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Debt transition consistent with the NER and NEL

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Executive summary

1. Rule 6.5.2 (c) of NER defines the allowed rate of return objective (ARORO) 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).

A benchmark debt management strategy must be defined

2. In my view, the promotion of the ARORO requires a regulator to undertake two distinct steps when estimating the return on debt (cost of debt) for a 'benchmark efficient entity' (or any other entity):
 - Step 1: define a financing strategy for 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"; then
 - Step 2: estimate the "efficient financing costs" of implementing that strategy.
3. Step 1 is a necessary step given that, before we attempt to measure the cost of something, we must define what that 'something' is. In this case, the 'something' in question is the benchmark efficient debt management strategy that the benchmark efficient entity referred to in the ARORO would undertake.

An agreed long-term benchmark

4. In its rate of return guideline (Guideline) the AER accepts that, in the long-term, the benchmark efficient debt management strategy for a regulated energy utility will be to have an evenly staggered issuance of 10 year debt. Consistent with this, the AER proposes that, in the long-term, the cost of debt allowance will be set based on a trailing average of the cost of issuing 10 year debt. The AER does not include in its definition of the long-term benchmark efficient debt management strategy any role for the use of interest rate swaps to alter the base interest rate costs that otherwise flow from a trailing average (i.e., a staggered debt issuance program).
5. There is no disagreement between the AER and myself on this definition of the appropriate long-term benchmark efficient debt management strategy. Namely, that this is associated with a trailing average cost of debt without any associated use of interest rate swaps.

AER Guideline imposes a transition

6. The Guideline imposes a transition to the agreed long-term benchmark efficient debt management strategy. Specifically, the Guideline proposes a gradual transition:
- **from** current regulatory practice – based on an estimate of the cost of debt if a regulated business raised 100% of its debt at the beginning of the regulatory period (the ‘on the day’ approach);
 - **to** the newly defined long-term benchmark efficient debt management strategy – a staggered portfolio of 10 year debt.

Rationale for AER transition

7. The AER’s rationale for imposing this transition is two-fold.
- First, the current benchmark efficient debt management strategy is not the same as the long-term benchmark efficient debt management strategy. Consequently, a transition from one to the other is required because otherwise “the benchmark efficient entity is likely then to face costs or practical difficulties...”¹; and
 - Second, the AER believes that customer and business expectations of pricing/revenues outcomes under the ‘on the day’ methodology should be retained at least for the first year of the next regulatory period.²

Critique of AER rationale for a transition

A transition between two different benchmark efficient debt management strategies

8. In my opinion, the fact that the previous regulatory benchmark was based on an inefficient (and ultimately un-implementable) debt management strategy means that it is not possible to define a unique benchmark efficient debt management strategy that existed under the previous ‘on the day’ regulatory practice.
9. Had the previous Rules and regulatory practice set the cost of debt allowance on the basis of a unique benchmark debt management strategy that was actually implementable and efficient then that unique strategy could reasonably be defined as ‘the’ benchmark efficient debt management strategy under the previous Rules and practice. This benchmark could then have reasonably have been adopted as the

¹ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 121.

² AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

starting point for a transition to any newly defined benchmark efficient debt management strategy.

10. However, the ‘on the day’ approach was not implementable by any entity (efficient or otherwise). Consequently, businesses and investors could, and indeed did, respond to this un-implementable regulatory benchmark by adopting a range of alternative strategies. This includes simply adopting staggered debt issuance with no interest rate swaps, issuing callable debt, having low or no debt finance (which is the position of ActewAGL Distribution itself and which I discuss in more detail in Appendix C), adding an interest rate swap position resetting around the beginning of the regulatory period, and/or attempting to raise more debt than average around the beginning of the regulatory period.
11. No single one, or combination, of these strategies can, in my view, be defined as “the” benchmark efficient strategy associated with the previous Rules. This is for the simple reason that, faced with an un-implementable regulatory benchmark, businesses were forced to manage their debt in another way.
12. In this context, it is my view that:
 - if a business is already managing its debt consistent with the agreed long-term benchmark efficient debt management strategy; then
 - that business should not be required to undergo a transition period prior to being compensated based on the agreed long-term benchmark efficient debt management strategy.
13. To impose a transition on such a business will simply extend the period for which they are exposed to interest rate risk and interest rate mismatch. Moreover, it will force customers to continue to face the same price volatility that drove them to request the adoption of a trailing average benchmark in the first place. In this circumstance, the effect of the transition is to delay the realisation of the benefits that accrue from the implementation of the newly defined (and implementable) regulatory benchmark.
14. In any event, under the AER logic the starting point for a transition would not be the “on the day approach” it would be the cost of debt associated with what the AER defines as the benchmark efficient debt management strategy – i.e., staggered debt issuance with an interest rate swap overlay. This starting point would need to compensate for the historical average debt risk premium (DRP). This is consistent with the AER’s own acceptance that the DRP cannot be reset using interest rate swaps.³
15. I also understand that there is evidence provided confidentially by UBS, but summarised in the NSW distribution businesses’ transitional proposal, that,

³ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

especially for a large group of businesses all with the same regulatory reset, attempting to reset base interest rates using swap instruments would tend to ‘move the market’ making this a costly exercise. The Australian Financial Market Association (AFMA) also submitted to the AER that “due to recent international regulatory developments it considers that interest rate swaps are likely to increase the cost of debt rather than reduce the cost of debt”.⁴

16. In summary, I do not believe that the AER is correct to define the previous benchmark efficient debt management strategy as involving the use of interest rate swaps. However, even if this AER definition is accepted, it does not support the AER’s proposed transition (i.e., the AER transition is not a transition from this benchmark debt management strategy).

A transition from ‘reasonable expectations’

17. The other basis the AER provides for its proposed transition is to stay true to the “*reasonable expectations consumers, service providers, and investors formed before the rule change*”⁵ and to support “*...confidence in the predictability of the regulatory regime*”.⁶
18. In my view this rationale confuses predictability and expectations about regulatory process with predictability and expectations about regulatory outcomes. It is the former that are important to customers and service providers and it is the former which the AER’s transition fails to deliver.
19. In my view the AER transition, rather than ensuring *confidence in the predictability of the regulatory regime*, ensures the uncertainty and arbitrariness associated with the old flawed ‘on the day’ methodology are retained for a longer period.
20. The ‘on the day’ approach is similar to a ‘roll of the dice’ for both customers and businesses. It gives compensation for the cost of debt ‘as if’ 100% of debt was refinanced in a narrow window – which is well understood not to be the case.
21. This past practice has led to volatility in prices that was disagreeable to customers and which was why customers were key supporters of a trailing average. It also led to volatility in revenues that did not match volatility in businesses’ costs (given that, at most, a small fraction of debt was actually raised in the window used to set the regulatory cost of debt and interest rate swaps could, at best, hedge only the base interest rate not the DRP).

⁴ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

⁵ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

⁶ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

22. In other words, the level of the cost of debt during the regulatory measurement window is the equivalent of a ‘roll of the dice’ for customers and businesses. Retaining this approach as the starting point for the transition on the grounds that it promotes certainty and predictability conflates the importance of predictability in process with predictability in outcomes.
23. The AER has also argued, in effect, that it believes that the dice may be loaded in customers favour in the upcoming review periods and that this is a further reason for retaining the ‘on the day’ approach as the basis of its transition.

In particular, to the extent that the prevailing market rate of return on debt is mean-reverting, consumers would expect that if they face higher than average energy prices today, they would face lower than average prices in the future.⁷

24. This statement is speculative and no evidence is presented to support the conclusion. In any event, I do not consider that it is a relevant consideration to the promotion of the ARORO.

⁷ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

1 Introduction

25. My name is Tom Hird. I have a Ph.D. in Economics and 20 years of experience as a professional economist. My *curriculum vitae* is provided separately.
26. This report has been prepared for ActewAGL Distribution. I have been asked to provide a report assessing the AER's reasoning for applying transition arrangements between the current 'on the day' approach to setting the cost of debt allowance and the 'trailing average' approach and whether this is consistent with the National Electricity Rules (NER). This report builds on two related reports I have previously provided to the NSW electricity distribution businesses.⁸
27. I have been asked to give particular consideration to the reasonableness of this transition path being applied to a business that already funds itself consistent with a staggered portfolio strategy (i.e., has a fixed rate debt portfolio with staggered debt issuance without any swap contract overlay to alter the base interest rate exposure from the average of past debt issues).
28. In this regard I have also been referred to the National Electricity Objective (NEO) and the Revenue and Pricing Principles (RPP) of the National Electricity Law (NEL) and asked to perform this assessment in that context. 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 – price, quality, safety, reliability, and security of supply of electricity; and the reliability, safety and security of the national electricity system.

29. The most relevant aspects of the Revenue and Pricing Principles are subsection (2) and (5) as set out below.

- (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.*

...

⁸ Hird, *Efficiency of staggered debt issuance*, February 2013. Hird, *Transition to a trailing average approach*, October 2013.

(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.*

30. The remainder of this report is structured as follows:

- Section 2 describes the AER's proposed transition to a trailing average benchmark;
- Section 3 describes my interpretation of the allowed rate of return objective (ARORO), the national electricity objective (NEO) and the revenue and pricing principles (RPP) as they relate to setting the cost of debt allowance;
- Section 4 describes what I regard as the properties of an ARORO compliant benchmark and transition path. This is then contrasted with the AER rationale for its proposed transition path;
- Section 5 discusses the relevance of the factors set out in Rule 6.5.2 (k) which the AER must have regard to;
- Section 6 discusses the relevance of other factors the AER has had regard to;
- Appendix A sets out an assessment of the AER's transition path against other criteria that I have previously used to assess the appropriate benchmark for the cost of debt;
- Appendix B describes the sources of the costs of financial distress – the minimisation of which constitute an important reason why the AER transition and benchmark should be implementable/hedgeable.
- Appendix C discusses the implications of ActewAGL Distribution's absence of debt funding.

31. I acknowledge that I have read, understood and complied with the Federal Court of Australia's *Practice Note CM 7, Expert Witnesses in Proceedings in the Federal Court of Australia*



Thomas Nicholas Hird

29 May 2014

2 AER's proposed transition

32. The Guideline imposes a transition to the agreed long-term benchmark efficient debt management strategy. Specifically, the Guideline proposes a gradual transition:
- **from** current regulatory practice – based on an estimate of the cost of debt if a regulated business raised 100% of its debt at the beginning of the regulatory period (the ‘on the day’ approach);
 - **to** the newly defined long-term benchmark efficient debt management strategy – a staggered portfolio of 10 year debt.
33. The mechanics of the AER's proposed transition arrangements are relatively simple.⁹ In the first year of the next regulatory period the cost of debt allowance would be set exactly as it would be under the ‘on the day’ approach. That is, 100% weight would be given to a cost of debt estimate measured in an averaging period immediately prior to the beginning of the regulatory period.
34. However, in the second year of that regulatory period the weight given to that estimate of the cost of debt would be reduced from 100% to 90% - with the residual 10% weight taken up by an estimate of the cost of debt measured during the first year of regulatory period. In the third year of the next regulatory period 80% weight would be given to the initially estimated cost of debt, 10% weight given to each estimate measured during the first and second years of the regulatory period, and so on.

⁹ See Appendix J of the Explanatory Statement to the Draft Rate of Return Guideline.

3 The ARORO, NEO and RPP

3.1 The ARORO

35. Rule 6.5.2 (c) of NER defines the allowed rate of return objective (ARORO) 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).

36. In my view, the promotion of the ARORO requires a regulator to undertake two distinct steps when estimating the return on debt (cost of debt) for a ‘benchmark efficient entity’ (or any other entity):
- Step 1: define a financing strategy for 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”; then
 - Step 2: estimate the “efficient financing costs” of implementing that strategy.
37. Step 1 is a necessary step given that, before we attempt to measure the cost of something, we must define what that ‘something’ is. In this case, the ‘something’ in question is the benchmark efficient debt management strategy that the benchmark efficient entity referred to in the ARORO would undertake.

3.2 The ARORO promotes the NEO and RPP

38. The NEO is defined in s 7 of the NEL:

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interest 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.

39. The potentially relevant elements of the RPP¹⁰ are:

(2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—

¹⁰ Subsection (4) of the RPP relates to asset valuation.

- (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.*
- (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.*
40. As already discussed, I consider that the ARORO requires the regulator to base the regulatory cost of debt allowance on a clearly defined efficient debt management strategy. This provides regulated businesses the option to implement that same debt management strategy in order to align their debt costs with the regulatory allowance. This tends to promote the NEO and RPP by virtue of the fact that:
- incentives to invest efficiently are promoted because compensation for the cost of debt is commensurate with efficient costs (consistent with the NEO and subsections (3), (5) and (6) of the RPP);
 - network providers are provided with a reasonable opportunity to recover at least the efficient costs the operator incurs as a result of the use of debt funding (consistent with subsection (2), of the RPP); (consistent with subsection (2) of the RPP);



- transaction costs, broadly defined to include the expected costs of financial distress, can be minimised because businesses can align their costs with compensation (consistent with the long term interests of end users and, therefore, the NEO); and
- prices reflect efficient costs which promotes efficient utilisation of the electricity network in question (consistent with the NEO and subsection (7) of the RPP).

4 An ARORO compliant benchmark

4.1 Agreement on the long-term benchmark efficient debt management strategy

41. In its rate of return guideline (Guideline) the AER accepts that, in the long-term, the benchmark efficient debt management strategy for a regulated energy utility is the maintenance of a portfolio of 10 year debt with staggered issuance of that debt – 10% of which was raised in each of the preceding 10 years.
42. Consistent with this, and consistent with the ARORO, the AER proposes that, in the long-term, the cost of debt allowance will be set based on a trailing average of the cost of issuing 10 year debt. The AER does not include in its definition of the long-term benchmark efficient debt management strategy any role for the use of interest rate swaps to alter the base interest rate costs that otherwise flow from a trailing average.
43. There is no disagreement between the AER and myself on this definition of the appropriate long-term benchmark efficient debt management strategy. Namely that, this is associated with a trailing average cost of debt without any associated use of interest rate swaps.

4.2 ARORO compliant rationale for a transition

44. The only rationale based on the ARORO for not immediately implementing the new benchmark is if it is believed that there is a temporary (or short-term) benchmark efficient debt management strategy that is different to the long-term benchmark efficient debt management strategy.
45. If it can be established that there are distinct current (but temporary) and long-term benchmark efficient debt management strategies then a transition between them would be consistent with the ARORO.
46. Importantly, the current (but temporary) benchmark efficient debt management strategy would form the starting point for that transition. The long-term benchmark would be the end point of that transition and the intervening path between them would be defined by the strategy a benchmark efficient entity would undertake in moving from the temporary to the permanent debt management strategy.

4.3 AER defines a temporary benchmark efficient debt management policy

47. The explanatory statement to the Guideline clearly introduces the concept of a temporary benchmark efficient debt management strategy that differs from the (agreed) long-term benchmark.

*Given the observed practices of regulated network businesses and the definition of the benchmark efficient entity, we consider that the following practice is likely to constitute an efficient debt financing practice of the benchmark efficient entity **under [sic] current 'on the day' approach:***

holding a debt portfolio with staggered maturity dates and using swap transactions to hedge interest rate exposure for the duration of a regulatory control period.¹¹ [Emphasis added.]

48. The AER then relies on this difference between the temporary and long-term benchmarks in support of its proposed transition.

In section 7.3.3 we considered what would constitute the efficient debt financing practices of the benchmark efficient entity under the current 'on the day' approach. We considered it likely that holding a debt portfolio with staggered maturity dates and using swaps to hedge interest rate exposure for the duration of a regulatory control period would constitute such an efficient debt financing practice. ... Therefore, if transition is immediate (that is, if there is no transitional arrangement), the benchmark efficient entity is likely then to face costs or practical difficulties, as:

- *It would have likely entered hedging contracts to manage its interest rate risk in the past.*
- *It would be impossible for it 'to go back and lock in rates that applied some time ago'.*
- *Without transition there would be, therefore, a mismatch between the expected return on debt of the benchmark efficient entity and the regulatory return on debt allowance set according to the trailing average portfolio approach. This mismatch could potentially be significant.*

A gradual transition, on the other hand, can take into account the efficient financing practices under the current 'on the day' approach.¹²

¹¹ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 107.

49. For the purpose of clarity, I repeat my understanding of the AER's above position in my own words:
- the previous regulatory practice was to set 100% of the cost of debt allowance based on the cost of debt prevailing at the beginning of each regulatory period (the 'on the day approach');
 - the efficient response to this by a benchmark efficient entity would have been to:
 - issue staggered debt – consistent with a trailing average cost of debt allowance; but
 - use interest rate swaps in an attempt to reset its base interest costs at the same time that the regulatory allowance for the cost of debt would be reset.
 - consequently, there is currently a unique benchmark efficient debt management strategy that involves having a debt portfolio that reflects a trailing average debt issuance program plus an interest rate swap portfolio that causes the base interest rate (but not the debt risk premium (DRP)) to be reset at the beginning of the regulatory period.
50. In doing so, the AER is inferring a benchmark efficient debt management strategy that:
- is not the agreed long-term benchmark efficient debt management strategy and nor is it the (inefficient) benchmark previously used to set the cost of debt allowance (the 'on the day' benchmark strategy); but
 - is what the AER regards as an efficient response to the interest rate risk created by the regulator adopting an inefficient benchmark (i.e., the un-implementable on the 'on the day' benchmark).

4.4 Critique of AER logic

51. In my view there are two serious problems with the logic that the AER uses in support of its transition:
- The selection of its (unique) temporary benchmark efficient debt management strategy is not, in my view, justified; and
 - Even if it were justified, the AER transition does not actually use the so defined temporary benchmark efficient debt management strategy as the starting point for its transition.

4.4.1 It is not possible to identify a unique temporary benchmark efficient debt management policy

52. It is uncontested that the ‘on the day’ approach to setting the cost of debt allowance is based on an inefficient debt management strategy. It is accepted that actually trying to implement this strategy would result in the benchmark entity exposing itself to an inefficient level of finance risk and this is why regulated business do not attempt this strategy. This is, of course, why the Guidelines propose a different methodology for setting the cost of debt allowance in the long-term (the trailing average).
53. The previous regulatory benchmark was based on an inefficient (and ultimately unimplementable) debt management strategy. The introduction of the new Rules, most relevantly the ARORO, meant that this benchmark had to change. That is, the old practice was inconsistent with the ARORO and had to change. In my view, this means that it is not possible to define a unique benchmark efficient debt management strategy that existed under the previous regulatory practice of setting the cost of debt ‘as if’ all debt was raised ‘on the day’.
54. Had the previous Rules and regulatory practice set the cost of debt allowance on the basis of a unique benchmark debt management strategy that was actually implementable and efficient then that unique strategy could reasonably be defined as ‘the’ benchmark efficient debt management strategy under the previous Rules and practice. This benchmark could then have reasonably have been adopted as the starting point for a transition to any newly defined benchmark efficient debt management strategy.
55. Businesses may still have departed from the old benchmark efficient strategy if they believed their own circumstances warranted it – but any such departure from the regulatory benchmark could reasonably be characterised as the business choosing to take on risk and needing to bear the consequences of that. Any application for a bespoke transition path based on that business’s choice to depart from the regulatory benchmark could reasonably be rejected on the basis that the business had deliberately departed from the previous efficient regulatory benchmark.
56. However, the ‘on the day’ approach was not implementable by any entity (efficient or otherwise). Consequently, businesses and investors could, and indeed did, respond to this un-implementable regulatory benchmark by adopting a range of alternative strategies. This includes simply adopting staggered debt issuance with no interest rate swaps, issuing callable debt, adding an interest rate swap position resetting around the beginning of the regulatory period, having low or no debt finance (which is the position of ActewAGL Distribution itself and which I discuss in more detail in Appendix C) and/or attempting to raise more debt than average around the beginning of the regulatory period.

57. No single one, or combination, of these strategies can, in my view, be defined as “the” benchmark efficient strategy associated with the previous Rules. This is for the simple reason that, faced with an un-implementable regulatory benchmark, businesses were forced to manage their debt in another way. Businesses had no choice but to depart from the regulatory benchmark because it was strongly inefficient.
58. I also understand that there is evidence provided confidentially by UBS, but summarised in the NSW distribution businesses’ transitional proposal, that, especially for a large group of businesses all with the same regulatory reset, attempting to reset base interest rates using swap instruments would tend to ‘move the market’ making this a prohibitively costly exercise. The Australian Financial Market Association (AFMA) also submitted to the AER that “due to recent international regulatory developments it considers that interest rate swaps are likely to increase the cost of debt rather than reduce the cost of debt”.¹³ This evidence suggests that it is not obvious that the AER’s proposed definition of a temporary benchmark strategy is itself efficient – let alone the unique temporary efficient debt management strategy.
59. In this context, it is my view that:
- if a business is already managing its debt consistent with the agreed long-term benchmark efficient debt management strategy; then
 - that business should not be required to undergo a transition period prior to being compensated based on the agreed long-term benchmark efficient debt management strategy (which is also their actual strategy).
60. To impose a transition on such a business will simply extend the period for which they are exposed to interest rate risk resulting from mismatch between their interest costs and the regulatory allowance. It would not serve the ARORO because such businesses’ actual practice cannot be said to be inconsistent with a benchmark efficient debt management practice. Of course, this does not mean that it is inconsistent to adopt a transition for another business whose previous debt management strategy was not consistent with the agreed long-term benchmark efficient debt management strategy.
61. Moreover, it would force customers to continue to face the same price volatility that drove them to request the adoption of a trailing average benchmark in the first place. This is illustrated in the following quotes from customer submissions (all emphasise is added):

¹³ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

Public Interest Advocacy Centre.¹⁴

Of particular concern is the current regulatory practice to assume (from a methodology point of view) that all debt for the 5-year determination period is raised over a short period of time close to the determination itself.

This is highly problematic and is not supported by observation of private sector network reports.

*To the extent that a portfolio approach using historical averaging **provides more stability in the cost of debt, while not exposing networks to unhedgeable risks**, then this approach is to be preferred as consistent with the overall objectives.*

Major Energy Users¹⁵

*The recognition of the need for the return on equity component to be **less volatile** over time and the introduction of a trailing average approach to developing the allowance for the return on debt are welcome changes...*

Council of Small Business Australia¹⁶

*COSBOA is supportive of the AER's proposed use of a simple trailing average approach to establishing the return on debt and of annual updating of this. We believe this is ... a better representation of the actual debt financing practices of NSPs and other firms than the existing AER approach. We also note the AER's comment that it **would smooth movements in the return on debt over time and so price volatility, which we recognise is consistent with the long term interests of consumers, other things being equal.***

62. I draw particular attention to the first quote from the Public Interest Advocacy Centre. I regard this quote as an excellent summary of how a regulator should approach defining benchmark efficient debt management strategy.
63. Ultimately, the effect of the transition is to delay the realisation of the benefits that accrue from the implementation of the newly defined (and implementable)

¹⁴ PIAC, *Reasonably rated: submission to the AER's Draft Rate of return Guideline*, 15 February 2013, p.25. Available at <http://www.aer.gov.au/node/18859>

¹⁵ MEU, Comments on the draft guideline, October 2013, p.3. Available at <http://www.aer.gov.au/node/18859>

¹⁶ COSBOA, Australian Energy Regulator – better regulation program, comments, October 2013. Available at <http://www.aer.gov.au/node/18859>

regulatory benchmark. This is inconsistent with the ARORO and, for the reasons set out in section 3.2, inconsistent with the NEO and RPP.

4.4.2 AER does not transition from its temporary benchmark

64. In any event, following the AER’s reasoning, the starting point for a transition would not be the “on the day approach” it would be the cost of debt associated with whatever is defined as the temporary benchmark efficient debt management strategy. The AER defines this as staggered debt issuance with an interest rate swap overlay. Consequently, the starting point would need to compensate for the historical average debt risk premium (DRP).
65. This is because, as is acknowledged in the AER’s explanatory statement, while interest rates swaps can have the effect of resetting base interest costs, they cannot be used to reset DRP costs.

“For an Australian efficient operator there is no market to effectively, and in a cost efficient manner, hedge their DRP.

Therefore the benchmark efficient entity would not able to alleviate all potential mismatch in relation to the debt margin component of the return on debt, unless it issues the entirety of its debt during the averaging period. To this extent, under the ‘on the day’ approach the benchmark efficient entity faces a potential trade–off between the need to manage its refinancing and interest rate risk.”¹⁷

66. Therefore, even if one did accept that the AER’s proposition that “using swap transactions to hedge interest rate exposure for the duration of a regulatory control period” was efficient under the previous ‘on the day approach’ this clearly does not provide a justification for the AER adopting the ‘on the day’ approach as the sole (unique) starting point for its transition. Rather, it provides support for a starting point that, at a minimum, is based on an historical trailing average DRP plus prevailing swap rates, plus the transaction costs associated with managing a swap portfolio.¹⁸

4.4.3 Summary

67. In summary, I do not believe that the AER is correct to define the previous benchmark efficient debt management strategy as involving the use of interest rate swaps. However, even if this AER definition is accepted, it does not support the

¹⁷ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122. The first sentence of this extract is a quote from the AER’s consultant, Chairmont Consulting.

¹⁸ Including the costs associated with (hypothetical) simultaneous large transactions for NSW and ACT distribution and transmission businesses moving the observed market prices.



COMPETITION
ECONOMISTS
GROUP

AER's proposed transition (i.e., the AER transition is not a transition from this benchmark debt management strategy).

5 Regard to Rule 6.5.2 (k)

68. Rule 6.5.2 of the NER also includes considerations that the regulator must have regard to that are relevant to the issue of transition.

5.1 6.5.2 (k) (1)

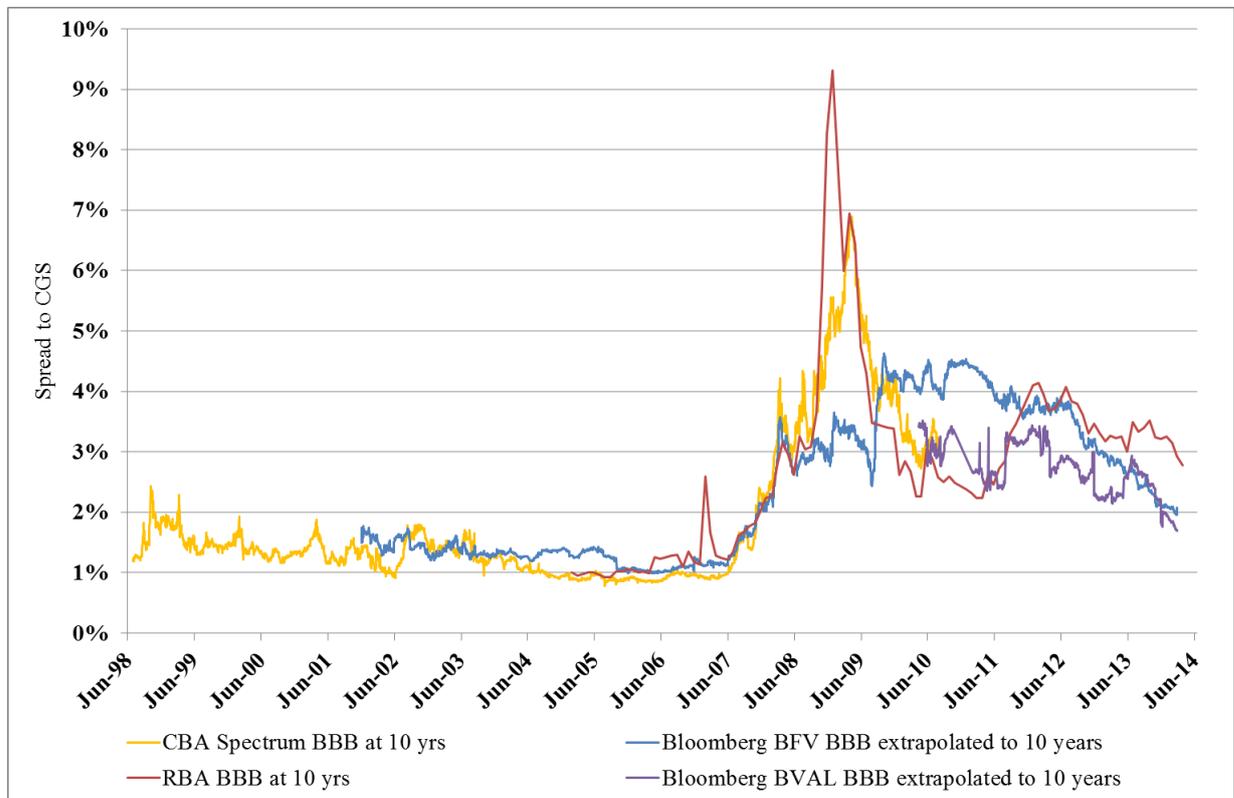
69. Rule 6.5.2 (k) (1) directs the regulator to have regard to:

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

70. Clearly, provided the cost of debt is set consistent with the ARORO any such difference will be minimised (with variance arising only due to estimation error). As I note below and in my companion report for the NSW electricity distribution businesses,¹⁹ estimation error is a much more significant issue for the ‘on the day’ approach than for the historical average approach. As can be seen in the below figure taken from my companion report, RBA and Bloomberg estimation of BBB cost of debt has at certain times been very different. However, these differences are much smaller on average – given that sometimes the RBA curve is higher than the Bloomberg curve and *vice versa*.

¹⁹ Hird, WACC estimates, May 2014.

Figure 1: Reproduction of Figure 8 from companion report (RBA, CBASpectrum and Bloomberg)



5.2 6.5.2 (k) (2)

71. Rule 6.5.2 (k) (2) directs the regulator to have regard to:

the interrelationship between the return on equity and the return on debt;

72. The cost of equity is, of necessity, based on estimates of the risk adjusted return estimated for similar listed businesses. None of these businesses finance themselves in the manner implied by the AER's transition calculation (i.e., on the day finance). If they did finance debt in the manner implied by the AER's transition then equity in those businesses would be materially higher risk due to the refinancing risk equity investors would have to bear.

73. Consequently, the AER's approach results in an internally inconsistent estimate of the cost of equity and debt – with the former based on real world debt financing strategies and the latter based on a hypothetical strategy which the AER acknowledges would raise the risk and cost of equity if actually implemented.

5.3 6.5.2 (k) (3)

74. Rule 6.5.2 (k) (3) directs the regulator to have regard 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

75. Provided that the ARORO is achieved, the cost of debt allowance will, at an aggregate level, reflect the efficient cost of debt. This will, in turn, give efficient incentives for capital expenditure. To the extent that capital expenditure is “lumpy” in nature it may be appropriate for weights in a trailing average to reflect this lumpiness (i.e., with higher/lower weight given to years in which capital expenditure was high/low).

5.4 6.5.2 (k) (4)

76. Rule 6.5.2 (k) (4) directs the regulator to have regard to:

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.

77. As discussed in section 4.2:

- a. if a prior well-defined and well-understood benchmark efficient debt management strategy exists such that businesses have previously had the opportunity to align their own debt management strategy with; and
- b. a transition path starts with this prior benchmark efficient debt management strategy; and
- c. the transition path to the new benchmark is set out in an internally consistent (implementable) manner; then
- d. any adverse ‘mismatch’ between a business’s debt servicing costs and the allowance for debt servicing costs provided by the regulator will only exist due to the business’s deliberate choice to depart from the previous benchmark in a) above.

78. However, the condition set out in a) above is not satisfied in the current context. There is no well-defined benchmark efficient debt management strategy that businesses have previously had the opportunity to align their own strategy with. There is, of course, a previous benchmark. However, this was not an efficient

benchmark and was, in reality, impossible²⁰ for a business to align their own strategy to.

79. In this context, I consider that it is inappropriate to impose a transition on a business that is already funding itself in a manner consistent with the newly defined benchmark which is both implementable and efficient.

²⁰ Even if a business did try and issue all of their debt at the beginning of the regulatory period (a practice that is recognised as being inefficient and which no businesses actually undertake) it would still be impossible to issue 10 year debt at that time – unless all 10 year debt was repurchased at the end of each 5 year regulatory period and then reissued.

6 Other factors relied on by the AER

80. The AER has also had regard to considerations that are not obviously derived from the ARORO, Rule 6.5.2 more generally or the NEO and RPP of the NEL.

6.1 Regard to reasonable expectations

81. The AER has had regard to reasonable expectations of what customers and businesses would have received had the AER retained its previous ‘on the day’ practice.

Further, we consider that a gradual adjustment is also consistent with the need to account for the effect of the change in the return on debt approach on confidence in the predictability of the regulatory regime. This would accommodate any potential discrepancy between the proposed approach to estimating the return on debt and reasonable expectations consumers, service providers, and investors formed before the rule change.

In particular, unexpected and immediate changes in approaches to setting regulatory allowances for the return on debt can be disruptive to both businesses and consumers (to the extent that they may result in significant and unexpected changes in energy prices and cash flows compared to the expected levels under the continuation of the previous policy). ...²¹

82. In my view, the previous ‘on the day’ approach is inconsistent with the ARORO and the NER and NEL more generally. The previous benchmark would expose businesses and customers to material changes in the allowed cost of debt which would flow through to electricity network prices.

83. As such, I do not believe that a ‘no change’ counterfactual is relevant – because failure to change the cost of debt methodology would have been inconsistent with the new Rules. The AER’s final explanatory statement is silent on this question but the draft explanatory statement clearly considers that this may be the case:

As we discuss in section 6.3.3, raising the entirety of the benchmark efficient entity's debt once for every regulatory control period would expose the benchmark efficient entity to substantial refinancing risk. Therefore, it may not be an efficient financing practice.²²

84. In any event, I consider that this rationale confuses predictability and expectations about regulatory process with predictability and expectations about regulatory

²¹ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

²² AER, Explanatory Statement to the Draft Rate of Return Guideline, page 81.

outcomes. It is the former that are important to customers and service providers and it is the former which the AER's transition fails to deliver.

85. By way of analogy, imagine that a regulator was previously setting the cost of debt allowance by way of a 'roll of the dice'. Further, imagine that the regulator had received complaints by customers and businesses that they did not like the price and revenue uncertainty that were associated with this regulatory process. To which the regulator responded by proposing to move to an approach that based the cost of debt allowance on the actual cost of debt of efficiently financed providers. However, imagine that the regulator postponed implementation of this approach to instead 'roll the dice' one more time in order to ensure "*...confidence in the predictability of the regulatory regime*".
86. This is clearly wrongheaded. Rather than ensuring *confidence in the predictability of the regulatory regime* the regulator would be doing precisely the opposite – ensuring the uncertainty and arbitrariness associated with the old regulatory process were retained for a longer period.
87. In my view, the parallels between this hypothetical scenario and the actual situation are strong. The 'on the day' approach was similar to a 'roll of the dice' for both customers and businesses. It gave compensation for the cost of debt 'as if' 100% of debt was refinanced in a narrow window which everybody understood was not the case. The consequence of this was that, if the cost of debt during that window was high/low, then prices and revenues based on that cost of debt were similarly high/low.
88. This led to volatility in prices that was disagreeable to customers and which, as noted above, was why customers were key supporters of a trailing average. It also led to volatility in revenues that did not match volatility in businesses' costs (given that, at most, a small fraction of debt was actually raised in the window used to set the regulatory cost of debt and interest rate swaps could, at best, hedge only the base interest rate not the DRP).
89. In other words, the level of the cost of debt during the regulatory measurement window was the equivalent of a 'roll of the dice' for customers and businesses. Retaining this approach as the starting point for the transition on the grounds that it promotes certainty and predictability is to confuse the importance of predictability in process with predictability in outcomes.
90. The AER has also argued, in effect, that it believes that the dice may be loaded in customers favour in the upcoming review periods and that this is a further reason for retaining the 'on the day' approach as the basis of its transition.

In particular, to the extent that the prevailing market rate of return on debt is mean-reverting, consumers would expect that if they face higher

*than average energy prices today, they would face lower than average prices in the future.*²³

91. This statement is speculative and no evidence is presented to support the conclusion. In any event, I do not consider that it is a relevant consideration to the promotion of the ARORO.
92. Alternatively, the AER's concern might be of the following nature. Imagine that a continuation of the 'on the day' approach was expected to set an allowance for the cost of debt at 7% p.a. in the future. Yet, an estimate of the trailing average cost of debt expected at the beginning of the next regulatory period was 8% p.a. Let this be the cost of a debt that an efficient business funding itself consistent with the trailing average methodology would incur.
93. In this example, current and future expected interest rates (7%) are below average interest rates over the last 10 years (8%) – where 10 is the term of the trailing average. If there was no change in approach used to set the cost of debt allowance then prices would be based on a 7% allowance rather than the 8% allowance associated with the trailing average.
94. Relative to a baseline of regulatory practice as normal, immediate implementation of a trailing average approach would give rise to a 1% loss/gain to customers/businesses. This would apply in the first year of the next regulatory period and would be expected to reduce over time to zero as historical data were dropped out of the trailing average.
95. However, this involves a specific way of defining a 'gain' and 'loss'. A 'gain' or a 'loss' could equally be defined relative to a baseline of the efficient financing costs of a business employing a trailing average strategy. (Noting that that is the strategy that the AER has determined is sufficiently better than the 'on the day' approach to warrant a change in regulatory approach.) In which case, there would be no gains/losses from immediate adoption of a trailing average. In fact, imposing a transition would create winners and losers relative to such a baseline. Specifically, in the short term customers would 'gain' by having prices set below efficient financing costs and the business would 'lose' by virtue of the same difference.²⁴
96. Which baseline to adopt when thinking in terms of gains and losses is not a matter of positive economics but rather is a matter of normative opinion. Different people could disagree on whether it is fairer to:
 - give customers prices that reflect what they would have received under a continuation of the 'on the day' regime; versus

²³ AER, Explanatory Statement to the Rate of Return guideline, Dec. 13, p. 122.

²⁴ However, ultimately the under-compensation of network businesses would inhibit necessary investment in and maintenance of electricity networks, to the detriment of the long term interests of customers.

- give equity investors in a business an allowance that reflects the efficient costs associated with their financing strategy (where that financing strategy reflects the strategy that the AER has deemed more efficient in the long run than the ‘on the day’ regime).
97. I do not attempt to opine on which of the above is fairer. Ultimately, this is not a matter of economics but is a normative value judgement.
98. However, there are fundamental economic efficiency differences between these two approaches. Where the business is already funding itself consistent with the trailing average approach, the choice between transitioning to, or immediately adopting, a trailing average has different implications for efficiency and transaction costs.
99. At a high level, the failure of a regulator to set an allowance that reflects a business’s efficiently incurred financing costs can have serious implications for the way in which investors rationally view the operation of the regulatory regime and, therefore, their incentives to invest. This general principle underpinned the criteria I set out in my previous report²⁵ and which I have analysed in Appendix A. My conclusions from that Appendix are summarised here:
- i. The AER trailing average transition retains the unhedgeable characteristics of the ‘on the day’ approach and causes the same exposure to unnecessary risks for a business that already finances in this way.
 - ii. The above risks can, at best, be partially hedged against. Moreover, any attempt by a business to partially reduce such risks will create transaction costs for the business.
 - iii. The AER transition increases the risks associated with measurement error.
 - iv. The AER transition creates more uncertainty around future prices because 100% of the cost of debt allowance is based on market conditions at a future date – which may be potentially very different to expectations.
 - v. Finally, imposing a transition delays the time until the benchmark cost of debt allowance reflects standard practice of businesses operating in similar environments to network energy businesses.

6.2 Practical considerations and gaming

100. The AER explanatory statement has the following text:²⁶

We have also had regard to the issues, related to the implementation of the return on debt approach. Without a transition, we would need to

²⁵ Hird, *Efficiency of staggered debt issuance*, February 2013.

²⁶ AER, Explanatory Statement to the Draft Rate of Return Guideline, page 96.

estimate the trailing average of the return on debt for each service provider at the commencement of the next regulatory control period. Some elements of the average would be based on historical data that might not be readily available, particularly, to the extent that we are proposing to use a third-party data set. We would also need to reach an agreement with each service provider on the averaging periods for historical data where there is no transition. In this case, a service provider may prefer the averaging periods that deliver the highest estimates of the past rates of return. A transition that does not use historical data would avoid this issue.

Finally, as we discussed in section 7.3.2, there is a concern that, given the guideline is not binding, service providers would seek to switch from proposing one return on debt approach to proposing another and back at the time of their determinations. Service providers could propose to adopt whichever approach provided them with the highest allowed revenue. A transitional arrangement may deter a service provider from seeking to opportunistically switch between approaches, given this would require a further transitional arrangement. Any further transitional arrangement would delay the full commencement of the new approach. In turn, this would delay any ‘windfall gains’ received by the service provider from changing approaches.

101. In my view the rationale set out above is not sufficiently strong to justify applying a single transition to all businesses.
102. In terms of deriving historical estimates, in a real sense it is easier/less fraught to estimate the cost of debt historically than it is to determine the cost of debt prospectively in a narrow window. Historically, any unbiased inaccuracy in estimation techniques will tend to cancel out – with each measurement receiving only 10% weight. However, under the AER’s proposed transition, the first measurement period actually receives more weight in the cost of debt calculation than under the current ‘on the day’ approach.²⁷
103. In addition, the time pressure associated with the first measurement in the AER transition analysis is compressed to within a few weeks of the end of an averaging period in order to feed into regulatory prices during the first year of a regulatory period. This is a simple reflection of the fact that the cost of debt estimate cannot be arrived at until the averaging period is past. The AER Guidleine states that the averaging period “should be as close as practical to the commencement of each regulatory year...”. This clearly leaves little time for analysis or submissions on the

²⁷ Under the AER proposed transition the first year receives 100% weight in the first year falling steadily to 0% weight in the 11th year. This equivalent to this year determining the cost of debt for 5.5 years ($100\%*1yr+90\%*1yr+80\%*1yr+...10\%*1yr=5.5$ years). By contrast, under the ‘on the day’ approach the cost of single measurement each regulatory period would determine the cost of debt for just 5 years.

best way to interpret the available data in that period (including which “independent third party data service provider” to use).

104. By contrast, the best estimate of a trailing average estimate can be engaged on early because all, or most of the available data, already exists. Indeed, this is precisely what I have done in my companion report for the NSW distribution businesses.²⁸
105. I also do not believe that the AER’s concern over firms switching between benchmarks if no transition is applied is valid. The Rules do, in my view, permit the AER to impose a transition from one benchmark efficient debt management strategy to another. The problem in the current circumstance is that there is no benchmark efficient debt management strategy associated with the ‘on the day’ approach. Consequently, there is no benchmark efficient debt management strategy to transition from.
106. In this context, I consider that it inappropriate to impose a transition on a business who is already funding in a manner consistent with the newly defined benchmark which is both implementable and efficient.

²⁸ Hird, *WACC estimates*, May 2014.

Appendix A Assessment against criteria

107. The same criteria that I have previously used²⁹ to assess, and ultimately recommend, the trailing average approach can be used to assess the application of the AER's transition arrangements to a trailing average. These are:

- i. **It is able to be implemented by a business** (hedgeable).
- ii. **Implementation involves low transaction costs for the business** – if there are two equally implementable debt raising strategies then, other things equal, the strategy that involves the lowest transaction costs (direct and indirect) should be preferred.
- iii. **It minimises the prospect and consequences of estimation error** – a business should be able to be confident that, if it manages to the benchmark strategy, its cost of debt will move with the AER's estimate of costs – especially during periods in which its costs are rising materially.
- iv. **It gives rise to relatively low price volatility for customers and does not result in higher prices when customer budgets are under stress** – customers are not as well placed to hedge against volatility in network prices and especially do not want to be facing higher prices when they are facing broader budgetary threats, e.g., due to a financial crisis.
- v. **It should reflect the standard practice of businesses operating in similar environments to network energy businesses.**

A.1 Able to be implemented

108. My first criterion was that the method for setting the cost of debt must be based on a debt management strategy that is able to implemented. This means that a business must have a reasonable opportunity to align its actual cost of debt to the cost of debt allowance. I agree with the conclusion in the Explanatory Statement that:³⁰

Finally, we consider the trailing average portfolio approach is capable of providing the benchmark efficient entity with a staggered debt portfolio with a reasonable opportunity to recover at least the efficient debt financing costs

109. In my view the 'on the day' approach is not, in general, capable of providing a reasonable opportunity to recover at least the efficient debt financing costs. The reason is that the 'on the day' approach is not implementable. In order to hedge to

²⁹ Hird, Efficiency of staggered debt issuance, February 2013

³⁰ AER, Explanatory Statement to the Rate of Return Guideline, December 2013, page 109.

the ‘on the day’ approach 100% of a business’s interest rate costs must be able to be reset over a short window of time. In order to achieve this 100% of all debt must be refinanced in the short window (averaging period) used to estimate the cost of debt allowance – and the estimate of the cost of debt allowance in that window must be accurate. Any attempt to do this would create unacceptable refinancing risk – as appears to be acknowledged in the explanatory statement to the draft Guideline.³¹

As we discuss in section 6.3.3, raising the entirety of the benchmark efficient entity's debt once for every regulatory control period would expose the benchmark efficient entity to substantial refinancing risk. Therefore, it may not be an efficient financing practice.

110. It must be noted that some businesses may have entered into swap contracts (at some transaction costs as discussed in the next section) that reset their base interest rate exposure at the beginning of the regulatory period. This allows for a partial hedge of the ‘on the day’ allowance. It is only partial because it does not hedge against movements in the debt risk premium component of the cost of debt – a component that has been historically large since the beginning of the GFC in 2007 at the same time that the base interest rate has been historically low.
111. The proposed transition is not implementable precisely because the proposed transition to trailing average retains, in large part, the ‘one the day’ approach. During the first year of the transition 100% of the cost of debt allowance is based on the ‘on the day’ approach. Assuming a 10 year term for the cost of debt, 90% of the allowance is based on the ‘on the day’ approach in the second year, 80% in the third year and so on until the trailing average is fully implemented in the 10th year.
112. This makes it impossible for a business to align its strategy with the regulatory benchmark during the AER’s proposed transition. This is particularly true of a business that already funded itself consistent with a trailing average approach. Such a business will have a cost of debt that is based on a trailing average of market conditions while the regulatory allowance will, at least initially, be based on a snapshot of market conditions during a short window at the beginning of the regulatory period.
113. That is not to say that immediate adoption of a trailing average for all firms would be appropriate. In particular, firms who have already entered into swap contracts to reset their base interest rate exposure at the beginning of the regulatory period may be able to better hedge the AER transition than an immediate implementation of a trailing average.
114. Fundamentally, the unhedgeable nature of the ‘on the day’ approach means that there is no single ‘dominant’ financing strategy for businesses under that regime.

³¹ AER, Explanatory Statement to the Draft Rate of Return Guideline, page 81.

Any transition arrangements need to reflect this fact if the transition arrangements are to be implementable.

A.2 Transaction costs

115. I have been asked to consider the specific case of a business that already funds itself consistent with a trailing average approach and who is faced with the AER proposed transition. Such a business is, under the AER transition, exposed to a mismatch between its funding costs and the regulatory allowance. Moreover, the extent of that mismatch depends on how market conditions evolve over the short window prior to the next regulatory period.
116. This mismatch can be broken down into two different components, each of which has its own subcomponents:
- i. The mismatch that exists right now between their costs and the allowance that is expected to be provided under the AER transition. This is made up of the expected mismatch between:
 - a) base interest rates paid/allowed; and
 - b) risk premiums paid/allowed.
 - ii. The variability in that mismatch around the expected level that might occur between now and the first averaging period of the transition. Including in relation to variation in the:
 - a) base interest rates allowed; and
 - b) risk premium allowed.
117. There is no mechanism by which the business can hedge the mismatch associated with ib) or iib). This is because there is no financial product that allows a business to hedge against changes in the risk premium on its own debt.
118. Similarly, the mismatch in ia) above cannot be altered or hedged against by any change in debt management policy. This mismatch represents the difference between the base interest rate on the business's books now (which reflects an average of base interest rates in the past when debt has been issued) and the base interest allowance the business expects to receive – which will be set in a future averaging period.
119. However, there is a mechanism by which the business could potentially hedge against movements in base interest rates between now and the future averaging period (hedge against the mismatch in iia). This would involve:
- taking out a set of pay floating/receive fixed swap contracts on its entire debt portfolio – the effect of which is to turn the entire portfolio into floating rate debt;

- taking out a further set of pay fixed swap contracts that expire during the future averaging period – the effect of which is to refix base interest rates, but only up to the first averaging period in the AER’s transition.
120. By engaging in this type of derivative trading the business could attempt to protect itself against unexpected reductions in base interest rates (and therefore the regulatory allowance) between now and the first averaging period of the AER transition (and, equally, remove any upside from an unexpected rise in base interest rates and, therefore, the regulatory allowance). Of course, as already explained, this would still leave exposure to a mismatch associated with the sources described at ia), ib) and iib) above.
 121. However, any attempt by a business to reduce such risks (even to the very partial level set out above) will create potentially prohibitive transaction costs. That is, the partial level of hedging provided by such a strategy is not free. It will have costs in terms of fees and charges by the arrangers of such trades. There will also be counterparty risks inherent in the contracts. Perhaps more significant, especially for a large business operating in a less than perfectly liquid market, buy/sell margins will be incurred going into both legs of the above swap strategy.
 122. In summary, the proposed transition is in large part not hedgeable by a firm that is funding itself with a trailing average approach. To the extent that it is hedgeable, potentially significant transaction costs would need to be incurred to achieve this partial hedge. These transaction costs would not be incurred if there was no transition to a trailing average for such a firm.

A.3 Measurement error

123. The ability of a firm to feasibly manage to the benchmark debt raising strategy can also be compromised if there is material scope for estimation error by the regulator. This is especially problematic if estimation errors are more likely to occur when the consequences are the most serious – such as in times of financial crisis.
124. The AER transition increases the risks associated with measurement error. The AER transition approach gives, in the first year of the next regulatory period, 100% weight to the estimate of the ‘on the day’ cost of debt at the beginning of that year and this continues to have (declining) weight in the cost of debt allowance over the transition.
125. This measurement will be given 90% weight in the second year, 80% weight in the third year and so on. This can be compared to the immediate adoption of the trailing average approach where this measurement will have only 10% weight in each of the 10 years. An immediate adoption of the trailing average dramatically reduces the potential for estimation error in a single year to affect the accuracy of the cost of debt allowance over the next 10 years.

A.4 Potential for customers to manage their exposure to the cost of debt

126. If customers' income (salaries / government benefits/ business sales) are not correlated with energy prices then volatility in energy prices (caused by volatility in energy infrastructure prices) will flow through into volatility in customers' net cash-flows. This will be especially problematic if the volatility is likely to result in energy costs increasing during periods in which their own budgets are under stress, e.g., during financial crises.
127. Individual consumers have only a limited capacity to enter into arrangements that mitigate such volatility in the prices they pay for delivered energy – especially where that volatility arises from network prices. For this reason, final consumers will generally prefer a cost of debt allowance that minimises volatility in network debt costs (and so network prices and energy costs) – even if businesses are themselves indifferent to such fluctuations (due to their ability to manage their debt costs to the benchmark allowance).
128. The AER's proposed transition retains the exposure to the volatile 'on the day' cost of debt for customers. For example, if the cost of debt turns out to be unusually high/low in the averaging period at the beginning of the next regulatory period for a business then 100% of this will be automatically translated into a higher/lower cost of debt allowance (and higher/lower energy price) in the first year of the AER's transition.
129. By comparison, immediate adoption of a trailing average approach would mean that the cost of debt allowance would be, to a large degree, known in advance of the next regulatory period. This is because the trailing average would use historical data that is already publicly known. Thus, this source of uncertainty would be removed. Of course, customers budgeting will depend on volatility in the overall price of energy and the cost of debt allowance is just one factor - albeit an important one – influencing that price.

A.5 Delaying the implementation of a benchmark efficient cost of debt allowance

130. Finally, imposing a transition delays the time until the benchmark cost of debt allowance reflects the standard practice of businesses operating in similar environments to network energy businesses. As noted in my previous report, the fact that other businesses generally fund consistent with a trailing average approach suggests that it is efficient. Where a business already funds itself in this way, delaying the implementation of a trailing average delays the time at which cost of debt allowances reflects efficient costs.

A.6 Summary

131. Based on an application of the same five criteria used to determine that a trailing average allowance is superior to an 'on the day' allowance I conclude that, for a business already funding itself consistent with a trailing average, immediate adoption of a trailing average is superior to the AER's proposed transition. This is unsurprising because, in this situation, the delay in the implementation of a trailing average simply delays the benefits associated with adopting a trailing average.

Appendix B The costs of financial distress

B.1 Finance theory

132. The cornerstone of modern finance theory on the optimal capital structure for a firm is the work of Modigliani and Miller (1958). The following three subsections summarise their results. The first describes the optimal capital structure in the hypothetical context of perfect (zero transaction costs) capital markets. The second describes optimal capital structure in the more realistic context of imperfect capital markets, where “frictions” exist. The third describes the special role of bankruptcy/insolvency costs in determining an optimal capital structure.

B.2 Modigliani-Miller with perfect financial markets

133. The principal insight of Modigliani and Miller (1958) is that the level of risk in a firm is rather like the amount of air in a balloon. Squeezing one end of a balloon does not reduce the amount of air that is inside – it just shifts it to “the other end”. In much the same way, issuing debt does not reduce the overall level of risk – it simply shifts it somewhere else – in this case, to equity. Miller (1991) made a similar observation some 30 years later:

Think of the firm as a gigantic tub of whole milk. The farmer can sell the whole milk as it is. Or he can separate out the cream, and sell it at a considerably higher price than the whole milk would bring. (Selling cream is the analog of a firm selling debt securities, which pay a contractual return.) But, of course, what the farmer would have left would be skim milk, with low butter-fat content, and that would sell for much less than whole milk. (Skim milk corresponds to the levered equity.) The Modigliani-Miller proposition says that if there were no cost of separation (and, of course, no government dairy support program), the cream plus the skim milk would bring the same price as the whole milk.

134. In this quote Miller notes that issuing low risk debt securities is analogous to a farmer separating out cream from whole milk; namely:
- the firm gets a good price (low interest rate) for its debt; but
 - the corollary is that the remaining equity is less desirable, and so requires a higher return to attract investors.
135. What Modigliani and Miller demonstrated is that if financial markets are efficient and there are no transaction costs, any reduction in the cost of debt will be perfectly

offset by a higher cost of equity. A firm's capital structure therefore has no effect on its weighted average cost of capital (WACC). This "law of the conservation of risk" is comparable to the "law of conservation of energy" from the physical sciences. Like energy, risk cannot be destroyed – it can only be converted from one form to another.

136. It should be noted that Modigliani and Miller do not define "transaction costs" as encompassing simply the direct and observable costs of an activity (such as payments to printers for a prospectus). Rather, transaction costs are defined much more broadly to include costs associated with dealing/trading in imperfect markets. These include, for example, costs associated with imperfect management incentives (agency problems and incentive problems with asymmetric information), and costs associated with trading in illiquid markets and/or with financial constraints that force a business to make suboptimal decisions.
137. A further conclusion that flows from Modigliani and Miller is that, if financial markets are perfectly efficient with zero transaction costs, then no particular debt raising strategy will dominate any other. Irrespective of whether a business issues large or small amounts of debt, short-term debt or very long term debt, callable or puttable debt, etc., its WACC will be the same.

B.3 Modigliani-Miller financial markets with frictions

138. Given the finding that, in frictionless financial markets, a business's capital structure simply does not matter then, if capital markets were frictionless, one would expect that firms with very similar attributes (products, competitors, cost structures and so on) would exhibit a great variety of capital structures. For example, some may have short term debt, others long term debt; some may have high gearing and others low gearing, and so on. There would be no 'common' strategy because, in the absence of frictions, there is no advantage from adopting any particular practice.
139. In actuality, businesses with similar attributes will often consistently adopt the same (or similar) debt raising strategies. The insight of Modigliani Miller is that consistently observed debt management strategies must be explained by a desire to minimise transaction costs (broadly defined) associated with less than perfect markets. That is, once one relaxes the assumption that capital markets are efficient, theory suggests that businesses (or subsets of businesses) will often adopt debt raising strategies that are designed to minimise exposure to those imperfections with a view to reducing transaction costs. Common strategies may therefore start to emerge.
140. A straightforward example is that businesses rarely, if ever, issue public debt at levels below a certain threshold, typically measured in the millions of dollars. This is because there are transaction costs associated with selling debt on both the seller

(prospectus/legal fees etc.) and buyer side (becoming informed about the quality of the debt etc.). For this reason, businesses will typically seek to avoid repeatedly incurring the same transaction costs by undertaking a smaller number of large debt issues (as opposed to a large number of small issues).

B.4 Special role of insolvency/bankruptcy costs

141. Once the Modigliani-Miller result was understood finance academics immediately attempted to explain, within the paradigm of transaction costs, businesses attempt to limit the volatility of cash flows by, for example, attempting to hedge their costs to their revenues – including by limiting the amount of debt finance used (because interest must be paid irrespective of revenues)? This question was especially pertinent given that the existence of tax as a transaction cost and the tax deductibility of interest costs would tend to suggest that 99.99% gearing would minimise tax costs (and therefore transaction costs).
142. The generally accepted answer was that there were very high levels of transaction costs associated with insolvency/bankruptcy and this was why firms tended not to adopt high levels of gearing. Baxter (1967)³² was one of the first to make this point but many authors have built on his insight since.³³

The purpose of the present paper is to explain, in the context of the Modigliani and Miller discussion, how excessive leverage can be expected to raise the cost of capital to the firm. It is argued that when account is taken of the “risk of ruin” a rising average cost of capital is perfectly consistent with rational arbitrage operations. Allowing for the possibility of bankruptcy is tantamount to relaxing the assumption that the anticipated stream of operating earnings is independent of the capital structure. [Baxter (1967)]

143. Insolvency or near insolvency imposes costs on a range of parties, including:
- Debt investors: insolvency means that debt holders do not get paid when debts fall due (a technical default). Debt investors will typically incur significant costs to manage that disruption (such as curtailing consumption/investment in other activities or borrowing from third parties – often at penalty rates due to the financial distress of the original technical default). If they cannot manage the

³² Baxter, N., "Leverage, Risk of Ruin and the Cost of Capital," *Journal of Finance* 22, September 1967, pp. 3956-403.

³³ For example: Stiglitz, J.E., "A Re-Examination of the Modigliani-Miller Theorem," *American Economic Review* 59, December 1972, pp. 784-793; Kraus, A. and R.H. Litzenberger, "A State Preference Model of Optimal Financial Leverage," *Journal of Finance*, September 1973, pp. 911-922; and Kim, E.H., "A Mean-Variance Theory of Optimal Capital Structure and Corporate Debt Capacity," *Journal of Finance* 33, March 1978, pp. 45-63.

technical default then they will themselves be rendered insolvent (unable to pay their debts as they fall due);

- Equity investors: insolvency (or near insolvency) means that equity investors must stop receiving a dividend on their investment, which they have to manage in the same manner as debt investors and with analogous consequences. Equity investors will also suffer because the businesses reputation as a reliable borrower will be damaged. Moreover, existing equity investors may be forced to participate in a rights issue and/or a public equity raising to address the insolvency. Both of these options are likely to involve substantial transaction costs for equity investors.
144. Depending on the nature of the contracts with debt holders, insolvency may also give rise to debt holders taking full or partial control of the company and, potentially, to bankruptcy proceedings. Protracted legal battles may ensue between debt and equity holders (and between different groups of debt/equity holders) over the future of the firm. This may paralyse management, with the principal focus being on the division of the existing value of the firm (and debt holders attempting to ensure the maximum repayment of their debts) rather than on maximising the total value of the firm (including the equity stake).
 145. These costs can destroy the value of a firm that would, had it adopted a less aggressive capital management strategy, never have become insolvent in the first place. Moreover, the disastrous nature of the potential transaction costs associated with insolvency (and bankruptcy), can see a firm in moderate financial distress quickly spiral into insolvency. This is because debt investors may be unwilling to fund the firm (or only at penalty interest rates) for fear of subsequent exposure to these costs. In other words, if there is perceived to be the potential for insolvency, this can become a self-fulfilling prophecy.
 146. It is for these reasons that transaction costs associated with insolvency/bankruptcy play a key role in the ‘real world’ analysis of optimal capital management plans. Any change to capital management strategy can materially influence the likelihood (or perceived likelihood) of insolvency/bankruptcy, and so the probability of these substantial costs being incurred. It is important to recognise that there does not need to be an imminent threat of insolvency or bankruptcy for these factors to have a material bearing upon a firm’s optimal capital management strategy. What matters is the potential effect of a particular strategy on expectations.
 147. The “catch-all phrase” for this downside from gearing in the economic literature is the “costs of financial distress” (CFD). These costs come in many forms, including:
 - being forced to raise capital at disadvantageous rates in the future;
 - having to sell assets at “fire-sale” prices;
 - distortions to operational decisions that result from operating in financial distress; and,

- ultimately, the direct costs of litigation between stakeholders triggered by insolvency/bankruptcy.
148. These costs are significant. In a separate report prepared on behalf of Orion,³⁴ CEG Academic Consultant Professor Bruce Grundy has reviewed the literature on the CFD and is able to provide a reasonably tight bound for the expected CFD – including utility specific estimates.
 149. Specifically, by relying on empirical estimates of the CFD in the finance literature, Professor Grundy estimates a range for the actuarially expected CFD of between 5% and 8.8% of firm value – with the upper end of that range being a utility specific estimate. At a WACC of 8%, compensating for this cost requires between 40 to 70bp to be added to the regulatory WACC in perpetuity.
 150. Unhedgeable regulatory allowances raise the expected CFD because it increases the probability of future financial distress.

³⁴ Professor Bruce Grundy, *The Costs of Financial Distress and Allowed Revenues for Regulated Firms*, 28 April 2014.

Appendix C ActewAGL Distribution's debt management strategy

151. ActewAGL Distribution, being one of the parties commissioning this report, has no debt. This raises conceptual issues when attempting to define what, if any, debt management strategy ActewAGL Distribution employed under the previous regulatory practice and Rules.
152. In adopting zero debt financing, ActewAGL Distribution has essentially left the issue of debt funding to its equity investors who are free to leverage their investment in ActewAGL Distribution in any way they see fit. Indeed, ActewAGL Distribution's owners do appear to have adopted different debt management strategies.
153. ActewAGL Distribution is a 50/50 joint venture between ACTEW Corporation and SGSP (Australia) Assets Pty Ltd (SGSPAA) (with the latter jointly owned by State Grid International Development Australia Investment Company Limited and Singapore Power International Pte Ltd). ACTEW has fixed rate debt (some of which is inflation indexed) with maturities stretching out to 2048 and no interest rate hedging.³⁵ SGSPAA clearly has used interest rate hedges in the manner the AER envisions for at least some of their regulated assets.³⁶
154. In this sense, by leaving different equity investors to decide their own the leverage position (and the type of debt used to gain that leverage), ActewAGL Distribution can be thought of as having no, and all conceivable, debt management strategies simultaneously. This means that, there is no unique debt management strategy that ActewAGL Distribution can be defined as having undertaken under the previous Rules and regulatory practice. Consequently, I consider that it is reasonable to deem ActewAGL Distribution as already funding itself in a manner consistent with the long-run benchmark efficient debt management strategy. Or, perhaps less strongly, it is not reasonable to deem ActewAGL Distribution as having a debt management strategy that is different from the long-run benchmark efficient debt management strategy.

³⁵ ACTEW 2013 annual report, note 24.

³⁶ See Note 31 to SGSPAA's financial statements 31 march 2013.