the NEL reflects the concept of "incentive regulation".

541 As part of that incentive regulation, an EBBS makes provision for sharing between a DNSP and its customers the efficiency gains or losses derived from the difference between a DNSPs actual opex and the forecast opex allowance for a regulatory control period. The EBSS is a forward-looking scheme. A DNSP is told at the commencement of the regulatory period what to aim for and at the conclusion of the regulatory period, it is told how well it did in relation to the efficiencies. The EBSS incentivises a DNSP by allowing it to keep any yearly gain derived from the difference between its actual opex and its forecast opex, not just in that year, but until the conclusion of the regulatory period. Thus, as the AER's Final Decision New South Wales *distribution determination 2009-10 to 2013-14*, 29 April 2009, observed (at p 245):

> The scheme will not have a direct financial impact on the NSW DNSPs until the 2014–19 regulatory control period, when the DNSPs will receive carryover benefits/penalties for efficiency gains/losses made during the next regulatory control period.

542 The AER further explained the role of the EBSS in the following paragraphs commencing on p 1 of the AER's Efficiency benefit sharing scheme for the ACT and NSW 2009 distribution

determinations, 29 February 2008 (the 2008 EBSS), the relevant EBSS for the Tribunal's review:

> The purpose of the EBSS is to share efficiency gains and losses between DNSPs and distribution network users. In the absence of an EBSS, the share of efficiency gains and losses received by a DNSPs declines as the regulatory control period progresses and, consequently, the incentive for the DNSP to improve the efficiency of its operating expenditure (opex) declines also.
>
> The EBSS allows a DNSP to retain the benefits of an efficiency gain for the length of the carryover period regardless of the year of the regulatory control period in which the gain was initiated. After the length of the carryover period the benefits of an efficiency gain are 'shared' with distribution network users. By doing so the EBSS provides a DNSP with a constant incentive to improve the efficiency of its opex and thus reveal their efficient level of opex.

543 Section B.2.1 of the written submission of Networks NSW refers to a range of extrinsic materials which confirm and explain incentive regulation. It is not necessary to refer to them in detail. For the immediate purpose of addressing the EBSS allowance, s 7A(3) is clear.

544 That reflects the requirement in r 6.3.2(a)(3) of the NER that the building block determination for a DNSP must specify, for a regulatory control period, amongst other things, how any applicable EBSS is to apply to the DNSP.

545 Rule 6.4.3 then explains the building block approach. Firstly, it specifies that the annual revenue requirement of a DNSP must include the approach under which the building blocks include the revenue increments or decrements (if any) for each regulatory year of the period arising from the application of any EBSS: see r 6.4.3(a)(5). Secondly, for that purpose, it cross refers to r 6.5.8: see r 6.4.3(b)(5).

546 Rule 6.5.8 then addresses in detail the EBSS. The AER emphasises that r 6.3.2(a) says that it is for the AER, in its relevant Final Decisions, to specify how the applicable EBSS is to apply, and that r 6.12.1(9) indicates that its relevant Final Decisions are predicated on its decision as to how any applicable EBSS is to apply to a DNSP.

547 It pithily asserts that those rules, including r 6.5.8(c), means that the EBSS must only reward "real efficiency gains".

548 This topic also concerns only the three Networks NSW DNSPs. It was not the subject of submissions by PIAC, nor by any of the other interveners.

549 The Final Decisions of the AER in relation to each of the Networks NSW entities is reflected in dollar terms in the following table, comparing the Revised Regulatory Proposal of each of those entities and the Final Decision:

	Ausgrid	**Endeavour**	**Essential**
Revised Regulatory Proposal	$426.3m reward	$197m reward	-$74.2m penalty
Final Decision	$260.3m reward	$93.4m reward	$0
Difference	$166m worse off	$103.6m worse off	$74.2m better off

The expressions "reward" and "worse off" or "better off" are those used by the AER. The position of Essential is partly addressed separately in the Tribunal's reasons dealing with its application. As can be seen, the Final Decisions for both Ausgrid and Endeavour resulted in a significantly smaller allowance (or potential allowance) for EBSS than was claimed in their respective Revised Regulatory Proposals. In the case of Essential, the AER in the Final Decision in effect waived retrospectively the imposition of that penalty.

550 It is also convenient to recall that, an underlying theme of the Networks NSW submission is that the AER's approach in its Final Decisions concerning those three entities was flawed because it did not allow appropriately for opex, as well as the EBSS, to be consistent with incentive regulation. That is, at a higher level of reasoning, merely a qualitative complaint. Moreover, by inviting the substitution of the Tribunal's assessment of what is appropriate to achieve effective incentive regulation, that approach tends to seduce attention away from the NEO in s 7 and the RRP in s 7A, and from the manner in which the NER (as prescribed by the AEMC) provide for and describe the way in which the NEO is to be achieved. However, it must be borne in mind that it is necessary to pay close attention to the relevant provisions to address a particular complaint or complaints.

551 That is what the Tribunal has sought to do in relation to opex (above) and in relation to each of the elements of the Final Decisions about which Networks NSW, and ActewAGL and JGN complain.

552 In relation to the EBSS, Ausgrid and Endeavour say that the AER suspended the operation of the EBSS for the 2015-19 regulatory control period so that it no longer has a "functional role" in the long term regulatory structure of DNSPs as contemplated by r 6.5.8 of the NER. In its general submissions, they say:

> However, as the AER observed, Ausgrid and Essential "will already bear any costs in transitioning to efficient levels … there does not seem to be a strong reason to provide it with additional incentive to become more efficient". In other words, looking forward there is no role for incentives anymore because the AER is forcing (what it considers to be) an optimum efficiency, by the use of benchmarking, on Ausgrid and Essential, in the short term (indeed, immediately).

Background

553 As noted, it is common ground that one of the building blocks for the annual revenue requirement of a DNSP is the revenue increment of decrement (if any) for a particular year arising from the application of any EBSS. So much is required by r 6.4.3(a)(5) of the NER. The relevant increment or decrement are prescribed or anticipated by r 6.4.3(b)(5).

554 In the development and implementation of the EBSS, r 6.5.8(c) requires the AER to have regard to:

(1) the need to ensure that benefits to electricity consumers likely to result from the scheme are sufficient to warrant any reward or penalty under the scheme for DNSPs;

(2) the need to provide DNSPs with a continuous incentive, so far as is consistent with economic efficiency, to reduce opex;

(3) the desirability of both rewarding DNSPs for efficiency gains and penalising DNSPs for efficiency losses;

(4) any incentive that DNSPs may have to capitalise expenditure; and

(5) the possible effects of the scheme on incentives for the implementation of non-network alternatives.

555 Thus, the EBSS is to create a continuous incentive for a DNSP to find efficiency gains by permitting the DNSP to retain the benefit of the gain for 5 years regardless of the year in which the gain is realised, with consumers having the benefit thereafter. The adverse is that the EBSS provides a disincentive for efficiency losses by providing that the DNSP is penalised for five years for any inappropriate increase in expenditure. These matters are achieved by providing for carryover gains or losses into the next period.

556 The 2008 EBSS describes the EBSS at section 2.1 as rewarding "sustained efficiency gains through the operation of a symmetrical carryover mechanism". Hence, a DNSP is either rewarded for opex reductions against forecasts or penalised for opex that exceeds forecast expenditure.

557 The example of the EBSS in Appendix A to the 2008 EBSS shows that this approach would lead to a sharing ratio of 70 percent of the efficiency gain to be returned to consumers over a 15 year period, with 30 percent of the gain being retained by the DNSP (and the same pattern with efficiency losses).

558 Consequently, the 2008 EBSS provides for the calculation of carryover amounts (either gains or losses) to be applied as a building block element in the calculation of allowed revenue for the regulatory control period commencing on 1 July 2014. The 2008 EBSS contains a formula for calculation of the carryover amounts, where:

(a) the efficiency gain or loss for the first year (2009-10) is the forecast opex minus actual opex for that year;

(b) the efficiency gain or loss for each subsequent year is: (forecast opex minus actual opex for that year) – (forecast opex minus actual opex for the previous year).

559 The 2008 EBSS provided that a DNSP could propose a range of additional cost categories to be excluded from the EBSS. That was to ensure that efficiency gains would be measured as the difference between forecast and actual expenditure, subject to adjustments designed to remove the impacts of agreed uncontrollable costs, non-network alternative opex and recognised pass-through events, and changes in capitalisation policies, demand growth and regulatory responsibilities: see at p 12.

560 For the 2009-14 revenue determination, the AER excluded five specific cost categories of opex from the operation of the EBSS for the next regulatory control period on that basis. They were debt raising costs, self-insurance costs, insurance costs, superannuation costs relating to defined benefit and retirement schemes, and non-network alternative costs. The 2009-14 revenue determination also specified forecast total opex amounts for each year for the purposes of the EBSS (that is, total forecast opex minus the excluded costs).

561 It should also be noted that Networks NSW's forecast, and approved, opex for that determination period included provisions, calculated on an accruals basis, which included provisions for employee benefits.

562 It is not suggested that the provisions so made did not accord with Australian Accounting Standard Board standard No 119, requiring an entity to recognise a liability when an employee has provided service in exchange for employee benefits to be paid in the future and on the other side of the ledger an expense when the entity receives that economic benefit.

Hence, cash payments in relation to employee benefits such as long service leave payouts either in service or when an employee exits the employment, reduce the provisions as they are made.

563 Networks NSW says that, in accordance with the 2008 EBSS, they included in their revenue proposals a calculation of EBSS carry-over amounts flowing from the differences between forecast opex and actual opex in the 2009-14 period. However, a not insignificant proportion of the component of forecast and actual opex comprised movements in provisions for employee benefits and other miscellaneous matters which were excluded by the AER from its allowance for EBSS in the current regulatory period.

564 That is because, the AER says, the Networks NSW entities changed the assumptions used to calculate their estimates, and so their provisioning for future payments for existing liabilities, resulting in artificial efficiency gains or losses which were claimed as "real efficiency gains" and losses but which did not represent genuine business outcomes.

565 The AER points out that the 2008 EBSS included the following statements:

> The measurement of gains and losses should not be affected by artificial means such as the shifting of costs between years, but should represent genuine business outcomes that have arisen in the ordinary course of conducting the business in a prudent and diligent manner.
>
> …
>
> Adjustments will be made where necessary to correct for variances in costs categories and methodologies, and errors.
>
> …
>
> In calculating carryover gains or losses, the AER must be satisfied that the actual and forecast opex accurately reflects the costs faced by the DNSP in the regulatory control period.

566 The question whether the AER, in proceeding on the basis set out above, acted without exposing a ground of review is at the heart of this issue.

The AER Decision

567 By way of introduction to the AER's decision, the AER says that it has a considerable degree of discretion in how it applies the EBSS. As noted, that discretion, it argues, is apparent inter alia from rr 6.3.2(3) and 6.12.1(9) which provide that its building block determination for a DNSP must specify how the EBSS is to apply to the DNSP, thus recognising its discretionary

decision-making, and secondly by r 6.5.8(c) which provides that it must have regard to a number of factors when implementing the EBSS, including "the need to ensure that benefits to consumers likely to result in the scheme are sufficient to warrant any reward or penalty" for the DNSPs. It is not, therefore, simply a mechanical exercise of adopting, relevantly, the provisioning of the DNSP for its liabilities from time to time.

568 Consequently, the AER's approach to the EBSS for the current regulatory period in relation to each of the Networks NSW entities is driven, at least to a significant extent, by its understanding that the claim for reward under the EBSS is unrelated to any real efficiency gains.

569 As noted above, the Networks NSW entities reduced their opex in the last regulatory period by changing their estimates for provisioning of future payments to employees of entitlements such as provision for long service leave. The AER considered that the change in estimates was not driven by real efficiency gains, but by a substantial change in the assumptions underlying those estimates.

570 The Tribunal accepts that position was available to the AER. It is not a position taken by the AER which the Tribunal regards as involving factual or other error on its part.

571 The AER drew attention to the fact that Cumpston Sarjeant in its "Response to Queries on Essential Energy Entitlements Valuation" 19 July 2012 (the Cumpston Sarjeant 2012 Essential Report) described the changed assumptions as "outside the range of realistic long term outcomes" and "unprecedented". It says that its decision was consistent with the NEO, and with the encouraging of Networks NSW to pursue efficiency gains.

572 The AER's reasoning involved a number of steps. Having identified the change in provisioning, resulting in a change in opex, it considered whether the change in expenses represented by the change in provisioning (largely based upon a change in the assumptions as to the quantification of provisioning for employee entitlement expenses or liabilities) should be rewarded or penalised under the EBSS.

573 It proceeded by considering whether, in those circumstances, the claim represented a fair sharing of efficiency gains and losses between DNSPs and network users, reflecting r 6.5.8(a). It considered whether, having regard to the need to ensure that benefits to electricity consumers likely to result from the scheme are sufficient to warrant any reward or penalty under the scheme for service providers (r 6.5.8(c)(1)), and more generally the

desirability of both rewarding the service provider for efficiency gains or penalising it for its efficiency losses (r 6.5.8(c)(3)), it was appropriate to adopt the claim of Networks NSW. It considered whether the claim as so made accorded with the requirement of the 2008 EBSS, so as to satisfy it that the actual and forecast opex accurately reflected the costs faced by Networks NSW in the regulatory control period.

574 Having regard to the analysis of the reasons for those changes referred to above, the AER decided that the change in expenses attributable to those provisions did not represent real business outcomes, but were attributable to changes in underlying assumptions. Bluntly, it says, the expenses did not reflect costs actually faced by each of the Networks NSW entities in the regulatory control period. As there were no actual efficiency gains, and the changes in opex were as a result of different assumptions which might or might not prove to be correct, it did not consider it was appropriate to reward Networks NSW for those changes as efficiency gains.

575 The AER then took the additional step of saying that it considered the more appropriate way to reflect the cost faced by each Networks NSW was to use a cash accounting methodology. Under that methodology the AER would account only for expenses actually recorded in respect of payments actually made. It says it did not thereby alter the reported opex, affected (as it accepted) by the change in assumptions underlying the value of provisions for the amount of provisioning.

576 It reached that view notwithstanding that, as Networks NSW pointed out, the incentive to move to efficient costs is consistent over an entire regulatory period. That is because historical opex towards the end of a then current regulatory period is a key input for forecasting opex allowances for the new regulatory period so any incentive to reduce opex below the regulatory allowance diminishes towards the end of the then current regulatory period. It is, therefore, a fair observation (as Networks NSW made) that the EBSS represents a consistent incentive across regulatory periods. In that light, Networks NSW says that, in reality, the AER in the relevant Final Decisions, simply decided to abandon the EBSS in the next regulatory period for Ausgrid and Essential, and in relation to all the Networks NSW businesses it excluded retrospectively an additional cost category so that none of those businesses were deemed to be entitled to include, as part of efficiency gains or losses, what appears as movements in provisions.

577 Networks NSW identifies two relevant decisions in relation to the EBSS made by the AER, which it says require reconsideration by the Tribunal as they will make out the grounds of review asserted:

(1) the determination that differences between forecast opex and actual opex arising from what the AER identified as changes in provisions, largely in provisions for employees' entitlements, would be excluded from the calculation of the EBSS carry-over amounts to be included as a building block in the annual revenue requirements for Networks NSW (the EBSS Decision); and

(2) secondly, in relation to both Ausgrid and Essential, the AER decision that having regard to its benchmark analysis the EBSS for 2013 should not apply in the 2014-19 regulatory period, so there should be no calculation of carry-over amounts arising from actual opex in 2015-19 then to be applied in the 2020-24 regulatory period (the EBSS Suspension Decision).

Networks NSW described the basis of the EBSS Suspension Decision as being that the operation of an incentive scheme in the form of the EBSS was inappropriate where the business was not being given an incentive to itself move to an efficient level of expenditure, but rather was being moved directly to a benchmark level of efficient expenditure by the AER. Consideration of the EBSS Suspension Decision is addressed later in these reasons.

EBSS Issues

The principal issue

578 The main debate is whether the AER was correct in adjusting the provisions expense reported in Networks NSW reported opex, so that it reflected liabilities actually settled and paid during a particular year, rather than changes in provisions for liabilities for accounting purposes made during that year. The AER, by making that adjustment, deducted an amount from the reported opex equivalent to the movement in provisions as illustrated in the course of submissions.

579 It should be noted that the AER did not, as suggested by Networks NSW at one point, coarsely simply exclude a category of expense. That is, of course, to draw a distinction between an expense actually paid on the one hand and a liability incurred, to be quantified in the future but the subject of a present estimate, on the other.

580 The AER referred to, and was probably prompted towards its analysis, by the apparent volatility in Ausgrid's provisioning for employee benefits. In the 2009-10 and 2010-11 financial years, that provisioning was constant. It was increased by a very significant sum for 2011-12 and then somewhat reduced but by a materially significant sum for 2012-13. The accounting justification for those adjustments for 2011-12, is found, for example, in the Ernst & Young Report, June 2012, "Ausgrid – Actuarial assessment for specified employee entitlements as at 31 December 2011" (the EY 2012 Ausgrid Report). For 2012-13, the reduction is explained by the Cumpston Sarjent Report "Ausgrid – Actuarial assessment of long service leave and other employee entitlements as at 31 December 2012" (the Cumpston Sarjeant 2012 Ausgrid Report), including different assumptions to assess the salary promotional scale.

581 The AER submission points out that, as a result of those reports being given effect to, for the 2012 financial year Ausgrid recorded an actuarial adjustment expense for long service leave of about $58m in nominal terms, and for the succeeding financial year recorded a negative actuarial adjustment expense for long service leave of about $40m in nominal terms. That fall in expenses is, in essence, claimed by Ausgrid to be properly treated as an efficiency gain under the EBSS. Similar analyses were made in relation to Essential's provisioning over that period and Endeavour's provisioning over that period.

582 In the case of Essential, the adjusted present value of the provisioning for long service leave and other employee benefits very significantly increased between 2010-11 and 2011-12, and then significantly reduced (but well above the 2010-11 level) for the 2012-13 year. The reasons for those changes can be seen as attributable to the use of different discount rates in the latter two years, and the long term growth assumption being higher for the latter two years compared to earlier years. The significance of those changes is also illustrated by the change in the relationship between the "discounted" present value of those provisional liabilities and their nominal value.

583 Similar observations can be made about Endeavour's treatment of provisions during the 2009-14 regulatory period. The "matched pairs" link under which it was assumed that the discount rate was always higher than the wages growth rate by a more or less constant percentage was broken.

584 The AER, in its Final Decisions, excluded the allowances claimed by Networks NSW businesses for efficiency gains for that final year as a result of movements in provisioning on

the basis that they should not be treated as actual opex for EBSS calculations. It removed the movement in provisioning from each of the Networks NSW DNSP's reported actual opex when calculating the EBSS carry over amounts because, it considered, the changes in provisioning were driven largely by changes in the discount rate and, at least in the case of Endeavour and Essential, by changes in salary growth assumptions used to value the provisions for long service leave. Those changes were, it considered, the result of accounting methodology and/or the result of assumptions made by the service provider or its actuary when there should be a minimal effect on rewards or penalties a service provider receives under the EBSS by the changes in provisioning. That is because, as the AER said:

> The fundamental requirement for the EBSS under the NER is to derive efficiency gains and losses from the comparison of forecast and actual opex over the period, not merely accounting gains or losses.

See generally: *Final Decision Ausgrid distribution determination 2015-16 to 2018-19, Attachment 9 - Efficiency Benefit Sharing Scheme* at p 9-17; *Final Decision Endeavour Energy distribution determination 2015-16 to 2018*-19, *Attachment 9 – Efficiency Benefit Sharing Scheme* at p 9-18; and *Final Decision Essential Energy distribution determination 2015-16 to 2018-19, Attachment 9 – Efficiency Benefit Sharing Scheme* at p 9-16.

585 Having taken that approach, the AER also then rejected the submission of Networks NSW that, even if it was appropriate to exclude the changes in provisioning from actual opex, the forecast opex (from the earlier 2009-14 Determination), should be used to compare actual opex for the purpose of the EBSS adjusted to remove any movement in provisions embedded in the forecast. That contention was included in the Revised Regulatory Proposals of each of Networks NSW. The AER declined to do so, on the basis that its approval of the forecast opex for 2009-14 was not an approach made with reference particularly to provisioning of that character, so any attempt to identify what was "implicitly forecast at the time for provisions" would not be "robust given the hypothetical nature of this exercise": see eg Final Decision Ausgrid distribution determination 2015-16 to 2018-19, Attachment 9 - Efficiency Benefit Sharing Scheme at p 9-17 to p 9-18.

The grounds of review

586 As with other grounds of review, there is some debate about how properly to characterise the errors which Networks NSW asserted in terms of s 71C of the NEL. The Networks NSW

submission says that the AER made a number of material errors of fact in its findings of fact, namely:

.2 in concluding that the changes to provisions excluded by the AER from the application of the EBSS were produced predominantly by changes in assumptions;

.3 in concluding that changes to provisions were not actual costs incurred in delivering network services;

.4 as to the level of efficiency gains or losses, including by assessing such gains or losses:

.4.1 without taking into account changes in provisions;

.4.2 by excluding changes in provisions from actual expenditure but not excluding changes in provisions from forecast expenditure; and/or

.4.3 by assessing certain costs on a cash basis and other costs on an accruals basis.

587 Alternatively, it says that the AER's decision involved an incorrect exercise of a discretion, or was an unreasonable decision because it was irrational, illogical and arbitrary, and inconsistent with the requirements of r 6.5.8(c) because:

(a) by excluding changes in provisions, the AER arbitrary, irrationally and illogically excluded actual costs (including the incurring of liabilities for holiday pay and long service leave) from the assessment of efficiency gains or losses;

(b) the AER's approach was internally inconsistent by:

(i) excluding changes in provisions from actual expenditure but not excluding changes in provisions from forecast expenditure; and/or

(ii) assessing certain costs on a cash basis and other costs on an accruals basis.

588 Finally, as a further alternative, it says that the decision to exclude opex, in respect of changes of provision, constitutes an amendment to the operation of the 2008 EBSS by identifying an additional cost category for exclusion from the calculation of the carry-over amounts, when the 2008 EBSS itself, and the Rules, do not permit the amendment of the operation of the 2008 EBSS retrospectively in the Final Decisions. Consequently, it is said the Final Decisions on this topic involve a misconstruction and misapplication of the NER, and therefore an incorrect exercise of discretion and, alternatively, an unreasonable decision.

589 The AER's broad position is that its approach involved no relevant "finding of fact", but an exercise of judgment as to what methodology best gives effect to the aims of the EBSS. Then it says that its decision to adopt its approach was a reasonable decision, without demonstrable error which could enliven any of the asserted available grounds of review. That invites on the part of Networks NSW the proposition that the AER Final Decisions each rested on a fundamental step which was illogical, irrational or arbitrary so that the Final Decisions themselves had that character and therefore were unreasonable in relation to each of them. It also provokes a response on the part of Networks NSW that, to the extent that the AER's decision involved an exercise of discretion, the discretion was incorrectly exercised.

590 It is accepted that, if the Tribunal accepts that the AER erred in its decision on opex, the challenge to the EBSS Suspension Decision in relation to Ausgrid and Essential will necessarily fall away as that part of their Final Decisions will be required to be varied pursuant to s 71P of the NEL. On the other hand, it is implicit from the absence of any detailed submissions separately addressing the EBSS Suspension Decision, that if the AER decision in relation to the EBSS is not shown to be in error, it will not be necessary separately to address the EBSS Suspension Decision.

591 The Tribunal does not comment on the extent to which either the EBSS Decision or the EBSS Suspension Decision would require reconsideration or amendment by reason of its decision in relation to opex generally.

592 However, as the fundamental approach to the EBSS allowance is obviously critical to any further revised final decision on the part of the AER, the Tribunal proposes to address the contentions concerning the EBSS Decision.

Consideration

593 It is convenient to address the contentions of Networks NSW in the sequence in which they appear in its written submissions.

594 The first is to address the alleged error that the AER retrospectively excluded the particular category costs in any event.

595 Much of the Tribunal's reasons for its conclusion on this series of alleged errors emerges from the discussion above.

596 The Tribunal does not accept that the AER's process of reasoning was retrospectively to exclude a category of costs in implementing the EBSS for the 2014-19 regulatory period.

597 As the AER says, it accepted that the costs which the provisioning allowed for – the payment of employee benefits such as holiday pay and long service leave entitlements – were to be accounted for. It departed from the previous practice of allowing for those costs on the basis of the provisions for them in the accounts, and instead used the measure of the actual payments to the employee creditors as and when they were paid.

598 It would seem that that change in the means of measuring those costs was prompted (at least in part) by the changes in the Networks NSW provisioning referred to above. Where there is such a dramatic change in provisioning, it is hardly surprising that the AER should consider whether the method of measurement of those costs by provisioning was the most appropriate way to measure them for the purposes of the NEL and in accordance with the incentivising of efficiency gains built into the EBSS. As a matter of practical commonsense, it is hard to see (for example) how Ausgrid's adjusted provisioning between 2011-12 and 2012-13 in fact represented any actual efficiency gain, so that the reduction in provisioning in the latter 12 month period should be taken into account in the application of any EBSS designed to serve r 6.5.8. Of course, that is a simplistic view, but it is nevertheless one which is not demonstrably fallacious.

599 If the AER were to question the appropriateness of measuring the cost of payments for employees for holiday pay and long service leave simply by the provisioning of each of the Networks NSW DNSPs, where those costs can vary dramatically by assumptions made from time to time by the provider (as they did), it was reasonable to investigate how the measurement of provisioning costs represented (as the 2008 EBSS expressed it at p 3) "genuine business outcomes that have arisen in the ordinary course of conducting the business in a prudent and diligent manner". Indeed, the 2008 EBSS at p 5 refers to the AER making adjustments to correct for the variances in methodologies.

600 Networks NSW says that the consequence of the change in methodology by excluding an additional category of costs, at the point of the relevant Final Decisions, is not to incentivise Networks NSW (or to disincentivise Networks NSW) because the costs which are reflected in the provisioning have already occurred by the "promise of rewards or penalties".

601 However, the Tribunal does not consider that that is a correct way to characterise what the AER has done. The AER does not resile from the proposition that the costs incurred by Networks NSW for labour on account of holiday pay and long service leave approved and payable should not be taken into account in determining the appropriate payments or allowances going forward for the 2014-19 regulatory period. It is not obliged to accept the provisioning estimates of Networks NSW for that purpose. It has chosen to make the appropriate allowance prospectively, based upon the actual payments made from year to year for those costs in the previous regulatory period.

602 In taking that step, at least in principle, the Tribunal does not consider that the AER has made any error of fact in its findings of fact.

603 The detailed grounds of review of Networks NSW are set out above. It appears that, at this point in the AER's reasoning, the relevant asserted error of fact is that the AER concluded that changes to provisions were not actual costs incurred in delivering network services. However, whatever may be the available accounting methods and assumptions from time to time for the making of provisions, or the appropriateness of the reported provisioning in accordance with accounting standards, it is not the case that the provisioning of those costs meant that they were "actual costs" incurred in delivering network services; they were estimates of liabilities incurred and to be paid in due course determined in accordance with accounting standards and based upon assumptions made by each of Networks NSW about the various elements going to the making up of the amount which, ultimately, would be paid to meet those liabilities.

604 The next step in Networks NSW's contentions is that the AER erred in concluding that the changes to provisioning by each of the Networks NSW entities were produced predominantly by changes in assumptions. That is the second of the two alleged errors in a sequence of four alleged errors.

605 It is clear that the movements in the liability to employees during a financial year may increase, or accrue, by reason of the employee having worked during that year. If the number of employees was unchanged, and none took leave, clearly the accrued or accumulated liability to those employees would increase over that year. The following confidential Figure 1 in the Networks NSW submissions on the EBSS forcefully makes that point.

[CIC] Figure 1: AER adjustment of Ausgrid opex for provisions for employee benefits **[CIC]**

[TABLE REDACTED]

606 The Networks NSW submission also points out (as the AER recognised) that changes in provisions may be induced by a change in the value of existing provisions such as a change in the discount rate (to determine the present value of the accrued liabilities when anticipated to be paid), or changes in integers (such as the assessment of the employee attrition rate and so changes in the amount and timing of the long service leave payments), and changes because of changed external conditions (such as changes in the discount rate) affecting the net present value of those accrued liabilities.

607 Then it is said that there was no material before the AER which suggested that relevant assumptions were being manipulated or that the calculations as to provisioning were otherwise than the best assessment of the liabilities of each of the Networks NSW entities, based upon independent third party actuarial assessment.

608 It is not a necessary part of the AER's role to determine that the way in which the Networks NSW provisioning was made involved any improper manipulation of data, although (as it pointed out) there was some material in the Cumpston Sarjeant 2012 Essential Report at pp 2 and 9 which did not clearly support certain integers used in the provisioning calculation of Essential. It should be noted that that report (as its title says) is confined to the circumstances of Essential. It is a significant departure from that expert's advice, as it meant that for 2011-12 the selected discount rate and selected salary growth assumptions resulted in a discounted present value of employee entitlements of 128.8 percent of their nominal value, compared to 98.4 percent of their nominal value on the assumptions suggested by that expert.

609 As noted above, the 2012-13 provisioning estimate for Endeavour, with an altered discount rate on the same salary growth assumption, resulted in a reduced figure for provisioning which (at least in a significant measure) constituted the claimed efficiency gained under the EBSS for that year.

610 The Tribunal has concluded above that the AER did not err by looking at, and behind, the provisioning by Networks NSW entities to decide whether their provisioning was an appropriate basis for measuring efficiency gains by those businesses.

611 In the Tribunal's view, the AER was not in error in deciding to look more closely at the alternatives to accepting the provisioning for such liabilities. As an accounting exercise, of

course, double entry accounting necessarily means that an increase in provisioning requires the complementary recording of an expense, even though the payment of that expense is not then made and may ultimately vary from the provisional liability. That is influenced by the timing of the employee in taking the leave, the applicable salary rate, and the like. Hence, the provisioning for such liabilities is generally based upon actuarial assessment, in turn based upon – amongst other things – assumptions as to the applicable discount rate to determine net present value of future liabilities and the future salary growth, and affected at least by age and years of service.

612 It is not unreasonable to expect, in the absence of particular circumstances, a stable relationship in the long term between the discount rate (as it varies from time to time) and the rate of future salary growth. That relationship was changed by changes in those elements, but not in a complementary way, so that it led to the significant variations in provisioning between 2011-12 and 2012-13 as referred to. It should be noted, as counsel for the AER acknowledged, that the precise critical assumptions by Ausgrid, Endeavour and Essential in their respective provisioning processes were not routinely the same and that at least in the case of Ausgrid, there was no consistent direct "matching" relationship between the two significant assumptions referred to.

613 Nevertheless, it follows from that discussion that the AER did not, in the view of the Tribunal, err by concluding that the changes to provisions were largely the consequence of changes in critical assumptions.

614 The material before the Tribunal includes the correspondence between the AER and the respective Networks NSW commencing mid-2014 as to whether the changes in certain assumptions (and the consequential disjunction of the complementarity between the two assumptions or the consequences of the two assumptions particularly discussed above) were matters which were in fact reflective of real efficiency gains or losses. That material was not shown to have been overlooked by the AER; indeed the strong inference is that it was carefully considered by the AER.

615 In the circumstances, the Tribunal is not persuaded that the AER erred by concluding that the changes to provisions by the Networks NSW entities were produced predominantly by changes in assumptions of the character referred to. Insofar as there is said to be an error of fact in that conclusion of the AER, that is not made out.

616 The third contention of Networks NSW is that the AER erred in concluding that changes in provisions were not "actual costs incurred in delivering network services". They say that it is an unconventional position for the AER to determine that a business entity, adopting an approach in accordance with standard and universally recognised accounting practice, and in a conventional way, should therefore exclude from having such properly recorded costs accounted for in an assessment of "actual opex".

617 Reliance was placed upon the decision of the Full Court of the Federal Court in Paciocco v Australia and New Zealand Banking Group Limited [2015] FCAFC 50 in support of the position taken by Networks NSW. It is convenient at this point to remark upon that decision. The Tribunal does not regard it as directly relevant to the question which the AER (and the Tribunal) have to address: whether the changes to provisioning should be the subject of rewards under the EBSS, where those changes occur as a consequence largely of differences in assumptions made from time to time about critical elements in determining the net present value of future liabilities. The context for that question, of course, is whether such changes in provisioning (where the changes are the consequence of different assumptions and the relativity of the critical assumptions was not maintained as had previously been the case) should attract the benefit of efficiency gains under the EBSS.

618 The AER decided to reject the provisioning approach previously adopted and exposed by the adjustments made by Networks NSW (in particular by the Essential accounts and methodology for provisioning) and it decided not to directly reflect actual efficiency gains or losses by the accounting provisioning for those future liabilities. Its use of the term "actual costs" is in that context. It does not mean that the AER simply chose to ignore the costs incurred by Networks NSW, as reflected by the payments made by the Networks NSW businesses for those liabilities, or to ignore the fact that there are future liabilities which are reflected in the provisioning estimates.

619 The AER presented a graph prepared from figures in the Ausgrid Revised Regulatory Proposal and then presented in Figures 3 and 5 of the written Networks NSW submissions on the EBSS, showing the Ausgrid proposal for opex to be used for the EBSS proposal and the AER's allowance of opex to be used for EBSS purposes. One line is calculated using the cash accounting methodology instead of Ausgrid's accrual accounting methodology. It shows the extent to which the AER has in fact allowed for opex for that purpose. It cannot be said that the AER did not allow for those costs by the method which it adopted.

620 There was some debate about whether the "actual costs" allowed by the AER were in fact correctly measured. It cannot be said that the AER did not accept that liabilities for accrued leave and other employee entitlements were not actual liabilities. Its approach was to measure those liabilities, to be discharged at some time in the future and to be quantified ultimately by the movement in earnings, promotion and other variables, at "actual", that is, paid amounts year by year. To the extent that the two critical projected elements of discount rates and wage movements (for the purposes of the provisioning) varied from time to time they would then be reflected in the amounts actually paid to meet those accrued liabilities from time to time. It is the Tribunal's view that that was an approach reasonably open to the AER. That is not to gainsay the observations in the Ernst & Young report Advice on movement in provisions, January 2015 expressing at p 3 and elsewhere the proper accounting method for those liabilities, and its view that the "true economic cost" to Networks NSW was or included the provisioning for entitlements to be paid in the future.

621 But, it has not been shown that the AER, for the purposes of the EBSS, was in error in looking behind the provisioning. It did that. As a result of looking behind or into the reasons for the changes in provisioning, it did not accept that the provisioning by Networks NSW, and more specifically the movements in provisioning, represented efficiency gains (or losses). The Networks NSW contentions did not set out to show that the changes in the critical assumptions for provisioning (which the Tribunal has accepted, as identified by the AER) were themselves correct so that the AER, upon analysis, could not have concluded that they were the only, or visually the only, assumptions which could properly have been made by Networks NSW. Indeed, the Tribunal in the course of submissions was taken to material which would suggest that the assumptions made by Networks NSW from time to time were not the only reasonable assumptions on those matters.

622 Finally, in relation to this contention, the Tribunal notes that the comparison of the allowance for opex for EBSS purposes between the Ausgrid proposal for opex for that purpose and the Ausgrid Final Decision (as based on Figures 3 and 5 in the Networks NSW principal submissions) indicates that the cash accounting methodology of AER does not mean that Ausgrid (or Endeavour or Essential) were deprived of the benefits of the EBSS incentives, save for those which might have flowed from the changes in provisioning for the 2011-12 and 2012-13 years, largely influenced by the changed assumptions referred to above.

623 The fourth general category of attack adopted by Networks NSW is based upon the assertion of a change in methodology for calculating opex (in relation to, or for the purposes of, the EBSS). It is said that the AER should have excluded any movement in provisioning embedded in the forecast opex for the 2009-14 regulatory control period, so that looking forward there would have been a proper comparison of "apples with apples".

624 In support of that contention, counsel for Networks NSW took the Tribunal to the AER's Final Decision Efficiency Benefits sharing scheme for the ACT and NSW 2009 distribution determinations, February 2009, particularly Section 5.2: Measuring efficiency and the EBSS, and Section 5.5: Adjustment of actual and forecast opex. It is not necessary to refer in detail to all the passages referred to. The conclusions sections 5.2.3 and 5.5.3 are as follows:

> **5.2.3 AER conclusions**
>
> The AER considers it appropriate to utilise a rule of thumb in assessing efficiency gains under the EBSS. However, the AER also considers that the EBSS should, as far as possible, reflect efficiency gains and losses by DNSPs. To this end the AER will allow forecast opex to be adjusted for actual demand growth for the purpose of calculating carryover amounts. The AER will also consider for exclusion from the EBSS cost categories proposed by DNSPs in their regulatory proposal before the commencement of the regulatory control period and must be determined as uncontrollable by the AER in its final determination.
>
> **5.5.3 AER conclusions**
>
> The AER will make adjustments to forecast and actual opex for the purposes of calculating carryover amounts where it has been explicitly stated in the final determination at the beginning of the regulatory control period that those specific adjustments will be applied to the EBSS for that period.
>
> Any cost categories that a DNSP considers to be uncontrollable and that should be excluded from the operation of the EBSS must be proposed in the DNSP's regulatory proposal prior to the commencement of the regulatory control period. These cost categories will only be excluded if the AER considers them to be uncontrollable and their exclusion prudent.
>
> The AER retains the right to exclude further cost categories from the operation of the EBSS. These cost categories must be outlined in the final determination at the beginning of the regulatory control period.

625 The Tribunal does not regard that material as supporting this contention of Networks NSW. Nor does it regard that material as demonstrating, or assisting to demonstrate, a ground of review as claimed by Networks NSW. The form of the discussions preceding those conclusions is to identify and give credit for real efficiency gains. Hence, the exclusion of uncontrollable costs. Indeed, at p 5 of the 2008 EBSS, the AER observed that it would react

to changes in the methodology adopted by a DNSP to calculate opex. It is only a semantic debate to say that the changes in assumptions by Networks NSW did not, in the present circumstances, amount to a change in methodology.

626 It is also important to note that the AER for the 2009-14 regulatory control period did not simply adopt the Networks NSW proposed opex allowances, but substituted its own assessment.

627 The Tribunal does not, therefore, conclude that this contention demonstrates that a ground of review has been made out by Networks NSW.

Conclusion

628 For those reasons, Networks NSW has not demonstrated any ground for review, or more accurately the Tribunal is not satisfied that any ground of review exists, in relation to the AER's Final Decisions concerning the EBSS.

629 In addition, having regard to the reasons why the claimed EBSS efficiency gains should not have been accepted (as found by the AER and accepted by the Tribunal), the Tribunal in any event would not have been satisfied that the restoration of the EBSS gains or rewards as claimed by Networks NSW would, or would be likely to, result in a materially preferable NEO decision.

630 The changes in provisioning do not represent in fact any real efficiency gain in the long term interests of consumers. They represent an accounting provision based upon changed assumptions, the reasons for which are not obvious or obviously correct, and which would introduce into the EBSS calculations a volatility which – as the material presently stands – is not necessarily a realistic reflection of the extent of the liabilities incurred. The changes between the three years specifically discussed above are sufficient to make that point.

631 In a sense, it is premature to make such a conclusion (because it is at the ultimate step of the Tribunal's determination that s 71P(2a) and (2b) really come into the Tribunal's consideration). In this instance, however, it can be said that if the EBSS were the only matter in respect of which a ground of review were made out, the Tribunal would not, for the reason given, be satisfied in terms of s 71P(2a)(c) so that it would not vary the AER Final Decisions. And, it can also be said that, even if this and other grounds of review were made out, as a constituent component of the Final Decisions, the AER's decision on the EBSS would not

weigh in the scales towards a favourable ultimate decision about whether to vary or set aside the Final Decisions.

RETURN ON EQUITY

INTRODUCTION

632 The return on equity topic gives rise to common interests between the Network Applicants under the NEL and under the NGL in the case of JGN. They sensibly presented their collective submissions through the same counsel.

633 While, in broad terms, their contentions were supported by the Vic/SA Interveners and by Ergon, it is on occasions necessary to separately address particular aspects of the submissions of the Vic/SA Interveners and Ergon.

634 As an applicant, PIAC did not apply to have the Network NSW Final Decisions in respect of this topic varied or set aside. As an intervener, however, PIAC made submissions on particular matters in respect of the topic confined to the Networks NSW Final Decisions.

635 As noted, the annual revenue requirement for a DNSP for each regulatory year of a regulatory control period must be determined using a building block approach, which includes a building block for return on capital for that year: r 6.4.3(a)(2) of the NEL. Rule 6.4.3(b)(2) of the NEL provides that the return on capital is calculated in accordance with r 6.5.2. Rule 76 of the NGR is to the same effect.

636 Rule 6.5.2 of the NEL relevantly provides:

> **6.5.2 Return on capital**
>
> **Calculation of return on capital**
>
> (a) The return on capital for each *regulatory year* must be calculated by applying a rate of return for the relevant *Distribution Network Service Provider* for that *regulatory year* that is determined in accordance with this clause 6.5.2 (the *allowed rate of return*) to the value of the regulatory asset base for the relevant *distribution system* as at the beginning of that *regulatory year* (as established in accordance with clause 6.5.1 and schedule 6.2).
>
> **Allowed rate of return**
>
> (b) The *allowed rate of return* is to be determined such that it achieves the *allowed rate of return objective*.
>
> (c) The *allowed rate of return objective* is that the rate of return for a

Distribution Network Service Provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the *Distribution Network Service Provider* in respect of the provision of *standard control services* (the *allowed rate of return objective*).

(d) Subject to paragraph (b), the *allowed rate of return* for a *regulatory year* must be:

(1) a weighted average of the return on equity for the *regulatory control period* in which that *regulatory year* occurs (as estimated under paragraph (f)) and the return on debt for that *regulatory year* (as estimated under paragraph (h)); and

(2) determined on a nominal vanilla basis that is consistent with the estimate of the value of imputation credits referred to in clause 6.5.3.

(e) In determining the *allowed rate of return*, regard must be had to:

(1) the relevant estimation methods, financial models, market data and other evidence;

(2) the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and

(3) any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

Return on equity

(f) The return on equity for a *regulatory control period* must be estimated such that it contributes to the achievement of the *allowed rate of return objective.*

(g) In estimating the return on equity under paragraph (f), regard must be had to the prevailing conditions in the market for equity funds.

Return on debt

[Subparagraphs (h)-(l) are under the subheading "Return on debt" and are relevant to that topic. They are separately the subject of consideration in the next principal section of these reasons for decision.]

Rate of Return Guidelines

(m) The *AER* must, in accordance with the *distribution consultation procedures*, make and *publish* guidelines (the *Rate of Return Guidelines*).

The *Rate of Return Guidelines* must set out:

(1) the methodologies that the *AER* proposes to use in estimating the *allowed rate of return*, including how those methodologies are proposed to result in the determination of a return on equity and a return on debt in a way that is consistent the *allowed rate of return objective*, and

(2) the estimation methods, financial models, market data and other evidence the *AER* proposes to take into account in estimating the return on equity, the return on debt and the value of imputation credits referred to in clause 6.5.3.

(n) There must be *Rate of Return Guidelines* in force at all times after the date on which the *AER* first publishes the *Rate of Return Guidelines* under these *Rules*.

(o) The *AER* must, in accordance with the *distribution consultation procedures*, review the *Rate of Return Guidelines*:

(3) at intervals not exceeding three years ...

637 Rule 87 of the NGR is relevantly in much the same terms.

638 In its application of r 6.5.2 of the NEL and r 87 of the NGR the AER followed a six-step methodology outlined in Chapter 5 of its *Better Regulation Rate of Return Guideline*, December 2013, (the RoR 2013 Guideline) to arrive at a return on equity of 7.1 percent.

639 The AER's return on equity of 7.1 percent is to be contrasted with:

(a) Ausgrid, Endeavour and Essential's proposed 10.11 percent;

(b) ActewAGL's proposed 10.71 percent; and

(c) JGN's proposed 9.83 percent.

The Regulatory Background

640 The 2012 Rule Amendments significantly altered the process previously prescribed for determining the return on capital.

641 Prior to 2012, r 6.5.2 of the NER required the return on equity to be determined using the Sharpe Lintner Capital Asset Pricing Model (SL CAPM), and r 87 of the NGR required the return on equity to be determined using "a well accepted financial model, such as the Capital Asset Pricing Model". The 2012 Rule Amendments removed these requirements and instead required that regard must be had to relevant estimation methods, financial models, market data and other evidence: NER r 6.5.2(e)(1); NGR r 87(5)(a).

642 A further significant change is the insertion of the allowed rate of return objective (RoR Objective), being the rate of return for a regulated service provider which is commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the regulated service provider in respect of the provision of standard control services/reference services: NER r 6.5.2(b); (c) and NGR r 87(2) and (3). The relevant Rules now require that return on equity is to be estimated such that it contributes to the achievement of the RoR Objective and in estimating the return on equity, regard must be had to prevailing conditions in the market for equity funds: NEL 6.5.2(f); (g); NGR r 87(6) and (7).

643 The 2012 Rule Amendments include a requirement that the AER must publish Rate of Return Guidelines in accordance with its consultation procedures. These guidelines must set out the methodologies that the AER proposes to use in estimating the allowed rate of return, and the estimation methods, financial models, market data and other evidence the AER proposes to take into account: NER r 6.5.2(m) and (n); NGR r 87(13) and (14).

644 The RoR 2013 Guideline referred to above, published by the AER in December 2013, result from the 2012 Rule Amendments requirement. It is accepted that the RoR 2013 Guideline are not binding on the AER when it comes to make an individual determination and that there is no requirement for the AER to provide persuasive evidence to depart from the RoR 2013 Guideline. The AER is permitted to make a decision that is not in accordance with the RoR 2013 Guideline, but if it does so, then it must state its reasons for departing from its guidelines: NER r 6.2.8(c); NGR r 87(18).

645 As the AER pointed out, one benefit of the changes was to provide a common framework for the determination of the rate of return under the NER and the NGR.

646 References by the parties to the AEMC's 2012 Rule Amendments accurately reflect that. In principle, the AEMC sought to achieve a process by the AER to get to the best estimate of the rate of return that can be obtained which reflects efficient financing costs of the service provider at the time of the regulatory determination.

647 The AEMC said at p 43:

> A rate of return that reflects efficient financing costs will allow a service provider to attract the necessary investment capital to maintain a reliable energy supply while minimising the cost to consumers.

648 The AEMC noted that its regulatory approach could best achieve the NEO, the NGO and the RPP. The broadening of available methods, to be adopted by the AER at its election, was intended to fulfil that objective. It made the point at p 68 that "achieving the overall objective has primacy". Thus, it saw the RoR 2013 Guideline, and the process by which they were to come into existence, as representing the correct balance between flexibility and regulatory certainty following the consultation required of and by the AER before fixing upon the Guidelines.

649 The AER has appropriately extracted from the 2012 Rule Amendments the following propositions summarising how it intended the 2012 Rule Amendments, in particular r 6.5.2 of the NER and r 87(2) of the NGR, to operate:

(a) the RoR Objective has primacy in any estimation of the rate of return on equity (pp 18, 36 and 38-39);

(b) the AER's obligation to "have regard to" the material referred to in NER 6.5.2(e) when determining the allowed rate of return is subject to its obligation under NER 6.5.2(b) to determine the allowed rate of return such that it achieves the RoR Objective (and equally under NGR r 87(3) and 87(2)) (pp 36-37);

(c) the AER must actively turn its mind to the factors listed, but it is up to the regulator to determine whether and, if so, how the factors should influence its decision (if at all) (pp 36-37);

(d) it is important that the AER be given flexibility to adopt an approach to determining the rate of return that is appropriate to market conditions (p 44);

(e) it is important for the AER to be transparent in its approach to determining the rate of return in order to maintain the confidence of service providers, investors and consumers in the process (pp 23 and 24);

(f) it is important that all stakeholders (including consumers) have the opportunity to contribute to the development of the RoR 2013 Guideline and its evolution through periodic review every three years (pp 45-46);

(g) the RoR 2013 Guideline should include details as to the financial models that the AER would take into account in making a determination, and why it has chosen those models over other models (p 70);

(h) the RoR 2013 Guideline should provide a service provider with a reasonably predictable, transparent guide as to how the AER will assess the various estimation methods, financial models, market data and other evidence in meeting the overall RoR objective. The Guideline should allow a service provider to make a reasonably good estimate of the rate of return that would be determined by the AER if the Guidelines were applied (p 71); and

(i) while while the RoR 2013 Guideline are not determinative, these should "provide a meaningful signal as to the regulator's intended methodologies for estimating return on equity" and be capable of being given "some weight" to narrow the debate about preferred methodologies and models. They should be used as a starting point in making a regulatory determination (p 71).

650 It is apparent also that the AEMC did not consider that the rate of return estimates should be driven by a single financial model, whether the SL CAPM or another model, or by one estimation method. The available relevant evidence should be considered. As the DNSPs and JGN pointed out, the AEMC recognised that, in any event, other models may be useful as all have weaknesses to some degree, including that they are all based on certain theoretical assumptions, so that no one model can be said to provide the right answer.

651 Indeed, it is commonly accepted that the AEMC's view (see the AEMC's 2012, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determinations*, 23 August 2012, at p 48) that "estimates are more robust and reliable if they are based on a range of estimation methods, financial models, market data and other evidence" is a sensible one.

652 Following the 2012 Rule Amendments, the AER from December 2012 undertook a careful consultation process, including through its Issues Paper of December 2012 then its Consultation Paper of May 2013, and its draft RoR 2013 Guideline of August 2013 before publishing the RoR 2013 Guideline on 17 December 2013.

653 In the RoR 2013 Guideline, the AER indicated that it proposed to apply a six-step methodology in order to determine the estimated rate of return on equity. Those six steps are:

(1) identify relevant material: in this step the AER identifies relevant methods, models, data and evidence;

(2) determine role: the AER then assesses each piece of material against a set of criteria that it set out in the RoR 2013 Guideline (discussed below). These criteria are then used to determine what role each piece of material would play in the determination of the return on equity. Under the AER's approach, each piece of material could either be:

(i) used as the foundation model (noting there could be only one); or

(ii) used to inform the foundation model; or

(iii) used to inform the overall return on equity; or

(iv) not used in any way;

(3) implement foundation model: in this step the AER determines a range and point estimate for the foundation model return on equity, based on the information from step two;

(4) other information: the AER uses other information to inform the overall return on equity estimate;

(5) evaluate information set: the AER evaluates outputs from steps three and four above, identifying patterns and investigating conflicting information; and

(6) distil return on equity point estimate: the AER uses the foundation model point estimate informatively to determine a starting point. Based on the information from steps four and five, it selects a final return on equity value as the foundation model point estimate, or a multiple of 25 basis points (from within the foundation model range).

654 The RoR 2013 Guideline identified that the SL CAPM was to be used as the foundation model, the Black CAPM was to be used to inform the parameter estimate of the equity beta for use in the SL CAPM, dividend growth models (DGMs) were to be used to inform the parameter estimate of the market risk premium (MRP) for use in the SL CAPM, with no role for the Fama French three factor model (the Fama-French model). Figure 5.2 identified a broad range of other information which was relevant or potentially relevant to the AER's task and is reproduced below:

Table 5.2 Role of other information.

Material (step one)	Role (step two
Commonwealth government securities	Inform foundation model parameter estimates (risk free rate)

Observed equity beta estimates	Inform foundation model parameter estimates (equity beta)
Historical excess returns	Inform foundation model parameter estimates (MRP)
Survey evidence of the MRP	Inform foundation model parameter estimates (MRP)
Implied volatility	Inform foundation model parameter estimates (MRP)
Other regulators' MRP estimates	Inform foundation model parameter estimates (MRP)
Debt spreads	Inform foundation model parameter estimates (MRP)
Dividend yields	Inform foundation model parameter estimates (MRP)
Wright approach	Inform the overall return on equity
Takeover and valuation reports	Inform the overall return on equity
Brokers' return on equity estimates	Inform the overall return on equity
Other regulators' return on equity estimates	Inform the overall return on equity
Comparison with return on debt	Inform the overall return on equity
Trading multiples	No role
Asset sales	No role
Brokers' WACC estimates	No role
Other regulators' WACC estimates	No role
Finance metrics	No role

The AER's Final Decisions

655 The AER made Final Decisions in relation to the return on equity for each of the Network Applicants in substantially the same terms. The AER's Final Decisions on the return on equity for each of the Network Applicants are set out in Attachment 3 to each of the AER's Final Decisions for the 2015-16 to 2018-19 period, each dated 30 April 2015, except for the JGN Final Decision dated 3 June 2015.

656 The AER Final Decisions rejected the Network Applicants' proposal that the return on equity be calculated by reference to four models, being the SL CAPM, the Fama-French model, the Black CAPM and a CAPM informed by the dividend growth models (DGM).

The AER's Foundation Model approach

657 Instead, the AER adopted the "foundation model" approach to estimating the return on equity as it regarded that approach to be consistent with the RoR 2013 Guideline. The AER used the SL CAPM as the foundation model, as it considered it to be superior to all other models for estimating the expected return on equity by reference to the BEE.

658 The AER considered that the SL CAPM:

(a) was the current standard asset pricing model of modern finance, both in theory and practice;

(b) has been in use for a long period to estimate expected equity returns and transparently represents the key risk and reward trade-off at the heart of the AER's task;

(c) is widely accepted; and

(d) is consistent with the approach employed by financial market practitioners.

659 The AER did consider other models, including the Black CAPM, the DGM and the Fama French Model. The AER said it used the theory behind the Black CAPM to inform the equity beta to be used in the foundation model, and used the DGM to inform the MRP. It is noted that the Network Applicants contend that the AER erred at this point, because:

(i) it "disregarded" estimates from other models, provided through other experts reports, and did not itself use other models with its own estimated input data; and

(ii) gave "entirely subsidiary roles" to the other models, rather than using them to determine the return on equity.

660 It is therefore appropriate to note how the Final Decisions record the AER's regard to other models.

661 The AER considered that the Black CAPM relaxes one of the key assumptions of the SL CAPM, namely the assumption that investors can borrow and lend unlimited amounts at the risk free rate. It is accepted that this leads the SL CAPM to underestimate the return required for low-risk investments. In place of that assumption, the AER said the Black CAPM assumes that investors can engage in unlimited short selling. It regarded this assumption as not reflecting how the stock lending markets work because short sellers are required to post collateral in the form of cash or equity when lending stock. It also noted that, in place of the risk free asset in the SL CAPM, the Black CAPM substitutes the minimum variance zero beta portfolio, which requires estimating an additional parameter (the zero beta expected return) in order to use the Black CAPM to empirically estimate the point estimate for return on equity.

662 However, consistent with the RoR 2013 Guideline, the AER said it did use the theory underlying the Black CAPM to inform the estimate of the equity beta. As the Network Applicants contend, all that the AER did was use the weakness of the SL CAPM identified by the Black CAPM as a rationale for selecting a beta at the top of the range suggested by the SL CAPM. As considered below, this approach may be justifiable, but it is hardly "using the theory". It did not use the Black CAPM empirically to estimate the return on equity for the BEE, thereby not accepting the arguments advanced by the service providers to the contrary. It gave reasons for that conclusion.

663 DGMs use dividends forecasted by market analysts to derive the return on equity by assuming that the market value of the equity in the business is equal to the present value of future dividends. In the RoR 2013 Guideline, the AER determined that it would limit the use of the DGMs to the function of informing the MRP in the SL CAPM.

664 It did not use a DGM return on equity for the BEE. The AER's reasons for that were:

(a) there was not sufficiently robust data of dividend yields for Australian energy network service providers;

(b) it was also unclear whether there was a sufficiently robust method for estimating the dividend growth rate for Australian energy network service providers; and

(c) the sensitivity of a DGM to its input assumptions limits its usefulness as a foundation model.

The AER noted that simple DGMs generated returns on equity for energy infrastructure businesses which significantly exceeded the average return on equity for the market. This, it said, did not make sense because a regulated natural monopoly was much less risky than the overall market, and should therefore have a lower return on equity.

665 The AER also considered that the Fama French Model was not appropriate to use. The risk factors used by the model are return on the market, firm size (measured by market capitalisation) and the ratio of book value to market value. By reference to the RoR 2013 Guideline, the AER considered:

(a) there was little evidence of companies or regulators using the model;

(b) empirical implementation of the model is relatively complex and opaque;

(c) its estimates are sensitive to the chosen estimation period and methodological assumptions;

(d) there is a lack of theoretical foundation for the factors; and

(e) the instability of parameter estimates and the backward looking observation of risk factors do not mean that those factors will apply on a forward looking basis.

666 The AER, then, needed to address the risk free rate, the equity beta, and the MRP for the purposes of its modelling.

667 In relation to the risk free rate, the AER was satisfied that the yields on Commonwealth government securities with a 10 year term to maturity represented a widely accepted proxy for the risk free rate. That is not contentious.

668 In relation to the MRP, after observing that the MRP cannot be directly observed, the AER considered a range of conceptual and empirical evidence to enable it to determine a point estimate that had regard to prevailing conditions in the market for equity funds.

669 The evidence that the AER had regard to in estimating the MRP was historical excess returns, DGM estimates (from its preferred construction of the DGM), survey evidence of the expectations of investors and market practitioners, conditioning variables (dividend yields, credit spreads and implied volatility) and recent decisions by Australian regulators.

670 The AER noted that there was no consensus among experts on which method produces the best estimate of the MRP and that estimates of it are diverse and can vary over time. As noted, the AER used DGM estimates (from its preferred construction of the DGM) to inform the estimate of the MRP, having regard to evidence that the output from the models is very sensitive to input assumptions and likely to show an upward bias in current market conditions. In that, it was supported by advice from McKenzie and Partington, in their report to the AER: *Part A: Return on Equity*, October 2014, at p 9 (the 2014 McKenzie Partington report).

671 In relation to the equity beta, the AER also noted that the equity beta also cannot be directly observed, and considered a broad range of information in order to inform its estimate. The evidence that the AER had regard to in estimating equity beta included empirical estimates based on Australian energy network firms, conceptual analysis of a BEE's systematic risks relative to the market average, international empirical estimates and the theory of the Black CAPM. Consistent with the RoR 2013 Guideline, it appears to the Tribunal that the Black CAPM was not "used" to produce a beta estimate; only the idea that SL CAPM understates beta was used to justify selecting a high-end value.

672 The AER adopted an equity beta point estimate of 0.7 from a range of 0.4 to 0.7. It was satisfied that an equity beta of 0.7 is reflective of the systematic risk a BEE is exposed to in providing regulated services, and was likely to contribute to the achievement of the RoR Objective. The position adopted in the Final Decisions is the same as that set out in the RoR

2013 Guideline; that is, the AER did not depart from the RoR 2013 Guideline in its determination of the equity beta of the BEE.

673 Through the above assessments in the Final Decisions, the AER adopted a risk free rate of 2.55 percent, an equity beta of 0.7 and a MRP of 6.50 percent as the input parameter values for the SL CAPM. The return on equity estimated by the SL CAPM using these parameter values was 7.1 percent.

The principal concerns of the Network Applicants

674 The Network Applicants are critical of the outcome of the AER approach: a return on equity of 7.1 percent.

675 They submit, firstly the AER's approach to the assessment of the equity beta is flawed because the AER wrongly ring-fenced the range of equity beta before considering other evidence to select within that range. Secondly, they submit the adjustment to the SL CAPM equity beta was in error because the AER's adjustment in the light of the Black CAPM was arbitrary and not based on any empirical evidence.

676 They are also critical of the AER's conclusion on the MRP because, they say, it unduly weighted historical average express returns and disregarded or discounted other relevant evidence, including the "Wright approach" (in very simple terms, an alternative means of calculating the MRP in the SL CAPM recommended by Professor Wright, see, for example: Wright, *Review of risk free rate and cost of equity estimates: A comparison of UK approaches with the AER*, October 2012). In this regard, they also say the AER erred in adjusting estimates of the MRP for the value of imputation credits by applying an incorrect formula in making that adjustment.

677 Finally, at a more general level, they contend that the estimate fixed for return on equity was not reasonable, and can be shown to have failed the appropriate cross-checks.

The AER's consideration of other material

678 That complaint flows from the next step in the AER's methodology. That was to undertake an examination of other information that could inform an overall estimate of return on equity as outlined in Figure 5.3 from Attachment 3 to the Ausgrid Final Decision. The AER considered the spread between debt and equity risk premiums, and return on equity estimates from the Wright approach, valuation reports, broker reports, and other regulators' decisions.

The AER considered that the range of MRPs derived from this other information supported its use of the foundation model and its foundation model return on equity estimate. Although investors' required return on equity is unobservable, the AER noted that the observable MRPs for debt did not materially change in the face of declines in the risk free rate.

679 At its conclusion, the AER considered that an expected return on equity derived from the SL CAPM should be the starting point for estimating the return on equity, and that the other information did not indicate that the equity MRP estimate should be uplifted or downshifted to better contribute to the achievement of the RoR Objective.

680 The AER was satisfied that an expected return on equity estimate of 7.1 percent derived from its implementation of the SL CAPM would contribute to the achievement of the RoR Objective and was commensurate with the prevailing market conditions (as required by NEL r 6.5.2(f) and (g) and NGR r 87(6) and (7)).

PIAC's Contention

681 PIAC, as might have been expected, carefully addressed the AER's methodology and conclusions and the contentions of the Network Applicants critical of those methods and conclusions.

682 Equally of present significance, PIAC contended that the AER erred in selecting a point value of the equity beta of 0.7 from the range 0.4-0.7.

683 In preparing the RoR 2013 Guideline, and reflected in it, is the work of Professor Henry: *Estimating β*, 2009 (Henry 2009 Report) for the AER. It is referred to in the RoR Explanatory Statement. Professor Henry noted that the empirical estimates then available justified a point estimate of about 0.55 for equity beta. The AER nevertheless then, as it did in the Final Decisions, adopted a range of 0.4-0.7 as a reasonable range for equity beta of a BEE.

684 PIAC notes that after the RoR 2013 Guideline was published, Professor Henry provided a paper *Estimating β: an update*, April 2014 to the AER (Henry 2014 Report). The Henry 2014 report reported equity beta estimates consistently falling within the range of 0.4-0.7, but added that "most estimates clustered around 0.5". That was expressly noted in the Final Decisions.

685 Based on the Henry 2014 Report, PIAC contends that the correct equity beta should have been 0.5, and so the AER erred by selecting a value of 0.7 at the top of the range which the RoR 2013 Guideline contemplated. It then says that, having regard to the obligations imposed on the AER by s 16(1)(d) of the NEL (as its applications concerned only the Final Decisions of the AER in relation to Networks NSW, it did not address the NGL), the AER should have proceeded on the basis of the equity beta of 0.5 to reach the materially preferable NEO decision.

Does s 71O of the NEL preclude PIAC from taking this position?

686 Before considering the issue whether PIAC is correct in its contention that the AER should have used an equity beta of 0.5, it is necessary to address the AER's submission that PIAC is precluded from taking the point it has raised by reason of s 71O of the NEL. That section prescribes matters that may and may not be raised in a review.

687 Section 71O(2)(c) and (d) are the relevant provisions. They provide:

> (2) In a review under this Subdivision, the following provisions apply in relation to a person or body, other than the AER (and so apply at all stages of the proceedings before the Tribunal):
>
> ...
>
> (c) an affected or interested person or body (other than a provider under paragraph (a) or (b) may not raise in relation to the issue of whether a ground for review exists or has been made out any matter that was not raised by the person or body I a submission to the AER before the reviewable regulatory decision was made;
>
> (d) subject to paragraphs (a), (b) and (c) –
>
> (i) the applicant, or an intervener who has raised a new ground for review under section 71M, may raise any matter relevant to the issues to be considered under section 71P(2a) and (2b); and
>
> (ii) any person or body, other than the applicant or an intervener who has raised a new ground for review under section 71M, may not raise any matter relevant to the issues to be considered under section 71P(2a) and (2b) unless it is in response to a matter raised by –
>
> (A) the AER under subsection (1)(b)(iii); or
>
> (B) the application under subparagraph (i); or
>
> (C) an intervener under subparagraph (i).

688 As observed, PIAC is an applicant in respect of the NSW DNSP Final Decisions and an intervener in the NSW DNSPs' applications. Also as observed, while PIAC as an applicant did not seek to have the Final Decisions on the return on equity varied or set aside, it has as an intervener made submissions on the appropriate return on equity. In terms of s 71O(3), PIAC is an applicant (limited by the terms of its application) and an intervener for the purposes of s 71O(2)(d).

689 The AER acknowledges that PIAC made the same points at a level of generality during the process of consultation leading to the RoR 2013 Guideline, well before the Network NSW Final Decisions. It says that PIAC did not raise the same issues in any submission to the AER specifically in relation to it making its Draft Decisions or between its Draft Decisions and its Final Decisions in relation to Networks NSW.

690 It is clear that PIAC made its points in a submission leading up to the RoR 2013 Guideline: see its submission of 28 October 2013 at 28-29, including that the point estimate for equity beta should not be at the higher end of the range.

691 However, for the reason in the following paragraphs, the Tribunal is of the view that submissions made to the AER not specifically concerning a reviewable regulatory decision which the AER is in the process of making can not qualify as raising a matter relevant to "… the issues to be considered under section 71P(2a) and (2b)" when the reviewable regulatory decision is under review. Section 71O was repealed and replaced by the 2013 Legislative Amendments. In part that would appear to have been prompted by the decision of the Full Court in *SPI Electricity Pty Ltd v Australian Competition Tribunal* (2012) 208 FCR 151 (the *SPI Case*), where the Full Court held that the Tribunal had been in error to deny SPI relief in relation to a ground of review that it had raised in its initial regulatory revenue proposal, but about which SPI had remained silent in its revised revenue proposal after the AER had "decided" the point adversely to SPI in its draft determination. Section 71O(2)(a) and (b) require a DNSP to "raise and maintain" the submission before the AER.

692 Clearly, s 71O(2) envisages a less stringent standard is to be applied to non-network applicants and interveners as regards the nexus between the matters addressed in the submissions of a non-network applicant or an intervener to the AER during the regulatory decision-making process and the matters which that applicant is permitted to raise in its application for review. The requirement of having maintained the submission does not appear in s 71O(2)(c). That may reflect a primary purpose to improve the practical

accessibility of the merits review process for organisations representing consumers whose long-term interests are the touchstone of the NEO and the NGO.

693 However, it is clear that s 71O is focused upon ensuring that a matter is properly raised in the course of, and in relation to, the particular regulatory review decision or decisions being made. The end words of each of subs (2)(a), (b) and (c) "before the regulatory review decision was made" are not merely temporal. If that were so, an applicant (subject to the "maintained" requirement) could go back to submissions made in relation to a previous regulatory review period. The matter must have been raised during and in relation to the process of making the regulatory review decision. The addition of the "maintained" requirement is readily explained by the *SPI Case*. That construction also is dictated by s 71R confining the "review related matter" relevantly to "decision related matter" under s 28ZJ: see s 71R(1) and (6), and in turn the nature of the decision related matter. It is noted that s 71R(1)(a) extends the available review related matter to matter raised during the consultation under s 71R(1)(b).

694 The Tribunal observes that the word "matter" in s 71O may have a different meaning from its use in s 71R. In the former, it seems broadly to refer to a contention or issue; in the latter it seems broadly to refer to the documentary records. For present purposes, it is not necessary to explore any difference. The Tribunal takes s 71O as relating to a contention or issue raised before the AER in the course of its reviewable regulatory decision-making process. It would not be sufficient for a document provided to the AER to obliquely refer to a topic. The topic (contention or issue) should have been raised before the AER so that it was a matter which the AER had to consider.

695 In any event, in response PIAC has referred to its submission to the AER following the Networks NSW Draft Decisions, made on 13 February 2015. In particular, it refers to that submission at [36.6], [43.2] and [44.3]. The Tribunal notes that at [36.6] PIAC wrote:

> PIAC was not comfortable with all the components of the AER's rate of return approach in the Guideline. For instance, PIAC previously advised the AER that the equity beta set out in the Guideline (0.7) was overly conservative and did not recognise the extent to which the economic risks sat with consumers rather than the networks.

The submission at [43.3] expresses general concerns "with a number of the constituent decisions that form part of the "RoR 2013 Guideline", and that the AER's Draft Decisions may not best achieve the RoR Objective. It is not specific enough to say which particular

"matter" (in the sense used in s 71O(2)(c)) is of concern to it. The submission at [44.3] expresses disagreement with the "sampling approach" used to calculate the equity beta, as US data was overweighted and was not properly reflective of the BEE. It also repeated the assertion that, given a range of equity beta between 0.4 and 0.7, the AER choice at the top of that range was "overly conservative" having regard to the "most recent updates to the empirical studies on Australian network companies".

696 It is the Tribunal's view that those references indicated clearly enough to the AER that PIAC did not consider the estimation of the equity beta at 0.7 as appropriate, and so it raised in its reply submission to the Draft Decisions relating to Network NSW the matter of whether the equity beta should be significantly lower than 0.7. It also raised the matter of whether the AER should have placed as much weight on the US data as it did. Its submissions to the AER, not surprisingly, also referred generally to the AER's obligation under s 16(1)(d) of the NEL.

697 As the application of s 71O has been raised also in relation to certain other submissions by Networks NSW (having regard to certain submissions of the Vic/SA Interveners), it is convenient at this point to briefly note some other non-controversial points concerning the application of s 71O, which do not appear to have been altered by the 2013 Legislative Amendments.

698 For the purposes of s 71O, a "matter" means a controversy or thing in dispute that was raised in submissions to the AER: *Re DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14 at [299] (*DBNGP (WA) Transmission (No 3)*). Consequently, a party will be permitted to raise a matter by way of argument before the Tribunal if it can be identified as broadly arising out of a matter fairly raised by that party before the final determination was made: *Re Energy Australia* [2009] ACompT 8 at [316(f)]. Whether the matter can be identified as broadly arising out of a matter fairly raised is a matter for the Tribunal to assess in practical terms, in the particular circumstances of the case: *DBNGP (WA) Transmission (No 3)* at [305].

699 The limited merits review provided for under both the NEL and the NGL, as explained in the Introduction section of these reasons, is premised upon the AER addressing a particular matter or topic (being mindful of the caution appropriate when using surrogate words) in the light of that matter or topic having been raised in submissions made to the AER by the party wishing to raise it before the Tribunal in relation to that reviewable regulatory decision then being made. The Tribunal is not to entertain a matter which has not been so raised before the

AER. That is, as the preceding paragraph notes, a practical assessment to be made in the particular circumstances.

700 PIAC's ground of review in relation to return on equity will be addressed in conjunction with considering the grounds of review of the Network Applicants. It is not a ground of review which is "alive" for the purposes of considering the return on equity allowed by the AER in the JGN Final Decision.

The Grounds of Review: Network Applicants

701 A summary of the reviewable errors asserted by the Network Applicants appears in [241] of their joint submissions. It is convenient to record it in detail, as it provides a structure for the further consideration of this topic.

702 The joint submissions at [241] assert the following:

(a) The AER's Final Decisions were based on an incorrect construction and application of the Rules, in that the AER chose not to have regard to relevant models, contrary to clause 6.5.2(e) of the NER / rule 87(5) of the NGR, and thus the exercise of the AER's discretion was incorrect.

(b) The AER made errors of fact in its findings of fact, each of which was material to the making of its Final Decisions:

(i) in finding that the required return on equity for a benchmark efficient entity with a similar degree of risk as each of the Network Applicants was 7.1%;

(ii) in concluding that the SL CAPM was superior to all other relevant models (and all possible combinations of these relevant models), and in concluding that other relevant models relied on by the Network Applicants were not suitable, including because they were "empririically unreliable" or "lacked theoretical foundation", to estimate the return on equity;

(iii) in concluding that an MRP of 6.5% was reflective of prevailing market conditions;

(iv) in concluding that the equity beta for a benchmark efficient entity with a similar degree of risk as each of the Network Applicants was 0.7; and

(v) in concluding that its "cross-checks" supported or confirmed its return on equity estimate of 7.1%.

(c) The errors of fact identified in (b) above, were relied upon bythe AER in the exercise of its discretion, and thus led to the incorrect exercise of the AER's discretion.

(d) The AER's decision was unreasonable in that it failed to take into account

relevant considerations, including:

(i) not having regard to estimates of the return on equity from all relevant financial models as is required by the Rules as a result of the errors of fact in (b) above, and in particular the errors of fact in relation to the assessment of SL CAPM and the other models relied upon by the Network Applicants;

(ii) not having regard to relevant information in relation to the MRP, including independent valuation reports and estimates from the Wright approach; and

(iii) the material before it and on which it purported to rely, but correctly interpreted.

(e) The AER's exercise of discretion was incorrect, and/or the Final Decisions were unreasonable in all the circumstances, in that the AER;

(i) adopted an inconsistent (and therefore irrational or illogical) approach to assessing the merits of the SL CAPM and the merits of other relevant models or approaches; and/or

(ii) irrationally and illogically gave sole weight to the SL CAPM notwithstanding the recognised deficiencies of the model.

(f) The AER's exercise of discretion was incorrect, and/or the AER's Final Decisions were unreasonable, in that the AER constrained the use of relevant evidence in relation to the equity beta from international data samples by using it only to inform the selection of a point estimate from a range based on a different (and very limited) data sample.

(g) The AER's exercise of discretion was incorrect, and/or the AER's Final Decisions were unreasonable, in that the AER purported to use the theory of the Black CAPM to select an equity beta of 0.7 when in fact the Black CAPM is not a model for calculating the equity beta, the AER did not calculate any adjustment that had to be made, and the AE's beta range was not a correct range for beta in any event.

(h) The AER's exercise of discretion was incorrect, and/or the AER's Final Decisions were unreasonable, in that the AER failed to have proper regard to evidence of the prevailing MRP from its own DGM analysis, and instead constrained the role of this evidence to indicating whether an estimate above or below the "baseline" estimate (based on historical evidence) should be adopted.

703 The Vic/SA Interveners made separate submissions, largely directed to the same categories of error.

704 They each have a very real interest in the correctness or otherwise of the AER's Final Decisions on the rate of return on equity. That is not in issue, so it is not necessary separately

to record the stage of each of the regulatory review decisions being made by the AER in relation to their respective regulatory proposals for 2015-19.

705 Each of the Vic/SA Interveners is a privatised business raising capital and borrowing in the equity and debt markets. Obviously, the AER Final Decisions in relation to the Network Applicants on rate of return for equity, rate of return for debt, and the value of imputation credits are significant to them. Any discordance from prevailing market conditions will, in the long run, potentially affect their respective businesses to a material extent.

706 On this topic, they contend in broad terms that the AER's "foundation model" approach to determining the allowed return on equity is based on the erroneous proposition that since the global financial crisis, prevailing rates of return for equity have moved downwards, one-for-one, in line with falls in base interest rates and can be best estimated by exclusively using the SL CAPM, with flawed AER ranges for beta and the MRP.

707 Ergon also broadly supported the joint submissions of the Network Applicants. Its submission on this topic is encapsulated in [1] of its submission where it said that the AER made an error of fact in finding that applying the SL CAPM as the foundation model would lead to a rate of return that meets the rate of return objective, when the evidence before the AER was that the SL CAPM underestimates the rate of return required by businesses with less than average risk.

708 Those submissions will be considered in conjunction with those of the Network Applicants. As noted, PIAC (apart from its own "ground of review") supported the decision making process and analysis by the AER.

Consideration

The relevant Rules

709 On this topic, there was emphasis on the relevant rules, introduced by the 2012 Rule Amendments. It is necessary to note certain features of them. In particular, the allowed rate of return (r 6.5.2 NER, r 87 NGR) is to be determined such that it achieves the RoR Objective: r 6.5.2(b) NER; r 87(2) NGR.

710 NER r 6.5.2 (c) and NGR s 87 (3) then state the RoR Objective is that the rate of return is to be commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the DNSP/service provider in respect of the provision of standard

control services/reference services.. In this context (unlike the issues debated in relation to the return on debt, as to which see below), the expression "benchmark efficient entity" (BEE) was not the subject of particular submissions.

711 The AER was required by r 6.5.2(e) NER and r 87(5)(a) NGR to have regard to "relevant estimation methods, financial models, market data and other evidence" in determining the allowed rate of return. As already noted, that change removed from the NER the provision requiring the return on equity to be determined using the SL CAPM and from the NGR that it be determined using a well-accepted financial model such as "the Capital Asset Pricing Model" and substituted the above formulation. The 2012 Amendments also introduced the RoR Objective as defined. And, they obliged the AER periodically to publish RoR Guideline.

The application of the Rules

712 The AEMC made it clear, as the rules referred to in the preceding paragraph indicate, that the AER is to consider a range of sources of evidence and analysis to estimate the rate of return: see eg sections 6.2.4 and 6.5 of the AEMC's 2012 Rule Amendments (at pp 48-49 and 56-57).

713 In the context of the first submission of the Network Applicants (and the submission of the Vic/SA Interveners), the obligation of the AER "to have regard to" the matters prescribed was itself the subject of submissions. The Network Applicants say that the AER did not have regard to models other than the SL CAPM, and to use their word it "chose" not to do so. The Tribunal takes the obligation on the AER so expressed as requiring it to give consideration to the range of sources of evidence and analysis to estimate the rate of return. It need not give particular weight to any one source of evidence, and indeed it might treat particular evidence as having little or no weight in the circumstances. It is for the AER to make that assessment. It may also have regard to other factors. See generally *Rathbone v Abel* (1964) 38 ALJR 293 at 295 and 301; *R v Hunt; Ex parte Sean Investment Pty Ltd* (1979) 180 CLR 322 at 329; *Turner v Minister for Immigration and Ethnic Affairs* (1981) 35 ALR 388 at 392; *R v Australian Broadcasting Tribunal; Ex p 2HD Pty Ltd* (1979) 144 CLR 45 at 49-50.

714 The AER accepted that it did not itself "run" other models than the SL CAPM. It had presented to it the outcome of other models, through various expert reports provided to it. It considered, but did not adopt, those outcomes. It is said by the Network Applicants that the AER's approach was based upon an incorrect step – both non-compliant with the Rules and

in fact – that the SL CAPM was a superior model and so an appropriate "foundation model" for the purposes of the RoR 2013 Guideline.

715 The relevant textual features, in the view of the Tribunal, are the breadth and generality of the words "relevant estimation methods, financial models, market data and other evidence". They do not suggest a prescriptive obligation to consider particular methods, models or data. If that were intended, one would expect it to be more prescribed. Rather, it is left to the AER to decide what is "relevant" and a dispute about relevance is not itself a basis for asserting error of the character now asserted. In fact, the AER did have regard – in the sense of considering – the material put forward by the Network Applicants. The same reasoning suggests that the obligation to "have regard to" certain material is to consider it and to give it such weight as the AER decides. Again, if a more sophisticated obligation were intended, it is likely it would have been differently expressed. The main contextual matter indicating the nature of the obligation is the regulatory framework where the RoR Objective is as set out above. It, too, indicates that the requirement to have regard to certain material is not prescriptive in the sense argued for by the Network Applicants. The RoR Objective is the general umbrella concept which the prescribed process is to serve; it would not serve it by requiring particular weight to be given to particular materials. That conclusion is also supported by the AEMC's views referred to, which indicate that it is left to the AER as the regulator to decide within the relevant Rules how it arrives at a rate of return which is robust and sensible and best achieves the RoR Objective.

716 That, the AER pointed out, is consistent with the RoR 2013 Guideline. Those Guidelines evolved in the manner described earlier in these reasons. In the AER *Consultation Paper, Rate of Return Guidelines,* May 2013, the AER had put forward four broad approaches. That paper was followed by extensive consultation, Draft RoR 2013 Guideline, the Issues Paper on equity beta and finally by the RoR 2013 Guideline.

717 The Tribunal does not regard the AER's approach as reflecting any misunderstanding of the relevant Rules or any fundamental misapplication of them. It does not consider that the RoR 2013 Guideline is itself a departure from their prescription. Consequently, the AER's decision to follow the process set out in the RoR 2013 Guideline was not itself necessarily erroneous.

718 The starting point for that conclusion is the NEL and the NGL themselves, principally the NEO and the NGO respectively and the complementary RPP. Their collective significance is

explained in *Re Application by ElectraNet Pty Limited (No 3)* [2008] ACompT 3 at [18] and in *Application by Energy Australia and Others* [2009] ACompT 8 at [79]-[82].

The use of the SL CAPM model

719 The AER's approach is supported by the expert advice it received in the McKenzie Partington 2014 Report and by Professor Handley, *Advice on the Return on Equity*, October 2014 (the Handley 2014 Report) (as well as the material sourced in the RoR 2013 Guideline and the earlier Consultation Paper and Draft RoR 2013 Guideline referred to above). As its Final Decisions disclose, it was well alive to the SL CAPM providing a starting point only. Whilst it used the SL CAPM as its foundation model, the AER did not then adopt its outcome without careful consideration of other sources of information. As noted, expert advice supported that as a starting point.

720 The AER's approach in this regard does not lead to the view that it assumed the SL CAPM does not have strengths or weaknesses, or that other models do not have strengths or weaknesses. Its subsequent analysis shows that it was not "locked in" to one model, relied on to the exclusion of all others.

721 The Tribunal notes the material referred to by the Network Applicants to support their proposition that the SL CAPM was an inappropriate starting point. That material is divided into four categories:

(a) the empirical literature, which shows that the SL CAPM in fact performs poorly against the empirical data, relative to other relevant financial models;

(b) a recent study by NERA: *Empirical Performance of Sharpe-Lintner and Black CAPM: A report for Jemena Gas Networks and others*, February 2015 (NERA 2015 Report), which confirms the findings of the earlier literature that documents the poor empirical performance of the SL CAPM, and shows that the Black CAPM is in fact superior to the SL CAPM in terms of its performance against the empirical data (NERA also separately provided a review of the literature in March 2015);

(c) the fact that alternative models have been developed specifically to overcome observed difficulties with the SL CAPM; and

(d) expert evidence, which demonstrated that all models have strengths and weaknesses and that no one model is superior. No expert advised that the SL CAPM is superior to

all other models and to all possible combinations of models (including combinations that include the SL CAPM).

722 The Network Applicants expand upon their proposition in their joint submissions at [45]-[68] and Appendix A. In their oral submissions, the Tribunal was taken extensively and appropriately to that material. The largely historical empirical literature indicated a bias in the SL CAPM by systematically underestimating returns for low-beta stocks and for stocks with high book-to-market ratios (such as network businesses). That was confirmed, at least on the first mentioned point, by the NERA 2015 Report.

723 The AER refers in turn to expert opinion supporting its characterisation of, and as a starting point its reliance on, the SL CAPM, together with its analysis of broker and valuation reports, and evidence of its use by market practitioners. It also referred to its analysis of the strengths and weaknesses of alternative models, both in the course of settling upon the SL CAPM as the "foundation model" in the RoR 2013 Guideline and in its Final Decisions. It is not necessary to refer in detail to that analysis. In Attachment 3 to the Ausgrid Final Decision, it appears at pp 3-244 to 3-271.

724 The difficulty of categorising the applicable ground of review for an asserted error on the part of the AER was raised in the course of the submissions as to whether leave to apply for review should be given. That difficulty persists. It is clear enough what the contentions are of the Network Applicants (supported by the Vic/SA Interveners and by Ergon), but their correct categorisation is a little more elusive.

725 The Tribunal has recorded the Network Applicants' contention that the use of a foundation model was not in accordance with r 6.5.2(e) of the NER or r 87(5) of the NGR. For the reasons given, no asserted error of discretion in that respect is made out.

726 Nor does the Tribunal consider that the Network Applicants have shown that the AER made a factual error in deciding to use the SL CAPM as its foundation model in preference to other material. That other material exposed the risk of bias where the entity concerned has an equity beta of less than 1. The AER was alert to that. It considered a range of low beta expert and market material, partly noted above. Some of the expert opinion was more apparently forceful than other parts of it. It is not shown to have misunderstood that material.

727 The Tribunal would, of course, substitute its finding of fact as to the relative suitability of the models if it were to have reached a view that the AER's assessment of their relative

suitability was incorrect. It would substitute its findings of fact, where complex "opinion" about the respective quality of particular models were shown to be incorrect. If it was satisfied of such a matter, that assessment would itself involve a finding of fact different from that of the AER, and on merits review would mean a ground of review was made out. Alternatively, the Tribunal would substitute any exercise of discretion about the use to which particular information (including expert opinion) should be put or how it would serve into a critical conclusion on this aspect if it were satisfied that the AER's discretion should have been otherwise exercised.

728 The Tribunal, like the AER, has access only to the materials before it. The opinions of the experts have not been tested by any process of joint exchange of views, whether before the AER or before the Tribunal. The sequential exchange of written opinions, and the variety of views expressed, suggests that views of experts genuinely held might indicate that there is no clearly correct view, but that matters of fine judgment are involved. The end point for the Tribunal on this aspect is that it is not satisfied that the adoption by the AER of the SL CAPM as the foundation model by the AER is incorrect.

729 Ergon's submission noted above asserts an error of fact of a different character. Correctly, in the view of the Tribunal, it starts by emphasising that the return on equity for a regulatory control period must be estimated in such a manner that it contributes to achievement of the RoR Objective (NER, r 6.5.2(b)) and, in turn, that the rate of return for a DNSP (Ergon was concerned as an electricity network 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 *Distribution Network Service Provider*" in respect of the provision of standard control services (NER, r 6.5.2(c)). It is accepted by the AER that a BEE has a "low risk profile", is "not average risk" and has a "very low" business risk.

730 Ergon is then critical of the AER for not adopting estimation methods and financial models that would most accurately estimate the return on equity for a business with a lower than average degree of risk. It says that the AER, by using assessment criteria set out in the RoR 2013 Guideline to select a model to use as a "foundation model" fell into error. That is firstly because the NER and the NGR do not require or authorise the determination of the allowed rate of return by the use of a foundation model (a contention the Tribunal has not accepted), and secondly because the SL CAPM was not a model which could or would accurately estimate the return on equity for businesses with lower than average risk. It is apparent that

the AER by using the RoR 2013 Guideline process selected a foundation model by criteria that were general in nature, and not by reference to a model that would in itself produce a rate of return commensurate with the efficient financing costs of a BEE with a lower than average degree of risk.

731 It is, as the AER noted, correct that the three parameters for the SL CAPM – equity beta, risk free rate, and MRP – are recorded as giving a low beta bias for businesses with a beta (that is, the risk of the asset relative to the average asset) of less than 1.0, and that the Network Applicants are all within that group. There was also evidence that the low beta bias is exacerbated when it is combined with conditions of low government bond rates and a high MRP. Those conditions were applicable at the time of the AER Final Decisions. The AER at p 3-240 of Attachment 3 to the Ausgrid Final Decision concluded that "notwithstanding potential limitations with the model, we consider that our implementation of the model recognises any potential empirical limitations".

732 Ergon says this conclusion was erroneous, and the AER then erred by considering whether the SL CAPM could be adjusted so as to mitigate the effects that made SL CAPM unsuitable for use as a foundation model, when it should have considered whether the SL CAPM was suitable for selection as the foundation model.

733 Ergon, as with the Network Applicants, was also critical of the way the AER used the SL CAPM.

734 The contention requires the Tribunal to focus on s 71C(1)(a) of the NEL (and s 246(1)(a) of the NGL). It is necessary to consider whether there was an error of fact as asserted, and whether it was material to the making of the decision.

735 The Tribunal does not consider the AER, by selecting the SL CAPM as its foundation model made an error of fact. It was aware of the shortcomings of the SL CAPM, and on broad terms of the shortcomings of other models. It analysed their respective qualities, including as assessed or reported on by a range of expert commentators. Whilst it is possible to argue for an alternative model as the more suitable (Ergon argues for the Black CAPM), the Tribunal is faced with the range of competing views but that does not take the Tribunal itself to reaching a conclusion that the AER's selection of the SL CAPM involved an incorrect finding of fact. To get to that point would be to reach a firm view that a different model should have been chosen. The conflicting expert opinions, and supporting contentions based on other material,

do not – in the Tribunal's assessment – get beyond showing that there are reasonable arguments for an alternative foundation model.

The challenged findings of fact

736 It is then to the implementation of the six-step methodology in the RoR 2013 Guideline, using the SL CAPM as the foundation model, to which the Tribunal turns. It is mindful of the RoR Objective and the submission that the six-step methodology does not estimate the cost of equity in a manner that contributes to the RoR Objective, but that it adds an unnecessary layer of complexity to the estimation process that is not mandated or authorised by the NER, and diverts attention away from the AER's regulatory task.

737 That last mentioned submission is a useful reminder of the AER's task, and re-affirms the view the Tribunal has taken – having regard to the ultimately qualitative assessment to be made to select a rate of return which achieves the agreed RoR Objective – as to the proper consideration of the factors prescribed.

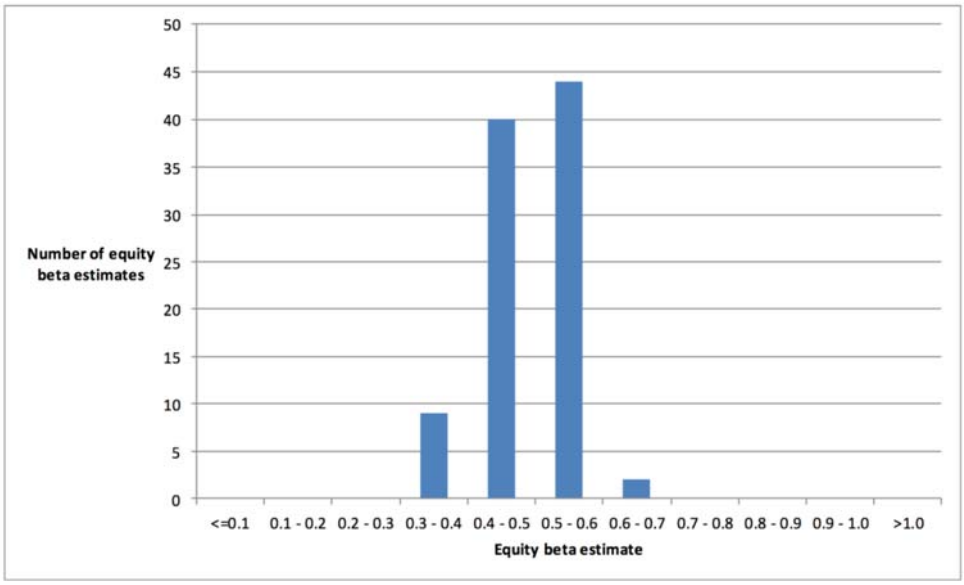
738 As Appendix D to Attachment 3 to its Final Decisions discloses, the AER went through several steps before finally adopting its estimated equity beta of 0.7. They are, briefly, conceptual analysis; Australian empirical analysis; international empirical estimates; the theory of the Black CAPM; and then the selection of the range and the point estimate.

739 It used its conceptual analysis to ascertain an expectation of the systematic risk of the BEE relative to the market average firm. That is as a cross-check against the empirically derived range. The AER considered two types of systematic risk were relevant to this analysis: business risk and financial risk. The AER concluded that the intrinsic business risk of a firm is the primary driver of its systematic risk, and that this intrinsic risk is low for the BEE (relative to the market average firm). The AER accepted that, while the BEE had a relatively high financial gearing of 60 percent (as it commonly accepted in the submissions), compared to the market average firm (30 to 35 percent), this did not imply that it has an equivalently high exposure to financial risk. This is because the exact relationship between financial risk and financial leverage is not straightforward. For example, the likelihood of bankruptcy as leverage increases is low (to the extent that the business is able to pass on borrowing costs to consumers). This conclusion was supported by advice in the McKenzie and Partington 2014 Report.

740 The AER then reviewed the empirical evidence on equity betas produced by Professor Henry on the instructions of the AER in the Henry 2009 and Henry 2014 Reports. Henry performed regression analysis on the data of the weekly returns of nine Australian energy firms. He concluded that the majority of the evidence suggested that the point estimate for the equity beta lay in the range 0.3 to 0.8. He considered that it was difficult, given the differences in sample periods and sizes underlying the various individual estimates, to pin down a value for the beta of a "typical firm". However, within the range 0.3 to 0.8 the average of the ordinary least squared estimates for the nine firms was 0.5223. Table 2 reflecting that data in the Henry 2014 Report presents beta estimates for the individual firms over the longest estimation period, using a weekly return interval.

741 The AER reviewed various different regression permutations from the Henry report. It concluded that Henry used credible econometric techniques and incorporated robustness checks for data outliers, thin trading and parameter instability in his analysis. The AER considered that Henry's 2014 Report indicated a best empirical estimate of approximately 0.5 for the BEE. This was because most of his estimates were clustered around 0.5, as shown in the following graph appearing at p 3-413 of Attachment 3 to the Ausgrid Final Decision:

Figure 3.27 Equity beta estimates from Henry's 2014 report (average of individual firm estimates and fixed weight portfolio estimates)



742 This graph featured significantly in the submissions of PIAC.

743 The AER also considered a range of other empirical evidence on the equity beta, including a report from Grant Samuel & Associates, *Envestra: Financial services guide and independent expert's report*, March 2014 which estimated equity betas for the sector based on various data of 0.42 to 0.64. That material is tabulated in eg the Ausgrid Final Decision, Attachment 3 – Rate of Return at pp 3-417 to 3-418.

744 Upon careful review of the AER Final Decisions, it does not appear that, when it considered evidence of equity beta estimates of energy companies operating in foreign countries, that material was used as the primary determinant of the equity beta range or point estimate. The AER considered this evidence provided some limited support for an equity beta point estimate towards the upper end of the AER's empirical range.

745 When it came to consider the Black CAPM, the AER recognised that the theory underlying the Black CAPM implies that it may predict a higher return on equity than the SL CAPM for firms with a beta less than 1.0. It was, at least in part, prompted by that when the AER has had regard to this theory by selecting an equity beta above the empirical estimates implied from the Henry 2014 Report.

746 The AER's broad stepping back then to weigh (in a practical way) the various factors led it to the empirical studies. It thought there was an extensive pattern of support for an empirical equity beta within a range of 0.4 to 0.7, despite Henry in 2014 reporting a range of 0.3 to 0.8, because averages of individual firm estimates and fixed weight portfolio estimates were more likely to be reflective of the BEE. Using this approach, the empirical estimates showed a consistent pattern of support for an empirical equity beta range of 0.4 to 0.7.

747 Then the AER, noting that the Henry 2014 Report suggested a best empirical equity beta estimate of approximately 0.5, considered that other information pointed towards a higher estimate. It looked again at the empirical estimates of international energy networks, which ranged from 0.3 to 1.0, giving some limited support for an equity beta point estimate towards the upper end of its range. It noted the "theory", or at least the likely outcome, of the Black CAPM was consistent with an equity beta point estimate towards the upper end of the range. So it reached an equity beta of 0.7. That was then reviewed by the broader steps 4 to 5 of the RoR 2013 Guideline methodology referred to above.

748 The Network Applicants and the Vic/SA Interveners mounted a sustained attack on that conclusion, including its observation (for example in the Ausgrid Final Decision, Attachment 3 – Return on Equity at p 3-59) that:

> Contrary to what some submissions indicated, there is no compelling evidence that the return on equity estimate from the SLCAPM will be downward biased given our selection of input parameters.

749 The Tribunal is not persuaded that the AER's estimate of an equity beta of 0.7 is understated and a wrong finding of fact, despite those forceful submissions. As an overall approach, the AER appears to have examined and considered relevant material, including that presented by the Network Applicants. It is clear enough that other minds might have treated the negative bias in the equity beta in the SL CAPM differently. It is clear that the Black CAPM would, depending on the input data, have produced a higher return on equity than the SL CAPM; using equity beta of 0.7 and MRP of 6.5 percent, the outcome would be 8.1 percent. It is clear also that other data might have supported a conclusion that the equity beta might have been estimated at a different number (PIAC says at 0.5). It is clear that there is room for debate about the significance of international empirical data. The Tribunal has had careful regard to that material. Much of it was referred to in the course of the submissions of the Vic/SA Interveners, including the analysis in the Henry 2014 Report of different combinations of the available Australian data, over time and with different entities. In the course of those submissions, it was pointed out why it was said the various sources of data might not be indicative of a clear result. Then the question was asked: what should have been done? Various alternatives were canvassed.

750 It is one matter to show reasons why the AER's analysis might have been undertaken in another way, but it is another matter to show that the other way would produce an outcome which is *the* correct outcome rather than an alternative and also rational outcome. It is important, in that regard, to note that the various sources of information and analysis and the alternative models and their inputs, will not routinely present a scientific and inevitably correct outcome. All experts agree with the AER that the various models have flaws, that the particular data sources do not automatically or mathematically convert to a precise number applicable to the BEE. For instance, the low beta bias on the SL CAPM does not mean that the Black CAPM will necessarily generate a more reliable outcome. Consequently, the more precise adjustments to the SL CAPM suggested by the Network Applicants in their submissions, whilst they are capable of showing one way in which the SL CAPM would be

adjusted, do not necessarily represent the best or only way to make the appropriate adjustment. The fact that the AER did not "run" the Black CAPM, the Fama-French Model or DGM with its own inputs does not demonstrate that it did not have regard to the various expert reports presented by the Network Applicants, or to the outcomes generated by those experts' use of those models.

751 Similarly, in the Tribunal's view, the fact that the AER set out – in accordance with the RoR 2013 Guideline – to:

(a) seek financial models which were "fit for purpose" in the sense that simple approaches should be promoted over complex ones where possible; and

(b) use estimation methods and financial models that are "consistent with well accepted economic and finance principles and informed by sound empirical analysis and robust data".

does not support that conclusion that its estimated equity beta of 0.7 was incorrect. It did not assume that its approach would in those respects necessarily result in a reliable estimate of equity beta without reference to a range of material.

752 The Network Applicants also criticised the AER's reasons for not using either the Black CAPM or the Fama-French Model more directly as erroneous. That does not tend to demonstrate that the AER made the error or errors of fact asserted. As the Network Applicants assert, all models are sensitive to methodological and input choices. It does not tend to demonstrate the primary factual error asserted to show that the AER might have adopted other methodological choices (relating to data sources and estimation techniques) which it might have used in other models. But the fact that it did not do so does not, in the view of the Tribunal, support the necessary step of showing that the estimated equity beta itself was wrong.

753 The Network Applicants produced a figure in their submission showing a range of returns on equity from the SFG Report *The required return on equity for the benchmark efficient entity*, 13 February 2015 (the SFG 2015 Report). It shows the 7.1 percent selected by the AER (from the SL CAPM with the AER parameter estimates) and a range of 9.3 percent to 10.3 percent (from the other three models and the SL CAPM with other parameter estimates selected by SFG). It is said that the AER could not disregard that sort of outcome simply because it did not reflect the results of its preferred model. But the Tribunal does not

consider that the AER simply proceeded on that basis; its reasoning is set out in a little detail above. It shows that the AER's approach was more complex and careful than simply adopting the SL CAPM output.

754 As to the equity beta estimate itself, the primary criticism of the Network Applicants is that, having identified a range for equity beta of 0.4 to 0.7 as the "primary range", the AER then only considered other relevant material to select within that range and effectively discounted material which suggested an equity beta outside that range. The Tribunal does not accept that the AER chose to ignore empirical material suggesting an equity beta outside its starting range; the reasons of the AER in its Final Decisions show that it did consider all the empirical evidence. It was alert to the potential problems arising from the data source confined to the small number of publicly listed Australian energy network businesses. It is not shown to have failed to appreciate the terms of the Henry 2009 and 2014 Reports. It is not shown to have ignored the proposition of SFG (in several reports) that the data set for estimating equity beta should not be so confined to those businesses, or to have ignored empirical evidence of international energy network businesses.

755 The Network Applicants further contended that the AER erred in concluding that adopting the top of the AER's range would overcome problems with the SL CAPM indicated by the theory of the Black CAPM. They point out that the theory of the Black CAPM does not say anything about the equity beta to be used in the SL CAPM, but that theory of the Black CAPM says that the SL CAPM formula should not be used and that the Black CAPM formula should be used in its place. One of the reasons for the low beta bias in the SL CAPM is said to lead to the Black CAPM being preferable. That is said to be fortified by the AER saying that it does not know by how much it needs to adjust its equity beta estimate to account for the issues identified and said to be corrected by the Black CAPM theory. The AER noted, at Attachment 3 to the Ausgrid Final Decision at p 3-426, that:

> We consider the theoretical principles underpinning the Black CAPM demonstrate that market imperfections could cause the true (unobservable) expected return on equity to vary from the SLCAPM estimate. For firms with an equity beta below 1.0, the Black CAPM may predict a higher expected return on equity than the SLCAPM. We use this theory to inform our equity beta point estimate, and consider it supports an equity beta above the best empirical estimate implied from Henry's 2014 report. However, while the direction of this effect may be known, the magnitude is much more difficult to ascertain. We do not consider this theory can be used to calculate a specific uplift to the equity beta estimate to be used in the SLCAPM. This would require an empirical implementation of the Black CAPM, and we do not give empirical evidence from the Black CAPM a role in determining the equity beta for a benchmark efficient entity (as discussed under step two of our foundation model

approach in section 3.4.1).

756 But it does not follow, as the Network Applicants submit, that the AER could not reasonably be satisfied that its equity beta estimate of 0.7, when used in the SL CAPM, will lead to a return on equity that contributes to the RoR Objective and that the AER's determination of its point estimate is highly arbitrary and is affected by errors in the interpretation of key evidence.

757 The Tribunal has, of course, carefully considered that assertion. As it has already observed, it is not satisfied that the AER's process of reasoning has led to an error of fact in selecting its foundation model. It has had regard, on the one hand, to the AER's reasons for selecting the SL CAPM as the foundation model and what the AER has said in response to the submissions of the Network Applicants, the Vic/SA Interveners and Ergon. It has had regard, on the other hand, to the submissions of those parties and the extensive material to which they have referred.

758 To confirm that the Tribunal has not overlooked the assertion, it is desirable to refer to the submissions concerning the use of international empirical data. This data was used by the Network Applicants to argue for a higher equity beta. PIAC argued that it was given too much weight by the AER.

759 The AER clearly identified its use of that data. It was treated with caution by the AER; in the Tribunal's view, that was appropriate for the reasons given by the AER.

760 The Network Applicants say that rather than simply providing "limited support" for the AER's estimated equity beta of 0.7, it should have been recognised as unequivocally supporting a higher equity beta.

761 The Tribunal shares the AER's view. It provides limited support for an equity beta higher than the 0.5 which the contemporary analysis of Australian empirical data by the Henry 2014 Report showed. To say it provides "limited support" for the selected figure is not erroneous. It does not reflect a misunderstanding of the data. It is simply to say that it is data, treated with caution, which assists in reaching the figure of 0.7.

762 As the conclusion of the submission of the Network Applicants shows, ultimately, it is necessary on this point for the Tribunal to be persuaded that an equity beta of 0.7 for a BEE

with a similar degree of risk to that of the Network Applicants (they did not distinguish between themselves for this purpose) was a wrong finding of fact.

763 For the reasons given, the Tribunal is not satisfied that the ground of review attaching the finding of fact represented by the estimation of the equity beta of 0.7 was in error, as asserted by the Network Applicants. Nor does the Tribunal consider that the exercise of any discretion by the AER involved in the process of decision making to reach that conclusion was incorrect, having regard to all the circumstances. That conclusion encompasses the grounds summarised in para 241(a),(b)(ii) and (iv) and (c) (at least partly), (d)(i) and (ii), (d), (f) and (g) of the Network Applicants' submissions. The attack on the MRP, and then more broadly the assessment of the return on equity of 7.1 percent in para 241(b)(i), (iii) and (v) are still to be considered, as are the grounds in para 241(d)(iii) and (h).

764 There is no doubt that, if such a factual error were made out, it would be material to the making of the decision. It is noted that, even if such an error of fact were made out, the Tribunal would have to turn to the question prescribed by s 71P(2a)(c) of the NEL, having regard to s 71P(2b)(d)(i), and by s 259(4a)(c) of the NGL having regard to s 259(4b)(d)(i).

765 It is not necessary for the Tribunal therefore to address in detail those provisions in relation to this topic. However, it observes that where the primary attack is upon a factual finding (such as the proper estimate of the equity beta), and the Tribunal is not persuaded that the asserted error of fact is made out, it is not immediately apparent how the criterion specified in s 71P(2a)(c) of the NEL and s 259(4a)(c) of the NGL might be satisfied by attacking an anterior discretionary decision feeding in to that finding of fact. That is not to say that the attack on an anterior factual finding or discretionary decision feeding in to that ultimate finding of fact may not be a reason, or the reason, why the ultimate finding of fact is found to be in error. But that has not been found to be the case on this aspect of the contentions.

766 Before addressing the remaining grounds of attack of the Network Applicants, it is convenient to address PIAC's contention that the AER erred by not estimating equity beta at 0.5 with a consequential adjustment to the rate of return conclusion.

767 The Tribunal has found that, notwithstanding s 71O(2) of the NEL, PIAC is entitled to maintain its ground of review, in relation to each of the Network NSW Decisions.

768 However, the Tribunal does not consider that the PIAC contentions demonstrate error on the part of the AER, despite the apparent attraction of its position by reason, in part, of it being

straightforward. That is, it says, that having regard to s 16(1)(d) of the NEL, and the AER's observation (based mainly upon the Henry 2009 Report) that the empirical estimates justified a point estimate for equity beta of 0.55 (as it recorded in its explanatory statement to the RoR 2013 Guideline, and the AER's selected range of 0.4-0.7 for equity beta, it should have selected an equity beta of 0.5, roughly representing mid-point in that range.

769 The contention is based in part upon the Henry 2014 Report (available only after the RoR 2013 Guideline was published) with its clustering of estimates around 0.5.

770 It cannot be said that the AER did not have regard to that data; it is referred to in some detail in the Final Decisions. PIAC says more weight should have been given to that conclusion as it is more contemporary. It also says the Henry 2014 Report was based on a larger data set, and has a clearer clustering, than was previously the case, especially if the "outliers" are removed at the extremes.

771 The AER recognised that the Henry 2014 Report produced an empirical estimate of about 0.5 for equity beta. PIAC says that, in the circumstances, should have been adopted.

772 The Tribunal has accepted that, in principle, the AER was entitled to adopt the process as laid out in the RoR 2013 Guideline. Indeed, PIAC's submissions support that, including the use of the foundation model concept and the selection of the SL CAPM as the foundation model. Once the AER, on that basis (and reasonably in the view of the Tribunal) selected a provisional range of 0.4-0.7 for equity beta, it was also entitled to have regard to the expert advice that the SL CAPM had, in the circumstances, a low equity beta bias. It was entitled to have regard to other models, and a range of other data. Indeed, it was required to do so.

773 However, PIAC says that it was in error, even having regard to that material, to adopt the 0.7 estimate rather than the 0.5 estimate.

774 Its starting point is to criticise the way the AER used the theoretical principles of the Black CAPM to assist in its selection of its point estimate. It describes the AER as using the "theoretical principles" of the Black CAPM to inform its selection of the point estimate for beta within its "reasonable range" because the SL CAPM may underestimate with return on equity for firms with equity betas less than one. PIAC criticises the AER's view that the Black CAPM would be expected to warrant an upward adjustment (of some unspecified magnitude) to the best empirical estimates derived in accordance with the SL CAPM. That, it says, is found in the Final Decisions and in the RoR 2013 Guideline.

775 PIAC says the analysis of the AER to justify that approach is an exercise in econometric reverse-engineering; and was to assess whether the AER might be able to justify making an adjustment from any point within the 0.4-0.7 range to the upper bound of that range.

776 The PIAC submission then refers to the AER's expressed concerns about the reliability of the estimates from the Black CAPM generally. It suggests the AER's confidence in the validity of the Black CAPM had "waned significantly" between the RoR 2013 Guideline and the Final Decisions.

777 The following step in PIAC's submission is that, in the circumstances, the AER had no proper basis on which it, acting reasonably and applying its own estimation methods rigorously, objectively and transparently, could justify making any upward adjustment from the best empirical estimate of 0.5 on account of the "theory" of the Black CAPM, even if it accepted that the SL CAPM had a low equity beta bias. It says that having the Henry 2014 Report and the empirical analysis it contained, it was inconsistent with the RoR 2013 Guideline for the AER to adhere to its approach of first affording itself a very sizeable margin of regulatory discretion and then relying on the "theory" of the Black CAPM to make an arbitrary adjustment from the best empirical estimate of 0.5 to the top end of that range.

778 PIAC accepts that the AER could have regard to overseas empirical estimates as a subsidiary consideration to inform its provisional point estimate of equity beta. At the Final Decisions stage, the overseas estimates considered by the AER lay in the range 0.3-1.0. The AER said that provided some limited support for an equity beta estimate towards the upper end of its empirical range. But, PIAC says, the AER does not appear to have taken account of the improved statistical reliability of the Henry 2014 Report estimates and to have drawn the logical conclusion that the overseas empirical estimates should have been given less weight than they had been given at the RoR 2013 Guideline stage.

779 As with the submissions of Networks NSW, supported by the Vic/SA Interveners and Ergon (although differently focused), the Tribunal can readily understand PIAC's reasons for urging error on the part of the AER. However, for much the same reasons, it has not taken the step of concluding that the AER was in fact in error in finding that the proper point estimate was 0.7 for equity beta. There are reasons why it might have chosen another point estimate. But the Tribunal accepts that the AER was entitled to start with a range. Upon reviewing the whole of the material before the AER, the Tribunal however is not satisfied that that material does not support a conclusion that the SL CAPM provided a low equity beta bias. When,

therefore, it comes to the selection of a point estimate, and having regard to the range of data available to the AER, the Tribunal must consider whether it is satisfied of the correctness of an alternative to that adopted by the AER. The short answer is that it is not so satisfied.

780 In the course of the PIAC submissions, there was some focus on s 16(1)(c) of the NEL and r 6.5.2(e)(3) of the NER requiring the AER to have regard to relevant inter-relationships between the constituent components of a reviewable regulatory decision. In that regard, the Tribunal notes that the AER in determining the rate of return adopted a common 10 year term for estimating the risk-free rate, the MRP, and the return on debt.

781 PIAC says, in that context, that there is no explanation for why the upper range figure of 0.7 for equity beta was selected, and no satisfactory assessment of the comparative elements of the rate of return on equity and the rate of return on debt. Nor, it says, has the AER explained satisfactorily why its selected figure of 0.7 as the value for beta will contribute to the achievement of the NEO to the greatest degree: s 16(1)(d)(i) of the NEL. The AER has addressed those matters in relation to equity beta in Attachment 3 to the Ausgrid Final Decision at pp 3-128 to 3-132; similar passages appear in the equivalent attachments to the other relevant Final Decisions.

782 There were no direct submissions on how an (assumed) failure on the part of the AER of that character would itself demonstrate a ground of review before the Tribunal under s 71C(1)(of the NEL. Once the Tribunal has reached the view that there is no error of fact in the AER's findings (as they are put in issue) or other error of the character identified on those sections, its role is to determine whether to set aside or vary the AER decision having regard to s 71P(2a) and (2b) of the NEL.

783 Having reached the view, at least to the point of considering the contentions thus far, that there is no ground of review made out on the part of the AER, the Tribunal is not required to consider the issues otherwise raised (relevantly, for PIAC's contentions) under s 71P(2a) and (2b) of the NEL. In particular, the Tribunal is not of the view that there was an error of fact in the AER's selection of the equity beta at 0.7.

784 If the alternative in PIAC's submission is considered, namely, that there was error in selecting the equity beta at 0.7 because, either as a matter of fact that equity beta would not produce the preferable regulatory decision (as defined in s 16(1)(d) of the NEL), the proposition attracts different consideration.

785 The consumer submissions considered by the AER (as listed in footnote 1715 of Attachment 3 to the Ausgrid Final Decision at p 3-433 and handed up to the Tribunal in the course of submissions) show very considerable support for a lower equity beta. The AER was alive to those submissions. Many were reflected in the course of the Tribunal's consultation under s 71R(1)(b) of the NEL (and s 261(1)(b) of the NGR).

786 It is one thing to criticise the reasoning of the AER as being superficial or slight because it did not cogently (at least in some views) explain why such submissions did not lead to a lower equity beta, and another to demonstrate that its conclusion therefore exposed a ground of review. Clearly the decision of the AER under s 16(1)(d) of the NEL is a complex one. It involves the balancing of all elements of the reviewable regulatory decision. Making the preferable regulatory decision does not require every element of the decision itself to be measured in that way.

787 Even if that were not correct, at least in relation to selecting the equity beta, the reference to that material does not show that a ground of review has been made out. As the Tribunal has discussed, the NEO and the RPP operate together. It is not the case that the NEO means that, where the long term interests of consumers is relevant, the RPP must be ignored or suppressed. The assumption in the regulatory scheme is that the long term interests of consumers is served by ensuring that monopoly infrastructure providers are permitted to recover at least the efficient costs of providing those services and, broadly speaking, the AER's role is to fix those efficient costs by reference to the proxy of the efficient costs of the competitive market. That is, of course, an oversimplification. But, as the AER said (for instance, in Attachment 3 to the Ausgrid Final Decision at p 3-434), it applied a "regulatory judgment" in that context to best satisfy the RoR Objective, and it considered that its conclusion is consistent with the NEO/NGO and the RPP.

788 Despite the material to which the Tribunal was taken by PIAC, and its submissions, the Tribunal is not satisfied that the AER's regulatory judgment enlivened a ground of review.

789 The next finding of fact of the AER which it is necessary to address is the MRP.

790 Having regard to estimates of historical excess returns, the AER first used a baseline estimate of 6.0 percent. It then considered whether DGM evidence warranted any adjustment to that baseline. The DGM estimates provided a range of 7.5 percent to 8.6 percent. Having regard to that, the AER considered that it should take the top of the range for historical excess

returns of 6.5 percent. It then considered whether other evidence directed it to some other different MRP.

791 The Networks Applicants attacked each of those steps, both in their principal written submissions (including its Appendix F) and of course orally. They complain that the outcome of the DGM "had very little influence" on the MRP estimate and, on the other hand, undue weight was given to historical average excess returns. As well, they say the AER incorrectly analysed the range for the historical average MRP, by regarding it as suggesting the proper MRP would be found in that range rather than treating it merely as showing an average. That, they argue, meant that the AER did not allow for an MRP outside that range, even though prevailing market conditions had changed to justify a significantly higher MRP.

792 The estimate for the MRP of 6.5 percent was adopted in the RoR 2013 Guideline in December 2013, and was maintained in the relevant Draft Decisions and Final Decisions (in April and June 2015).

793 The Network Applicants asserted that there had been a significant change in market conditions over that period. The AER's DGM estimated range had altered from 6.1 percent-7.5 percent (as exposed in its *Better Regulation: Explanatory Statement – Rate of Return Guideline*, December 2013, at p 93) to 7.4 percent to 8.6 percent (JGN Final Decision at p 3-325 and the other relevant Final Decisions at June 2015 and April 2015 respectively). There had also been a significant fall in the risk free rate: Commonwealth Government Securities from about 4.2 percent to about 2.55 percent over the same period. It is the Network Applicants' contention that as the DGM analysis was that the MRP was not falling in lock-step with the risk free rate, but was increasing over that period, the return on equity should have been higher.

794 In support of their contentions, the Network Applicants say that:

(1) by a different DGM model construction and with different input assumptions, the DGM estimate should have been 8.73 / 8.84 percent rather than the range 7.4 to 8.6 percent;

(2) corrected historical excess returns showed an MRP of 6.56 percent rather than the 5.1 percent to 6.5 percent range;

(3) the "Wright approach", which was not used by the AER showed an MRP estimate of 9.00 / 9.11 percent; and

(4) the independent expert reports: SFG 2014 Report at 74 and 77 and Incenta Economic Consulting, *Update of evidence on the required return on equity from independent expert report*, May 2014 provided an MRP range of 6.93 / 6.91 percent and should also have been used by the AER.

795 It is said that the misapprehension of, or misuse or non-use of that data is a supplement to the primary contentions briefly summarised in the second preceding paragraph.

796 It is further said that the AER wrongly gave some weight to survey evidence when it should not have done so, and wrongly understood the "conditioning variables" so as to perceive (wrongly) that they supported its MRP estimate.

797 As to the "Wright approach", they assert that in Wright, *Review of Risk Free Rate and Cost of Equity Estimates: A comparison of U.K. Approaches with the AER*, 25 October 2012 there is the evidence of the historical average real market return as leading to a proper estimate of the MRP, and they argue that it was incorrect to use this analysis only as a cross-check on the estimated overall return on equity.

798 The evidence available to the Tribunal indicates that the DGM as applied by the AER estimates the MRP range for the two months up to February 2015. The discussion in the Final Decisions (eg Attachment 3 to the Ausgrid Final Decision at pp 3-125 to 3-127) explains why the AER considered its outcome at 7.5 percent to 8.6 percent as being too high in the (then) current market. It is a matter of debate whether those reasons are correct, but it is not apparent to the Tribunal that they are incorrect.

799 The AER's process then was to consider a range of other material: historical excess returns, survey evidence, conditioning variables and recent Australian regulatory decisions. It then made a decision based upon its assessment of the whole of that material: see eg Attachment 3 to the Ausgrid Final Decision at pp 3-115 to 3-120.

800 As the Tribunal said in *Re WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12 at [105]-[110], there is no single econometric modelling or other financial technique which can particularly and correctly provide a figure for the forward-looking estimate of MRP. The analysis of the individual source material balanced by the AER will not of itself show that the evaluative decision of the AER was a wrong finding of fact, or reflected the wrong exercise of a discretion.

801 The Tribunal has carefully considered the material to which the AER had regard, including the respects in which (as the Network Applicants contend) some elements of that material might point to a different outcome on the MRP than the AER adopted. It has considered how the AER used that material, as exposed by its reasons in the Final Decisions. The Tribunal is not satisfied that the AER has wrongly taken into account averages from the historical data. Nor is the AER's use of the DGM outputs inappropriate: there is a difference of experts' views about that but the difference of views does not demonstrate error of itself. The use of the survey evidence is not seen by the Tribunal as inappropriately too much. The AER recognised that there was a fall in the risk free rate, but decided that despite the apparent relative growth in dividend yields, as they were very close to the long term average and had been for some time, the fall in the risk free rate did not support a higher MRP. The AER did refer to the Wright approach: see eg Attachment 3 to the Ausgrid Final Decision at Section C.4.1, and is not shown to have misunderstood it. Similarly, the AER referred to the expert reports to which the Network Applicants referred to in their submissions on this topic, and explained why it did not regard those reports as persuasive.

802 As the Tribunal has elsewhere noted, as a merits review process, it may reach a conclusion on a question of fact different from that of the AER. Provided the fact is a material one to the outcome of the decision under review, a ground of review will then be established. Like the AER, the Tribunal is called upon (as here) to assess the respective weighting of pieces of information, and to assess the respective competing views of experts. The mere existence of competing views or of reasons why a particular piece of information might point in one or other direction will not of itself mean that the Tribunal should or will reach a view different from that of the AER. That is particularly so where there are competing expert opinions. In the universe of the NEL and the NGL (as in other areas of decision making) it is a feature of the qualitative decision making process that competing materials, including competing expert opinions, may be available to the AER. It must make its decisions under, and in accordance with, the legislative and regulatory instruments having regard to that material. So too, on review, must the Tribunal.

803 On this topic of the MRP, the Tribunal does not conclude that the AER's decision was factually erroneous. It selected an available starting point. It addressed the relevant material. It applied its own experience to the qualitative findings to be made, and it sought to cross-check them with other sources of information. By following the same process, but also in the light of the detailed and thorough submissions on behalf of the Network Applicants and

PIAC, the Tribunal has not come to a firm but different conclusion. It does not consider that the AER's selection of the MRP at 6.5 percent was an error of fact. Nor (for the reasons already given) does it consider that the other findings attached in the submissions, as set out in in the above quoted [241(b)] of the Network Applicants' submissions were errors of fact.

804 It follows that the grounds of review there specified, and the complaints in [241(c)] of those submissions are also not made out.

The Unreasonableness of the Final Decisions

805 The remaining grounds of review of the Network Applicants are based on the asserted unreasonableness of the decision, as specified in [241(d)-(h)] of that submission.

806 The submission identifies four matters: the misunderstanding, and therefore the misuse, of the Wright approach as a cross check; secondly, the misuse of the Grant Samuel 2014 Report (especially in the light of the Grant Samuel, *Response to AER Draft Decision*, January 2015 (the Grant Samuel 2015 Letter); thirdly, other independent expert reports, being those discussed in Attachment 3 to the Draft Decisions concerning JGN at pp 3-91 to 3-92 and concerning the DNSPs at the more or less similar pages in the Attachments 3 to their respective Draft Decisions; and finally the misunderstanding of the broker reports considered by the AER.

807 To an extent, these contentions of the Network Applicants stand or fall with their earlier contentions. They are nevertheless a broader and qualitative attack on the correctness of the AER Final Decisions.

808 The Tribunal does not consider that the AER failed to have regard to the available financial models to inform its decisions on the appropriate return on equity. It has produced as part of its contentions an analysis of the available data sources. That data was considered as part of its cross-checks (steps 4 and 5) in its methodology. The line through the ranges provided by that data showing the AER decision appears to "fit", that is it appears as a reasonable and sensible one. Moreover, it appears at, or close to, the mid-point of the ranges provided by the source providers, other than the proposals of the service providers (whose range is from and above the line) and the "stakeholders" (whose range is from just above the line and then in large measure below the line).

809 In short, whilst it is possible to use the data sources to which the Tribunal was referred by the Network Applicants (including the outcomes of the DGM) to arrive at a different and

somewhat higher figure for the return on equity, that does not persuade the Tribunal that the AER's decision was unreasonable, or that its process of addressing that data involved any error of the character to make its outcome unreasonable. Part of the contentions was to criticise how the AER considered particular pieces of information. To the extent that those contentions are critical of the exercise of a discretion by the AER, it is sufficient to say that the Tribunal does not take the step which the Network Applicants invited it to take.

810 It is desirable to add a little more in relation to the Wright approach. As an approach or process, the AER appears to have followed it. That is, it estimated the MRP, the equity beta, and the risk free rate to arrive at its return on equity estimate. It is correct to say that the AER used a range for equity beta in that process, rather than a point estimate. The Tribunal does not regard that as illogical or as having misapplied the Wright approach in a way which renders its decision on the return on equity unreasonable.

811 It is also necessary to note that the AER, when considering the return on equity estimates from broker and valuation reports that included both uplifts and adjustments for dividend imputation, was well aware of those differences and took them into account.

812 The AER's cross-checks included an analysis of the spread between debt risk premium (the cost of debt less the risk free rate) and equity risk premium. That was an obvious and appropriate form of cross-check. It supports the conclusion of the AER. It does not tend to suggest that the overall return on equity estimate is too low. The various broker reports and revaluation reports do not include any consideration of the appropriateness of the outcomes which they support with the market data on debt premiums.

813 For those reasons, the Tribunal does not find any grounds of review are made out in relation to the AER's return on equity estimate.

814 There is one final matter to mention. The AER raised the issue of whether, by reason of s 70O of the NEL, the Vic/SA Interveners were entitled to make the attack on the return on equity estimate in relation to the Henry material concerning the equity beta. As the Network Applicants adopted those contentions, and they were made and maintained before the AER by the Network Applicants, the Tribunal has not needed to rule on that contention.

RETURN ON DEBT

INTRODUCTION

815 In making its decisions that are challenged under this heading the AER was required to give effect to the NER and NGR as altered by the 2012 Rule Amendments. They included the introduction of the RoR Objective that informs both the rate of return on equity (as canvassed in the preceding section of these reasons) and the rate of return on debt which consists of two components – a risk free rate (or base rate) component and a risk premium over the base rate. The risk premium is called the debt risk premium (DRP).

816 As observed, the 2012 Rule Amendments now require that the allowed rate of return is to be determined such that it achieves the RoR Objective. The objective is that the rate of return for a regulated service provider is to be commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the regulated service provider in respect of the provision of standard control services/reference services: NER r 6.5.2(b) and (c); NGR r 87(2) and (3). The relevant rules now require that return on equity is to be estimated such that it contributes to the achievement of the objective and in estimating the return on equity, regard must be had to prevailing conditions in the market for equity funds: NEL 6.5.2(f) and (g); NGR r 87(6) and (7).

817 In reaching its decisions under this heading, the AER introduced, uncontentiously, a new methodology to determine the rate of return on debt: the trailing average approach. As explained further below, it replaced the on-the-day approach applied by the AER in relation to the previous regulatory period.

818 The on-the-day approach estimates the allowed return on debt based upon prevailing interest rates at the start of the regulatory period. It is a forward-looking approach which applies the then prevailing rate across the period. At each regulatory determination, the allowed return on debt is reset based upon prevailing interest rates at the start of the new regulatory period.

819 The “trailing average” approach estimates the allowed return on debt based on a trailing average of interest rates over a historical period. To obtain the trailing average, each year a component of debt at the prevailing interest rate is added, and the component of debt for the oldest year in the trailing average is removed. It too is a forward-looking approach in that each addition to the average occurs at the prevailing interest rates.

820 The impact on the BEE, rather than on individual service providers, is in order to incentivise and reward efficient practices, rather than seeking to make allowances for the impact on particular providers, consistently with the incentive based regulation reflected in the regulatory framework.

821 The issue of concern is how the AER's new approach was to be adopted or transitioned. The AER considered that a BEE with efficient financing practices would have staggered borrowing and that it would be likely to have hedging contracts which it would need to unwind in moving to the new approach. Consequently, the AER adopted a 10 year transitional period which was annually adjusted to shift to this approach from the previous on-the-day approach.

822 It is the selection of that transitional option, including calculation and implementation of the transitional period, which is the subject of this dispute.

823 Each of the following applicants challenged the AER's decisions on return on debt: the three Networks NSW entities, ActewAGL, JGN and PIAC (the latter only in relation to the AER's Network NSW decisions). The Vic/SA interveners and Ergon also raise issues in relations to the AER's return on debt decisions.

Networks NSW's challenge

824 In their regulatory proposals, Networks NSW proposed the immediate application of the trailing average approach.

825 Networks NSW submit that the AER's approach involved a series of errors in terms of s 71C(1) of the NEL, because it:

(1) used as the relevant BEE a regulated efficient entity, rather than an unregulated efficient entity;

(2) misapplied the concept of a regulated efficient entity in its assessment, in particular that it thereby required transitioning rather than direct application; that it used the prevailing 2014 rate for the future, rather than periodically re-setting it; and because the trailing average approach did not require the transitioning imposed by the AER:

(3) did not reflect the fact that Networks NSW had debt facilities comprising a staggered portfolio of fixed rate debt without hedging;

(4) concluded therefore the debt management strategies of Networks NSW were inefficient;

(5) failed to have regard to the way Networks NSW had managed its debt facilities in the past having regard to the life of its assets;

(6) concluded the transitioning of the trailing average approach as proposed by Networks NSW did not represent the efficient financing costs or debt management practices of a BEE;

(7) did not take into account that there were or may be other characteristics of a BEE;

(8) concluded there was no "windfall" gain to Networks NSW by the immediate introduction of the trailing average approach with the transitioning process it imposed and that reference to any earlier windfall gain could not inform the current AER decision;

(9) inappropriately selected a simple average of broad BBB rated debt data series published by the Reserve Bank and Bloomberg; and

(10) departed from its RoR Guideline.

ActewAGL's challenge

826 While ActewAGL and Networks NSW made joint submissions on the topic of return on debt, there are some differences between them in the detail of their respective challenges to the AER's approach which are explained as these reasons are developed.

PIAC's challenge

827 PIAC also complains of the AER's transitional introduction of the rate of return on debt, insofar as it applies to Networks NSW, but from a different perspective. It says the transition should have commenced from 2015-2016 rather than 2014-2015 to comply, or to better comply, with r 6.5.2 of the NER, especially where the on-the-day rates at the time of, and leading up to, the date of its decision were declining. On PIAC's analysis, the consequential allowances over the regulatory period would be very much less than the effect of the AER's decision.

JGN's challenge

828 It is accepted that while the return on debt is calculated based on the risk free rate and DRP, it is not possible to hedge the DRP component of the return on debt because the level of DRP in respect of a tranche of debt is incurred at the time of issue.

829 JGN says that, as a result, the AER's decision to apply its transition methodology to both the base rate and the DRP components of the return on debt was inappropriate and that it should only have applied the transition method to the base rate. JGN submits that the AER's decision to include the DRP in the transition was inconsistent with r 87 and r 76 of the NGR, including because it was not appropriate to undercompensate for the efficient return on debt in order to 'clawback' an alleged windfall gain in the last regulatory period when the DRP was high.

830 Additionally, JGN submits that:

(1) the AER's measurement of the return on debt for all future measurement periods is inflexible and imprudent as there is uncertainty around when refinancing will be required;

(2) the AER incorrectly determined that JGN's credit rating should be BBB+ not BBB;

(3) the AER should have allowed it to revise its proposal to the AER under r 60 of the NGR.

831 While JGN generally makes submissions similar to those of the Networks NSW and ActewAGL on this topic, there are differences in its approach concerning the AER's application of the transition to the base rate and its use of the trailing average fixed principle.

The Vic/SA Interveners' challenge

832 The Vic/SA Interveners' challenge largely reflect those of the Network Applicants.

Ergon's challenge

833 Ergon raised as an additional ground of review that the AER made an error of fact in finding that a simple trailing average should be preferred over a Post Tax Revenue Model (PTRM) weighted trailing average in estimating the allowed return on debt.

The AER's Final Decisions

834 The AER's Final Decisions estimated the allowed return on debt based on a trailing average of interest rates over a moving historical period. Each year, prevailing interest rates from each new year are added to the trailing average, and interest rates from the last year of the trailing average "fall out" of the trailing average.

835 There is no disagreement among the parties that the trailing average approach is an acceptable methodology and is available under the NER and NGR. The disagreement lies within the transition. That is the topic which primarily requires the Tribunal's attention.

836 In arriving at its Final Decisions, the AER investigated four options for determining the return on debt. Those options appear in the Attachment 3 to the Ausgrid Final Decision at p 3-145 as follows:

- Option 1 - Continue the on-the-day approach
- Option 2 - Start with an on-the-day rate for the first regulatory year and gradually transition into a trailing average approach over 10 years
- Option - Hybrid transition. Start with an on-the-day rate for the base rate component and gradually transition into a trailing average approach over 10 years. This would be combined with backwards looking trailing average DRP (that is, a base rate transition only).
- Option 4 - Adopt a backwards looking trailing average approach (that is, no transition on either the base rate or DRP components of the return on debt).

837 The AER adopted Option 2 and explained its application at p 3-145 of Attachment 3 to the Ausgrid Final Decision as follows (without footnotes):

> Applied to Ausgrid's distribution determination, this means our return on debt approach is to:
>
> > estimate the return on debt using an on-the-day rate (that is, based on prevailing interest rates) in the first regulatory year (2014-15) of the 2014–19 period, and
> > gradually transition this rate into a trailing average approach (that is, a moving historical average) over 10 years using a forward looking approach.
>
> This means for the 2014–15 regulatory year, the return on debt is based on prevailing interest rates in 2014 (during Ausgrid's debt averaging period) before the start of the 2014–19 period. For subsequent regulatory years, the gradual transition will occur through updating 10% of the return on debt each year to reflect prevailing interest rates (during Ausgrid's debt averaging period) in each year.
>
> In practical terms, our return on debt approach means that an on-the-day rate shortly before the start of the 2014–19 period is applied to:

- 100% of the debt portfolio in the calculation of the allowed return on debt for the 2014–15 regulatory year

- 90% of the debt portfolio in the calculation of the allowed return on debt for the 2015–16 regulatory year, with the remaining 10% updated to reflect prevailing interest rates during Ausgrid's averaging period for 2015–16

- 80% of the debt portfolio in the calculation of the allowed return on debt for the 2016–17 regulatory year, with 10% based on prevailing interest rates during Ausgrid's averaging period for 2015–16, and 10% updated to reflect prevailing interest rates during Ausgrid's averaging period for 2016–17, and

- so on for the subsequent regulatory years.

After the 10 year transition period is complete, the return on debt is a simple average of prevailing interest rates during Ausgrid's averaging periods over the previous 10 years.
… … …
This debt approach is consistent with the approach we proposed in the Guideline and adopted in the draft decision. In the Guideline, we based our transition on the approach recommended by the Queensland Treasury Corporation (QTC). We refer to this as 'the QTC approach'.

838 The AER considered this approach to be the best way forward because as it explained in Attachment 3 to the Ausgrid Final Decision at (at p 3-148):

We are satisfied our return on debt approach contributes to the achievement of the NEO, the allowed rate of return objective and is consistent with the revenue and pricing principles. This is because it:

- Has regard to the impact on a benchmark efficient entity of changing the method for estimating the return on debt/

- Promotes efficient financing practices consistent with the principles of incentive based regulation/

- Provides a benchmark efficient entity with a reasonable opportunity to recover at least the efficient financing costs it incurs in financing its assets. And as a result it:

    - Promotes efficient investment, and
    - Promotes consumers not paying more than necessary for a safe and reliable network/

- Avoids a potential bias in regulatory decision making that can arise from choosing an approach that uses historical data after the results of that historical data are already known /

- Avoids practical problems with the use of historical data as estimating the return on debt during the global financial crisis is a difficult and contentious exercise.

839 Option 2 was supported broadly by consumer representatives, energy retailers, major energy users and the AER's consultants Chairmont, *Cost of debt: Transitional analyses,* April 2015 (Chairmont Report) and Lally, *Transitional arrangements for the cost of debt,* November 2104 (Lally 2014 Report) and Lally, *Review of Submissions on the cost of debt, April 2015* (Lally 2015 Report). Option 2 was also supported by CitiPower, Powercor and SAPN. It was initially also supported by Jemena Electricity Networks, JGN and United Energy, which later changed their support to Option 3.

840 Option 4 was supported by Ausgrid, Essential, Endeavour, TransGrid, ActewAGL and Directlink.

841 In short, the AER adopted Option 2 as the entirely forward-looking approach. As its reasons indicate, that involved setting a debt portfolio for the BEE at the commencement of the regulatory control period, and then replacing 10 percent of the portfolio with the prevailing interest rate at that time. It says that the process provides and maintains incentives on service providers to meet or beat the performance of the BEE. It also says that it is an appropriate option because it did not incorporate any historical rates decided on a backward-looking basis, and it created no windfalls for either service providers or consumers.

842 The AER says that its approach involved no error, as the very diversity of the contentions by service providers demonstrates that its approach was reasonably open to it.

843 It has separately addressed the issues concerning credit rating and data series (Networks NSW and JGN), the selection of averaging periods and whether the transition process should be "locked in" (JGN), how the trailing average should be determined (Ergon), and the commencement year for the introduction of the trailing average approach (PIAC).

844 There is also an issue about whether JGN may make its contention in its present terms, having changed its position from an initial support of Option 2.

845 The AEMC made its 2012 Rule Amendments in response to requests submitted by the AER and a group of large energy users (the Energy Users Rule Change Committee) for changes to the economic regulation of electricity and gas distribution services. As noted, the reforms included reference to the rate of return, both the return on debt and the return on equity. The rate of return has a substantial impact on the building block revenue of regulated service providers.

846 A key emphasis in the changes was regulatory transparency and consultation when determining the allowed rate of return. The AER accordingly conducted extensive consultation leading to the RoR Guideline. The 2012 Rule Amendments allowed consideration of alternative ways of determining the efficient debt servicing costs of network service providers. It was broadly agreed by stakeholders, including consumers, network service providers and the AER that the approach to estimating the return on debt could be improved.

847 It is not necessary to refer to the AEMC's detailed consideration leading to the 2012 Rule Amendments which pointed to, and accommodated, the introduction of the trailing average approach. As noted, that led to the AER publishing the RoR Guideline together with the RoR Explanatory Statement, and then adopting the trailing average approach.

848 The AEMC introduced the 2012 Rule Amendments, in broad terms, having regard to the following:

(1) the NEO, NGO and RPP are more likely to be met by a non-prescriptive flexible framework that allows the regulator to more accurately match debt conditions in the market for funds and that it should remain open to the regulator to consider how different sectors and businesses have different debt characteristics that lead to efficient debt financing;

(2) a one size fits all approach to setting a benchmark should not be considered as a default position;

(3) stakeholders would be engaged with on the development of an appropriate benchmark and with the latest evidence taken into account;

(4) the actual historical debt financing practices of network service providers could be added to the range of evidence that the AER considers in developing its methodologies, alongside the prevailing cost of funds, or a combination of both;

(5) the allowance must be consistent with the RoR Objective, which would consider the position of a BEE, rather than the actual cost of debt of the particular network service provider; and

(6) there should be no distinction between state-owned network service providers and other network service providers.

849 As noted above, the 2012 Rule Amendments included the introduction of r 6.2.8 of the NER, which required the AER to make and publish a number of Guidelines, including the RoR Guideline. It was relevantly in the following terms:

> (a) The *AER*:
>
> (1) must make and publish the *Shared Asset Guidelines*, the *Capital Expenditure Incentive Guidelines*, the *Rate of return Guidelines*, the *Expenditure Forecast Assessment Guidelines*, the *Distribution Confidentiality Guidelines* and the *Cost Allocation Guidelines* in accordance with these *Rules*; and
>
> (2) may, in accordance with the *distribution consultation procedures*, make and *publish* guidelines as to any other matters relevant to this Chapter.
>
> (b) A guideline may relate to a specified *Distribution Network service provider* or *Distribution Network service providers* of a specified class.
>
> (c) Except as otherwise provided in this Chapter, a guideline is not mandatory (and so does not bind the *AER* or anyone else) but, if the *AER* makes a distribution determination that is not in accordance with the guideline, the *AER* must state, in its reasons for the distribution determination, the reasons for departing from the guideline.
>
> (d) If a guideline indicates that there may be a change of regulatory approach in future distribution determinations, the guideline should also (if practicable) indicate how transitional issues are to be dealt with.
>
> …

850 Rule 6.5.2 of the NER has been set out in the section of these reasons dealing with the Return on Equity (excluding subparas (h)-(k) of r 6.5.2). It is partly repeated for ease of reference, as well adding as subparas (h)-(k):

> …
>
> **Allowed rate of return**
>
> (b) The *allowed rate of return* is to be determined such that it achieves the *allowed rate of return objective*.
>
> (c) The *allowed rate of return objective* is that the rate of return for a *Distribution Network service provider* is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the *Distribution Network service provider* in respect of the provision of *standard control services* (the *allowed rate of return objective*).
>
> (d) Subject to paragraph (b), the *allowed rate of return* for a *regulatory year* must be:

(1) a weighted average of the return on equity for the *regulatory control period* in which that *regulatory year* occurs (as estimated under paragraph (f)) and the return on debt for that *regulatory year* (as estimated under paragraph (h)); and

(2) determined on a nominal vanilla basis that is consistent with the estimate of the value of imputation credits referred to in clause 6.5.3.

(e) In determining the *allowed rate of return*, regard must be had to:

(1) relevant estimation methods, financial models, market data and other evidence;

(2) the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and

(3) any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

…

Return on debt

(h) The return on debt for a *regulatory year* must be estimated such that it contributes to the achievement of the *allowed rate of return objective*.

(i) The return on debt may be estimated using a methodology which results in either:

(1) the return on debt for each *regulatory year* in the *regulatory control period* being the same; or

(2) the return on debt (and consequently the *allowed rate of return*) being, or potentially being, different for different *regulatory years* in the *regulatory control period*.

(j) Subject to paragraph (h), the methodology adopted to estimate the return on debt may, without limitation, be designed to result in the return on debt reflecting:

(1) the return that would be required by debt investors in a benchmark efficient entity if it raised debt at the time or shortly before the making of the distribution determination for the *regulatory control period*;

(2) the average return that would have been required by debt investors in a benchmark efficient entity if it raised debt over an historical period prior to the commencement of a *regulatory year* in the *regulatory control period*; or

(3) some combination of the returns referred to in subparagraphs (1) and (2).

(k) In estimating the return on debt under paragraph (h), regard must be had to

the following factors:

(1) the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the *allowed rate of return objective*;

(2) the interrelationship between the return on equity and the return on debt;

(3) the incentives that the return on debt may provide in relation to capital expenditure over the *regulatory control period*, including as to the timing of any capital expenditure; and

(4) any impacts (including in relation to the costs of servicing debt across *regulatory control periods*) on a benchmark efficient entity referred to in the *allowed rate of return objective* that could arise as a result of changing the methodology that is used to estimate the return on debt from one *regulatory control period* to the next.

(As noted above in the Return on Equity section of these reasons, r 6.5.2 of the NER corresponds with r 87 of the NGR.)

851 As observed, the RoR Guideline, proposed the use of the trailing average portfolio approach to estimating the return on debt for the BEE. The RoR Explanatory Statement noted (at p 102) that the AER proposed to use a single definition of a BEE and specify a single approach to estimating the return on debt and considered that:

- that holding a portfolio of debt with staggered maturity dates was likely to be an efficient debt financing practice of the BEE under the trailing average approach;
- the regulatory return on debt allowance under the trailing average portfolio approach is, therefore, commensurate with the efficient debt financing costs of the BEE; and
- that the trailing average portfolio approach is consistent with the Rules, RPP and the NEO and NGO.

852 The RoR Explanatory Statement also states (at p 34) that a BEE is a pure play, regulated, energy network service provider, operating within Australia – one that was regulated under the NER or NGR. By way of support for the AER's preferred BEE, the RoR Explanatory Statement goes on to observe (without footnotes) that:

> … the benchmark efficient entity should be a regulated entity as:
>
> • The rules require that the risks associated with the provision of regulated services are considered in determining the required rate of return [see NER, rr. 6.5.2(c), 6A.6.2.(c); NGR, r.87(2) and (3)]. As regulated services are delivered by

regulated entities, it is logically consistent to consider the benchmark efficient entity as a regulated entity.

- Regulated service providers are typically not exposed to competition from other firms (in the case of distribution and some transmission businesses) or exposed to limited competition (in the case of regulated transmission businesses). The limited competition may alter the relevant (systematic) risk profile when compared with an unregulated firm.

- Regulated service providers are able to earn more stable cash flows relative to most unregulated businesses. These cash flows are regularly updated at resets to reflect required revenue (including changes due to shifts in demand and expenditure drivers) and therefore have similar business risks. Regulated service providers are also provided with some protection to their cash flows during regulatory control periods (e.g. pass through provisions and reopeners).

853 For reasons later explained, the views in above quoted passage from the RoR Explanatory Statement are not views which the Tribunal necessarily regards as correct.

854 The AER recognised that the networks faced refinancing and interest rate risks under the on-the-day approach, which operated on the premise that the entire debt portfolio of a regulated service provider would be refinanced once every regulatory control period. The refinancing risk would arise when debt cannot be refinanced or it is not commercially sensible to do so. The interest rate risk was that the interest rate on debt would exceed the regulatory allowance, resulting in higher costs for the network service provider.

855 It noted that a network service provider could reduce its interest rate and refinancing risk by entering into hedging arrangements that are aimed to replicate a borrowing cost structure that would arise if the BEE did refinance the entirety of its debt at the commencement of the regulatory control period. The Chairmont Report explained that the BEE would not be able to alleviate all potential mismatches in relation to the debt margin component of its return on debt, unless the entirety of the entity's debt is reissued during the averaging period.

856 The AER observed that most network service providers held a diversified portfolio of debt with staggered maturity dates to help manage refinancing risk. It observed that small to medium sized and privately owned network service providers were likely to engage in interest rate swaps to reduce their interest rate risk. The AER also recognised that some network service providers may be too large to lock in interest rates during the averaging period, or may choose not to reduce interest rate exposure by hedging.

857 However, as a consequence of the AER's view that the BEE was of one size and shape only, it approached its task on the basis that a BEE under an on-the-day approach would hold a

debt portfolio with staggered maturity dates and use swap transactions to hedge interest rate exposure for the duration of the regulatory control period:

The Transition: The AER Approach

858 As the AER had defined the BEE as a pure play, regulated, energy networks business, it could not observe directly what efficient debt management practices of such an entity would be under the trailing average approach. All pure play, regulated, energy networks businesses up to that time were limited to adhering to the on-the-day approach under the Rules. Consequently, the AER had to rely on "theoretical reasoning" and indirect evidence, including observed financing practices of entities subject to the on-the-day approach and the observed debt financing practices of unregulated businesses: RoR Explanatory Statement at p 108.

859 The AER took the view that the decision to enter into swaps contracts by small to medium network service providers was likely to be a function of the on-the-day approach. The BEE would, it decided, be required to have the characteristics of a small to medium, privately owned entity that was subject to an on-the-day approach and managed its risk through swaps.

860 In its RoR Explanatory Statement, the AER stated that a uniform transition to the trailing average approach would be applied to all network service providers, consistent with the method proposed by the Queensland Treasury Corporation (QTC) in its submission to the AER. The decision to conduct a uniform transition relied on what the BEE as identified by the AER was likely to need to transition from the on-the-day approach to the trailing average approach. The AER was aware that any transitional process would need to contribute to the RoR Objective and the Rules. It would need to provide a steady transition to the trailing average approach "given a possible change in prior expectations regarding the regulatory framework by stakeholders". It also would need to consider the use of historical information and minimise incentives for potential strategic behaviour by network service providers: RoR Explanatory Statement at p 120.

861 The AER was conscious of r 6.5.2(k)(4) of the NER and r 87(11)(d) of the NGR relating to any transition from one methodology to another. Rule 6.5.2(k)(4) is set out above and r 87(11)(d) is in relatively similar terms. That required the AER to have regard, in estimating the return on debt, to any impacts (including in relation to the costs of servicing debt across *regulatory control periods*) on a BEE that could arise as a result of changing the methodology that is used to estimate the return on debt from one *regulatory control period* to the next.

862 That lead to a critical step the AER took in transitioning to the trailing average approach. It did not consider that the transitional arrangements should have regard to the specific debt financing practices of individual network service providers. It had defined a BEE in the RoR Guidelines, and decided that a singular transitional method should be applied. It maintained that approach in its Final Decisions.

863 Consequently, for the transitional step in introducing the trailing average approach, the AER considered that the efficient debt financing practices of the BEE under the on-the-day approach was to have a staggered debt portfolio combined with hedging contracts to reduce interest rate risk. As such, an immediate change to a trailing average approach would require the BEE to unwind its hedging contracts, which might be costly if at all possible. The AER would allow for a gradual transition so that the BEE could adjust to changes.

864 The AER also outlined in the RoR Guideline (and reflected in its Final Decisions) that the transition would occur over a ten year period. It was aware that ActewAGL, and Networks NSW and some other network service providers would be affected by that form of transition as they had not entered into swap contracts under the on-the-day approach. Indeed, Networks NSW already used a staggered debt financing approach without hedging, and so in a sense reflected the proposed benchmark efficient portfolio approach to debt management which the AER was seeking ultimately to achieve by the trailing average approach.

865 Underlying the adoption of the trailing average approach, commonly accepted, is the fact that companies usually structure their debt by refinancing a portion of their debt each year at fixed rates prevailing at the time of renewal. At any given time, a company will therefore have a portfolio of fixed rate debt entered into in different years in the past and at interest rates prevailing at the date of entry into each facility referred to in the submissions as a staggered portfolio of fixed rate debt. As older facilities come up for renewal, they are replaced by new debt at current rates.

866 One consequence of the previous on-the-day methodology was that regulated businesses took steps to partially align one component of their cost of debt (the risk free rate component) to the regulatory allowance for that component under the on-the-day approach by entering into floating rate debt rather than fixed rate debt (or alternatively by entering into fixed rate debt and converting this to floating rate debt using fixed-to-floating interest rate swaps), and then entering into hedge transactions during the averaging period to fix part of their cost of debt at the prevailing rate. It is common ground that businesses could not hedge the DRP component

of their debt. It is also clear that some DNSPs did not enter into such hedge transactions. That included each of the Networks NSW businesses, and (for different reasons) ActewAGL.

867 The AER's transitional approach, adopted in each of the Final Decisions under review and apparently in all regulatory decisions for the current regulatory period, was based on a regulated entity as the BEE which (it considered) would have a portfolio of floating rate debt that, had the on-the-day approach continued, it would have swapped into fixed rate debt during the relevant averaging period. Consequently, the BEE would have unwound its hedging contracts in moving from the current on-the-day approach to the trailing average portfolio approach.

868 Thus, it allowed for the transition on the following basis:

(a) the return on debt for the first regulatory year as the prevailing rate, averaged over the relevant averaging period (being set using the on-the-day approach – this allowance corresponds to the expected return on debt of an entity that refinances its entire debt portfolio during the averaging period prior to the first regulatory year);

(b) in the second regulatory year, the allowed return on debt is a weighted sum of the prevailing rates in the first and second years (with weights of 0.9 and 0.1 respectively) (this allowance corresponds to the expected return on debt of an entity if it refinanced its entire debt portfolio during the averaging period prior to year one and then refinanced 10 percent of its debt portfolio during the averaging period for year two);

(c) in the third year, the allowed return on debt is a weighted sum of the prevailing rates in the first, second, and third regulatory years (with weights of 0.8, 0.1 and 0.1, respectively);

(d) and so on until in the tenth year of transition, the allowed return on debt is an equally weighted (with weights of 0.1) sum of the prevailing rates in the ten years of transition – at this stage the transition is complete.

See generally Appendix G to the RoR Explanatory Statement at p 131.

869 The AER's transition methodology was therefore:

(a) for Networks NSW, the return on debt applying in the 2015-16 regulatory year is calculated by giving 90 percent weight to the annual return on debt that applied in 2014-15 (being 6.51 percent), and 10 percent weight to the annual return on debt that was calculated using the relevant averaging period prior to the commencement of the

2015-16 regulatory year, being 1 July 2014 to 31 December 2014, namely 6.40 percent; and

(b) for ActewAGL, the return on debt applying in 2015-16 is calculated by reference to 90 percent weight on the annual return on debt that applied in 2014-15 (being 6.07 percent), and 10 percent weight to the return on debt that was calculated using the relevant averaging period prior to the commencement of the 2015-16 regulatory year, and as this averaging period was 20 business days ending 31 January 2015, the resultant annual return on debt was 5.91 percent;

(c) the return on debt applying in the 2016-17 regulatory year is calculated by giving 80 percent weight to the return on debt that applied in 2014-15; and 10 percent weight to the return on debt measured in the averaging period that applied prior to the commencement of the 2015-16 regulatory year; and 10 percent weight to the return on debt measured in the averaging period that applied prior to the commencement of the 2016-17 regulatory year; and

(d) the above process is continued until the weight placed on the return on debt that applied in 2014-15 is zero as the transition to the trailing average approach is complete, that is by 30 June 2024.

Consideration

870 Networks NSW and ActewAGL say that the AER's decision to delay moving to the trailing average approach for up to 10 years by imposing a 10 year transition from the on-the-day approach to a trailing average approach does not reflect the cost of debt of Networks NSW, and does not reflect the cost of debt for a hypothetical benchmark entity in the position of Networks NSW or ActewAGL.

871 It is perhaps a little coarse, but not inaccurate, to describe the primary errors asserted by them on the part of the AER in its transitioning approach as:

(a) adopting the concept of the BEE as a regulated BEE; and

(b) adopting a "one size fits all" BEE for the purposes of each of its Final Decisions, and its other similar regulatory decisions made in respect of the current regulatory period.

872 Those steps, they contend, do not reflect the fact that – at least for the transitioning decision to the trailing average approach – efficient debt management practices of DNSPs and other network service providers may differ according to their size and structure. Consequently,

they refer to various passages in the 2012 Rule Amendments at pp 84-90, particularly the following passage at pp 84-85:

> The inclusion of the factors in the rules is intended to provide direction to the regulator as to what factors it should consider for determining the best approach to estimate the return on debt.
>
> The factors reflect a number of key issues raised by SFG in its analysis of different methodologies for estimating the return on debt, and other stakeholders during the rule change process. These issues can be summarised as follows:
>
> - efficient benchmarking service providers may have different efficient debt management strategies;
> - the effect on the cost of equity of different methodologies for estimating the return on debt;
> - the effect on incentives for efficient capex during the regulatory period of the methodology used to estimate the return on debt; and
> - consideration of whether transition arrangements are required if there is a change in the methodology used to estimate the return on debt.
>
> …
>
> The purpose of the fourth factor is for the regulator to have regard to impacts of changes in the methodology for estimating the return on debt from one regulatory control period to another. Consideration should be given to the potential for consumers and service providers to face a significant and unexpected change in costs or prices that may have negative effects on confidence in the predictability of the regulatory arrangements.
>
> It may be possible in many circumstances for the method to estimate the return on debt to take such concerns into account in the design of the method. Therefore, this criterion was intended to promote consideration of concerns raised by service providers with regard to transitions from one methodology to another. Its purpose is to allow consideration of transitional strategies so that any significant costs and practical difficulties in moving from one approach to another is taken into account.

873 The reference to SFG in the above quoted passage is a reference to its *Rule change proposals relating to the debt component of the regulated rate of return: Report for AEMC*, 21 August 2012.

> In its submissions the AER referred to what was said by the AEMC as quoted above and a passage from the SFG report which concludes with the observation that an appropriate transition arrangement should effectively destroy any incentive of a business to seek to "game" the regulatory allowance by proposing whichever method might result in the highest allowance.

874 Each of Networks NSW and ActewAGL acknowledge that the immediate implementation of the trailing average approach, which they advocated in their respective regulatory proposals and maintained in their revised regulatory proposals was not consistent with the AER's RoR

Guideline. The relevant AER Final Decisions (as illustrated by the passages from Attachment 3 to the Ausgrid Final Decision set out earlier in this section of these reasons) adhered to the transitional approach in the RoR Guideline.

875 For the purposes of Networks NSW (but not ActewAGL) there is an issue that the AER used a BBB+ credit rating, other than a BBB credit rating, and that it used the Reserve Bank of Australia (RBA) broad-BBB rating interest rate data extrapolated to 10 years (although it used Bloomberg data for 2004, as RBA data was not available).

876 It is common ground that the risk free rate element of the return on debt, being the unobservable return on risk free assets, is properly represented by the prevailing yields on 10 year Commonwealth Government Securities.

The Benchmark Efficient Entity

Was this issue raised and maintained by Networks NSW and ActewAGL?

877 The AER first contended that s 71O(2)(a) of the NEL precludes the issue whether the BEE is an unregulated firm operating in a workably competitive market now being raised.

878 In the Tribunal's view, the issue was raised by Networks NSW and by ActewAGL in submissions to the AER. Indeed, it is a little curious, on this question, that the respective contentions of Networks NSW and ActewAGL, on the one hand and of the AER, on the other, are based on the same documents.

879 It is sufficient, in that light, to note those parts of the respective submissions which lead the Tribunal to that view.

880 Networks NSW's submissions to the AER, dated 13 February 2015 at pp 3-4 refer to the efficient financing costs that would be expected absent regulation. It says:

> The notion of the hypothetical "benchmark efficient entity" is a tool designed to ensure that the relevant service provider only recovers revenue in respect of the efficient conduct of the business in a hypothetical competitive environment, not the inefficient conduct of the business in a monopoly environment.

881 The submissions also made the claim that in moving to the trailing average methodology, the efficient financing costs of a BEE with a similar degree of risk as that which applies to Networks NSW is the cost of issuing debt on a fixed rate staggered portfolio basis, and that Networks NSW already issues its debt on that basis, so that there is no requirement in the

interests of efficiency or the avoidance of monopoly pricing for imposing a delay in the movement to the preferred methodology.

882 In short, Networks NSW raised as a matter that the efficient financing costs of a BEE are the financing costs that would be expected in a competitive environment.

883 The Tribunal, having considered the particular passages from the submissions referred to by the AER, does not consider that they argue for a BEE that was regulated.

884 The AER also referred to the report of Frontier Economics entitled *Cost of Debt Transition for NSW Distribution Networks*, January 2015. There is nothing in that report which says that the BEE is a regulated entity. Indeed, the report at pp 8-9 considers the efficient practices of an unregulated infrastructure service provider as a potential benchmark and notes that such a provider would have adopted a fixed rate staggered maturity approach.

885 The AER also submitted that the Revised Regulatory Proposals submitted by Networks NSW do not contain any reference about the definition of the BEE. However, the Tribunal thinks it is clear that Networks NSW was maintaining its position. In each of the Revised Regulatory Proposals, reference is made to the predominant debt management approach of non-regulated infrastructure firms such as ports, airports, roads and railways as being to issue debt on a staggered portfolio/trailing average basis, and as supporting the approach that Networks NSW has adopted.

886 The contention that the AER should have found that the BEE was an unregulated form operating in a workably competitive market was also raised and maintained by ActewAGL. ActewAGL submitted in its Revised Regulatory Proposal at pp 473-474 that:

> The financing practices of relevance to the term "efficient financing costs" do not encompass practices adopted in response to a pre-existing regulatory approach to the estimation of the return on debt notwithstanding whether one of the characteristics of the benchmark efficient entity that informs the degree of risk for which capital market investors require compensation is that that entity is regulated.
>
> Such a construction of the term "efficient financing costs" is consistent with the objective of the regulatory regime established by the NEL and the Rules, as evinced by the NEO and the RPPs, which is itself concerned with creating incentives for efficiency and mimicking, so far as practicable, the outcomes of a workably competitive market, including in particular by creating incentives for providers to operate and invest in the manner of a firm in a competitive environment.

887 Those submissions assert that the pre-existing regulatory approach is of no relevance to the "efficient financing costs" referred to in the RoR Objective "regardless of the characteristics

of the 'benchmark efficient entity'". It is said that the financing practices of relevance to the term "efficient financing costs" do not encompass practices adopted in response to the regulatory approach: see its Revised Regulatory Proposal at p 478.

888 The AER also contended that even if the matter was raised by any of the material, it was not raised by Networks NSW and ActewAGL with the precision sufficient to be considered "raised and maintained" within the meaning of s 71O(2) of the NEL because the Networks NSW and ActewAGL proposals did not identify and explain it as a departure from the RoR Guideline in accordance with r S6.1.3(9) of the Rules. The AER relied on *Application by Jemena Gas Networks (NSW) Ltd (No 3)* [2011] ACompT 6 at [102].

889 That is a qualitative assessment the Tribunal does not make. In both their Regulatory Proposals and Revised Regulatory Proposals, Networks NSW and ActewAGL identified and provided reasons for a departure from the RoR Guideline because they sought the immediate adoption of the AER's trailing average with no transition. The Regulatory Proposals submitted by Networks NSW and ActewAGL clearly did not apply the transitional arrangements as set out in the RoR Guideline. They explain why the RoR Guideline, in that respect, should not be followed. In the Tribunal's view, that is sufficient to satisfy r S6.1.3(9) of the NER. It is not, therefore, necessary to address whether the obligation in r S6.1.3(9) applies to Revised Regulatory Proposals. Nor is it necessary to explore whether the expression "raised and maintained" in s 71O(2) of the NEL is somehow informed by r S6.1.3(9) of the NER.

890 The Tribunal also does not consider it necessary to explore the general extent or "sufficient precision" referred to in [102] of the case mentioned above. It was a comment made by the Tribunal in the context of cautioning participants to a regulatory process against providing a mass of material to the AER without an indication of which parts of the material they regard as relevant.

Is the Benchmark Efficienty Entity a Regulated Entity?

Is the Benchmark Efficient Entity a common entity for all DNSPs?

891 In the Tribunal's view, these issues are related and can be addressed together. They concern, for the purposes of r 6.5 of the NER, identifying the matters relevant to the building block determinations required by Part C, in particular for the return on capital under r 6.4.3(a)(2)

and 6.4.3(b)(2) to be calculated in accordance with r 6.5.2. The relevant parts of r 6.5.2 are set out above.

892 A preliminary point was raised by the AER. It referred in some detail to the process by which it made the RoR Guideline, including the position taken by the Energy Networks Association (ENA) that proposed the definition of the BEE consistent with that adopted by the AER in the RoR Guideline and in its Final Decisions. It pointed out that each of Networks NSW, ActewAGL, JGN, the Vic/SA Interveners and Ergon supported the ENA submission on that point. Consequently, it says, it is not now open to those entities to adopt a position different from that taken during the making of the RoR Guideline.

893 That preliminary point was not developed further in oral submissions. The Tribunal takes the view, having regard to r 6.2.8(c), that neither the AER nor the regulated service providers generally were bound to comply with the RoR Guideline in relation to the process leading to the relevant Final Decisions. As it has concluded that Networks NSW and ActewAGL raised and maintained this issue in their submissions to the AER, it does not consider that somehow they are now estopped from raising the same issue before the Tribunal.

894 The position of JGN requires separate consideration, addressed in the Tribunal's decision concerning its application for review.

895 Understandably, the AER adhered to the view on these related issues expressed in its relevant Final Decisions for much the same reasons as it then gave. It is also understandable that, subject to one significant issue, PIAC too adopted that position.

896 In one relevant respect, at least in PIAC's submissions, the 2012 Rule Amendments have a somewhat different emphasis than previously.

897 Under the earlier r 6.5.4(e)(1) of the NER, the key objective for the return on equity and debt was to be:

> … a forward looking rate of return commensurate with prevailing conditions in the market for funds and the risk involved in providing the *standard control services*.

898 That focus on prevailing conditions is maintained in relation to the return on equity: r 6.5.2(g). The nearest parallel expression now for the return on debt is in r 6.5.2(j)(1) which allows for the continuation of the on-the-day methodology, requiring an estimate of the return required by debt investors if the debt were raised shortly before the determination.

899 Rule 6.5.2(j)(2), which allows for the trailing average methodology, does not have a like expression. However, it provides for the estimate as the average return required by debt investors in a BEE if it raised debt over a historical period prior to the commencement of the regulatory year itself during the regulatory control period.

900 Section B of PIAC's submission on the return on debt issue is headed: "The Economic Regulation amendments on return on debt: what became of 'prevailing conditions?' It is a rhetorical question, as the change is not said (at that point or later in the submissions) to be of particular significance. That is probably because it is not. The annual recalculation under the trailing average methodology, giving effect to the RoR Objective and in turn the efficient financing costs of the BEE, would require that contemporaneous consideration in any event.

901 PIAC made much of the process by which the 2012 Rule Amendments in relation to debt came to be made. As already noted, it is clear that, in the course of that process, significant transitional issues including the potential for windfall gains or losses by reason of the transition process from one methodology to another were addressed. One context was the avoidance of a DNSP "gaming" by selecting its preferred methodology, or its preferred transitional process to a new methodology. The 2012 Rule Amendments do not permit that. The decision is made by the AER. Another was to have regard to the consequences for a particular DNSP by reason of the change in methodology and the transitional consequences.

902 PIAC emphasised QTC's June 2012 submission to the AEMC on those issues. QTC proposed the moving average approach, or "rolling in" arrangement, as ultimately adopted by the AER in the RoR Guideline and then in the relevant Final Decisions.

903 Also, in relation to r 6.5.2(k)(4), PIAC pointed to what was said by the 2012 Rule Amendments at pp 84-85 as quoted above.

904 The critical step then, notwithstanding the recognition that different network providers may have different efficient financing structures in place under the previous regulatory period because of their responses to the on-the-day approach – dictated by their respective circumstances – was for the AER to adopt one regulated entity as the BEE.

905 Once that step was taken, headed by the AER's choice to adopt the QTC proposal of a 10-year progressive introduction of the trailing average approach, necessarily some DNSPs and network providers would be materially disadvantaged. That step is one also supported by PIAC.

906 It is the case, commonly accepted, that the Networks NSW entities would each recover a significantly greater sum during the current regulatory period by an immediate transition to the trailing average methodology: see the respective Final Decisions for Ausgrid (Attachment 3 at p 3-151); Endeavour (Attachment 3 at p 3-149); and Essential (Attachment 3 at p 3-148). That would have a significant impact on price, adverse to consumers. Networks NSW says that they are being deprived of those amounts by reason of the erroneous adoption of the "one size fits all" transition process. That is, they submit, their debt financing structures are presently efficient structures that the AER seeks to achieve by the introduction of the trailing average approach. By the transition process imposed, they say, they are being given an artificial debt financing structure as a starting point which depresses their recoverable financing costs below their actual (and subject to analysis by the AER) efficient financing costs.

907 It is the Tribunal's view that the BEE referred to in the RoR Objective is not a regulated entity. It need not necessarily be the one entity for the purpose of all regulatory decision-making in a particular regulatory period for all regulated service providers.

908 The general underlying purpose of economic regulation of regulated service providers under the NEL, the NGL and the Rules is canvassed earlier in these reasons. It is common ground. It is to secure, so far as practicable, the NEO and the NGO in accordance with the RPP. To achieve that, the AER is required to make its regulatory determinations in relation to a regulated service provider, in an environment where there is no competition for the services it provides, but broadly speaking as if the relevant provider were operating in a competitive environment.

909 As the AER said, its decision on this topic (and on other topics) is to be made by reference to the efficient financing costs of a BEE, rather than the actual financing costs of the particular regulated service provider. Once those costs or allowances are fixed, they provide the economic incentive to the provider to operate more efficiently.

910 The relevant rules support that overall approach, rather than (as would be the effect of the AER's contention) support the measurement of performance and the fixing of the return on capital (including the return on debt) by reference to a regulated efficient entity.

911 The particular features of the NER (and the equivalent provisions in the NGR) which, in the view of the Tribunal, are significant are:

(a) the definition of the RoR Objective in r 6.5.2(c);

(b) the reference to the return required by debt investors in r 6.5.2(i);

(c) the interrelationship between the return on equity and the return on debt under r 6.5.2(j)(2);

(d) the reference to incentives in r 6.5.2(k)(3); and

(e) the reference to the impacts on a BEE that could arise as a result of changing the methodology used to estimate the return on debt from one regulatory control period to another in r 6.5.2(k)(4).

912 It is appropriate to address those provisions in turn.

913 The RoR Objective directs the allowed rate of return on capital for the relevant DNSP to be applied to its regulatory asset base: r 6.5.2(a) and (b). When r 6.5.2(c) then defines the RoR Objective, it is directed to determining a rate of return for a DNSP by reference to (what the AER determines as) the relevant BEE. The relevant BEE is to be used to determine efficient financing costs to be allowed for. The BEE is to have a similar degree of risk as that which applies to the relevant DNSP in respect of the provision of standard control services.

914 The BEE, in the view of the Tribunal, is likely to refer to the hypothetical efficient competitor in a competitive market for those services. Such a BEE is not a regulated competitor, because the regulation is imposed as a proxy for the hypothetical unregulated competitor. Otherwise, the starting point would be a regulated competitor in a hypothetically regulated market. That would not be consistent with the policy underlying the purpose of the NEL and the NGL in relation to the fixing of terms on which monopoly providers may operate. Indeed, the concept of a regulated efficient entity as the base comparator would divert the AER from the role of fixing the terms for supply of services on a proxy basis compared to those likely to obtain in a competitive market, and focus its attention on some different and unidentified regulated market.

915 It may be observed that the AER, both in the RoR Guideline and in the relevant Final Decisions, imposed the trailing average methodology as that most likely to represent the proxy for the cost of debt for a supplier of the services in a competitive market.

916 Secondly, it is necessary to focus on the characteristic that the BEE must have: a similar degree of risk to that of the relevant DNSP. The relevant DNSP is the DNSP for which the BEE is being determined by the AER. Once it is accepted that different DNSPs have in fact

different degrees of risk (as is recognised in the discussions referred to) and so may have different efficient financing cost structures, it leads to the conclusion that there will not be an identical BEE for all DNSPs.

917 The reference to "debt investors" in r 6.5.2(j)(1) and (2) needs little comment. The allowed return may be fixed having regard to the return required by the debt investors in a BEE. The "debt investors" are likely to be investors in a competitive market, rather than in a regulated service provider as the measure for comparison is then unidentified and may not lean towards an efficient entity.

918 The interrelationship in r 6.5.2(k)(2) also points to the same conclusion. The reference to the interrelationship between the return on equity and the return on debt means they have a complementarity. The complementarity is significant and meaningful if they are measured by similar, or similarly conceptual, yardsticks. Otherwise, the comparison would not be meaningful. The return on equity is to be measured by the prevailing conditions in the market for equity funds. It would follow that market conditions for the BEE should be used to measure the return on debt, rather than some undefined regulated conditions.

919 Much the same may be said about r 6.5.2(i).

920 The AER contended that, although economic regulation seeks to achieve certain outcomes consistent with a workably competitive market, if the BEE is assumed to compete in a workably competitive market, then the regulatory framework in which the concept of that entity is employed would be otiose. It emphasises the words on the RoR Objective that the BEE is to be taken to have "a similar degree of risk" to the relevant DNSP. Because of their monopoly position, each of the regulated service providers is insulated from comparative risk and is provided with regulated rates of return for capital and debt. Thus, it is argued, the rates of return of investors for investing in regulated service providers is "commensurately lower". Moreover, it is said, to adopt the alternative view is to depart from the NEO and the NGO, and is to detract from their achievement, because the regulatory environment alters the risk profile of the relevant regulated service provider. It also means, it is said, that the BEE must be a regulated entity because it is otherwise an entity with a risk profile different from, rather than similar to, the risk profile of the regulated DNSP or network provider.

921 The Tribunal has, of course, carefully considered those contentions in reaching its conclusion. For the reasons given, it considers that textually and contextually there are strong reasons

why the AER's contentions should be rejected. The AER's analysis of the definition of the RoR Objective involves a degree of circularity. The comparison is provided so that the BEE is not an artificial or contrived comparator. As explained in the next section of these reasons, the Tribunal is not persuaded that the AER erred by adopting a single BEE for the regulated service providers. But, it is not likely that within the structure of the NER and NGR, premised (as the AER acknowledges) on imposing by regulation a pricing structure for monopoly service providers by reference to the hypothesised efficient pricing structure in a workably competitive market, there would be a discrete subset of tests prescribing a comparison with a regulated service provider. There is nothing in the AEMC materials leading to the 2012 Rule Amendments which indicates such an intention.

922 The Tribunal in the next section of its reasons dealing with "The Transition" addresses the proper operation of r 6.5.2(k)(4). It reaches the view that, although the concept of the BEE is a standard one, because the RoR Objective refers to a BEE "with a similar degree of risk as that which applies to the *Distribution Network Service Provider*" (Tribunal underlining) and "the *Distribution Network Service Provider*" refers back to the RoR Objective for that particular DNSP, it is necessary to consider how that DNSP should efficiently have structured its financing costs under the former regulatory regime. Relevantly, how it should efficiently have done so in response to the on-the-day methodology of estimating the rate of return. As different DNSPs may have different degrees of risk, there is scope for a range of structures of efficient financing costs to exist at the end of one regulatory period. That range of structures then assumes significance for the purposes of r 6.5.2(k)(4) of the NER.

The Transition

923 This part of the reasons concerns Network NSW and ActewAGL.

924 For present purposes, once the step has been taken (as the Tribunal has done) of starting with a BEE which has the characteristics of one hypothetical participant in the competitive market – that is, the "efficient financing costs" are determined on that basis – it follows that the AER's approach to transitioning under r 6.5.2(k)(4) must be reconsidered.

925 Its determination of the BEE required it to determine at the commencement of the current regulatory period, as between the various DNSPs, which (if any) of their debt financing structures adopted in relation to the on-the-day methodology used in the previous regulatory period was the preferable or more representative one. As noted, it selected that applicable to those DNSPs which had a portfolio of floating debt that would have been hedged, and then

considered what would have been involved in moving to the trailing average portfolio approach. That starting point meant that the debt financing structures of Networks NSW (which did not hedge) or of ActewAGL (which does not have debt financing) were, by its definition, inefficient and the implementation of the trailing average methodology required transitioning in their instance in a manner which was obviously artificial.

926 It is somewhat ironic that, by that process, the BEE at the end of the current regulatory period, under the trailing average approach, would (subject to particular considerations) have the characteristics of the financing cost structure of Networks NSW at the commencement of the current regulatory period. That is because, by its approach, the AER has treated that current financing cost structure as inefficient, even though that structure (subject to particular considerations) underlies the trailing average approach.

927 If a different starting point, that is a different BEE efficient financing cost structure, is adopted, it is then necessary to revisit the AER's approach to, and consideration of, the factor to which it (or the Tribunal) must have regard under r 6.5.2(k)(4).

928 The Tribunal addresses later in these reasons whether, and if so how, that should be done having regard to s 71P(2a) and (2b) of the NEL.

929 It is desirable to comment, at this point, on one further submission of the AER.

930 Its contention is that the effect of debt transition on a particular service provider is ultimately a largely irrelevant consideration. The relevant matters that the AER must have regard to under r 6.5.2(k)(4) are any impacts on a BEE that could arise from a change in methodology, including in relation to the cost of debt across regulatory control periods. Accordingly, the effect of debt transition on a particular service provider can be relevant only to the extent that it provides some information about how a change in debt methodology would impact a BEE. Therefore, it says, it is not a mandatory relevant consideration whether an immediate transition to the trailing average approach would cause any cost and inconvenience for Networks NSW and ActewAGL because they either have no debt or staggered non-hedged debt. The relevant consideration is the efficient financing costs of a BEE, not the particular DNSPs the subject of a decision.

931 Consequently, it argues, that the AER made no reviewable error in adopting a transition option (Option 4 of the four options referred to above) on the basis that it would not have any effect on Networks NSW and ActewAGL. The effect on Networks NSW and ActewAGL was

not the matter that the AER was required to turn its mind to. This effect was relevant only to the extent to which their practices reflect efficient financing practices, which is addressed further below.

932 The contention itself is ironical. It takes the regulated BEE (which is chosen by the AER as a standard from the range of individual network providers financing costs structures, which are their idiosyncratic individual responses to the on-the-day methodology), and then selects a transition option to achieve a financing costs structure to that reflected by, and in, the trailing average approach. So it is converting the hypothesised regulated BEE from one financing costs structure which it therefore regards as "the efficient costs structure", but which ultimately it regards as inefficient, to another financing costs structure. And in doing so, it does not have to have regard to the fact that Networks NSW already have that financing costs structure (not necessarily in the efficient form), but it deems Networks NSW and ActewAGL to have some other costs structure for the purposes of the transition process.

933 The Tribunal's view is that is not correct. In its view, the compulsory consideration in r 6.5.2(k)(4) of the NER:

(1) starts with the efficient financing costs of a BEE as described above (ie not a regulated BEE);

(2) in the case of a changed methodology to estimate the return on debt, determines whether the BEE would suffer any impacts as a result of the changed methodology; and

(3) if so, have regard to those impacts in deciding on the transition process to the new methodology.

934 The starting point is not the actual financing costs of the relevant DNSP, but the efficient financing costs having regard to its degree of risk. In the case of Networks NSW, as its financing costs structure was readily applied to the trailing average methodology, the relevant inquiry would start with whether its actual financing costs were efficient as at the commencement of the new regulatory period. If not, those of the BEE would be applied prospectively. In the case of other DNSPs, the relevant inquiry would start with whether each of their actual financing costs (including the hedging costs) were efficient having regard to their particular degree of risk at the start of the new regulatory period. If so (as appears, broadly speaking, to have been accepted), the impacts of the changed methodology would require the sort of transition process which was imposed in the Final Decisions concerning

them. If not, then the starting point for that transition process would be some refinement to the efficient financing costs within that structure.

935 It is the expression in r 6.5.2(c) requiring the efficient financing costs of a BEE "with a similar degree of risk" as that applying to the particular DNSP which, in the view of the Tribunal, supports that conclusion. It also has a degree of common sense, as a response to a changed methodology, as it represents a means of realistically looking to the actual consequences of the changed methodology. It means, contrary to the AER submission, that an actual assessment must be made of the efficient (not just the actual) financing costs of each DNSP as it has responded in its methodology for estimating the return on debt for the prior regulatory period and an actual assessment must be made of the impacts on those efficient financing costs of that DNSP by the changed methodology.

936 Those conclusions are consistent with the AEMC's reasons for the relevant new or changed rules introduced by the 2012 Rule Amendments. The AEMC's comments on new r 6.5.2(k)(4) of the NER and r 87(11)(d) of the NGR are set out above, and of course the underlying theme of the AEMC is that the most appropriate benchmarking is the efficient private sector provider: see the 2012 Rule Amendments as quoted above. The AEMC there also recognises that there may be multiple debt management strategies that are efficient, and that different businesses may adopt different but equally efficient debt management practices:

> The Commission intends that the regulator could adopt more than one approach to estimating the return on debt having regard to different risk characteristics of benchmark efficient service providers.
>
> The first factor in the rule requires the regulator to have regard to the characteristics of the benchmark service provider and how this influences assumptions about its efficient debt management strategy … debt management practices tend to differ according to the size of the business, the asset base of the business, and the ownership structure of the business.

And, earlier the AEMC said, at p 49:

> The Commission considered that no one method can be relied upon in isolation to estimate an allowed return on capital that best reflects benchmark efficient financing costs.

937 Accordingly, the Tribunal considers that a ground or grounds of review have been made out by Networks NSW and ActewAGL in relation to the estimate of the rate of return on debt.

938 The selection or identification of the BEE as a regulated entity involved the wrong exercise of a discretion about the character of the BEE in all the circumstances, and as a consequence its decision on the topic was unreasonable in all the circumstances. It may have been possible to identify the specific features of the regulated BEE which then, as a matter of fact, might be said to involve errors of fact in its findings of fact, but it is not necessary to go into that detail. Similarly, its exercise of its discretion to apply the characteristics of its selected regulated BEE to the transition process in the case of Networks NSW and ActewAGL is also erroneous, and its decision on the transition process was unreasonable, in all the circumstances.

939 If the changed methodology might produce benefits to a particular DNSP (as, it was suggested, might be the case because of some carry forward windfall arising from the previous methodology), it may be that s 16(1)(d) of the NEL in the case of the AER (or s 71P(2a) and (26) of the NEL in the case of the Tribunal) would require some alterations to what would otherwise be an appropriate transition process. That is not a matter which was much debated in the course of submissions.

940 As the Tribunal proposes to remit this matter to the AER, for reasons expanded upon later, it is not necessary or appropriate to explore those alterations in detail at present.

941 The Tribunal notes that Networks NSW and ActewAGL argued that the regulatory regime does not permit "true-ups" based on an ex post review of the previous regulatory allowance, in part because it would remove the incentives to efficiency on which the regulation is based. They also extensively responded to the analysis of Lally, *Transitional Arrangement for the Cost of Debt*, 24 November 2104, suggesting at a general level (that is, not specific to any one DNSP) a significant past benefit under the on-the-day approach because it led to rates of return on debt significantly higher than those actually incurred. The submission is to the effect that there was no past "windfall" gain. It is not necessary to do other than note those matters.

942 There are a few other matters which may be relevant to that review. The Tribunal has noted that the existing debt financing structures of the Networks NSW DNSPs are not necessarily to be taken as efficient for the purposes of any transition. There are issues as to any correlation between the risk free rate and the DRP. There are issues as to the relevance and significance of the high DRP rates immediately following the Global Financial Crisis (GFC) of 2007-08, and how they should or should not be taken into account. To the extent that the Networks

NSW DNSPs have currently locked in those rates, it may not (on the appropriate analysis) have been appropriate to do so. PIAC notes that locking in those rates at about August/September 2008 produces a return in debt of 8.82 percent per annum (risk free rate of 5.82 percent per annum and a DRP of 3 percent per annum) whereas the rates if taken at about June 2014 would produce a return on debt of 6.51 percent per annum. There may be other relevant considerations. In addition, even if the correct starting point is each Networks NSW DNSP's current actual financing costs (that is, if they are efficient), s 16(1)(d) of the NEL may entitle the AER to make some adjustment if – as PIAC says – consumers may thereby be paying "a second time" for the consequences of the spike in rates following the GFC.

943 The Tribunal, as it does not propose to itself make the reviewed decision, simply notes those contentions.

PIAC's contentions

944 Having regard to the Tribunal's conclusions on the matters discussed above, in theory PIAC's contention on the estimation of the return on debt does not presently require determination. It is premised upon the Tribunal, in broad terms, adhering to the AER's Final Decisions concerning the transition for the Networks NSW entities into the trailing average approach.

945 The Tribunal has decided earlier in these reasons, that PIAC's contention is not precluded by s 71O(2)(c) of the NEL.

946 Before addressing this issue, as should be apparent, the Tribunal has not disregarded PIAC's contentions in support of the AER's transition approach for Networks NSW. PIAC pointed out that the 2012 Rule Amendments by the AEMC were instigated in part by consumer complaints about both the methodology and outcomes of the AER's estimation of the return on debt for the previous regulatory period. They have been carefully considered as part of the earlier section of these reasons. In particular, it is noted that PIAC had the concern that the transition should not produce windfall gains or losses either to networks or consumers, and should not generate any incentive for networks to "game" any change in estimation method in order to maximise their regulatory allowances.

947 This section of the reasons addresses PIAC's contention that the transitional mechanism adopted by the AER has resulted in return on debt allowances to Networks NSW that

substantially exceeded those justified by prevailing conditions in the debt finance market at the time of the relevant Final Decisions in April 2015.

948 PIAC contends that the substantial over-allowance is the result of :

(1) the AER having misspecified the formula implementing the transitional mechanism for the return on debt, as it applies in the particular circumstances of the 2014-15 and 2015-19 regulatory control periods for Networks NSW; and

(2) a consequent misalignment of the averaging periods for observing the on-the-day return on debt for the transitional base year, and for the risk-free rate.

949 The AEMC recognised that its guideline development period would overlap with the time period during which networks would be due to submit their regulatory proposals for the first of the "second round" of network revenue determinations. Accordingly, when making the 2012 Rule Amendments, the AEMC inserted transitional provisions to allow for the full revenue determination process to be carried out for each network after publication of the guidelines, and to make arrangements for interim revenue determinations where necessary for a short period following the conclusion of networks' then current regulatory control periods. PIAC's Return on Debt submissions describes the process as set out in the following paragraphs.

950 PIAC's submissions commence by noting that the AEMC's prescription for the NSW/ACT Networks was to use a placeholder determination for a one-year interim regulatory control period (2014-15), followed by a full determination for the subsequent 4-year regulatory control period (2015-2019), incorporating an NPV-neutral "true-up" mechanism to account for any differences between the revenue allowed for 2014-15 under the placeholder determination, and the revenue requirement for 2014-15, as determined in the full determination process. The submissions then note that that mechanism was relevantly provided for in r 11.56 of the NER:

> **11.56.4 Subsequent regulatory control period**
>
> **General**
>
> (a) Except as otherwise specified in this clause 11.56.4, current Chapter 6 governs the making of a distribution determination for the subsequent regulatory control period [2015-2019] of an affected DNSP.
>
> **Calculation of an annual revenue requirement and other matters**

(b) …

(c) For the purposes of making a distribution determination for an affected DNSP for the subsequent regulatory control period of that affected DNSP, the *AER* must determine:

(1) the *annual revenue requirement* of the affected DNSP for each *regulatory year* of its subsequent regulatory control period;

(2) the *total revenue requirement* of the affected DNSP for that subsequent regulatory control period;

(3) the X factor for each control mechanism for each *regulatory year* of that subsequent regulatory control period; and

(4) the opening value of the regulatory asset base for the relevant *distribution system*,

in accordance with current Chapter 6 … and as if:

(5) the subsequent regulatory control period comprised the transitional regulatory control period (as the first *regulatory year* of the subsequent regulatory control period) and all of the *regulatory years* of the subsequent regulatory control period (as the remaining *regulatory years* of the subsequent regulatory control period); and

(6) the transitional regulatory control period were not a separate *regulatory control period*.

For the avoidance of doubt, this paragraph (c) requires the AER to determine a notional *annual revenue requirement*, a notional X factor or X factors and a notional opening value of the regulatory asset base for the *regulatory year* that comprises the transitional regulatory control period

…

(e) The transitional regulatory control period of an affected DNSP must be treated as if it were the first *regulatory year* of the subsequent regulatory control period of the affected DNSP, and not a separate *regulatory control period*, for the purposes of the application of the following clauses of current Chapter 6 in respect of a distribution determination for the affected DNSP for that subsequent regulatory control period: clauses 6.5.2(i) …

…

Adjustment to annual revenue requirement

(h) An affected DNSP's *total revenue requirement* for its subsequent regulatory control period must be fully adjusted for the adjustment amount determined in accordance with paragraph (i) …

(i) For the purposes of paragraph (h), the adjustment amount is calculated as:

(1) the amount of the annual revenue requirement that was approved for the transitional regulatory control period under clause 11.56.3(b) or (d); less

> (2) the amount of the notional annual revenue requirement for the transitional regulatory control period that is determined under paragraph (c). …

951 It is PIAC's submission that the effect of r 11.56.4(e) modifying r 6.5.2(i) (and consequently r 6.5.2(l)) is that if the AER estimates the return on debt:

(a) using a method that results in a uniform return on debt for each regulatory year, then the AER must apply that uniform return on debt throughout the combined period 2014-19; or

(b) using a method that results in the return on debt being different for different regulatory years, then the AER must specify a formula to the determine the resulting change to a DNSP's annual revenue requirement across the combined period 2014-19.

952 It is also PIAC's submission that r 11.56.4 did not make any specific provision affecting the operation of Chapter 6 for estimation of the return on equity. Thus, it submits, notwithstanding that 2014-15 stood alone as a regulatory control period separate from the subsequent 2015-19 regulatory control period, the AER was required by r 11.56.4(c), when making its Final Decisions, to make its determination in accordance with "current Chapter 6", as if the 2014-15 year were included as the first year of the revenue determination. Accordingly, when making the Final Decisions in April 2015, the AER was required, in determining the return on equity, to have regard to the then prevailing conditions in the market for equity funds (r 6.2.5(g)), unaffected by any considerations pertaining to the notional inclusion of the 2014-15 year as the first year of the revenue determination.

953 It went on to submit that similarly, in estimating the return on debt (and the overall return on capital), the only modification of r 6.5.2 that was made by r 11.56.4 was that the r 6.5.2(l) formula for annual updating of the return of debt had to cover the 2014-15 year, in addition to the 2015-19 regulatory control period. Otherwise, the AER remained subject to the other requirements of r 6.5.2 which as PIAC submitted included:

(a) if the AER elected to use the "on the day" method (or some combination of that and the trailing average methods), then the "on the day" rate was required to reflect the return that would be required by debt investors in a BEE raising debt "at the time or shortly before" the making of the distribution determination: r 6.5.2(j)(1);

(b) in estimating the return on debt, the AER was required to have regard to the interrelationship between the return on equity and the return on debt: r 6.5.2(k)(2);

(c) in determining the overall allowed rate of return, the AER was required to have regard to:

(i) relevant market data;

(ii) the desirability of consistent application of parameters relevant or common to the return on equity and the return on debt; and

(iii) any interrealtionships between estimates of financial parameters relevant to the return on equity and the return on debt: r 6.5.2(e).

954 As PIAC pointed out, its grounds of review do not concern the return on debt that the AER in fact determined under the placeholder revenue determination for the interim 2014-15 regulatory control period, or the truing-up of that placeholder return on debt in the Final Decisions.

955 Its complaint is how the AER adopted the trailing average approach and the 10 year transition methodology. PIAC says it commenced the 10 year transition from 2014-15 as the transitional base year, for which an on-the-day rate was applied in full; and then in each subsequent year, it rolled in that year's return on debt, weighted as to 10 percent in determining the weighted average return on debt for that year. Hence, the on-the-day rate for the transitional base year determines 80 percent of the aggregate 5 year return on debt allowance.

956 From that point, PIAC points out that in the RoR Guideline, the AER had indicated that the observed return on debt for each successive year would be determined over an averaging period to be nominated by each network of a duration between 10 consecutive business days up to a maximum of 12 months; lying wholly in the future at the time it is nominated; and as close as practical to the commencement of each regulatory year in a regulatory control period.

957 In the Final Decisions, the AER approved the following averaging periods nominated by each of Networks NSW for 2014-15 and 2015-16, and observed the following average returns:

Regulatory year	Averaging period	Return on debt
2014-15	28 February – 30 June 2014	6.51 percent
2015-16	1 July – 31 December 2014	5.41 percent

The last mentioned figure is calculated from the 90 percent/10 percent weighted average annual rate of 6.40 percent determined for 2015-16.

958 For estimation of the risk-free rate, the AER had indicated in the RoR Guideline that it would adopt a short averaging period of 20 business days in length, as close as practically possible to the commencement of the regulatory control period. That continued the AER's pre-2012 regulatory practice, and has previously been endorsed by the Tribunal: see *Re DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14 at [127].

959 In the Final Decisions, the AER determined a 20 business day averaging period, from 9 February to 6 March 2015, resulting in an annual risk free rate of 2.55 percent.

960 PIAC's case is that, in the particular transitional circumstances of the 2014-15 and 2015-19 regulatory control periods, the AER's specification of the formula for annual updating of the return of debt contravened cl 6.5.2 in three main respects. Those points are:

(1) the transition did not commence from the on-the-day rate reflecting prevailing conditions shortly before the making of the final decisions;

(2) the base year return on debt was not based on the latest and most up to date market data; and

(3) the AER's transitional formula resulted in the base year return on debt and the risk free rate being observed in windows 8 to 12 months apart.

961 The AER addressed those contentions, in part by challenging the proposition that r 6.5.2(j)(1) is mandatory rather than discretionary, and (it said) it follows that its approach was compliant with the Rules including the transitional rule 11.56.4(e). Secondly, it says, it correctly adopted 2014-15 as the transitional year, consistently with r 6.5.2(e)(1) including by having regard to market data, leading to its graduated transition methodology. Thirdly, it says that sound regulatory practice does not require the same, or approximately the same, averaging intervals for the calculation of the return on equity and the return on debt.

962 It is not necessary to record in detail the further submissions of Networks NSW in relation to PIAC's contentions.

963 As the Tribunal proposes to set aside the Final Decisions concerning Networks NSW, at least in relation to the return on capital (more specifically the return on debt) and remit the decisions to the AER for reconsideration, PIAC's contentions do not need to be determined. As noted, it is premised on the transitional path for the trailing average contained in the AER Final Decisions concerning Networks NSW being maintained in principle.

Separate issues of Networks NSW

964 There are two further issues which related to Networks NSW only (in the case of the second also raised by JGN but on a different basis and for different reasons). In the case of Networks NSW, they arise because they proposed that, in estimating the return on debt, the AER should use:

(a) a BBB credit rating; and

(b) the RBA 10 year curve, extrapolated to an effective term of 10 years for the nine year period from 1 January 2005 to 31 December 2013, and Bloomberg data for the one year period from 1 January 2004 to 31 December 2004 (over which RBA data is not available).

965 The AER's Final Decision concerning Networks NSW was that a credit rating of BBB+, and a simple average of the RBA curve and the Bloomberg Fair Value (BFV) curve should be used to estimate the return on debt. These issues are discussed below, dealing with data source first and then credit rating.

(a) Data source

966 There is no issue as between Networks NSW and the AER that a third party data service provider should be used in estimating the return on debt: Attachment 3 to the Ausgrid Final Decision at pp 3-12 and 3-149. The only issue is which of the curves (or combination of curves) should be used.

967 At the time of the publication of the RoR Guideline, the AER used the BBB seven year BFV curve, extrapolated to a 10 year maturity: RoR Explanatory Statement at p 127. The RoR Explanatory Statement, also noted (at p 128) the AER's expectation that the RBA would commence publication of an estimate for return on debt, on both broad band BBB (includes BBB-, BBB and BBB+) and an A credit rating band (includes A-, A and A+), with a range of maturities (including a seven and 10 year average debt terms) which the AER observed: "Importantly we also understand that the RBA's method will be transparent".

968 In April 2014, the AER published an Issue Paper on the choice of third party data service provider for estimating the return on debt: *Return on Debt: Choice of Third Party Data Service Provider: Issue Paper*, April 2014. The Issues Paper noted that the RBA, in its December 2013 Bulletin, had published an article, *New Measures of Australian Corporate Credit Spreads*, that presented a method for estimating the aggregate credit spreads of A-rated and BBB-rated bonds issued by Australian non-financial corporations across a range of maturities. The Issues Paper noted that the RBA would commence publishing monthly credit spreads estimates from December 2013.

969 Networks NSW proposed that the return on debt be measured solely by reference to the RBA curve, with the exception of the one year period from 1 January 2004 to 31 December 2004 (over which RBA data is not available). Its reasons included the behaviour of the curves published by Bloomberg and the RBA in response to market events; and the relative transparency of the methodologies used to construct the curves.

970 Networks NSW says the RBA curve (introduced in November 2013 and backcast to January 2005) responded to the GFC in late 2008 and early 2009 in the manner expected, but the BFV curve did not. That proposition is based on the report of CEG: *WACC estimates – A Report for NSW DNSPs*, May 2004 at p 41. It is noted that the BFV curve is the predecessor to the Bloomberg Valuation Service broad BBB (BVAL) curve.

971 The BVAL curve was only introduced in 2013 and was subsequently backcast by Bloomberg to mid-2010 but does not extend back to the 2008-09 GFC.

972 For present purposes, the BPV curve and the BVAL curve can be treated as equivalent, as the contentions of Networks NSW apply equally to them. The AER referred to the BVAL curve in its submissions.

973 Networks NSW says the CEG view is supported by the RBA: *New measures of Australian corporate credit spreads*, at p 24 and by the Chairmont Report at pp 40-41. It also says the RBA curve responds appropriately to the perceived sovereign risk in some European currencies up to 2012. The graph of the two curves against new issuance margins during 2009 suggests the RBA curve fits more conformably. It is common ground that the RBA methodology and data is transparent whereas Bloomberg, as a commercial entity, does not provide publicly its methodology or the data it has used.

974 It is not necessary to refer to the particular points made by CEG in support of the RBA's selection criteria and data used for its curve.

975 Following an extensive consultation process and on the basis of advice from Dr Martin Lally and the ACCC's Regulatory Economic Unit (Lally, *Implementation issues for the cost of debt,* November 2014; REU, *Return on debt estimation: A review of the alternative third party data series: Report for the AER*, August 2014, published with the Draft Decisions) the AER decided to use both the RBA curve and BVAL curve.

976 The AER also submits that following the Draft Decisions, the most common position among service providers was to support a simple average of the RBA and BVAL curves in all or most circumstances. It referred in detail to them in its written submissions to the Tribunal. It is convenient to note JGN's position. JGN supported using a simple average of the RBA and BVAL curves where the difference between them was not "a material divergence" (which it considered to be 60 basis points), but did not necessarily support a simple average when the difference was greater than 60 basis points. JGN's preferred approach involved an annual testing of the available third party data series.

977 As is self-evident, Networks NSW maintained their initial proposal to use only the RBA curve (a position taken also by Ergon).

978 It is also worth noting that Networks NSW and JGN hold opposing views on this matter.

979 The AER summarised its reasons for the approach it adopted, for example, in Attachment 3 to the Ausgrid Draft Decision at p 3-136 as follows:

> We consider a simple average of the two curves will contribute towards a return on debt that is commensurate with the efficient debt financing costs of the benchmark efficient entity. This is because:
>
> - Based on analysis of the bond selection criteria, we are not satisfied that either curve is clearly superior to the other.
> - Based on analysis of the curve fitting (or averaging) methodologies, we are not satisfied that either curve is clearly superior to the other.
> - Both curves require adjustments from their published form to make them suitable, and we are not satisfied that either can be more simply or reliably used for estimation of the annual return on debt.
> - A simple average is consistent with Lally's advice that we adopt a simple average of the BVAL curve and the RBA curve, subject to the necessary adjustments to each curve. In particularly, Lally concluded that based on analysis of the curves, it was reasonably likely that a simple average of the two

> curves would produce an estimator with a lower mean squared error (MSE), than using either curve in isolation. Lally also noted "on the question of which index better reflects the cost of debt for the efficient benchmark entity, there is no clear winner".
>
> • The two curves have regularly produced substantially different results at particular points in time. While we are not satisfied that either curve is clearly superior, this suggests that it may not be appropriate to simply select one curve or the other.
>
> • A simple average of two curves, in these circumstances, is consistent with the Tribunal's decision in the ActewAGL matter [*Application by ActewAGL Distribution* [2010] ACompT 4 at [78]], where the Tribunal concluded that:
>
> > if the AER cannot find a basis upon which to distinguish between the published curves, it is appropriate to average the yields provided by each curve, so long as the published curves are widely used and market respected.
>
> • A simple average of the two curves will reduce the likely price shock if either curve becomes unavailable or produces erroneous estimates during the period.
>
> Further, our draft decision is also to make certain adjustments to the RBA and BVAL curves. For the RBA curve, our draft decision is to interpolate the monthly data points to produce daily estimates, to extrapolate it to an effective term of 10 years using the spread between the extrapolated RBA 7 and 10 year curves, and to convert it to an effective annual rate.

980 In their Revised Revenue Proposals, Networks NSW again proposed the *exclusive* use of the RBA curve for the period in which this was available, although it did not provide any further detailed analysis or evidence on this issue going beyond what was included in its initial regulatory proposals. Nor did Networks NSW engage with the extensive reasons that the AER had set out in its Draft Decisions as to why it chose to adopt a simple average of the two curves. The Revised Revenue Proposals did not include any substantive new analysis in support of the exclusive use of the RBA curve. The arguments presented in relation to this issue in the Revised Regulatory Proposals were limited to the following:

> The AER's draft decision adopted an average of Bloomberg's Valuation (BVAL) curve and data on corporate bond yield from the Reserve Bank of Australia (RBA) to estimate the allowed return on debt. In this revised proposal, we maintain our initial position that where available the RBA data source should be used to estimate the trailing average cost of debt. As outlined in our initial proposal, we consider the RBA to be a highly reliable independent data service provider for estimates of yields on 10 year BBB rated Australian corporate bonds. Moreover, RBA data extends back to January 2005, which enables the use of a consistently calculated data series to estimate the trailing average cost of debt as far back as January 2005.

981 Networks NSW points out that there is a careful and thorough rebuttal of each of the matters raised in the other expert reports, and in the ACCC Regulatory Economic Unit's analysis.

982 The submission that the BFV/BVAL curves should be regarded suspiciously because of an apparently counter-intuitive response following the GFC, according to Dr Lally, is a criticism related to a different Bloomberg (BFVC) curve so the point is said not to be significant. In any event, the AER says, it was aware of that counter-intuitive aspect of a Bloomberg curve but nevertheless considered that it was an acceptable reliable future indicator. That sort of judgment has been previously considered by and not rejected by the Tribunal: eg *Application by AAPT Allgas Energy Ltd (No 2)* [2012] ACompT 5 at [76]-[80]. The issue of relative transparency was also recognised and taken into account by the AER: eg Attachment 3 to the Ausgrid Draft Decision, at pp 148-149.

983 In the Tribunal's view, whilst there are arguments for the sole use of the RBA curve, it has not been shown that – for the purposes of estimation of the return on debt – any ground of review has been made out. The AER had a choice to make as to what data services, or combination of data services, it should use. Its reasons for selecting the combination of data services are cogent, and reasonable. It is not shown to have misunderstood or overlooked material information. Although there are facts underlying the choice of the AER, the Tribunal is not persuaded of any particular material factual finding which is different from those made by the AER. For the purposes of the relevant Final Decisions, the AER does not positively find that the RBA curve was clearly superior to the BVAL curve, so that its averaging of the two curves was an acceptable measure of the DRP. The Tribunal is not satisfied that, on the material, the AER should have exercised its discretion to select either the RBA curve only, or some other formula for the estimation of the return on debt. Consequently, the Tribunal is not satisfied that the AER made an irrational decision in this respect.

984 The Tribunal considers JGN's separate contention on this issue in its reasons for decision on the JGN application.

(b) Credit Rating

985 In its relevant Final Decisions, the AER noted the divergence of views between service providers and distribution providers, consultants and consumer groups as to the appropriate credit rating to adopt. There was a mix of views among service providers, a mix of views among consultants, and consumer groups generally supported using a benchmark credit rating of BBB+ or higher or placing less reliance on credit ratings in general.

986 The AER explained its identification of the median credit rating in Attachment 3 to the Ausgrid Final Decision, at p 3-197 as follows:

> For historical periods of progressively longer length (starting with the current year, then the last two years and etcetera, up to the last 10 years), the median credit rating has been BBB+ in three out of ten cases, BBB+/BBB in six cases, and BBB in one case. While some evidence supports a BBB credit rating (for example, the median over 2009-2015), we are satisfied that, on balance, the evidence supports a BBB+ credit rating (for example, the median over the periods 2013-2015, 2014-2015 and 2015). We also note that this estimate entails taking the median from the yearly medians.

987 The AER acknowledged that it could also take the median of all credit rating observations over these time periods. That would produce BBB+ for the five most recent periods, BBB/BBB+ for the period 2010-2015 and BBB for the averaging periods 2006-2015 to 2009-2015.

988 Networks NSW says the AER's methodology of taking the median from yearly medians at the measurement point over the relevant period (as opposed to taking the median of all available data points at the measurement point over the relevant period) was in error. This is because such an approach results in disproportionate weight being given to observations at measurement points where there are limited data points. For example, under the AER approach, a year in which there may be a single observation on the relevant measurement of A-, will be given the same weight as a year in which there are four observations of BBB+. A methodology that takes the median over the relevant period gives equal weight to each observation.

989 Networks NSW submit that, if that methodology (of taking the median of the observations, as opposed to the median of the yearly medians) had been adopted, then the applicable credit rating is BBB for longer averaging periods (such as 2006-2015 to 2009-2015). In support of its submission, Networks NSW refer to the CEG report: *WACC estimates – a Report for NSW DNSPs*, May 2014 at p 65 and say that the median across all credit rating observations from 2004 to 2013 (inclusive) is BBB, not "BBB+, negative watch" as per the AER's estimate. Networks NSW also say that as Networks NSW (and the AER's BEE) have a trailing average DRP component, the correct approach is to adopt a longer averaging period.

990 Alternatively, Networks NSW submits that, even if a shorter averaging period is adopted, the AER's methodology wrongly did not exclude or otherwise adjust for the two most highly

rated issuers as untypical outliers because their credit rating was as a result of ownership by the Singapore Government.

991 Networks NSW also submits that the Final Decisions indicates that the AER considered data from 7 April 2015 and that if the AER were to include a 2015 observation (based on an April 2015 or earlier observation), all observations from the previous years would logically need to be made at the same time (being April of the relevant years).

992 Networks NSW says that the AER's decision involved material errors of fact "in concluding that the credit rating" for the BEE was BBB+ and that it made an error of discretion and took an illogical and irrational approach as it gave a disproportionate weight to observations in years where there were fewer observations, rather than a median of observations.

993 The Tribunal is not satisfied that the AER's relevant Final Decisions on this topic disclose a ground of review. In the Final Decisions (eg Attachment 3 to the Ausgrid Final Decision, –at p 3-197) is a table analysing the median credit ratings over time. The table itself is not apparently inaccurate. The more recent years point firmly towards a BBB+ credit rating for the BEE. The Tribunal does not consider that it was either factually wrong, or a wrong exercise of the discretion, to have regard to that material for the purpose of identifying the characteristics of the BEE. The Networks NSW contentions properly demonstrate the potential for bias in the AER's "median of medians" approach and argue that another approach or approaches might have been taken. Nevertheless, the Tribunal is not satisfied that the further step should be taken of concluding that, appropriately using a median of observations methodology, that another approach or approaches should have been taken so that a ground of review has been made out. It is not to be taken as accepting that the "median of medians" approach is a statistically valid approach.

(c) Conclusion on the two issues

994 For the reasons given, the Tribunal is not persuaded that a ground of review has been made out.

995 In any event, the Tribunal would not take the step of being satisfied, in either respect, that to vary or set aside the relevant Final Decision would, or would be likely to, result in a materially preferable NEO decision under s 71P(2a)(c). There was no data to indicate the extent of the change or changes which might be made to the relevant Final Decisions by substituting the components of the process of decision-making for which Networks NSW

contends, and so no basis on which the Tribunal might conclude in the long term interests of consumers that some other decision on either of these two topics would be affected in a material way.

Other General Issues

996 In view of the above, it is not necessary to address the contentions of Networks NSW and ActewAGL that:

(1) assuming the AER correctly adopted the concept of regulated efficient entity as the BEE, and correctly adopted as the BEE, a network service provider which adopted a financing cost structure involving swaps contracts and hedging in response to the on-the-day methodology, in any event its transition process was erroneous because it was not possible to enter into hedging arrangements to match the regulatory allowance for the DRP component of the financing;

(2) assuming the AER correctly adopted the concept of the regulated efficient entity as the BEE, it erred in selecting the swap-based approach as the BEE rather than the trailing average approach as providing a better match to the regulatory allowance during the previous regulatory period (a number of specific reasons for that contention were advanced); and

(3) in any event, whether or not it is assumed that the AER correctly adopted the concept of the regulated efficient entity as the BEE, the AER erred in adopting a single BEE across all gas, electricity, transmission and distribution networks by proceeding on the basis that there is one single BEE.

997 As to (3) above, the Tribunal has generally adopted the position that it was not correct for the AER to have done so, but it has not separately addressed the detailed arguments to support the position of particular DNSPs by reason of their size; the size and availability and cost of swap contracts; their operating environments; and their corporate structures. The arguments are made largely upon the expert views in the Chairmont Report, the Report of Frontier Economics: *Cost of Debt Transition for NSW Distribution Networks*, January 2015; the Lally Report: *Estimating the Cost of Debt of the Benchmark Efficient Regulated Energy Network Business*, 16 August 2013; CEG: *Efficiency of staggered debt issuance*, February 2013; and UBS: *Response to the Networks NSW request for financeability analysis following the AER Draft Decision of November 2014*, 16 January 2015. That is not a comprehensive list.

Ergon's issue

998 Ergon raises as intervener an additional ground or review pursuant to s 71M of the NEL. Ergon contends that the AER made an error of fact in finding that a simple trailing average should be used to estimate the allowed return on debt, when the evidence before the AER was that the use of a Post-Tax Revenue Model (PTRM) weighted average would better meet the requirements of the NER.

999 The AER considered this submission during the course of preparing the Final Decisions. It also considered this submission in its consideration of Ergon's own regulatory proposal, which was considered in the preliminary decision made by the AER with respect to it.

1000 The approach that the AER has adopted in the RoR Guideline and the Final Decisions is to calculate the allowed return on debt as a simple (equally weighted) average of the prevailing market rates in each of the past 10 years. Ergon contends for an alternative weighting approach, based on the debt component of the forecast capex approved in the PTRM. This is a more complex approach, which effectively weights the prevailing rates in each of the past 10 years by the amount of debt that the service provider was forecast in its PTRM to have raised in that year.

1001 The AER decided that, while it acknowledged that the PTRM-weighted average had potential advantages in some circumstances, it would maintain the approach set out in the RoR Guideline of taking the simple average. It stated that it was open to future consideration.

1002 The Tribunal does not, in the circumstances, consider it desirable to address that issue. Ergon will have the opportunity to take it up, if so advised, if the point is maintained by the AER as in its Preliminary Determination in relation to Ergon.

1003 It is not a matter of direct moment to Networks NSW or ActewAGL.

JGN's separate issues

1004 As noted above, there are a number of issues raised by JGN which are discrete to it. They are dealt with in the reasons for decision on its application.

1005 There are also some issues requiring separate consideration on its application, although addressed above.

GAMMA

1006 Under the Australian taxation system, company shareholders can receive an imputation credit (in the form of a franked dividend) for income tax paid at the company level. Australian resident investors may be eligible to use these imputation credits to reduce their individual income tax liability or to obtain a tax refund. Imputation credits may therefore be valuable to investors and of benefit to investors. They represent a return in addition to the face value of franked dividends and the capital gains or losses associated with owning shares.

1007 The value of imputation credits is recognised by the NER and the NGR in estimating a regulated service provider's allowed revenue. Under the Rules, a regulated service provider is entitled to recover revenue that compensates it for its efficient costs of providing regulated services. Those costs include a return on equity sufficient to promote an efficient level of investment. While the value of imputation credits flowing from a regulated service provider's franked dividends may reduce those costs, the return on equity is not reduced to take into account the value of imputation credits. Rather, the NER (r 6.5.3) and NGR (r 87A) reduces the revenue that the service provider requires to pay the estimated cost of its corporate tax by way of a formula in which the value of imputation credits is represented by the Greek letter γ.

1008 The Rules require an estimate of "*the value of imputation credits*" (also referred to as "gamma" or "γ") as an input into the calculation of the corporate income tax building block: r 6.5.3 NER:

> **6.5.3 Estimated cost of corporate income tax**
>
> The estimated cost of corporate income tax of a *Distribution Network Service Provider* for each *regulatory year* (**ETC_t**) must be estimated in accordance with the following formula:
>
> $ETC_t = (ETI_t \times r_t)\ (1 - \gamma)$
>
> where:
>
> ETI_t is an estimate of the taxable income for that *regulatory year* that would be earned by a benchmark efficient entity as a result of the provision of *standard control services* if such an entity, rather than the *Distribution Network Service Provider*, operated the business of the *Distribution Network Service Provider*, such estimate being determined in accordance with the *post-tax revenue model*;
>
> r_t is the expected statutory income tax rate for that *regulatory year* as determined by the *AER*; and

γ is the value of imputation credits.

1009 Rule 87A of the NGR is relevantly in much the same terms.

1010 The application of the formula was explained in *Application by Energex Ltd (No 2)* [2010] ACompT 7 (*Energex No 2*) as follows:

> [18] The generally accepted regulatory approach in Australia has been to define the value of gamma imputation credits as a product of the imputation credit 'distribution ratio' (**F**) and the 'utilisation rate' (**theta** or θ) ($\gamma = F \times \theta$) where:
>
> (a) ***F*** is defined as the value of imputation credits distributed by a firm as a proportion of the value of imputation credits generated by it in the period (the distribution ratio); and
>
> (b) theta or $\boldsymbol{\theta}$ is defined as the value of imputation credits distributed to investors as a proportion of their face value (the 'utilisation rate').
>
> [19] Under the formula set out in the rules, the higher the value for gamma, the lower the estimated cost of corporate income tax for a service provider. The overstatement of either the distribution rate or the utilisation ratio would result in an overstatement of gamma and thus an underestimate of the cost of corporate income tax for the DNSP. This would result in an underestimate of the revenue that is required to provide the required return to investors. This, in turn, would deprive the DNSP of a reasonable opportunity to recover its efficient costs, such that it would not have the incentive to achieve the efficiency objectives, that are the purpose of the regulatory regime.

1011 That explanation of the application of the rule in *Energex No 2* is to be read subject the 2012 Rule Amendments, which substituted "the value of imputation credits" for "the assumed utilisation of imputation credits" in the definition of gamma.

1012 It is the Network Applicants' submission that, notwithstanding that change, the regulatory practice and consistent approach by all parties in previous years was to treat gamma as the value to the investor of imputation credits. The AER submits it is a change to make the language reflect what has always been the position and that while its construction of the rules is not materially different from the applicants, its way of working out the value to investors in the market is. The difference as explained by counsel for the AER: "… is whether one identifies a market value on the before tax basis, as the AER has it, or whether one estimates it on the basis that is significantly affected by factors such as personal costs and risk and other factors which we say are brought into the dividend drop-off studies."

1013 The common approach between the parties to the assessment of gamma, expressed as a decimal ratio, is to be calculated as the product of:

(a) the distribution rate for imputation credits, expressed as a decimal ratio (also referred to as “F”); and

(b) the value of distributed imputation credits (also referred to as “theta” or "θ").

1014 The AER adopts a gamma of 0.4 (from a possible range of 0.3 to 0.5). The Network Applicants contend for a gamma of 0.25. The result of the AER’s decision is that the calculation of the corporate income tax building block for the Network Applicants is lower than would be the case had the Network Applicants’ gamma proposals been accepted, and therefore amounts to the Network Applicants being allocated lower revenue allowances.

1015 There is a dispute between the Network Applicants, the Vic/SA Interveners, Ergon, on the one hand and the AER, on the other as to:

(a) the appropriate interpretation of the distribution rate and theta parameters (including what is meant by “the value of imputation credits” in the Rules);

(b) the appropriate method, sources of information and/or weight to be attributed to each data source when determining “the value of imputation credits”; and

(c) the appropriate figures for each of the distribution rate, theta, and ultimately, gamma.

1016 The submissions made by the Vic/SA Interveners and by Ergon broadly reflect the submissions made by the Network Applicants. Therefore, they are only specifically discussed where they have raised additional or separate issues which are necessary to address.

1017 In particular, the Network Applicants contend that the AER’s estimate of gamma:

(a) does not reflect the best estimate of the value of imputation credits to investors, as reflected in market prices that investors are willing to pay for traded stocks; and

(b) is significantly above even the upper bound for the value of imputation credits, as indicated by tax statistics.

1018 The Network Applicants raise each of the grounds in s 71C of the NEL and s 246 of the NGR in relation to each of these matters. The Network Applicants say that if their construction of the Rules is correct, the AER erred in the weight it attributed to each source of data and incorrectly determined the appropriate figure for gamma. However, even if the AER’s interpretation is favoured, they say that the AER erred in the weight that it attributed to each data source and incorrectly determined the appropriate figure for gamma.

Historical and Legislative Content

1019 It is helpful to consider the significance of imputation credits and the legislative context to contextualise the submissions made by the parties in relation to gamma.

1020 In 1987, the Commonwealth introduced an imputation tax system for companies. Soon after the introduction of the imputation system, academics began to consider the implications of the system for the valuation of companies and estimation of a company's cost of capital, including a 1994 paper by Professor Officer, *The cost of capital of a company under an imputation system,* Accounting and finance*;* vol 34(1), May 1994 (the Officer Paper). This paper forms the basis of the "Officer Framework" upon which the current regulatory system is based.

1021 Gamma was first introduced into the Australian regulatory context in 1998 by the ACCC in the first version of the National Electricity Code (the Code) under Part VII of the *Trade Practices Act 1974* (Cth), in the context of calculating the weighted average cost of capital under the imputation tax system. It was defined as the "value of franking credits or imputation factor". This definition of gamma was then introduced as part of the weighted average cost of capital formula in Ch 6 of the NER, which commenced operation on 1 July 2005.

1022 In 2006, Ch 6A of the NER relating to transmission services was introduced, which broadly aligned the provision in Ch 6 relating to distribution services as part of the determination of the corporate income tax building block. It defined gamma as "the assumed utilisation of imputation credits, which is deemed to be 0.5". From 1 January 2008, the definition of gamma as "the assumed utilisation of imputation credits" was adopted in Ch 6.

1023 The current versions of the Rules are the result of a series of amendments culminating in the 2012 Rule Amendments. Unlike the Code which was initially implemented, and as the AER has observed (in Attachment 4 to each of the JGN Final Decision at p 4-6, the ActewAGL Final Decision at p 4-7, and the Networks NSW Final Decisions p 4-7), without footnotes) under the Rules:

> the estimation of the return on equity does not take imputation credits into account. Therefore, an adjustment for the value of imputation credits is required. This adjustment could take the form of a decrease in the estimated return on equity itself. An alternative but equivalent form of adjustment, which is employed by the NER/NGR, is via the revenue granted to a service provider to cover its expected tax liability. …This form of adjustment recognises that it is the payment of corporate tax which is the source of the imputation credit return to investors.

1024 As the AER observes, the 2012 Rule Amendments effectively restore the wording of the definition of gamma that appeared in the first version of the NER (incorporating Schedule 6.1 of the Code), as the "value of franking credits".

1025 As observed, it is agreed between the parties that the change in the definition of gamma in the Rules from the "assumed utilisation of imputation credits" to the "value of imputation credits" does not change the meaning of gamma. Instead, the dispute concerns what that meaning is.

1026 The Rules continue to reflect the relationship between imputation credits and the cost of capital in the method of calculating the rate of return. Relevantly, r 6.5.2(d) of the NER provides that:

> …the *allowed rate of return* for a regulatory year must be:
>
> (1) a weighted average of the return on equity for the *regulatory control period* in which that *regulatory year* occurs (as estimated under paragraph (f) and the return on debt for that *regulatory year* (as estimated under paragraph (h)); and
>
> (2) determined on a nominal vanilla basis that is **consistent with the estimate of the value of imputation credits** referred to in clause 6.5.3.
>
> [emphasis in bold added]

1027 Rule 87(2)(4) of the NGR is in similar terms.

1028 As noted elsewhere in these reasons, the 2012 Rule Amendments also introduced a requirement for the AER to periodically publish the RoR Guideline: r 6.5.2(m) of the NER and r 87(13) of the NGR. As required, the RoR Guideline sets out (among other things) the estimation methods, financial models, market data and other evidence the AER proposes to take into account in estimating the value of imputation credits under r 6.5.3 of the NER and r 87A of the NGR: r 6.5.2(n) of the NER and r 87(14) of the NGR. Also as noted elsewhere in these reasons, while the RoR Guideline is not binding on the AER in relation to making individual determinations, if the AER makes a decision that is not in accordance with the RoR Guideline, it must state its reasons for departing from the them: r 6.2.8(c) of the NER and r 87(18) of the NGR.

1029 In accordance with the Rules, as indicated above, the AER published the RoR Guideline in December 2013, setting out (amongst other things) guidelines for estimating imputation credits. In keeping with accepted interpretation and practice, the AER's gamma decision calculated the value of imputation credits as the product of the distribution rate for imputation credits and the utilisation rate of distributed imputation credits. The estimates outlined at p 23 of the RoR Guideline were an estimate of 0.5 for the value of imputation credits, based on a distribution rate of 0.7 and a utilisation rate of 0.7.

The AER's approach to setting Gamma

1030 While the AER notes that it did not "decide" (and did not need to decide) particular values for each of the distribution rate and utilisation rate in making its gamma decision, the AER analysed several approximations of the distribution rate and the utilisation rate.

1031 The AER rejected the Network Applicants' proposed value of 0.25 for gamma and adopted a gamma of 0.4 in its Final Decisions based on an analysis of various sources and estimates for both all equity and listed equity. Those sources and the AER's use of that evidence is discussed in more detail below. The reasons for its decision are outlined in Attachment 4 to each of the AER's Final Decision for each Network Applicant.

The distribution rate (F)

1032 The distribution rate was interpreted as "the proportion of imputation credits generated that is distributed to investors". It was estimated with a cumulative payout ratio approach which uses Australian Taxation Office (ATO) Franking Account Balances (FAB) statistics to calculate the proportion of imputation credits generated (via tax payments) that have been distributed by companies since the start of the imputation system. There is no dispute about this definition or the reliability of the ATO FAB data used to determine the distribution rate.

1033 The parties do, however, dispute whether the distribution rate should be calculated from all equity, or from the sub-set of listed equity.

1034 In its Draft Decisions, the AER derived its estimate of the distribution rate of 0.7 based on data for all equity, consistent with past practice and the estimate endorsed by the networks and their advisors. Its Final Decisions were based on consideration of the original 0.7 value and a new estimate of 0.8 (0.77 in the case of JGN) derived from the distribution rate based on data only for listed equity. The listed equity only estimate was produced in response to advice from the AER's expert Professor Handley: *Report prepared for the Australian Energy*

Regulator: Advice on the value of imputation credits, 29 September 2014 (the Handley 2014 Gamma Report). He said that the distribution rate should be calculated on a consistent basis with the utilisation rate, theta. This, in turn is based on his understanding of a CAPM framework; consistent with the definition of a BEE, Handley had advised the distribution rate should be estimated only from the data for listed equity.

1035 As discussed below, it appears that the AER effectively adopted the distribution rate of 0.8 when setting gamma. Whether this was correct or reasonable in the circumstances hinges on the validity of the rationale it has provided for the emphasis placed on the listed equity estimate of the utilisation rate.

The utilisation rate (theta)

1036 Theta was interpreted as "the utilisation value to investors in the market per dollar of imputation credits distributed", which reflects the extent to which investors can utilise the imputation credits they receive to reduce their tax or obtain a refund.

1037 Three methods of estimating theta were considered by the AER in the Final Decision: the equity ownership approach; tax statistics; and market studies. A fourth approach (the conceptual goalposts approach) mentioned in the RoR Guideline was not given any further consideration, but the reasons for excluding it were explained.

Equity Ownership Approach

1038 The AER described the equity ownership approach in the Final Decisions (eg Attachment 4 to the Ausgrid Final Decision at p 4-23) as follows (without footnote):

> We consider that the value-weighted proportion of domestic investors in the Australian equity market is a reasonable estimate of the utilisation rate. This is because, in general, domestic investors are eligible to utilise imputation credits and foreign investors are not. Moreover, as discussed above, we consider that eligible investors have a utilisation rate of 1 because each dollar of imputation credit received by these investors can be fully returned to them in the form of a reduction in tax payable or a refund. We refer to this approach as the 'equity ownership approach', and we use data from the National Accounts of the Australian Bureau of Statistics (ABS) to estimate the domestic ownership share.

1039 The AER says that, on a before-personal-tax and before-personal costs basis, an investor that is eligible to fully utilise imputation credits they receive has a utilisation rate of 1 (ie they gain 100 percent of the "value" of the imputation credits); whereas an investor that is ineligible to redeem imputation credits has a utilisation rate of 0 (ie they gain no "value" from

the imputation credits). The AER rejected all arguments suggesting that individual eligible investors could value imputation credits at less than their nominal dollar value. Consequently, the equity ownership approach assumes this dollar value of imputation credits to a relevant class of investors and then attempts to estimate the proportion of those investors in the total.

1040 Consistent with the Handley 2014 Gamma Report the Australian Bureau of Statistics (ABS) National Accounts data was filtered to exclude equity in public sector entities, and the AER calculated the "refined domestic ownership share of total equity" as the "equity held by 'households', 'pension funds' and 'life insurance corporation' as a share of the equity held by these classes plus 'rest of world'": Attachment 4 to the Ausgrid Final Decision at p 4-72. The "rest of world" included both equity held by foreigners and government-held equity.

1041 The refined domestic ownership shares of total equity were calculated for both all and listed equity over the period from July 2001 to October 2012.

1042 The Network Applicants have criticised the equity ownership approach on the basis that it makes no allowance for the percentage of Australian domestic investors who are unable to redeem an imputation credit because of restrictions on redemption, such as the 45 day holding rule (a requirement, subject to certain exceptions, that domestic investors hold shares for at least 45 days, excluding the date of purchase or sale, before they are eligible to obtain the benefit of imputation credits associated with that share), and therefore domestic equity ownership rates exceed even the true maximum figure for the proportion of eligible investors. In its Final Decisions the AER specifically considered the extent to which the equity ownership data should be adjusted for the effect of the 45 day holding rule. The AER concluded, based on an analysis of ATO data in N. Hathaway, *Imputation credit redemption ATO data 1988–2011: Where have all the credits gone?*, September 2013 that "the 45-day holding rule does not appear to have a material effect on the utilisation rate" (Attachment 4 to the Ausgrid Final Decision at p 4-56).

1043 The Network Applicants have also criticised the equity ownership approach on the basis that it essentially assumes the value of imputation credits rather than deriving it from market data and, as discussed below, have identified a number of reasons why, in aggregate, Australian resident shareholders will value a dollar of distributed imputation credits at less than a dollar.

1044 The Network Applicants also contend that the AER erred by giving more weight to the equity ownership approach to estimating theta (which they say is, at best, an "upper bound" for theta) and that the AER erred by relying on equity ownership rates over a period commencing in July 2000. The Network Applicants and the Vic/SA Interveners claim that there is no apparent basis for taking figures up to 15 years old.

1045 The AER says that the use of historical equity ownership data is important as there is volatility in the ABS data as to equity ownership and therefore, more than just the most recent estimates should be taken into consideration.

Tax Statistics

1046 The AER estimate of the utilisation rate based on ATO tax statistics applied similar reasoning to that in the AER's equity ownership approach. The tax statistics estimate, also assumes a dollar value for each dollar of imputation credits issued, but measures the actual rate of redemption of distributed imputation credits by eligible investors from information reported in tax returns. This ATO data also does not reflect any of the factors which may decrease the value of imputation credits to shareholders, although the rate of redemptions is smaller than the domestic ownership share, so the associated estimate of theta is smaller.

1047 Although the Network Applicants dispute the AER's interpretation of the redemption rate, there is no dispute about the validity of the relevant tax statistics or the estimate. They note (Network Applicants Joint Submissions On Gamma, at [8(b)]):

> The AER correctly identifies that the redemption rate from tax statistics is 0.43 (or 0.45 using updated data).

1048 The proper use of tax statistics in determining a value for theta was also considered in *Energex (No 2)* at [91] in which it was said:

> [I]ts relevance [the relevance of taxation statistics] could only be related to the fact that it was an upper bound. No estimate that exceeded a genuine upper bound could be correct. Thus the appropriate way to use the tax statistics figure was as a check.

We agree with the Tribunal's discussion in *Energex (No 2)*. In our view tax statistics can only provide an upper bound on the estimate of theta.

Market Studies

1049 The third source of estimates of the utilisation rate were market studies of the value of imputation credits. The AER Final Decisions cite a substantial number of studies of utilisation rates based on share market data and summarises the estimates they produced (eg Table 4-9 at p 4-78 of Attachment 4 of the Ausgrid Final Decision). These include, but are not limited to, dividend drop-off studies that compare the changes in share prices in the period when stocks go from cum-dividend to ex-dividend (that is, before and after entitlement to dividends and any associated imputation credits) with the value of the associated dividends and imputation credits.

1050 Stock prices rarely change by exactly the "face value" of the dividend and associated franking credits when they go ex-dividend. Dividend drop-off studies identify any consistent differences between price changes and the related dividends and imputation credits. They have to address data and statistical problems, such as isolating the dividend drop-off from other factors impacting prices at the same time and multicollinearity in parameter estimates due to the close correlation between the levels of dividends and imputation credits for fully franked dividends. Properly specified and estimated dividend drop-off studies estimate the market values of dividends and associated imputation credits.

1051 The theory and practice of using dividend drop-off studies to estimate theta was considered in detail by the Tribunal in *Energex (No 2)* at [70] to [76] and again at [100] to [144]. The AER's discussion and summary includes a significant proportion of studies which, based on that discussion, could be excluded on the basis that they were not relevant to an estimate of theta for the purposes of its determination. For instance, none of the results based on pre-2000 period data include the effects of changes to allow tax rebates of imputation credits for low income earners.

1052 The AER correctly identified a number of weaknesses in the market studies, particularly the dividend drop-off studies. These included that, because imputation credits are not traded, the studies must infer the value of imputation credits from econometrically estimated parameters, rather than observing market prices directly. This criticism is at odds with the AER's reliance on economic modelling in other aspects of its determinations, particularly the benchmarking model used to determine opex.

1053 The Network Applicants preferred value of gamma is based on the theta estimate of 0.35 from a dividend drop-off study commissioned from SFG, *Updated dividend drop-off estimate of theta*, SFG Consulting, 7 June 2013, (the SFG 2013 Study) and intended to update a previous SFG study, reported and relied upon in *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, which was produced in response to the Tribunal's concerns with previous studies as expressed in *Energex (No 2)*.

1054 The discussion in *Energex (No 2)* also makes it clear that the AER is correct not to place much weight in its Final Decisions on the results of early Australian dividend drop-off studies. Nevertheless, its summary of the range of potential theta estimates from these studies fails to focus on what the AER, in its RoR Guideline (RoR Guideline, Appendices at p 174), notes were "[t]he most relevant dividend drop-off studies, by SFG and Vo et al" which "present estimates in the range 0.35 to 0.55".

Estimates of gamma

1055 Each of the Final Decisions summarised the AER's analysis of the various data sources and methodologies for estimating gamma as follows (eg Attachment 4 to the Ausgrid Final Decision, Tables 4.1 and 4.2 at p 4-18):

Evidence from all equity			
Methodology	Utilisation rate (theta)	Distribution rate	Implied Gamma
Equity ownership approach	0.56 to 0.68	0.7	0.4 to 0.47
Tax statistics	0.43	0.7	0.3

Evidence from listed equity			
Methodology	Utilisation rate (theta)	Distribution rate	Implied Gamma
Equity ownership approach	0.38 to 0.55	0.8	0.31 to 0.44
Market value studies	0 to 1(implied market value studies) 0.35 (SFG Dividend drop-off study)	0.8	0 to 0.8 0.28

1056 It is necessary for the Tribunal to review the AER's decision based on reference to its assessment of the component parts. It follows that the gamma decision must logically be consistent with those parts. In order to adhere to the AER's setting gamma at 0.4, the Tribunal needs to identify preferred point values or ranges of the distribution and utilisation rates that, multiplied together, equal 0.4 or produce a range around that value. If the two components, or a range of the two components, when multiplied cannot set gamma at that figure, or in that range, the Tribunal would regard the decision of the AER as demonstrating error. If the AER's broad discretionary approach is the correct one, it must be referable to properly assessed data. If the data was not properly assessed, that may demonstrate factual error.

1057 In responding to the Network Applicants, the AER submits:

> The AER did not adopt a "range" for the distribution rate. Rather, it used an estimate of the distribution rate of 0.8 (or for JGN, 0.77) when considering estimates of the utilisation rate from only listed equity and an estimate of the distribution rate of 0.7 when considering estimates of the utilisation rate from all equity.

1058 Without further clarification about which value was used, it is only possible to conclude that, by setting gamma at 0.4, from a range between 0.3 and 0.5, the AER relied upon a value for theta that was one of, or close to, 0.5, 0.52 or 0.57, depending on whether it used a distribution rate of 0.8, 0.77 (for JGN) or 0.7, respectively. All of these values exceed the upper bound suggested by the tax statistics estimates of the redemption rate (0.43 (updated to 0.45 for JGN)).

Interpretation of "The Value of Imputation Credits"

1059 In order to determine the appropriate methodology for calculating gamma it is necessary to consider the role of gamma in the Rules.

1060 Gamma is part of the formula for determining the corporate income tax building block which in turn comprises part of the total revenue allowance for a network service provider: rr 6.4.3(a)(4), (b)(4), 6.5.3 of the NER and rr 76 and 87A of the NGR. It is necessary to consider corporate income tax as part of the total revenue allowance for a network service provider so that the "cost" of taxation can be offset through its revenue allowance. In doing so, the network service provider is provided with a reasonable opportunity to recover at least the efficient level of revenue incurred in providing services and complying with regulatory obligations or making regulatory payments: s 7A of the NEL and s 24(2) of the NGL.

1061 The calculation of gamma must be approached in this context. The proper concern is not the extent to which imputation credits may be translated to real money. Instead, it involves a determination of the cost of taxation to a network service provider, and the extent to which that cost must be reduced to reflect the impact of the dividend imputation system on the network service provider. The reduction in the cost of income tax represented by gamma reflects the personal taxation benefits (as opposed to other benefits such as dividends) gained by shareholders from holding equity in the network service provider and the value of those benefits as ascribed by shareholders. Consequently, it is necessary to consider both the eligibility of investors to redeem imputation credits and the extent to which investors determine the worth of imputation credits to them.

1062 A significant proportion of the written and oral submissions in relation to gamma, as well as certain submissions made during the consumer consultation process, concerned the correct approach to gamma in r 6.5.3 of the NER and r 87A of the NGR and the extent to which either or both the approaches by the Network Applicants and the AER were concerned with the "worth" or "market-value" of imputation credits. The Network Applicants say that the AER took a non-market view in the construction of gamma which involved a misconstruction of the Rules. The AER says that the dispute does not concern a debate between market and non-market approaches, but instead can be characterised as a debate between how one calculates the value of imputation credits to investors in the market, which does not turn on the construction of the legislation.

1063 While the Tribunal is not required to conclusively determine the character of this dispute, except to the extent necessary to consider whether a ground is made out under s 71C(1) of the NEL or s 246(1) of the NGL, it is helpful to consider the nature of the dispute as a background to the detailed submissions made by the parties.

1064 The respective approaches of the parties to calculating gamma are as follows. The Network Applicants say that the correct approach to conceptualising both theta and gamma is to interpret "value" as meaning the "actual value" that equity-holders place on imputation credits assessed from examining market prices, particularly dividend drop-off studies. The AER's approach is set out above.

1065 The implications of these approaches to gamma mean that it is agreed that gamma may be significantly less than the face amount of the distributed imputation credits because they cannot always be utilised by investors. It is agreed that this may be because, inter alia,

foreign investors cannot utilise imputation credits which are part of the Australian taxation system or, at least conceptually, because of the 45 day holding rule.

1066 However, in addition, relying on an SFG report, (*An appropriate regulatory estimate of gamma: Report for Jemena Gas Networks, ActewAGL, APA, Networks NSW (Ausgrid, Endeavour Energy and Essential Energy), ENERGEX, Ergon, Transend, TransGrid and SA Power Networks*, 21 May 2014, at [65]) the Network Applicants submit that shareholders who do utilise imputation credits may not value them at the full face amount, including because:

> (a) Time value of money: unlike dividends themselves, imputation credits only produce value through reducing or rebating personal tax, such that there can be a significant delay between receiving the credit and obtaining the benefit. That delay can be years where credits are distributed through other companies or trusts or where the taxpayer is initially in a tax loss position. Thus, credits may be worth less to investors than their face amount.
>
> (b) Transaction costs: the accounting and administrative costs of redeeming imputation credits are greater than for dividends (which are typically simply paid into a nominated bank account). These costs will partially offset against the value that an investor would otherwise receive.
>
> (c) Portfolio effects: An Australian investor obtaining an 8% return from an investment in the USA might decide instead to redirect the investment to an Australian equity returning 7% but so as to obtain the benefit of imputation credits which contribute an additional 2%. For that investor, who is switching investments to obtain the benefit of imputation credits, the imputation credits in question are not worth 2% but are worth 1% (because they come with an opportunity cost). Also, as an investor redirects funds to Australian equity, the investor's portfolio becomes more concentrated which is costly. For each investor, such switching and portfolio adjustment would rationally continue until the marginal value of switching (and thus the marginal value of the imputation credits) approaches zero.

1067 The AER characterises these additional factors as 'personal costs' which are faced by investors and submits that they should not be accounted for when characterising the proper value for theta and, consequently, gamma. The AER says that this is because of the requirements for consistency with the "Officer framework" and for an internally consistent method for estimating gamma and the allowed rates of return on debt and equity in the weighted average cost of capital (WACC).

1068 While the AER does not contend that the Officer Paper is a statute or a code, it explains that the Officer Paper underpins the inclusion of gamma in the corporate income tax formula in

the NER r 6.5.3 and the NGR r 87A, and that it is fundamental to a coherent understanding of the role of gamma in the regulatory scheme.

1069 As outlined above, there is a relationship between imputation credits, the cost of capital and the method of calculating the rate of return. This is formally recognised by r 6.5.2(d)(1) and (2) of the NER and r 87(4)(a) and (b) of the NGR which require that the allowed rate of return be a WACC "determined on a nominal vanilla basis that is consistent with the estimate of the value of imputation credits". The vanilla WACC framework upon which the NER and NGR are based (and have historically been based) is an "after-tax" or "post-tax" framework (cf r 6.4 of the NER), finding its origins in the Officer Framework.

1070 Under the Officer Framework, the AER says that the required return on capital is calculated after company tax and does not explicitly factor in the personal taxes or transaction costs of equity-holders. Further, the AER says the approach to gamma should be consistent with this after-company tax, before-personal tax and costs rate of return framework. This is because it says that estimating different aspects of regulated revenue using different definitions of the return on capital may result in incorrect compensation for the regulated business, which does not incentivise efficient investment. Therefore, the AER says that, conceptually, gamma should not be characterised as including the "personal costs" faced by investors, as contended by the Networks Applicants.

1071 In effect the AER submits that $1 of capital gain is taken to have a value of $1, which is equal to $1 of dividend, using the all ordinaries accumulation index (All Ords) as a proxy for the return on Australian domestic equity and using the All Ords to determine a dividend yield. As a result, in order for the regulatory system to be consistent (assuming that the imputation credits can be utilised by an investor), the AER says that $1 of capital gain, which is equal to $1 of dividend, must be equal to $1 of imputation credits.

1072 As the Network Applicants submit, the difficulty that arises with this line of reasoning is that market-value studies of imputation credits suggest that investors may not value cash dividends and eligibility to reduce their income tax liabilities, equally.

1073 Moreover, the AER's reasoning ignores the fact that other parameters in the WACC calculations are market values that already incorporate the effects of the differences in investors' tax positions and transaction costs. As noted by Professor Gray of SFG Consulting, *Estimating gamma for regulatory purposes*, 6 February 2015 at 9:

> In my view, gamma is no different from any other WACC parameter in this respect. For example, when estimating beta, the AER uses traded stock prices, which reflect the value of those shares to investors. That value reflects any "personal costs" that the investors bear. There is no process of adjusting share prices to reverse some of the reasons why investors value shares the way they do. The same applies to the traded bond prices that the AER uses to estimate the cost of debt. All of these prices reflect the value to investors – *all* of the considerations that are relevant to how investors value the stock are reflected in the price. [italicised emphasis in the original]

1074 Consequently, there is no inconsistency between the use of market studies to estimate the value of imputation credits and the methods used to calculate other parameters of the costs of debt and equity from market data.

1075 In the Handley 2014 Gamma Report prepared for the AER, Handley discusses, inter alia, recent extensions (Monkhouse, Lally and van Zijl, Handley) of the Officer Framework that relax the simplifying assumptions in the original analysis. These extensions include assessing the effects of:

- allowing for multiple time periods instead of Officer's perpetuity approach (in which dividends and other flows are assumed to be constant amounts that are reduced to net present values at constant discount rates);
- the subsequent possibility that not all imputation credits are distributed in the periods in which they are generated;
- recognising that not all company tax paid can or will be issued as imputation credits (unlike Officer's Framework which equates the proportion of imputation credits generated/available as a result of paying company tax with those actually distributed through franked dividends - the special case of 100 percent distribution, in which $F=1$ and $\gamma=\theta$); and
- explicit application of forms of the CAPM, including variations that allow for the existence of, and interaction with, foreign residents, asset classes and markets.

These extensions infer different interpretations of, and appropriate empirical approaches to, the estimation of the distribution and utilisation rates that determine the value of gamma.

1076 Although these recent studies give greater insight into the impact of imputation credits on the value of a company in more general circumstances than allowed for by the Officer Framework, they do not appear to present an empirically robust and internally consistent explanation for the link between the existence of imputation credits and the applicability of the vanilla WACC that remains the basis for the allowed rate of return defined by r 6.5.2(d)(1) and (2) of the NER and r 87(4)(a) and (b) of the NGR.

1077 The Tribunal notes that the complementarity already discussed does not mean that there is some refined concept for the "value of imputation credits".

1078 The complementarity suggests that the sort of factors which inform the return on equity generally (as discussed in "Return on equity" above) should also inform the determination of gamma. But, as is apparent from the matters there referred to, the values of the relevant elements are informed by data in the market, and are arrived at by analysis and inference from that data. They are not then adjusted by a more detailed analysis of why the participants in the market have caused the market to reach those levels or to act in that way. For some predictions, such information and analysis may be appropriate. But, in the present circumstances, there is nothing to support that reliance on historical data is inappropriate. Indeed, that is what all parties did in their respective submissions.

1079 The consequence is that it is how shareholders act in the marketplace, in relation to the utilisation of the franking credits available to them, which should inform the value of those imputation credits. Their individual, and inevitably different, sets of reasons for acting in the way they do generates their behaviour. The observable market behaviour is the consequence of the individual reasons of each shareholder, in that shareholder's personal circumstances.

1080 Consequently, to the extent that the Network Applicants submit that the value of theta, and therefore the value of gamma, should be assessed at a "market value" which is less than the value which the observable behaviour including behaviour in the market demonstrates (as analysed by market studies and divided drop-off studies) as well as the ATO tax statistics, the Tribunal does not accept that submission. It may be that the submission of the Network Applicants does not go that far.

1081 Of course, it also follows from the above, that the Tribunal does not accept the AER's approach that imputation credits are valued at their claimable amount or face value (as it said in the Final Decisions: the measure is what can be claimed). The value is not what can be claimed or utilised, but what is claimed or utilised as demonstrated by the behaviour of the shareholder recipients of the imputation credits.

1082 Those comments do not address how the value of the imputation credits is best assessed or properly assessed in these matters. But they do re-affirm how the imputation credits in the Tribunal's view, are to be valued. Of course, the valuation is, or may be, a complex exercise depending upon the inference to be drawn from a range of data sources.

Consideration

AER's CAPM framework

1083 It is clear that the AER's conceptual and empirical approach to estimating gamma has been influenced by models of the effects of imputation credits on the value of a BEE that generalise the original Officer Framework to allow for important real-world complications, such as the limits on companies' ability to issue imputation credits and the existence of, and interaction of Australian investors with, foreign residents, asset classes and markets. It is also clear that the intent of the changes to the NER and the NEL was to allow the AER greater flexibility to adopt a more sophisticated approach to the cost of capital than previously envisaged by the NER and the NEL.

1084 It is appropriate that the AER should use that additional flexibility to seek advice on alternatives to the Officer Framework that better define the impact of imputation credits on the cost of capital. Nevertheless, the Tribunal considers that, in light of the changes to its methodology, the AER has not satisfied the Tribunal that its conception and estimation methods are consistent with the requirements of the NER and NEL, including the RPP. That is understandable where the experts themselves, through their recent reports, present no consistently coherent CAPM framework for the assessment of the components of the cost of capital. There are models with disputed applicability which may or may not be consistent with the application of a vanilla WACC, as required by r 6.5.2(d)(1) and (2) of the NER and r 87(4)(a) and (b) of the NGR.

1085 For instance, as discussed above, the AER adopted the SL CAPM as its foundation model for assessing the cost of equity. That model makes no allowance for the presence of imputation credits. Nevertheless, the AER's preference for, and effective adoption of, the listed equity versions of the estimate of the distribution rate and of the equity ownership approach to theta was based on advice it received based on CAPMs that allow for the effects of imputation credits.

1086 This contrasts with the approach taken by the New Zealand Commerce Commission (NZCC) which adopted a variant of the CAPM, the Simplified Brennan-Lally CAPM (the SB-L CAPM) as the basis for its estimates of the costs of capital in its determinations in 2012 of allowed revenue for a number of regulated entities. As described in *Wellington International Airport Ltd and others v Commerce Commission* [2013] NZHC 3289 (*WAIL*) at [1090]:

> The SB-L CAPM adapts the classical (tax free) CAPM to take account of New

> Zealand's taxation system. It recognises the presence of imputation credits, assumes that they are fully utilised and also assumes that capital gains are tax-free.

The intention was to underpin its assessment of the cost of capital with a coherent framework that incorporated the effects of imputation credits.

1087 In their appeal to the New Zealand High Court against the NZCC determinations, the regulated entities criticised use of the SB-L CAPM on a number of grounds, including because the NZCC assumed entities had a common level of debt financing. This assumption was made in order to overcome an anomaly in the SB-L CAPM whereby the WACC increases with leverage, contrary to the generally accepted view that it should not (*WAIL* [1418]), since that would imply firms should never use debt finance. Whatever its other merits, the SB-L CAPM was not able initially to model the cost of capital in a way that was consistent with an important "real world" observation. The authors of the model were later able to demonstrate that the anomaly could be resolved by changes to the assumptions underlying the original version (*WAIL* at [1614] et seq), albeit at the cost of introducing other imperfections. Despite the acknowledged weaknesses of the SB-L CAPM and the approach taken by the NZCC, the High Court in *WAIL* considered that alternatives suggested by the appellants would not produce "a materially better IM [input methodology]" (*WAIL* at, for instance, [1656]).

1088 The New Zealand decision in *WAIL* suggests that financial modelling may not yet have produced a workable version of a CAPM that incorporates a generalised treatment of imputation credits, in which case the AER would necessarily have to make judgements about whether and how to the modify the methodology in the RoR Guideline for factors subsequently raised in advice it received from experts.

1089 The question still remains whether the AER's relevant conclusions in relation to this building block should be maintained. The Tribunal notes that the impact of the advice it received based on alternative forms of CAPM relates primarily to the adoption of the listed-equity versions of its estimates of the distribution and utilisation rates, rather than the all-equity versions in the RoR Guideline and Draft Decisions. The AER's reliance on the equity ownership approach hinges on the larger question of whether that approach correctly captures the value of imputation credits, a concept unchanged by the amendments to the Rules and the NEL and NGL that allowed the AER to consider a wider range of financial models.

AER's conceptual approach to and estimation of theta

1090 The evidence indicates that there is a discrepancy between the values for theta determined using the equity ownership approach, which is higher, and through the use of tax statistics, which is lower. As noted above, consistent with the Tribunal's discussion in *Energex (No 2)*, the Tribunal's view is that tax statistics provide an upper bound on the estimate of theta. Therefore, to the extent that the equity ownership approach indicates that theta is above the amount specified through tax statistics, it is also apparent that there are investors who the AER assumes are eligible to redeem imputation credits but, for whatever reasons, either cannot redeem them or attribute so little value to the credits that they do not utilise them.

1091 As noted above, in its Final Decisions the AER specifically considered and rejected one of these potential reasons, the effect of the 45 day holding rule. The AER concluded, based on an analysis by Hathaway of ATO data that "the 45-day holding rule does not appear to have a material effect on the utilisation rate". The AER found that, on the basis that there was no other data available, there was no compelling evidence of a material class of investors who hold shares for less that 45 days. On this basis, the AER did not attribute any effect from the 45 day rule to its calculation of gamma.

1092 In the Tribunal's view, three issues arise with that analysis by the AER. Firstly, as outlined by the Network Applicants, clearly there is a class of investors who hold shares for less than 45 days. The present issue is not whether such a class exists, but the size of that class and the extent to which the value of imputation credits is lower as a result of domestic shareholders being unable to use them. Secondly, the value of theta produced by taxation statistics (and by market value studies to some extent) is evidence that Australian investors do not value imputation credits at their face value, including because they may be unable to use them. Finally, the ATO data relied on by Hathaway has since been acknowledged by Hathaway to be of some concern, as the existence, or non-existence, of some $180 billion of dividends cannot be internally reconciled with that data.

1093 Leaving aside the issue of whether the AER is correct to assume that eligible shareholders value each dollar of imputation credits at a dollar, the Tribunal considers that the equity ownership approach overstates the redemption rate. We agree with the Network Applicants' submission that "even on the AER's own definition of theta (focussing on potential utilisation by eligible investors), equity ownership rates are above the true maximum possible figure for theta". In the Tribunal's view the estimates of the redemption rate produced by the equity

ownership approach would be useful only, like the upper bound suggested by tax statistics, as a further check on other estimates.

1094 It is agreed that the correct approach to gamma must involve an internally consistent method for estimating gamma with the allowed rate of return and that gamma must be given a "market-value". It is the concept of "market value" that is disputed. The AER argues that its approach is consistent with the value of imputation credits to investors in the market. In Attachment 4 to the Ausgrid Final Decisions the AER states (p 4-46):

> Our definition of the utilisation rate in this final decision and the draft decisions is the utilisation value to investors in the market per dollar of imputation credits distributed. Thus, we do consider that the utilisation rate represents the value to investors in the market. However, the key difference between our position and SFG's is we consider that, to be consistent with the underlying conceptual framework provided by Officer, we need to estimate the before personal-tax and before-personal-cost value.

The AER perceives no difference between attributing an assumed "utilisation value ... per dollar of imputation credits distributed" to estimates of the number or proportion of "investors in the market" eligible to redeem imputation credits and an estimate of the "market value" that those investors attribute to imputation credits as a part of the capitalised value of companies in the share market.

1095 The AER's equity ownership and tax statistics approaches consequently make no attempt to assess the value of imputation credits to shareholders and ignores the likely existence of factors, such as the 45 day rule, which, across all eligible shareholders, reduce the value of imputation credits to those shareholders below the "face" value assumed by the AER. The Tribunal considers these approaches to be inconsistent with a proper interpretation of the Officer Framework underlying s 6.5.3 of the NEL. It is the reason that the theta estimates produced by the equity ownership approach and tax statistics can be no better than upper bounds on the market value of imputation credits.

1096 Given that two of the three approaches adopted by the AER are considered no better than upper bounds, it follows that the assessment of theta must rely on market studies. The Tribunal considers that, of the various methodologies for estimating gamma employed by the AER, market value studies are best placed to capture the considerations that investors make in determining the worth of imputation credits to them.

1097 As noted above, the Tribunal considers the use of market studies to estimate the value of imputation credits is consistent with the methods used to calculate other parameters of the costs of debt and equity from market data.

1098 The Tribunal accepts the Network Applicants' submission that the return on equity is derived from the market prices of government bonds (the risk-free rate) and from the market prices of shares (beta and MRP). The cost of debt is calculated by reference to bond yields. Bond yields are derived directly from the traded market prices of bonds. Further, we accept the Network Applicants' submission that these market prices reflect every consideration that investors make in determining the worth of shares to them and that the bond prices, and the yields that are derived from them, reflect every consideration that investors make in determining the worth of the asset to them, including "personal costs". Consequently, placing significant weight on market value studies is, in the Tribunal's view, consistent with evidence relied on by the AER to calculate the rate of return on capital.

1099 The Network Applicants contend that the AER erred in its estimation of gamma by considering tax statistics and market value studies in a "very general manner" and thereby giving less weight to the SFG 2013 Study, advanced by them as providing the "best available" study of the market value of imputation credits.

1100 We consider that, by placing most reliance on the equity ownership approach and effectively defining the utilisation rate as the proportion of distributed imputation credits available for redemption, the AER has adopted a conceptual approach to gamma that redefines it as the value of imputation credits that are available for redemption. This is inconsistent with the concept of gamma in the Officer Framework for the WACC which underlies the Rules, and with the objective of ensuring a market rate of return on equity by making an adjustment to the revenue allowance for taxation to account for imputation credits.

Adjustment of SFG theta estimate for personal costs

1101 In summarising the utilisation rates from market value studies, the AER made adjustments based upon the view from its advisers that both the estimated value of cash dividends and imputation credits need to be grossed-up to adjust for factors, such as differential personal taxes and risk, which are not relevant to the utilisation rate.

1102 SFG Consulting in *Estimating gamma for regulatory* purposes, 6 February 2015 at fn 36 explains that the adjustment is not necessary, and stemmed from a misinterpretation of theta:

> The AER's adjusted figure of 0.40 with respect to the SFG study is based upon the incorrect view that both the estimated value of cash dividends and imputation credits need to be grossed-up to the correct figures for interpretation. This view is based upon the idea that the understatement of the value of cash dividends is due to an econometric bias that needs to be accounted for (that is, the true value of cash is 1.00 and the estimate is 0.88, and so the coefficients need to be multiplied by 1.00 ÷ 0.88 = 1.14). That adjustment is based entirely upon conjecture that the coefficients provide an under-estimate of the true value.

1103 The Tribunal accepts this explanation and provisionally considers that the best estimate of theta derived by the updated SFG Study is 0.35. That provisional view is subject to the "Conclusions" section of this part of the Tribunal's reasons.

Estimation of the distribution rate

1104 The AER calculated the distribution rate based on data from listed equity only (0.8 in the Networks NSW and ActewAGL Final Decisions and 0.77 in the JGN Final Decision) and the distribution rate for all equity (0.7).

1105 The Networks Applicants say that the AER should not have relied on an estimate of the distribution rate for listed equity in estimating the distribution rate because it was likely to be unrepresentative of the distribution rate of the benchmark entity. This is because a large proportion of listed companies are multinational firms with foreign profits which will generally have an incentive (by virtue of generating foreign-sourced income) to distribute a higher proportion of imputation credits. In contrast, the benchmark entity, by definition, is an entity with 100 percent Australian income.

1106 The all equity estimate follows past practice up to and including the RoR Guideline and the Draft Decisions. The AER only introduced the listed equity estimate to reflect the views of its expert Handley on the scope of the relevant markets for assessing theta. In explaining its reasons, the AER stated (eg Attachment 4 to the Ausgrid Final Decisions at p 4-22):

> … we now consider that:
>
> - It is open to us to have regard to evidence from all equity and/or only listed equity.
>
> - It would be inconsistent to pair an estimate of the utilisation rate from only listed equity with an estimate of the distribution rate from all equity (and vice versa).

Without questioning whether the option was open to the AER, the Tribunal on review is not of the view that this is a sufficient explanation for introducing the alternative measure. It does not explain how the change would be consistent with the NEL or NER, or otherwise advance the NEO or the NGO. In any event, given that the AER was referring to its estimate of the utilisation rate in the equity ownership approach, consistency with a market study estimate of theta would no longer necessarily require a particular definition of the distribution rate. At present, the Tribunal is of the view that it is appropriate to follow past practice.

Range of possible gamma

1107 If the AER's equity ownership approach is adopted, other than as a further check on the upper bound on estimates of theta, the AER gamma decision (0.4 from a possible range of 0.3 to 0.5) no longer aligns with the estimated ranges of the distribution and utilisation rates.

1108 The AER identifies that the redemption rate from tax statistics is 0.43 (or 0.45 using updated data) (Attachment 4 to each of the Final Decisions: JGN at p 4-17 (Table 4-1); ActewAGL at p 4-18 (Table 4-1); Networks NSW Final Decisions at p 4-18 (Table 4-1)). The Network Applicants' preferred estimate of theta from the updated SFG study is 0.35. These values of theta produce estimates of gamma in the range between 0.25 and 0.30 with the all equity distribution rate in the RoR Guideline and Draft Decisions (0.7), or between 0.28 and 0.34 if using the higher listed equity distribution rate (0.8).

1109 Similarly, using the updated redemption rate that applied to JGN, gamma in that determination would either range between 0.25 and 0.32 with the original distribution rate, or between 0.27 and 0.35 when using the higher updated listed equity distribution rate (0.77).

Conclusion

1110 The Tribunal considers that the AER decision on this topic should be set aside. Further reasons for the conclusion, having regard to s 71P(2a) and (2b) of the NEL are in the concluding section of these reasons.

1111 As explained, the AER's decision sets a value for gamma which is too high, where the relevant upper bounds for theta should be no more than the ATO statistical data of 0.43 (or 0.45 in the case of JGN).

1112 The 2012 Rule Amendments then impose a complex task on the AER, and on the Tribunal on review. Within the parameters of the NEO/NGO and the RPP, the decision on gamma (as generally) should take into account and reflect the inter-relationships between the building blocks and the elements within them within the determination to be made, and then produce the decision which properly serves the NEO/NGO.

1113 In this context, whilst recognising the complementarity discussed above, the reduction in the utilisation rate (theta) to a figure below the upper bound represented by the ATO statistics will or may have the consequence that the relevant regulated service provider, under this building block, may recover for corporate income tax more than the face value of the tax which it has in fact paid on behalf of its shareholders and which has been utilised by them, because a value of theta below the tax statistics will mean the imputation credits used come to be valued at less than their face value. There is a tension there which requires careful balancing.

1114 The AER has estimated that, without allowing for interrelationships with other issues, varying gamma from 0.4 to the Network Applicants' preferred 0.25 would change allowed revenues by around 1.3 percent for Ausgrid, Essential and ActewAGL, 1.5 percent for Endeavour and 0.6 percent for JGN equivalent to, in nominal dollar terms, $110.4m Ausgrid, $62.3m for Endeavour, $65.5m for Essential, $10.1m for ActewAGL and $13.9m for JGN. Those amounts were specified as the revenue outcomes on the topic of gamma as presented by the AER in its closing submission. The amounts involved of themselves are clearly significant.

1115 Any change in gamma will also have to be included in a revised rate of return on equity.

1116 The interaction with the rate of return on equity should only increase the materiality of the direct effects of a change in gamma on the revenue allowance for income tax.

1117 No further consideration of inter-relationships may be necessary – the impact of changing gamma "is what it is", and the consequences for equity should also only be what will necessarily follow from correcting the AER's error.

1118 The Tribunal notes that the SFG 2013 Study represents one point of view. As in a number of instances in these matters, there are conflicting expert views. Without the benefit of learning further from the experts, the Tribunal (like the AER) is faced with the selection between competing views.

1119 There are finely balanced decisions to be made in that light. As the Tribunal proposes to remit each of the Networks NSW and ActewAGL applications to the AER for reconsideration, in relation to the topic of opex, and as its revised determination will have to give effect to its obligation under s 16(1)(d), the Tribunal considers that it is likely to result in a materially preferable NEO decision if this issue, in the light of its reasons, is also remitted to the AER. It is an obligation which is a "holistic" one, so that – apart from its individual decision on the building blocks – the AER is required to step back and make the overall assessment required.

1120 The way in which the aspect of the Tribunal's reasons should be given effect in relation to the JGN Final Decision is addressed in the separate reasons of the Tribunal in that matter.

METERING SERVICES OPEX

INTRODUCTION

1121 Ausgrid raised a ground of review with respect to metering services opex. It is prudent to briefly explore the classification of metering services and why metering services opex is a separate component to opex, as already addressed.

1122 Under the NER, the AER makes a distribution determination every five years relating to the provision of electricity network services. The services that are a subject of the distribution determination are called "direct control services".

1123 "Standard control services" (SCS) may be described as the services shared across all customers in a network, for example, vegetation management and maintenance. The costs associated with SCS are placed together into other building block elements, which include the return on capital, opex, the cost of corporate income tax, increments and decrements from incentive schemes and the cost of any jurisdictional scheme. The building block for SCS, with the application of any control mechanisms, produces with the other building blocks the revenue that can be earned by a DNSP. The allowed revenue in each year of the regulatory control period for SCS is then recovered through network tariffs paid by electricity retailers, which are ultimately paid for by consumers. This is the "revenue cap" control mechanism in action because the DNSP cannot earn more than its allowed revenue for a particular combination of services: r 6.2.5(b)(3) of the NER.

1124 "Alternative control services" (ACS) are services with costs that are attributable to a specific customer. They could be requested by the customer or may be simply attributable to them alone. These costs are recovered differently from SCS, which are spread across all customers within the distribution area. These are regulated by a "price cap" control mechanism which means a DNSP cannot charge more than a specific amount for the service r 6.2.5(b)(2) of the NER.

1125 The AER decided to include the services Ausgrid provides associated with the reading, operation and maintenance of electricity meters installed at customer premises as ACS under r 6.2.2 of the NER. The price cap would therefore include a return on the metering asset base (MAB). The meters that were classified as ACS are known as Type 5 and Type 6 meters.

1126 A Type 6 meter is a meter that most of Ausgrid's residential or small business customers have at their premises. It is a widely used meter for small customers across the national electricity market. It calculates the amount of energy consumed in kilowatt hours (kWh). It is read manually every quarter.

1127 A Type 5 meter is also known as a Manually Read Interval Meter (MRIM). This meter is able to record customer consumption throughout the day at 30 minute intervals. This means that it records 48 data points a day and stores it until it is read manually on a quarterly basis. It is read by being probed with the data downloaded onto a device held by the meter reader. As it is a manually read meter, it does not possess remote communications capacity to transmit data to a separate location.

1128 The AER based its decision for metering services opex as being part of the non-capital component on an estimate of the forecast opex associated with providing metering services for the regulatory control period. It rejected Ausgrid's proposal of $142.7m (2014-15) and substituted its own forecast of $111.0m (2014-15) for metering services opex.

The Decision

1129 Ausgrid's Regulatory Proposal selected 2012-13 as the best representation of the current volumes and efficiencies for Type 5 and 6 meters. In Attachment 8.15 to its Regulatory Proposal at p 22, Ausgrid stated that the costs of Type 5 meters were three to four times higher per quarter than Type 6 meters.

1130 The AER's Draft Decision used a lower annual point for metering opex in 2014-15 of $23.3m ($nominal). This was done, as asserted by Ausgrid in the Networks NSW submission, by reference to the average opex for 2009-13 ($nominal per annum) and Ausgrid per customer benchmark metering cost of $14 per customer per annum. The AER rejected the proposed $143.4m ($nominal) of metering opex and substituted it for $119.1m ($nominal).

1131 Ausgrid challenged the AER's Draft Decision in its Revised Proposal, by contending that Energex had not historically operated Type 5 meters and as at 30 June 2014, there were zero meters operating as Type 5 in its distribution area. After removing the cost of Type 5 meters from the forecast, Ausgrid's metering costs were $11.26 ($nominal) per customer for a Type 6 meter. This is below $14 per customer and demonstrated, according to Ausgrid, that Energex was not an appropriate benchmark. The second issue was that Ausgrid had experienced a significant increase in Type 5 meters since 2008-09. If an average of 2008-13 was utilised to calculate metering opex then it would incorrectly represent the costs associated with metering due to the increase in Type 5 meters being used in Ausgrid's distribution area since 2008-09. Ausgrid posited that Type 5 meters were more costly to operate and maintain as it takes longer to read a Type 5 meter (as reflected in the probe meter reading surcharge). There are also greater costs associated with the validation of interval meter as per the AEMO metrology procedure requirements. Ausgrid argued that a 2012-13 base year would be more appropriate as in 2008-09 Ausgrid had 15 percent Type 5 meters and 85 percent Type 6 meters in use, whereas 2012-13 had 30 percent Type 5 meters and 70 percent Type 6 meters.

1132 Its Revised Regulatory Proposal took into account updates from labour, materials, contracted services and labour hire costs. It proposed $142.7m ($real 2014-15). The AER rejected this proposal and substituted its own forecast of $111m ($real 2014-15) in its Final Decision.

1133 The AER used the 2008-09 to 2012-13 average when calculating metering opex and maintained its position from the Draft Decision. This was because, in the absence of an EBSS for ACS opex, it did not want to create an incentive to overload metering opex into a single year. It considered that Type 5 meters were not more expensive to operate than Type 6. It stated in Attachment 16 to the Ausgrid Final Decision, at 16-57 that:

> There is no material difference in the cost of operating type 5 and 6 meters as both have to be manually read. This involves visiting an installation, reading them from a numeric display, and recording the information on a handheld device. This process takes only a few minutes at each site and is not materially different between type 5

and type 6 meters.

1134 To the extent that more stringent data obligations existed in relation to Type 5 meters under AEMO metrology procedure requirements, the AER considered that data validation could be done through the imposition of appropriate computer systems. The costs associated with Type 5 meters would not be a recurrent cost on base opex. The AER said it provided Ausgrid with an opportunity to recover at least its efficient costs and approved metering opex for $15.5m ($2014-15) in information technology capex for the provision of Type 5 and 6 metering services.

1135 The AER decided that metering could be charged on the basis of an up-front capital cost for new and upgraded meters from 1 July 2015 and an annual charge with capital and non-capital components to cover the costs of the MAB, opex and tax. The charge was set based on a cost-reflective basis to meet the pricing principles in r 6.18.5 of the NER.

1136 The network pricing principles relate more closely to the pricing proposal for the first regulatory year which a DNSP must submit to the AER as soon as practicable and within 15 days of the distribution determination. The proposals are produced annually and three months prior to the commencement of the second to fifth regulatory year under r 6.18.2 of the NER.

1137 The network pricing objective in r 6.18.5(a) of the NER states:

> The *network pricing objective* is that the tariffs that a *Distribution Network Service Provider* charges in respect of its provision of *direct control services* to a *retail customer* should reflect the *Distribution Network Service Provider's* efficient costs of providing those services to the *retail customer*.

1138 The network pricing principles are included in r 6.18.5.

Grounds of Review

1139 Ausgrid sought to establish a ground of review under s 71C of the NEL on the basis of the following errors:

- The conclusion that Type 5 meters are not more expensive to operate and maintain than Type 6 meters, when the information before the AER demonstrated otherwise; and
- The decision to determine that it was inappropriate to use a single year because that would create an incentive for Ausgrid to load its expenditure into that single year, which

is based on the erroneous assumption that the opex costs for Type 5 and Type 6 meters are not materially different.

1140 It said its grounds of review on the AER's metering opex decision would be made out on the basis of each point individually, or the decision collectively. The conclusion that Type 5 meters were not more expensive to operate was, it said, an error of fact material to the making of the decision. It could also be seen as an unreasonable decision because it contained logical error and did not take into account the material before it regarding the costs to operate the two different meter types.

1141 It also claims that the AER's decision to use an average rather than a single year involved an incorrect exercise of discretion. This is because the basis for not using a single year was based on the logical error or erroneous assumption referred to and not on an analysis of the most appropriate methodology for choosing the base rate to forecast metering opex. As the Final Decision was based on a factual error, it was an incorrect exercise of discretion. The decision was also claimed to be unreasonable as it contained an element of arbitrariness, and did not take relevant considerations into account.

1142 Ausgrid also stated the decision by the AER to substitute its own metering opex forecast was an unreasonable decision because it contained a logical error, given the evidence that Ausgrid was likely to incur substantially greater opex over the regulatory control period than that taken into account by the AER in setting the ACS price cap.

Costs of Type 5 and Type 6 meters

1143 Ausgrid argued that there was evidence before the AER that Type 5 meters were more expensive to operate and maintain because they are more complex. They store and record readings every 30 minutes for three months, unlike a Type 6 meter which is only required to read and store one figure per quarter. A Type 5 meter requires a probe reading which takes 35 seconds whereas a Type 6 meter reading takes 7 seconds. Some Type 5 meters are read monthly and others are read quarterly, whereas all Type 6 meters are read quarterly. The contractor who conducts meter reading for Ausgrid charges a probe reading surcharge which is $1.2m annually.

1144 It was presented to the AER that Type 5 metering data must be published to the National Electricity Market, electricity retailers and the network. The server data storage for that would be greater in volume and sophistication than that of Type 6 meters, including the need

to ensure the accuracy of the data and meeting requirements for validation. These all involve greater costs.

1145 It also said that complexity of the Type 5 meters compared to the Type 6 also means they need to be maintained more regularly by a metering technician to resolve operational issues, such as failed reads.

1146 Ausgrid also submitted that the price cap determination made by the AER had costs like a higher non-capital charge cap on the annual metering services charge for Residential Time of Use (ToU) tariff customers (Type 5 meters) than the Residential Inclining Block Tariff (IBT) customers (Type 6 meters). This applied equally to small business customers. The ToU tariff charges different rates in price per kWh depending on the time of day the electricity is consumed. The IBT sets a flat rate that applies throughout the day but charges more depending on the volume of electricity consumed, with different amounts per "block". The higher the usage, the higher the price per kilowatt hour. While the AER's revenue allowance assumed the opex costs are comparable, the ACS price cap demonstrated differences in costs between the two meter types.

1147 The AER argued in its submissions that it accommodated the differences in time to read the different types of meters as it was assumed to take a couple of minutes at each metering site. As that had been considered, the only differential was the frequency of meter reads, acknowledging that some will require monthly reads. The AER said that only 24,616 of 1,619,307 customers in 2014 required monthly reads, which is only 1.5 percent of customers.

1148 The AER also said the costs associated with Type 6 meters are broadly the same as to Type 5 meters. They must be read, and the data processed and stored. It correctly highlights that the Ausgrid submission also relied on the data processing costs to reflect the higher maintenance costs. The AER stated that the costs associated with storing data were non-recurrent costs and that Ausgrid did not consider its approved capex costs in making this claim.

1149 The AER stated that the ACS revenue was determined based on cost-inputs. The pricing models are not inputs into the assessment of revenue. The AER stated that the manner in which prices had been set (prepared on the basis of Ausgrid's pricing model) was not an indication that it accepted that the overall costs of Type 5 and 6 meters were materially different.

Averaging from 2008-09 to 2012-13

1150 Ausgrid said that the AER's decision to use an average over 2008-09 to 2012-13 was in error. The AER did this to avoid any incentive to load metering expenditure into one year. This was seen as a consequence of the AER's decision on the similarity in costs between Type 5 and 6 meters. If there was no material difference in costs, there would be no reason to use a narrower date range.

1151 Ausgrid said the AER did not suggest that it had loaded up a single year with expenditure. Ausgrid argued that the suggestion was in fact contrary to the explanation for the 2012-13 proposed year and that its proportion of Type 5 meters had stabilised. Therefore, using a single year's metering opex as the basis for the decision in the present circumstances would not have created any likelihood or expectation that a single year's metering opex would form the basis for any determination in the future. It also argued that the issue facing the AER was to determine the forecast metering opex. Using an average of Ausgrid's metering opex from 2008-09 to 2012-13 would not be a good predictor of Ausgrid's likely metering opex for the 2014-19 regulatory control period. Ausgrid's position was that the AER Final Decision resulted in it not considering costs into the future out of concern it would create an incentive to load costs into a single year, even though the costs incurred in the single year were identifiable and quantifiable.

1152 The AER stated that it took its "multi-year" approach because it was a more robust approach and would avoid any incentives to load up into a single year moving forward. This was because in the absence of an EBSS, there would not be such an incentive to reveal costs. The AER stated that it considered Ausgrid's position regarding the Type 5 meters during that period of time. Its preference for an alternative methodology did not involve any factual error, or any incorrect exercise of discretion and did not lead to an unreasonable decision, having regard to all the circumstances.

Consideration

1153 The Tribunal does not consider that the AER was in error in its decision relating to metering services opex. The decision that Type 5 and 6 meters do not have materially different costs was not an error of fact and does not, therefore, lead to it making an unreasonable decision, having regard to the circumstances.

1154 It is easy to say that utilising Energex as a benchmark at $14 per customer per annum cost for metering was inappropriate given the differences in metering uptake between their respective distribution areas. However, the AER did not use that benchmark blindly. It took ito account the relative time actually required to read Type 5 and Type 6 meters, but as part of the attendance cost per read. As it said, the time for reading each type of meter was not charged at 35 second and 7 second units, but was a more general charge on the basis of each site attendance. The information before the AER on that basis did not support a materially different number of reads per hour or per day, by reason of some of the reads being of Type 5 meters.

1155 The AER accepted that, in the case of Type 5 meters, there may be a slightly higher frequency of meter reads because of servicing issues or for other reasons, the data available to it indicated that in the 2013-14 year, that was an insignificant (1.5 percent) difference.

1156 The Tribunal is not satisfied that those two steps by the AER are either incorrect or inappropriate. They do not lead to the Tribuanl having the firm view that some other finding of fact on that topic is the correct one, whether it be the finding of fact urged by Ausgrid or some other finding of fact.

1157 In those circumstances, the use of Energex as a benchmark for metering costs, despite the differences in its network which Ausgrid pointed out, was not an incorrect exercise of a discretion as asserted by the AER.

1158 The Tribunal is also not satisfied that the AER did not adequately consider the differences between Type 5 and 6 meters, and their associated costs. The Tribunal notes that the associated costs for storage of data and information technology infrastructure are a capital cost, which was allowed. It may be that capital costs for collecting and maintaining data, in alignment with AEMO requirements, are somewhat higher because of the vastly more data to manage, validate and report on.

1159 However, it was open for the AER to conclude that only 1.5 percent of customers would be causing higher opex costs as a result of monthly meter reads. It is logical that a monthly site visit to extract meter data would be more expensive than a quarterly read. The surcharge cost, the additional time, the more sophisticated equipment and regular repair and maintenance are all relevant considerations. If Ausgrid is required to pay additional charges for probed readings, it takes longer and the technology is more sophisticated, then to that extent it may

be more costly to operate and maintain. Using Energex as the benchmark, against Ausgrid's lower nominal cost per read of Type 6 meters would appear to have the potential for such higher costs built into the AER decision.

1160 In any event, having regard to the relatively small percentage of increased reads which the data suggested, the Tribunal does not consider that the overall allowance by the AER indicates an error of fact in the findings of fact or an error in the selection of total allowance which would be material to its decision.

1161 The Tribunal is also not satisfied that the AER's decision to use the 5 year averaging to calculate metering opex demonstrates reviewable error. It did not overlook the fact that there were more Type 5 meters in its distribution system towards the end of that period. It acknowledged that in future years the intensity of Type 5 meters may increase, but indicated that with the passage of time allowance could be made for that to the extent appropriate. However, for the purposes of the current regulatory period, it was appropriate for the AER to be conscious of the risk that the 2012-13 year (Ausgrid's suggested base year) may be unreliable because it may reflect the overloading of metering opex in that year.

1162 The Tribunal regards the AER's caution in the circumstances as appropriate. In general terms, a multi-year averaging is more robust. It is not satisfied that the AER's decision in this regard involved any relevant factual error, or any wrongful exercise of its discretion.

Conclusion

1163 For those reasons, the Tribunal does not consider it appropriate to set aside the AER's decision on metering opex in the Ausgrid Final Decision.

1164 It is not necessary, therefore, to consider whether or how the rectification of any ground of review would or would be likely to lead to, or contribute to, a materially preferable NEO decision.

1165 If error of the kind asserted by Ausgrid were made out, it is not at present obvious to the Tribunal that the correction of the asserted errors by remitting these issues to the AER would, or would be likely to, lead to a materially preferable NEO decision. As discussed in the concluding section of these reasons, it appears that to a significant extend, the AER (and on review the Tribunal) is charged with making the best or preferable decision in the long term interests of consumers which may involve a trade off between cost and quality or reliability of the provision of the service. At least on this particular topic, the trade off is not self-

evidently in favour of increasing the cost to consumers, for the benefit of the installation of the Type 5 meters or for the benefit of the detailed usage data that can then be provided. That may or may not be the case. It is not necessary to decide it in this context.

FINAL CONCLUSIONS

General

1166 For the reasons stated above, the Tribunal concludes that Ausgrid has made out its grounds of review in relation to the allowance or figures in the Ausgrid Final Decision for:

(1) Opex. As explained above, it follows from that conclusion that the AER's decision on Ausgrid's STPIS is flawed and it is unnecessary for the Tribunal to determine whether the AER's decision on the X factor is flawed.

(2) Return on debt.

(3) Gamma.

1167 Also for the reasons stated above, the Tribunal concludes that Ausgrid has not made out its grounds of review in relation to the allowance or figures in the Ausgrid Final Decision for:

(1) EBSS.

(2) Return on equity.

(3) Metering services.

1168 It is then necessary to decide what, if any, orders should be made by the Tribunal in the light of those conclusions. The options available to the Tribunal under s 71P of the NEL are:

(1) to affirm the Ausgrid Final Decision;

(2) to vary the Ausgrid Final Decision; or

(3) to set aside the Ausgrid Final Decision and remit the matter to the AER to make the decision again in accordance with any direction or recommendation of the Tribunal.

1169 As noted above, the Tribunal may only vary the Final Decision, or set it aside if, as s 71P(2a) provides, the Tribunal is satisfied that, to do so will, or is likely to, result in a materially preferable NEO decision (otherwise the Final Decision must be affirmed): s 71P(2)(c). In the case of a variation order, it is only if the Tribunal is satisfied that a variation order will not require the Tribunal to undertake an assessment of such complexity that it is preferable to set aside the Final Decision and remit it to the AER: s 71P(2a)(d).

1170 The second step can readily be addressed. It is almost self-evident from the topics in respect of which the Tribunal has found grounds of review made out and its reasons that the task of undertaking the appropriate review and determining the appropriate orders is a complex one. The Tribunal does not presently have the resources available to the AER to itself undertake that task and to secure those resources rather than have the AER reconsider its decision would not be sensible.

1171 Networks NSW proposed a variation of the Final Decision in the case of Ausgrid by substituting in respect of:

(1) opex, the figure of $2,674.3m ($2013-14, excluding debt raising costs and demand management innovation allowance) for the period 2014-19;

(2) gamma, the total income requirements for standard control services altered to amounts calculated by reference to an estimated cost of corporate income tax based on a gamma of 0.25, with consequential amendments in respect of alternative control services;

(3) allowed rate of return on debt, by amounts calculated by reference to a return on debt of 7.908 percent for the 2014-15 regulatory year; of 7.94 percent for the 2015-16 regulatory year; and annual updating using a trailing average methodology with consequential amendments;

(The grounds of review were not made out in respect of the allowed rate of return on equity. The Tribunal has excluded the adjustments Ausgrid has proposed requiring use of a BBB credit rating and the RBA curve only, as it has not concluded that the use of the credit rating and mixed curve selected by the AER separately give rise to any ground of review.)

1172 There were variations in those proposed final orders to accommodate the different positions of Endeavour and Essential. The Networks NSW proposed opex allowance for Endeavour without specifying nominal or real of $1465.6m and for Essential of $2306.6m. There were EBSS adjustments for Endeavour of $197m and Essential of $72m (again without specifying nominal or real). The proposed orders also recognised that only Ausgrid provided transmission control services.

1173 Networks NSW, no doubt to cover the prospect of the Tribunal not being satisfied that the variation of the relevant Final Decisions would not require such a complex assessment as to warrant the preferable course of remitting the matter to the AER, also submitted alternative orders to accommodate the course of remitting the Final Decision to the AER with directions.

1174 The Tribunal's consideration of the opex issue is sufficient to explain why it does not have the satisfaction prescribed in s 71P(2a)(d). The task involves a reconsideration of extensive source material and the decision upon the form or forms of modelling, including the relevant inputs, which is a complex task in itself. It requires the careful re-analysis of historical data. The material which comprised the review-related material for the purposes of the hearing of these applications was said to extend to more than one million pages. The number of expert reports is very extensive.

1175 The short step the Tribunal has taken in the light of its reasons regarding the opex issue is that it does not have the satisfaction prescribed in s 71P(2a)(d) to lead it to making orders varying the relevant Final Decisions of the AER in relation to Networks NSW.

A Materially Preferable NEO Decision?

1176 It is then necessary to address the issue prescribed in s 71P(2a)(c). Unless the Tribunal has that satisfaction, notwithstanding its conclusions about the ground or grounds of review made out, it must affirm the Ausgrid Final Decision and, in the absence of particular reasons to distinguish the circumstances of Endeavour and Essential, each of the Networks NSW Final Decisions.

1177 In considering that issue, the Tribunal is directed to consider each of the matters referred to in s 71P(2b)(a)-(c). It is also directed by s 71P(2b)(d) that, in themselves, neither the establishment of a ground of review, nor the "consequences for, or impacts on, the average annual regulated revenue" of a DNSP, nor the fact that the amount in issue exceeds the amount specified in s 71F(2) – namely the lesser of $5m or 2 percent of the average annual regulated revenue of the DNSP – "determine" the question about whether a materially preferable NEO decision exists.

1178 At a straightforward level, Networks NSW contends that correcting an error (as established by a ground of review being made out) will, or will be likely to, result in a materially preferable NEO decision. The fact that a ground of review is made out cannot, of itself, determine that question affirmatively: s 71P(2b)(d)(i). But, Networks NSW says, the proper

application of the building block methodology in the NER, with each building block determined in accordance with the NER, will promote the NEO.

1179 There is, however, an additional step required. The fact that (as may be accepted) the proper application of the NER on the building block methodology under Part C of the NER will promote the NEO does not mean that, where a step taken by the AER is, or is not, in full accordance with the building block methodology, the NEO is not being achieved. There may be other matters which the AER considered, and which may balance out any adverse consequences of such non-compliance. The amounts involved may not merit the description of a departure from the building block approach so as to impair in a material way the NEO. Depending on the options considered by the AER, there may be two or more possible decisions which may contribute to the achievement of the NEO, and the AER may have formed an appropriate assessment of those alternatives: s 16(1)(d) of the NEL. As was pointed out by the AER, s 16(2) requires it to "take into account" the RPP in s 7A when exercising a discretion in relation to a regulatory distribution or transmission determination, or when making an access determination relating to a rate or charge for an electricity network service provider. The AER says that how it takes the RPP into account is a matter for it.

1180 It is also important to acknowledge, as was very clearly demonstrated by the consultation undertaken by the Tribunal, that the elements of the NEO – in the long term interests of consumers – are potentially in conflict. In particular, the price at which electricity is supplied to consumers is presently (and will continue to be under the new regulatory regime) one which many consumers find confronting. There are significant numbers of consumers or potential consumers who either cannot pay, or have great difficulty in paying, that price. The difficulty in paying that price was also reported by some small and medium sized businesses, so that alternatives to using the electricity network or a focus on minimising that usage, were explained. On the other hand, for obviously good personal or commercial reasons, there were a significant number of consumers who expressed the need to have a very reliable and secure supply of electricity, and others who emphasised the need for safety in the structure and operations of the network.

1181 Where the line or lines are to be drawn between price on the one hand, and quality service, reliability and security of supply (or some of those elements) on the other, is not an easy question. The line nevertheless is clearly one which must be drawn. The consultation process, and the submissions of all parties, made it clear that some compromise is necessary.

Also, as observed in the Introduction to these reason, it was specifically noted on the introduction of the NEO (which has remained constant) that the NEO did not (and has not) extended to "broader social and environmental objectives": Legislative Council, South Australia, 16 October 2007, Hansard p 886.

1182 It is also important to note that the NEO is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers with respect to the identified topics. Efficiency is an economic concept. It is then explained or expanded on by the RPP. It is not necessary to list the RPP serially to reinforce that point; they include references to consideration of the potential for under and over investment and under and over utilisation where regulatory control is imposed. The building blocks specified in Part C of the NER, as generally identified in r 6.4.3 and as then specified in r 6.5 fortify the appropriateness of that observation.

1183 Consequently, the line to be drawn involves or requires a regulatory assessment to be made about those matters.

The AER's Approach

1184 It is instructive, in this context, to refer to how the AER addressed that task, and in turn its obligations under s 16(1)(d) of the NEL.

1185 In this respect, the references to the Ausgrid Final Decision can be taken as typical of how the AER explained its approach to those matters in each of the five Final Decisions which gave rise to the eight applications heard together.

1186 It will not be necessary, when addressing them individually (including the JGN application under the NGL) to refer separately to each of the respective Final Decisions.

1187 Under the heading "Contribution to the achievement of the NEO" (Ausgrid Final Decision – Overview at p 10-20), the AER specifically recorded its conclusion in terms of s 16(1)(d) and in terms of the NEO.

1188 It recognised the key drivers of cost facing a network service provider are:

- its accumulated network investment (reflected in the regulatory asset base);
- its expected growth in network expenditure (reflected in the capex program "net of capital returned to shareholders through depreciation");

- its financing costs (interest on borrowing and a return on equity to shareholders);
- its opex program (the cost of operating and maintaining the network); and
- its taxation costs (taxable income at the corporate rate adjusted for the value of imputation credits).

1189 Each of those topics reflects one of the building blocks in the NER.

1190 At p 11, the AER referred to the most important factors impacting on Ausgrid's costs in the 2015-19 regulatory control period. It identified an improved investment environment, translating to lower financing costs necessary to "attract efficient investment"; as evidence that Ausgrid's past expenditure has been higher than necessary to maintain its network safety and reliability (confirmed, it stated, by inter alia its benchmarking analysis; lower than expected demand growth and therefore falling levels of utilisation; expected reasonably flat forecast demand; and inefficiency in Ausgrid's labour and workforce practices).

1191 It concluded at p 11:

> These factors are reflected throughout our final decision and impact the different constituent components of our decision to varying degrees. At the total revenue level, they provide a consistent picture: Ausgrid, operating prudently and efficiently, could provide distribution services with materially less revenue than it has proposed for the 2015-19 regulatory control period. Further, the average annual revenue Ausgrid requires in the 2015-19 regulatory control period is materially less than the revenue it recovered from customers in 2013-14.
>
> In our final decision we consider that Ausgrid's proposal does not reflect the factors impacting on its cost drivers to a satisfactory extent. As a consequence, we conclude that Ausgrid has proposed to recover more revenue from its customers than is necessary for the safe and reliable operation of its network. It follows that we consider that Ausgrid's revised proposal does not contribute to the achievement of the NEO to a satisfactory degree.

1192 As the AER then said, the major constituent components of the AER Final Decision related to the rate of return and opex. Those matters are, of course, addressed above.

1193 One matter which the AER addressed at this point, prompted by Ausgrid's Revised Regulatory Proposal, was the "safety implications" of the opex proposed in the Draft Decision. The AER said, in part by reference to its benchmarking analysis and the OEFs, that it considered the revenue allowance it allowed would fund efficient costs for Ausgrid, as a prudent operator, to run its network safely and reliably. Thus, the AER said, its costs above that level should be borne by its shareholders and not its consumers.

1194 Another matter addressed at this point, prompted also by Ausgrid's Revised Regulatory Proposal, was financeability. The AER noted that Ausgrid indicated that its financial viability would be threatened as a result of its Draft Decision if carried through. In support of this, Ausgrid had submitted a range of material including an expert's report submitting that sizeable opex reductions in a short period of time would negatively impact the ongoing financeability of the DNSPs and their viability as economic entities: Ausgrid, *Revised Regulatory Proposal*, January 2015 at p 45; a confidential credit profile report by Standard and Poors (S&P): S&P, *Confidential credit assessment: Ausgrid – Stand-alone credit profile*, January 2015; and a report by USB including confidential content relevant to financeability: USB, *Financeability – Debt issue and capital structure (Confidential version)*, January 2015.

1195 The AER said as to that at pp 18-19:

> Neither the NEL nor the NER include an explicit obligation requiring us to consider the impact of our determination on the viability of the service provider in its actual circumstances. Our task is to determine the revenue that a service provider can recover from its customers with reference to an efficient and prudent level of expenditure. The service provider's actual ownership circumstances and the financial structure of its shareholder are not factors that we are required to consider in fulfilling our task under the NEL or the NER.

1196 The AER added that Ausgrid had not been clear about what it meant by the term "financial viability", so it had considered whether it would be at material risk of insolvency. By modelling cash flows, and on the basis of an expert report of RSM Bird Cameron: *Independent review of the AER's internal cash flow analysis of insolvency risk for NSW electricity service providers for the regulatory period 2014-19*, April 2015, the AER concluded that Ausgrid would not be at material risk of insolvency. It was not prepared to act on the S&P Report, as it "was not persuaded" that the assumptions underlying that report were reasonable; its cash flow modelling and its expert report did not support the claim; and it noted that Ausgrid was subject to a stable regulatory environment favourable for capital raising (of course, the latter observation is dependent upon informed investors considering that an investment of capital is worthwhile, and upon informed lenders considering that the advance of funds would be able to be funded as to interest at an appropriate rate and the funds duly repaid).

1197 The AER Final Decision in Attachment 20 – Analysis of financial viability further explains why it reached that view.

1198 More generally, and in principle more significantly, by reference to s 16(1)(d), the AER under the heading "Assessment of options under the NEO", addressed matters relevant to the issue the Tribunal is now addressing. That is that there may be several possible decisions that will, or are likely to, contribute to the achievement of the NEO. It said at pp 19-20:

> For at least two reasons, we consider that there will almost always be several decisions that contribute to the achievement of the NEO. First, the NER requires us to make forecasts, which are predictions about unknown future circumstances. As a result, there will likely always be more than one plausible forecast. Second, there is substantial debate amongst stakeholders about the costs we must forecast, with both sides often supported by expert opinion. As a result, for several components of our decision there may be several plausible answers or several point estimates within a range. This has the potential to create a multitude of potential overall decisions. In this decision we have approached this from a practical perspective, accepting that it is not possible to consider every possible permutation specifically. Where there are several plausible answers, we have selected what we are satisfied is the best outcome, under the NEL and NER.
>
> In many cases, our approach results in an outcome towards the end of the range of options materially favourable to Ausgrid (for example, our choice of equity beta). While it can be difficult to quantify the exact revenue impact of these individual decisions, we have identified where we have done so in our attachments. Some of these decisions include:
>
> - selecting at the top of the range for the equity beta
> - setting the return on debt by reference to data for a BBB broad band credit rating, when the benchmark is BBB+
> - the cash flow timing assumptions in the post-tax revenue model
> - the the point at which we have set the benchmark for opex
> - the allowances we have made for operating environment factors in our benchmarking analysis.
>
> We set out our detailed reasons in the attachments. They demonstrate that the constituent components of our decision comply with the NER's requirements. At an overall level our decision reflects the key reasons set out above, which indicate that Ausgrid should recover less revenue than it has proposed or recovered in recent years. Our decision reflects these at both the constituent component and overall revenue levels.
>
> Given our approach, we are satisfied that our decision will or is likely to contribute to the achievement of the NEO to the greatest degree.

1199 It is important to note that the AER recognises that the regulatory decision-making under the NEL may involve balancing of factors going to the long term interests of consumers. It returned to that theme in the later section of its Ausgrid Final Decision-Overview, under the heading "Understanding the NEO" at pp 52-53. There it referred to the importance of

"correct" pricing. It said that overpricing leads to consumers not using or not efficiently using the network (and the longer term pricing for those consumers continuing to do so) on the one hand, and that underpricing by too low a revenue stream leads to investors being unwilling to invest in adequately maintaining the network so as not to adversely affect its safety, security and reliability to the detriment to consumers on the other. Either of those positions would not advance the NEO.

1200 The Tribunal agrees with those observations

1201 There was an additional matter for the AER to address.

1202 In tandem with s 71P(2b)(a) and (2c)(a) for the Tribunal, s 16(1)(c) of the NEL requires the AER to consider how the constituent components of its relevant Final Decisions relate to each other, and how that inter-relationship has been taken into account. It recognised that inter-relationships can take various forms, including:

(1) underlying drivers and context which are likely to affect many constituent components of its decision – an example is that forecast demand affects the efficient levels of capex and opex in the regulatory control period;

(2) direct mathematical links between different components of a decision – examples are that the level of gamma has an impact on the appropriate tax allowance; the BEE's debt to equity ratio has a direct effect on the cost of equity, the cost of debt, and the overall vanilla rate of return;

(3) trade-offs between different components of revenue – an example is that undertaking a particular capex project may affect the need for opex or vice versa;

(4) trade-offs between forecast and actual regulatory measures, that is the reasons for one part of a proposal may have impacts on other parts of a proposal – an example is that an increase in augmentation to the network means the distributor has more assets to maintain leading to higher opex requirements; and

(5) the distributor's approach to managing its network, as the distributor's governance arrangements and its approach to risk management will influence most aspects of the proposal, including capex/opex trade-offs.

1203 That approach by the AER is a proper one. It is the approach the Tribunal takes. That is, the Tribunal considers whether, in the light of its conclusions on the merits of the grounds of review, the remittal of the matter to the AER is, or is likely to, result in a materially preferable NEO decision.

1204 The AER has drawn attention to the nature of the relevant inter-relationships in broad terms. As the AER did, the Tribunal has sought to identify in addressing the grounds of review those similar inter-relationships.

Consideration

1205 The real question, in the view of the Tribunal, is whether, by reason of the matters where it has found grounds of review made out, the balancing exercise which the AER carried out is, or may well be, erroneous. If it is, or is likely to be, then there is a very real risk that allowing the AER Final Decision concerning Ausgrid to stand will, or is likely to, have the adverse consequences to the long term interests of consumers to which the AER referred.

1206 Obviously, from the price perspective, the present issues raised by Networks NSW are not intended to reduce the price for the provision of electricity. PIAC's applications concerning Networks NSW are intended to have that effect. Obviously, pricing for the provision of electricity services is a sensitive topic.

PIAC's contentions

1207 For the reasons already given, the Tribunal has concluded that the AER's approach to determining opex was erroneous. The nature of those errors is such as to have made it unnecessary to fully explore PIAC's contentions regarding opex, namely whether the benchmark comparison point for Networks NSW should not have been lowered (as the AER did) but held to the weighted average of the upper quartile of the comparators, and whether there should be re-setting of the OEF adjustments adversely to Networks NSW.

1208 Those contentions, if accepted, would have reduced significantly the opex allowances by the following amounts (claimed by Networks NSW without specifying whether the figures were real or nominal): Ausgrid by $365m; Endeavour by $196m; and Essential by $291m.

1209 Clearly, that in turn would materially contribute to lowering the price to consumers for the provision of electricity services during the current regulatory period, and in the longer term.

1210 PIAC's contentions, however, were premised on the AER's primary approach being correct. The Tribunal has not accepted with respect to opex that to be the case.

1211 As to the return on equity, the Tribunal has not concluded that the contentions of PIAC should lead it to setting the equity beta at 0.5. That contention, if correct, would have set the return on equity at 5.8 percent. It would also have reduced the Networks NSW return on equity over the regulatory control period by the following amounts (claimed by Networks NSW without specifying whether the figures were real or nominal): Ausgrid by $485m, Endeavour by $196m, and Essential by $241m.

1212 Again, all else being equal, and putting aside any inter-relationships between elements of the revenue, those adjustments would substantially reduce the price to consumers for electricity.

1213 The Tribunal has also not concluded that, with respect to the return on equity, the AER's relevant Final Decisions have exposed any ground of review as raised by Networks NSW, or by ActewAGL.

1214 As to the return on debt, again the grounds of review made out by Networks NSW have meant that PIAC's particular point concerning the commencing year for the QTC methodology for the introduction of the trailing average approach has not needed to be determined. There were very significant potential consequences – on the assumption that the AER's adoption of that transitional methodology was broadly correct but should have commenced at the earlier year – as the Networks NSW allowances for return on debt would have been reduced by the following amounts (claimed by Networks NSW without specifying whether the figures were real or nominal): Ausgrid by $706m, Endeavour by $288m, and Essential by $341m.

1215 If the other elements of the AER Final Decisions with respect to Networks NSW were not disturbed as no ground of review had been made out by Networks NSW, then it would be quite clear to the Tribunal that any one or more of PIAC's contentions with respect to those topics – if established – would have satisfied the Tribunal that the error should be corrected because its correction would have, or would be likely to have, resulted in a materially preferable NEO decision. The price to consumers would have been substantially reduced, and (on the assumption of no other grounds of review being made) there would probably be no offsetting detriment to the long term interests of consumers with respect to the quality, safety, reliability or security of the supply of electricity or of the national electricity system.

However, whether either the AER or Networks NSW would have asserted and established before the AER (if the matter were remitted) or before the Tribunal (if it decided simply to vary the Final Decisions) either some significant detriment or detriments to the long term interests of consumers which needed to be taken into account is not a matter which needs to be addressed.

Application of the prescribed test

1216 The AER has, as discussed above, identified the appropriate considerations required to address the making of a materially preferable NEO (or NGO) decision. Or put alternatively, the parameters within which the materially preferable NEO (or NGO) decision lies.

1217 As directed by s 71P(2b)(d), the Tribunal does not regard any of the three particular matters there referred to as determinative.

1218 However, in the Networks NSW matters, the Tribunal's conclusions on the grounds of review indicate that in significant respects the AER has formed its decision on foundations that are not properly established. Put another way, its decisions have been reached on complex factual bases and/or the exercise of discretions giving rise to very significant outcomes which, by reason of the Tribunal's conclusions on the grounds of review, are not appropriate to support the ultimate decision of the AER.

1219 The Tribunal, in that light, is satisfied that it is appropriate to set aside the AER Networks NSW Final Decisions and to remit them to the AER under s 71P(2)(c) of the NEL.

1220 In that way, the AER will better identify the appropriate revenue during the current regulatory control period for those entities to achieve the level of quality, safety, reliability and security of supply of electricity and of the national electricity system in the long term interests of consumers, and be in a better position then to also address the desirability of consumers not paying more than is necessary over the long term for those services. Those two elements are identified and addressed by the AER as noted above. The AER's analysis is also reflected in the comments of the Tribunal in *Electranet (No 3)* [2008] ACompT 3 at [15], [201] and [251].

1221 There are obviously significant inter-relationships between elements of the building blocks. Again, the AER has identified them or some of them. To avoid a piecemeal approach, the Tribunal does not propose to restrict the AER by confining the remittal to a particular building block or building blocks. Moreover, because such significant building blocks are to

be revisited, when re-assessing the options under the NEO, the Tribunal does not intend to prevent the AER (subject to giving effect to the matters determined by, or directed by, the Tribunal) from revisiting those other matters where (as noted above) its approach involved, in its view, an outcome on particular matters towards the end of the range of options materially favourable to Networks NSW. Those matters were not quantified, and the AER does not present the case that they are of such magnitude that, taken as they are, they would offset the potentially adverse consequences of the established grounds of review for the purposes of the Tribunal's task under s 71P(2a)(and (2b).

1222 Apart from those matters, which address s 71P(2b) and (2c)(b), it is desirable to add a little more about inter-relationships having regard to s 71P(2b)(a) and (2c)(a).

1223 Obviously, as noted in the body of these reasons for decision, there is a relationship between the allowance for opex and the decisions of the AER to suspend the operation of the EBSS for Ausgrid and Essential, and not to impose the penalty carry over amount for Endeavour in relation to the EBSS in respect of the previous regulatory period.

1224 The Tribunal notes that, in relation to Networks NSW, there are no other direct inter-relationships where a change in the method for quantifying one building block necessarily requires a change in another building block analysis.

1225 At the request of the Tribunal, the AER provided a "Table of Inter-relationships in its Draft and Final Decisions" for each of the network service providers. Inevitably, as senior counsel for the AER said, it was extensive and non-specific in its application because, at that time, the parties did not know whether the Tribunal would determine whether any, and which, grounds of review would be made out. The Tribunal has had careful regard to that Table.

1226 It does not consider that the data in that Table goes to minimise or offset the very substantial (putative) consequences to Networks NSW of the grounds of review which have been made out. They are quantified in the "Networks NSW – Summary of revenue impacts", and a related document concerning data source revenue impacts presented in the course of closing submissions. They are described by the Tribunal as "putative" simply because they represent the contentions of Networks NSW, but not necessarily the final outcomes which the AER might reach when it reconsiders its relevant Final Decisions. In any event, they have been treated by the Tribunal as indicative only. The precise figures are not critical to these decisions. The AER, in turn, present a different version of "Estimated revenue outcomes by

topic (without inter-relationships)" concerning each of the five network service providers. It incorporates changes which would flow from PIAC's contentions being accepted. The Tribunal does not express any view about the "correct" outcome, or the range of correct outcomes, following the AER's reconsideration.

Determination

1227 The Tribunal therefore makes the following determination:

(1) Pursuant to s 71P(2)(c) of the NEL, the Final Determination is set aside and remitted to the AER to make the decision again in accordance with the following directions:

(a) the AER is to make the constituent decision on opex under r 6.12.1(4) of the NER in accordance with these reasons for decision including assessing whether the forecast opex proposed by the applicant reasonably reflects each of the operating expenditure criteria in r 6.5.6(c) of the NER including using a broader range of modelling, and benchmarking against Australian businesses, and including a "bottom up" review of Ausgrid's forecast operating expenditure;

(b) the AER is to make the constituent decision on return on debt in relation to the introduction of the trailing average approach in accordance with these reasons for decision; and

(c) the AER is to make the constituent decision on estimated cost of corporate income tax (gamma) in accordance with these reasons for decision, including by reference to an estimated cost of corporate income tax based on a gamma of 0.25;

(d) the AER is to consider, and to the extent to which it considers appropriate to vary the Final Decision in such other respects as the AER considers appropriate having regard to s 16(1)(d) of the NEL in the light of such variations as are made to the Final Decision by reason of (a)-(c) hereof.

A final observation

1228 The Tribunal wishes to record its appreciation to each of the applicants in these eight applications heard together, and the AER, and each of the interveners, and their respective counsel and solicitors, for the very extensive assistance provided to the Tribunal prior to and during the hearing.

1229 As is readily apparent, each of the parties, the AER and the interveners worked cooperatively to properly identify issues, to draw to the Tribunal's attention the material relevant to those issues, and to present their respective submissions. That meant that, in some instances, joint submissions were made by more than one party; in many instances submissions made on behalf of one party were adopted and refined to a particular entity rather than repeated. The volume of the review related material was very extensive, and it appeared to the Tribunal that reference to it was appropriately selective and focused.

1230 Moreover, as all readily acknowledged, the task confronting the AER, and then the Tribunal was a very large one having regard to the extensive 2012 Rule Amendments, and the 2013 Legislative Amendments. The AER was required to adopt consultation procedures in relation to its Guidelines and its relevant Final Decisions in what was in real terms a fairly confined period. The Tribunal was constrained by a tight timetable to complete the hearing, allowing for its consultation and the work of the parties and the AER to prepare and participate in the hearing. The fact that the eight applications were able to be heard and determined in the time which has elapsed is in no small measure a consequence of the efforts of the parties, the AER and the interveners, and without exception the very considerable assistance they provided to the Tribunal.

I certify that the preceding one thousand two hundred and thirty (1230) numbered paragraphs are a true copy of the Reasons for Decision herein of the Honourable Justice Mansfield, Mr R Davey and Dr D Abraham.

Associate:

Date: 26 February 2016

AUSTRALIAN COMPETITION TRIBUNAL

Application by SA Power Networks [2016] ACompT 11

Review from:	Australian Energy Regulator
File number:	ACT 11 of 2015
Tribunal:	**MIDDLETON J (PRESIDENT)** **PROFESSOR KT DAVIS (MEMBER)** **MR R STEINWALL (MEMBER)**
Intervener:	South Australian Minister for Mineral Resources and Energy
Date of Determination:	28 October 2016
Catchwords:	**ENERGY AND RESOURCES** – applications under s 71B of the National Electricity Law (NEL) for review of a distribution determination by the AER – consideration of the legislative background to the NEL and the National Electricity Rules (NER) – amendments to the NER made in 2012 by the Australian Energy Market Commission (AEMC) – amendments to the NEL made in 2013 – role of the AER – national electricity objective (NEO) – consultation and notification obligations under s 16(1)(b) – conduct of consultation process under s 71R(1) – relevance of *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* (*Ausgrid*) – topics for review – gamma – return on debt – forecast bushfire safety capital expenditure (capex) – forecast labour cost escalation – forecast inflation **ENERGY AND RESOURCES** – gamma – building block determination – significance of the substitution of "the value of imputation credits" for "the assumed utilisation of imputation credits" in the definition of gamma – valuation of imputation credits – theoretical models – empirical evidence – relevance of the *Ausgrid* decision – proper use of the distribution rate, equity ownership data and tax statistics **ENERGY AND RESOURCES** – return on debt – transition arrangements for the debt risk premium component of the cost of debt – gradual transition compared with immediate transition – allowed rate of return objective – promotion of efficient financing practices – bias in regulatory decision-making – historical data problems – impact of change on benchmark efficient entity and recovery of efficient financing costs – meaning of "across regulatory control periods" – windfall gains and losses

ENERGY AND RESOURCES – forecast bushfire safety capex – capex objectives and criteria – meaning of "regulatory obligation or requirement" – the nature of regulatory obligations – *Electricity Act 1996* (SA) – *Fair Work Act 2009* (Cth) – decisions of AER not to be approached in overly rigid way – compliance with capex criteria

ENERGY AND RESOURCES – forecast labour cost escalation – whether enterprise agreement is a "regulatory obligation or requirement" – operating expenditure (opex) objectives and criteria – capex objectives and criteria – character of enterprise agreements – relevance of the *Ausgrid* decision

ENERGY AND RESOURCES – forecast inflation – post-tax revenue model (PTRM) – building block determination – whether AER can consider inflation outside the PTRM

Legislation:

Australian Energy Market Act 2004 (Cth)

Electricity Act 1996 (SA)

Fair Work Act 2009 (Cth)

National Electricity Rules

National Electricity (South Australia) Act 1996 (SA)

Work Health and Safety Act 2012 (SA)

Cases cited:

Application by ActewAGL Distribution [2015] ACompT 3

Application by ATCO Gas Australia Pty Ltd [2015] ACompT 7

Application by ATCO Gas Australia Pty Ltd [2016] ACompT 10

Application by Energex Ltd (No 4) [2011] ACompT 4

Application by EnergyAustralia and Others [2009] ACompT 8

Application by Jemena Gas Networks (NSW) Ltd (No 2) [2011] ACompT 5

Application by South Australian Council of Social Service Incorporated [2016] ACompT 8

Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1

Applications by Public Interest Advocacy Centre Ltd, Ausgrid, Endeavour Energy and Essential Energy [2015] ACompT 2

Toyota Motor Corporation Australia Ltd v Marmara [2014] 222 FCR 152

Date of hearing:	1-2, 4-5 August 2016
Date of Community Consultation:	1 June 2016
Registry:	South Australia
Category:	Catchwords
Number of paragraphs:	621
Counsel for SA Power Networks:	Mr CA Moore SC with Ms C Dermody and Dr RCA Higgins
Solicitor for SA Power Networks:	Gilbert + Tobin
Counsel for the Australian Energy Regulator:	Mr M O'Bryan QC with Mr J Arnott and Mr T Clarke
Solicitor for the Australian Energy Regulator:	Australian Government Solicitor

IN THE AUSTRALIAN COMPETITION TRIBUNAL

ACT 11 of 2015

RE:	**APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO SA POWER NETWORKS PURSUANT TO CLAUSE 11.60.4 OF THE NATIONAL ELECTRICITY RULES**
BY:	**SA POWER NETWORKS (ABN 13 332 330 749)** Applicant
TRIBUNAL:	**MIDDLETON J (PRESIDENT)** **PROFESSOR KT DAVIS (MEMBER)** **MR R STEINWALL (MEMBER)**
DATE OF DETERMINATION:	**28 OCTOBER 2016**

THE TRIBUNAL DETERMINES THAT:

1. The *Final Decision: SA Power Networks Distribution Determination 2015-16 to 2019-20*, including attachments, is affirmed.

REASONS FOR DETERMINATION

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AER distribution determination process [14]

Impact of the 2012 changes to the NER [14]

SAPN's regulatory review process [18]

LEAVE TO APPLY FOR REVIEW [23]

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Prima facie case on materially preferable NEO decision (s 71E(b) of the NEL) [46]

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Competition in international and domestic markets [66]

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CONCLUSION [620]

INTRODUCTION

1 This is an application by SA Power Networks ('**SAPN**'), pursuant to s 71B(1) of the Schedule of the *National Electricity (South Australia) Act 1996* (the '**NESA Act**'), for review of a reviewable regulatory decision of the Australian Energy Regulator ('**AER**'), filed with the Australian Competition Tribunal (the '**Tribunal**') on 19 November 2015.

2 The decision under review is the final decision and distribution determination published by the AER on 29 October 2015 pursuant to cl 11.60.4(c) of the NER, entitled 'Final Decision: SA Power Networks Distribution Determination 2015-16 to 2019-20' ('**Final Decision**').

3 On 4 May 2016, SAPN was granted leave to apply for review of the Final Decision, with respect to the designated grounds of review referred to in an amended application for review filed with the Tribunal on 3 May 2016 ('**Review Application**'). The Tribunal's reasons for granting leave are discussed below.

Regulatory regime

4 SAPN is the operator of an electricity distribution network located in South Australia ('**South Australian distribution network**'). SAPN is registered as a distribution network service provider ('**DNSP**') under cl 2.5.1 of the *National Electricity Rules* ('**NER**'), and provides distribution network services by means of the South Australian distribution network.

5 Section 6 of the NESA Act applies the *National Electricity Law* ('**NEL**'), set out in the Schedule of the Act, as a law of South Australia. Section 9 of the NEL gives the NER the force of law in South Australia.

6 Section 7 of the NEL sets out the national electricity objective ('**NEO**'), which is to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers with respect to:

(1) price, quality, safety, reliability and security of supply of electricity; and

(2) the reliability, safety and security of the national electricity system.

7 Section 16(1)(a) of the NEL provides that in performing or exercising an AER economic regulatory function or power, which includes a function or power performed or exercised by the AER relating to the making of a distribution determination, 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 NEO.

8 Section 16(1)(d) of the NEL provides that if the AER is making a reviewable regulatory decision and there are two or more possible reviewable regulatory decisions that will, or are likely to, contribute to the achievement of the NEO, the AER must:

(1) make the decision that the AER is satisfied will, or is likely to, contribute to the achievement of the NEO to the greatest degree (the '**preferable reviewable regulatory decision**'); and

(2) specify reasons as to the basis on which the AER is satisfied that the decision is the preferable reviewable regulatory decision.

9 In addition, s 16(2)(a) of the NEL requires the AER to take into account the revenue and pricing principles ('**RPP**') when exercising a discretion in making those parts of a distribution determination relating to direct control network services.

10 Section 7A of the NEL sets out the RPP, as follows:

> *(2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in–*
>
> *(a) providing direct control network services; and*
>
> *(b) complying with a regulatory obligation or requirement or making a regulatory payment.*
>
> *(3) A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes–*
>
> *(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and*
>
> *(b) the efficient provision of electricity network services; and*
>
> *(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.*
>
> *(4) Regard should be had to the regulatory asset base with respect to a distribution system or transmission system adopted–*
>
> *(a) in any previous–*
>
> *(i) as the case requires, distribution determination or transmission determination; or*
>
> *(ii) determination or decision under the National Electricity Code or jurisdictional electricity legislation regulating the revenue earned, or prices charged, by a person providing services by means of that distribution system or transmission system; or*

(b) in the Rules.

(5) A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

(6) Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

(7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.

11 Clause 6.12.1 of the NER provides that a distribution determination is predicated on a number of constituent decisions to be made by the AER. These include:

(1) a decision on the DNSP's building block proposal in which the AER either approves or refuses to approve the annual revenue requirement for the DNSP, as set out in the building block proposal, for each regulatory year of the regulatory control period;

(2) a decision in which the AER either:

(a) acting in accordance with cl 6.5.7(c), accepts the total of the forecast capital expenditure ('**capex**') for the regulatory control period that is included in the current building block proposal; or

(b) acting in accordance with cl 6.5.7(d), does not accept the total of the forecast capex for the regulatory control period that is included in the current building block proposal, in which case the AER must set out its reasons for that decision and an estimate of the total of the DNSP's required capex for the regulatory control period that the AER is satisfied reasonably reflects the capex criteria, taking into account the capex factors;

(3) a decision on the allowed rate of return for each regulatory year of the regulatory control period in accordance with cl 6.5.2;

(4) a decision on the value of imputation credits as referred to in cl 6.5.3; and

(5) any other amounts, values or inputs on which the building block determination is based.

12 Clause 6.12.2 of the NER provides that the reasons given by the AER for a final distribution determination under r 6.11 must set out the basis and rationale of the determination, including:

(1) details of the qualitative and quantitative methods applied in any calculations and formulae made or used by the AER;

(2) the values adopted by the AER for each of the input variables in any calculations and formulae, including:

(a) whether those values have been taken or derived from the provider's current building block proposal; and

(b) if not, the rationale for the adoption of those values;

(3) details of any assumptions made by the AER in undertaking any material qualitative and quantitative analyses; and

(4) reasons for the making of any decisions, the giving or withholding of any approvals, and the exercise of any discretion, as referred to in Ch 6 of the NER, for the purposes of the determination.

13 The exercise of the AER's discretion in making distribution determinations is governed by cl 6.12.3 of the NER.

AER distribution determination process

Impact of the 2012 changes to the NER

14 Section 15 of the NEL prescribes the functions and powers of the AER, which include the making of distribution determinations under the NER.

15 Certain provisions of the NER relating to distribution determinations were amended by the Australian Energy Market Commission ('**AEMC**'), and were published, and took effect from on 29 November 2012 ('**2012 rule changes**').

16 A number of revenue determination processes due to be completed in 2014 and 2015 were delayed through transitional provisions inserted into the NER as part of the 2012 rule changes ('**transitional provisions**'). This delay afforded the AER the time to develop 'Better Regulation' guidelines in response to the 2012 rule changes (the '**Better Regulation Guidelines**'). The Better Regulation Guidelines were published in late 2013.

17 Key aspects of the transitional provisions applying to SAPN's distribution determination process are as follows:

(1) the date for submission of SAPN's regulatory proposal was delayed by nine months, from 31 January 2014 to 31 October 2014;

(2) the AER was not required to publish a draft distribution determination in relation to SAPN's regulatory proposal, as it would have been required to do under cl 6.10.1 of the NER, in the absence of the transitional arrangements. Rather, following appropriate consultation on SAPN's regulatory proposal, the AER was able to proceed immediately to making a distribution determination under cl 6.11.1 of the NER;

(3) at the same time as the AER published its distribution determination under cl 6.11.1 of the NER (which it was required to by 30 April 2015), it was required to also publish an invitation for written submissions on the revocation and substitution of that distribution determination;

(4) under cl 11.60.4(b) of the NER:

(a) any person was allowed to make a written submission to the AER in relation to the revocation and substitution of the distribution determination within the time period specified by the AER, which must not be earlier than 45 business days after the making of that distribution determination; and

(b) without otherwise limiting the manner in which SAPN's may make such submissions, SAPN was allowed to make a submission in the form of revisions to the regulatory proposal that it submitted to the AER in relation to the distribution determination that was to be revoked.

(5) by no later than 31 October 2015, the AER was required to revoke its distribution determination for the 2015-2020 regulatory control period and make a new distribution determination in substitution for the revoked determination which takes effect as at the date it is made; and

(6) in making the new distribution determination, the AER was required to have regard to:

(a) the matters it would be required to have regard to if it were making a final distribution determination under "current Chapter 6" subsequent to it making a draft distribution determination that is the same as the revoked determination

including (except where (c) below applies) the regulatory proposal that was submitted to the AER in relation to the revoked determination;

(b) written submissions received in relation to the revocation and substitution of the distribution determination;

(c) any revisions to the regulatory proposal that was submitted to the AER in relation to the revoked determination and that are given to the AER under cl 11.60.4(b); and

(d) any analysis undertaken by or for the AER that is published prior to the making of the distribution determination or as part of the distribution determination.

SAPN's regulatory review process

18 Pursuant to cl 6.8.2 of the NER (as modified by cl 11.60.3 of the transitional provisions), SAPN was required to submit, and on 31 October 2014 did submit, a regulatory proposal to the AER for consideration in accordance with the NER ('**Regulatory Proposal**').

19 On 30 April 2015, pursuant to cl 6.11.1 of the NER, the AER published a decision and distribution determination entitled 'Preliminary Decision: SA Power Networks Distribution Determination 2015-16 to 2019-20' ('**Preliminary Decision**').

20 On 3 July 2015, pursuant to cl 11.60.4(b) of the NER, SAPN submitted a revised regulatory proposal to the AER for consideration in accordance with the NER ('**Revised Proposal**').

21 On 29 October 2015, the AER published its Final Decision, pursuant to cl 11.60.4(c) of the NER.

22 On 19 November 2015, SAPN filed an application for leave and review under s 71B of the NEL.

LEAVE TO APPLY FOR REVIEW

23 Section 71B of the NEL provides:

> ***71B – Applications for review***
>
> *(1) An affected or interested person or body, with the leave of the Tribunal, may apply to the Tribunal for a review of a reviewable regulatory decision.*
>
> *(2) An application must—*
>
> *(a) be made in the form and manner determined by the Tribunal; and*

(b) specify the grounds for review being relied on.

24 The Tribunal accepts that, for the purposes of s 71B(1) of the NEL:

(1) SAPN is an "affected or interested person or body" (as that term is defined in s 71A of the NEL); and

(2) the Final Decision, the decision that is under review in the present application, is a reviewable regulatory decision, as it is a network revenue or pricing determination that sets a regulatory period.

25 In addition, it is accepted that there is no issue that SAPN's application for review was made within the 15 business-day time limit prescribed by s 71D of the NEL.

26 The application for leave to apply for review was unopposed by the AER.

27 As previously mentioned, on 4 May 2016, SAPN was given leave to apply for review of the Final Decision on the grounds set out in its Review Application.

28 It is worth noting that the South Australian Council of Social Service ('**SACOSS**') also applied for leave to review the Final Decision, however the Tribunal dismissed SACOSS' application for review on 2 May 2016: see *Application by South Australian Council of Social Service Incorporated* [2016] ACompT 8.

Requirements for the leave application

29 Section 71C of the NEL sets out the following two relevant requirements for applications made under s 71B of the NEL:

71C – Grounds for review

(1) An application under section 71B(1) may be made only on 1 or more of the following grounds:

(a) the AER made an error of fact in its findings of facts, and that error of fact was material to the making of the decision;

(b) the AER made more than 1 error of fact in its findings of facts, and that those errors of fact, in combination, were material to the making of the decision;

(c) the exercise of the AER's discretion was incorrect, having regard to all the circumstances;

(d) the AER's decision was unreasonable, having regard to all the circumstances.

(1a) An application under section 71B(1) must also specify the manner in which a determination made by the Tribunal varying the reviewable regulatory

> *decision, or setting aside the reviewable regulatory decision and a fresh decision being made by the AER following remission of the matter to the AER by the Tribunal, on the basis of 1 or more grounds raised in the application, either separately or collectively, would, or would be likely to, result in a materially preferable NEO decision.*

30 It is worth repeating that, pursuant to s 7 of the NEL, the NEO is to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers with respect to:

(1) price, quality, safety, reliability and security of supply of electricity; and

(2) the reliability, safety and security of the national electricity system.

31 The Tribunal accepts that SAPN's Review Application was made only on the grounds of review specified in s 71C of the NEL.

32 The Tribunal has reached that conclusion having regard to the observations made in recent Tribunal decisions relating to applications for limited merits review by DNSPs in NSW and ACT. For example, the Tribunal accepts that:

> *… the line between the several available grounds of review is not necessarily always clear cut. Sometimes, it will be a clear line, and sometimes it will not. Moreover, there is no prescription in s 71C that, in particular facts and circumstances, there can be only one ground of review made out …*
>
> *There is also no clear line between factual error, opinion, and discretionary judgment; one may feed into the other.*
>
> *… error or errors – if accepted – may be a combination of error or errors of fact, wrongful exercise of discretion, and/or the outcome of an unreasonable decision. Because the characterisation of error or errors, if made out, will more clearly emerge in the course of considering the review related material and the submissions dealing with it, the Tribunal does not consider it appropriate or necessary to embark upon the careful textual analysis and criticism of the* [DNSP's] *application at this point to describe the combination or permutation of alternative expressions of reviewable error in that application.*

See *Applications by Public Interest Advocacy Centre Ltd, Ausgrid, Endeavour Energy and Essential Energy* [2015] ACompT 2 at [55], [57]; *Application by ActewAGL Distribution* [2015] ACompT 3 at [21].

33 Further, the Tribunal has had regard to the matters outlined in SAPN's submissions on its application for leave to review ('**Leave Submissions**') and paragraphs [22]-[26] and [200]-[210] of SAPN's Review Application. In considering these matters, the Tribunal accepted, in granting leave to apply for review, that SAPN had sufficiently addressed the manner in which

a determination by the Tribunal in accordance with s 71C(1a) of the NEL may result in a materially preferable designated NEO decision.

Criteria for the grant of leave

34 Pursuant to s 71E of the NEL, the Tribunal must not grant leave to apply for review unless it appears to the Tribunal that:

> *(a) that there is a serious issue to be heard and determined as to whether a ground for review set out in section 71C(1) exists; and*
>
> *(b) that the applicant has established a* prima facie *case that a determination made by the Tribunal varying the reviewable regulatory decision, or setting aside the reviewable regulatory decision and a fresh decision being made by the AER following remission of the matter to the AER by the Tribunal, on the basis of 1 or more grounds raised in the application, either separately or collectively, would, or would be likely to, result in a materially preferable NEO decision.*

35 However, even where the Tribunal determines that the criteria in s 71E are satisfied, leave to apply under s 71B must not be granted "unless the amount that is specified in or derived from the decision exceeds the lesser of $5,000,000 or 2% of the average annual regulated revenue of the regulated network service provider": s 71F(2) of the NEL.

36 The Tribunal may also refuse to grant leave on the grounds set out in s 71H(2) of the NEL, namely that:

> *...*
>
> *(a) without reasonable excuse—*
>
> *(i) failed to comply with a request (including a request for relevant information), or a direction, of the AER made under this Law or the Rules for the purpose of making the decision; or*
>
> *(ii) conducted itself in a manner that resulted in the making of the decision of the AER being delayed; or*
>
> *(b) misled, or attempted to mislead, the AER on a matter relevant to the AER's decision.*

37 There is no suggestion, however, by the AER or SAPN that any of the conditions contained in that provision are present to enliven the Tribunal's discretion to refuse the granting of leave.

38 Each of the relevant criteria for leave in s 71E and s 71F(2) of the NEL are considered below.

Financial threshold (s 71F(2) of the NEL)

39 The affidavit of Luke Woodward affirmed on 19 November 2015, and made in support of SAPN's Review Application sets out the 2% of the average annual regulated revenue of SAPN over the 2015-2020 regulatory control period specified in or derived from the Final Decision as approximately $15.9 million. As such the relevant threshold pursuant to s 71F(2) is $5 million.

40 As previously held by the Tribunal in *Application by Energex Ltd (No 4)* [2011] ACompT 4 ('***Energex (No 4)***'):

(1) the "amount that is specified in or derived from the decision" should not be read literally as meaning the total revenue to be derived by the service provider, rather, the amount at issue in light of the grounds upon which the AER's decision is challenged: *Energex (No 4)* at [50]; and

(2) when determining whether the financial threshold in s 71F(2) of the NEL is satisfied, all of the errors are to be taken into account; the threshold does not need to be satisfied for each ground: *Energex (No 4)* at [52]; see also *Application by Jemena Gas Networks (NSW) Ltd (No 2)* [2011] ACompT 5 at [3]; *Application by ATCO Gas Australia Pty Ltd* [2015] ACompT 7 at [21] ('***ATCO* 2015**').

41 SAPN's Leave Submissions set out the relevant amounts specified in or derived from the decision in respect of each of the topics that are the subject of grounds for review in SAPN's Review Application. On the basis of these amounts, the Tribunal considered that the financial threshold was comfortably satisfied.

Serious issue to be heard and determined (s 71E(a) of the NEL)

42 SAPN adopted the submissions of Ausgrid, Endeavour Energy, and Essential Energy in *Applications by Public Interest Advocacy Centre Ltd, Ausgrid, Endeavour Energy and Essential Energy* [2015] ACompT 2, in relation to the legal principles relevant to the meaning of "serious issue to be heard and determined". These submissions were accepted in *ATCO* 2015 at [23], where the following principles were noted as being of particular relevance:

> *(a) The phrase 'serious issue to be heard and determined' has been correlated with the phrase 'serious question to be tried' in the context of the grant of interlocutory injunctions:* Re Application by ElectraNet Pty Limited *[2008] ACompT 1 at [39]-[42];*

> *(b)* *The relevant question is indeed whether an applicant has established that there is a serious issue to be heard and determined given the nature of the rights asserted by the applicant and 'the practical consequences likely to flow' from the grant of leave. In particular, the Tribunal has previously expressed the view that the threshold merely requires the applicant to 'show that there is a sufficient prospect of success to justify in the circumstances it being given the opportunity' to have the decision reviewed:* Application by Envestra Ltd *[2011] ACompT 12 at [21]*.

43 SAPN made extensive submissions on whether there was a serious issue to be tried in respect of:

(1) gamma

(2) allowed rate of return – return on debt

(3) forecast inflation;

(4) forecast bushfire safety capex;

(5) forecast labour cost escalation;

(6) operating expenditure ('**opex**') for increased asset inspections in bushfire risk areas; and

(7) opex for "no access" poles inspections.

SAPN ultimately decided not to apply for review of the final two topics above relating to opex.

44 For each of these topics, SAPN set out the background to the issue, summarised the issue as arising in SAPN's Regulatory Proposal and in the AER's Final Decision, and identified the specific aspects of the relevant grounds of review to demonstrate that there was a serious issue to be heard and determined.

45 As will be apparent from the reasons in respect of each ground of review below, there were serious issues to be heard and determined on SAPN's Review Application.

Prima facie case on materially preferable NEO decision (s 71E(b) of the NEL)

46 For each of the issues in dispute, SAPN made submissions on how rectification of an error in the AER's distribution determination – if found to be an error – could result in a materially preferable NEO decision. SAPN then submitted in its Leave Submissions at [241]:

> *The immediate consequence of these errors is that the overall revenue allowance determined by the AER in its Final Decision is materially below that which would be required by an efficient entity to recover at least efficient costs and provide a commercial market return to investors across the 2015-20 regulatory control period.*

> *As noted in paragraphs 198 and 199 of the SA Power Networks Application, these are individually material in terms of the overall regulated revenue SA Power Networks is permitted to earn, and in aggregate are very significant – that is, approximately, a $285.6 million ($nominal) revenue reduction.*

47 Further, SAPN also submitted that if the Final Decision is left uncorrected:

(1) SAPN's incentives and signals to undertake investment in the network and operations would be distorted due to a significant revenue shortfall;

(2) the shortfall in the allowances for the operating and capex may lead to an inability to recover the efficient costs of meeting regulatory (or otherwise appropriate) safety obligations and requirements of the distribution system;

(3) perceptions of regulatory risk will significantly increase; and

(4) it will set a precedent (in the non-technical sense of that term) for under-compensation of SAPN (and potentially other businesses) now and in the future.

48 The Tribunal considered SAPN's submissions in this respect. The Tribunal was satisfied that SAPN has made a prima facie case in accordance with s 71E(b) of the NEL.

49 On the basis of the above considerations, and as will be apparent further from the reasons in respect of each of the topics below, the Tribunal considered it was appropriate to grant leave to SAPN to apply for review.

COMMUNITY CONSULTATION PROCESS

50 The consultation process referred to in s 71R(1)(b) of the NEL is an additional procedural step which the Tribunal must take and, ideally, be accommodated within the target time prescribed by s 71Q of the NEL.

51 The Tribunal, having given leave to SAPN to apply for review in this matter on 4 May 2016, sought information from the AER as to groups or persons who might have an interest in the Tribunal's review under s 71R(1)(b) of the NEL.

52 The Tribunal then conducted an extensive communication process with each of those groups or persons, to invite them to indicate:

(1) whether they wished to consult with the Tribunal in relation to the Final Decision;

(2) the nature of their proposed participation; and

(3) how the consultation might best be carried out.

53 Having determined a protocol for the consultation, the Tribunal issued a Consultation Agenda under which it provided for those who wished to speak to the Tribunal on that occasion either personally or on behalf of an organisation, to do so.

54 The Tribunal conducted the consultation on 1 June 2016 at the Federal Court of Australia in Adelaide. As there was time remaining at the end of the consultation, opportunity was also provided for those who had not registered to participate, to make submissions to the Tribunal.

55 The transcript of that consultation process has been included by the Tribunal on its website. The following is a list of the entities and their representatives who made submissions during the consultation process, or in writing as a complement or supplement to oral submissions, or by providing written submissions after the consultation:

(1) National Irrigators' Council – Tom Chesson (Chief Executive Officer)

(2) Central Irrigation Trust – Gavin McMahon (Chief Executive Officer)

(3) UnitingCare Australia and Uniting Communities – Mark Henley (Manager Advocacy and Communications)

(4) Business SA – Andrew McKenna (Senior Policy Adviser)

(5) Riverland Energy Association – Brenton Paige (Association Member)

(6) SACOSS – Jo De Silva (Senior Policy Officer)

(7) The South Australian Financial Counsellors Association – Wendy Shirley (Executive Officer)

(8) Riverland Wine – Chris Byrne (Executive Officer)

(9) Major Energy Users, Inc, acting for Energy Users Coalition of SA – David Headberry (Public Officer)

(10) South Australian Chapter of The Electric Energy Society of Australia – Martyn Pearce (Chairman)

(11) Jubilee Almonds and Century Orchards – Brendan Sidhu (Chief Executive Officer)

(12) The Better Drinks Co Pty Ltd – Kym Baldock (General Manager)

(13) Renmark Irrigation Trust – Barry Schier (General Manager)

(14) Energy Consumers Australia – Rosemary Sinclair (Chief Executive Officer)

(15) Consumer Utilities Advocacy Centre

(16) Bundaberg Regional Irrigators Group

56 All submissions at the consultation were made on behalf of organisations. For ease of reference, the contributions will be identified according to the organisation, rather than the organisation's representative.

57 SAPN, the AER and the South Australian Minister for Mineral Resources and Energy (the '**Minister**') as intervener did not participate in the consultation process. That was appropriate, of course, because they each participated in the hearing before the Tribunal.

58 In the course of the consultation, a number of issues of concern to consumers and consumer interests were identified and the participants' submissions fell into several broad themes. It is, in the view of the Tribunal, helpful to summarise the submissions made in relation to the major themes, as identified by the Tribunal. It is important to note that neither the entirety of the submissions, nor every topic raised will be captured, and the broad themes as identified by the Tribunal will only be in summary form.

59 It is useful to note the starting point from which the majority of the submissions were made. It was generally submitted that, when considered according to the elements of the NEO – price, quality, safety, reliability and security of supply of electricity – the only element with which consumers were dissatisfied was price. As the Bundaberg Regional Irrigators Council ('**BRIG**') submitted:

> *In terms of the elements of the NEO, BRIG believes that price is the most important and has the greatest impact on consumers and their long term interests. Price has been neglected in favour of investment in recent determinations.*

60 Similarly, in survey of businesses conducted by Business SA, 87% of responses ranked reduction in electricity prices as most important, with less than 1% ranking it as either the lowest, or second lowest priority.

61 While each of the topics for review were referred to at the consultation, those that received most attention were gamma and taxation, forecast bushfire safety capex, and forecast labour cost escalation.

Impact on local industry, businesses and the local community

62 The majority of the participants drew connections between the cost of electricity and its impact on the relevant industry and the broader community. One of the key messages of participants was the importance of agriculture in South Australia, and therefore, the region's dependency on irrigation and electrical energy to operate irrigation for agricultural purposes.

Participants impressed upon the Tribunal the centrality of the agricultural industry to the region's prosperity, and therefore the importance of its protection into the future. As was submitted by The Better Drinks Co Pty Ltd, the whole Riverland region relies on what is pumped out of the river and therefore it affects all industries in the area. Participants also submitted that with other local industries, such as manufacturing, shrinking, more pressure was placed on agricultural industries to keep the local economy healthy.

63 The participants identified specific ways in which the cost of electricity impacted not only on their own businesses but also more broadly on the local industry and, as a result, the local community. For example, Central Irrigation Trust submitted that to absorb the higher costs of electricity, the business were required to either run down assets or reduce opex or capex. National Irrigators' Council submitted that, for many businesses, the only place that increasing electricity prices could be "worn" was in reducing the number of employees of the business. This had the ripple effect on households, already struggling with "some of the world's highest energy prices", which necessarily had to reduce their spending at local shops and restaurants, in turn harming the other local industries. Similarly, BRIG submitted that:

> *The intentional optimization and deliberate gaming of network profitability has resulted in a rate of price escalation that is unethical and is harming business and domestic consumers across the NEM with standards of living suffering appreciably and less money available for reinvestment in our farms.*

64 While a number of participants outlined the measures they were taking to manage increasing electricity prices, improve efficiency and remain competitive, several participants noted that electricity prices were something beyond the consumers' control. South Australian Financial Counsellors Association ('**SAFCA**') submitted that the steep increase in electricity prices during the previous regulatory period had not been matched by the community's capacity to pay.

65 A number of participants described the "Swiss cheese" effect of increased electricity prices, being that higher electricity prices were forcing some consumers to seek alternative sources of energy "off the grid". In the long run however, this would mean fewer consumers to pay for the network. It was in this context that participants submitted that from a policy perspective, increasing electricity prices which drove consumers away from the grid seemed an "absurd" strategy for SAPN itself.

Competition in international and domestic markets

66 Several participants addressed the Tribunal on how increasing electricity prices, and energy costs in general, had, and would continue to undermine the competitiveness of South Australian businesses if something was not done to address them. The high export rate of produce from irrigated agriculture in South Australia meant that the almond, wine and juice producers were competing with producers from Chile, Argentina, South Africa, North America and across Europe. Therefore, to continue to be a significant wealth generator for South Australia, agriculture producers would have to remain competitive both domestically and internationally.

67 For businesses such as The Better Drinks Co Pty Ltd, which operated in a highly competitive market both domestically and internationally, it was submitted that there was a very limited ability to pass on increased costs to its customers, and so the increase in costs had to be absorbed by business itself. Central Irrigation Trust submitted that Australia's competitive advantage was being quickly squandered through rising energy costs. Business SA submitted that the pending structural change on South Australia's economy with the exit of the automotive manufacturing industry in 2017 provided further impetus for energy costs to not contribute to an already uncompetitive cost base, compared with interstate and international competitors.

Long term interests of the consumer

68 The notion of the "long term interests of consumers" ('**LTIC**'), as the factor underpinning the NEO, was a focal point of many of the submissions. In considering the factors relevant to the LTIC, UnitingCare Australia and Uniting Communities ('**UnitingCare**') sought to juxtapose the "supply-side" perspective of the LTIC contended for in SAPN's Review Application with the "demand-side" perspective of network users. Therefore, it was submitted that the elements of the LTIC, as specified in the NEO, should be interpreted in the following way:

- *Price* – end consumer pays no more than is necessary;
- *Reliability* – all consumers are able to afford to pay for the essential use of electricity needed to participate in contemporary society, and that people will not be cut off from electricity supply for essential purposes because it is too expensive;
- *Quality* – prices as well as supply are stable with no supply-side or bill shocks;

- *Safety* – a person's house is not at risk of burning down because they cannot use electricity for safe lighting, cooking or heating or other unsafe practises considered in the absence of supply.

69 Energy Consumers Australia ('**ECA**') also directed some of their submissions to considering the appropriate interpretation of LTIC. ECA submitted that the question for interpretation is whether "efficiency" is the goal, and LTIC is just a signpost to balancing items, or whether LTIC is the goal, and efficiency is the means to achieve it. In developing its interpretation, ECA submitted that the objective of the regulatory regime is to deliver the outcomes that are equivalent to those that would be delivered if there were competition achieved in the electricity market. ECA identified such outcomes as the consumer interests, price, quality, safety, reliable and secure supply services – in essence, the elements of the NEO, through which the LTIC must be achieved.

Impact on SAPN

70 Some of the participants submitted that SAPN's Regulatory Proposal would ultimately work against SAPN's interests as it would force a significant proportion of consumers off the grid through increased prices. This would thereby reduce SAPN's customer base and impact on its ability to run its business. A number of participants noted that they were investigating alternative energy sources to run their businesses such as through diesel generation and solar energy.

Taxation and gamma

71 An issue raised by a number of the participants at the consultation was the amount of tax paid by SAPN. Many consumers called for an explanation for why consumers were paying for an income tax equivalent of "over $400 million" when, as the participants submitted, it did not appear to reflect the amount of tax SAPN was actually paying. As UnitingCare submitted, the Consumer Challenge Panel (established by the AER to assist with the AER's regulatory determinations) noted that SAPN has historically paid minimal tax to the Australian government despite increases in the regulatory revenue allowance from 2011. UnitingCare emphasised that it was not suggesting anything improper on the part of SAPN. However, it raised the issue to ensure consumers were not paying more as a result of a "more-than-generous" credit arrangement in favour of SAPN.

72 In seeking clarity and transparency around the amount of tax paid by SAPN, the participants also called for an indication of taxation allowances for privately owned distributors to determine whether this properly represented their actual tax costs. In support of this submission, National Irrigators' Council referred to the Minister's criticism of SAPN for making "super profits" from its customers.

73 Consumer Utilities Advocacy Centre ('**CUAC**') considered the relationship between gamma and the LTIC in two respects. First, submitting that the value for gamma proposed by SAPN "relies on a single methodology that produces statistically unstable results because it is highly sensitive to underlying assumptions", CUAC urged the Tribunal to consider

> *whether it is in the best interests of consumers for the regulator to rely on this single measure and methodology, rather than considering a wider range of evidence drawn from different methodologies to produce a more robust value for gamma, as has been done by the AER in their guideline paper.*

74 Secondly, CUAC noted the recent changes in the NEL, as stated in the second reading speech of the Statues Amendment (National Electricity and Gas Laws – Limited Merits Review) Bill 2013, which sought to ensure

> *consumers do not pay more than necessary for the quality, safety, reliability and security of supply of electricity and natural gas under the national energy laws.*

75 However, CUAC queried how this would be reflected and implemented if SAPN's own estimate of their proposed gamma value would cost consumers $85.2 million over the 2015-2020 period.

76 Central Irrigation Trust submitted that the effect of the AER's determination in the Final Decision in respect of gamma was viewed to be a transfer of money from their own business to SAPN. Renmark Irrigation highlighted that even small changes in the value of gamma would mean "big returns" for SAPN. It was considered to be in the best interests of consumers for the AER's gamma methodology to be ratified by the Tribunal.

77 Major Energy Users ('**MEU**') considered gamma in the context of the incentive nature of the regime. MEU submitted that not only have companies been willing to invest in SAPN with a gamma of 0.5 or 0.4 over many years, but it was also submitted that the current owner of SAPN was prepared to invest in the distributor with a gamma of 0.4. It followed, on MEU's submission, that there was no reason to change it as a disincentive could not be identified.

Capex and opex

78 In raising issues about the specific topics for review, a number of participants voiced concerns about capex and opex generally.

79 Business SA submitted that a broad concern was that substantial increases in the AER's determination both in relation to capex and opex will lock in significant additional electricity costs over the next five years and beyond, as they would be incorporated into the regulatory asset base and opex used in future calculations. It was further submitted by Business SA that it considered it to be "inconceivable" for capex and opex to be increasing as it submitted that the demand on the electricity network was static, if not in decline. More fundamentally, SACOSS expressed concern that SAPN was attempting to expand the meaning of its regulatory obligations to justify additional expenditure in relation to capex and opex.

80 Drawing a connection with the concern around consumers abandoning the network in favour of alternative energy sources, Riverland Energy Association posed the question of who would be paying for existing and new assets proposed by SAPN if future customers would be seeking alternative energy sources and deserting the traditional network supply base.

Forecast bushfire safety capex

81 One of the main issues raised by participants at the consultation in relation to the bushfire mitigation capex was the absence of legislative changes by the South Australian government to warrant or require SAPN's increase in spending on bushfire mitigation over the relevant regulatory period. SACOSS submitted that the AER was correct to conclude that the regulatory obligations imposed by *Electricity Act 1996* (SA) ('**Electricity Act**') and *Work Health and Safety Act 2012* (SA) ('**WHS Act**') in relation to the bushfire mitigation measures had not been expanded by the outcome of the Victorian Bushfire Royal Commission and Powerline Bushfire Safety Taskforce, as had been suggested by SAPN. Further, SACOSS submitted that, in any event, SAPN had failed to demonstrate how the additional expenditure proposed in their Regulatory Proposal was prudent and efficient. Similarly, MEU emphasised that the amount allowed for bushfire mitigation capex should not simply be the cost of service but what is efficient.

82 Business SA submitted that as SAPN's proposal on bushfire mitigation capex had been made independent of comprehensive policy consideration, it did not represent optimal public policy outcomes. Participants warned against allowing SAPN to become an "arbiter" on what

constitutes good industry practice in relation to bushfire mitigation, and disregarding the AER's views on the basis that is "merely" an economic regulator. MEU submitted that such an approach would risk shifting from an incentive-based regime, which was specifically required by the legislation, to a regime driven by cost of service.

83 A contrasting perspective was provided by the South Australian Chapter of the Electricity Energy Society of Australia ('**EESA**'). EESA acknowledged that SAPN had been achieving good results in bushfire mitigation controls. However, EESA submitted that SAPN, with whom lay a large portion of the responsibility for protecting the community during bushfires, had to demonstrate continuous improvement to its practices to address "reasonably foreseeable" events causing bushfires. Otherwise, as EESA submitted, such organisations would become vulnerable to litigation, particularly in light of the findings and changes brought about in this sphere following the Victorian Bushfires Royal Commission. It was submitted that the cost of litigation in circumstances where negligence and the "reasonable foreseeability" test were made out, would be in excess of $12 million. In light of this, and the public expectation that EESA considered existed for such measures to be implemented, EESA contended for the program of bushfire mitigation proposed by SAPN to be approved.

Forecast labour cost escalation

84 Forecast labour cost escalation received significant attention during the consultation. Participants submitted that SAPN's proposal to increase the terms of the enterprise bargaining agreement ('**EA**' or '**EBA**') governing SAPN's employees was at odds commercially with other EAs across Australia, particularly in light of what were considered to be already favourable EA terms. A number of participants queried why increases in allowances for labour costs would be required where there had been no indication of increases in productivity. As CUAC submitted:

> *It is questionable whether any increases in real labour price growth are appropriate – and in the long term interests of consumers – without a corresponding increase in productivity growth. As stated by in the* [Victorian Energy Consumer and User Alliance] *submission, "productivity and labour price increases are inextricably linked". This is particularly pertinent given that the AER has accepted the networks in both states have proposed zero productivity growth (with the exception of Jemena in Victoria), despite the significant capital expenditure over the previous period. CUAC notes that SAPN proposed that the AER adopt negative productivity growth forecasts in its alternative estimate of opex.*

85 Business SA submitted that while the shareholders in SAPN were free to remunerate their labour force as they saw fit, electricity consumers would not be willing to absorb any costs considered above the efficient rate in relation to market conditions in South Australia.

86 SACOSS noted its support for the AER's decision to use the wage price index to escalate cost rather than basing the escalation on SAPN's EA. MEU identified the risk with allowing SAPN to determine the escalation, rather than using an external benchmark: there would be no competitive pressure on SAPN to negotiate an EA on terms most favourable to consumers. This is particularly the case given that, as MEU submitted, without an external competitor, the unions, with whom SAPN would be negotiating, could argue that the business could just pass on its costs to clients.

87 SACOSS further submitted that, if an error in the AER's decision were identified, the Tribunal should still consider whether, in any event, it would be a materially preferable NEO decision to reverse the AER's decision when the reviewable regulatory decision was considered as a whole.

Consumer engagement

88 The 2012 rules changes required DNSPs to improve their engagement with electricity consumers to ensure that capex and opex forecasts include expenditure to address consumers' concerns. The consumer engagement process ('**CEP**') conducted by SAPN received some criticism from participants. Riverland Energy Association contended that the "cornerstone" of SAPN's Review Application was based on the AER failing to giving significant weighting to the views of the consumer expressed in SAPN's CEP. However, Riverland Energy Association identified the methods adopted by SAPN for determining the consumers' priorities to be self-fulfilling "in the extreme". SACOSS claimed, both at the consultation and in written submissions filed with the Tribunal subsequently, that as the CEP undertaken by SAPN was conducted in respect of areas not the subject of review before the Tribunal, it should be not be relied upon by SAPN to demonstrate the LTIC, nor be given any weight in the Tribunal's considerations in this review. SACOSS submitted that its only relevance was to highlighting the consumer concern about potential cost increases, and directed the Tribunal's attention to SAPN's research findings relating to the consumers' willingness to pay, namely that:

> *there is significant community concern about potential cost increases. Half of the customers surveyed are very concerned about the prospect of rising electricity costs.*

89 MEU also identified problems with consumer engagement in the regulated energy distribution sphere more generally. For example, it was claimed that there was insufficient time to engage with consumers, consumers had inadequate knowledge to be able to make an informed contribution or recommendation, and the majority of time spent engaging with consumers was explaining the role of a network distributor, and distinguishing it from a network retailer. MEU considered this to be detracting from a discussion of the substantive issues.

Role of the Tribunal and the regulatory process

90 Participants also addressed the Tribunal on their perceptions of the regulatory process and what they considered to be the role of the Tribunal in the process.

91 A number of participants articulated that they saw the Tribunal as a "final backstop for consumers." One participant "challenged" the Tribunal to bring electricity prices in South Australia back to the bottom quartile of prices amongst countries forming the Organisation for Economic Co-operation and Development ('**OECD**'). SAFCA submitted that for the Tribunal to achieve the materially preferable NEO decision, it is required to take into account real-life experiences of large numbers of low and modest income households.

92 Some comments were made about the regulatory process more generally. Some participants submitted that they felt let down by the regulatory process given the sharp rise in SAPN tariffs over the last regulatory period. UnitingCare submitted that consumer behaviour over recent years put paid to the notion that regulation of network monopolies successfully functioned as a proxy for competitive and efficient markets. UnitingCare cited a number of statistics to support this argument, including that:

- 31,666 South Australian households had an electricity debt, with the average debt being $758;
- 3,174 South Australian small businesses had an electricity debt, with the average debt being $1,559; and
- South Australia has highest rate of energy customers on hardship programs.

93 BRIG also expressed their dissatisfaction with the regulatory process:

> *The network price setting process is deeply flawed. In BRIG's experience, it has been a one sided process that has no regard for impact on consumers or the wider economy. If the AER's increased powers are greatly reduced by the decisions of this Tribunal, we fear this will continue to be the case.*

94 In relation to the regulatory review process, participants submitted that they considered it to be adversarial, intimidating and complex. Others noted that as it took significant time to understand the technical and complex concepts such as theta, gamma, and regulatory asset bases, the process itself became costly and time consuming for businesses to participate in it effectively.

95 The incentive-focus of the regulatory regime was also raised as an issue. MEU contended that the AEMC "cleverly" characterised the LTIC as being achieved by ensuring there is incentive for investors to invest in the networks, and disincentive when investment is not required. MEU considered that this emphasis on investment and investors took the focus away from the interests of the consumers who were required to pay for the network services and the impact that electricity prices had on their daily lives.

96 ECA devoted a significant portion of their submissions to the new limited merits review process, addressing what they considered to be intended from the introduction of the process. For example, ECA submitted that while SAPN does have a responsibility to meet its regulatory and other obligations, the question before the Tribunal is whether SAPN's Regulatory Proposal represents the most efficient way of meeting such responsibilities and obligations. In this respect, ECA referred to the aim of the energy market reforms, identified by the (former) Standing Council on Energy and Resources (now COAG Energy Council), to "restore the focus of the electricity market on serving the long term interests of consumers".

97 ECA also contrasted this case before the Tribunal with that of a NSW and ACT proceeding with respect to the absence of a consumer advocacy group as a party to the proceeding, noting that in *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1 ('***Ausgrid***'), the Tribunal held at [64]:

> *Given the role of PIAC, and the relevance of its submissions to the Tribunal's functions and responsibilities under the legislation, the Tribunal has not needed in these matters to address separately the matters which emerged in the course of the consultation process. The role and submissions of PIAC have encompassed those matters.*

98 As such, ECA submitted that it was particularly important for the Tribunal to carefully consider and place weight on the submissions of SACOSS put forward in the consultation.

99 Relevantly, in its written submissions, SACOSS urged the Tribunal to continue to

> *consider its consultation obligations once the parties have had an opportunity to respond to matters raised at the public forum, and demonstrates in its reasons for*

decision on the review how the submissions made through the consultation process have been considered by the Tribunal.

100 Before going to this issue, the Tribunal makes mention of the submissions of the Minister. It was the Minister's contention that the Tribunal should affirm the Final Decision. In the course of these reasons, the Tribunal traverses the issues raised by the Minister, although without specific attribution to the Minister as intervenor. These issues were effectively argued by both SAPN and the AER, and need no repetition. Nevertheless, one submission of the Minister does require specific mention relevant to the consultation process.

101 The Minister submitted that the efforts of the consumers who took the time to participate in the community consultation should be recognised and their submissions to the Tribunal must be considered as part of the review. The Tribunal accepts this submission, and acknowledges that the participants in the consultation took time out of their own businesses and life to be part of the review, representing various consumer interests.

102 In light of the ultimate decision of the Tribunal, it is unnecessary to otherwise comment on the Minister's helpful submissions.

103 It should also be observed, as the following reasons indicate, the decision of the Tribunal has been reached on the basis of the contentions made by SAPN and the AER, and not by direct reference to submissions made during the consultation process. This is not because such submissions are not relevant to the review, but because in this review the decision to affirm the Final Decision has been readily arrived at by focussing on the submission of the parties and in determining whether any error had occurred on the part of the AER. Nevertheless, the consultation process and the submissions of consumers (and the Minister) may have become particularly significant (if error had been found in the Final Decision) in the consideration of the materially preferable NEO decision. This has been unnecessary in this review as no error has been found to occur.

GROUNDS OF REVIEW

104 SAPN has identified multiple grounds of review in respect of each of the topics for review. In *Application by ATCO Gas Australia Pty Ltd* [2016] ACompT 10 ('***ATCO* 2016**'), the Tribunal outlined the nature and scope of each of the relevant grounds of review: error or errors of fact, incorrect exercise of discretion, and that the decision under review is unreasonable: see *ATCO* 2016 at [36]-[48]. The Tribunal considers these principles to be applicable in respect of the present application by SAPN.

105 The Tribunal now turns to consider in detail each ground of review by reference to the submissions of the parties. There was a substantial degree of repetition and overlap in the submissions dealing with each ground of review, and the Tribunal has attempted to address the significant and determinative issues to arrive at its decision.

Cost of corporate income tax (gamma)

106 Gamma is one of the required parameter inputs into the post -tax revenue model ('**PTRM**') used under the NER for the determination of allowable revenues for a DNSP. It represents the "value" of imputation (tax) credits arising from company tax payments which are distributed with dividends to shareholders. These can be expected to reduce the required return on equity of shareholders (relative to receiving returns without such tax credits attached).

107 However, in the PTRM, rather than applying an estimated value of gamma to adjust the required rate of return on equity, the estimate is instead applied to reducing the revenue required to compensate the company for corporate tax paid. Consequently the return on equity incorporated into the allowed rate of return is calculated ignoring the imputation credit component of returns to shareholders. This approach draws on a demonstration by Professor Bob Officer (The Cost of Capital of a Company under an Imputation Tax System, Accounting and Finance, May 1994) of the equivalence of several such alternative approaches to valuation of company cash flow streams.

108 Because gamma is unobservable, and also because of conflicting interpretations of the word "value" in its definition, there has been ongoing debate over the appropriate numerical value to use in the PTRM. In its Final Decision, the AER applied a value for gamma of 0.4, whereas the applicant SAPN argued for a value of 0.25. This difference has a significant negative impact on the allowable revenue for SAPN over the regulatory control period which it estimates to amount to $85.2 million. The AER argues that the effect would be less than this because of the need to adjust other parameters accordingly in the PTRM, as discussed later. SAPN argues that the AER made errors in determining to use a value of 0.4 for gamma, and contends that it should have accepted the proposed value of 0.25.

109 This same issue arose in the 2015 determinations by the AER for the NSW DNSPs, which was also appealed to the Tribunal by the affected parties (arguing for a gamma value of 0.25 rather than the AER's use of 0.4). That (differently constituted) Tribunal ruled on 26 February 2016 in the *Ausgrid* decision in favour of the applicants, and remitted the matter

back to the AER to recalculate allowable revenues using a gamma value of 0.25. The AER has, in turn, appealed that decision to the Full Court of the Federal Court. No determination has yet been made by the Full Court.

110 This Tribunal determined that despite the existence of that appeal, it was appropriate for it to hear this review rather than leave the matter to be determined conditional on the outcome of the hearing of the Full Court of the Federal Court. The Tribunal has a legislative responsibility to hear and determine the review (within a statutorily delineated period of time), and should proceed accordingly.

111 It was also contended by SAPN that this Tribunal should follow the *Ausgrid* decision, or alternatively, treat it as highly persuasive. Undoubtedly, each differently constituted Tribunal should consider the importance of consistency between Tribunal decisions, but this is not the sole determinative factor nor is consistency an unqualified value. Consistency may lead to arbitrariness of decision-making, and may not produce the correct legal and just result in the particular case before the Tribunal. Each Tribunal, considering the application before it, and dealing with the relevant parties, must in accordance with the law, the issues before it, and the evidence, consider and determine the matters raised before the Tribunal.

112 It is to be recalled the Tribunal is an administrative decision-maker, not a court of law. The Tribunal cannot conclusively decide questions of law. The general statements of principle the Tribunal articulates will not and cannot have the same force as the development of principles of general law determined by the courts. The function of the Tribunal is a reviewer of decisions, and is not a primary decision-maker. The Tribunal has a responsibility to determine individual cases based upon the evidence and arguments put before it. This Tribunal proceeds accordingly.

The role of gamma in the PTRM

113 The NER (r 6.3) specify that the DNSP's revenue requirement is to be calculated using the "building block" approach. Rule 6.4 provides detail on the building block components. Two components are relevant in this matter. One is the allowed rate of return on capital which is to be calculated in accordance with cl 6.5.2. The NER (cl 6.5.2(d)(2)) specifies that the allowed rate of return "must be … determined on a nominal vanilla basis that is consistent with the estimate of the value of imputation credits referred to in clause 6.5.3." The second component (cl 6.4.3(b)(4)) is that "the estimated cost of corporate income tax is determined in accordance with clause 6.5.3".

114 Clause 6.5.3 of the NER states that:

> *The estimated cost of corporate income tax of a Distribution Network Service Provider for each regulatory year (ETC_t) must be estimated in accordance with the following formula:*
>
> $ETC_t = (ETI_t \times r_t)(1 - \gamma)$
>
> *where:*
>
> *ETI_t is an estimate of the taxable income for that regulatory year that would be earned by a benchmark efficient entity as a result of the provision of standard control services if such an entity, rather than the Distribution Network Service Provider, operated the business of the Distribution Network Service Provider, such estimate being determined in accordance with the post-tax revenue model;*
>
> *r_t is the expected statutory income tax rate for that regulatory year as determined by the AER; and*
>
> *γ is the value of imputation credits.*

115 Thus, the value of imputation credits provided to shareholders is deducted from that part of the allowed cash flows required to meet tax obligations. Under the "vanilla" WACC approach, those tax obligations are calculated after allowing for the effect of the tax deductibility of interest on debt. Consistency of approach means that the allowed rate of return on the regulatory asset base (another component of allowed cash flows) is calculated as a "vanilla" WACC. This is a weighted average of a cost of debt (pre company tax – ie ignoring the tax deductibility of interest at the company level) and the cost of equity (ignoring returns to shareholders in the form of imputation credits). This "vanilla" WACC is also used to convert cash flows over, and the regulatory asset base at the end of, the regulatory control period to a present value to achieve a zero NPV condition for a smoothed set of revenues or prices over the regulatory control period.

116 This "vanilla" WACC approach, for use under an imputation tax system, has its genesis in the aforementioned paper by Professor Officer, in which he demonstrated the equivalence of a zero NPV condition for a set of future cash flows under alternative approaches. One was the "vanilla WACC" approach in which net cash flows to be valued have company tax payments (allowing for tax deductibility of interest) deducted. This involved company tax being defined as net of the value of imputation credits distributed to shareholders. For consistency, required rates of return (the discount rates) ignore personal tax consequences, including the effects of imputation. Among the alternative approaches was a dividend imputation version of the standard textbook approach. In that, cash flows are calculated, after company tax, "as if" the company were unlevered, such that there is no tax deduction for debt interest allowed.

Rather, the required return on debt is the after-company-tax cost of debt. Moreover, the company tax figure ignores imputation credit implications, and the required return on equity is lowered by some amount related to the value of imputation credits.

117 Two important considerations flow from this. One is whether the nature of the Officer approach has explicit implications for the interpretation of the term "value of imputation credits" used in the PTRM and the NER. The second is how a "value" of imputation credits should be estimated given the interpretation which is (or should be) adopted. These are the two issues at the heart of the dispute between SAPN (and other DNSPs) and the AER.

Regulatory background

118 The dispute over gamma needs to be placed in the context of changes made to the NER in November 2012 which changed the terminology used to describe gamma. Prior to that change, gamma was defined as "the assumed utilisation of franking credits". Subsequently it has been defined (NER cl 6.5.3) as "the value of imputation credits". No specific definition of what that term means, or how it is to be estimated, is given, other than that it needs to be consistent with the "vanilla WACC" approach.

119 Those rule changes also gave increased flexibility to the regulator in determination of the value to be chosen for gamma. "The current prescription of the gamma value of 0.5 in clause 6A.6.4 has also been removed to allow the regulator the ability to estimate an appropriate value that reflects the best available evidence at the time of a decision and would therefore result in a rate of return that meets the overall objective." (AEMC, Rule Determination: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, p 68).

120 Other than this statement, there appears to be no other explanation given for the change in terminology from "assumed utilisation" to "value", although the latter term (even though not specifically defined) is more consistent with the flexibility given to the regulator and requirement (NER cl 6.5.2(e)) that:

> *In determining the allowed rate of return, regard must be had to:*
>
> *(1) relevant estimation methods, financial models, market data and other evidence;*
>
> *(2) the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and*

> *(3) any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.*

The regulatory determination process.

121 In its initial proposal, SAPN proposed a value for gamma of 0.25, calculated as the product of a distribution rate of 0.7 and a "theta" value ("the value of distributed imputation credits to investors who receive them": SAPN, Regulatory Proposal, p 320) of 0.35. It noted that the latter figure (0.35) was different to that contained in the AER Rate of Return Guideline ('**ROR Guideline**') (where 0.7 is proposed) and also argued that the interpretation adopted by the AER of the "value of imputation credits" in those guidelines was incorrect.

122 It argued that the AER had inappropriately discarded a correct (in SAPN's view) prior approach which interpreted theta as the "value" of imputation credits, and which led to emphasis being given in its estimation to "market value studies" (such as dividend drop-off studies). Instead it had adopted an approach based on a "utilisation" rate. SAPN argued that rather than seeking to estimate the value of distributed imputation credits, the AER instead seeks to estimate what it refers to as "the before-personal-tax reduction in company tax per one dollar of imputation credits that the representative investor receives". Elsewhere in the Explanatory Statement, the AER refers to its conceptual definition of theta as "the expected ability of equity holders to use the imputation credits they receive to reduce their personal tax". (The references are to AER, Explanatory Statement: Rate of Return Guideline, December 2013, pp 165 and 174 respectively). By incorrectly (in SAPN's view) adopting this approach, the AER placed more weight on information from equity ownership and tax statistics than market value studies.

123 It is worth referring back to the Explanatory Statement of the ROR Guideline (pp 166-7) from which those statements have been extracted, since fuller reading of the document makes clear both the AER's approach and conceptualisation of theta, and also its perspective on earlier interpretations of gamma and theta by the Tribunal and others:

> *We consider the relationship between the representative investor in the market and the implied representative investor from estimation methods such as tax studies and dividend drop off studies). We consider this relationship is critical in assessing what we are estimating and which estimation methods are fit for purpose.*
>
> *To answer the question of the appropriate representative investor, we considered afresh:*
>
> > ** the Sharpe-Lintner CAPM framework under imputation as derived in Officer, Monkhouse, Lally and Van Zijl, and Lally*

> ** analysis of this conceptual framework by academic experts*
>
> ** the construction of the corporate tax building block in the rules and how this interacts with the Officer framework used within the rate of return.*
>
> *Our analysis of these issues is set out in section 9.3.1, and further in appendix H. Having undertaken this analysis, we conclude that we did not fully adopt or address important aspects of this analysis during the 2009 WACC review. As a result, the Tribunal review focused only on the particular suitability of tax value studies and dividend drop off studies. This was with an incomplete conceptual framework. The Tribunal acknowledged this incomplete framework at several points in its reasons.*
>
> *We conclude that the representative investor:*
>
> ** Is the weighted average of investors within the defined market, where the weightings reflect market participation (equity ownership value) and risk aversion.*
>
> ** In this context, the defined market is investors in Australian equity, either domestic or foreign.*
>
> ** Is the representative investor at any hypothetical point during a trading year – that is, it does not disproportionately reflect an investor or set of investors at a particular point in time. This is because investors may invest at any point during the year. If a benchmark parameter is set using data from a short period in systematically different trading circumstances to the rest of the year, it produces an estimate that is only relevant to those circumstances.*
>
> *Having reached this view, we consider it has important implications for the practical task of estimating the value of imputation credits. The most important implication of this relationship is that the source of evidence the Tribunal adopted for the utilisation rate (a dividend drop off study) does not produce an estimate for the representative investor. This is because dividend drop-off studies give the value weighted investor's valuation of imputation credits:*
>
> ** Based on the combined package of imputation credits, dividends, and other entitlements (unless adjusted for). That is, a value for imputation credits is not available via simple observation of the dividend drop off in these studies. The implied values for the franking credit and the cash component must be econometrically separated, which is difficult to do reliably. We discuss this further in appendix H.*
>
> ** For trades around the time of dividend distribution – that is, these studies only reflect trading around the cum-dividend and ex-dividend dates.*

124 In its preliminary decision, the AER rejected SAPN's proposal and determined that the value attributed to gamma should be 0.4, which was a departure from its ROR Guideline figure of 0.5. It explained that change as reflecting the available current information, and being based primarily on data from equity ownership and taxation statistics. These indicate (respectively) potential and actual utilisation of imputation credits. The AER argued that little weight should be given to market value studies due to a range of factors potentially affecting the robustness and interpretation of their results. The AER also departed from its ROR Guideline

in dropping from the list of alternative approaches the "conceptual guidelines" approach. The preliminary decision incorporated an extensive evaluation of alternative approaches to estimation of gamma and arguments provided by a range of experts and related evidence.

125 In its response to the preliminary decision and revised proposal, SAPN maintained its position that the value attributed to gamma should be 0.25, and provided additional expert reports in support of its position (and critical of the AER preliminary decision). It noted (SAPN, Revised Proposal, pp 370-1) that

> *There are two fundamental differences of view that explain how SA Power Networks' approach differs so substantially from that of the AER:*
>
> *1) the first fundamental difference of approach concerns what is meant by the term 'value of imputation credits' in rule 6.5.3. SA Power Networks and its advisors have consistently contended that this term must mean the valuation revealed in openly traded equity markets. The reasons for this view are explained at section (a) below. By contrast, in a range of regulatory documents published over the past five years the AER and its consultants have advanced one, two, three and even more formulations of argument and explanation that seek to bridge the gap between the reference in the Rules to a 'value', on the one hand, and the AER's preferred measure of the redemption rate …*
>
> *2) The second fundamental difference of approach concerns the set of comparator businesses that should be used when establishing a benchmark distribution rate. There are two key differences. First, the AER takes the view that the data for the distribution rate and the data for the valuation of imputation credits need to be drawn from the same set of firms. … Secondly, even if it were appropriate to look at a limited group of 'comparator firms' the AER's approach to selecting that subset is inconsistent over time and inconsistent with other aspects of its approach to rate of return regulation.*

126 These fundamental differences underpin the current dispute between SAPN and the AER (as well as being those considered by a previous Tribunal in the *Ausgrid* case).

127 In its Final Decision, the AER maintained its position on the appropriate value of gamma being 0.4. The AER (Final Decision, Attachment 4, pp 6-7) notes "[t]here is no consensus among experts on the appropriate value or estimation techniques to use. Further, with each estimation technique there are often a number of ways these may be applied resulting in different outcomes." The AER also noted the commonality of proposals from a wide range of service providers and that the value of gamma was one issue currently (at that time) subject to appeal by other service providers to the Tribunal. It concluded at p 18 that "[o]verall, the evidence suggests that a reasonable estimate of the value of imputation credits is within the range 0.3 to 0.5. From within this range, we choose a value of 0.4", and justified that choice

by the greater weight it placed on data from equity ownership and taxation statistics than on market value studies (such as dividend drop-off studies). The AER did not provide specific individual estimates for the two components of gamma (ie the distribution rate (F) and the value of imputation credits (theta)).

128 In reaching its decision, the AER adopted a clear position on the interpretation of the term "value of imputation credits". The AER based its decision on the view that "the value of imputation credits in NER cl 6.5.3 is the value of imputation credits to investors which, within the Officer framework, is the proportion of company tax returned to investors through the utilisation of imputation credits" (AER's Outline of Submissions, para 35).

129 In implementing that approach, the AER adopted a method for calculating gamma which involves multiplying the distribution rate (or payout ratio, "F") by the utilisation rate ("θ" or theta). There is disagreement over how best to calculate these two numbers, and whether "θ" should be interpreted as a utilisation rate or an implied market price of imputation credits. In its Outline of Submissions (at para 35), the AER:

> *(c) defined the distribution rate as the proportion of imputation credits generated by the benchmark efficient entity that is distributed to investors;*
>
> *(d) defined the utilisation rate as the value to investors in the market per dollar of imputation credits distributed, which reflects the extent to which investors can utilise the imputation credits they receive to reduce their tax or obtain a refund …*
>
> *(e) estimated the distribution rate using the "cumulative payout ratio approach", which uses data from the ATO on the accounts used by companies to track their stocks of imputation credits (franking account balances);*
>
> *(f) estimated the utilisation rate by giving varying degrees of weight to the different available estimation methods identified in the ROR Guidelines. …*

130 In estimating the utilisation rate the AER gave significant weight to equity ownership information, less weight to taxation statistics and lesser weight to market value studies (such as dividend drop-off studies).

Grounds of review

131 SAPN argues that the AER made multiple errors of fact, was unreasonable, or made an incorrect exercise of its discretion in determining that the appropriate value for gamma is 0.4. These commence at paragraph 37 of its Amended Application for leave, and run for several pages. Since they are, in many cases duplicative, interrelated, and overlapping, it is not

helpful for the Tribunal to reproduce them verbatim, but rather to summarize them in an order which facilitates a logical approach to analysis.

132 First, SAPN contends that the AER erred in misconstruing the correct interpretation of "value of imputation credits" through focusing on utilisation rather than implied market value.

133 Secondly, this misconstruction led the AER to incorrectly give greater weight to utilisation measures of imputation credit other than market based studies and particularly dividend drop-off studies.

134 Thirdly, SAPN contends that the AER erred in not recognising that investors would incur personal costs in extracting value from receipt of imputation credits which would reduce the value ascribed to them.

135 Fourthly, in calculating the value of imputation credits from equity ownership and taxation information, the AER used inappropriate data.

136 Fifthly, the AER in interpreting equity ownership and taxation figures failed to recognise that these are maximum possible values.

137 Sixthly, the AER did not accord sufficient weight to the dividend drop-off study of SFG Consulting ('**SFG**') due to misconceptions about the merits and reliability of drop-off studies.

138 The Tribunal notes that in relation to the concept of the "value of imputation credits" referred to in the first of the issues listed above, different theoretical models, all of which are simplifications of reality, with different strengths and weaknesses, and with different degrees of support among experts, may suggest differing approaches. Judgement about the weight to be given to alternative approaches would then be required, with resulting consequences for judgements about the subsequent issues.

Consistency of approach with the PTRM framework

139 In this section, the Tribunal addresses the first of SAPN's challenges – that the AER erred in misconstruing the correct interpretation of "value of imputation credits" through focusing on utilisation rather than implied market value.

140 Fundamental to the dispute over gamma is the correct interpretation of the word "value" in the NER which relates to one of the two components of gamma. It is accepted by all parties, and defined in the NER (cl 6.5.3) that gamma is the product of two components. Gamma is

the value of franking credits generated by the company tax paid by the entity. In turn gamma is defined as the product of the "F" (the distribution rate) and "θ" (theta – variously described as the utilisation rate or the market value (price) of distributed credits).

141 The AER places particular emphasis on the statement in cl 6.5.3 of the NER that the estimated cost of corporate income tax is to be "determined in accordance with the post-tax revenue model". That model (abbreviated as PTRM) is based on the derivation by Professor Officer of equivalence relationships between various formulations of the calculation of the NPV of future cash flows under an imputation tax system. In particular, Officer showed that the NPV=0 criterion could be described in a number of different ways, each involving different future cash flow concepts (with differences arising from different treatment of taxation) and correspondingly consistent interpretations of a discount rate (WACC). Officer's approach assumed a 100% distribution rate, which has been generalised in the common approach adopted by the AER and regulated entities of defining gamma as the product of "F" and "θ" as described above. Consequently, debate over the value of gamma involves debate over the values of both "F" and "θ", with the latter being the more contentious and fundamental to the interpretation of the PTRM model. Dispute over the value of "F" relates more to the choice of empirical data for its estimation rather than fundamental theoretical issues.

142 Officer observed (at page 4 of the aforementioned article) that:

> *A proportion (γ) of the tax collected from the company will be rebated against personal tax and, therefore, is not really company tax but rather is a collection of personal tax at the company level. Therefore, if we wish to define the effective company tax collection, we need to reduce T by the proportion γ. …*
>
> *Thus γ is the proportion of tax collected from the company which gives rise to the tax credit associated with a franked dividend. This franking credit can be utilized as tax credit against the personal tax liabilities of the shareholder. γ can be interpreted as the value of a dollar of tax credit to the shareholder.*

143 Officer also observed (p 4, fn 5) that:

> *Where there is a market for tax credits one could use the market price to estimate the value of γ for the marginal shareholder. i.e. the shareholder who implicitly sets the price of the shares and the price of γ and the company's cost of capital at the margin, but where there is only a covert market, estimates can only be made through dividend drop-off rates.*

144 There are (at least) two possible interpretations of these comments, as has been pointed out in submissions and expert evidence. First, the derivation by Officer places emphasis on gamma as the amount of tax credits which are utilised to reduce personal tax liabilities, and this is the

interpretation used by the AER. It also leads to an interpretation of "effective" company tax payments as being $T(1 - \gamma)$ where T is the amount of tax collected at the company level. Secondly, Officer asserts that the market value of gamma will be set by the marginal investor, and that this can only be indirectly estimated by dividend drop-off rates. This, or at least the emphasis on drop-off studies, is the interpretation focused upon by SAPN and other DNSPs.

145 The Tribunal notes that the AER, in its reasoning in the ROR Guideline quoted earlier, did not interpret the drop-off evidence as relating to a marginal investor, but rather to some average investor prevailing at that specific time. The Tribunal also notes that Officer's interpretation of the role of a "marginal investor" in price determination is one commonly found in academic literature, as also is the notion of an average investor.

146 It is also worth noting the emphasis given by Officer to the "marginal shareholder" in the determination of share prices and the implicit price of γ. This underscores, and potentially calls into question, a commonly-heard assertion which is also made by SAPN. The marginal investor is not the same as the average investor. The proportion of tax credits used in aggregate (ie the average utilisation) provides no information about the value of tax credits to the marginal investor. Hence, contrary to the arguments advanced, the usage of tax credits is not an upper bound on the market value of tax credits – if that is set by some "marginal investor". Alternatively, if the market value is set by some "average" investor, an estimate for the average investor of the tax payment consequences of imputation credits distributed has relevance. As argued by SAPN, the value estimated in this way may be an upper bound due to a number of value-reducing factors. This is considered later.

147 This raises a fundamental consideration in the approach to the determination of a market value for imputation credits and implications for the cost of capital. Officer's approach, and consequent adoption of the "vanilla WACC" approach in the PTRM does not imply anything about the precise value of γ nor how it is determined. Officer does argue that the required return on equity will be lower than would otherwise be the case (in the absence of imputation) by the value of franking credits (γ) received with dividends. And while he uses an "imputation adjusted CAPM" to illustrate, the determination of the value of γ involved in that is not specified.

148 As noted above, there are, at least, two alternative theoretical approaches to considering the determination of γ. One relies on an average investor perspective, the other on a marginal investor. On this matter, the AER (Final Decision, Attachment 4, p 60) quotes from a recent

academic paper (A. Ainsworth, G. Partington and G. Warren, Do Franking Credits Matter? Exploring the Financial Implications of Dividend Imputation, May 2015):

> *Indeed, whether prices are set by a marginal investor, or by aggregation across investors, is an open question …*

149 The average investor perspective is reflected in versions of the CAPM which allow for the imputation system such as those developed by P. Monkhouse and by Professors M. Lally and T. van Zijl, and considered by the AER. These models give rise to a utilisation rate which "in equilibrium is equal to the weighted average, by wealth and risk aversion, of the individual utilisation rates of investors in the market" (Final Decision Attachment 4, p 52). In those models, this utilisation rate is also the value of distributed imputation credits in the sense that the equilibrium required rate of return on equity (ignoring the franking credit component received) is reduced by that figure. For example, if an investor required a 10% return on a stock offering returns in a form involving no receipt of imputation credits, then if an otherwise equivalent stock provided an imputation credit yield of 3% which was valued at 50% of face value, the required return ignoring imputation credits would be 8.5%. This would imply that in the PTRM where a vanilla WACC is used and the effect of imputation incorporated into the required tax revenue component of cash flows, the utilisation rate is an appropriate estimate of theta (as an input into gamma) which can be used.

150 SAPN challenges the validity of use of these tax adjusted CAPM models, and the implication that the utilisation rate (estimated using either shareholder nationality or taxation statistics) can be used to estimate gamma. The principal critique is one of the logical consistency of using a "domestic" CAPM model when an international perspective is required. Interpreting utilisation as reflecting the proportion of domestic investors, for whom imputation credits are valuable, implies that the remaining investors are foreigners. But, in that case, it is argued, the CAPM market portfolio should be the world portfolio, and those foreigner investors would have a wealth many multiples of the amount they have invested in the local market (and of domestic investors). In the limit, the role of domestic investors in domestic stock valuation and implied value of imputation credits would be zero. The AER (Final Report, Attachment 4 p 64) considers this critique and on the advice of its expert (Associate Professor J. Handley) rejects it. Underpinning that rejection is the argument that the CAPM assumes only that there is specified group of investors who hold the specified set (market) of assets being considered. The equilibrium individual asset prices and expected returns are derived by reference to their systematic risk relative to that specified market. In that framework,

which takes as given the wealth invested by foreigners in the domestic market, the weights implied in the determination of gamma would reflect relative wealth shares of the domestic market, not total wealth.

151 Such a framework may, or may not be reasonable, but there is no one generally accepted model for dealing with asset pricing in a domestic market where foreigners subject to different tax considerations participate. As the AER notes (p 64), an "international" CAPM (of which there are a number of variants) could be adopted but, as well as not being advocated by SAPN, this would require fundamental re-estimation of betas and cost of equity, as well as valuation of imputation credits.

152 On this matter, the Tribunal recognises the fact that models are, at best, simplifications of and approximations to reality. There has been, and likely always will be, debate over how to assess the relative merits of alternative models. One perspective is that models should be evaluated by explanatory performance, rather than by the reality of their assumptions. On this criterion, the possible lack of realism of the Monkhouse and Lally and van Zijl models, argued by SFG (Estimating Gamma for Regulatory Purposes, February 2015) for SAPN, is not necessarily a reason for rejecting them, provided that their predictions are not rejected empirically. Unfortunately, in terms of resolving the debate over these matters, the relevant empirical evidence is quite disparate.

153 An alternative approach to considering the valuation of imputation credits is based on assuming that it is the "marginal investor" who determines security prices and thus sets the value of imputation credits impounded into that price. As in standard price theory, investors may have different valuations for a stock (reflecting different information or personal considerations including tax), and specific amounts they demand at various market prices. Limits to arbitrage, risk, wealth constraints, or other factors may lead to their demands not being infinitely elastic at some price. Aggregated, these investor demands generate a downward sloping total demand curve for the stock. The market clearing price will be that at which the marginal investor's valuation equals that price, with some infra-marginal investors placing a valuation on their holding above that price. In theory, at least, the marginal investor is either a domestic investor for whom theta = 1 or a foreign investor for whom theta = 0. In practice, determination of share prices (from which implied market value estimates of imputation credit value might be derived) is more complex, reflecting market and individual characteristics (including limits to arbitrage).

154 There is no guarantee (nor reason to necessarily expect) that the marginal, price-setting investor will be the same type of investor at all points in time. For example, institutional features of the stock market mean that returns only have an explicit dividend (and franking credit) component (rather than comprising only capital gains or losses) if stocks are held on the date of record. Moreover, the franking component of dividends can only be useable if holdings satisfy the 45-day holding requirement around the ex-div date. There are also constraints on franking credit usage if the stock holding is hedged against price risk (such as by use of derivatives).

155 The marginal investor perspective has several implications for assessing dividend drop-off studies, which are based on prices being determined by arbitrage by marginal investors (or by average investors active in the market at that time). First, if drop-off studies are estimating valuation of a marginal investor, the imputation credit usage figure, being an average, is not a relevant upper bound for that valuation. It may be so, although not necessarily, for the alternative approach where valuation is based on the average investor. Secondly, for reliable information to be extracted from drop-off studies, constancy of the marginal investor pre and post the dividend ex-date is required. Otherwise the drop-off figures may reflect nothing more than a short-term change in the composition of investors, and not information about the role of imputation credits in determining the required return of longer-term investors.

156 In conclusion, the Tribunal is of the view, reflected in the diversity of expert opinion, that there is no generally accepted theoretical model for explaining the valuation of imputation credits. There is broad agreement across experts that the existence of the imputation system lowers, to some degree, the cost of equity capital to Australian, domestically operating, companies, relative to a classical tax system. That is, required returns ignoring imputation credits (ie expected cash dividends plus capital gains) will be lower if imputation credits are expected to be attached to cash dividends.

157 Within the framework of the PTRM and "vanilla WACC" requirement of the NER, this translates into a reduction in the revenue allowance for corporate tax payments. Within the Officer framework underpinning that approach, that revenue reduction could be interpreted as reflecting that some part of company tax payments is a pre-payment (withholding) of personal taxes. Alternatively, the interpretation could be that the revenue reduction is the value accorded by the market to that pre-payment of personal taxes and reflected in the (non-vanilla) cost of equity capital. Under the "average investor" approach these should, in theory,

coincide. Under the marginal investor approach, the relationship is indeterminate – unless specific assumptions about the identity (and constancy) of the marginal investor are made.

158 Unfortunately, the available empirical evidence is inadequate to enable confident discrimination between these alternative perspectives. There are a range of studies, reviewed in the AER's Final Decision, using market prices which attempt to estimate the extent to which imputation credits are capitalised into stock prices and thus their market valuation. There are a range of results, and experts are divided on the merits of the various approaches and techniques.

159 Consequently, the Tribunal is of the view that the AER did not err, nor was unreasonable, in giving most weight to the "utilisation" approach. It considered the range of alternative approaches, recognised the diversity of views of experts on their merits (both theoretical and empirical), and made a judgement call. In doing so, it demonstrated responsiveness to the empirical evidence in lowering its estimate of gamma from 0.5 as proposed in its ROR Guidelines to a value of 0.4. The Tribunal recognises that this decision is the converse of that made by a differently constituted Tribunal in the *Ausgrid* case. The reason for this difference is twofold. First, submissions in this hearing gave greater attention to the theoretical underpinnings of the PTRM and "vanilla WACC" framework. Secondly, and as discussed immediately below, this Tribunal is of the view that the dividend drop-off evidence should be viewed in the context of the theoretical model underpinning it, and that there are significant uncertainties associated with extracting reliable evidence about tax-related parameters (such as gamma) from such studies.

Dividend drop-off evidence

160 The Tribunal now considers the second and sixth issues noted above which both assert that the AER should have given more (or complete) weight to evidence from dividend drop-off studies (and in particular the SFG study).

161 SAPN (and other DNSPs in other cases) argue that, in estimating the value of distributed imputation credits, most if not complete weight should be given to results from dividend drop-off studies. In particular, it is argued that the primary piece of evidence should be the results from a 2013 study by SFG commissioned by the Energy Networks Association. The latest version of this study updates an earlier 2011 study by SFG which had been undertaken in response to directions from the Tribunal. In contrast the AER argues that evidence from this type of approach should be given least weight.

162 The 2011 study concluded that "the appropriate estimate of theta from the dividend drop-off analysis that we have performed is 0.35 and that this estimate is paired with an estimate of the value of cash dividends in the range of 0.85 to 0.90." The 2013 study which uses data from 2001 to October 2012 generates similar results.

163 The Tribunal notes that the SFG study is very clear about the data used and econometric techniques employed. Different specifications (reflecting statistical considerations required to achieve unbiased, efficient estimates) of the basic relationship estimated generate similar results. That basic relationship links the fall in stock price on the ex-dividend date (the drop-off) to the amount of the cash dividend and the amount of the franking (imputation) credit. Because the study includes dividend events which may involve no, partial, or full franking, it is able to estimate the sensitivity of the drop-off to both the size of dividend and the size of the franking credit in a regression relationship.

164 However, the Tribunal also notes that interpreting the drop-off sensitivity as evidence about the implicit value of a tax parameter such as the "value" of a franking credit (gamma) requires a number of further, quite strong, assumptions. In its Final Decision (Attachment 4, Section A.14) the AER gave explicit attention to issues involved in estimation of gamma from dividend drop-off studies. It considered the view of a number of experts including SFG (Professor S. Gray), Associate Professor J. Handley, Associate Professor M. Lally, Professor M. McKenzie and Associate Professor G. Partington, and examined a range of academic studies.

165 A number of issues regarding reliability of dividend drop-off studies were considered by the AER, but only one is substantive in this context, given the Tribunal's view that the methodology and approach of the SFG study is generally acceptable (or "state of the art" as claimed by the DNSPs). The Tribunal recognises that some researchers may prefer use of alternative approaches or choices of specific data in analysing drop-off rates, but offers no comment on those empirical matters. That is the question of whether the sensitivities of the drop-off rate to dividend characteristics as estimated in such a study can be reliably interpreted as reflecting specific tax-related factors (such as the value of gamma). On this there is marked disagreement between the experts, with SFG (Professor S. Gray) asserting that the value of imputation credits can be reliably inferred, and the others referred to above, advancing a range of reasons in support of an opposing position.

166 In its Final Decision (Attachment 4, p 48) the AER notes that:

- *There is no market for imputation credits and therefore there is no directly observable market price. …*
- *The value of imputation credits as estimated through a dividend drop off study:*
    - *is not necessarily a correct post company tax value before personal taxes and personal transaction costs (particularly demonstrated where the study estimates a value for cash dividends materially below their face value as the SFG study does) …*

167 In coming to this conclusion, the AER liberally quotes criticisms of dividend drop-off studies from experts Associate Professor J. Handley, Associate Professor M. Lally, Professor M. McKenzie and Associate Professor G. Partington, and other authors. There are a range of criticisms, with the most significant being that of whether dividend drop-off information can provide information about tax parameters, such as the value of imputation credits. In this regard the AER quotes from a paper by K. Siau, S. Sault and G. Warren (2013) which references a range of other well-known published studies which have identified the problem that drop-off rates can reflect a range of other influences other than taxation:

> *A key methodological issue is that price movements around ex-dividend events encapsulate not only the tax differential effect, but may also reflect the presence of traders seeking to arbitrage dividends and noise associated with trading activity around ex-dividend dates. Drop-off ratios can be distorted by the need to compensate traders for transaction costs (Eades, Hess, and Kim ,1984); Lakonishok and Vermaelen, 1986; Karpoff and Walkling, 1988, 1990; Bali and Francis, 2011); or the risk involved (Fedenia and Grammatikos, 1993; Grammatikos, 1989; Heath and Jarrow, 1988; Michaely and Vila, 1995). Transaction costs may be substantial, and can drive the drop-off ratio below one (Kalay 1982, 1984; Boyd and Jagannathan, 1994). Market microstructure effects may also complicate estimation of market value, as discrete tick sizes can bias drop-off ratios downwards (Dubofsky, 1992; Bali and Hite, 1998).*
>
> *A further key methodological issue is the difficulty in attributing the observed drop-off value between cash dividends and imputation credits.*

168 The Tribunal also notes that the typical argument used to motivate use of drop-off studies is one of arbitrage based on differences between the cum-div price (and entitlement to dividend) and the ex-div price (with no entitlement to dividend). The "marginal investor(s)" would, in the absence of substantive transactions costs and risk, adopt a trading strategy to capitalise upon tax consequences. This behaviour would cause the price drop-off to reflect characteristics of the tax code, such as differences in capital gains tax rates and dividend tax rates, possibly allowing inferences to be made about the tax arrangements facing the marginal investor(s). But as noted above, evidence of the price drop-off differing systematically from the dividend amount could reflect a number of other factors in addition to, or other than, tax

implications. These also include the "marginal investor(s)" (with differing tax considerations) being different on the cum-div and ex-div dates, or different to the marginal investor throughout the rest of the year.

169 The Tribunal also notes that such a rationale for drop-off studies appears to make attempting to estimate the market value of franking credits from such a study highly problematic. The reason is that the operation of the 45-day rule impacts upon the consequences of such trading strategies. For example, purchase of a stock cum-div and sale on the ex-div day (as implied by an arbitrage argument where the marginal investor anticipates a sufficiently low drop-off) would generally void the ability of the investor to use franking credits attached to the dividend due to the 45-day rule. This type of arbitrage strategy would thus tend to imply an equilibrium expected price drop-off (where no arbitrage gains result) equal to the cash value of the dividend, regardless of how much imputation credits were valued by longer-term investors. The situation is obviously more complex than this since equilibrium requires analysis of capital gain/loss tax consequences from trading strategies involving sales by existing holders or short sales and associated stock borrowing costs – including requirements to compensate stock lenders for the equivalent of any franked dividends received.

170 The Tribunal is thus of the view that while dividend drop-off studies may convey some information about tax parameters and valuation of their consequences for the set(s) of investors determining stock prices around the ex-div date, there are too many other confounding factors to place sole, or even, major weight on such studies for the estimation of the value of franking credits in the context of the PTRM.

171 The AER makes a number of other criticisms of drop-off studies. A general one is that there have been a range of results, sometimes implausible, from different drop-off studies. The Tribunal accepts those observations as a matter of fact, but does not regard them as a valid reason to reject the statistical results of a particular study (such as that by SFG). However, as mentioned above, the fundamental issue is whether valid tax related valuation parameters can be reliably inferred from such statistical results. Because of the weight of expert evidence questioning that such inferences can be reliably drawn, and the AER reliance on that evidence in forming a judgement, the Tribunal does not believe it needs to address those other criticisms. The uncertainty associated with drawing conclusions about the value of imputation credits from any existing drop-off study (no matter how well specified and conducted) was sufficient for the AER to make a judgement to accord limited weight to this

type of evidence. Consequently, the Tribunal does not agree that the AER erred or was unreasonable in placing less weight on dividend drop-off studies in the estimation of the value of gamma.

The role of personal costs

172 In this section the Tribunal considers SAPN's third and fifth contentions. SAPN argues that (a) there are a range of personal costs faced by investors in obtaining "value" from imputation credits which would reduce the value below that implied by their face value, and (b) this would reduce the market valuation of imputation credits relative to estimates based on the shareholder nationality or taxation statistics. Thus, the required return on equity would be higher (gamma would be lower) than implied by using a gamma value based on the shareholder nationality or taxation statistics estimates.

173 Three types of such costs are emphasised. One is a time-value of money effect. It is argued that the delays investors experience in receiving tax offsets or rebates from using franking credits reduces their value relative to face value. A second one is the consequences of the 45-day rule, precluding investors from using tax credits unless they have held the stock unhedged for that length of time around the ex-div date. Some Australian investors may have violated this rule and thus the value obtained, in terms of tax reduction or rebate, from receipt of franking credits may be less than the face value received. The third argument is that investors who aim to maximise imputation credit receipts will suffer from reduced portfolio diversification which imposes a cost, in the form of increased risk, upon them.

174 There can be little doubt that the investor-level (or personal) costs involved in making and managing investments will affect the price they are willing to pay for (or sell) an asset. For some investors, certain of those costs might be high and for others inconsequential. How they impact upon market prices, and the valuation of certain asset characteristics such as imputation credit yield, is not something well determined by theory. In practice, market prices might incorporate the personal costs of a marginal investor for whom those costs are trivial (or otherwise), or reflect some average of such costs across investors. Moreover, the effects of such costs on asset demand will be intermingled with a range of other asset price determinants such as differential views on fundamental values and liquidity needs. There would thus, it seems, need to be a very strong case to identify some such general investor costs and attribute to them some systematic effect on asset prices (and valuation of imputation credits). This is particularly so when the argument advanced is that these factors

imply that predictions drawn from a theoretical model (in this case a tax-adjusted CAPM implying a price-setting role for some "average investor") which ignores such factors, will be biased in a particular direction. Such factors could, for example, already be reflected in the composition of investors such that this group comprises those to whom such costs are of minor significance. It is not clear to the Tribunal that such a case has been substantiated.

175 SAPN contends that the delay in accessing tax benefits from receipt of imputation credits will reduce their present value to below face value. That may be the case for some investors, but would appear to imply logically that such investors will also discount the tax costs associated with any taxes yet to be paid on dividends. The net effect is unclear, and introduces the confounding effect of investor discounting of future tax liabilities from actual (or as yet unrealised) capital gains or losses which are otherwise ignored. More generally, it is not obvious that a fund manager who uses imputation credits to offset other future known or expected tax liabilities on their portfolio would find merit in applying such discounting. As a practical matter, the relatively short time lags and currently low discount rate which would likely be applied suggest that this effect is likely to be small. Because there may well be investors important to price determination who do not discount such tax-benefit delay consequences, the Tribunal is not convinced of the materiality of this argument.

176 SAPN contends that the 45-day rule will reduce the ability of domestic investors to utilise all imputation credits received. Evidence presented to the Tribunal about the reliability of tax statistics suggested that the materiality of this point is hard to judge. More generally, while this effect may be relevant, its effect on the valuation of imputation credits is far from clear. It is, for example, an institutional factor which is outside the formal structure of models used for analysis, such that the consequences with regard to results of such models which ignore it in their determination of asset prices is unclear. As noted earlier, the Tribunal also questions whether the existence of the 45-day rule (which voids imputation credits from short-term trading around the ex-div date) impedes the ability of dividend drop-off studies to inform on the value of imputation credits.

177 SAPN contends that domestic investors who structure their portfolios to acquire imputation credits will incur costs due to loss of diversification benefits, and that this will reduce the implicit price they are willing to pay for imputation credits to something below face value. Given that there is a well-documented "home-bias" in investor portfolios (found

internationally generally regardless of tax systems), implying incomplete diversification benefits, the extent to which this is an additional factor of significant materiality is unclear.

178 The Tribunal is of the view that while some investors do experience investor level (personal) costs in dealing in equities, these can vary substantially across investor groups. It is thus not clear what effect such costs will have on equity market prices or on the need to adjust estimates for implied values of franking credits drawn from shareholder distribution or tax statistics.

Estimates using shareholder nationality, company type, and tax statistics

179 SAPN's contention that the AER erred in adopting a wrong conception of "value" of imputation credits and consequently placing more weight on shareholder and tax statistics then on dividend drop-off results for estimation purposes has been dealt with earlier. The Tribunal determined that there was no error involved.

180 This leaves as a matter for further contention the appropriate statistics to be used which forms the basis of the fourth contention of SAPN. SAPN contend that the AER erred in three ways in data choices in estimating gamma. However, because the AER only gave a range of figures for each of the inputs to the gamma calculation and not explicit figures used in reaching its final estimate of gamma, the issue before the Tribunal is whether the net result of its decision based on these ranges for inputs is unreasonable or in error. To assess that, however, it is necessary to determine whether the ranges adopted were reasonable.

181 The following Table (extracted from Table 1 of SAPN's Outline of Submissions) provides a concise summary of the AER analysis and decisions which are points of contention.

Input	**ROR Guideline**	**Final decisions**	**Reason for change**
Distribution rate	0.7	0.7 for all equity 0.77 for listed equity	AER takes into account the distribution rate for all equity and listed equity in the Final Decision.
Theta estimate from equity ownership	0.7-0.8	0.56-0.68 for	Further analysis by the AER demonstrated that its previous

data		all equity 0.38-0.55 for listed equity	estimate of 0.7-0.8 was too high.
Theta estimate from tax statistics	0.4-0.8	0.45	Further analysis by the AER demonstrated that the best estimate is 0.45.

The distribution rate

182 First, the AER considered the possibility of a different value for the Distribution Rate (F) to the figure of 0.7 based on all equity, which was adopted in the ROR Guideline. An alternative figure of 0.77 was considered based on listed equity only. This raises the question of whether the distribution rate of the hypothetical benchmark efficient entity ('**BEE**') is better proxied by the average of any company or listed companies only. SAPN asserts that by having regard to the distribution rate of listed companies the AER was in error. The principal reason advanced is that the BEE is assumed to have only domestic earnings, whereas many large listed companies have foreign earnings which do not generate imputation credits. Then, if the dividend payout ratio (dividends/earnings) is the same as for the BEE, the distribution rate of imputation credits (credits distributed/credits generated) will be higher. That argument, does not, however, allow for the possibility that such companies with foreign earnings have a lower dividend payout ratio.

183 More generally, dividend payout ratios and distribution rates can be expected to vary between companies based on ownership characteristics and need/preferences for internally generated capital. Unlisted companies vary markedly. At one extreme there are small companies owned by individuals on high marginal tax rates who may prefer earnings retention to generate concessionally-taxed long-term capital gains or to defer the additional tax which would need to be paid on franked dividends. At the other extreme, large foreign-owned Australian registered companies may also prefer retention and reinvestment of earnings rather than distribution of dividends and attached franking credits which would be wasted.

184 The conclusion the Tribunal reaches is that there is no compelling reason which has been advanced to believe that the "average" unlisted company is any better or worse than the "average" listed company as a proxy for the BEE. Consequently the Tribunal does not

believe that the AER made an error or was unreasonable or incorrectly exercised its discretion in considering estimates of distribution rates for listed entities.

Equity ownership data

185 The AER placed most reliance on estimates of the domestic ownership rate for estimating theta. This is consistent with its conceptual interpretation of the role of gamma in the PTRM and the NER as considered earlier in these reasons, and with which this Tribunal does not find error.

186 SAPN contends that the AER then erred in two regards in use of ownership statistics. First, it argues that the AER did not take account of the fact that the domestic ownership percentage is at best an upper bound on the value of theta because of the inability of some investors to use imputation credits. As this Tribunal has noted previously, that argument is incorrect if it is believed that stock prices (and thus imputation credit value) are determined by some marginal investor. Even if the average investor perspective is taken, there may be other relevant factors, not adequately captured in theoretical models, which preclude an interpretation as an upper bound.

187 Secondly, SAPN contends that the actual equity ownership figures used by the AER are essentially not fit for purpose. The principal argument advanced here is that the AER uses data since 2000 in determining the potential range of relevant values for equity ownership. Instead, SAPN argues, it should be the current rate of domestic equity ownership which should be used. It points to the AER's own analysis (Final Decision, Attachment 4, p 96, Figure 4-3) showing that the domestic ownership share at the end of 2014 was 0.6 for total equity and 0.45 for listed equity. These were both marginally below the midpoint of the ranges of 0.56-0.68 and 0.38-0.55 respectively in post-2000 data considered by the AER.

188 The AER's counterargument is that (a) there is considerable temporal variability in ownership shares; (b) there is a degree of uncertainty about the precision of available information; and (c) the regulatory control period spans five years such that it is necessary to predict ownership rates over the whole of that period (AER's Outline of Submissions, para 96). The Tribunal is unable to see the validity of the last point in the context of estimating the value of imputation credits as at the start of the regulatory period. It relates to an interpretation of theta as purely a utilisation rate over a five-year period. While the Tribunal recognises the need for analysis of historical data to reduce uncertainty surrounding current figures, it would expect that sound reasons would be provided for using figures significantly

different from the current value given that this is close to the historical average. As discussed below, the implied value for theta used by the AER in adjusting the MRP is 0.6 which is not inconsistent with the 2014 domestic ownership share of total equity.

189 SAPN also asserts (Outline of Submissions, para 127) that the listed company, domestic equity ownership, figure will provide a better proxy (than the total figure which includes unlisted companies) for that applicable to a BEE. This argument appears at variance with SAPN's argument in the context of distribution rates (discussed above) that unlisted equity would provide a better proxy than listed equity for the BEE. The Tribunal is however willing to accept that there might be different proxies better suited to estimation of different characteristics of the hypothetical BEE. Nevertheless, the Tribunal has not been presented with convincing evidence that the listed equity data should not have been considered by the AER.

190 The Tribunal thus does not find that the AER erred or that its decision was unreasonable in considering historical data on domestic equity ownership shares for both listed and all companies. The issue of whether it was unreasonable in forming a judgement about gamma, based on weighing a range of evidence, including the implied choice of values from the ranges examined, is considered below.

The use of taxation statistics

191 SAPN contends that the AER erred, or made an incorrect exercise of discretion and was unreasonable in its use of taxation statistics by failing to recognise that the credit redemption rate of 0.45 from such statistics (which number is not in dispute) (a) did not indicate the value of imputation credits to investors and (b) and was an upper bound on the value of theta.

192 The AER gave less weight to the taxation statistics than to equity ownership information (and more weight than to market value (dividend drop-off studies). It argued for giving greater weight to equity ownership data on the grounds of concerns about the reliability of the tax statistics.

193 The Tribunal was presented with a range of information which indicates that there is a considerable degree of uncertainty about the reliability of the tax statistics regarding the redemption rate of imputation credits. That, of itself, implies that the redemption rate figure from tax statistics is not an upper bound for the utilisation rate, but rather a noisy estimate. Whether, ignoring that fact, it would be an upper bound for the market valuation of

distributed credits has been considered earlier. As explained there, the answer to that question depends upon the unsettled issue, on which experts disagree, of how stock market prices are determined. In particular, if a marginal price-setting investor perspective is taken, the average utilisation rate implies nothing about valuation by a marginal investor. If an average investor perspective is taken, then the figure is potentially more relevant to being a noisy upper bound on valuation.

194 The Tribunal does note, however, that the arguments advance in the context of the shareholder-nationality approach for a market value less than implied by those statistics do not all apply in this case. In particular, the argument relating to the 45-day rule would be irrelevant, since any effect of that would already be reflected in the utilisation rate being less than 100%.

195 The argument that the redemption rate does not reflect the value of imputation credits to investors has also been considered earlier. The Tribunal has noted that experts are divided on this issue, and has found no reason to accept that the interpretation by the AER is incorrect.

Conclusion

196 In the face of significant uncertainty, the approach by the AER of considering a range of approaches to estimating gamma and applying different weights to those approaches is, the Tribunal believes, appropriate. It is clear that some experts would apply different weights to the alternative types of evidence, and that some support the AER's relative ranking while others disagree. In particular, some would accord much higher weight to results of dividend drop-off studies. The Tribunal has noted the arguments about the problems of deriving reliable tax-related parameters such as investor valuation of imputation credits from drop-off parameters, and is of the view that the AER did not err in forming the judgement it did regarding weight to give to different forms of evidence.

197 The Tribunal also feels it worth commenting on the interrelation between the value of gamma and the market risk premium ('**MRP**') estimate, since this was raised in submissions. Specifically, the AER noted that in deriving a value for the MRP based on historical data from both pre and post imputation periods, an adjustment incorporating gamma is required. It appears, from evidence submitted, that in doing so the AER has implicitly adopted a higher gamma for that adjustment than used explicitly in the matters considered here. Doing so means that the MRP and allowed rate of return on equity is higher than would be the case if a lower value was used. The AER states (Final Decision, Attachment 3, p 398) that "[o]ur

adjustment is based on investors valuing distributed franking credits at 60 per cent of their face value".

198 At the risk of repetition of earlier remarks, but to elaborate, this arises because the PTRM is a post-company tax model in which company tax payments are measured net of the implied value of personal tax pre-payments resulting from distribution of imputation credits. The "vanilla WACC" rate of return on equity component is before investor tax consequences arising from, or costs incurred in, deriving that return. It is the rate of return the company would need to provide in the form of capital gains and cash dividends to meet shareholder requirements assuming that no imputation credits were distributed. Consequently, the allowed rate of return in the revenue determination is increased, relative to that (capital gains and cash dividends return) observed in the market, by the value of imputation credits distributed. In adjusting historical data on the MRP to reflect the introduction of imputation in 1987, the MRP data post that date is increased by an assumed value of imputation credits received by investors. This is offset (to some degree) by the subtraction of the value of distributed imputation credits from the allowed revenues for meeting tax obligations. Thus, a lower assumed valuation of gamma would have two partially offsetting effects on the allowed revenue. The rate of return on capital component would be reduced (since there would be a smaller upward adjustment of the rate of return) while the tax component would be increased (due to reduced deduction of a lower value of distributed credits).

199 In theory, if not in practice, there are circumstances where these effects could be exactly offsetting. One could be where the company was fully equity financed, had a CAPM beta of unity, distributed all cash flows, and the required return involved grossing up the observed market returns and MRP under imputation by a gamma factor which was used also in determining the tax revenues. In that case, it would appear that the actual value of gamma might be irrelevant to the allowed revenue determination – it would simply affect the allocation of revenue between the rate of return and tax components. In practice, the effects are less clear due to complications such as (a) estimation of a market rate of return using both historical pre-imputation and post-imputation observations; (b) tax code features such as differences in accounting and tax treatment of depreciation; (c) use of debt financing; and (d) equity betas different from unity.

200 In the current context, the possible use of a higher theta value in adjusting the historical MRP than in determining the tax revenue allowance (although the AER does not provide

information on the precise value used for this latter figure) could involve some inconsistency which would work in favour of SAPN. Alternatively, if a theta value of 0.6 was also applied in the determination of gamma, a result for gamma of 0.4 suggests use of a distribution rate of slightly below 0.7. That would make redundant the debate over whether AER's consideration of the distribution rate of 0.77 of listed companies is preferable to a consideration of all companies (with a distribution rate of 0.7).

201 The Tribunal simply notes that (a) consistency in the adjustment of the MRP for the value of franking credits distributed (theta) and in the value assumed for determining the net corporate tax revenue component is desirable; and (b) assumption of a higher or lower value for theta (and thus, ceteris paribus) gamma will have partially offsetting effects on the rate of return and taxation components of allowable cash flows.

202 The grounds of review regarding the value of gamma are rejected.

Return on debt

203 The issue regarding the return on debt is the choice of transition arrangements between the previously used approach for determining the cost of debt of a benchmark efficient DNSP and a new approach to be fully implemented by the end of a 10-year transition process. The previous approach is referred to as an "on-the-day" approach in which the cost of debt for each year of the regulatory period was determined as that prevailing at the start of the regulatory period. The new approach is referred to as an "historical trailing average" approach and was facilitated by a change to the NER described below. In that approach the cost of debt in each year of the regulatory period is calculated as the average cost of the debt portfolio of a benchmark efficient DNSP at the start of that year, resulting from assuming that it had raised equal amounts of 10-year maturity debt over the past 10 years. It can thus vary in each year of the regulatory control period.

204 There is no dispute on the decision to change to the new approach, nor on the benefits of some form of gradual transition to the new approach. The issue is purely about the specific transition arrangements to be used. Moreover, it relates to the transition of only one of the two components of the cost of debt, namely the debt risk premium ('**DRP**'). Both parties are in agreement on the merits of, and on the form of, a gradual transition arrangement for the risk-free component of the cost of debt.

205 This transition of the risk-free component involves a determination in the first year of the regulatory period using the previous "on-the-day" approach – which takes the rate prevailing in the market at (or just prior to) the start of the regulatory control period. In each subsequent year the weight given to the "on-the-day" figure (ie the rate at the start of the regulatory control period) in calculating the return on debt for that year would decline by 10% per year. The risk-free rate (calculated as an average over some previously agreed averaging period) just prior to the start of each subsequent year would be given a weight of 10% and would remain part of the calculation with that same weight for 10 years. Thus, the on-the-day rate would have 90% weight in the second year and the average rate determined for the start of that second year would have 10% weight. In the third year, the on-the-day weight would decline to 80% with the rate determined for the start of that third year being given a weight of 10% – and the rate determined for the start of the second year remaining in the calculation with a weight of 10%. After 10 years of this process full adjustment to the new "historical trailing average" approach will have occurred.

206 In the Final Decision the AER considered four options for transitioning to the new approach. The dispute relates to only two of those options. One of the options starts with an on-the-day rate for the first regulatory year of the regulatory control period and then transitions to the average approach over 10 years in the manner described above ('**Option 2**'). Option 2 was the option adopted by the AER in the Final Decision and it is the same transition arrangement as outlined by the AER in its ROR Guideline – although there was no (nor needed to be no) separation of borrowing costs there into a risk-free and DRP component made there. The other option uses a hybrid approach. Under this approach the risk-free rate would transition like Option 2, however the DRP would transition immediately ('**Option 3**'). Option 3 is the transition approach ultimately advanced by SAPN and rejected by the AER. SAPN challenges the decision of the AER that there should also be gradual transition arrangements for the DRP component.

207 SAPN argues that the correct approach, which it proposed, should instead be an immediate shift to Option 3.

208 The DRP prevailing at the commencement of the regulatory control period was lower (at 1.95% per annum) than its 10-year trailing average which SAPN argued was 2.37% per annum at that date, giving a gap of 0.42% per annum for the first year of the regulatory control period (SAPN's Submissions in Reply, Figure 1). Because of the past history of the

DRP (with much higher values than 1.95 occurring in the wake of the global financial crisis), SAPN argue that the gap between the Option 2 and Option 3 allowed DRPs would be significantly higher in subsequent years of the regulatory control period. That is, the Option 3 DRP would be more than 42 basis points above the Option 2 DRP in later years of the regulatory control period.

209 It is possible to calculate the effect of the AER's decision, compared to SAPN's preferred approach, on the allowed revenue over the regulatory period. Future values of the DRP prevailing at the start of each year (and thus the allowable DRP) are, by definition, unknown at the start of the regulatory period. But the effect of a particular outcome on the allowed DRP is the same under both Options 2 and 3. The reason is that the DRP prevailing at the start of a future year enters into the calculation of the allowable DRP for that year (and each of the subsequent 10 years) with a weight of 0.1 in both cases. While the difference in the allowed DRP between the two options will change year-by-year due to the "rolling off" of the DRP from 10 years prior in Option 3, the newly included current year DRP will affect the average calculated by both options equivalently.

210 SAPN argues that in comparing Options 2 and 3 there is a material reduction in allowed revenue under the AER's choice of Option 2, which would be in excess of $40 million over the five-year period. The precise figure would depend upon what numbers would be used in Option 3 for past values of the DRP for a BEE. In oral submission, the AER indicated that their calculations of the effect would be $22 million over the five years: Transcript, p 157. There is debate about how to determine the appropriate numbers, and while this is relevant to the AER's stated reasons for its preference for Option 2, the appropriate method of determining such numbers is not a matter before this Tribunal.

211 SAPN asserts that the Final Decision of the AER involved error or errors of fact, an incorrect exercise of discretion, or was unreasonable. The errors asserted relate to each of the AER's considerations in choosing a transition method. These were given in the Final Decision (Attachment 3, pp 170-1) as:

- the impact on promoting efficient financing practices consistent with the principles of incentive based regulation;
- the impact on a BEE's opportunity to recover at least its efficient financing costs over the life of its assets;

- matching the allowed rate of return with efficient financing cashflows over a single regulatory period, and the potential conflict between this consideration and providing a BEE with a reasonable opportunity to recover efficient financing costs over the life of its assets;
- avoiding a potential bias in regulatory decision-making that can arise from choosing an approach that uses historical data after the results of that historical data is already known;
- avoiding the practical difficulties in the use of historical data to calculate the allowed return on debt, particularly during the global financial crisis.

Background

212 The NER (cl 6.5.2) provide rules for how the return on debt, as one component of the allowed rate of return, for a DNSP is to be determined and requires it must contribute to the allowed rate of return objective ('**ARORO**') which is defined in NER (cl 6.5.2.(c)) as:

> *The allowed rate of return objective is that the rate of return for a Distribution Network Service Provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the Distribution Network Service Provider in respect of the provision of standard control services (the allowed rate of return objective).*

213 Prior to rule changes in November 2012, the NER required that the return on debt must be the same figure for each year of the regulatory control period. In practice this was implemented through use of the "on-the-day" approach in which the return on debt for all years was determined as the prevailing cost of debt finance at the start of the regulatory control period (using an average over some agreed, preceding, number of days).

214 The rule changes allowed for the return on debt to be determined to be the same for each year of a regulatory control period, or to be different for each year (NER cl 6.5.2(i)) and, subject to contributing to the ARORO, NER cl 6.5.2(j) allowed for a methodology which resulted in the return on debt reflecting:

(a) the return that would be required by debt investors in a BEE if it raised debt at the time or shortly before the making of the distribution determination for the regulatory control period; or

(b) the average return that would have been required by debt investors in a BEE if it raised debt over an historical period prior to the commencement of a regulatory year in the regulatory control period; or

(c) some combination of the returns referred to in subparagraphs (a) and (b).

215 The 2012 changes included NER cl 6.5.2(k)(4) which required the AER to take into account any impacts on a BEE that could arise from a change in the debt estimation methodology. Clause 6.5.2(k) states that:

> *In estimating the return on debt under paragraph (h), regard must be had to the following factors:*
>
> *(1) the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective;*
>
> *(2) the interrelationship between the return on equity and the return on debt;*
>
> *(3) the incentives that the return on debt may provide in relation to capital expenditure over the regulatory control period, including as to the timing of any capital expenditure; and*
>
> *(4) any impacts (including in relation to the costs of servicing debt across regulatory control periods) on a benchmark efficient entity referred to in the allowed rate of return objective that could arise as a result of changing the methodology that is used to estimate the return on debt from one regulatory control period to the next.*

216 It is noteworthy that while these requirements refer to a "benchmark efficient entity" there is no precise guidance given on the debt financing policy assumed to be followed by such an entity. Indeed NER cl 6.5.2(j) quoted above allows for virtually any pattern of financing of such an entity. The AEMC's rule determination (AEMC, Rule Determination: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012) noted at 7.4.1 (p 84) that "efficient benchmarking service providers may have different efficient debt management strategies". Moreover, NER cl 6.5.2(k) implies that it in adopting a change in methodology, consideration is to be given to the effect on a hypothetical "benchmark efficient entity", not the DNSP which is the subject of the determination. In practice, of course, it is possible that the DNSP could be such an entity.

217 Also NER cl 6.5.2(k)(1) and (4) are not specific to the time periods to which regard needs to be given. Thus, in subcl (k)(1), the minimisation between allowed and actual cost of debt (for a BEE) could refer to the regulatory control period, or to the life of the assets being (partially) financed by that debt. Similarly, subcl (k)(4) could be interpreted as referring to only the two regulatory control periods spanning the change in methodology, or to a longer period such as the life of assets. One component of the dispute between SAPN and the AER effectively relates to different interpretations of these rules, with the AER tending to focus on

effects over the life of the assets and SAPN focusing on the current regulatory control period. In the Final Decision (Attachment 3, p 153) the AER states that "[w]e discuss impacts that occur across regulatory control periods, such as over the life of a benchmark efficient entity's regulated assets. We consider the rules require us to do so." It is the view of this Tribunal that the conclusion of whether the AER committed errors or was unreasonable in making its decision on the transition process hinges upon the validity of this interpretation of the rules.

218 As noted above, the AER's decision to adopt Option 2 is consistent with its ROR Guideline published in December 2013, following a draft document in August 2013. There, the AER stated that it would henceforth use a trailing average portfolio approach for total debt costs following completion of a transitional period of 10 years (of the same form as that described for the risk-free component above). It argued that this approach would be adopted for all service providers and that doing so would contribute to confidence in the regulatory process. DNSPs would therefore have been aware of the intended change some 18 months before it was due to come into effect, enabling them to make some adjustments to debt portfolio financing arrangements in anticipation.

219 In its Explanatory Statement of the ROR Guideline (p 120) the AER referenced the AEMC commentary regarding the motivation for the 2012 changes allowing for the possibility of a transition period:

> *The purpose … is for the regulator to have regard to the impacts of changes in the methodology for estimating the return on debt from one regulatory control period to another. Consideration should be given to the potential for consumers and service providers to face significant and unexpected change in costs or prices that may have negative effects on confidence in the predictability of the regulatory arrangements. …*
>
> *Its purpose is to allow consideration of transitional strategies so that any significant costs and practical difficulties in moving from one approach to another is taken into account.*

220 In the ROR Guideline at 6.1, it is stated that:

> *The allowed return on debt must be estimated such that it contributes to the achievement of the allowed rate of return objective. It should therefore provide compensation to a service provider for the debt financing cost which is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk.*

The regulatory decision process

221 SAPN provided its initial access proposal to the AER in October 2014, in which it proposed transitioning to the new trailing average approach for the cost of debt (SAPN, Regulatory

Proposal, pp 338-41). In that proposal the suggested approach involved direct reference to the cost of debt for a BBB rated entity rather than separate examination of risk-free and DRP components. This was, in effect, the Option 2 approach chosen by the AER (although it did not separately identify the risk-free and DRP components of borrowing costs), and was consistent with the AER's ROR Guideline. On 6 February 2015, before the AER's draft decision in this case, SAPN made a submission to the AER following the AER's November 2014 draft determinations for NSW DNSPs, which involved the adoption of Option 2. In this submission it recommended use of the hybrid (Option 3) approach.

222 In its Preliminary Decision in April 2015, the AER determined that Option 2, consistent with SAPN's original proposal, should be adopted. It commented that it was not clear that the NER allowed for SAPN to submit a changed proposal such as via its 6 February 2015 submission (SAPN Preliminary Decision, Attachment 3, p 129).

223 Subsequently in the Final Decision (Attachment 3, p 12) the AER noted:

> *In the preliminary decision we accepted SA Power Networks' initial proposal to adopt a transition applied to both the base rate and debt risk premium components of the return on debt. Under the normal decision making process, this means SA Power Networks could not change its position in the revised proposal. However, it appears the drafting of the transitional arrangements in the NER leads to an outcome which makes it possible for service providers to depart from their proposal after the AER has accepted it, and allows them to introduce a new position after the preliminary decision stage. Such an outcome raises concern on the relevance of the preliminary decision process.*

224 In its Revised Proposal submitted in July 2015, SAPN explained at p 380 that the significant fall in the DRP since submission of its initial proposal, and the implication of the high weight given to the "on-the-day" approach in the Option 2 transition process thus depressing the allowed rate of return was one reason for its changed position. It also argued that the hybrid Option 3 approach was more consistent with the efficient financing processes of a benchmark firm.

225 In its Final Decision, the AER reaffirmed its decision to use Option 2 as the transition method. Other issues where there were differences in method for determining the cost of debt between the AER decision and SAPN's Revised Proposal included adoption of a BBB+ rating rather than BBB rating for the BEE, and sources of, and required adjustments to, data for determining the DRP for 10-year debt of a BBB+ rated entity. These are not matters under review and thus do not need consideration here.

Debt financing practices and regulation

226 It is generally accepted that the debt financing practices of a regulated access provider will be influenced by the specific features of regulation. This is because the regulatory approach will determine the allowed cost of debt, and resulting revenue implications, based on its assumed financing method. Risks to the service provider of actual debt costs differing from the allowed cost (and thus revenue allowed) will arise from differences between the financing pattern adopted and that assumed in the regulatory process.

227 Under the previous "on-the-day" approach, an allowed return on debt was determined at the start of the regulatory control period and fixed for each of the years in that period. Under the building block approach, the allowed revenue over the period thus included an amount sufficient to meet interest payments on the debt financed component of the regulatory asset base in each year, calculated using that specified cost of debt figure (and specified leverage). If the entity had an actual cost of debt above or below that figure it would thus be, respectively, under-compensated or overcompensated for its debt financing costs during that regulatory control period.

228 To avoid that risk, one option would be for the DNSP to arrange its debt finance portfolio such that all debt would mature just prior to the commencement of a regulatory control period. It would then raise new debt at the same time – when the allowed cost of debt is determined. Doing so would, in principle, mean that its actual cost of debt would match the allowed cost in the new regulatory control period (or differ only to the extent that its debt costs were different to those of a BEE).

229 In practice, a number of complications mean that such an approach is unlikely to be consistent with efficient debt financing, and possibly infeasible. Particularly relevant to the current matter is the potential risks to the DNSP of attempting to refinance its entire debt portfolio at a specific point in time. It would then be subject to risk of adverse movements in its borrowing costs which are not compensated under the regulatory regime, which bases allowed cost of debt on that applicable to a BEE. Such risks could arise either from random shocks to the DRP of the issuer, unwillingness of investors to absorb a large volume of new debt from the issuer, or opportunistic behaviour by lenders aware of the issuer's debt rollover requirements. While regulatory agreement to use some private, pre-agreed, averaging period for calculating the cost of debt can mitigate some of this risk, the concentration of debt

rollover within a relatively short period is not generally accepted as good risk management practice.

230 Another complication was that, in the on-the-day approach, the AER based the cost of debt on an assumed 10-year maturity for debt, even though the regulatory control period was five years. Except in the highly unlikely event of five-year and 10-year debt having the same cost at the start of the regulatory control period, issuing five-year debt to match the five-year resetting of debt costs which occurs at the start of the next control, and thus hedge debt financing cost risks, would lead to actual debt costs differing from allowed debt costs. In general, given an historical tendency for an upward sloping yield curve (10-year rates greater than five-year rates), the DNSP issuing five-year debt would tend to have debt costs less than the corresponding allowable revenue, which might, to some degree, compensate for the rollover risks in such a strategy.

231 More generally, the DNSP's allowed revenue over the regulatory control period would also reflect debt (and equity) costs from new funding to meet new capex, but at the cost of debt allowed at the start of the regulatory control period. The actual cost of new debt funding during the period could be expected to differ from the allowed cost existing at the start of the regulatory control period creating risk for the DNSP. In principle, the DNSP could hedge that risk by entering derivative contracts at the start of the regulatory control period to lock in the cost of a future debt-raising. However, depending on the slope of the yield curve, the resulting cost could be above or below the allowed cost determined at the start of the regulatory control period, while uncertainties about the precise amount and timing of future debt financing also create risks for the DNSP.

232 Rather than attempting to structure its debt portfolio to mature and be rolled over at the start of the regulatory control period, a BEE might adopt an alternative approach to risk management. One such alternative approach for the DNSP is to arrange to have a maturity profile of debt which is relatively evenly spread over some horizon such as 10 years, and use derivative contracts to attempt to hedge the interest rate risk associated with the "on-the-day" determination of the allowable cost of debt. It might, for example, issue some amount of 10-year floating rate debt each year and enter interest rate swaps as the fixed rate payer/floating rate receiver at the start of each regulatory control period. Then, for example, if it had floating rate debt on issue with 7 years remaining maturity at the start of the regulatory control period, it could enter a five-year swap at that date to fix the cost of that debt for the

next five years. Then, at the start of the next regulatory control period it could enter another five-year swap which would fix the cost of that debt for the remaining two years of its life as well as fixing the cost of new floating rate debt to then be issued to replace it over the subsequent three years of the regulatory control period.

233 However, because available derivative contracts are based on "risk-free" benchmarks such as a bank bill swap rate or government security rate, only the risk-free component of the debt cost can be hedged in this way. The DRP component of borrowing costs which is determined at the time the debt financing is taken out, and applies for the term of the financing, cannot generally be hedged. Consequently, a DNSP which adopts a debt portfolio management strategy involving a staggering of debt maturities will remain exposed to the risk that the DRP "on-the-day" of determination of allowable cost of debt will differ from that applicable to its existing debt portfolio (as well as future rollovers of maturing debt during the regulatory control period).

234 The decision to move towards an allowable cost of debt determination based on the historical trailing average approach reflects recognition that this is more consistent with efficient debt management practices for a DNSP. With such a regulatory approach in place, the DNSP can minimize debt funding cost risks by creating a debt maturity (or repricing) profile consistent with that assumed by regulatory practice. Having 10% of its debt re-issued (or repriced) each year as 10-year debt would remove exposure to movements in both the risk-free component of debt costs and the DRP component applicable to a BEE. The DNSP would still face the risk that the DRP they were able to achieve was different from that applicable to a BEE.

Implications of past financing practices and the transition approach

235 A transition process for the risk-free component of debt costs is accepted by both parties as appropriate. The reason is that an immediate shift to the new approach could involve potentially costly unwinding of hedging contracts put in place to deal with the risks of on-the-day determination of debt costs.

236 But, as noted above, issues associated with unwinding hedge contracts are only relevant for the risk-free component of debt costs. DNSPs are locked into the DRP involved in their past funding decisions until those debt contracts mature.

237 The AER transition approach means that differences between the historical average DRP embedded in the debt portfolio of the DNSP as at the start of this regulatory control period

are not reflected in the DRP included in allowable cost of debt in the first year (since the on-the-day approach applies there). However, future DRP costs in rolling over existing debt and issuing additional debt are, in principle, fully included. This is because the DRP in each successive future year is included in the DRP component of allowable debt costs with a 10% weight, with the weight of the on-the-day DRP reducing by 10 percent.

238 Maintaining some weight for the on-the-day approach to the DRP component in the transition process means that the DNSP incurs higher or lower debt costs than allowed over this regulatory control period if the on-the-day DRP differs from the trailing historical average DRP costs embedded in its debt portfolio at the start of the regulatory control period. Consequently, if the historical trailing average DRP at the start of the regulatory control period exceeded the on-the-day figure (at the start of the regulatory control period) the allowable revenue in that regulatory control period would be higher in each year from immediately shifting to Option 3, and vice versa if it were lower. In the current case the historical average exceeds the on-the-day figure implying higher revenue from Option 3 over the current regulatory control period, and in submissions SAPN provided evidence that this would also apply over the subsequent regulatory control period.

Efficient investment and the regulatory approach to debt costs

239 NER cl 6.5.2.(k)(3) requires that in setting the cost of debt consideration be given to "the incentives that the return on debt may provide in relation to capital expenditure over the regulatory control period, including as to the timing of any capital expenditure". While the historical trailing average approach is more compatible with actual debt management practices, it might be thought to be less consistent with determination of a cost of capital, and allowable revenue and prices, required for efficient investment decisions.

240 By using an on-the-day approach to determine cost of capital and thus allowable revenues, the outcome – in theory at least – is that the DNSP can expect a revenue stream consistent with what a competitive market would generate. Capital investment decisions made at that date which meet a positive NPV condition using the allowed rate of return would be efficient, based on current conditions in the market for funds. In contrast, if the DNSP assessed capital investment options by reference to the rate of return incorporating debt costs allowed from the trailing average approach, inefficient investment decisions could result.

241 For example, suppose allowable revenues for a very short-term project were based on historical funding costs, and those were above current market funding costs. By undertaking

that project abnormal profits could be made, because allowable revenue implies a positive NPV when evaluated at current market funding costs. However, it is by no means clear that a sophisticated DNSP would make investment decisions for the very long-lived assets required for its operations based on past financing costs rather than current and expected future financing costs. It is the latter which determine, through the building block model, future expected cash flows over the long horizon involved. Nor should it be expected that regulatory approval for capex plans would be based on an appraisal using historical funding costs rather than current market conditions.

242 Also relevant in this context is the fact that the building block model using the on-the-day approach implies a NPV=0 condition at that date, in the sense that expected cash flow streams from current assets or new capex are just sufficient to match required returns of investors. However, financial market conditions can change substantially over the five-year horizon of a regulatory control period such that using the allowed cost of capital to assess potential investments during the period could, again, lead to inefficient decisions. However, to the extent that investments are very long-term (eg 80 years), and future cash flows linked to future changes in cost of capital (at the start of each regulatory control period, or over a 10-year historical trailing average) it is not obvious that a sophisticated DNSP would act in this manner.

243 The approach to debt costs also affects the risk facing the DNSP from investment decisions, although there is no evidence provided to the Tribunal that those risks would be systematic and thus affect the cost of capital. Under the on-the-day approach, a DNSP which adopts a staggered-debt financing approach experiences random differences between actual and allowed cost of debt (and thus revenue) over the life of an investment. Arguably, these differences could be expected to average out to zero over the long term, and are not systematic risks which would lead to a higher cost of equity capital than if a trailing historical average approach were used.

244 While the transition approach used will have implications for the extent to which past differences in debt costs are locked in or averaged out over the transition period, and affect DNSP profitability over that period, that is not relevant to forward looking investment decisions. Because the choice between the trailing historical average and on-the-day approaches to the costs of debt should not affect long-term investment decisions, the form of

transition should also have no material implications for the efficiency of future investment decisions.

Alleged errors in the Final Decision

245 SAPN argues that the AER decision to not adopt an immediate change to a trailing average approach (Option 3), and instead deciding on a gradual transition approach (Option 2), for the DRP component of the allowable cost of debt was wrong on each of the five considerations involved. These were outlined at Attachment 3, p 149 (and presented slightly differently in several cases at pp 170-1) of the Final Decision. It is appropriate to adopt a different ordering to that contained in the Final Decision reflecting the logic and approach applied by the Tribunal in considering the arguments. It is noticeable that the considerations on pp 170-1 make several references to the consideration of recovering efficient financing costs over the life of its assets, and this permeated the AER discussion in the Final Decision. This emphasis on considerations relevant to "life of assets" rather than just the current regulatory control period is an important one raised by SAPN.

Promotion of efficient financing practices

246 One consideration listed by the AER was "the impact on promoting efficient financing practices consistent with the principles of incentive based regulation". The AER accepts that both Option 2 and Option 3 are consistent with this consideration (AER's Outline of Submissions, p 51). SAPN focuses in its submission (Section C.4(a)) on the impact of the choice of transition approach on the consequences of past efficient financing practices for the revenues of the BEE in the current (and future) regulatory control periods. It is true that the consequences of past efficient financing practices are affected by the choice of transition arrangement (since the allowable cost of debt in the forthcoming regulatory control period(s) differs) but this has no consequences for choices regarding future practices. But SAPN provides no explanation as to how future financing arrangements would be affected in a manner inconsistent with this consideration by the choice of transition approach. Indeed, the arguments advanced by SAPN about inability to hedge the DRP component of existing debt costs suggests that these are akin to "sunk costs" and, while relevant to profitability impacts from the choice of transition are not relevant to future debt financing decisions. The Tribunal is of the view that the AER committed no error of fact, incorrect exercise of discretion, or was unreasonable in reaching its conclusion that both Options 2 and 3 were consistent with this first consideration.

Bias in regulatory decision-making

247 Another consideration of the AER was avoiding "a potential bias in regulatory decision-making that can arise from choosing an approach that uses historical data after the results of that historical data is already known". SAPN argues in its Outline of Submissions (at para 279) that the AER made an error of discretion and was unreasonable in preferring Option 2 over Option 3 on this basis because:

> *(a) the AER was incorrect to find that it was a desirable feature of the AER transition that it avoided a relevant bias in regulatory decision making;*
>
> *(b) the AER was incorrect to find that the hybrid transition gave rise to a relevant bias in regulatory decision making; and*
>
> *(c) concerns as to the nature of the bias raised by the AER were not relevant to, and could not override, the requirement of cl 6.5.2, to estimate the return on debt for a regulatory year such that it contributes to the achievement of the allowed rate of return objective.*

248 It is hardly surprising that in proposing a one-off transition arrangement in moving from one procedure for choosing the cost of debt to an alternative procedure, a DNSP would prefer and recommend the option which, given the information available, is to its advantage. In this case, Option 3 is clearly preferable to the DNSP because the immediate adoption of the historical trailing average means that the DRP component of debt costs over the regulatory control period will reflect higher past values of the DRP. Chairmont Consulting provided evidence to the AER that had the transition process started between 2011 and 2014, the historical pattern of the DRP would have led to the opposite outcome: Final Decision, Attachment 3, p 149. In contrast, the Option 2 transition does not incorporate those historical values. Future values of the DRP impact equivalently on the allowable DRP component of debt costs in future years under both Option 2 and Option 3.

249 The answer to the contentions of SAPN is that the AER's approach involved "starting with an on-the-day rate and gradually transitioning to the trailing average approach (Option 2) [which] only uses averaging periods for each year that are nominated in advance" (Final Decision, Attachment 3, p 192).

250 The Tribunal is of the view that this approach is a valid one, involving the AER considering alternative transition approaches to the one proposed by SAPN, in order to avoid a bias in regulatory decision-making. In determining which among the alternative transition options should be chosen, the AER was endeavouring to reach a decision that contributes to the ARORO. This approach by the AER was correct.

Historical data problems

251 Another consideration listed by the AER was avoiding "practical problems with the use of historical data as estimating the return on debt during the global financial crisis is a difficult and contentious exercise" (Final Decision, Attachment 3, p 149). Use of Option 3 would require use of such data, whereas Option 2 avoids the need to consider such historical data. The AER noted that this was a relatively minor issue compared to other considerations.

252 It is the case that there are some difficulties in accurately determining what the historical DRP on 10-year debt issued by a "BBB+" rated BEE would have been in each of the 10 years preceding the start of the current regulatory control period. Two factors are relevant.

253 First, this period incorporates the global financial crisis which meant that the DRP on outstanding bonds and new bond issues was significantly elevated in the years following 2007 when financial markets were disrupted. While the DRP on loans from banks can also be assumed to have increased at that time, there is no readily available evidence on whether the increase was higher or lower than that seen in bond markets. And it could be anticipated that the efficient financing practice for a BEE would have involved choosing to raise debt finance through the cheaper of the two alternatives (debt issue or bank loan). This might suggest that DRP figures from the bond market might be an upper bound on the achievable DRP unless there was significant use of the bond market by comparable entities at that time. On the other hand, given elevated borrowing costs, efficient financial management may have involved greater temporary use of equity financing (such as via increased earnings retention) rather than use of debt markets. Alternatively, at times when the DRP was perceived to be unusually and temporarily high, shorter-term debt might have been used to avoid locking in that high level of DRP.

254 These considerations suggest that observable DRP figures from this period might be noisy estimates of the DRP (both in terms of the percentage cost and also actual dollar cost if leverage changed temporarily) of a BEE. However, this is no different in principle to potentially similar problems in accuracy of DRP estimation which may occur in future years. Moreover, such data was used in the previous AER determination of cost of debt for the regulatory control period 2010-2014, suggesting that concerns about the validity of the historical data from that date onwards should not be paramount. Arguably, estimating appropriate DRP figures for the preceding several years (2007-2009) associated with the financial crisis may be problematic and contentious. However, this is not an argument for not

incorporating such data, particularly since it is eventually phased out of the trailing historical average.

255 A second issue is the robustness of the interest rate data available from providers of such data for the use required here. Several commercial providers track returns on corporate debt of issuers of different credit ratings. However, there are relatively few domestic corporate bond issues in Australia, and their remaining maturity is extremely unlikely to be exactly 10 years. Consequently to estimate the yield and DRP on a 10-year maturity of a BBB+ rated entity requires a number of approximations, including interpolation or extrapolation of rates or DRPs available for different maturities. The complexities are well outlined in the Final Decision, Attachment 3, pp 197-200. In response, SAPN notes (Outline of Submissions, C4(e)) that alternative approaches involving averaging of various sources do not involve major differences in estimates when averaged over a number of years.

256 There can be significant debate about the merits of alternative approaches. The Tribunal notes that the issue of extracting reasonable estimates of the historical DRP from available, but non-robust, past data appear inherently no more problematic than estimating many other inputs into the PTRM such as the current cost of equity or the valuation of imputation credits.

257 The Tribunal is of the view that while there are undoubtedly problems with obtaining accurate estimates of the DRP of a BEE over earlier years of the decade prior to the start of the regulatory control period, this is not a sufficient reason to reject the use of the Option 3 transition approach. The Tribunal does not accept that the AER was in error or its decision was unreasonable in considering the reliability of the historical information.

Impact of change on BEE and recovery of efficient financing costs

258 The Tribunal's analysis of the three preceding contentions does not demonstrate the errors claimed by SAPN. Thus the matter hinges on the final two considerations.

259 The final two considerations listed by the AER are somewhat interrelated, and dependent upon a common item. That common item is the question of whether the application of the reference to "across regulatory control periods" should refer solely to the periods before and after the change in methodology, or involve a longer horizon. This involves looking at the NER as a whole. Also important is the question of whether the choice of transition approach creates or enshrines "windfall gains or losses" to either the DNSP or its customers which are inconsistent with incentive based regulation.

260 The relevant considerations in its approach listed by the AER affecting this issue are having regard to (a) "the impact on a benchmark efficient entity of changing the method for estimating the return on debt in one regulatory control period to the next" and (b) that it "provides a benchmark efficient entity with a reasonable opportunity to recover at least the efficient financing costs it incurs in financing its assets. And as a result it: [p]romotes efficient investment, and [p]romotes consumers not paying more than necessary for a safe and reliable network" (Final Decision, Attachment 3, p 149).

261 This latter consideration is alternatively expressed by the AER as consideration of "matching the allowed rate of return with efficient financing cashflows over a single regulatory period, and the potential conflict between this consideration and providing a benchmark efficient entity with a reasonable opportunity to recover efficient financing costs over the life of its assets" (Final Decision, Attachment 3, pp 170-1).

262 In assessing the arguments, it is useful to refer to the NER which states that in determining the return on debt regard must be had to "the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective" (NER cl 6.5.2(k)(1)) and "any impacts (including in relation to the costs of servicing debt across regulatory control periods) on a benchmark efficient entity referred to in the allowed rate of return objective that could arise as a result of changing the methodology that is used to estimate the return on debt from one regulatory control period to the next." (NER cl 6.5.2(k)(4))

263 It has been already noted that the AER, in deciding to move to a trailing historical average approach, has adopted a perspective that a characteristic of a BEE is that it would (a) adopt a financing policy involving a staggered-debt portfolio, and (b) hedge the risk-free component of debt costs associated with the on-the-day approach through use of swaps (Final Decision, Attachment 3, p 551). That would leave that entity exposed to differences arising between the average historical DRP embedded in its debt portfolio and the on-the-day DRP. If the embedded DRP exceeds the on-the-day figure the allowed revenue for debt costs would not cover actual costs, and vice versa. For such an entity, NER cl 6.5.2(k)(1), if considered in isolation and interpreted as referring to minimizing year-by-year differences, would imply that Option 3 would be the appropriate choice.

264 SAPN (Outline of Submissions, paras 232 and 248) notes that:

> *The AER's interpretation of the factor in clause 6.5.2(k)(1) is not a matter in dispute, save that SA Power Networks contends that it is properly applied on a forward-looking basis in each year of the regulatory control period. That is, the factor is properly understood as requiring regard to be had to the desirability of minimising any difference between the return on debt allowance the AER sets for each year of the relevant regulatory control period (the allowed return on debt) and the cost of debt a benchmark efficient entity would incur each year of that regulatory control period, based on the AER's assumptions of the efficient financing practices of a benchmark efficient entity (the actual return on debt). …*
>
> *SA Power Networks contends that it is plain that rate of return objective requires the return on debt to be estimated so that the return on debt is commensurate with the efficient financing costs that a benchmark efficient entity would incur each year over the relevant regulatory control period.*

265 SAPN argues that (at para 247), in contrast:

> *the justification that appears to be proffered by the AER in the Final Decision is that the NER only require compensation for efficient financing costs over a longer period referred to as "the life of the relevant assets".*

266 In this regard NER (cl 6.5.2(k)(4) also requires consideration of the impact on cost of servicing debt across regulatory control periods. The AER applies the notion of "across regulatory control periods" as extending beyond the two periods immediately before and after the change in regulatory methodology and referring to "the life of the relevant assets". Consequently, it argues that in taking a longer perspective differences in the allowed and actual cost of debt in individual years and over regulatory control periods under the on-the-day approach can be expected to balance out over time. The historical trailing average approach also achieves that balance of allowed and actual cost of debt over the longer time horizon, but also on a year-by-year basis.

267 In its Final Decision (Attachment 3, p 167) the AER stated that "[w]e consider the efficient debt financing costs of a benchmark efficient entity as those which are expected to minimise its debt financing costs over the life of its assets, while managing refinancing risk and interest rate risk".

268 The AER argues at pp 174-5 that this is equivalent to applying the NPV principle which it defines as follows:

> *The NPV principle is that the expected present value of a benchmark efficient entity's regulated revenue should reflect the expected present value of its expenditure, plus or minus any efficiency incentive rewards or penalties. In other words, departures from cost recovery are acceptable and desirable, so long as they are the result of management induced efficiencies or inefficiencies, rather than windfall gains or losses. Windfall gains or losses would result in a service provider being over- or under-compensated for its efficient costs. The building block model which the NGR require us to use is based on this principle.*

269 The Tribunal is of the view that the AER has not erred in applying the provision of NER cl 6.5.2(k)(4) in referring to a longer time period, such as that involved in recovery of efficient financing costs over the life of the asset. The theoretical basis of the PTRM and the NER are premised on such an approach which involves determining allowable cash flows such that an NPV=0 condition is met ex ante. It is true that this NPV=0 condition is implemented via the PTRM so as to apply as at the start of each regulatory period for that period. However, the inclusion of the end of period regulatory asset base in that calculation (such that the opening regulatory asset base equals the present values of cash flows plus end-of-period regulatory asset base) implies that this is only one stage in a sequence of such decisions aimed at achieving NPV=0 over the life of the assets.

270 A BEE may adopt a different financing structure to that implied in the PTRM calculation, such as using a staggered-debt portfolio rather than an on-the-day rollover approach. This could lead to it facing a non-zero NPV situation for any regulatory period. But it can be assumed that it would only do so if it anticipated that over the longer term (life of the assets) such non-zero NPV situations would tend to balance out.

271 This interpretation of NER cl 6.5.2(k)(4) has two consequences. First, it means that the argument of SAPN that Option 3 involves smaller year-by-year differences between the actual cost of debt and that allowable over the current regulatory control period is not, of itself, sufficient to prefer Option 3 over Option 2. Second, it then requires identifying whether one of the two transition options is more consistent with recovery of efficient financing costs over the life of assets, or involves impacts on the BEE which are judged to be, in the context of the NEL objectives, worse. Unfortunately, in this regard, the NER cl 6.5.2(k)(4) provides no guidance on how to assess such impacts. Nor is such criteria explicitly specified in the NEL. Section 7A(2) of the NEL provides:

> *A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in–*
>
> *(a) providing direct control network services; and*
>
> *(b) complying with a regulatory obligation or requirement or making a regulatory payment.*

272 At s 7A(3) a further consideration relevant to this situation is specified as:

> *… The economic efficiency that should be promoted includes–*
>
> *(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and*

> *(b) the efficient provision of electricity network services; and*
>
> *(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.*

273 Section 7A(2) does not imply recovery of costs within a particular regulatory control period such that the AER focus on "the life of the asset" is not inconsistent with the NEO. Section 7A(3)(c) indicates that in determining allowable revenue and prices, the AER should take into account the impact of its decisions on demand for electricity network services. Thus it would be appropriate for the AER to consider impacts both on consumers and DNSPs in arriving at a decision on the choice of transition approach.

274 The AER's argument that Option 2 is better aligned with the NEO than is Option 3 is based on consideration of the effects of the transition on a BEE which had adopted a staggered-debt portfolio approach under the previous on-the-day regime. There is no dispute that this is a suitable characterisation of a BEE, and that the BEE would be able to hedge the resulting risk on the risk-free component of its debt, but would be subject to the risk that the DRP allowed for any regulatory control period differed from its actual embedded DRP for that period.

275 The AER argues (in its Outline of Submissions at para 185) that regulatory decisions which generate windfall gains or losses (to either DNSPs or their customers) are undesirable:

> *The AER observed that departures from cost recovery are acceptable and desirable so long as they are the result of management induced efficiencies or inefficiencies, rather than windfall gains or losses.*

276 In the Final Decision, there is considerable discussion about whether allowed DRPs differed from actual DRPs over past regulatory control periods, and SAPN focuses on this as the potential source of windfall gains or losses. It argues that there is no authority for subsequent "squaring up" which it interprets the AER decision as involving. That argument implies that an allowed DRP less than the actual (of a staggered-debt portfolio) in the current regulatory period under Option 2 is offsetting the reverse situation in previous periods. SAPN stated in its Outline of Submissions (at para 264) that:

> *Even if it was permissible for the AER to have regard to the motion of the balance of under and over recovery over time (which it is not, for the reasons discussed above), as the AER's Final Decision would result in a benchmark efficient entity in the position of SA Power Networks facing the costs of a trailing average DRP which is in excess of the prevailing DRP, the AER can only reach a conclusion that its transition provides a benchmark efficient entity with a reasonable opportunity to recover at least efficient costs if it is satisfied that:*
>
> > *(a) a benchmark efficient entity in the position of SA Power Networks would, at the beginning of the 2015-20 regulatory control period,*

> *have an accumulated gain comprising the difference between the DRP costs it had faced in the past and the regulatory allowance provided for this component of the return on debt; and*
>
> *(b) the AER transition will erode that accumulated gain to zero (and no more or less) over the course of the AER's transition.*

277 SAPN argued at para 252 that:

> *cl 6.5.2 of the NER must be interpreted as requiring a return that is sufficient to recover efficient financing costs in each regulatory year of the regulatory control period. Neither the NER or the Law permit the AER to reduce the return on debt allowance below the level of efficient financing costs in an attempt to "claw back" or square-up differences between the allowed return on debt and the return on debt faced by a benchmark service provider in a previous regulatory period.*

278 There is some lack of clarity in the AER's discussion of this issue. For example, in the Final Decision (Attachment 3, pp 562-3) the AER argues that:

> *a consistent application of either the on-the-day or trailing average approach … promotes revenue with an expected present value equal to the present value of the entity's efficient costs. This outcome is consistent with the NPV principle which we discussed further below. However, when the method to estimate the return on debt changes during the life of regulated assets; the NPV principle is unlikely to hold automatically. Any existing accumulated differences between the allowed and actual return on debt of a benchmark efficient entity would remain. As a result, the service provider will receive a return on debt that is different from that of a benchmark efficient entity, and consumers will pay prices that reflect this difference.*

279 It is possible to interpret the above statement as referring to past gains or losses as at the date of switching from an existing regulatory approach to another approach That would prompt a focus on how a particular transition process would, or would not, involve some "squaring up" element. However, while the AER devoted considerable space to discussing the past behaviour of the DRP, this was not an apparent consideration in its preference for Option 2. In its Final Decision (Attachment 3, p 569) the AER states that, despite examining the issue and available data "we have not relied on analysis of whether our transitional approach will erode past windfall gains or losses in making our decision".

280 Rather the AER's approach is premised on examining whether a particular transition approach would itself create "windfall gains or losses" arising over the current (and subsequent) transition period. Its approach is based on analysis of the NPV=0 principle underlying the PTRM, which implies that for each component of costs (return on capital, return of capital, opex etc), a corresponding component of the revenue stream with zero anticipated NPV is allowed. It then considers the total debt portfolio of a BEE as a set of

annual tranches of debt issued in each of the past 10 years and examines the consequences of a transition approach for each of those tranches.

281 As previously outlined, under the previous "on-the-day approach" a BEE which refinanced all debt at the start of the regulatory control period would be assured of allowed debt costs equal to actual during that period. In contrast, a BEE which adopted a staggered-debt portfolio (and hedged the risk-free component) would accept risks of future deviations of actual embedded debt costs from allowed debt costs. Over the long-term (such as the life of assets) these deviations might average out as debt raised in a particular year matures and is refinanced at prevailing rates.

282 Once a shift to the historical trailing average approach is completed there is no annual divergence between allowed and actual debt costs for each annual tranche of debt issued by the BEE.

283 The AER argues that, under the on-the-day approach, such a BEE would have anticipated that each annual tranche of debt could have experienced future differences between the allowed and its actual debt cost. For example, a BEE which issued 10-year debt seven years prior to the start of the current regulatory control period would have expected that the allowed DRP for the remaining three years to maturity of that debt would be set under the on-the-day approach and could differ from its actual DRP.

284 Thus if the allowed DRP on that tranche of debt is set according to a different rule during the transition period, a different outcome to that based on the anticipated application of the existing rule when the debt was issued would occur as a result of the regulatory decision. In this sense, there would be "windfall gains or losses" on that tranche of debt occurring during the transition period. Option 2 avoids this outcome for previously issued debt. It also means that debt which is issued (either new debt to fund capex or rolling over of maturing debt) in the transition period would have no difference between allowed and actual debt costs over the term of that debt.

285 The AER stated in its Final Decision (Attachment 3, p 158):

> *Our approach is designed such that service providers will face the outcomes on their debt raising decisions consistent with the expectations when that debt was issued. That is, for debt issued under the previous return on debt regime, outcomes will be consistent with those that would have arisen under the previous regime. For debt issued under the new regime, outcomes will be as per the trailing average portfolio. We are satisfied this approach achieves the NPV=0 principle in expectation, and is*

symmetrical and unbiased.

286 The AER argues that this is consistent with principles of incentive regulation, where a BEE adopting a staggered-debt portfolio approach under the on-the-day approach took financing risks from which it might gain or lose. It stated in its Final Decision (Attachment 3, p 173):

> *One of our reasons for this approach is so service providers face the financial outcomes of their past financing decisions, whether positive or negative, consistent with the principles of incentive regulation. …*
>
> *Accordingly, the impact on a benchmark efficient entity is not, in principle, different to the impact on a benchmark efficient entity if we had continued to adopt the on-the-day approach. This means that there is a minimal impact on the level of financial risk faced by a benchmark efficient entity as a result of changing the return on debt methodology from one regulatory control period to the next.*

287 At Attachment 3, pp 181-2, the AER argued its preference for Option 2 as:

> *In these circumstances, departures from the NPV principle do not result from efficiency gains or losses, but from changing the regulatory regime. For this reason, we consider the resulting benefits or detriments are windfall gains or losses that the change in methodology for estimating the return on debt should avoid. In other words, regardless of who faces the benefit or detriment, an immediate change from one return on debt method to another could have undesirable consequences. This possibility should concern both service providers and consumers. This is because, prior to a change in method occurring, neither could know whether they would face a benefit or detriment.*

288 The AER had, in its ROR guidelines, flagged that a gradual transition (equivalent to Option 2) was its intended approach because it would reduce the potential for "windfall gains or losses" arising from the change in regulatory approach impacting adversely on either consumers or the BEE (and to the benefit of the other). The Tribunal accepts that this position, stated well before this regulatory determination, is consistent with the NEO, and thus preferable to the alternative (Option 3).

289 The Tribunal is of the view that the AER has committed no error of fact or been unreasonable in reaching the conclusion that Option 2 is preferable on grounds of the "impact of change on benchmark efficient entity and recovery of efficient financing costs". Its interpretation of "across regulatory periods" as involving more than just the periods immediately surrounding the change in regulatory approach, and leading to consideration of effects over the life of the asset, is consistent with the NER. That justifies the attention paid by the AER to the NPV=0 criterion, which in turn leads it to consider whether one particular transition approach is more consistent with that criterion than the other. In that regard, it does not undertake a comparison based on offsetting historical excesses or deficiencies in the allowed DRP relative to actual. Rather, it assesses which approach is more consistent with meeting

expectations held of how future DRP values would be determined when particular annual tranches of debt were issued. It concludes, correctly in the view of the Tribunal, that Option 2 is preferable in that regard because it does not create windfall gains or losses in the current regulatory period from the regulatory change.

290 The grounds of review on the cost of debt are rejected.

Forecast bushfire safety capex

291 In its Revised Proposal, SAPN proposed a $40.6 million bushfire mitigation capex program ('**Bushfire Mitigation Capex Program**').

292 The Bushfire Mitigation Capex Program comprised three measures:

- replacement of manual 33kV, 19kV and 11kV reclosers with fast operating supervisory control and data acquisition ('**SCADA**') controlled enabled reclosers at a proposed capital cost of $18.1 million;
- replacement of rod air gaps ('**RAG**') and current limiting arcing horns ('**CLAH**') with modern surge arrestors at a proposed capital cost of $12.4 million; and
- reconstructing metered mains at a proposed capital cost of $10.1 million.

293 These measures were intended to limit fire-starts caused by SAPN's distribution system in high bushfire risk areas ('**HBFRAs**').

Reclosers, RAGs and CLAHs

294 The following technical features and operation of reclosers, RAGs and CLAHs are uncontroversial. The description of those systems which follow is taken largely from SAPN's written submissions.

295 Reclosers are self-contained pole mounted circuit breakers with inbuilt fault detection mechanisms and control systems. For transient faults, reclosers interrupt supply allowing the fault to clear and then automatically reclose to restore supply. For permanent faults, the recloser trips and remains open or "locks out" until the line is patrolled and confirmed as safe to restore supply.

296 SAPN has many manual 33kV, 19kV and 11kV reclosers in service that are part of its protection system to minimise the risk of injury and damage from an electrical fault and to limit the interruption of supply caused by a fault.

297 The operating system in manual reclosers is predominately hydraulic for fault detection and operation. SAPN says that the limitations of these units, compared with modern units, include slower fault clearing times, inflexible protection and control settings and an inability to remotely monitor or control their operation.

298 SAPN says that many of the reclosers can only be operated manually with the result that crews are required to attend multiples sites in rural locations over a short time frame. Under common circumstances, this process is practically difficult to implement in the required time frame. In addition, SAPN says it will not send its crews into dangerous situations on "catastrophic" bushfire days. This, it says, further limits the number of reclosers that can be manually operated on high bushfire risk days. SAPN argues that these difficulties can be overcome through investment in remote controlled SCADA reclosers.

299 SAPN maintains that these changes would bring it in line with current good electricity industry practice and significantly reduce the risk of fire-starts when faults occur.

300 RAGs and CLAHs are intended to protect equipment from the effects of overvoltages.

301 SAPN submits there is evidence that failures have occurred to overhead line equipment forming part of SAPN's distribution system because RAGs and CLAHs have been:

- bridged by animals or birds, resulting in them being electrocuted and falling to the ground and starting fires; or
- struck by lightning, causing hot metal particles to fall onto dry ground, igniting local grasses and vegetation.

302 In order to mitigate this risk, SAPN proposed to replace RAGs and CLAHs with modern surge arrestors. SAPN believes this would deliver clear reductions in the number of arcing events when these devices are bridged by animals or birds, or when lightning strikes.

Application of the NER

303 It is important to note that the AER's decision in relation to the Bushfire Mitigation Capex Program is only one component of the AER's overall decision in relation to forecast capex.

304 Under cl 6.12.1(3) of the NER, the AER's determination must include a decision in which the AER either:

> *(i) acting in accordance with clause 6.5.7(c), accepts the total of the forecast capital expenditure for the regulatory control period that is included in the*

current building block proposal; or

(ii) acting in accordance with clause 6.5.7(d), does not accept the total of the forecast capital expenditure for the regulatory control period that is included in the current building block proposal, in which case the AER must set out its reasons for that decision and an estimate of the total of the Distribution Network Service Provider's required capital expenditure for the regulatory control period that the AER is satisfied reasonably reflects the capital expenditure criteria, taking into account the capital expenditure factors …

305 Clause 6.5.7 of the NER applies to the approval of a DNSP's forecast capex. Clause 6.5.7(a) addresses the capex objectives, namely:

> *(a) A building block proposal must include the total forecast capital expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve each of the following (the capital expenditure objectives):*
>
> *(1) meet or manage the expected demand for standard control services over that period;*
>
> *(2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;*
>
> *(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:*
>
> *(i) the quality, reliability or security of supply of standard control services; or*
>
> *(ii) the reliability or security of the distribution system through the supply of standard control services,*
>
> *to the relevant extent:*
>
> *(iii) maintain the quality, reliability and security of supply of standard control services; and*
>
> *(iv) maintain the reliability and security of the distribution system through the supply of standard control services; and*
>
> *(4) maintain the safety of the distribution system through the supply of standard control services.*

306 Clause 6.5.7(c) directs the AER to consider whether proposed capex meets the capex criteria. It provides:

> *The AER must accept the forecast of required capital expenditure of a Distribution Network Service Provider that is included in a building block proposal if the AER is satisfied that the total of the forecast capital expenditure for the regulatory control period reasonably reflects each of the following (the capital expenditure criteria):*
>
> *(1) the efficient costs of achieving the capital expenditure objectives;*
>
> *(2) the costs that a prudent operator would require to achieve the capital expenditure objectives; and*

> *(3) a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives.*

307 In making its decision under cl 6.5.7(c) the AER must have regard to the capex factors listed in cl 6.5.7(e). The AER is also required to:

- make the decision in a manner that is likely to contribute to the achievement of the NEO set out in s 7 of the NEL;
- take into account the RPP specified in s 7A of the NEL; and
- ensure that SAPN (among others) is informed of material issues under consideration by the AER, and given a reasonable opportunity to make submissions in respect of the determination before it is made, under s 16(1)(b) of the NEL.

The AER's final decision on bushfire mitigation capex

308 The AER did not accept SAPN's capex proposal to spend $40.6 million, (or $38.9 excluding overheads) on its Bushfire Mitigation Capex Program. The AER was not satisfied that SAPN's proposed forecast reasonably reflected the capex criteria.

309 Instead the AER made a decision estimating the total of SAPN's required capex for the regulatory period that it considered reasonably reflected the capex criteria. The AER included $21.3 million in its decision, being an amount proposed by SAPN for its "core safety" program (which included substation fencing and security, sub-station earthing, sub-station lighting and CBD fault level control).

310 The AER's estimate of total forecast capex comprises a number of categories or "drivers" of capex. Those categories are set out in Table 6.3 of its Final Decision. Those categories include augmentation ('**augex**'), connections, replacement ('**repex**') and non-network capex.

311 In reaching its decision the AER said (Final Decision, Attachment 6, pp 81-2):

> *We are not satisfied that the additional capex for the proposed bushfire mitigation program is efficient additional capex that the prudent operator would require to maintain the reliability and safety of the network, or to comply with regulatory obligations or requirements. As such, we do not accept SA Power Network's capex proposal to spend $38.9 million on its bushfire mitigation program. We find that SA Power Network's Revised Regulatory Proposal, and our alternative estimate, already factor in a sufficient level of capex related to its business-as-usual bushfire risk management.*
>
> *As we noted in the preliminary decision, the evidence before us indicates that SA Power Networks is meeting its existing obligations, and historically, its bushfire risk management has been effective. The Office of the Technical Regulator has confirmed that SA Power Networks currently satisfies existing regulations and standards*

relating to managing bushfires.

312 The AER provided a summary of its decision immediately following this conclusion (at pp 82-3). It is helpful to reproduce that summary as much of it is specifically challenged by SAPN:

> *In summary we consider that:*
>
> - *The information before us does not satisfy us that section 60 of the SA Electricity Industry Act requires SA Power Networks to incur bushfire mitigation capex, in addition to capex that it may be required to incur in order to comply with other, more specific requirements under the SA Electricity Industry Act.*
> - *contrary to SA Power Networks' assertion, the information before us does not demonstrate that the practices now adopted by Victorian networks are required to be adopted in order for a prudent South Australian network operator to achieve the capex objectives. SA Power Networks' bushfire risk and network construction is different from its Victorian counterparts.*
> - *SA Power Networks is in a position to manage an increase in bushfire risk if it eventuates, given its legislated power to cut off the power to specific parts of the network in high bushfire risk situations.*
> - *SA Power Networks has improved its fire start performance to date with business-as-usual expenditure, in compliance with its obligation under the NER to maintain the safety of the distribution system*
> - *SA Power Networks has maintained its compliance with its obligations under the Work Health and Safety Act, and there is no indication that the Act will be amended to increase SA Power Networks' obligations.*
> - *contrary to SA Power Networks assertions that a cost/benefit analysis for the bushfire mitigation program is not feasible, it could have provided a cost benefit analysis based on the 'As Low As Reasonably Practical' risk mitigation principle.*
> - *while we accept that SA Power Networks proposed SCADA reclosers program may mitigate fire start risks, we have provided funding for the replacement of aging reclosers in our repex allowance.*
> - *the proposed surge arrestors program is not efficient capex that a prudent network operator would need to make to achieve the capex objectives. Further, SA Power Networks has been given additional repex that addresses increased asset replacement needs.*
> - *the proposed metered mains project is not efficient capex that a prudent network operator would incur .*

313 For these reasons the AER concluded that SAPN's capex for the Bushfire Mitigation Capex Program did not satisfy the capex criteria.

Areas of dispute

314 It is undisputed that the AER assessed SAPN's proposed Bushfire Mitigation Capex Program in two steps. First it assessed SAPN's compliance with its safety related obligations and its ability to manage bushfire risk. Secondly it assessed the prudency and efficiency of the bushfire mitigation projects, relevantly the SCADA reclosers and surge arresters.

315 Following this approach, the AER provided nine reasons for its decision – reproduced in the summary above. The first eight of these reasons (the ninth – the metered mains component – not being pressed here) are reproduced in SAPN's Amended Application and dealt with extensively in the written submissions of both parties.

316 SAPN argues that the relationship amongst these eight reasons does not clearly emerge from the AER's decision. That it is unclear, among other things, whether the AER considers that each of the reasons is individually sufficient to produce the result that the AER was not satisfied with the Bushfire Mitigation Capex Program.

317 SAPN is also critical of the AER's failure to identify how each of these reasons relates to the matters to which the AER was required to have regard, namely the capex objectives and the capex criteria.

318 In its Amended Application at para 142, SAPN contends that the Bushfire Mitigation Capex decision of the AER was based on an incorrect construction and application of the NER. In particular:

> *(a)* *the AER erred in construing cl 6.5.7(a)(2) of the NER as only giving rise to an altered standard of obligation by reference to whether specific legislative provisions had been amended. It failed to have regard to the objective content of such regulatory obligations at the relevant time. As a consequence, the AER failed to have proper regard to SA Power Network's actual regulatory obligations and requirements;*
>
> *(b)* *the AER erred in assessing the prudency and efficiency of the Bushfire Mitigation Capex Program by reference to whether a sufficient level of capex related expenditure had already been provided for 'business-as-usual bushfire risk management', in circumstances in which there was no specific business as usual bushfire risk management capex allowance; and*
>
> *(c)* *the AER erred in determining that cl 5.2.1(a) of the NER is not a regulatory obligation or requirement that imposes any augmentation capex obligation on a network service provider; specifically the AER erred in construing the provision as being limited to maintenance opex and as precluding capex designed to enhance the safety of the South Australian distribution network.*

319 As a consequence of this incorrect construction and application of the NER, SAPN contends that the AER exercised its discretion incorrectly and made a decision that was unreasonable, having regard to all the circumstances.

320 The AER is critical of SAPN's Amended Application for alleging numerous errors but failing to specify the category of error being alleged. It suggests the problem is compounded by SAPN's written submissions which are said not to be closely tied to the grounds of review in the Amended Application, making it difficult to discern whether the submissions are addressing grounds of review raised in the Amended Application, or raising new grounds of review.

321 The AER considers that the difficulties are exemplified by SAPN's overarching argument that the AER should have assessed whether the proposed Bushfire Mitigation Capex Program:

- was required to comply with a regulatory obligation or requirement for the purposes of cl 6.5.7(a)(2) of the NER; or
- alternatively, was required to maintain the safety of the distribution system for the purposes of cl 6.5.7(a)(4).

322 SAPN's contends that had the AER determined that the Bushfire Mitigation Capex Program met the capex objectives it was then required:

- to be satisfied that the Bushfire Mitigation Capex Program met the capex criteria and approve the program; or
- to substitute the cost sought by SAPN for the Bushfire Mitigation Capex Program with an alternative amount that the AER was satisfied would meet the capex criteria.

323 SAPN's maintains that the AER failed to clearly address these steps.

324 The AER's criticism of the way SAPN presented its case also extends to aspects of SAPN's written submissions which address matters of construction of the NER and legislation in South Australia.

325 The Tribunal does observe a change in emphasis between the Amended Application and SAPN's written submissions. This became more pronounced during oral argument where counsel for SAPN devoted a degree of attention – more than might first appear to have naturally emerged from the Amended Application – to several points of construction of the

NER and legislation in support of the view that the capex objectives had been satisfied, contrary to the view held by the AER.

326 Despite the AER's criticism of the "disconnect" between SAPN's Amended Application and its written submissions, it nevertheless responded to SAPN's arguments in its written submissions.

Compliance with a regulatory obligation or requirement under cl 6.5.7(a)(2) of the NER

327 SAPN argued that the correct approach is to first inquire whether the Bushfire Mitigation Capex Program is necessary in order to comply with a regulatory obligation or requirement under cl 6.5.7(a)(2), as part of the capex objectives.

328 The expression "regulatory obligation or requirement" as used in the capex objectives, is defined in s 2D of the NEL, and includes:

- a distribution system safety duty in relation to the provision of an electricity network service by a regulated network service provider; and
- an obligation or requirement under the NEL or the NER.

329 The expression "distribution system safety duty" is defined in s 2(1) of the NEL as follows:

> *distribution system safety duty means a duty or requirement under an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act, relating to–*
>
> *(a) the safe distribution of electricity in that jurisdiction; or*
>
> *(b) the safe operation of a distribution system in that jurisdiction*

330 The expression "participating jurisdiction" is defined in s 5 of the NEL relevantly as follows:

> *(1) The following jurisdictions are participating jurisdictions for the purposes of this Law–*
>
> *(a) the State of South Australia; and*
>
> *(b) the Commonwealth, a Territory or a State (other than South Australia) if there is in force, as part of the law of that jurisdiction, a law that corresponds to Part 2 of the National Electricity (South Australia) Act 1996 of South Australia.*

331 SAPN points to three regulatory obligations it considers trigger cl 6.5.7(a)(2), through the combined operation of these definitions. They are (collectively the '**Obligations**'):

- the obligation to take reasonable steps to ensure that infrastructure is safe and safely operated under s 60(1)(b) of the Electricity Act;

- the obligation to ensure, as far as reasonably practicable, that the health and safety of workers and other persons is not put at risk: ss 5, 18 and 19 of the WHS Act; and
- the obligation to maintain and operate all equipment that is part of their facilities in accordance with good electricity practice and Australian Standards, within the meaning of cl 5.2.1(a) and Ch 10 of the NER.

332 Section 60(1)(b) of the Electricity Act provides:

> *(1) A person who owns or operates electricity infrastructure or an electrical installation must take reasonable steps to ensure that–*
>
> *(a) the infrastructure or installation complies with, and is operated in accordance with, technical and safety requirements imposed under the regulations; and*
>
> *(b) the infrastructure or installation is safe and safely operated.*

333 Section 19(1) of the WHS Act provides:

> *(1) A person conducting a business or undertaking must ensure, so far as is reasonably practicable, the health and safety of–*
>
> *(a) workers engaged, or caused to be engaged by the person; and*
>
> *(b) workers whose activities in carrying out work are influenced or directed by the person,*
>
> *while the workers are at work in the business or undertaking.*

334 Section 18 of the WHS Act defines "reasonably practicable" as follows:

> *reasonably practicable, in relation to a duty to ensure health and safety, means that which is, or was at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters including–*
>
> *(a) the likelihood of the hazard or the risk concerned occurring; and*
>
> *(b) the degree of harm that might result from the hazard or the risk; and*
>
> *(c) what the person concerned knows, or ought reasonably to know, about–*
>
> *(i) the hazard or the risk; and*
>
> *(ii) ways of eliminating or minimising the risk; and*
>
> *(d) the availability and suitability of ways to eliminate or minimise the risk; and*
>
> *(e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.*

335 Clause 5.2.1(a) of the NER requires that:

> *(a) All Registered Participants must maintain and operate (or ensure their authorised representatives maintain and operate) all equipment that is part of their facilities in accordance with:*
>
> *(1) relevant laws;*
>
> *(2) the requirements of the Rules; and*
>
> *(3) good electricity industry practice and relevant Australian Standards.*

336 The expression "good electricity industry practice" is defined, in Ch 10 of the NER, as:

> *The exercise of that degree of skill, diligence, prudence and foresight that reasonably would be expected from a significant proportion of operators of facilities forming part of the power system for the generation, transmission or supply of electricity under conditions comparable to those applicable to the relevant facility consistent with applicable regulatory instruments, reliability, safety and environmental protection. The determination of comparable conditions is to take into account factors such as the relative size, duty, age and technological status of the relevant facility and the applicable regulatory instruments.*

337 SAPN submits that these provisions are indeterminate in scope and therefore describe categories of indeterminate reference which may be satisfied by conduct of various kinds. That is, they do not narrowly prescribe a series of specific actions that SAPN must take.

338 The AER agreed with this characterisation and was therefore surprised that SAPN appeared to be suggesting in its written submissions that its Bushfire Mitigation Capex Program was of determinative scope and therefore within its terms, a regulatory obligation or requirement.

339 If that indeed was the position held by SAPN, it had moved on by the time of the hearing. Counsel for SAPN said (at Transcript, pp 186-7):

> *Can I turn then to the first issue for consideration, which is whether the Bushfire Mitigation Program was required to be undertaken in order to comply with a regulatory obligation or requirement. Can I interpolate and note that in our submissions at 425 and 452, we use a shorthand for this notion.* ***SAPN, of course, doesn't contend that the bushfire program is itself a regulatory obligation. It contends that effecting it is necessary to fulfil an obligation.*** *As the tribunal is aware by clause 6.5.7(a)(2) of the rules, compliance with all applicable regulatory obligations or requirements that are associated with standard control services is one of the capex objectives. Standard control services are, through the combined operation of chapter 10 of the rules and section 2B of the law, services regulated under a distribution determination.*
>
> ***SAPN contends that three distinct but overlapping regulatory obligations require it to undertake the program.*** *They are the obligation to take reasonable steps to ensure that infrastructure is safe and safely operated under section 60 of the Electricity Act, the obligation to ensure, as far as is reasonably practicable, that the health and safety of workers and other persons is not put at risk. That's section 5, 18*

> *and 19 of the Work Health and Safety Act. And, finally, the obligation to maintain and operate all equipment that's part of their facilities in accordance with good electricity industry practice and Australian standards within the meaning of clause 5.2.1(a) and chapter 10 of the rules. It will, of course, suffice if but one of these obligations is a regulatory obligation requirement within the meaning of the capex objectives, and the tribunal concludes that the steps contemplated by the program are necessary are apt to achieve compliance with that obligation. However, SAPN submits that they are overlapping and they are complimentary sources of regulatory obligation.*
>
> (Emphasis added).

340 Further, in response to the Tribunal' s question whether there was only one means of compliance with the Obligations, counsel for SAPN replied (at Transcript, p 188):

> *Absolutely not. I agree with that and I'm about to come to that point. These are quintessentially categories of indeterminate reference. These obligations.* ***It's not suggested that there was only means to comply with them.*** *What is suggested, for reasons I've indicated already and will return to, is that when you look at the very modest aspects of this program now pressed – when you look at key findings of the VBRC, the PBST and the Jacobs report – these are straightforwardly linked to fire. They are aspects, in respect of which SAPN is lagging behind good electricity industry practice. And they are standard issue, utterly non-gold plated pieces of infrastructure that will actually be used to supply that defect.*
>
> (Emphasis added).

341 Counsel for the AER expressed surprise at that response (Transcript, pp 212-13):

> *And the question was to the effect was there only one method of compliance with the safety obligations. And I had understood my learned friend to answer that to say it's not being suggested that there's only one manner of compliance. That presents a difficulty, it seems to me, for the argument – I must say even replying to the argument presents a difficulty – because we had been proceeding on a certain understanding of the argument and the error. And, certainly, the biggest error being this is mandatory. That was the matter put to the AER and the tribunal will see in the reasons why that matter was addressed by the AER because of the way it was put. But there is a little bit of uncertainty there but I just flag that at the beginning.*

342 To complete this dialogue, counsel for SAPN responded (Transcript, pp 242-3):

> *My learned friend suggested that I had made a concession that were many ways of complying with an obligation, and this was not the only way. My submission was, and it is SAPNs position that, the obligations in question are obviously indeterminate in content. There may be multiple ways of complying with them. The Jacobs report identified multiple proposed steps to comply with those obligations. What we contend is that what is now before the tribunal is the bare minimum necessary to comply with the obligations imposed by section 60, section 19 and clause 5.2.1(a), and it's important to recall that those obligations in that order have cascading levels of specificity. Section 60 is very broad. Section 19 is slightly narrower. 5.2.1(a), in speaking of good electricity industry practice, is directly addressing the kind of topic that is before the tribunal.*

343 The Tribunal has taken some time over this dialogue because it goes to the heart of the approach in construing cl 6.5.7(a) and cl 6.5.7(c). It also again highlights some of AER's concerns in responding to SAPN's submissions, given its original pleading.

344 It is uncontroversial that forecast capex must comply with both the capex objectives and capex criteria. Here the focus of attention on the capex objectives is whether the Bushfire Mitigation Capex Program is required to comply with a regulatory obligation or requirement or in the alternative is required to maintain the safety of the distribution system.

345 In the passage reproduced above, counsel for SAPN suggests that what is now before the Tribunal (which we take to mean the capex sought as part of the Bushfire Mitigation Capex Program) is the minimum required to comply with the Obligations. Of course at one level that is incorrect. There is nothing in the statutory provisions underpinning the Obligations that expressly mandate any specific actions or any specific level of expenditure. Counsel for SAPN all but acknowledged that. The expenditure proposed by SAPN is not required to comply with those statutory obligations, in the sense that those statutory provisions mandate them.

346 Rather as the other passages suggest, SAPN's real contention is that the three distinct but overlapping legislative obligations require it to undertake the expenditure. As already indicated those legislative obligations do not mandate any particular actions or any particular expenditure. As SAPN quite rightly noted, those statutory obligations describe categories of indeterminate reference, which may be satisfied by conduct of various kinds. Therefore it is unsurprising that counsel for SAPN agreed (in the passage quoted) that there may be many means of discharging them. This is because they impose what may for convenience be referred to as reasonableness obligations.

347 At the heart of the issue then is the question of what should be the approach to the capex objectives where (as here) the regulatory obligation or requirement does not import specific obligations but rather reasonableness obligations which may be complied with in many ways.

348 In its submissions the AER contrasted two types of regulatory obligation. One type of regulatory obligation may be highly specific: for example, a regulation may require specific assets to be deployed in the electricity network. In those circumstances, a DNSP will not have any choice as to the assets to be deployed. In those circumstances, the AER's task under cl 6.5.7(c) is more confined. It must still assess any proposed capex by reference to the

capex criteria, but the assessment would start from the position that the deployment of the assets is necessary and the assessment is confined to the efficient and realistic costs of deployment.

349 The second is an obligation stated as a general principle, where there may be various means of compliance with the obligation. The Obligations that SAPN relies on are said to be of that kind – they are, in substance, reasonableness obligations. A DNSP may choose or propose a particular means of complying with such an obligation. The task of the AER is to assess the DNSP's proposal in accordance with the capex criteria.

The nature of regulatory obligations

350 In order to address SAPN's arguments it is useful to make some observations on the approach to assessing different types of regulatory obligation under the capex objectives and capex criteria.

351 In the Tribunal's view it is first necessary to clearly identify the regulatory obligation or requirement associated with the provision of standard control service. There must be a real, direct and tangible connection – one that is not remote.

352 Secondly it is necessary to determine the character of the regulatory obligation or requirement to determine its scope, what it seeks to address and what it demands. There are likely to be at least three types of regulatory obligation, each having different characteristics, which the Tribunal discusses below.

353 Thirdly it is necessary to examine whether the proposed capex has a direct connection in responding to the regulatory obligation or requirement, having regard to its identified character, scope and requirements.

354 Finally it is necessary to assess whether the forecast capex satisfies the capex criteria in the discharge of the regulatory obligations or requirements, as those obligations or requirements have been characterised under the second and third steps.

355 In the Tribunal's view there are arguably at least three types of regulatory obligation or requirement to which this approach may be applied. The first is one that imposes an express and specific direction, such that there is only one means of compliance, with fixed and determined costs. A second type of regulatory obligation is one that imposes a specific obligation, but does not specify the means of compliance so that costs will vary with the

method of compliance employed. A third type is one that adopts a principled approach – specifying only overarching outcomes that must be achieved, leaving considerable discretion as to the approach adopted.

356 Even in the case of the first type of obligation, compliance with all the above steps must still be demonstrated. The express nature of the obligation does not of itself exempt it from consideration under the capex criteria. However in practice, satisfaction of the capex criteria is likely to follow relatively easily. This is because, for instance it would not be prudent to disregard an express regulatory obligation risking breach of that obligation with the consequences that may follow from that breach. Similar considerations apply to the assessment under the efficiency limb of the capex criteria.

357 For the most part the approach to the second and third types can be taken together. The Tribunal considers that the Obligations relied on by SAPN are of the third kind because the legislation underpinning them adopts a principled approach – broadly to take reasonable steps concerning safety.

358 The Tribunal is not suggesting it is necessary to classify obligations in this way. It employs that approach here merely as a convenient analytical framework against which to examine the competing arguments of the parties.

359 This third type of principled obligation raises some obvious difficulties in applying cl 6.5.7. First, if the regulatory obligation does not specify what specifically is to be done, then how does one determine that an action taken is directly attributable to the discharge of that obligation? Secondly, as there are many means of compliance, what factors ought to be considered in determining a suitable mix of measures that ensures compliance? That takes on some importance because different measures will invariably involve different costs. Third, what are the "model" measures and corresponding costs against which the capex criteria, particularly prudency and efficiency, are to be assessed when there is nothing expressly mandated?

360 It is correct, if unhelpful in practice, simply to suggest that the answer to these questions is to consider the capex objectives and capex criteria within their terms. Ultimately of course that is what must occur as it is necessary to comply with both. However it is difficult to arrive at an answer – at least at the outset of one's consideration – by simply employing that approach. This is because principled regulation carries with it the difficulties to which we have alluded.

361 In the case of principled regulation there is invariably some overlap between the capex objectives and capex criteria. For instance, whether the capex objectives have been discharged raises considerations such as what steps have been taken by other DNSP's, what is generally accepted in the industry, what alternatives are available, what has occurred in other jurisdictions and the like. These questions also go to the issue of what is prudent and efficient under the capex criteria. There is some fluidity between the capex objectives on the one hand and the capex criteria on the other, even though they are separate features of cl 6.5.7 of the NER.

362 As counsel for the AER said, the test for determining whether the capex objectives have been satisfied have components of prudency and efficiency built into them, even though those expressions expressly appear only under the capex criteria (Transcript, p 231):

> *On page 82, in the second full paragraph down there's a reference to the AER assessing the applicant's revised Bushfire Mitigation Program in two steps: (1), we assessed SA Power Network's compliance with its safety related obligations and its ability to manage bushfire risk. And (2), we assessed the prudency and efficiency of the three projects.*
>
> *It's tempting to put a label on paragraphs 1 and 2, labelling paragraph 1, 6.5.7(a) decision, the regulatory obligation decision, and labelling 6.5.7(c) the capex criteria decision. And plainly those two points do go to some extent can be divided in that way. The point I wanted to emphasise to the tribunal and the tribunal said, as it plays out in the reasons, one can't completely divorce those two steps, and I don't want to completely divorce those two steps. And one of the critical reasons one can't separate the two steps is the regulatory obligations that we're dealing with all have notions of reasonableness and prudence built into them.*
>
> *So that when the AER comes to consider in what way or to what extent is this asset replacement program required – is a regulatory obligation or required, it's looking at a question of prudency and reasonableness. If one is applying the same question under the capex criteria, one is applying the same sort of questions.* ***That's not to say there aren't still two questions, but it is to say that some of the considerations that will take into account in dealing with each aspect are very similar because of the nature of the regulatory obligations that you're dealing with.*** *So there can be questions does this point, which we will come to in a moment, go to defining the regulatory obligation or does it go to the capex criteria? It may well go to both, and quite appropriately go to both.*
>
> (Emphasis added).

363 Although the capex objectives and the capex criteria involve two separate and distinct considerations, the Tribunal agrees with the AER that in the case at least of principled regulation (under consideration here) it is not possible in practice to completely separate those two steps for the reasons mentioned above. More precisely, some of the features underpinning the capex criteria, particularly prudency and efficiency, may also be relevant in

determining whether the capex objectives have been discharged because they emerge naturally in considering principled obligations.

364 It is with these observations that the Tribunal now turns to consider SAPN's primary challenge.

365 As indicated, it is undisputed that the AER approached the task in two steps. It first assessed SAPN's compliance with its safety related obligations, and its ability to manage bushfire risk. Secondly it assessed the prudency and efficiency of the Bushfire Mitigation Capex Program.

366 As indicated, SAPN argued that that AER should have assessed whether the proposed Bushfire Mitigation Capex Program was required to comply with a regulatory obligation or requirement or alternatively, was required to maintain the safety of the distribution system. Having done that, SAPN argues that the AER was then required to be satisfied that the Bushfire Mitigation Capex Program met the capex criteria.

367 Implicit in SAPN's submission is that the AER has failed to assess whether the proposed Bushfire Mitigation Capex Program was required to comply with a regulatory obligation or requirement. That the AER's assessment of SAPN's compliance with its safety related obligations, and its ability to manage bushfire risk is not a substitute for undertaking this assessment which is required by cl 6.5.7(a)(2).

368 The Tribunal agrees with SAPN that the AER is required by cl 6.5.7(a) to assess whether the proposed capex is required to comply with a regulatory obligation or requirement. However it rejects SAPN's argument that the AER failed to do this.

369 In the AER's summary of its findings and conclusions on capex (Final Decision, Attachment 6, Table 6.2) there are a number of references to compliance with regulatory obligations and the capex criteria, including prudency and efficiency. Immediately following this summary the AER said (Final Decision, Attachment 6, pp 6-11):

> *We consider that overall our capex forecast addresses the revenue and pricing principles. In particular, we consider our overall capex forecast provides SA Power Networks a reasonable opportunity to recover at least the efficient costs it incurs in:*
>
> - *providing direct control network services, and*
> - *complying with* ***its regulatory obligations and requirements****.*
>
> *As set out in appendix B we are satisfied that our overall capex forecast is consistent with the NEO. We consider our decision promotes efficient investment in, and efficient operation and use of, electricity services for the long term interests of*

> *consumers of electricity.*
>
> *We also consider that overall our capex forecast addresses the capital expenditure objectives. In making our final decision, we specifically considered the impact our decision will have on the safety and reliability of SA Power Networks' network. We consider this capex forecast should be sufficient for a prudent and efficient service provider in SA Power Networks' circumstances to be able to maintain the safety, service quality, security and reliability of its network consistent with its current obligations.*
>
> (Emphasis added).

370 Later, in describing its approach, the AER also alludes to compliance with regulatory obligations or requirements, in addition to the capex criteria (Final Decision, Attachment 6, pp 12-13).

371 Specifically in considering the Bushfire Mitigation Capex Program the AER also said (Final Decision, Attachment 6, p 81):

> *We are not satisfied that the additional capex for the proposed bushfire mitigation program is efficient additional capex that a prudent operator would require to maintain the reliability and safety of the network, or to comply with* ***regulatory obligations or requirements****.*
>
> (Emphasis added).

372 The passage suggests the AER was aware of the need to ensure the proposed capex was necessary to comply with a regulatory obligation or requirement. In the summary which followed (at p 82) the AER referred to a number of obligations arising under the Electricity Act and the WHS Act. These provisions are considered in some detail by the AER in the pages which followed under the heading "SA Power Networks' regulatory obligations and requirements". Leaving aside SAPN's challenge to the AER's construction of these provisions (discussed later in these Reasons for Determination), these are relevantly the regulatory obligations contended by SAPN. The fact that they have been considered in this manner, suggests the AER was mindful of the need to assess compliance with a regulatory obligation or requirement.

373 It is true that some of the passages quoted by the Tribunal and others that appear in the Final Decision clearly show that the AER was very much focused on the safety related obligations as well as the tests of prudency and efficiency. That is, in many respects they appear to run together. To the extent that they do, the Tribunal is satisfied from having considered the context, they arise as a natural consequence of considering principled regulation of this type as explained in our earlier observations. Namely that the issues of prudency and efficiency

arise naturally from this type of regulation. In the Tribunals' view that does not demonstrate the errors contented by SAPN.

374 In reaching this view the Tribunal is also mindful of the following comments of a differently constituted Tribunal in *Application by EnergyAustralia and Others* [2009] ACompT 8 at [312(i)] ('***EnergyAustralia***'):

> *The Tribunal is mindful that in considering the reasons of the AER, it is important to recall that the reasons are there to inform and are not to be scrutinised in a over-zealous way seeking to discern error from the way in which the reasons are expressed: see eg Minister for Immigration and Ethnic Affairs v Wu Shan Liang (1996) 185 CLR 259, 272. It is all a matter of degree, as an obvious inadequacy of the reasons may amount in any given case to an error in the process of fact finding or the exercise of a discretion. The Tribunal refers to its comments in the Application by EnergyAustralia (2009) ACompT 7 at [16].*

375 The Final Decision is a substantial document intended to explain the AER's reasons to a wide audience comprising many different stakeholders. As the Tribunal indicated in *EnergyAustralia*, the Final Decision should not be approached in an overly rigid way.

Change in the nature of the regulatory obligations and requirements over time

376 A related challenge is that the AER was in error in construing cl 6.5.7(a)(2) of the NER in such a way that it is enlivened only where there is an express amendment to the regulatory obligations or requirements applicable to SAPN. That is, the AER failed to have regard to whether the objective content of the Obligations had changed, where there was no statutory amendment. Accordingly, SAPN asserts that the AER failed to properly identify the regulatory obligations and requirements that applied to SAPN and did not assess the Bushfire Mitigation Capex Program in accordance with the capex objectives.

377 In particular, SAPN argues that the AER was in error by determining that the content of the Obligations was not altered by, among other things:

- the findings of the Victorian Bushfire Royal Commission ('**VBRC**') and the Powerline Bushfire Safety Taskforce ('**PBST**') concerning the ignition risks associated with the operation of reclosers and ageing infrastructure assets in BFRAs and the steps which can and should be taken to minimise those ignition risks;
- "good electricity industry practice" as defined Chapter 10 of the NER; and
- improvements in knowledge and technology and authoritative expert opinion.

378 The AER disagrees that it approached its decision in that manner.

379 As indicated, the AER agrees with SAPN's submission that the Obligations are indeterminate in scope and may be satisfied by conduct of various kinds.

380 Both SAPN and the AER refer to the following passage in the Final Decision in support of their respective positions (Attachment 6, pp 83-4):

> *In the preliminary decision, we acknowledged SA Power Networks' initiatives to date in reviewing its current practices and procedures for bushfire risk management following the release of the recommendations of the VBRC and the strategies proposed by the PBST. However we noted that there had not been a change to its regulatory obligations and safety standards related to bushfire risk that would justify additional expenditure. We also noted that the evidence before us indicated that it was compliant with its existing obligations.*

381 For SAPN, the reference to there being no "change" in the relevant obligations and safety standards is evidence that the AER only considered whether there had been a change in the regulations, and not whether the content of those obligations had been influenced by other events. Conversely, the AER relies on this passage to suggest that SAPN has mischaracterised its approach – including because the AER's focus on there being no change to regulatory obligations was to direct attention to whether the additional expenditure was justified.

382 Consistent with the comments in *EnergyAustralia* above, the Tribunal does not approach this task by reading the Final Decision in an overly rigid way. It is also not prepared to determine this question merely by construing this single passage as if it were legislation. It is necessary to look at the Final Decision in its totality.

383 The substantive discussion of the Bushfire Mitigation Capex Program commences at paragraph B.5 of Attachment 6 of the Final Decision. Shortly into this paragraph the AER said (at pp 81-2):

> *We are not satisfied that the additional capex for the proposed bushfire mitigation program is efficient additional capex that a prudent operator would require to maintain the reliability and safety of the network, or to comply with regulatory obligations or requirements. As such, we do not accept SA Power Networks' capex proposal to spend $38.9 million on its bushfire mitigation program. We find that SA Power Networks' revised regulatory proposal, and our alternative estimate, already factor in a sufficient level of capex related to its business-as-usual bushfire risk management.*
>
> *As we noted in the preliminary decision, the evidence before us indicates that SA Power Networks is meeting its existing obligations, and historically, its bushfire risk management has been effective. The Office of the Technical Regulator has confirmed that SA Power Networks currently satisfies existing regulations and standards relating to managing bushfires.*

384 The reference in this passage to SAPN meeting "its existing obligations, and historically, its bushfire risk management has been effective" is suggestive of two messages. One, as SAPN contends, is that the AER did not consider how existing obligations may have changed as a result of changing circumstances, outside of any legislative change. However it is equally consistent with the AER's view that the words import existing statutory obligations as well as what those obligations require in light of any changed circumstances or events.

385 In the summary of its decision the AER refers to the legislative provisions which underpin the Obligations and the practice of Victorian networks, among other things (Final Decision, Attachment 6, pp 82-3). The AER expressly acknowledged SAPN's initiatives in reviewing its current practices for bushfire risk management, following the release of the recommendations of the VBRC and the strategies proposed by the PBST. In the Preliminary Decision the AER also considered a number of reports that bear on this topic and the actions taken in Victoria in response to the VBRC.

386 After presenting its summary in the Final Decision, the AER then referred to the Obligations and SAPN's contention that the Obligations are informed by factors which include the findings of the VBRC and the PBST. Then in considering SAPN's express legislative obligations the AER said (Final Decision, Attachment 6, p 86):

> *On the information before us, we do not consider that SA Power Network' current bushfire mitigation practices or expenditures are inadequate to meet its obligations under Section 60(1) of the Electricity Act …*
>
> *Rather, the evidence before us indicates that SA Power Networks is meeting its existing regulatory and safety obligations.*
>
> *As we have noted, the Office of the Technical Regulator in South Australia has advised that SA Power Networks is meeting its current bushfire obligations.*

387 The reference to SAPN meeting its "existing" regulatory obligations must be viewed in the context that what was under consideration here was the regulatory obligations under the Electricity Act and other relevant obligations. Although resorted to by SAPN in support of its position, it can equally be viewed as a short form reference to the fact that SAPN's obligations were being assessed in the timeframe in which the Final Decision was being made, not at another time. That is, currency in this context does not necessarily carry with it the criticism advanced by SAPN that the AER failed to consider how the character of that obligation may change over time.

388 The AER also separately considered the obligations under the WHS Act. In considering the WHS Act the AER said (Final Decision, Attachment 6, p 94):

> *We do not consider that SA Power Networks' current obligations under the WHS Act justify the additional expenditure sought through the bushfire mitigation program. …*
>
> *The Energy Users Association of Australia (EUAA) submitted that, to its knowledge, the WHS Act has not been amended recently and does not contain any new obligations in relation to SA Power Networks management of risk. We agree with the EUAA. On the information before us, we do not consider that SA Power Networks is currently unable to meet its obligations under the WHS Act or that its obligations have changed such that additional capex is required to meet them.*

389 This passage also contains the expression "current" – presumably carrying with it the same defect in construction advanced by SAPN.

390 Additionally, to the specific passages to which the Tribunal has referred, the AER also undertook an extensive analysis of the level of bushfire risks in South Australia, Victoria and in other parts of the country, concluding (Final Decision, Attachment 6, p 94):

> *As we noted above, the evidence before us indicates that SA Power Networks is meeting its obligations under the Electricity Act. SA Power Networks has explained that it has a comprehensive and mature Bushfire Risk Management System (BRMS). This system has been in place since the early 1980s after investigations into the impacts of the 1983 Ash Wednesday fires in South Australia, and has been progressively improved since.*
>
> *In this section, we explain that we do not consider SA Power Networks has provided sufficient evidence that demonstrates its fire start risk has increased.*

391 The AER compared for example the measures taken in Victoria following the VBRC and the conditions in South Australia to determine whether the same measures ought to be employed in South Australia. Much as it did in the Preliminary Decision, the AER examined a number of reports as part of its analysis. The AER also examined information on fire-starts and differences in network design. It did so with the stated aim of determining whether the Bushfire Mitigation Capex Program was consistent with good electricity industry practice under cl 5.2.1(a) of the NER but also with obligations flowing from the WHS Act.

392 The nature and extent of the analysis undertaken by the AER is significant, not just for the conclusions the AER draws from it (much of it challenged by SAPN) but also for what it reveals about the analysis which the AER considered it was required to undertake. In particular the degree of analysis undertaken on fire conditions in Victoria and South Australia flows directly from the need to assess whether measures taken in Victoria after the VBRC ought to be applied in South Australia. The AER addressed these issues despite the fact that

the Final Report of the VBRC was delivered many years earlier in 2010 (and the report of the PBST in 2011). It is suggestive that the AER considered it was required to assess not only whether there had been a regulatory change but also how other events, outside of regulatory changes (like the outcomes of the VBRC) should be approached in assessing SAPN's Bushfire Mitigation Capex Program. The fact that the AER took this approach lends a deal of credibility to the AER's view that it was mindful of the correct approach to construction of the Obligations.

393 Having considered the Final Decision as a whole and for the reasons given above, the Tribunal is satisfied that the AER did not disregard the full impact of other events and circumstances on SAPN's obligations.

The VBRC, the PBST and the Jacobs report

394 SAPN also considers the AER was in error in failing to consider whether the Obligations were altered by the findings of the VBRC and the PBST or alternatively gave insufficient weight to the evidence advanced by SAPN from the VBRC and PBST. This is part of SAPN's overall criticism of the AER's approach in determining whether the capex was required by a regulatory obligation or requirement.

395 The Tribunal has effectively addressed the first part of this criticism in its consideration of the overall construction point above. The numerous passages the Tribunal referred to in considering that point leaves no doubt that the AER considered the findings of the VBRC and PBST and dealt with them extensively. It is unnecessary to address them again. That part of SAPN's argument fails.

396 The second part of SAPN's criticism is that the AER gave insufficient weight to the findings of the VBRC and PBST.

397 Accompanying its proposal to the AER, SAPN provided a report prepared by Jacobs: Recommended Bushfire Risk Reduction Strategies for SA Power Networks, Final Report October 2014. Jacobs considered current research, the VBRC and PBST reports, as well as bushfire risk management initiatives undertaken by DNSPs in other Australian states.

398 Jacobs considered it prudent for SAPN to implement additional risk mitigation strategies for the following reasons (at p 33):

- *The VBRC found that the events of Black Saturday called for "material reduction in the risk of bushfire caused by the failure of electrical assets". A*

similar expectation is likely to apply within South Australia;

- *The subsequent PLBSTF identified a range of initiatives to reduce the likelihood of powerlines starting bushfires. Some of these are applicable to the distribution network in South Australia and are likely to now be considered as good industry practice within Australia; and*
- *General community expectation is that bushfire starts from electricity network assets are preventable by the network owner. Litigation against network owners has arisen from numerous bushfire events in Victoria and Western Australia in recent years.*

399 Jacobs then provided a detailed strategy analysis, recommending a number of measures SAPN should implement and the costs attributable to them (see pp 34-7).

400 SAPN argues that the AER should have accepted the findings of these reports, as they strongly support a conclusion that the Bushfire Mitigation Capex Program is a regulatory obligation or requirement. Instead the AER sought to distinguish between the requirements of Victorian DNSPs and SAPN, by suggesting that the findings made by the VBRC and PBST in relation to Victoria are not directly applicable to South Australia, because of greater overall areas of bushfire risk in Victoria, differences in network construction, and the statutory ability of SAPN (not Victoria) to cut off power in high bushfire risk situations. In any event, SAPN argues that the evidence does not support the AER's position.

401 SAPN also suggests that its proposal for the replacement of reclosers is more targeted than that suggested by the PBST. Additionally the fact it has adopted a number of network construction approaches which minimise the ignition risks associated with the operation of a distribution system in a BFRA does not mean it should ignore the demonstrated risks associated with the use of manual reclosers, RAGs and CLAHs in HBFRAs.

402 SAPN is critical of a number of subsidiary points relied on by the AER for distinguishing between the position in Victoria and South Australia. SAPN's criticism that the AER did not give adequate weight to the findings of the VBRC and PBST, is addressed below, as part of the Tribunal's consideration of those subsidiary points. However before doing so it is important to make a few comments in response to SAPN's primary submission that these reports, particularly the Jacob's recommendations, should have been adopted by the AER, almost as a matter of course.

403 The VBRC was asked to inquire into and report on the causes and circumstances of the fires that burned in January-February 2009, the preparation and planning before the fires, all aspects of the response to the fires, measures taken in relation to utilities and any other

matters it considered appropriate. It made 67 recommendations for reform covering areas including emergency and incident management, planning and building, land and fuel management and – relevantly to this matter – eight recommendations applying to electricity caused fire.

404 As is the nature of a Royal Commission, its task is to inquire, report and make recommendations. Ultimately it is for government to decide whether to adopt those recommendations, to determine how they should be adopted and the timelines by which that should occur. The fact that a Royal Commission makes a recommendation does not of itself mean that it will be adopted. Of course, its recommendations also have no binding effect until they are implemented, usually through legislative measures. No greater weight can be placed on the recommendations of a Royal Commission. The Tribunal is aware that some of the recommendations of the VBRC have been implemented while others are ongoing.

405 The PBST was established to recommend to the Victorian Government how two electricity-related recommendations of the VBRC – recommendation 27 (progressive replacement of 22kV and SWER powerlines) and recommendation 32 (disabling or adjustment of powerline reclose functions) should be implemented.

406 In relation to recommendation 27, the PBST provided the following guidance (p 9):

> *Electricity distributors implement the 2009 Victorian Bushfires Royal Commission's recommendation 27 by:*
>
> *(a) installing new generation protection devices to instantaneously detect and turn off power at a fault on high fire risk days:*
>
> - *on SWER powerlines in the next five years (new generation SWER ACRs)*
> - *on 22kV powerlines in the next 10 years (rapid earth fault current limiters)*
>
> *(b) targeted replacement of SWER and 22kV powerlines with underground or insulated overhead cable, or conversion of SWER to multi-wire powerlines, in the next 10 years*
>
> *to the level of between $500 million and $3 billion, consistent with the package of measures selected by the Victorian Government. These should be implemented in the highest fire loss consequence areas first.*
>
> *Any new powerlines that are built in the areas targeted for powerline replacement should also be built with underground or insulated overhead cable.*

407 The PBST's recommendation provides for several means of compliance with implementation packages ranging in cost as indicated within the recommendation.

408 In relation to recommendation 32, the PBST recommended that Electricity distributors adjust the protection systems for 22kV and SWER powerlines based on the severity of the day and the fire loss consequence of the area, as further described in that recommendation. The PBST made other recommendations to support this proposal. The Victorian Government embarked on an implementation program in response to the PBST recommendations.

409 As indicated, the VBRC and PBST made several recommendations in relation to the issues experienced in Victoria. As important as those recommendations may be, they have no force of themselves. It was the decision of the Victorian Government to implement them in that State in response to the VBRC which it established. This is the context in which the recommendations came to have a life in Victoria. The Tribunal therefore rejects SAPN's suggestion that the AER ought to have adopted the findings and recommendations of the VBRC and PBST in the absence of them being given any express regulatory recognition in South Australia.

410 SAPN's criticism is that even if they did not apply as a matter of statutory force, the AER was obliged to consider their application in South Australia as bearing on the Obligations. However as the Tribunal has already noted, the AER did consider the VBRC and the PBST extensively in its Final Decision.

Distinguishing the findings in Victoria

411 The way in which the AER considered these reports is also challenged by SAPN. Specifically the AER's approach in distinguishing the findings in Victoria because of greater overall areas of bushfire risk in Victoria, differences in network construction, and the statutory ability of SAPN (not Victoria) to cut off power in high bushfire risk situations.

412 SAPN maintains that the AER wrongly focused upon a comparison of the overall area of bushfire risk throughout Victoria and South Australia, when the only relevant comparison should be between HBFRAs in South Australia and Victoria. That is because SAPN's Bushfire Mitigation Capex Program recommends installation of SCADA reclosers and surge arrestors specifically in HBFRAs within South Australia, where SAPN's distribution system operates. SAPN maintains that where the VBRC and PBST made recommendations relating to HBFRAs in Victoria, those recommendations properly inform bushfire assessment in HBFRAs in South Australia.

413 SAPN argues it is not necessary that the underlying bushfire conditions or the network infrastructure be identical for the recommendations properly to inform a bushfire mitigation program in South Australia. The AER's conclusion that overall there are more areas of high bushfire risk in Victoria than South Australia is said not to be on point.

414 It is undisputed that the AER examined closely the difference in bushfire risk levels in Victoria and South Australia and the differences in network construction between Victoria and South Australia. Indeed it is that review of which SAPN is critical.

415 The AER asserts that the question whether certain recommendations made by the VBRC and the PBST should be considered to now constitute a mandatory safety obligation in South Australia, or whether they have now become good electricity industry practice, is a matter that is informed by a comparison of the geographic conditions, and consequential bushfire risk, as between the Victorian rural network areas and the rural parts of SAPN's network area.

416 The AER also maintains that local geographic and network conditions is relevant in considering any interregional translation of "reasonable steps" under the following definition of good electricity industry practice under the NER (Ch 10):

> *The exercise of that degree of skill, diligence, prudence and foresight that reasonably would be expected from a significant proportion of operators of facilities forming part of the power system for the generation, transmission or supply of electricity under conditions comparable to those applicable to the relevant facility consistent with applicable regulatory instruments, reliability, safety and environmental protection. The determination of comparable conditions is to take into account factors such as the relative size, duty, age and technological status of the relevant facility and the applicable regulatory instruments.*

417 It is said to be equally relevant to the application of s 60(1) of the Electricity Act and s 19 of the WHS Act.

418 In the Final Decision the AER examined in detail a number of matters including fire-start data and vegetation, fire intensity and fire risk maps in concluding that SAPN faced a lower bushfire risk than its Victorian counterparts. The AER maintains that a comparison of the fire risk areas reveal a clear difference of degree in vegetation density, fire intensity and bushfire risk between the South Australian HBFRAs and the highest-risk areas in Victoria. That comparison is said to be relevant to any assessment of whether the bushfire mitigation measures recommended in Victoria should be adopted in South Australia and the costs associated with their implementation in South Australia.

419 In the Tribunal's view it was open to the AER to consider the geographical, environmental and other differences in forming a view whether the recommendations of the VBRC applied in South Australia and how they might be applied. Once the automatic application in South Australia of the recommendations of the VBRC and PBST is rejected – as the Tribunal has indicated above ought to be the position – the issue of whether those measures constitute obligations or good electricity practice in South Australia must stand or fall on a full and proper consideration of the conditions and circumstances in South Australia compared to those in Victoria.

420 The Tribunal sees no objective reason why, in that circumstance, the AER ought to have excluded from its consideration geographical, environmental and other factors that bear on the bushfire risk levels in South Australia. Indeed a full and objective assessment required it to do so. Having embarked on that course, the AER undertook a comprehensive analysis spanning several pages of the Final Decision and drawing on several reports and published data. There can be no criticism that it gave insufficient attention to the factors which the Tribunal has indicated were open to it to consider. The Tribunal therefore rejects this plank of SAPN's challenge.

Additional matters supporting a regulatory obligation or requirement

421 SAPN also argues that the AER was in error in relying on three additional matters in support of its determination that the Obligations did not require SAPN to undertake the Bushfire Mitigation Capex Program. Those matters are:

- SAPN's ability to turn-off power supply to appropriately manage bushfire risks;
- the absence of an increase in fire danger caused by electrical assets due to forecast climactic conditions; and
- SAPN's historically improving fire-start performance.

422 All three matters also go to the heart of the issue whether the Bushfire Mitigation Capex Program satisfied the capex criteria. It is convenient to deal with the capex criteria later in these Reasons for Determination.

423 The first of these factors (the ability to turn off the power supply) was also relevant to the AER's consideration of the application of the VBRC and PBST in South Australia.

424 As the Tribunal has already indicated, it was open to the AER to consider all relevant factors in determining whether those reports applied on South Australia. The ability to turn off the power supply was one such factor. Accordingly there was no error in the AER having considered it. That is sufficient in itself to dispose of SAPN's criticism of AER's reliance on this factor. Nevertheless the Tribunal makes some brief comments on it below as SAPN's concerns extend also to the manner in which this issue was taken into account by the AER.

The ability to turn off the power supply

425 Section 53(1) of the Electricity Act provides the capacity to switch off supply in the following terms:

> *(1) An electricity entity may, without incurring any liability, cut off the supply of electricity to any region, area, land or place if it is, in the entity's opinion, necessary to do so to avert danger to person or property.*

426 Section 53(2) provides that if an electricity entity proposes to cut off a supply of electricity in order to avert danger of a bush fire, the entity should, if practicable, consult with the Chief Officer of the South Australian Country Fire Service before doing so.

427 The AER determined that as SAPN is empowered to cut off the power on extreme fire danger days, it does not necessarily follow that the frequency of asset-caused fires will increase correspondingly with the forecast increase in the frequency of extreme fire danger days.

428 SAPN rejects this determination for three reasons. First, the ability to turn-off power supply was considered in detail by the PBST, which noted that similar powers existed in Victoria. The fact that a similar power exists undermines any distinction that the AER sought to draw between SAPN and Victorian DNSPs. Secondly, the requirement for consultation in s 53(2) limits the speed within which this could occur. Thirdly, disconnecting the power can result in a large number of customers losing power for approximately 7 hours, places risk on people who rely on appliances for medical and other reasons and may undermine the reliability and security of the network in times of fire danger. These were factors also identified by the PBST.

429 SAPN relied on references made by the PBST to the Electricity Distribution Code in Victoria authorising power to be switched off. It is unclear, at least from that passage of the PBST, what is the source and scope of that power. In that same passage the PBST also referred to, but ultimately dismissed, comments made by the Chief Fire Office that it had the power to switch off supply.

430 In any case, the terms on which the power to switch off supply is cast is not the only basis on which the AER relied. It was also aware of the risks associated with switching off power which SAPN identified. It is clear that the AER turned its mind to some of the consequences associated with switching off supply and the measures in place by SAPN to manage these consequences (Final Decision, Attachment 6, p 97):

> *Regarding the additional risks to the community of turning off the power, we note that SA Power Networks has communicated to its customers that they should be prepared and have plans in place to cope with a power outage. It also advises the media and advertises regularly during the warmer months. We consider SA Power Networks has taken appropriate steps to ensure that community risks are minimised in the event of a power outage.*

431 The AER also noted advice from SAPN that it has an agreed set of criteria and procedures for using its power, which has been discussed with the Country Fire Service and the South Australian Government.

Increase in fire danger days

432 SAPN argues that the AER was in error by determining that evidence provided by SAPN did not support a conclusion that an increase in extreme fire danger days will lead to more fires caused by SAPN's electricity assets.

433 SAPN points to evidence to the effect that over 90% of fire-starts occur in the hottest five months of the year strongly suggests a correlation between hotter weather and an increased risk of fire-starts. Additionally SAPN relies on evidence from the Bureau of Meteorology ('**BoM**') and CSIRO suggesting that the number of extreme fire danger days per year had increased by 1.7 to 2.5 times since 2000, with that increase expected to continue. SAPN says that the increase in hotter weather, combined with the increased potential for fire-starts during hotter weather, creates a clear inference that SAPN's infrastructure will cause more fires in future.

434 Therefore SAPN maintains it will be required to take additional steps to comply with the Obligations and maintain the safety of the distribution system. Accordingly the AER was in error in not giving proper regard, or giving insufficient weight, to that evidence.

435 It should be noted that SAPN points only to a correlation between hotter weather and an increased risk of fire-starts. Its stops short of suggesting causality. Similarly SAPN suggests the potential for fire-starts during hotter weather merely creates an inference that SAPN infrastructure will cause more fires in future – there is no suggestion of a clear and direct

correlation. Having put its arguments no higher than that, relatively little would be required from the AER to rebut it.

436 The AER considered SAPN's arguments. It noted that the overall decrease in annual fire-starts occurred during a period when the number of fire danger days increased. The AER also pointed to the same data from the BoM of fire danger days referred to by SAPN. However the AER concluded that this evidence, in addition to evidence of SAPN's fire-start performance relative to Victorian distributors indicates that SAPN is managing its current fire-start risk appropriately (Final Decision, Attachment 6, p 98). The Tribunal rejects SAPN's assertion that the issue was not considered or given insufficient weight by the AER.

Fire-start performance

437 SAPN contends that the AER was in error by determining that SAPN's historical fire-start performance was relevant in assessing whether the Bushfire Mitigation Capex Program met the capex objectives and the capex criteria.

438 SAPN submits that the requirement to maintain the safety of the distribution system, (particularly in the context of an increase in extreme fire danger days and fire-starts) requires continual improvement. It cannot be acceptable for SAPN to determine that its historical fire-start performance is good and therefore that it need not take further precautionary steps.

439 Further, if the Bushfire Mitigation Capex Program is a regulatory obligation or requirement, SAPN is required to undertake the Bushfire Mitigation Capex Program independently of any general change to SAPN's historical fire-start performance. In that circumstance, SAPN's historical fire-start performance has no bearing on whether the Bushfire Mitigation Capex Program should have been approved and the AER was in error by placing any weight on that issue.

440 The AER suggests that SAPN's contentions are internally circular – if SAPN's fire-start performance has been shown to be improving then the regulatory obligation should not oblige SAPN to undertake the proposed capex in the face of that improvement.

441 In the Tribunal's view, SAPN's contention goes to the central feature of its overall pleading, namely that the content of obligations change over time. To suggest that the requirement to maintain the safety of the distribution system requires continuous assessment embodies that central concept. As the Tribunal has already noted above, it is satisfied that the AER turned its mind to this central contention. SAPN has not demonstrated why that central contention

should be viewed any differently in relation to fire-start performance than any of the other factors the AER considered and why accordingly the Tribunal should reach a different conclusion.

442 Additionally SAPN's argument is that historical fire-start performance was relevant in assessing whether the Bushfire Mitigation Capex Program met both the capex objectives and the capex criteria. Even if SAPN were able to demonstrate that the Bushfire Mitigation Capex Program was a regulatory obligation or requirement that is not a complete answer to the inclusion of the proposed capex. The proposed capex must still satisfy the capex criteria. The requirement for "continual improvement" does not of itself discharge that requirement.

Construction of the Electricity Act and the NER

443 SAPN raised several arguments challenging the AER's interpretation of s 60(1)(b) of the Electricity Act and cl 5.2.1(a) of the NER.

Electricity Act

444 As noted above, s 60(1)(b) of the Electricity Act provides:

> *(1) A person who owns or operates electricity infrastructure or an electrical installation must take reasonable steps to ensure that–*
>
> *(a) the infrastructure or installation complies with, and is operated in accordance with, technical and safety requirements imposed under the regulations; and*
>
> *(b) the infrastructure or installation is safe and safely operated.*

445 SAPN's challenge stems from the following passage in the Final Decision where the AER said (Final Decision, Attachment 6, p 85):

> *Section 60(1) of the Electricity Act is a general safety obligation, which we consider must be considered against the context of other, more specific provisions of the Electricity Act.*

446 SAPN's contention is that the AER wrongly applied principles of statutory construction to read down s 60(1)(b) by reference to the other specific provisions in the Electricity Act. That is, the provisions referred to by the AER relate to discrete aspects of bushfire safety and do not expressly address all of the matters which could fall within the broad scope of s 60(1)(b). Those other specific provisions deal with insurance, compliance with the Safety, Reliability, Maintenance and Technical Management Plan, the capacity to turn off power and vegetation management.

447 In its Final Decision, the AER expressly addressed the specific provisions in the Electricity Act noted above (see Attachment 6, pp 85-6). It also relied on advice it received from the Office of the Technical Regulator ('**OTR**'), discussed below.

448 This consideration arose at that point in the Final Decision where the AER had noted SAPN's submissions in relation to its regulatory obligations, including the submission that s 60 imports broad objective standards of safety (see Attachment 6, p 84). The AER was therefore aware of SAPN's construction. Shortly after that – in the context of assessing whether the capex was required by a regulatory obligation – the AER turned to consider the specific Electricity Act provisions. It is hardly surprising that it would do so because those provisions impose specific, identifiable obligations for example relating to insurance and licensing. The AER needed to assess whether those specific obligations were being discharged.

449 Having considered the relevant parts of the Final Decision noted, the Tribunal concludes that the AER did not read down the general obligations imposed by s 60 of the Electricity Act as SAPN contends. The Tribunal is satisfied that the AER gave s 60 of the Electricity Act its full effect in its consideration of whether the proposed capex was required to satisfy a regulatory obligation.

450 Finally, SAPN asserts that the AER erred by placing reliance on a discussion with an OTR representative as a valid means of determining the content of SAPN's obligations under the Electricity Act.

451 The Final Decision notes advice from the OTR confirming that SAPN currently satisfies existing regulations and standards relating to managing bushfires. The AER then concludes (Final Decision, Attachment 6, p 86):

> *As we have noted, the Office of the Technical Regulator in South Australia has advised that SA Power Networks is meeting its current bushfire obligations. It is open for the technical regulator to review the material provided by SA Power Networks and their consultant Jacobs and determine whether formal changes to South Australian requirements are necessary. We would consider expenditure required to meet any new obligations either as part of the next reset process or as part of a cost pass through application from SA Power Networks.*

452 This conclusion follows several occasions in the Final Report where the AER relies on its own assessment in determining the content of SAPN's obligations. The Tribunal does not discern any suggestion that the AER effectively delegated the task of assessing the content of SAPN's Electricity Act obligations to the OTR. It is certainly the case (as the above passage shows) that the AER consulted with and took into account advice provided by the OTR.

SAPN has not raised any argument as to why it would be improper for the AER to do so, any more than it would be for the AER to receive input from any other person in making its decision.

Clause 5.2.1(a) of the NER

453 SAPN contends that the AER was in error by construing cl 5.2.1(a) of the NER as not imposing any augex obligation on SAPN and in construing the obligation as being limited to maintenance opex and repex programs only. As noted, the provision provides:

> *(a) All Registered Participants must maintain and operate (or ensure their authorised representatives maintain and operate) all equipment that is part of their facilities in accordance with:*
>
> *(1) relevant laws;*
>
> *(2) the requirements of the Rules; and*
>
> *(3) good electricity industry practice and relevant Australian Standards.*

454 SAPN's criticism is that the AER has placed too restrictive an interpretation on the phrase "maintain and operate" in this provision.

455 The following passage in the Final Decision highlights the approach taken by the AER (Attachment 6, pp 86-7):

> *We do not accept that the clause 5.2.1(a) good electricity industry practice obligation is a regulatory obligation or requirement that imposes any augmentation capex obligation on a network operator. Clause 5.2.1(a) relevantly requires that …*
>
> *That obligation specifies the standard to which a network operator must maintain and operate the equipment that is part of its distribution network facilities. It does not impose any obligation on a network operator to augment its existing facilities: at most, cl 5.2.1(a) might be seen to impliedly require a network operator to replace its existing equipment in the event that the equipment can no longer be maintained in accordance with good electricity industry practice or applicable standards.*

456 It will be noted that in the above passage the AER considered that the obligation under cl 5.2.1(a) does not extend to augmentation of the network. SAPN's criticism is that the phrase "maintain and operate", naturally extends to replacing out-dated infrastructure with more modern infrastructure over time. This reading is said to be supported by the use of the word maintain in conjunction with "good electricity industry practice". SAPN maintains that the definition expressly refers to a need for foresight in the operation of facilities, in the context of their technological status. It also requires SAPN to consider what would be expected following the findings of the VBRC and the PBST that relate to bushfire safety.

457 It is unnecessary for the Tribunal to determine the construction issue raised by SAPN. As indicated above, the Tribunal is satisfied that the AER did not apply a "static" concept of safety and also adequately considered the findings of the VBRC and PBST, in regards to their application in South Australia.

Maintaining the safety of the distribution system under cl 6.5.7(a)(4) of the NER

458 If the Bushfire Mitigation Capex Program was not required to comply with a regulatory obligation or requirement, SAPN's alternative contention is that it is required to maintain the safety of the distribution system under cl 6.5.7(a)(4) of the NER.

459 SAPN says that the objective of maintaining safety is a separate and distinct obligation to a regulatory obligation and should be considered in light of several matters, including AEMC's Rule Determination: National Electricity Amendment (Network Service Provider Expenditure Objectives) Rule 2013 ('**2013 Rule Determination**') at (ii) and 19. SAPN's position is that whilst the AEMC considers matters of reliability and security of supply should be limited by relevant regulatory obligations and requirements, safety should not. The Tribunal does not accept that construction.

460 The AEMC's determination arose in the context of an apparent lack of clarity in how the NER applied to a regulatory obligation relating for example to safety, compared with a safety obligation arising under objectives 3 and 4. The AEMC said in its 2013 Rule Determination (at p 10):

> *The Commission considers that, under the previous rules, it was not clear how the existing expenditure objectives worked together. This was because expenditure objective 2 required an NSP, in developing its regulatory proposal, to base its expenditure on complying with regulatory obligations or requirements for reliability, security, quality and safety. On the other hand expenditure objectives 3 and 4 could be interpreted such that they required this expenditure to be based on maintaining existing levels of reliability, security, quality and safety. This created a lack of clarity for the NSP when putting together its regulatory proposal and for the AER in determining an NSP's expenditure allowance in relation to these measures.*
>
> *In addition, the previous expenditure objectives could have been interpreted to require the expenditure in an NSP's regulatory proposal to be based on maintaining existing levels of reliability, security quality or safety, even where:*
>
> - *an NSP was performing above the required standards for these measures, or where*
> - *the required standards for these measures were lowered.*
>
> *The same issue arose when the AER determined the expenditure allowance.*

461 The AEMC then commented that in light of this problem, complying with standards in regulatory obligations or requirements is the appropriate objective for these measures. Nevertheless the AEMC did not consider it appropriate to amend the expenditure objectives for safety. This is because it considered that current levels of safety may appropriately have been influenced by safety standards in voluntary industry codes or Australian standards in addition to regulated standards. The AEMC's concern is that doing so could risk inadvertently reducing the level of safety delivered. Alternatively it could require those existing non-regulated standards to be moved to regulation to avoid any unintended reduction in safety levels (2013 Rule Determination, pp 10-11).

462 The AEMC said that where there are no regulatory obligations or requirements in relation to reliability, security, quality or safety then the issue of how the existing objectives work together does not arise. That is, in the absence of standards being set by the jurisdiction, the objective will be to maintain previous performance (2013 Rule Determination, p 11). The Tribunal does not understand the AEMC to be suggesting that expenditure on safety is in a sense "open ended".

463 SAPN also maintains that the safety obligation in cl 6.5.7(a)(4) is informed by the VBRC, the PBS and the Jacobs report. The obligation under cl 6.5.7(a)(4) is nonetheless an obligation relating to safety of the distribution system and in that sense has characteristics in common with the safety requirements said to arise under the Obligations.

464 The Tribunal has already traversed the submissions of SAPN in relation the VBRC, PBST and the Jacobs report in its consideration of the safety issues arising as a regulatory obligation or requirement. Therefore it is unnecessary to consider them again here. The Tribunal rejects SAPN's argument.

Compliance with the capex criteria

465 It is undisputed that the Bushfire Mitigation Capex Program must also satisfy the capex criteria.

466 SAPN contends that the AER was in error in concluding that the Bushfire Mitigation Capex Program did not satisfy the capex criteria. Specifically that the AER was in error in finding that:

(a) a sufficient level of capex related expenditure had already been provided for "business-as-usual bushfire risk management", when there was no specific or identifiable "business-as-usual bushfire risk management" capex allowance;

(b) SAPN was required to provide, but had not provided, a cost-benefit analysis in respect of the Bushfire Mitigation Capex Program; and

(c) the driver for the Bushfire Mitigation Capex Program was replacement based on age and condition (repex) that could be addressed using SAPN's repex allowance.

Business as usual bushfire risk management

467 SAPN's criticism is that the expression "business-as-usual bushfire risk management" is not found in the NEL, the NER, or the AER's guidelines. Further, the Final Decision did not specify or identify any "business-as-usual bushfire risk management" capex allowance.

468 It is uncontroversial that the expression "business-as-usual bushfire risk management" is not found in the NEL or the NER.

469 The expression "business-as-usual" appears in several places in the Final Decision. One such passage on which SAPN relies provides (Attachment 6, pp 81-2):

> *We are not satisfied that the additional capex for the proposed bushfire mitigation program is efficient additional capex that a prudent operator would require to maintain the reliability and safety of the network, or to comply with regulatory obligations or requirements. As such, we do not accept SA Power Networks' capex proposal to spend $38.9 million on its bushfire mitigation program. We find that SA Power Networks' revised regulatory proposal, and our alternative estimate, already factor in a sufficient level of capex related to its business-as-usual bushfire risk management.*

470 It is useful to look at the other parts of the Final Decision to gain a better understanding of what the AER intended to convey by that expression.

471 In addition to the passage noted above, the expression is used in several other places. For example, it emerges in the AER's consideration of historic fire-start performance. There the AER finds (Final Decision, Attachment 6, p 97):

> *Evidence provided by SA Power Networks shows that it has improved its fire-start performance to date using business-as-usual expenditure, and has done so during a period of increasing bushfire risk. The evidence further supports the view that SA Power Networks does not require additional expenditure to meet the capex criteria.*

472 The AER also used that expression in determining whether the business-as-usual approach to repex will provide SAPN with sufficient capex to manage the replacement of its assets and meet the capex objectives. Also in relation to the installation of modern surge arresters, the AER said that SAPN had been given additional business-as-usual repex that addresses increased asset replacement needs.

473 In its context, the Tribunal finds that the expression was used by the AER to refer to SAPN's existing asset replacement practices (particularly SCADA reclosers and surge arrestors) addressed by the repex forecast. Clearly the AER was using the expression as a shorthand reference to this and was not suggesting it is a requirement flowing from the NEL or NER.

474 Beyond this, SAPN also asserts that the AER did not specify or identify any "business-as-usual bushfire risk management" capex allowance. SAPN says it has not installed SCADA reclosers and surge arrestors at end of life using its repex budget. Only part of the cost of replacing manual reclosers with SCADA reclosers at end-of-life is funded through repex, namely that proportion of the cost equal to replacement with a modern equivalent. SAPN therefore argues it is an error to suggest that it could fund SCADA reclosers and surge arrestors through its repex allowance.

475 SAPN's concern is not simply whether the repex was adequate to fund SCADA reclosers and surge arresters. It is also that the AER was not mindful that the Obligations import changes in circumstances (including in relation to safety) and therefore the "business-as-usual" approach adopted by the AER is incapable of responding to that construction.

476 The Tribunal has already concluded that the AER was aware of and had regard to the fact that the Obligations may change over time. Once this is accepted, business-as-usual bushfire risk management must be viewed for the shorthand reference which we consider the AER intended it to convey. In that context, the AER appears to have proceeded on the basis that the business-as-usual approach would be sufficient for SAPN to meet its safety obligations (Final Decision, Attachment 6, p 77):

> *We are satisfied that the business as usual approach to repex will provide SA Power Networks with sufficient capex to manage the replacement of its assets and meet the capex objectives of maintaining safety, reliability and security of the distribution system. The business as usual approach takes into account the service provider's recent replacement practices, together with information on the age of its current stock of assets, to estimate the replacement volumes and expenditure the service provider business is likely to require if it maintains its current asset replacement practices over the next period. As noted in the Expenditure Forecast Assessment Guideline, we consider that its replacement practices in the last period were*

> *appropriate to allow the business to meet the capex objectives. We consider that adoption of the business as usual estimate approach means these asset replacement practices will continue to allow the businesses to meet the capex objectives.*

477 Although SAPN undoubtedly rejects the adequacy of the repex component of the total capex forecast, the AER reached a position of satisfaction having considered what was necessary to discharge SAPN's capex objectives, consistent with the prudency and efficiency requirements of the capex criteria. That involved the exercise of some judgement. The Tribunal is not satisfied that the SAPN has mounted any arguments to suggest this judgement was not open to the AER.

Cost-benefit analysis

478 SAPN contends that the AER was in error by determining that SAPN was required to provide, and had not provided, a cost-benefit analysis in respect of the Bushfire Mitigation Capex Program. It is undisputed that the SAPN did not provide a cost-benefit analysis, though it says it provided sufficient information to the AER to enable the AER to undertake a cost-benefit analysis. The implication is that if a cost-benefit analysis was indeed required, then the AER had before it information to undertake that analysis, but failed to do so.

479 SAPN refers to the AER's Explanatory Statement to the Expenditure Forecast Assessment Guideline. The Better Regulation Guidelines suggests a cost-benefit analysis is typically required by the AER to demonstrate that forecast expenditure meets the efficiency and prudency criteria in the NER. SAPN indicates that the Better Regulation Guidelines make clear that a cost-benefit analysis allows for a quantitative assessment of the overall monetary costs of programs against their overall monetary benefits to consumers, to determine which program provides the most net benefit.

480 SAPN's position is that such a cost-benefit analysis is inappropriate where the program relates to network safety. This is because the cost to be considered is in monetary terms and the benefit to be considered is not only economic, but includes the prevention of loss of life or serious injury. Monetary costs cannot be quantitatively compared with loss of life and serious injury, and that comparison necessarily requires a level of subjective or qualitative assessment. In such a circumstance SAPN says that a strict comparison of monetary costs and benefits contemplated by the Guideline is not possible and should not be required.

481 The Tribunal rejects that argument. It is common knowledge that courts are regularly called on to ascribe a monetary value to life and injury in the form of compensation for personal

injuries. As unfortunate as it may be, it is possible to place a monetary value on life and injury. In the context of this matter, the capex criteria in the NER do not draw any distinction between costs related to safety or other capex costs. This suggests that safety related costs must run exactly the same efficiency and prudency gauntlet as any other claimed capex. In that context the requirement for a cost-benefit analysis (such as that specified in the Better Regulation Guidelines) is apt.

482 A related submission of SAPN is that the AER ought not to have required SAPN to provide a cost-benefit analysis to demonstrate the "as low as reasonably practicable" risk mitigation principle. SAPN's reasons are similar to its objection to a cost-benefit analysis for the Bushfire Mitigation Capex Program in total – namely that qualitative not quantitative approaches should be applied to loss of life and injury. The Tribunal does not accept that argument for the same reasons given above.

483 Alternatively, SAPN submits that the AER had before it evidence that allowed it to make a qualitative assessment that the Bushfire Mitigation Capex Program was not grossly disproportionate to the benefit gained from the risk reduction, but failed to consider that evidence.

484 The AER maintains that the information SAPN provided did not endeavour to measure the relative costs and benefits of all available measures.

485 Even assuming the information SAPN provided the AER was sufficient to undertake a cost-benefit analysis, SAPN has not identified any provision of the NER or NEL that obliges the AER to undertake such a task. It would be an unusual regulatory regime that entitles a DNSP to provide a "data dump" to the regulator with the expectation that the regulator undertake its own quantitative analysis, as it sees fit.

Augmentation versus replacement

486 SAPN argues that the AER was in error by determining that the driver for the Bushfire Mitigation Capex Program was replacement based on age and condition (repex), which could be addressed using SAPN's repex allowance.

487 As SAPN explained, the Bushfire Mitigation Capex Program did not propose replacement of assets with an "equivalent" device, nor did it propose to replace assets which had deteriorated or reached the end of their economic life. Rather SAPN had proposed expenditure on newer types of assets that it considered provided improved or safer functionality.

488 In dealing with this issue in the Final Decision, the AER relevantly said (Attachment 6, p 100):

> *In the sections above we have considered SA Power Networks' compliance with its regulatory obligations and its ability to manage the existing and potential risks. As explained, we consider that SA Power Networks' proposed additional expenditure does not reasonably reflect the capex criteria.*
>
> *However, as an additional step, we have also considered whether the three projects that form its revised bushfire mitigation program reasonably reflect the capex criteria at an individual project level. These proposed projects include SCADA reclosers, surge arrestors and metered mains. We consider these projects below. …*
>
> *We recognise that the installation of SCADA reclosers may mitigate fire start risks, however we consider the replacement of aging reclosers funded through augex does not reasonably reflect the capex criteria. We have provided funding for the replacement of aging reclosers in our repex allowance, and expect that SA Power Networks will prioritise its repex program in accordance with its risk management framework.*

489 Part of SAPN's objection emerges from the final paragraph of this passage and the classification employed there by the AER in dealing with SCADA reclosers. However that paragraph must be understood in the context of the two paragraphs which precede it. It is clear from the first paragraph that the AER had already considered and rejected the additional capex expenditure as not satisfying the capex criteria. The analysis which it then undertakes is what it describes as "an additional step".

490 The AER had not made the determination claimed by SAPN. As the full passage indicates, the AER took the approach of assessing whether the proposed expenditure met the capex criteria as required under the NER. As the Tribunal has already found there was no error in the AER's approach to the capex criteria, it is sufficient to dismiss SAPN's submissions on this point.

Conclusion

491 For the reasons given, the Tribunal concludes that the AER did not, in its decision concerning the Bushfire Mitigation Capex Program, make the errors of fact pleaded by SAPN, incorrectly exercise its discretion or make a decision that was unreasonable in all the circumstances. SAPN fails on this aspect of its application.

Forecast labour cost escalation

492 A component of the AER's decision concerning forecast opex under cl 6.5.6 and cl 6.12.1(4) of the NER is an annual escalator to take account of likely changes in prices (input costs),

output and productivity during the regulatory control period. A similar approach is applied to forecast capex under cl 6.5.7 and cl 6.12.1(3) of the NER.

493 To forecast price growth, the AER uses a weighted average of forecast labour price growth and forecast non-labour price growth. The weighting applied by the AER in the Final Decision was 62% for labour and 38% for non-labour. The escalator used for forecasting non-labour price growth is CPI. This is undisputed. It is only the labour price component that is in dispute.

494 In its Regulatory Proposal, SAPN proposed that the AER should adopt real labour cost escalators of:

- +1.66% per annum for 2015-16 and 2016-17, based on the nominal wage increase outcomes negotiated by SAPN under its EA for 2014-16; and
- +1.77% per annum for 2017-18 through 2019-20, being the forecasts based on the Frontier Economics' Wage Price Index ('**WPI**') for Electricity, Gas, Water and Waste Services ('**EGWWS**') in South Australia.

495 SAPN indicated in its Revised Proposal that compliance with the EA is mandatory and the EA is a "regulatory obligation or requirement", as described in s 2D(b)(v) of the NEL.

496 In its Final Decision, the AER rejected SAPN's proposed increments, and substituted real labour cost escalators of:

- +0.50% and +0.45% for 2015-16 and 2016-17, respectively; and
- values increasing from +1.00% to +1.45% for the years 2017-18 through 2019-20 based on the average of the EGWWS WPI forecasts provided by Deloitte Access Economics and BIS Shrapnel.

497 It will be seen that the dispute relates only to the approach adopted by the AER in relation to the first two years of the regulatory control period.

498 SAPN submits that its EA is a "regulatory requirement or obligation" for the following reasons:

- the EA is an instrument made or issued under or for the purposes of the *Fair Work Act 2009* (Cth) ('**FW Act**'), which in turn is an Act of a participating jurisdiction (namely, the Commonwealth);

- section 50 of the FW Act requires SAPN to comply with its EA; and
- the EA materially affects the provision by SAPN of the electricity network services that are the subject of the Final Decision.

499 For SAPN, a consequence of this view is that:

- the costs incurred by it in complying with its EA are costs that meet the expenditure objectives in cl 6.5.6(a)(2) and cl 6.5.7(a)(2);
- SAPN's proposed labour cost escalators reasonably reflect the prudent and efficient cost of achieving the expenditure objectives; and
- the AER was required to take into account the principle that SAPN should be provided with a reasonable opportunity to recover at least the efficient cost of complying with the regulatory obligation created by or under the FW Act.

500 The AER did not accept that the EA is a regulatory obligation or requirement. In its Final Decision it said (Attachment 7, p 45):

> *We consider EA's are not a 'regulatory obligation or requirement' as defined in section 2D of the NEL.*
>
> *The fact that the EA requires certification under the Fair Work Act 2009 does not make it an instrument "made or issued by or under" that Act. Likewise, the fact that the Fair Work Act 2009 contains provisions regulating certain procedures by which an enterprise and its employees may make an EA does not mean that EAs are "made under" the Act. Section 182 specifies than an EA is made when a majority of employees vote to approve the agreement. It follows that an EA is made by agreement between the enterprise and its employees but regulated by an Act. The agreement made between parties is not made or issued under an Act.*

501 The AER also concluded that the EA is not an instrument that "materially affects the provision of electricity network services" under s 2D (Attachment 7, p 45):

> *We also note an EA is not an instrument that "materially affects the provision of electricity network services" within the meaning of section 2D. The EA itself has no effect on the provision of network services. There is no necessary connection between the terms of the EA and the nature, quality or quantity of network services supplied by a DNSP. An EA is not a requirement to provide electricity network services and a DNSP may arrange labour on many bases that do not involve an EA.*

Application of the NER

502 Clause 6.5.6(a) of the NER states the opex objectives in relation to DNSPs as follows:

> *(a) A building block proposal must include the total forecast operating expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve each of*

the following (the operating expenditure objectives):

(1) meet or manage the expected demand for standard control services over that period;

(2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of standard control services; or

(ii) the reliability or security of the distribution system through the supply of standard control services,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of standard control services; and

(iv) maintain the reliability and security of the distribution system through the supply of standard control services; and

(4) maintain the safety of the distribution system through the supply of standard control services.

(Emphasis added).

503 Clause 6.5.7(a) of the NER is in similar terms, in its application to capex.

504 Clause 6.5.6(c) prescribes the opex criteria as follows ('**opex criteria**'):

(c) The AER must accept the forecast of required operating expenditure of a Distribution Network Service Provider that is included in a building block proposal if the AER is satisfied that the total of the forecast operating expenditure for the regulatory control period reasonably reflects each of the following (the operating expenditure criteria):

(1) the efficient costs of achieving the operating expenditure objectives; and

(2) the costs that a prudent operator would require to achieve the operating expenditure objectives; and

(3) a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

505 Clause 6.5.7(c) of the NER is in the similar terms, in its application to capex.

506 Clause 6.5.6(d) provides that if the AER is not satisfied as referred to in cl 6.5.6(c), it must not accept the DNSP forecast.

Areas of Dispute

507 SAPN contends that the AER wrongly concluded that SAPN's EA was not a regulatory obligation or requirement. Alternatively, the AER wrongly concluded that the FW Act which requires SAPN to comply with its EA, was not a regulatory obligation or requirement applicable to SAPN.

508 SAPN's position is that had the AER correctly determined that compliance with SAPN's EA was a regulatory obligation or requirement, it would have followed that the escalation of SAPN's labour costs in the first two years of the 2015-20 regulatory control period, in accordance with the EA, would satisfy the expenditure criteria and therefore should have been accepted.

509 SAPN's contention is that the AER made an error of fact or facts that was material to the making of the decision, that the exercise of the AER discretion was incorrect and the decision unreasonable, having regard to all the circumstances.

510 In its written submissions, SAPN argues in the alternative that if the EA is not a regulatory obligation or requirement, it is required to achieve the opex and capex objectives, namely, the objective as articulated in cl 6.5.6(a)(4) and cl 6.5.7(a)(4) to "maintain the safety of the distribution system through the supply of standard control services". Also, the EA reasonably reflects the opex and capex criteria in cl 6.5.6(c)(3) and cl 6.5.7(c)(3) as realistic expectations of the demand forecast and costs inputs required to achieve the opex and capex objectives.

511 The AER objected to SAPN raising these alternative grounds, claiming they were not raised as a grounds of review in SAPN's Amended Application or in submissions before the AER as required under s 71O(2)(a) of the NEL. The AER maintained that objection during oral argument. The Tribunal indicated that ordinarily a fairly generous view is taken in cases where, as here, there is some reference to the grounds now advanced (albeit minimal), in submissions to the AER during the making of its decision. SAPN did not apply to amend its pleading and the AER proceeded to also address these grounds.

Regulatory obligation or requirement

512 The expression "regulatory obligation or requirement" is relevantly defined in s 2D(1)(b)(v) of the NEL as follows:

an Act of a participating jurisdiction, or any instrument made or issued under or for

> *the purposes of that Act … that materially affects the provision, by a regulated network service provider, of electricity network services that are the subject of a distribution determination or transmission determination.*

513 As previously mentioned, a "participating jurisdiction" is a jurisdiction within the meaning of s 5(1) of the NEL, which relevantly provides:

> *(1) The following jurisdictions are participating jurisdictions for the purposes of this Law–*
>
> *(a) the State of South Australia; and*
>
> *(b) the Commonwealth, a Territory or a State (other than South Australia) if there is in force, as part of the law of that jurisdiction, a law that corresponds to Part 2 of the National Electricity (South Australia) Act 1996 of South Australia.*

514 SAPN submitted that the Commonwealth is a participating jurisdiction through the following interrelated definitions.

515 The *Australian Energy Market Act 2004* (Cth) ('**AEM Act**') is a law that is in force in the Commonwealth and corresponds with Pt 2 of the NESA Act, which provides for the operation of the NEL and NER. Section 6 of the AEM Act provides:

> *Application of National Electricity Law in offshore areas etc.*
>
> *(1) The National Electricity Law set out in the Schedule to the National Electricity (South Australia) Act 1996 of South Australia as in force from time to time:*
>
> *(a) applies as a law of the Commonwealth:*
>
> *(i) in the offshore area of each State and Territory; and*
>
> *(ii) in any other places, to any circumstances, or to any persons, that are prescribed by regulations for the purpose of this subparagraph; and*
>
> *(b) so applying may be referred to as the National Electricity (Commonwealth) Law.*
>
> *(2) The reference in subsection (1) to the National Electricity Law set out in the Schedule to the National Electricity (South Australia) Act 1996 of South Australia as in force from time to time includes a reference to any Rules or other instruments, as in force from time to time, made or having effect under that Law.*

516 The AER does not contest that the Commonwealth is a participating jurisdiction, albeit that s 6 of the AEM Act appears to have been enacted only to ensure the application of the NEL to Australia's offshore areas.

517 The second limb of the definition of "regulatory obligation or requirement" is whether the EA is an "instrument made or issued under or for the purposes of that Act", relevantly the FW Act. As noted the AER concluded that the EA is not made under the FW Act but is rather an agreement between the enterprise and its employees, though regulated by the FW Act. The agreement made between parties is not made or issued under an Act.

518 In *Toyota Motor Corporation Australia Ltd v Marmara* [2014] 222 FCR 152 ('***Toyota Motor***'), the Full Court of the Federal Court (Jessup, Tracey, and Perram JJ) made the following comments in relation to the character of an EA:

> *[88] We do not accept that premise, or the appropriateness of the contractual analogy. Under the FW Act, an enterprise agreement is an agreement in name only. ...*
>
> *[89] ... The effect of the legislation is to empower the employer and the relevant majority of its employees to specify terms which will apply to the employment of all employees in the area of work concerned. The legal efficacy of those terms will arise under statute, not contract, and, as mentioned above, will be felt also by those who did not agree to them. Someone, such as an employee subsequently taken on, who had nothing to do with the choice of the terms or the making of the agreement, will be exposed to penal consequences under s 50 if he or she should happen to contravene one of the terms. When viewed in this way, it is not difficult to share in the perception that an enterprise agreement approved under the FW Act has a legislative character.*

519 As the Full Federal Court has indicated, an EA is an agreement in name only. The legal efficacy of the terms under an EA arise under statute, not contract. The AER has not put forward any argument to distinguish SAPN's EA from the construction articulated by the Full Federal Court in *Toyota Motor*, which must therefore prevail. The second limb of the definition is therefore satisfied.

520 The third limb is whether the Act or instrument materially affects the provision of electricity network services.

521 In the Tribunal's view neither the FW Act nor the EA satisfies this third limb, for several reasons.

522 There must be a direct connection between the Act and instrument and the provision of electricity network services. The direct connection is the labour needed to provide those services, not the mechanism (in this case the EA) that is employed to deliver the labour. It would equally have been open to SAPN to engage labour through other means, for example a third party labour provider. Depending on the means chosen, the employment terms and conditions (and importantly the accompanying costs) would be different, but with no

corresponding impact on the provision of electricity network services. It would be an odd circumstance where the definition is attracted merely by the vehicle chosen to deliver that labour.

523 Additionally, the FW Act applies to all Australian companies. The EA model is open to companies across many industries, not just DNSPs. In that sense there is no unique connection between the EA and the provision of electricity network services, any more than there is to any other industry.

524 The other examples of regulatory obligation or requirement under s 2D also sheds some light on the type of matters contemplated. It is useful for this purpose to reproduce s 2D(1):

> *2D – Meaning of regulatory obligation or requirement*
>
> *(1) A regulatory obligation or requirement is–*
>
> *(a) in relation to the provision of an electricity network service by a regulated network service provider–*
>
> *(i) a distribution system safety duty or transmission system safety duty; or*
>
> *(ii) a distribution reliability standard or transmission reliability standard; or*
>
> *(iii) a distribution service standard or transmission service standard; or*
>
> *(b) an obligation or requirement under–*
>
> *(i) this Law or Rules; or*
>
> *(ia) the National Energy Retail Law or the National Energy Retail Rules; or*
>
> *(ii) an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act, that levies or imposes a tax or other levy that is payable by a regulated network service provider; or*
>
> *(iii) an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act, that regulates the use of land in a participating jurisdiction by a regulated network service provider; or*
>
> *(iv) an Act of a participating jurisdiction or any instrument made or issued under or for the purposes of that Act that relates to the protection of the environment; or*
>
> *(v) an Act of a participating jurisdiction, or any instrument made or issued under or for the purposes of that Act (other than national electricity legislation or an Act of a participating jurisdiction or an Act or instrument referred to*

> *in subparagraphs (ii) to (iv)), that materially affects the provision, by a regulated network service provider, of electricity network services that are the subject of a distribution determination or transmission determination.*

525 It can be seen that subss 2D(1)(b)(ii)-(iv) deal with instruments which impose levies or taxes or apply to the use of land or the protection of the environment. They are in the nature of instruments which the legislature has prescribed. In contrast the EA (although having a statutory character once implemented as described by the Full Federal Court in *Toyota Motor* Corporation) is nevertheless within the choice of SAPN management. The decision to pursue an EA was not "imposed" on SAPN by s 2D in the same way that taxes and levies for example are imposed on it under s 2D.

526 The NEO provides:

> *The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to–*
>
> *(a) price, quality, safety, reliability and security of supply of electricity; and*
>
> *(b) the reliability, safety and security of the national electricity system.*

527 The NEO indicates that the overarching objective is to ensure the efficient investment in and operation of electricity services for the long-term interests of end users. The NEO is supported, among other things, by the opex criteria which directs attention to whether opex costs are prudent and efficient. The contents of an EA (at least at the point of its establishment) is something which is negotiated by SAPN management and the employees covered by the EA. Despite the best efforts of a DNSP (like SAPN), there is the capacity for an EA to include terms (and corresponding costs) that are not conducive to meeting the NEO, for example because a DNSP needs to accede to employee demands. Ultimately an EA is the product of negotiation and there is considerable discretion on SAPN on the costs associated with complying with the terms of an EA. It is not necessarily benchmarked to provide the necessary comfort that EA costs are efficient. The Tribunal does not accept SAPN's submission that the arms-length negotiation of its EA is a substitute for benchmarking or other appropriate means for testing its costs.

528 SAPN suggested that its EA is comparable to the EA considered by a separately constituted Tribunal in *Ausgrid*. There at [416]-[417] the Tribunal was faced with the AER's conclusion that the EA was not a regulatory obligation or requirement because it was not made under the

law of a participating jurisdiction (namely the Commonwealth). The Tribunal there was asked to consider whether the Minister's intervention amounted to a concession that the Commonwealth was a participating jurisdiction (at [418]). As the Tribunal made very clear, it was not necessary for it to delve further into that question. The Tribunal did not decide that an EA was a regulatory obligation or requirement.

529 For these reasons the Tribunal concluded that the FW Act and the EA made under that Act is not a regulatory obligation or requirement associated with the provision of standard control services.

Maintaining the safety of the distribution system

530 SAPN's alternative argument is that even if its EA is not a regulatory obligation or requirement, it is still necessary to maintain the safety of the distribution system, and falls within the opex and capex objectives in cl 6.5.6(a)(4) and cl 6.5.7(a)(4) of the NER.

531 Clause 6.5.6(a)(4) and cl 6.5.7(a)(4) direct attention relevantly to whether the EA is necessary to "maintain the safety of the distribution system through the supply of standard control services".

532 SAPN again argues that *Ausgrid* accepted that labour costs derived in accordance with an EA reasonably reflects the opex and capex criteria mentioned. One of the passages from *Ausgrid* relied on by SAPN in support of this view is the following at [418]:

> *Noting that in its Final Decisions the AER maintained the view that the Commonwealth is not a "participating jurisdiction", Networks NSW draws on the Minister's intervention in these proceedings to submit that the AER now acknowledges that status. It is, however, unnecessary to delve further into whether the Minister's intervention amounts to a concession on the part of the AER.* ***That is because the EBAs may be reasonably regarded as:***
>
> **(a)** ***otherwise required to achieve an opex objective, namely, the r 6.5.6(a)(4) objective to: "maintain the safety of the distribution system through the supply of standard control services"; and***
>
> **(b)** ***reasonably reflecting the opex criteria in r 6.5.6(c)(3): "a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.*****"**
>
> (Emphasis added).

533 SAPN points in particular to the highlighted passage for the proposition that *Ausgrid* decided that labour costs derived in accordance with an EA reasonably reflects the opex and capex criteria. As explained above, the Tribunal there found it unnecessary to decide whether an

EA was a regulatory obligation. It is then that the highlighted passage appears where the Tribunal indicates that "the EBAs may be reasonably regarded as … [required to achieve the opex objective and opex criteria]". That conclusion is reached from the following passage in which the Tribunal quotes from the AER's reasons, at [419]:

> *That the EBAs may be so regarded may be seen in the following paragraphs (without footnotes) from Attachment 7 to the Ausgrid Final Decision (at p 7-86) in which the AER, while rejecting the EBAs as a 6.5.6(a)(2) "regulatory obligation or requirement', recognised that the EBAs may affect the Networks NSW DNSPs' provision of standard control services:*
>
> > *We also disagree with the service providers' submissions that compliance with the terms of their own EBAs is a 'regulatory obligation or requirement'. For example, service providers have referred to redundancy costs 'required to be paid as a regulatory obligation'.*
> >
> > *… of the six possible (and exhaustive) categories of obligations or requirements … , EBAs could conceivably only fall with an Act or instrument made or issued that 'materially affects a service provider's provision of electricity network services'. This is because the terms of an EBA could plausibly materially affect a service provider's provision of standard control services. However, that Act or instrument must be made by a 'participating jurisdiction'. Given a participating jurisdiction must have passed a version of the NEL, an EBA made under the Commonwealth's Fair Work Act 2009 appears to be imposed by a law other than of a participating jurisdiction. Further, the terms of an EBA itself are not contained in the Fair Work Act 2009.*

534 The Tribunal's conclusion that the EA may reasonably be regarded as satisfying the capex objective and capex criterion, was presumably drawn from the following statement in the above passage:

> *This is because the terms of an EBA could plausibly materially affect a service provider's provision of standard control services.*

535 However that passage emerged only in the context of the AER attempting to find a category of regulatory obligation or requirement under s 2D to which an EA could logically "fit". It considered the most logical fit was with the category dealing with an Act or instrument that materially affects the provision of electricity network services. The AER was not suggesting from the above passage that it had in fact concluded that an EA materially affects a service provider's provision of standard control services. Rather that was the only working category that could possibly fit within the requirements of s 2D. Hence the AER's use of the expression "plausibly".

536 SAPN also referred to the following passage from *Ausgrid* in support of its position at [436]:

> ***It may be said that, in the view of the Tribunal, it is the policy of the legislative arm***

> ***of government that, to the extent that the EBA's are (if they are) an inefficient imposition on the DNSPs, nevertheless they are a cost to be borne by the consumers of electricity.*** *... [H]aving regard to the regulatory prescriptions, the Tribunal does not accept that [the AER] may, by the use of the EI model [proposed by the AER], simply select the measurement of efficiency which it did in this respect without regard to the obligations under the EBAs as they presently exist. Over time, and probably during the new current regulatory period, any such inefficiencies as the AER considers to exist may progressively be reduced ... and any allowances under the EBAs (as they expire) which the AER considers to be inefficient may also by the same elapse of time be reduced to an efficient level.*
>
> (Emphasis added).

537 SAPN relies on the highlighted passage for the proposition that it is the policy of the legislative arm of government to permit EAs, almost without regard to their cost impact.

538 That is not what the Tribunal in *Ausgrid* conveys by that passage. It is important to understand the context in which it arose. The AER had relied on a model prepared for it by Economic Insights Pty Limited ('**EI**'). What came to be known as the EI model was an econometric benchmarking model which arose from two reports EI prepared for the AER. The model was relied on by the AER in determining the appropriate opex. The relevant parties challenged the manner in which the AER had applied that model including the inputs it used.

539 Although the AER appears to have recognised that the terms of an EA can affect a DNSP's delivery of standard control services, nevertheless, in applying the EI model, the AER purportedly treated costs arising under the EAs as an endogenous factor to be ignored in the AER's estimate of the total required opex (see [421]-[423] of *Ausgrid*). The Tribunal then said at [427]:

> *Thus, although the EBAs may lack either the NEL's s 2D jurisdictional foundation or the genus of a safety or reliability standard etc of a r 6.5.6(a)(3) "regulatory requirement or obligation", the Networks NSW DNSPs are bound by their EBAs as a matter of law. Unlike a contract, which according to its terms may be terminated, an EBA continues in force until its nominal expiry date after which it may, with the approval of the Fair Work Commission, be terminated by agreement between an employer and the employees it covers (ss 219-224 of the Fair Work Act 2009 (Cth)). Absent agreement, an application must be made to the Fair Work Commission to terminate an EBA. Termination may only occur if the Commission is satisfied that to do so is not contrary to the public interest and is appropriate in all the circumstances (ss 225-227 of the Fair Work Act 2009 (Cth)).*

540 In the opening part of this passage it said:

> *Thus, although the EBAs may lack either the NEL's s 2D jurisdictional foundation or the genus of a safety or reliability standard etc of a r 6.5.6(a)(3) "regulatory requirement or obligation", the Networks NSW DNSPs are bound by their EBAs as a*

matter of law.

541 The Tribunal is there suggesting that an EA does not attract the regulatory obligation of s 2D or indeed the safety and reliability standard of cl 6.5.6(a)(3). This of course also lends further support to our view that SAPN's EA is not a regulatory obligation. It is then said "Networks NSW DNSPs are bound by their EBAs as a matter of law". Having already rejected the application of s 2D and cl 6.5.6(a)(3), the Tribunal must be referring to the fact that a DNSP is bound by an EA only in the sense that a failure to comply would constitute a breach and attract penalties under the FW Act. That interpretation is supported by the remainder of the passage where the Tribunal discusses the limited rights to terminate an EA – reinforcing the point that an EA is binding on a DNSP as a matter of law.

542 It is after this discussion that paragraph [436] of the Tribunal's reasons emerge on which SAPN relies. When the Tribunal refers in that paragraph to "the policy of the legislative arm of government that, to the extent that the EBA's are (if they are) an inefficient imposition on the DNSPs, nevertheless they are a cost to be borne by the consumers of electricity", it is referring to the fact that an EA is binding in the sense in which they had previously used it. That is, the Tribunal is suggesting it could not have been the policy intent of the legislature to permit the AER (relevantly when applying the EI model) to ignore the binding nature of an EA and to treat it wholly as an endogenous factor which could be ignored by the AER. It is not suggesting that the cost impacts of an EA should, as matter of policy expressed by the legislature, be disregarded entirely or conversely, automatically adopted.

543 Accordingly the Tribunal rejects SAPN's reliance on this aspect of the *Ausgrid* decision.

544 Even if our assessment of *Ausgrid* is incorrect, SAPN's argument that the EA is necessary to maintain the safety of the distribution system and falls within the opex and capex objectives of the NER should be rejected.

545 First, the provision still requires that SAPN demonstrate that the EA is necessary to "maintain the safety of the distribution system through the supply of standard control services". As explained in the earlier consideration of cl 6.5.6(a)(2) and s 2D, there must be a direct connection between the EA and the delivery of standard control services. That connection is the labour employed to deliver those services, not the mechanism chosen to provide that labour.

546 Secondly, the capex and opex objectives apply to the total estimates for capex and opex. The labour cost escalator is one such factor. It cannot be assumed that any error with respect to the labour cost escalator would completely undermine the capex and opex objectives applying to the safe delivery of standard control services.

Compliance with the capex criteria

547 As SAPN's contention that the EA is a regulatory obligation or is otherwise necessary to maintain the safety of the distribution system under the opex and capex objectives is rejected, it is unnecessary to consider whether the EA satisfies the capex criteria. Were it necessary to do so, the Tribunal would find that the capex criteria is not satisfied. The Tribunal sets out briefly its reasons for this view.

548 SAPN argues that its EA was negotiated at arm's length in good faith and represents current market conditions for electricity workers in South Australia. Its labour escalations cover almost 95% of its employees, and others (such as contractors) are effectively bound to the EA through a contractor parity clause requiring the payment of EA rates of pay. SAPN also submits that the use of the benchmark EAs is a preferable methodology than the EGWWS WPI suggested by the AER and provides a more reasonable and transparent forecast for the labour price rate of change.

549 It should be noted that the labour cost escalator is applied to a broader category of costs than simply internal labour. To forecast price growth, the AER uses a weighted average of forecast labour price growth and forecast non-labour price growth. The implications therefore extend beyond SAPN's EA issues alone.

550 The EA must satisfy the prudency and efficiency tests under the opex and capex criteria. The mere negotiation of an EA, albeit in good faith and at arm's length, is not itself an adequate foundation for discharging the opex and capex criteria. As earlier explained, the nature of an EA leaves itself open to considerable management discretion on terms, even if they may arise from employee demands. It would be important, for example, to demonstrate productivity and other improvements, consistent with wage conditions in the industry.

551 Finally SAPN has not mounted a compelling challenge in face of the considerable sectoral wage growth data and wage growth trends relied on by the AER.

Conclusion

552 For the reasons given, the Tribunal concludes that the AER did not make an error of fact or facts that was material to the making of the decision, that the exercise of the AER's discretion was not incorrect or the decision unreasonable, having regard to all the circumstances.

Forecast inflation

553 Under cl 6.4.3(a) of the NER, the annual revenue requirement for a DNSP for each regulatory year of a regulatory control period must be determined using a building block approach.

554 The indexation of the regulatory asset base building block is in effect, a deduction from the annual revenue requirement equal to the amount that is referred to in cl S6.2.3(c)(4) – that is, the amount necessary to maintain the real value of the regulatory asset base as at the beginning of the subsequent year by adjusting that value for inflation.

555 The deduction from the annual revenue requirement is needed to avoid "double counting" of inflation. Under the NER, a nominal rate of return is used in combination with an inflation-adjusted regulatory asset base. Thus, without any adjustment, service providers would be compensated twice for the effects of inflation – once through the rate of return and again through indexation of the regulatory asset base. The way this is addressed in the NER is to provide for a negative adjustment as described.

556 If there is a mismatch between forecast and actual inflation, there will be an inconsistency between the amount by which the regulatory asset base is increased over time to account for inflation and the corresponding deductions from the revenue allowance.

557 The AER is required to specify appropriate methods for the indexation of the regulatory asset base and any other amounts, values or inputs on which its building block determination is based. It is therefore necessary for the AER to determine an appropriate forecast of inflation as part of each distribution determination.

The AER's Final Decision

558 In its Regulatory Proposal, SAPN adopted an inflation forecast of 2.55%. This was based on the method applied by the AER in its distribution determination for the prior regulatory control period, which is to take a geometric mean 10-year forecast based on:

- for the first two years of the regulatory control period, the mid-point of the RBA forecast range for CPI inflation; and

- for subsequent years, the mid-point of the RBA target range for CPI inflation.

559 SAPN submitted a Revised Proposal in light of what it says were concerns that the method it adopted in its Regulatory Proposal was no longer producing accurate forecasts.

560 In its Revised Proposal, SAPN adopted a different forecasting method which produced an inflation forecast of 2.06% for the 2015-2020 period. The revised forecasting method was based on a report by consultant Competition Economists Group ('**CEG**') "Measuring expected inflation for the PTRM" June 2015 and is referred to as the "breakeven" inflation forecasting method. Under the CEG "breakeven" method, an estimate of expected inflation is derived from the difference in yields on nominal and inflation-indexed Commonwealth Government Security ('**CGS**') of the same maturity.

561 SAPN's concern and that of CEG was that due to changes in market conditions, it was no longer reasonable to expect inflation to revert to the middle of the RBA target range over the medium term. The evidence presented by CEG indicated that over the medium term, inflation is likely to be below the mid-point of the RBA target range. Therefore in current market conditions a methodology that assumes medium-term inflation would be at or around the mid-point of the RBA target range is likely to overestimate forecast inflation.

562 SAPN's alternative methodology presented in its Revised Proposal was said to overcome this limitation by relying on market-based measures of inflation expectations. The "breakeven" inflation forecasting method does not involve any assumption as to medium-term inflation. Rather, the "breakeven" method is a measure of market expectations of inflation, as indicated by the difference in market yields on nominal and inflation indexed CGS of the same maturity.

563 In the Final Decision, the AER adopted an inflation forecast of 2.5% for the 2015-2020 regulatory control period. This was based on the methodology that had been adopted by the AER in its prior determination, namely:

- for the first two years of the regulatory control period, taking the mid-point of the RBA forecast range for CPI inflation. At the time of the AER's Final Decision, the RBA had published a forecast range of 2-3% for these two years, with a mid-point of 2.5%; and
- for subsequent years, taking the mid-point of the RBA target range for CPI inflation, also 2.5%.

564 The AER provided the following reasons for rejecting SAPN's alternative methodology (Final Decision, Attachment 3, pp 253-4):

> *We do not accept SA Power Networks' new method for the following reasons:*
>
> - *Changing the method after we accepted the original proposal in the preliminary determination is inconsistent with the intent of the regulatory process. Stakeholder submissions on our preliminary determination were made on the basis that the inflation estimation method is not under consideration in the final decision.*
> - *The rules mandate a nominal vanilla WACC. Consequently, the inflation estimate is not a direct input parameter for deriving the rate of return that contributes to the achievement of the allowed rate of return objective. This is consistent with a broader reading of the NER, and in particular the express requirement for inflation and taxation to be addressed through the PTRM.*
> - *An amendment to the PTRM is a distinct and separate process to the assessment of an NSP's proposal. It must follow the specific timeframes set out by the distribution consultation procedures. Moreover, good regulatory practice requires a comprehensive consultation process as a prerequisite before changing the method for estimating a parameter that impacts all NSPs and users across multiple building blocks thereby affecting total revenue estimates.*

565 The AER then explored features of the model used by SAPN and considered that the research, analysis and reasoning submitted to the AER should be subject to review through a comprehensive process allowing effective engagement with all stakeholders. The AER then pointed to the importance of the PTRM process in determining forecast inflation (Final Decision, Attachment 3, p 255):

> *Under both the NER and NGR, an inflation forecast is required for modelling revenue over the next regulatory control period. The NER mandates the use of the AER's Post tax revenue model (PTRM). The NGR does not mandate the use of the PTRM, but requires service providers to provide financial information on a nominal basis or real basis or some other recognised basis for dealing with the effects of inflation. Under the NER, the AER's published PTRM must include a method the AER determines is likely to result in the best estimate of inflation. Under the NGR, a service provider must propose an estimate on a reasonable basis which is the best forecast or estimate possible in the circumstances. United Energy stated that the appropriate approach to address concerns with our current method was to undertake an amendment to the PTRM.*
>
> *Any changes/amendments to the PTRM must be done in accordance with the distribution consultation procedures.*

566 The AER indicated that under cl 6.5.2(d)(2) of the NER, subject to achieving the rate of return objective, it is required to determine a rate of return on a nominal vanilla weighted average cost of capital basis. The AER said that under the nominal vanilla approach an inflation forecast is therefore not a direct input in determining the allowed rate of return.

567 The AER also expressed its satisfaction with its current approach as reflecting the views of stakeholders (Final Decision, Attachment 3, p 256):

> *In our recent rate of return guideline development consultation process we raised the inflation method as an issue for potential review. We noted that the indexed bond market had changed since we departed from the Fisher equation, and asked for submissions on whether we should change the approach. We also noted different methods and what other regulators were adopting. In response, stakeholders endorsed the continuation of the current approach. We therefore are satisfied that the current approach is the appropriate approach for this determination.*

568 For these reasons the AER did not consider the method for forecasting inflation as part of its distribution determination for SAPN. The AER did not rule out a change to the method of inflation forecasting. However in its view this needed to be undertaken in accordance with the consultation processes mandated by the NER. The next rate of return guideline review was considered a more suitable process for reviewing the inflation forecasting method.

Areas of dispute

569 SAPN contends that the AER incorrectly exercised its discretion in failing to consider the merits of SAPN's methodology and in rejecting the proposed methodology on the basis that it was different to that originally proposed by SAPN.

570 SAPN also contends that the AER made a number of errors of fact including forming an opinion as to the existence of future inflation. The AER rejects this as not an issue of fact but rather a statement of opinion.

571 SAPN also points to other errors made by the AER.

572 It is unnecessary to go into more detail about the errors contended by SAPN. This is because counsel for both parties acknowledged that the dispute now had a fairly narrow scope. It is whether the PTRM is binding such that the AER cannot consider inflation outside an amendment to the PTRM or whether, as SAPN contends, although there is a reference to inflation in the PTRM, the AER in fact has to give separate consideration to that issue under the NER in making its Final Decision.

573 The dispute will therefore be resolved on the correct interpretation of the NER. For this reason it is also unnecessary to consider the suitability of SAPN's alternative methodology or indeed the inflation forecasts derived under that methodology.

Arguments advanced by SAPN

574 SAPN accepts that the inflation estimate is not a direct input parameter for deriving the nominal rate of return under cl 6.5.2. However, SAPN argues that just because it is not an input into the nominal rate of return does not mean that the inflation forecasting methodology cannot fall for consideration by the AER as part of making a distribution determination.

575 SAPN argues that the NER does not require that the inflation forecast used to calculate the indexation of the regulatory asset base building block be determined in accordance with the inflation forecasting method specified in the PTRM.

576 On the contrary, SAPN says that as part of each distribution determination the AER is required to specify appropriate methods for the indexation of the regulatory asset base and any other amounts, values or inputs on which its building block determination is based. It is therefore necessary, as part of each distribution determination, for the AER to determine an appropriate forecast of inflation.

577 For consistency with their context and purpose, SAPN submits that the relevant provisions of Ch 6 are to be read as requiring the AER to determine an appropriate forecast of inflation as part of each distribution determination. In contrast, the AER's approach is said to be rigid and will produce an inflation forecast that is too high resulting in a total revenue allowance (all other things being equal) that is less than what is required to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers.

578 SAPN also points out that under the AER's approach, the inflation forecasting method is one input that can be effectively locked in by the AER, without any opportunity for stakeholders to have that method reviewed. The AER recognises that the methods used to determine other inputs (eg gamma, rate of return inputs and expenditure forecasting methods) must be considered as part of each determination. It is therefore unclear why the method for forecasting inflation should be treated any differently.

Arguments advanced by the AER

579 Contrary to SAPN's position, the AER submits that the NER requires the inflation forecast used to calculate the indexation of the regulatory asset base building block to be determined in accordance with the inflation forecasting method specified in the PTRM. This is said to flow from cl 6.3.1 and cl 6.4.2 of the NER.

580 Clause 6.3.1(c)(1) stipulates that a building block proposal must be prepared in accordance with the PTRM and cl 6.4.2(b)(1) stipulates that the PTRM must include a method that the AER determines is likely to result in the best estimates of expected inflation. The PTRM published by the AER includes a method for forecasting inflation and the AER applied that method in its building block determination under cl 6.12.1.

581 As noted, SAPN relies on various clauses in the NER to argue that the inflation method specified in the PTRM is not mandatory. The AER submits that those other clauses cannot be read in a manner that contradicts the plain meaning of cl 6.3.1(c)(1) and cl 6.4.2(b)(1). For example, SAPN relies on cl 6.12.1(2)(i) which provides that one of the constituent decisions of the overall distribution determination is a decision on the DNSP's current building block proposal in which the AER either approves or refuses to approve the annual revenue requirement for the DNSP as set out in the building block proposal. However the AER says that the contents of the building block proposal are governed by Pt C of Ch 6, and cl 6.3.1(c) stipulates that the building block proposal must be prepared in accordance with the PTRM.

582 The AER also points out that the PTRM provides certainty, consistency and continuity to DNSPs in the regulation of required revenue. Although the PTRM is not fixed, nevertheless the NER establishes a consultation process for amendment which involves all DNSPs as all DNSPs are impacted by the PTRM. The AER's position is not that it could never consider a change to the PTRM at the same time as a distribution determination. However it maintains it is required to comply with the distribution consultation procedures, which evidence an intention on the part of the rule makers that broad consultation occur across the industry before any change is made.

Tribunal's consideration

583 The AER concedes there is no express provision in the NER that prohibits it from considering inflation forecasts outside the PTRM process. Rather its position follows from the overall construction of the NER. Equally SAPN did not point to a provision of the NER that expressly requires the AER to consider its inflation forecast, other than as part of the usual considerations that should inform the AER's decision-making, like other factors it considers in making its Final Decision.

584 Therefore the position of both parties ultimately turns on the overall construction of the NER.

The PTRM

585 It is useful at the outset to gain some understanding of the PTRM.

586 The PTRM is defined in the NER Glossary as the model prepared and published by the AER in accordance with cl 6.4.1.

587 The AER must, in accordance with the distribution consultation procedures, prepare and publish a PTRM: cl 6.4.1(a). The AER must ensure that a PTRM is in force at all times: cl 6.4.1(c).

588 The PTRM must set out the manner in which the DNSP's annual revenue requirement for each regulatory year of a regulatory control period is to be calculated: cl 6.4.2(a).

589 The contents of the PTRM must include (but are not limited to the following (NER cl 6.4.2(b)):

> *(1) a method that the AER determines is likely to result in the best estimates of expected inflation; and*
>
> *(2) the timing assumptions and associated discount rates that are to apply in relation to the calculation of the building blocks referred to in clause 6.4.3; and*
>
> *(3) the manner in which working capital is to be treated; and*
>
> *(4) the manner in which the estimated cost of corporate income tax is to be calculated.*

590 The AER may amend the PTRM from time to time, in accordance with the distribution consultation procedures: cl 6.4.1(b). The distribution consultation procedures are those procedures set out in Pt G of Ch 6. Broadly, the distribution consultation procedures specify the consultation steps the AER must employ, including the use of explanatory materials and the requirement to seek comments from interested parties before making a relevant decision.

591 In practical terms, the PTRM is an excel spreadsheet. The Tribunal was taken to a brief demonstration of its application. From the illustration (and as counsel explained) the PTRM is a excel file that contains various cells corresponding to various parameters required in arriving at a final decision on building blocks. A DNSP is required to input numbers into various cells. As we understand, other aspects of the PTRM have been preset within the model, for example the inflation forecast. When the model is run those preset features apply to the remainder of the inputs made by a DNSP.

592 In that way the AER can assess the responses consistently across all DNSPs, with the knowledge that the features of the model will automatically have been incorporated, including the preset parameters.

593 It should be noted that although the Tribunal was provided with a brief illustration of an extract of the PTRM, the full PTRM, the process by which it is determined and practically applied was not the subject of any significant evidence. Given the way in which the arguments were presented, presumably a greater understanding of the PTRM is not required as ultimately the issue turns on the proper place of the PTRM in the scheme of regulation under the NER.

594 The PTRM is expressly employed in some parts of the NER. For example, the formula specified in cl 6.5.3 in estimating the cost of corporate income tax expressly requires that the estimate of taxable income be determined using the PTRM. It is also used to calculate incremental revenue in circumstances where a DNSP has applied under cl 6.6.2 to vary a determination where a trigger event for a contingent project in relation to that determination has occurred.

595 One immediate observation to make is that the rule makers sought to expressly include a PTRM in the NER, specified the matters it should contain and how the PTRM should be amended. Having gone to those lengths, there is a strong suggestion that the rule makers intended the PTRM to occupy a particular place in the scheme of regulation in the NER.

596 It appears that the first PTRM was published in 2008, the second version in 2009 and the current version (version 3) was published in January 2015.

The NER and the PTRM

597 As indicated, cl 6.3.1(c)(1) directs that a building block be prepared in accordance with the PTRM. For the AER this indicates that a DNSP cannot depart from a parameter preset in the PTRM. However SAPN places a different construction on the clause having regard to the practical workings of the PTRM itself. For SAPN, what that clause requires is only that a DNSP submit numbers in accordance with that model so that the AER can coherently consider the data at its end. That is, the direction given by cl 6.3.1(c)(1) is only to use the model, not that the preset parameters themselves are beyond challenge in submitting a proposal to the AER.

598 To reconcile the direction given by cl 6.3.1(c)(1) with a different inflation forecast to the PTRM, SAPN distinguishes between two phases of a proposal. Under the first phase, the building block proposal must, as required by cl 6.3.1(c)(1), be submitted in terms of the model that is the PTRM. But then different considerations are said to apply in the second phase – the making of the determination.

599 Clause 6.3.2 in this second phase specifies the matters that must be considered in making a building block determination. One of those matters is in cl 6.3.2(a)(2) – the appropriate methods for the indexation of the regulatory asset base. SAPN says that provision stands alone and is not constrained by the PTRM. Certainly there is no express reference there to the PTRM. Of course the AER's response is that there is no need to mention it because if a DNSP complies with cl 6.3.1(c)(1), then the PTRM will have dealt with the issue through the preset parameters in the PTRM.

600 Chapter 6 does step through the process for the making of a building block determination in fairly a sequential way. It starts as both parties acknowledge, with a DNSP submitting a building block proposal to the AER under cl 6.3.1(b). The sequential nature of the process is effectively described in that provision. It also then notes that Pt E will apply to the making of the building block determination.

601 As noted, cl 6.3.1(c)(1) directs that the proposal "be prepared in accordance with the post-tax revenue model". It is significant that cl 6.3.1(c)(1) employs the word "prepared". If all that were required is that a DNSP simply submit its proposal under the form of the PTRM, then the NER could simply have directed that a proposal be submitted using the PTRM framework or some similar form of words. It does not do that. It suggests that the PTRM is more than simply an excel template to be used by each DNSP. The PTRM carries substantive parameters that must be employed by a DNSP in submitting a proposal.

602 Immediately following is r 6.4 which deals with the contents of the PTRM referred to above. In one sense, having introduced the concept of a PTRM in cl 6.3.1 it is obviously sensible to describe what it should contain. However, it would have been easy for the drafters of the NER to deal with the PTRM in a schedule or elsewhere in Ch 6. However they choose to interpose it between the contents of a building block determination and the building block approach. This is also because the PTRM is more than a mere tool in which to submit a proposal.

603 The drafting of r 6.4 also lends support to this view. First, cl 6.4.1(c) requires the PTRM to be "in force" at all times. It is not merely that the PTRM be available for use. Secondly, the PTRM cannot be amended at a whim. It can only be amended under the distribution consultation procedures. There would be little point in the rule makers establishing such a significant "gatekeeping" requirement if the PTRM were little more than a tool in which to submit a proposal. Finally, the PTRM must establish a "method" that the AER determines is likely to result in the best estimates of expected inflation (cl 6.4.2(b)(1)). The requirement to establish a "method" is a far stronger and significant direction than simply to establish a tool by which to submit a proposal.

604 Following this sequence, cl 6.4.3(a)(1) then specifies that one of the building blocks in calculating the annual revenue requirement is the indexation of the regulatory asset base. For the purposes of indexing the regulatory asset base cl 6.4.3(b)(1) provides that the regulatory asset base is to be calculated under cl 6.5.1 and Sch 6.2 and that the building block comprises a negative adjustment equal to the amount referred to in cl S6.2.3(c)(4) for that year. This is the source of the negative adjustment referred to earlier.

605 It is in the context of the roll forward of the regulatory asset base that S6.2.3(c)(4) provides:

> *(c) Method of adjustment of value of regulatory asset base*
>
> *The value of the regulatory asset base for a distribution system as at the beginning of the second or a subsequent year (the later year) in a regulatory control period must be calculated by adjusting the value (the previous value) of the regulatory asset base for that distribution system as at the beginning of the immediately preceding regulatory year (the previous year) in that regulatory control period as follows:*
>
> *…*
>
> *(4) The previous value of the regulatory asset base must be increased by an amount necessary to maintain the real value of the regulatory asset base as at the beginning of the later year by adjusting that value for inflation.*

606 It will be seen that what cl S6.2.3(c)(4) directs is that the regulatory asset base be adjusted for the effect of inflation.

607 Clause 6.5.1(b) requires that the AER in accordance with the distribution consultation procedures, develop and publish a model (the '**roll forward model**') for the roll forward of the regulatory asset base. The AER may amend or replace the roll forward model from time to time in accordance with the distribution consultation procedures: cl 6.5.1(c). The purpose of the roll forward model (as the name suggests) is to deal with movements from one

regulatory control period to the next. Clause 6.5.1(e)(3) requires in particular that the roll forward model set out the method for determining the roll forward of the regulatory asset base for distribution systems under which:

> *(3) the roll forward of the regulatory asset base from the immediately preceding regulatory control period to the beginning of the first regulatory year of a subsequent regulatory control period entails the value of the first mentioned regulatory asset base being adjusted for actual inflation, consistently with the method used for the indexation of the control mechanism (or control mechanisms) for standard control services during the preceding regulatory control period.*

608 The clause refers to adjustments for actual inflation in the case of the first roll forward. Clause 6.5.1(f) provides that "[o]ther provisions relating to regulatory asset bases are set out in schedule 6.2". In other words, there is a reference to Sch 2 in both cl 6.4.3(b) dealing with the specification of the building blocks and also through cl 6.5.1.

609 It should be noted that neither cl S6.2.3(c)(4) nor cl 6.5.1(e)(3) expressly refer to the adjustment for inflation or the roll forward of the regulatory asset base occurring consistently with the PTRM. SAPN argues that the AER should therefore determine an appropriate forecast for inflation without being constrained by the PTRM. For if it were constrained by the PTRM that rigid approach would be inconsistent with the framework of the NER that looks to a revenue allowance that allows a DNSP to recover efficient costs. An inflation forecast that is too high or low (through slavish reliance on the PTRM) would be inconsistent with that framework. The AER's response is that these provisions do not deal with inflation because inflation is embedded in the PTRM from the first moment a DNSP is directed to submit its building block proposal.

610 To understand the AER's argument it is necessary to return to the next step in the sequence in the making of a determination. The remaining provisions in Pt C then proceed to address features of the other building blocks such as the return on capital and depreciation. Having dealt with those building blocks, Pt E then logically addresses the determination process. That starts with a DNSP submitting a regulatory proposal to the AER under cl 6.8.2. The regulatory proposal must include a building block proposal: cl 6.8.2(c)(2). Following consultation the AER is required to publish a draft determination which also includes a consultation process: cl 6.10.1(a). A DNSP is required to respond to a draft determination by submitting revisions "so as to incorporate the substance of any changes required to address matters raised by the draft distribution determination or the AER's reasons for it": cl 6.10.3(b). A related criticism made by the AER is that this precludes SAPN submitting a

new inflation methodology as it is not in truth a response to the draft determination. In view of the Tribunal's ultimate conclusion, it is unnecessary to consider the merits of that argument.

611 The final stage in the sequence is the making by the AER of a final determination: cl 6.11.1.

612 Clause 6.12.3 deals with the extent of the AER's discretion in making a distribution determination. Clause 6.12.3(a) provides:

> *Subject to this clause and other provisions of this Chapter 6 explicitly negating or limiting the AER's discretion, the AER has a discretion to accept or approve, or to refuse to accept or approve, any element of a regulatory proposal or proposed tariff structure statement.*

613 One aspect of the AER's discretion in approving the annual revenue requirement is dealt with in cl 6.12.3(d):

> *The AER must approve the total revenue requirement for a Distribution Network Service Provider for a regulatory control period, and the annual revenue requirement for each regulatory year of the regulatory control period, as set out in the Distribution Network Service Provider's current building block proposal, if the AER is satisfied that those amounts have been properly* ***calculated using the post-tax revenue model*** *on the basis of amounts calculated, determined or forecast in accordance with the requirements of Part C of this Chapter 6.*
>
> (Emphasis added).

614 The effect of cl 6.12.3(d) is that the AER has no discretion but to approve the total revenue requirements for a DNSP if it is satisfied that it has been calculated using the PTRM. It is significant that the clause requires the amounts to have been "calculated" using the PTRM. That expression ascribes to the PTRM a status more than merely a device or tool in which a proposal should be submitted. Ultimately it plays a material part in the determination of the total revenue requirement. It is also significant that both SAPN and the AER are bound by the PTRM through this clause. It is no more open to the AER to substitute an alternative inflation forecast through the building blocks than it is for SAPN. This is because the AER has no discretion but to approve a revenue requirement that has been calculated using the PTRM.

615 What this journey reveals is that the PTRM features at the very beginning of the determination process (when a DNSP is directed to submit a building block proposal that complies with the PTRM) and at the very end of the process when the AER is obliged to approve a revenue requirement (reflecting the building blocks) calculated using the PTRM. The common link between the start and end of the process is the PTRM. Having given the

PTRM such a central place the rule makers did not see a need to expressly refer to it again in any of the intermediate stages or for example in dealing with the roll forward provisions.

616 At this stage it is worth returning to SAPN's fundamental criticism of AER's approach – that it is too rigid and will produce and inflation forecast that is too high resulting in a total revenue allowance (all other things being equal) that is less than what is required to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers. There are several difficulties with this argument. First it assumes that SAPN's methodology and the inflation forecast it derives is correct. That has not been established. Indeed the distribution consultation procedures ensure that these arguments can be fully ventilated and debated before a new PTRM is established. SAPN has the opportunity to put forward the model and have it "tested" as part of that process.

617 Secondly, the rule makers have determined to give the PTRM an express role within the NER as we have explained – presumably to ensure consistency between DNSP's and regulatory decisions. Having done so, the AER must comply. That is no more rigid an approach than the requirement to comply with other directives in the NER.

618 Finally, cl 6.4.1(b) permits the AER to amend or replace the PTRM from time to time. There are no limits on how many times it may do so. Further the distribution consultation procedures do not appear to preclude a review of the PTRM occurring during the distribution determination process, if there is adequate time within the consultation procedures in which to do so. In that way a DNSP need not be prejudiced should it wish to advance an alternative model as SAPN sought to do.

Conclusion

619 For the reasons given, the Tribunal concludes that the PTRM is binding on SAPN and the AER such that AER cannot consider inflation outside the PTRM, as proposed by SAPN. Accordingly the Tribunal concludes that the AER did not make any error.

CONCLUSION

620 As no error has been found in the Final Decision, it is unnecessary to consider the operation of s 71P(2a)(c) of the NEL.

621 In view of the above reasons, the determination of the Tribunal is that the Final Decision is affirmed.

I certify that the preceding six hundred and twenty one (621) numbered paragraphs are a true copy of the Reasons for Determination herein of the Honourable Justice Middleton, Professor KT Davis and Mr R Steinwall.

Associate:

Dated: 28 October 2016

AUSTRALIAN COMPETITION TRIBUNAL

Application by Energex Limited (Distribution Ratio (Gamma)) (No 3)

[2010] ACompT 9

Citation:	Application by Energex Limited (Distribution Ratio (Gamma)) (No 3) [2010] ACompT 9
Review from:	Australian Energy Regulator
Parties:	**ENERGEX LIMITED (ACN 078 849 055)** **ERGON ENERGY CORPORATION LIMITED (ACN 078 646 062)** **ETSA UTILITIES (ABN 13 332 330 749)**
File number(s):	2 of 2010 3 of 2010 4 of 2010
Members:	**MIDDLETON J (DEPUTY PRESIDENT), MR R DAVEY AND MR R SHOGREN**
Date of delivery of Reasons:	24 December 2010
Date of hearing:	13, 14, 15, 16, 17, 20 and 21 September 2010
Place:	Melbourne
Category:	No Catchwords
Number of paragraphs:	5
Counsel for Energex Limited:	Mr S Doyle SC with Mr P O'Shea SC and Mr A Pomerenke
Solicitor for Energex Limited:	Allens Arthur Robinson
Counsel for Ergon Energy Corporation Limited:	Mr T Bradley
Solicitor for Ergon Energy Corporation Limited:	Minter Ellison Lawyers
Counsel for ETSA Utilities:	Mr CA Moore with Mr M Borsky

Solicitor for ETSA Utilities:	Gilbert + Tobin
Counsel for Australian Energy Regulator:	Mr P Hanks QC with Mr Gray, Ms R Ellyard, Mr T Clarke and Mr L Merrick
Solicitor for Australian Energy Regulator:	Corrs Chambers Westgarth

IN THE AUSTRALIAN COMPETITION TRIBUNAL

File No 2 of 2010

RE: **APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO ENERGEX LIMITED PURSUANT TO CLAUSE 6.11.1 OF THE NATIONAL ELECTRITICY RULES**

BY: **ENERGEX LIMITED (ACN 078 849 055)**
Applicant

File No 3 of 2010

RE: **APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO ERGON ENERGY CORPORATION LIMITED PURSUANT TO CLAUSE 6.11.1 OF THE NATIONAL ELECTRICITY RULES**

BY: **ERGON ENERGY CORPORATION LIMITED (ACN 078 646 062)**
Applicant

File No 4 of 2010

RE: **APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO ETSA UTILITIES PURSUANT TO CLAUSE 6.11.1 OF THE NATIONAL ELECTRITICY RULES**

BY: **ETSA UTILITIES (ABN 13 332 330 749)**
Applicant

MEMBERS: **MIDDLETON J (DEPUTY PRESIDENT), MR R DAVEY AND MR R SHOGREN**

DATE: **24 DECEMBER 2010**

WHERE MADE: **MELBOURNE**

REASONS FOR DECISION: DISTRIBUTION RATIO (GAMMA)

1 The Tribunal has received submissions as to the distribution ratio to be used in the calculation of gamma.

2 The AER accepts that on the material presently before the Tribunal, there is no empirical data that is capable of supporting an estimated distribution ratio higher than 0.7. The AER therefore accepts that it is open to the Tribunal to adopt a substitute distribution ratio of 0.7.

3 While each applicant agrees with the submissions of the AER in respect of the distribution ratio to be adopted by the Tribunal in this review, they challenge the AER's prognosis of what the ratio may be in the future. That is an issue for another day.

4 In light of these submissions and the material before the Tribunal, the Tribunal concludes that the distribution ratio is 0.7 for the calculation of gamma.

5 The Tribunal directs that the parties confer and provide minutes of the appropriate determination to be made in light of the above reasons no later than 4:00pm on Monday 31 January 2011.

I certify that the preceding five (5) numbered paragraphs are a true copy of the Reasons for Decision herein of the Honourable Justice Middleton (Deputy President), Mr RC Davey and Mr RF Shogren.

Associate:

Dated: 23 December 2010

AUSTRALIAN COMPETITION TRIBUNAL

Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9

Citation:	Application by Energex Limited (Gamma) (No 5) [2011] ACompT 9
Review from:	Australian Energy Regulator
Parties:	**ENERGEX LIMITED (ACN 078 849 055)** **ERGON ENERGY CORPORATION LIMITED (ACN 078 646 062)** **ETSA UTILITIES (ABN 13 332 330 749)**
File number(s):	2 of 2010 3 of 2010 4 of 2010
Members:	**MIDDLETON J (DEPUTY PRESIDENT), MR R DAVEY AND MR R SHOGREN**
Date of Reasons:	12 May 2011
Date of hearing:	29 April 2011
Place:	Melbourne
Category:	No Catchwords
Number of paragraphs:	51
Counsel for Energex Limited:	Mr S Doyle SC with Mr A Pomerenke
Solicitor for Energex Limited:	Allens Arthur Robinson
Counsel for Ergon Energy Corporation Limited:	Mr T Bradley
Solicitor for Ergon Energy Corporation Limited:	Minter Ellison Lawyers
Counsel for ETSA Utilities:	Mr CA Moore with Mr M Borsky
Solicitor for ETSA Utilities:	Gilbert + Tobin

Counsel for Australian Energy Regulator:	Mr P Hanks QC with Mr P Gray and Mr T Clarke
Solicitor for Australian Energy Regulator:	Corrs Chambers Westgarth

IN THE AUSTRALIAN COMPETITION TRIBUNAL

File No 2 of 2010

RE: **APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO ENERGEX LIMITED PURSUANT TO CLAUSE 6.11.1 OF THE NATIONAL ELECTRITICY RULES**

BY: **ENERGEX LIMITED (ACN 078 849 055)**
Applicant

File No 3 of 2010

RE: **APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO ERGON ENERGY CORPORATION LIMITED PURSUANT TO CLAUSE 6.11.1 OF THE NATIONAL ELECTRICITY RULES**

BY: **ERGON ENERGY CORPORATION LIMITED (ACN 078 646 062)**
Applicant

File No 4 of 2010

RE: **APPLICATION UNDER SECTION 71B OF THE NATIONAL ELECTRICITY LAW FOR A REVIEW OF A DISTRIBUTION DETERMINATION MADE BY THE AUSTRALIAN ENERGY REGULATOR IN RELATION TO ETSA UTILITIES PURSUANT TO CLAUSE 6.11.1 OF THE NATIONAL ELECTRITICY RULES**

BY: **ETSA UTILITIES (ABN 13 332 330 749)**
Applicant

MEMBERS: **MIDDLETON J (DEPUTY PRESIDENT), MR R DAVEY AND MR R SHOGREN**

DATE: **12 MAY 2011**

WHERE MADE: **MELBOURNE**

REASONS FOR DECISION: GAMMA

INTRODUCTION

1 In May 2010, the AER made a distribution determination regulating the charges each applicant may impose for the provision of its regulated services for a period of five years from 1 July 2010.

2 The NEL establishes a regime for what it describes as "merits review" of certain decisions of the AER. In July 2010, the Tribunal (Finkelstein J, President, R Davey and R Shogren) granted each applicant leave under s 71B of the NEL to review the AER's decisions on particular issues addressed in the determinations.

3 One issue in respect of which leave was granted was common to each determination and applicant. The other issues in respect of which leave was granted were peculiar to a particular applicant.

4 The expressions used in these reasons are those employed by the Tribunal in its earlier reasons relating to these applications, which describe the nature of the applicants' respective businesses and the role of the AER in the economic regulation of those businesses.

THE COMMON ISSUE - GAMMA

5 The common issue in each determination in respect of which leave was granted was the AER's decision on the value of 'γ' (or 'gamma', the assumed utilisation of imputation credits) a component of the formula which r 6.5.3 of the Rules mandates must be applied in calculating the cost of each applicant's corporate income tax for each of the five years from 1 July 2010.

6 The approach adopted by the AER, and accepted by the applicants, was to define the value of gamma imputation credits as a product of the imputation credit 'distribution ratio' (F) and the 'utilisation rate' (theta or θ) ($\gamma = F \times \theta$) where:

(a) F is defined as the value of imputation credits distributed by a firm as a proportion of the value of imputation credits generated by it in the period (the distribution ratio); and

(b) theta or θ is defined as the value of imputation credits distributed to investors as a proportion of their face value (the 'utilisation rate').

7 In October 2010, the Tribunal gave its reasons (*Application by Energex Limited (No 2)* [2010] ACompT 7) for finding error by the AER in its treatment of 'distribution ratio' (F) and the 'utilisation rate' (theta or θ). Those reasons foreshadowed directions:

(a) allowing a submission to be filed by the AER whether the distribution ratio (F) should be 70% (see para [57]);

(b) in respect of the utilisation rate (theta or θ), calling for a report that:

- correctly used tax statistics studies and dividend drop-off studies to arrive at the utilisation rate;
- reviewed dividend drop-off studies from as many sources as possible to see whether confident use may be made of any of them; and
- provided results from a newly-commissioned dividend drop-off study that is "state of the art".

(see para [146]); and

(c) concerning the provision to the Tribunal of extrinsic material relating to:

- the rationale for including the gamma component in the formula for calculating the estimated cost of corporate income tax; and
- how it relates to the rest of the building blocks, especially the rate of return (cl 6.4.3(a) and cl 6.5.2(b) of the Rules) (see para [150]).

8 Relevant directions were made on 5 November 2010 and, pursuant to those directions, the Tribunal has since had the benefit of:

(a) relevant extrinsic material;

(b) submissions from the AER accepting that on the material before the Tribunal:

(i) there was no empirical data that was capable of supporting an estimated distribution ratio higher than 0.7; and

(ii) it was open for the Tribunal to adopt a substitute distribution ratio of 0.7.

While the applicants challenged the AER's prognosis of what the ratio might be in the future, each applicant otherwise agreed with the AER' submissions.

(c) a report by Strategic Finance Group: SFG Consulting ('SFG') entitled: *Dividend drop-off estimate of theta*, 21 March 2011 ('SFG's March 2011 report');

(d) a report by The Securities Industry Research Centre of Asia-Pacific (SIRCA) Limited ('SIRCA') entitled *Report to the AER - Response to questions related to the estimation and theory of theta*, 7 March 2011 ('SIRCA's March 2011 report');

(e) a report by the AER to the Tribunal entitled: *The value of imputation credits*, April 2011 ('the AER's report');

(f) the applicants' submissions, dated 19 Aril 2011, in reply to the AER's report together with the following reports to be read in conjunction with those submissions:

- *Expert Report prepared in respect of certain matters arising from the AER's Merit Review - Determination of Gamma – Prepared for ETSA Utilities, Energex and Ergon Energy by R R Officer*, 18 April 2011 ('Officer's April 2011 report');
- *A review of SFG's 2011 Dividend Drop-off Study – Dr Neil Diamond and Professor Rob Brooks*, 19 April 2011 ('the Diamond & Brooks' report'); and
- *Dividend drop-off estimate of theta – Notes on AER Report* by SFG, 18 April 2011 ('SFG's April 2011 report').

(g) a further supplementary report from SFG entitled: *Dividend drop-off estimate of theta – Additional estimates based on comments in the AER report*, 21 April 2011 ('SFG's further supplementary report').

9 At a hearing on 29 April 2011, the Tribunal also had the benefit of oral submissions from the AER on the gamma issue.

10 The Tribunal concluded on 24 December 2010 (see *Application by Energex Limited (Distribution Ratio (Gamma)) (No 3)* [2010] ACompT 9) that the distribution ratio was 0.7 for the calculation of gamma.

11 As discussed above, there are two issues to be decided in determining the value of gamma: the value of *F*, the distribution ratio; and the value of theta, the utilisation ratio.

12 Therefore, the only outstanding issue with respect to gamma is the value to be determined for theta. That value, multiplied by the value 0.7 for the distribution ratio, produces the value for gamma.

13 SFG's March 2011 report proposes an estimate of 0.35 for theta. This estimate is paired with an estimate, produced in the same statistical procedure, of the value of cash dividends in the range of 0.85 to 0.90.

14 The AER's report, responding to the Tribunal's earlier reasons, sets out its view on the correct approach to the use of tax statistics and dividend drop-off studies. In doing so the AER draws upon SIRCA's March 2011 report. It also reviews a number of dividend drop-off studies, and assesses SFG's March 2011 report. The Tribunal finds it convenient to discuss these issues in the reverse order.

SFG's March 2011 Report

15 The terms of reference for this report were settled between the parties, with intervention by the Tribunal, on 22 November 2010. The parties had the opportunity to comment on a draft of the report, and SFG's responses to those comments are incorporated in the final report.

16 The AER's report raises what it calls major compliance issues – eight in number – with the terms of reference. These all relate to the treatment of the data. The AER also makes comments on SFG's analysis: the model specification and estimation procedures. The AER's overall conclusion is that the SFG report should be considered "together with the results of other relevant and reliable studies".

17 In SFG's April 2011 report and its further supplementary report, SFG responded to the AER's report in considerable detail.

18 It is not necessary to set out the details of the eight issues, since they raise no important or significant questions of principle. Rather they involve detailed decisions made in the course of constructing a database and analysing it. Having considered the reports, including Officer's April 2011 report, the Tribunal has concluded that any departures from the agreed terms of reference were justified, even necessary. Calling them "major

compliance issues" is unnecessarily pejorative. Whether or not the terms of reference have been departed from, what is important is whether the concerns raised by the AER with the construction of the database cast doubt on the value of SFG's analysis, requiring the Tribunal to give it less weight than it otherwise would.

19 In the Tribunal's view, they do not. The Tribunal is satisfied that the procedures used to select and filter the data were appropriate and do not give rise to any significant bias in the results obtained from the analysis. Nor was that suggested by the AER.

20 The AER's further comments concern the inherent problem of multicollinearity, the model specification and the estimation procedure.

21 Little more can be usefully said about multicollinearity than was included in the Tribunal's earlier reasons subject to some brief comments below. It is an unavoidable problem in the estimation of the utilisation of franking credits, since franking credits are very highly correlated with cash dividends. What can be done is to conduct a study as carefully as possible with as large a data set as is available.

22 In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG's reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG's report has been subjected, and SFG's comprehensive response, gives the Tribunal confidence in those conclusions. In that context, the Tribunal notes that in commissioning such a study, it hoped that the results would provide the best possible estimates of theta and gamma from a dividend drop-off study. The terms of reference were developed with the intention of redressing the shortcomings and limitations of earlier studies as far as possible.

SFG's study in the context of other dividend drop-off studies

23 The AER's report reviews ten dividend drop-off studies. The context for this was that in the hearings leading up to the commissioning of the SFG study, significant concerns were expressed regarding all of the studies that were before the Tribunal. The main contenders were a 2010 study by SFG and a 2006 study by Beggs and Skeels. Those concerns are set out in the Tribunal's earlier reasons for decision.

24 The Tribunal wanted to know whether other studies existed that did not exhibit the shortcomings of those before it.

25 The AER's report concludes that the Beggs and Skeels post-July 2000 estimate from their 2006 study is the only one that should be considered along with SFG's March 2011 study. In doing so, the AER relies in part on advice given in McKenzie and Partington (2010), a report referred to in the Tribunal's earlier reasons, which stated that where multiple studies of the same type are available, the results from all these studies should be considered.

26 Several remarks are necessary. First, considering a range of studies does not imply that they should be given equal weight. Indeed, the AER's report proposes that only two of the ten studies it reviewed be given any weight.

27 Secondly, the Tribunal has already made clear its difficulty in accepting the results of the Beggs and Skeels study.

28 Thirdly, as the Tribunal noted in its earlier reasons, in January 2010 Associate Professor Skeels endorsed the then SFG study estimate over that of his own earlier study.

Conclusions regarding SFG's March 2011 report

29 The Tribunal is satisfied that SFG's March 2011 report is the best dividend drop-off study currently available for the purpose of estimating gamma in terms of the Rules. Its estimate of a value of 0.35 for theta should be accepted as the best estimate using this approach. In particular, the Tribunal cannot accept the submission of the AER that either minor issues in the construction of the database or multicollinearity argue for giving the SFG study less weight and the Beggs and Skeels study some weight. The Beggs and Skeels study, despite not being subjected to anything like the same level scrutiny, is known to suffer by comparison with the SFG study on those and other grounds.

30 Moreover, the fact that in its earlier reasons the Tribunal found no error in the AER having relied on the Beggs and Skeels study is not to the point. The proceedings since then have been largely designed to render that study, along with the earlier SFG study, obsolete for the purpose of setting a value for gamma – and have done so.

Dividend drop-off studies in the context of other approaches

31 A question remains whether dividend drop-off studies are able to provide appropriate estimates for the purposes of the Rules; and whether the results of SFG's March 2011 report should be considered in the light of other approaches. This issue is addressed in the AER's report and in SIRCA's March 2011 report.

32 SIRCA's March 2011 report provided responses to a number of specific questions asked by the AER. Some of these responses raise serious issues regarding the use of dividend drop-off studies and the Tribunal's earlier reasons. For example, SIRCA's March 2011 report suggests that:

- estimates from dividend drop-off studies are very imprecise and of questionable reliability;
- such studies are likely to produce downwardly-biased estimates of theta; and
- taxation studies do not give an upper bound to theta.

33 By way of background, the Tribunal in earlier reasons noted that the AER accepted that tax statistics studies provide an upper bound on possible values of theta. The AER in its report, while being less unequivocal than SIRCA, adopts SIRCA's suggestion that the results of tax statistics studies (now called the redemption rate) could be discounted for factors such as the time between the distribution and the redemption of imputation credits. These adjustments "would need to be made on an economically justifiable basis". The AER referred to a 2004 study by Hathaway and Officer as being an example of such a use of an estimate of the utilisation rate.

34 Beyond these observations, the AER does not seek to adduce material from SIRCA's March 2011 report to advance its submissions. On the material before it, the Tribunal is unable to reach any conclusions about the further use of tax statistics studies in estimating the utilisation ratio, theta. No doubt the AER will in the future have opportunity, and perhaps cause, to investigate further. It has not sought to do so in these proceedings.

The argument for regulatory inertia

35 In its submission, the AER re-agitated one of its earlier arguments: that the Rules establish a regime of regulatory inertia whereby values of the WACC parameter set in the Statement of Regulatory Intent ('SORI') will govern the distribution determinations that are made during the following five years unless, and to the extent that, it is shown that a departure from the SORI values is justified.

36 The Tribunal accepts that due regard should be given to historical consistency in applying regulatory values over time. Nevertheless, the Tribunal, standing in the AER's shoes, is inescapably required to exercise regulatory judgment in determining the appropriate value of theta.

37 The Tribunal must determine an appropriate value for gamma on the basis of the material before it. It does not accept that its task is to determine a value of gamma that is appropriate and not too different from the previously determined value of gamma. That gives too little policy weight to the objective set out in s 7A of the NEL that a regulated DNSP should be provided with a reasonable opportunity to recover at least the efficient costs it incurs. That objective must outweigh any presumption of regulatory inertia. In any event, within the SORI framework by which the AER argues for the principle of regulatory inertia, the Tribunal has persuasive evidence justifying a departure from previously determined values of gamma.

CONCLUSION

38 The Tribunal finds itself in a position where it has one estimate of theta before it (the SFG's March 2011 report value of 0.35) in which it has confidence, given the dividend drop-off methodology. No other dividend drop-off study estimate has any claims to be given weight vis-à-vis the SFG report value.

39 Although the AER has ventured some general comments about the possibility of using another analytical approach, viz, tax statistics studies, the AER has provided no such material in these proceedings.

40 The AER has tendered, largely without comment, material that casts some doubt on the use of dividend drop-off studies in estimating gamma for regulatory purposes. In

responding to questions from the AER, SIRCA's March 2011 report raises questions about the theoretical basis for dividend drop-off studies. In doing so, it touches on issues raised in the Tribunal's earlier reasons regarding the arbitrage model underlying dividend drop-off studies.

41 However, SIRCA's March 2011 report does not resolve these issues and the AER has provided no conclusions of its own.

42 Taking the values of the distribution ratio and of theta that the Tribunal has concluded should be used, viz 0.7 and 0.35, respectively, the Tribunal determines that the value of gamma is 0.25.

43 The Tribunal notes that, in accordance with cl 6.5.3 of the Rules, the consequence of this decision is that the estimated cost of corporate income tax of a DNSP will be 75% of the estimated tax liability of a bench mark efficient entity determined in accordance with the post tax revenue model. Of course, this provision is based upon the receipt and utilisation of franking credits by shareholders, it being determined that 25% of tax credits created are utilised.

44 The Tribunal has been provided with extrinsic materials in an attempt to explain clearly the basis of this approach. It has not found an explanation in the clear terms that might be expected. The Tribunal remains of the view that an explanation is needed of the basis for adjusting the costs of a DNSP to take account of the tax liabilities of its shareholders. Such an explanation should be the starting point for considering how best to estimate gamma.

45 Further, the Tribunal notes that estimation of a parameter such as gamma is necessarily, and desirably, an ongoing intellectual and empirical endeavour. Its decision in these proceedings is based on the material before it.

46 It now remains for the Tribunal to make a determination in each of the applications.

47 An issue has arisen whether the Tribunal has the power to make interim or partial determinations – see eg *Application by Jemena Gas Networks (NSW) Ltd (No 4)* [2011] ACompT 8; and *Application by EnergyAustralia* [2009] ACompT 7 at [3].

48 After considering this matter and receiving submissions from the parties, this is a matter which needs no further consideration in these applications.

49 As there is doubt about the validity of earlier determinations made in these proceedings, the Tribunal will make a final determination incorporating all earlier decisions. The Tribunal is still seized of the applications and is not *functus officio*. No party opposes this course of action. No third party (including any consumer) is adversely affected by this approach.

50 Therefore, the parties are requested to bring before the Tribunal a determination in each application reflecting the various decisions made by the Tribunal.

51 The parties are reminded that the Tribunal has given notice extending the period that the Tribunal has for determining the applications to 31 May 2011.

I certify that the preceding fifty-one (51) numbered paragraphs are a true copy of the Reasons for Decision herein of the Honourable Justice Middleton (Deputy President), Mr RC Davey and Mr RF Shogren.

Associate:

Dated: 12 May 2011