Estimating the return on debt

Discussion paper

4 March 2015

Economic Regulation Authority
WESTERN AUSTRALIA

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Economic Regulation Authority
Perth, Western Australia
Phone: (08) 6557 7900

Contents

Invitation to make submissions

Interested parties are invited to make submissions on this discussion paper by **4:00 pm (WST) Wednesday 25 March 2015** via:

Email address: publicsubmissions@erawa.com.au

Postal address: PO Box 8469, PERTH BC WA 6849

Office address: Level 4, Albert Facey House, 469 Wellington Street, Perth WA 6000

Fax: 61 8 6557 7999

Please note that points made in earlier submissions need not be repeated. The Authority will take that material into account. Submissions should focus on any new material that is set out in this discussion paper.

There will also be an opportunity to discuss the matters raised in this discussion paper at a workshop, to be held on Thursday 12 March 2015. Please see the website for further details of the workshop.

CONFIDENTIALITY

In general, all submissions from interested parties will be treated as being in the public domain and placed on the Authority's website. Where an interested party wishes to make a submission in confidence, it should clearly indicate the parts of the submission for which confidentiality is claimed, and specify in reasonable detail the basis for the claim. Any claim of confidentiality will be considered in accordance with the provisions of the *National Gas Law* (WA).

The publication of a submission on the Authority's website shall not be taken as indicating that the Authority has knowledge either actual or constructive of the contents of a particular submission and, in particular, whether the submission in whole or part contains information of a confidential nature and no duty of confidence will arise for the Authority.

General Enquiries
Richard Begley
Economic Regulation Authority
Ph: 08 6557 7900
records@erawa.com.au

Media Enquiries
Richard Taylor
Riley Mathewson Public Relations
Ph: 61 8 9381 2144
admin@rmpr.com.au

Executive Summary

1. On 14 October 2014, the Economic Regulation Authority (**ERA**) published its Draft Decision on ATCO's proposed revised access arrangement (**AA4**) for the Mid-West and South-West gas distribution systems (**GDS**). The Authority maintained the approach to estimating the return on debt set out in the Guidelines, albeit with amendments relating to the treatment of the debt risk premium (**DRP**), among other things.

2. In responding to the Authority's Draft Decision, ATCO Gas Australia Pty Ltd (**ATCO**) has revised its proposal with regard to the return on debt, seeking to apply a hybrid trailing average approach.

3. This consultation seeks stakeholders' views on the approach to be used to estimate the return on debt for the ATCO Final Decision. In particular, it seeks stakeholders' views on the relative merits of:

   - the 'on the day' approach set out in the Authority's Draft Decision on the GDS AA4 access arrangement provisions (the Authority's 'current approach'); and
   - the hybrid trailing average approach.

4. This consultation is not about other aspects of the return on debt or the rate of return. In particular, it is not about the means used to estimate the parameters contributing to each return on debt approach.

Evaluation issues

5. The various return on debt options may be evaluated in terms of their ability to achieve the National Gas Objective, the Revenue and Pricing Principles, the National Gas Rules (**NGR**) and the allowed rate of return objective set out in Rule 87(3) of the NGR, as well as the other requirements of Rule 87 of the NGR. In line with these requirements, the Authority considers that any approach to estimating the rate of return should, among other things:[1]

   - promote efficiency, such that the regulated return on debt:
     - is 'commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk in provision of the reference services',[2] and
     - delivers 'effective incentives to promote efficient investment in, or in connection with a pipeline, efficient provision of pipeline services, and efficient use of the pipeline';[3]
   - minimise any differences between the regulated return on debt and that of the benchmark efficient entity, as a factor the Authority must have regard to under the NGR;[4]

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[1] Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, pp. 5 – 9.

[2] National Gas Rule 87(3).

[3] National Gas Objective, Revenue and Pricing Principle (*National Gas Access (WA) Act 2009,* s.23 and s.24(2)). National Gas Rule 87(11)(c).

[4] National Gas Rule 87(11)(a).

- remunerate efficient financing costs, over the lives of the assets, in net present value terms;[5]
- minimise regulatory costs.

6. The performance of the options are evaluated against these considerations.

Hybrid trailing average alternative approach?

7. Based on its evaluation, the Authority is further considering a hybrid trailing average approach as an option for estimating the return on debt.

8. The paper sets out the Authority's view of a possible preferred option for a hybrid trailing average approach – which it considers could meet the requirements of the NGR and National Gas Law (**NGL**) – and which therefore might provide an alternative to the Authority's current approach.

9. The Authority invites stakeholder comment on this hybrid trailing average approach, its relative merits as compared to the Authority's current on the day approach, and its relative merits as compared to the approach proposed by ATCO.

Submissions

10. Interested parties are invited to make submissions on this discussion paper by 4:00 pm (WST) Wednesday 25 March 2015.

11. Please note that points made in earlier submissions need not be repeated. The Authority will take that material into account. Submissions should focus on any new material that is set out in this discussion paper.

12. There will also be an opportunity to discuss the matters raised in this discussion paper at a workshop, to be held on Thursday 12 March 2015. Please see the website for further details of the workshop.

[5] Revenue and Pricing Principle 2 (*National Gas Access (WA) Act 2009*, s.24(2)).

Introduction

13. On 17 March 2014, ATCO Gas Australia Pty Ltd (**ATCO**) submitted its proposed revised access arrangement, access arrangement information and other supporting information for the GDS to the Authority. The proposed revised access arrangement, access arrangement information and supporting information are available on the Authority's website.

14. The role of the Authority is to determine whether the proposed revisions comply with the requirements of the NGL and NGR, as implemented in Western Australia by the *National Gas Access (WA) Act 2009* (**NGL**(**WA**)).

15. ATCO's proposed revised access arrangement covers the period 1 July 2014 to 31 December 2019 (herein referred to as **AA4** or fourth access arrangement period). ATCO's current access arrangement (**AA3**) applies until a new proposed access arrangement is approved by the Authority.

16. The purpose of an access arrangement is to provide details about the terms and conditions, including price, upon which an independent third party (user) can gain access to the pipelines for the transport of gas.

ATCO's approach to the cost of debt

17. In its AA4 proposal, ATCO did not accept the Authority's approach for estimating the return on debt set out in the Rate of Return Guidelines.[6]

18. Instead, ATCO proposed to estimate the return on debt – for the purposes of determining the rate of return over the AA4 period – as the full 'on the day' estimate at the start of the AA4 regulatory period. The proposed 'full' on the day approach would have estimated the return on debt – comprising both the risk free rate and the debt risk premium (**DRP**) – based on the prevailing rate just prior to the start of the regulatory period.[7]

19. On 14 October 2014, the ERA published its Draft Decision on ATCO's proposed AA4 revised access arrangement for the GDS. The Authority maintained the approach to estimating the return on debt set out in the Guidelines, albeit with amendments relating to the treatment of the DRP, among other things.

20. In responding to the Authority's Draft Decision, ATCO has revised its proposal with regard to the return on debt, proposing a hybrid trailing average approach.

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[6] The Guidelines required that the return on debt be estimated as the sum of the 5 year risk free rate estimated 'on the day' at the start of the regulatory period, the updated debt risk premium estimated each regulatory year, combined with an allowance for debt raising and hedging costs.

[7] The term 'on the day' refers to any estimate made just prior to a regulatory year. The term 'full on the day' refers to an on the day estimate which applies for the full five years of the regulatory period.

The purpose of this consultation

21. This consultation seeks stakeholders' views on the approach to be used to estimate the return on debt for the ATCO Final Decision. In particular, it seeks stakeholders views on the relative merits of:

- the 'on the day' approach set out in the Authority's Draft Decision on the GDS AA4 access arrangement provisions (the Authority's 'current approach'); and
- the hybrid trailing average approach.

22. This consultation is not about other aspects of the return on debt or the rate of return. In particular, it is not about the means used to estimate the parameters contributing to each return on debt approach.

23. This discussion paper responds principally to ATCO's submission on the Authority's Draft Decision, and its proposal for a hybrid trailing average approach. ATCO had not raised the option of a hybrid trailing average prior to the Draft Decision. However, despite this, the Authority has agreed to consider the hybrid trailing average option. This consultation is to allow due process with regard to the Authority's AA4 final decision.

24. The paper also takes account of Goldfields Gas Transmission Pty Ltd's (**GGT**'s) and DBNGP (WA) Transmission Pty Ltd's (**DBP**'s) revised access arrangement proposals. Both GGT and DBP are proposing a full trailing average approach to estimating the return of debt.

25. The discussion paper undertakes a broad evaluation of the alternative approaches, in terms of performance against the requirements of the NGL and NGR. The paper also considers implementation issues associated with trailing average approaches.

26. But first, the paper sets out the relevant elements of NGR and summarises the various positions of the service providers at the current time.

The NGR and NGL

27. With specific regard to the return on debt, NGR87 requires that:

> **Return on debt**
>
> (8) The return on debt for a regulatory year is to be estimated such that it contributes to the achievement of the allowed rate of return objective.
>
> (9) The return on debt may be estimated using a methodology which results in either:
>
> (a) the return on debt for each regulatory year in the access arrangement period being the same; or
>
> (b) the return on debt (and consequently the allowed rate of return) being, or potentially being, different for different regulatory years in the access arrangement period.
>
> (10)Subject to subrule (8), the methodology adopted to estimate the return on debt may, without limitation, be designed to result in the return on debt reflecting:
>
> (a) 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 time when the AER's decision on the access arrangement for that access arrangement period is made;

(b) 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 access arrangement period; or

(c) some combination of the returns referred to in subrules (a) and (b).

(11) In estimating the return on debt under subrule (8), regard must be had to the following factors:

(a) 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;

(b) the interrelationship between the return on equity and the return on debt;

(c) the incentives that the return on debt may provide in relation to capital expenditure over the access arrangement period, including as to the timing of any capital expenditure; and

(d) any impacts (including in relation to the costs of servicing debt across access arrangement 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 access arrangement period to the next.

(12) If the return on debt is to be estimated using a methodology of the type referred to in subrule (9)(b) then a resulting change to the service provider's total revenue must be effected through the automatic application of a formula that is specified in the decision on the access arrangement for that access arrangement period.

28. Overarching these specific rules relating to the return on debt are the objectives and principles of the NGL and NGR. These are that the regulated return on debt should, among other things achieve, as far as possible:[8]

- efficient financing – contribute to the achievement of the allowed rate of return objective, such that the 'rate of return for a service provider is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services';[9]
- efficiency in investment and use –'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';[10]
- cost recovery – allow the service provider 'reasonable opportunity to recover at least the efficient costs the service provider incurs';[11]
- best practice regulation – minimise transactions costs of regulation, and provide for effective transitional processes.[12]

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[8] These considerations are informed by the requirements of the National Gas Objective, the Revenue and Pricing Principles and the Allowed Rate of Return Objective. The considerations also draw on the analysis in the Rate of Return Guidelines (Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, chapter 2).

[9] National Gas Rule 87(3).

[10] National Gas Objective (*National Gas Access (WA) Act 2009*, s. 23, clause 23.

[11] National Gas Objective (*National Gas Access (WA) Act 2009*, s. 23, clause 24(2).

[12] These considerations relate to the efficiency aspects of regulation, and are also informed by National Gas Rule 87(11)(d), which requires consideration of 'any impacts (including in relation to the costs of servicing debt across access arrangement periods) on a benchmark efficient entity… that could arise as a result of changing the methodology that is used to estimate the return on debt from one access arrangement period to the next'.

The Authority's current approach

29. The Authority in its GDS AA4 Draft Decision required ATCO to:

- estimate the return on debt based on a risk premium over and above the risk free rate, combined with a margin for administrative and hedging costs:

  Return on Debt = Risk Free Rate+ Debt Risk Premium+ Debt raising costs + Hedging costs

- proxy the risk free rate by the return on the 5 year CGS 'on the day' over a short averaging period of 40 days – the draft decision stated:

  650. The application of a 5 year risk free rate and an allowance for costs associated with interest rate swap contracts (see paragraph 917 for the latter) replicates the efficient financing costs of a benchmark efficient entity operating in a competitive market. The benchmark efficient entity may manage refinancing risk by issuing longer term debt, but may hedge the underlying base rate by entering into 5 year swaps.

  651. The Authority considers that the Australian market for interest rate swaps has the depth and liquidity to cover the notional amounts required by regulated utilities in Australia. To illustrate the point, Figure 26 indicates that there has been a strong increase in the turnover of such derivatives, to approach 9 trillion dollars in 2012-13, up almost 3 trillion dollars since 2007-08. [13]

- adopt a 10 year term for the DRP – the draft decision acknowledged that in order to follow Lally's recommendations with regard to achieving the present value principle (or NPV=0, given the lack of hedging instruments for the DRP component), that is needed to estimate the DRP consistent with the average term at issuance, which is 10 years.
- In addition, the draft decision set out that the DRP would be estimated by:
  - assuming a BBB band credit rating for the benchmark efficient entity;
  - using the extended bond yield approach to encompass international bonds;
  - estimating the DRP estimate 'on the day' – just prior to the regulatory period – over a short 40 day averaging period (within 100 to 300 bp 'guiderails'); and
  - annually update the DRP estimate and publish the estimate, but only adjust revenue once, via a 'true up' at the next access arrangement.

What ATCO is proposing

30. ATCO in response now proposes a 'hybrid' trailing average approach to the cost of debt:

- combining a 10 year trailing average of the 10 year DRP; with a
- 5 year 'swap contract overlay' to reset the base rate of interest.

[13] Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, p. 150.

31. To this ATCO proposes to add a margin for hedging and administration costs. ATCO has also made a subsequent submission calling for a new issue premium to be added to the cost of debt.

32. ATCO's consultant CEG summarises this as follows:

> …if the benchmark efficient entity is assumed to have entered into hedging contracts using swaps to reset its base rate of interest every five years, its trailing average cost of debt could be altered in a manner that gives rise to a 'hybrid' cost of debt. This is a hybrid of a trailing average debt risk premium (DRP) and a prevailing base rate of interest that its debt related costs would equal:
>
> $Costs = Swap_{t=o}^{5} + DRP_{TA}^{10}$ rel. to swaps + $Trans.\ costs$ (1)
>
> Where:
>
> $Swap_{t=0}^{5}$ = the 5 year swap rate prevailing at the beginning of the regulatory period (t=0);
>
> DRP_{TA}^{10} rel. to swaps= $Corp.\ Yield_{TA}^{10} - Swap_{TA}^{10}$;
>
> $Corp.\ Yield_{TA}^{10}$ = the trailing average of 10 year corporate debt yields;
>
> $Swap_{TA}^{10}$ = the trailing average of 10 year swap rates; and
>
> $Trans.\ costs$ = the transaction costs of the strategy – including the transaction costs associated with the relevant swap contracts.

33. Use of the 'swap contract overlay' means that the base rate of interest is determined by 5 year bank bill swap rates at the beginning of the regulatory period (that is, on the day).

34. The DRP would be measured as the spread to swap for a 10 year term. ATCO proposes using the RBA estimates – extrapolated to give a 'true' 10 year term – to estimate the DRP. The DRP estimate would be updated annually, which would require a fixed principle clause to be inserted in the access arrangement.

35. No transitional arrangements are proposed.

What other service providers are proposing

DBP

36. DBP also proposes a full trailing average, estimated as the sum of:

- the 10 year swap rate;
- the DRP estimated using the approach set out by the ERA in the ATCO draft decision – as the average of the Gaussian kernel, Nelson Seigel and Nelson Siegel Svenson spreads to the risk free rate, albeit with some minor adjustments; and
- allowances for debt raising, hedging and a new issue premium.[14]

37. DBP proposes to adopt the Australian Energy Regulator (**AER**) / Queensland Treasury Corporation's (**QTC**) ten year transition.

[14] Dampier Bunbury Pipeline, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Access Arrangement Period*, 31 December 2014.

38. One exception to following the AER approach is that DBP proposes that any new investment – greater than one tenth of the existing asset base – be transitioned to the trailing average over ten years, starting from the point it is added to the asset base (on the basis that this will avoid perverse investment incentives under the trailing average approach).

39. DBP submitted a simple spreadsheet example illustrating how the 10 year transition and capex weighting would operate in practice, consistent with the QTC approach.[15]

GGT

40. GGT proposes the 10 year 'full' trailing average approach consistent with the AER's approach.

41. The risk free rate is proposed as the trailing average of the return on 10 year CGS.

42. The DRP is the 10 year trailing average, estimated from the RBA data series for BBB debt.

43. Allowances for debt raising and hedging costs are then added as per the Guidelines (15 bppa).

44. The trailing average would be annually updated. No transition is proposed; GGT proposes to commence with the 10 year trailing average based on the years 2005 to 2014, using the RBA dataset.

45. GGT, unlike DBP, was not aware of the Authority's ATCO Draft Decision at the time of its submission.

Outcomes under each approach

46. The following table compares the cost of debt from each of the proposed approaches based on the most recent data from the Reserve Bank of Australia (**RBA**). For heuristic purposes – so as to illustrate differences on a consistent basis – it is assumed that the averaging period is the month of February. Thus the 'full' on the day approach estimate would be 4.06 per cent, which is the RBA's most recent reported non-financial corporate BBB-rated bond yield for February 2015 (Table 1).[16]

47. The Authority's current approach and DBP's transition to a full trailing average would give an (indicative illustrative) rate of 4.06 per cent for the first year of a notional regulatory period, which started shortly after February 2015 (both rates would subsequently be annually updated). ATCO's hybrid trailing average approach, without a transition, would give a rate of 4.63 per cent for the first year. GGT's full trailing average approach, without a transition, would give a rate of 7.48 per cent for the first year.

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[15] Dampier Bunbury Pipeline, *Proposed Revisions DBNGP Access Arrangement 2016 – 2020 Access Arrangement Period*, 31 December 2014, Submission 12, Appendix J.

[16] The term 'on the day' refers to any estimate made just prior to a regulatory year. The term 'full on the day' refers to an on the day estimate which applies for the full five years of the regulatory period.

Table 1 Cost of debt comparison – BBB non-financial corporate bonds – as at February 2015

	BBSW (5 year) (per cent)	BBSW (10 year)[a] (per cent)	DRP (per cent)	Total cost of debt (per cent)[b]
On the day	2.36		1.70	4.06
Hybrid trailing average	2.36		2.27	4.63
Full trailing average		5.21	2.27	7.48

Notes: a) The 'on the day' estimate of the 10 year BBSW for February 2015 is 2.78 per cent – 42 basis points higher than the 5 year BBSW estimate. b) The illustrative rates here do not include other costs such as hedging or debt raising costs.

Source: Reserve Bank of Australia, *Statistical table F3 – aggregate measures of Australian corporate bond spreads and yields: non-financial corporate bonds*, accessed 3 March 2015; ERA analysis.

Evaluation

48. This section of the discussion paper provides an evaluation of on the day versus trailing average approaches, as a means of highlighting key issues. In so doing, it considers outcomes associated with:

    - the Authority's current approach set out in the Authority's draft decision on ATCO's GDS AA4 proposal; and
    - ATCO's revised proposal, for a hybrid trailing average.

49. Outcomes for a full trailing average approach are also discussed where relevant.

50. The various options may be evaluated in terms of their ability to achieve the National Gas Objective (**NGO**), the Revenue and Pricing Principles (**RPP**), the National Gas Rules (**NGR**) and the allowed rate of return objective (**ARORO**) set out in NGR 87(3), as well as the other requirements of NGR 87. In line with these requirements, the Authority considers that any approach to estimating the rate of return should, among other things:

    - promote efficiency, such that the regulated return on debt:
        - is 'commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk in provision of the reference services', and
        - delivers 'effective incentives to promote efficient investment in, or in connection with a pipeline, efficient provision of pipeline services, and efficient use of the pipeline';[17]
    - minimise any differences between the regulated return on debt and that of the benchmark efficient entity, as a factor the Authority must have regard to under the NGR;[18]
    - remunerate efficient financing costs, over the lives of the assets, in net present value terms;[19]
    - minimise regulatory costs.[20]

51. In what follows, the performance of the various proposals are evaluated against these three key considerations.

Promote efficiency

52. The Authority evaluated the efficiency properties of alternative return on debt estimators in the Rate of Return Guidelines. The Guidelines set out the Authority's view that considerations of efficiency are key to the achievement of the NGO, the RPP and the ARORO. Relevant efficiency considerations include the efficiency of

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[17] National Gas Rule 87(3); National Gas Rule 87(11)(c); National Gas Objective, Revenue and Pricing Principles (see relevant parts of the *National Gas Access (WA) Act 2009*). See also Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, pp. 5 – 9.

[18] National Gas Rule 87(11)(a).

[19] Revenue and Pricing Principle 2 (*National Gas Access (WA) Act 2009*, s. 23, clause 24).

[20] National Gas Rule 87(3) – least cost regulation is in the long term interests of consumers.

the approach to financing debt, as well as the resulting signals provided for investment and use of pipeline services.

53. The Authority's conclusion was an the 'on the day' approach, annually updated, had the best efficiency properties. To this end, the Guidelines set out the following arguments:[21]

- First, the Guidelines provided evidence that the on the day approach is a better predictor of interest rates going forward, all other things equal. The on the day approach therefore provides better signals with regard to the expected cost of debt. This in turn implies that basing the return on debt on the on the day approach would lead to greater economic efficiency.
- Second, the Authority argued in the Guidelines that competitive firms cannot always recoup their debt costs in their prices at any point in time, and that therefore allowing the regulated firm to do so would at times in effect lower the regulated firm's risk and provide a lower cost of debt as compared to other firms in the economy, hence leading to an implicit subsidy and a distortion. This would not reflect efficient financing costs.
- Third, there is the issue of investment incentives. To a large degree, this is related to the issue of prediction performance.
- Fourth, there is the issue of signalling efficient use by upstream and downstream users.

54. These considerations are evaluated in light of the service providers' responses in what follows.

Prediction performance

55. The Guidelines concluded that – to the extent the on the day approach is a better predictor of interest rates going forward, all other things equal – it provides better signals with regard to the expected cost of debt. This in turn implies that basing the return on debt on the 'on the day' approach would lead to greater economic efficiency for investment decisions and for upstream and downstream use.

56. ERA Secretariat research relating to prediction performance was reported in the Guidelines.[22] The research compared differences between the average of five actual annual interest rate outcomes for the risk free rate, over a five year forward looking period (mimicking the actual outcomes across five regulatory years of an access arrangement period), and the average of the alternative forward looking interest rate estimators (giving an 'error forecast series). The error performances of various approaches were compared, with the conclusions that:

- the 'on the day' estimator (based on an averaging period of 20 to 60 days) was (statistically significant) superior as compared to five and 10 year trailing average estimators;[23]

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[21] Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Chapter 6.

[22] Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 5.

[23] Application of the Diebold Mariano test demonstrated that the on the day forecast was superior in terms of minimising the error performance, at a statistically significant level (see Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 5).

- the only time a trailing average was a superior predictor was when it was annually updated just prior to each regulatory year, but the on the day estimator was not (in other words the on the day approach was based on the estimate at the start of the regulatory period).

57. The Guidelines' conclusions are disputed by DBP in its access arrangement submission. DBP argues that comparing what is actually being implemented by the ERA and AER respectively (that is, on the day *ex ante the regulatory period* versus 10 year trailing average *annually updated*), indicates that there is no superiority in the on the day approach in terms of forward prediction.[24,25]

58. DBP also disputes the robustness of the ERA's statistical testing, despite the peer review conducted by Data Analysis Australia. DBP contends that a requirement of the Diebold Mariano test is that the error forecast series are stationary, but that this condition is not met:[26]

> The most important question, given the two models for debt actually being proposed by the ERA and the AER in their respective Guidelines, if one is concerned about efficiency and predictions matching subsequent actual outcomes as best they can (which the ERA professes to be in its Guidelines), then the relevant comparison is between the ERA and AER models. The Dickie-Fuller test results find that each error vector examined in isolation is stationary, but that the DM-test statistic (AER-ERA in Tables 1 and 2 above) is not. This means that the conditions of the DM test are not met in respect of comparing these two models. The Phillips-Perron test indicates that neither the test statistic nor the error vectors are stationary, which suggests that neither model is likely to predict well.
>
> The practical upshot of our investigations is that one cannot draw conclusions about whether the ERA or the AER's models are likely to form better predictions of rates likely to prevail during the access period.

59. However, the Authority notes that with its approach:

- firms can hedge the risk free rate, and hence the on the day approach for the risk free rate component provides a perfect predictor for the service provider's actual cost of capital;[27] and
- the DRP is annually updated, so that the estimate will be a better predictor than the trailing average.[28]

60. On a different issue, ATCO's consultant CEG argues that firms consider interest rates over the life of an investment project, not just the prevailing rate, when making

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[24] Dampier Bunbury Pipeline, *Proposed Revisions: DBNGP Access Arrangement: 2016 – 2020 Access Arrangement Period: Access Arrangement Proposal: Submission 12: Rate of Return*, 31 December 2014, p. 36.

[25] DBP also continue to raise questions about the replicability of the ERA's statistical analysis relating to this testing.

[26] Dampier Bunbury Pipeline, *Proposed Revisions: DBNGP Access Arrangement: 2016 – 2020 Access Arrangement Period: Access Arrangement Proposal: Submission 12: Rate of Return*, 31 December 2014, Appendix N, last page (unnumbered).

[27] .However, as interest rates change over the course of the regulatory period, the estimated risk free rate will become less aligned with the prevailing rate faced by other firms in the economy.

[28] The Authority notes that it is unable to statistically test predictive properties of the DRP estimators, given a lack of data. However, the Authority considers that results for the risk free rate – which indicate that the most recent on the day estimator has the best predictive properties for a forecast period of less than five years – provides insight for the DRP estimate for short periods of one to five years (see Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2015, Appendix 5).

investment decisions (see discussion of this point below). If one agrees with such a longer term perspective, then the differences between the present value of the trailing average and the on the day approach at any point in time become less important, while the superior performance of the trailing average in terms of the present value condition would tend to favour the trailing average (see next section below on the present value issues).

61. Further, it is possible to weight the trailing average approach to ensure that new investment faces a marginal cost of debt that is based on the prevailing rate (see below). This attenuates the shortcomings of the trailing average that relate to prediction performance.

Incentives for efficient financing costs

62. Second, the Authority argued in the Guidelines that competitive firms may not always recoup their debt costs in setting their prices at any point in time, and that therefore allowing the regulated firm to do so would in effect lower the regulated firm's risk and provide a lower cost of debt at times as compared to other firms in the economy, hence leading to an implicit subsidy and a distortion:

> 366. The view that the trailing average approach is preferred on efficiency grounds is therefore misplaced. Stakeholders claim that, to the extent that the trailing average would match the firm's embedded cost of debt, its mismatch timing risk is reduced significantly… This is correct. The corollary would be that, under the trailing average, regulated firms would be able to reduce their hedging and other debt management activities markedly.
>
> 367. The regulated firm's debt risk premium, under a trailing average approach, would also likely reduce, as lenders would account for the lower risk of future mismatch timing risk and related risks, such as default risk. However, to the extent that this opportunity is not available to other unregulated firms in the economy, such an approach would create a type of financial subsidy to the regulated firm. This creates an economic distortion and an associated reduction in economic efficiency.[29]

63. However, CEG maintains that competitive firms do not adjust prices in response to frequent interest rate changes, hence are able to replicate the *return on debt* of a staggered portfolio in their prices:

> Many, if not most, non-regulated infrastructure investments are undertaken in the presence of long term contracts (typically negotiated prior to investment) that are akin to compensating based on a trailing average cost of debt. That is, the contract will specify a revenue/price path that is expected to recover the investors' actual costs (which will not be based on the assumption that actual costs move one for one with annual fluctuations in interest rates).
>
> Moreover, where investment proceeds without a long-term contract market forces do not create a scenario where revenues/prices fluctuate one for one with prevailing interest rates.[30] As discussed above, short term fluctuations in interest rates are more likely to cause short term prices to move in the opposite direction (to the extent demand

[29] Economic Regulation Authority, *Explanatory statement for the rate of return guidelines*, 16 December 2014, p. 70.

[30] The ERA seems to have in mind some form of 'perfectly contestable' unregulated industry where prices are set based on the costs of 'overnight' entry and exit by potential competitors. Such industries, to the extent that they exist anywhere in the economy are not the norm – and certainly don't exist in markets for large sunk infrastructure assets. Moreover, even if they did exist the relevant interest rate would be the cost of new debt at that time – not the DRP at that time plus a 5 year CGS yield estimated some time in the previous 5 years.

> in the economy is inversely related to the level of interest rates). Sustained increases in interest rates over an extended period can be expected to raise prices, especially for capital intensive services, but this is precisely what will be delivered by a trailing average in these conditions.[31]

64. CEG appears to be suggesting that competitive firms account for their costs of debt when pricing – in equilibrium the marginal firm (which sets prices) is likely to charge the expected average cost of a debt portfolio, or else make losses. If this is accepted, there is no subsidy involved in pricing to a trailing average through the return on debt.

65. Furthermore, CEG contends that if there is an approach which can lower the cost of finance of regulated firms, such as through the trailing average, thereby raising creditworthiness and lowering the cost of debt, then that approach should be adopted:

> To the extent that it is within the ERA's power to lower the risks, and therefore the costs, of service providers then the ERA should adopt that practice and, in doing so, it would promote economic efficiency. This would result in a cost reduction due to regulatory innovation that is just as valuable to society as a technological innovation of another kind. No economist would argue against the introduction of a technological innovation that lowered costs for industry "X" just because this would lower their costs relative to other industries who cannot have this technological innovation applied to them. Such a cost reduction does not involve a 'subsidy' nor does it create a 'distortion'. Such a cost reduction is clearly welfare enhancing 'progress' and is the primary engine of economic growth in the economy.[32]

Investment incentives

66. Third, there is the issue of investment incentives. To a large degree, this is related to the issue of prediction performance, set out above. However, CEG also contends that the mechanics of regulation mean that intra-regulatory period changes in the return on debt will not have an influence on investment.

> First, the nature of the regulatory regime is that, within the regulatory period, businesses do not receive an additional allowance for the cost of debt the more they invest (and vice versa). The ERA's annual update to the cost of debt will be applied to the RAB that was forecast to apply in that year at the beginning of the regulatory period.
>
> The first time that a regulated business will receive any additional allowance for the cost of debt based on higher investment (and vice versa) will be at the beginning of the next regulatory period – and that will be based on the ERA's future risk free rate and DRP estimates. Consequently, the interest rates that feed into the allowance that is provided in the year an investment is made is irrelevant to a business's incentives to invest in that year. Rather, it is the expected future interest rates that will apply in the next and subsequent regulatory periods over the assets life that matter. There is no reason that an entity will expect a different level of cost of debt allowance in future regulatory periods as a result of having their cost of debt allowance updated in this regulatory period.[33]

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[31] Economic Regulation Authority, *Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, p. 70.

[32] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 31.

[33] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 32. See also pp. 39 – 41.

67. CEG therefore questions whether the prediction performance matters at all. However, the Authority considers that where the trailing average under-remunerates a new (approved forecast) investment – for example when the trailing average is below the prevailing rate – then there will be an incentive to defer that forecast investment until a later date.

68. This is because (forecast) investment that is approved for the regulatory period under a trailing average regime will receive the trailing average return on debt applying in the year that it is commissioned, not the prevailing rate for that regulatory year (see Box 1). The corresponding trailing average return will already have been incorporated in tariffs based on the expected year of commissioning. To the extent that expectations of prevailing rates are above the trailing average, then there will be an incentive to delay making investments.

69. This investment distortion is recognised by DBP, at least for investments greater than 10 per cent of the RAB (with a 10 year trailing average). DBP proposes to apply a transitional approach to major new capital expenditure as a means to overcome the problem.[34] However, the Authority does not agree with DBP that the marginal cost of debt for capex that is less than 10 per cent of the RAB is the prevailing annual rate – rather it is (again) the trailing average (Box 1).

Box 1 Return on debt applying to approved (forecast) investment

Under a simple trailing average, the marginal return on debt applying to a new investment is not the prevailing rate, but rather the trailing average itself.

So for example, if a firm increases the size of its regulatory asset base by 5 per cent in any year, then it will receive the regulated rate of return on that investment for the year in which it is expected to enter the asset base, and for subsequent years. That rate of return will incorporate the full trailing average; it will not be the prevailing rate.

It makes no difference whether the new investment, as a proportion of the asset base, is greater or lesser than the proportion of debt annually updated in the trailing average.

Therefore, to the extent that the prevailing rate exceeds the trailing average cost of debt allowance, then there will be an incentive to delay any forecast investment, so as to avoid making a loss. This is a clear distortion in investment incentives.

70. The Queensland Treasury Corporation (**QTC**) summarises its view on this issue thus (where 'unweighted' means a simple equally weighted trailing average):

> If an unweighted average is used, a service provider's investment decisions will be affected by the difference between the prevailing cost of debt and the trailing average return on debt. Due to the use of overlapping data, large differences between these rates will naturally occur on an annual basis. Therefore, it is inappropriate to

[34] Dampier Bunbury Pipeline, *Proposed Revisions: DBNGP Access Arrangement: 2016 – 2020 Access Arrangement Period: Access Arrangement Proposal: Submission 12: Rate of Return*, 31 December 2014, p. 36.

> incorporate a bias towards under (over) investment when the prevailing cost of debt is above (below) the trailing average return on debt.[35]

71. Therefore, contrary to CEG's and DBP's contentions, differences between a trailing average and the prevailing cost of debt do arise and will be relevant for forecast investment. Hence, prediction performance does matter.

72. In addition, CEG considers that:[36]

> …actual incentives to invest in maintaining existing regulated networks are not solely, or even primarily, driven by a comparison of the entity's actual cost of debt with the expected allowed cost of debt. Rather, they are driven by the need to keep the service in operation and to meet safety and other quality of service standards. It will be economic to make such investments, and avoid the potential costs of service interruptions etc., even if the allowed cost of capital is temporarily below the actual cost of capital.

73. This argument is reasonable for safety type investments, but does not apply to growth investments.

74. A weighted trailing average approach, annually updated, can be implemented to remove distortions for new investments, as compared to the simple (equal weighted) trailing average approach. Weighting the trailing average can restore the marginal cost of debt back to the on the day prevailing rate of the immediate annual update. As noted by QTC:

> A weighting scheme based on the actual increase in the RAB would provide incentives for efficient financing practices, because the service provider is incentivised to fund at a lower cost relative to prevailing rates at the time of the investment. If an unweighted average approach is used, the service provider would have a windfall gain if the prevailing cost of debt was lower than the trailing average, even if its particular funding strategy was inefficient, or a windfall loss if the prevailing rate is higher, even if it uses the most efficient available source of funding. The advantage of weighting using the actual increase in RAB is that the service provider is not influenced by the absolute level of interest rates in regards to the timing of its investment.[37]

75. Alternatively, QTC considers that using forecast (Post Tax Revenue Model – **PTRM**) debt balances, ex ante, to determine weights 'is appropriate to ensure that changes in the debt balance are correctly compensated at the prevailing cost of debt'.[38]

76. This adds some complexity. However, it is not insurmountable. Indeed, QTC and DBP both demonstrate that the spreadsheet calculation relating to weights would be straightforward, at least for the PTRM approach.

77. Paragraphs 142 to 152 in the implementation section below consider the pros and cons of various implementation approaches with regard to weighting for new capex.

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[35] Queensland Treasury Corporation, *Draft Rate of Return Guideline*, Submission to the AER, 11 October 2013, p. 18.

[36] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 33.

[37] Queensland Treasury Corporation, *Draft Rate of Return Guideline*, Submission to the AER, 11 October 2013, p. 20.

[38] Queensland Treasury Corporation, *Draft Rate of Return Guideline*, Submission to the AER, 11 October 2013, p. 21.

78. It may be noted that the AER chose to adopt a simple (equally weighted) trailing average. It rejected weights for the trailing average on the following grounds:

- implied weights would be different for each service provider – the AER endeavoured to have a single uniform approach for electricity and gas, and was not inclined to consider any method that created different benchmarks;[39,40]
- weights based on the increase in the RAB or an actual debt issuance data could only be calculated ex post, by means of annual true up, once outcomes for the weights became known;[41]
- weights may 'not provide appropriate incentives to review the efficient timing of investment in response to the cost and availability of finance';[42]
- service providers often do not follow their forecast (ex ante) PTRM investment profile, leading to imprecision;[43]

  > During the regulatory control period, a service provider might choose not to follow the debt issuance profile assumed in the PTRM forecast. We agree that the 'PTRM debt balances …are ultimately approved by the AER' and 'reflect the new funding required to maintain and expand a service provider's network'.[44] However, the PTRM is approved at the time of regulatory determination and relies on forecasts incorporating all the available relevant information at that time. It is conceivable that future capital expenditure which is considered efficient at the time of the determination might no longer be considered to be efficient at a later date, as new information becomes available. For example, a significant change in the prevailing conditions in capital markets might influence the efficiency of such investment.

- PTRM weights add complexity.[45]

Signalling efficient use

79. The Authority noted in the Guidelines that the economic efficiency requirements of the National Gas Objective and Revenue and Pricing Principles also imply a need to consider the signals for efficient upstream and downstream use. The Guidelines stated:

> The Authority considers that effective incentives for economic efficiency will achieve outcomes similar to those observed in markets with effective competition, including:[46]
>
> - efficient production;
> - profits at levels just sufficient to encourage and reward investment, efficiency and innovation;

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[39] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline,* December 2013, p. 116.

[40] The AER also rejected hybrid versus full trailing average approaches on the same ground, arguing that 'we propose not to use size as a part of the benchmark efficient entity definition. We do not consider that risks associated with difference in size of service providers should be rewarded through the allowed rate of return on capital' (Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline,* December 2013, p. 111).

[41] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline,* December 2013, p. 116.

[42] Ibid.

[43] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline,* December 2013, pp. 116-117.

[44] QTC, *Submission to the draft guideline*, October 2013, p. 21.

[45] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline,* December 2013, pp. 116-117.

[46] See for example Scherer F. and Ross D. 1990, *Industrial Market Structure and Economic Performance*, Houghton Mifflin, Chapter 2.

- prices that signal appropriate consumption decisions, clear markets, and enhance cyclical stability;
- output levels and product quality responsive to consumer demands, and which reward those firms which best deliver such responsiveness.

80. With this in mind, the Authority considers that the efficiency properties of any estimation approach will relate to the forward prediction performance of the resulting return on debt:

- The Authority notes that its current approach attenuates the signals for efficient use by upstream and downstream users as the regulatory period progresses, given that the risk free rate and DRP are set on the day, and the DRP is only updated at the next regulatory period.
- On the other hand, the hybrid trailing average, annually updated, will provide a signal that incorporates debt components that are as much as nine years old.

81. The foregoing discussion suggests that:

- there is limited differentiation between the two approaches in terms of prediction performance;
- by allowing the regulated firm to replicate the return of debt, a trailing average approach may provide some advantage for regulated firms – as compared to comparable competitive firms. However, the extent of this effect will depend on a host of factors, including the capital intensity of the industry;
- the Authority's approach provides strong incentives for efficient investment; however, it is possible to address prevailing investment incentives within the trailing average framework through the use of capex weights;
- both approaches have shortcomings in terms of signalling efficient use of pipeline services by upstream and downstream users, however, on balance, the Authority considers that its current approach has better performance in this regard.

Minimise differences to the return on debt for the benchmark firm

82. NGR 87(11)(a) requires the Authority 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'.

83. This requirement may be interpreted as relating to the replicability or otherwise of the return on debt by the benchmark efficient entity. The rule clearly states the desirability of allowing the benchmark efficient entity to replicate the return on debt.

84. ATCO argues that, in order to satisfy the allowed rate of return objective at NGR 87(3):[47]

> …the cost of debt must be estimated based on the cost of implementing a well-defined debt management strategy that is efficient and consistent with a policy that a

[47] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, p. 204.

benchmark efficient entity with a similar degree of risk to AGA would undertake. As a matter of logic, the cost of debt estimated must reflect a debt management strategy that can actually be implemented. Otherwise, it could not be efficient.

85. In similar fashion, ATCO's consultant CEG contends that the NGR and NGL require that the cost of debt allowance must be:[48]

- replicable in the sense that it is based on a well-defined debt management strategy;
- based on a debt management strategy which is efficient in the sense that it reflects a prudent strategy that minimises the expected (risk adjusted) costs of financing. In order to achieve this, the benchmark strategy should be based, as far as possible, on observed behaviour of regulated businesses (where it can be assumed that regulated business have an incentive to behave efficiently); and
- estimated based on the best available data.

86. CEG therefore considers that it is necessary for the Authority to define a financing strategy for the benchmark efficient entity, and then to estimate the efficient financing costs of implementing that strategy.[49] CEG quotes the AEMC – where it refers to the NGR 87(11)(a) requirements – in support of this approach.[50]

87. It is clear that the AEMC had 'better matching' in mind when it developed NGR 87(11):

> The first factor in the rule requires the regulator to have regard to the characteristics of a benchmark service provider and how this influences assumptions about its efficient debt management strategy. As highlighted by SFG in its report, 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.
>
> The current prevailing market conditions "one-size-fits-all" approach required under the NER, and applied under the NGR, may lead to various mis-matches between the regulatory estimate allowed by the regulator and the actual interest rate exposures of those service providers that employ debt management practices that are not closely aligned with the benchmark assumptions.
>
> The second factor requires the regulator (and service providers when making their proposals) to have regard to any potential benefit to consumers that could flow from reduced financing risks that may result from different return on debt methodologies. The intention is to require consideration of the potential impact on the return on equity that may result from a return on debt methodology that reduces the overall volatility of cash flows to equity holders. As modelling results provided by SFG show, in certain cases the cash flow volatility to equity holders can be reduced by better matching the debt component of the regulated return with borrowing costs.
>
> The third factor that requires the regulator to have regard to the incentive effects on capex recognises that any methodology for the return on debt allowance may affect service providers' incentives to make efficient investment decisions.

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[48] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 9.

[49] Ibid.

[50] Australian Energy Market Commission, *National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, 29 November 2012, p. 84, quoted at ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 11.

> 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. [51]

88. The Authority set out its position on the issue of replicability in the Guidelines: that no competitive firm can replicate prevailing interest rates in its cost of debt.

> …the Authority is of the view that it is incorrect to consider that the cost of debt needs to be able to be exactly replicable at all times. To do so is unlikely to be practical. Efficient financing costs do not necessarily achieve this.[52]

89. However, the Authority accepts that it is desirable that a firm be able to 'minimise differences' to its return on debt, but does not consider that this implies that the return on debt be exactly replicable at all times.

90. The Authority also accepts that the return on debt implicit in pricing in competitive markets may not always reflect the prevailing rate. However, the extent to which this occurs will depend on capital intensity of the industry, among other things. So for example, new entrants may undercut incumbents for a time in some industries, if they are able to finance at the prevailing rate. The pricing in such industries would tend to incorporate prevailing rates, and this would be efficient. On the other hand, full new entrant pricing is less likely for industries with significant sunk costs. As a result, the return on debt implicit in pricing may diverge from the prevailing rate, having some element of historic debt costs.[53]

91. As noted above, the Authority has to date considered that its annual update for the DRP, in concert with the risk free rate set on the day, would allow the firm to come very close to meeting the present value principle.

92. The key issue though is that while the trailing average approach can be replicated exactly by the firm, based on the foregoing analysis, the Authority's approach cannot. Under the Authority's current approach, the firm is required to manage the ups and downs of prevailing rates, with its cost of debt sometimes exceeding the regulated return on debt, and sometimes undercutting it.

93. In conclusion, it is clear that the Authority is allowed to move away from exact replicability under the rules if there are reasons for doing so. The issue of 'minimising differences' is but one element which the Authority will need to take into consideration in determining the return on debt which best meets the requirements of the NGL and NGR.

94. However, it is also clear that trailing average approaches to estimation are potentially superior to the Authority's approach with regard to replicability.

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[51] Australian Energy Market Commission, *National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, 29 November 2012, p. 84.

[52] Economic Regulation Authority, *Explanatory statement for the rate of return guidelines*, 16 December 2014, p. 70.

[53] IPART for example changed its position in 2013, stating: 'Our final decision represents a change from the objective for our previous WACC methodology, in which the benchmark entity was a new entrant in a competitive market. In line with this objective, we previously set the WACC with reference to the current costs of debt and equity, since a new entrant would be financed at prevailing rates. However, because new entry is rare in practice, it was difficult to infer the efficient financing strategy for a new entrant from observed behaviour.' (IPART, *Final Report – Review of WACC Methodology*, December 2013, p. 10.

Recovery of efficient costs commensurate with risk

95. The Revenue and Pricing Principles are clear that the benchmark efficient entity needs to have 'reasonable opportunity to recover at least the efficient costs' it incurs.[54] This may be interpreted as being consistent with the present value principle (or 'NPV=0'), which regulators take into account when determining the return on regulated assets.[55] Meeting the present value principle ensures that an investment is 'made whole' over time – such that the return on and of capital is achieved over the life of the asset.

96. The Guidelines considered the present value principle at length.[56] The term of the estimates is key. The Guidelines noted that in the absence of credit default swaps, then following Lally, an approach to estimating the cost of debt combining a five year base rate with a DRP which corresponded to the term of corporate debt would best meet the present value principle, even though there would be a slight deviation from present value neutrality each year.[57] This entails using:

- the five-year risk free rate; plus
- the 10-year debt risk premium; plus
- annualised 10-year debt issuance costs; and
- the transactions costs involved with swap contracts.[58]

97. This was the approach adopted by the Authority for the ATCO Draft Decision. The ATCO Draft Decision represented a change from the Guidelines with regard to the term of the DRP. Specifically, the Authority recognised that Lally was referring to the average term at issuance of corporate bonds, which is around 10 years, rather than the average term to maturity.

98. Lally recognises that the trailing average approach can allow the firm's return on debt to be replicated exactly by the benchmark efficient entity, such that it would be able to meet exactly the present value principle at any point in time.[59] The trailing average approach, therefore, maintains the present value principle in a stronger fashion as compared to the Authority's current approach.

99. In his recent advice to the ERA, Lally considered that the ERA's approach to retain the on the day approach was appropriate, as he:

- remained of the view that the violation of the present value principle under the ERA's proposed approach was small;[60]

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[54] Revenue and Pricing Principle 2 (*National Gas Access (WA) Act 2009, s. 23, clause 24(2)*).

[55] The present value principle – also known as the financial capital maintenance principle – ensures that the present value of expected capital charges for an asset over its economic life should be equal to the initial value or purchase costs. The capital charge relating to assets comprises both the return on and the return of capital.

[56] Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 2.

[57] Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines*, 16 December 2013, Appendix 2, p. 25.

[58] M. Lally, *The Appropriate Term for the Risk Free Rate and the Debt Margin*, 27 April 2010, p. 3.

[59] M. Lally, *The Trailing Average Cost of Debt*, 19 March 2014.

[60] M. Lally, *The Cost of Debt*, 10 October 2014, p. 12.

- considered that capex incentives are important considerations in choosing regulatory policy – and that a simple trailing average approach gives rise to capex incentive problems.[61]

100. ATCO's consultant CEG, however, disagrees with Lally's analysis – and therefore the Authority's position – that an approach other than some form of trailing average meets the requirements of the NGL and NGR. CEG's contention is that the Authority's approach is not present value neutral, whereas a trailing average approach can be exactly present value neutral.

101. Second, as noted above, CEG also considers that it is the expected return on debt over the life of the asset (say 40 years) which matters to an investor, not the small differences related to the immediate prevailing rate, which contribute only a 'trivial' amount to the overall return.[62] CEG considers that an 'investor will have an incentive to make the investment if they expect the regulatory DRP over the next 40 years (life) to match their actual DRP'.[63] CEG contends that the prevailing rate will only apply for a short period before changing, and when updated annually (in line with the ERA approach), would not match the *actual costs* associated with the bonds used to fund the investment:

> What matters to investors is an expectation that, on average over the life of the assets, they will receive a regulatory DRP that is consistent with their actual DRP. Annual updating of the DRP does not ensure that this is the case. However, this expectation can be ensured via the adoption of a trailing average DRP. Consider a firm refinancing 10% of its regulatory asset base in a given year. The firm will know that the DRP associated with its investment in that year will enter the trailing average with a 10% weight and will remain in the trailing average for the next 10 years with that same weight (i.e., the period it will be paying the DRP on 10 year debt issued in that year). The operation of a trailing average provides the appropriate level of compensation that the firm requires for an investment in that year.[64]

102. This argument therefore also relates to present value neutrality considerations.

103. The latter part of this argument seems weak, suffering from the idea that the firm receives the cost of a bond newly issued to fund capex – which initially has the prevailing rate – through the trailing average. That is not the case with the simple trailing average, as noted in Box 1 above. However, the argument could be sustained with the PTRM weighted trailing average, discussed at paragraph 75 above and 142 below.

104. Overall, it appears reasonable to conclude that the present value condition is approximated, particularly over the longer lives of infrastructure assets, under the Authority's current approach. That is, violations in any one year may be significant, but over the long run, unders balance overs, such that present value neutrality is approximately achieved.

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[61] M. Lally, *The Cost of Debt*, 10 October 2014, p. 5.

[62] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 35.

[63] Ibid.

[64] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 36.

105. That said, it also needs to be recognised that the trailing average can exactly meet the present value condition, irrespective of whether it is:

- the hybrid of the five year risk free rate set on the day in combination with a 10 year trailing average of the 10 year DRP; or
- a 10 year trailing average of the total (10 year) cost of debt.

106. On this basis, consideration of the present value condition on balance favours some form of trailing average approach, unless there are other compelling reasons not to adopt it.

Minimise regulatory costs

107. All approaches have regulatory costs. However, some approaches entail greater regulatory complexity than others, requiring more active input from the regulator and service provider.

108. The full on the day approach is relatively simple to implement. It does not require annual update, and once set, is fixed for the duration of the regulatory period.

109. Annual updating – which is a requirement under the other approaches – adds some complexity and resource intensity.

110. Other additional analysis required at the regulatory reset – such as 'true ups' and potentially weights adjustment – will add further complexity again. However, given the requirement to achieve such outcomes through a fixed formula, the additional resource intensity can be minimised.

Conclusions on evaluation

111. Each of the approaches to estimating the return on debt has strengths and weaknesses. The Authority considers that there is merit in considering the hybrid trailing average approach in comparison to its current approach.

112. With regard to efficiency, the current approach has superior prediction performance:

- The Authority's current approach provides for a rate that is close to the prevailing rate, and therefore provides superior investment signals.
  - However, hybrid trailing average approaches can be weighted for new capex, overcoming this problem.
- In terms of signalling efficient use by upstream and downstream users, both approaches dilute or mask changes in prevailing rates for end users to an extent. However, the Authority considers that its current approach has slightly better performance on this count.

113. With regard to 'minimising differences', the hybrid trailing average approach can be replicated exactly by the firm, whereas the Authority's current approach cannot. Under the Authority's current approach, the firm is required to manage the ups and downs of prevailing rates, with its cost of debt sometimes exceeding the regulated return on debt, and sometimes undercutting it. Over time, on average, there are likely to be limited differences between the two approaches.

114. As a corollary, the hybrid trailing average approach can achieve the present value condition exactly at any point in time, whereas the Authority's current approach only approximates the condition, on average, over the longer term.

115. Finally, both approaches involve complexity related to annual updates and true ups.

Hybrid trailing average implementation issues

116. Based on the foregoing analysis, the Authority is now of the view that there is merit in reconsidering the hybrid trailing average approach.

117. The following sections set out the Authority's evaluation of a possible preferred approach for implementing a hybrid trailing average, which it considers could meet the requirements of the NGR and NGL, and which therefore should be considered as an alternative to the Authority's current approach.

118. The Authority invites stakeholder comment on this preferred hybrid trailing average approach, its relative merits as compared to the Authority's current on the day approach, and its relative merits as compared to the approach proposed by ATCO.

Term of the trailing average

119. It is clear that if a trailing average is to be adopted, then it should be based on issuance of debt with a 10 year term. The evidence assembled by both the ERA and the AER supports this term as being consistent with energy business' average term at issuance.[65] The trailing average component would then be based on the past 10 years of data (although initially could involve a shorter period, depending on transition arrangements – see section below).

Hybrid trailing average

120. With a hybrid approach, the base rate would be set once, on the day just prior to the regulatory period. The term would need to be five years, consistent with the Lally present value analysis. CEG sets out the associated finance management strategy of the service provider as follows:

> Under the hybrid approach the business will enter into swap contracts in order to:
>
> - fix its base interest rates in the current regulatory period based on the swap rates that prevailed at the beginning of the current regulatory period; and
> - have its base interest rate exposure purely floating at the end of that regulatory period (beginning of the next regulatory period); which
> - facilitate its ability to repeat the process in the first dot point for the next regulatory period.[66]

[65] See Economic Regulation Authority, *Appendices to the Explanatory Statement for the Rate of Return Guidelines: Meeting the Requirements of the National Gas Rules*, 16 December 2013, p. 39.

[66] ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 18.

121. CEG notes that the two swaps would be required each regulatory period to swap out the 10 year base rate to the 5 year fixed amount (see Box 2 on the next page).

122. The DRP would be estimated as a 10 year trailing average. Weights could be assigned based on either a simple average or some other weighting to account for transition arrangements and investment incentives. Transition and PTRM weighting schemes are discussed further below.

Debt raising and hedging costs

Debt raising costs

123. The Guidelines provided for 12.5 bp per annum debt raising costs. The estimate has been accepted by all three service providers. It would apply irrespective of the approach adopted, whether hybrid or full trailing average.

Hedging costs

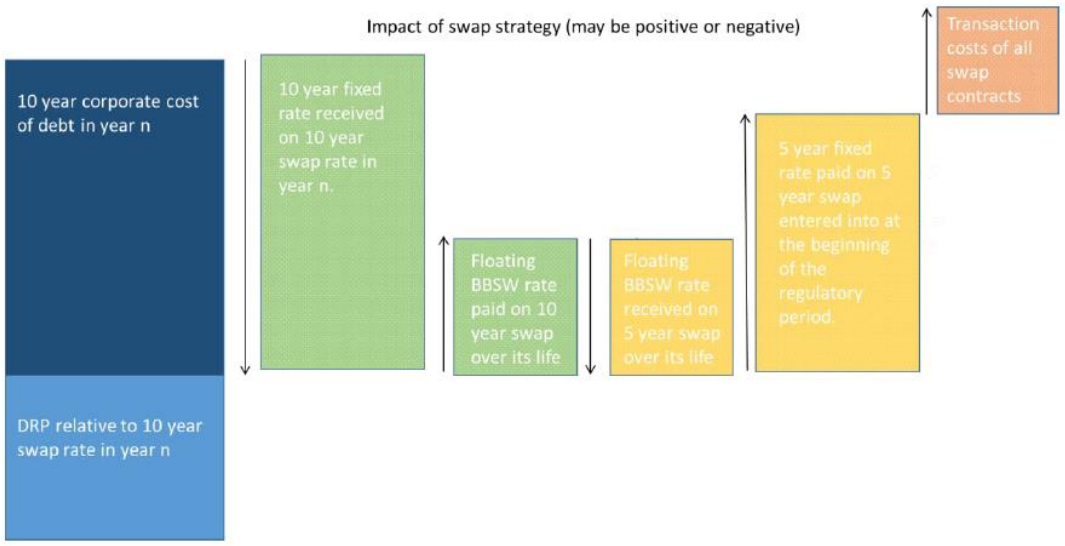
124. The Guidelines also provided 2.5 bp per annum for hedging costs. However, it is apparent from the discussion above that this allowance is only required for the hybrid approach. In addition, it should be amended slightly to be a one off allowance each regulatory period, in recognition that the firm is not hedging the whole of its portfolio each year.

125. Two swaps would be required to swap out the 10 year base rate to the 5 year fixed amount (see Box 2 on the next page) each regulatory period. The resulting hedging allowance would cover the costs of two swaps for the whole portfolio in the first year.

126. The current spread cost of the 10 year swap is around 10 bps, half of which would be incurred by the service provider – therefore the total cost of the two swaps required at the current time could approach 2 by 5 bps, or 10 bps. Two swaps would also be required subsequent to cover the amount of any increase in debt associated with capital expenditure over the course of the regulatory period.

127. To calculate this amount for inclusion in revenue, it would be simplest to provide a single allowance for swaps in the operating expenditure cash flows. The swaps allowance could be based on the swap spread, as outlined above, multiplied by the closing debt balance in the final year of the forecast regulatory period.

Box 2 Mechanics of the swaps strategy underpinning the hybrid approach



Moving from left to right in the above graphic describes the mechanics of the swap strategy underpinning the hybrid debt management strategy as it relates to the costs associated with a single bond issued in year "n".

First, the firm issues a 10 year bond with a yield that is represented by the height of the first column (the sum of both the light and dark blue components of that column).

Second, the firm immediately enters into a 10 year swap contract (the components of which are the green coloured columns in the above figure) under which it:

- is paid the 10 year fixed swap rate prevailing at that time (the business receives this same (fixed) rate over the 10 year life of the swap contract – which is also the life of the bond). (The difference between the 10 year fixed swap rate and the yield on the corporate bond is, for future reference, how the light blue "DRP relative to 10 year swap rate in year n" is calculated);
- must pay its counterparty the floating 3 month bank bill swap rate (BBSW) over the next 10 years. This is described as a 'floating rate' because the BBSW rate varies through time and the firm must make quarterly payments to the counterparty at a rate equal to whatever the prevailing 3 month BBSW rate is at that time.

Third, the firm enters into a 5 year swap contract (the two components of which are coloured yellow in the above figure) at the beginning of the regulatory period under which it:

- must pay the 5 year fixed swap rate prevailing at that time (the business receives this same (fixed) rate over the 5 year life of the swap contract – which is also the life of the regulatory period);
- is paid by its counterparty the floating 3 month bank bill swap rate (BBSW) over the next 5 years.

The final (orange) column on the chart shows the impact of the transaction costs associated with two sets of swap contracts.

Source: ATCO Gas Australia, *Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 27 November 2014, Appendix 9.2, p. 18.

Risk free rate versus BBSW

128. CEG criticises the use of the risk free rate rather than the bank bill swap rate (**BBSW**). This appears to be based on misunderstanding of our position. The Authority notes that:

- the Authority has always recognised that the BBSW rate tends to exceed the risk free rate by around 20 bp or so on average;
- the 'regulated DRP' estimate set out in the ATCO Draft Decision included the margin of swap to risk free rate – in this way the service provider would be fully recompensed.[67]

129. Chairmont analysis showed that the use of the risk free rate rather than the BBSW hedges some of the DRP.[68] However, the benefit of this hedging has less value with a hybrid trailing average, as the hybrid approach replicates the DRP. Furthermore:

- There is no inconsistency between the use of the BBSW for the return on debt and the risk free rate for the return on equity – both need to be estimated anyway.
- If a hybrid trailing average were adopted, it would mark a major regulatory change, so there may be no reason to hold on to the past practice of using the risk free rate as the base.

130. Finally, there would be no need to estimate either the risk free rate or the BBSW for the return on debt under the full trailing average.

Annual updates

131. If the hybrid trailing average was adopted, then it would seem sensible to annually update it, rather than to estimate it once at the start of the regulatory period.

- NGR 9(b) allows for annual updating, provided that the service provider's revenue is then adjusted through an automatic formula (per NGR (12));
- annual updating accounts for the present value principle, as it more closely matches the return on debt to the staggered debt portfolio of the regulated firm;
- annual updating is relatively straightforward to implement;
- annual updating would have significant benefits for signalling prevailing rates for investment, when PTRM weights are used (see below).

132. Annual updating would not lead to excessive volatility – the tariff would change in a reasonably smooth way, but provide some impact of the direction of interest rates for users of pipeline services.

- There would be limited benefit from delaying an annual update by undertaking a true up each regulatory reset, as this would mask signals from the changing cost of debt, and possibly also introduce additional volatility.

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[67] Economic Regulation Authority, *Draft Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution System*, 14 October 2014, p. 202.

[68] Chairmont Consulting, *Comparative Hedging Analysis*, 12 June 2013, p. 14.

Transition weights

133. ATCO has not proposed a transition to the proposed hybrid trailing average approach.

134. The AER has adopted a 10 year transition period phasing in the full trailing average. The AER considers that a transition is required in order to allow firms time to adjust arrangements from the previous regulatory regime (on the day), where firms would have undertaken hedging arrangements to align the cost of debt closely to the regulated rate:

> As discussed in chapter seven, we consider that an efficient financing practice of the benchmark efficient entity would be to minimise the expected present value of its financing costs over the life of its assets subject to managing the associated financial risks (and subject to the regulatory regime). On this basis we have concluded that the benchmark efficient entity would have likely entered into hedging contracts to manage its interest rate risk in the current regulatory control period (that is, under the 'on the day' approach). Further, we consider that holding a (fixed rate) debt portfolio with staggered maturity dates to align its return on debt with the regulatory allowance is likely to be an efficient financing practice of the benchmark efficient entity under the trailing average portfolio approach. To achieve this the benchmark efficient entity would need to unwind its existing hedging contracts and issue new (fixed rate) debt over a transition period to gradually accumulate a portfolio that matches the trailing average regulatory return on debt allowance. Consistent with this, we consider that post transition the benchmark efficient entity is not likely to engage in an active debt management strategy using swaps.[69]

135. A transition consistent with the term of the hybrid trailing average would:[70]

- enhance confidence in the predictability of the regulatory regime;
- facilitate data collection for implementing the trailing average, as historic data would not be required;
- remove the potential for gaming of the regulatory regime by service providers (with the specified trailing average approach established through a fixed principle and to apply for 10 years).

136. The AER adopts the 'QTC method' of transition for the full trailing average, which:

- provides for 100 per cent weight to the prevailing estimate of the return on debt in year 1;
- in year 2, provides for 90 per cent weight to the prevailing estimate of the return on debt in year 1, and 10 per cent weight to the annually updated (prevailing) estimate of the return on debt in year 2;
- in year 3, provides for 80 per cent weight to the prevailing estimate of the return on debt in year 1, and 10 per cent weight to each of the annually updated (prevailing) estimates of the return on debt in years 2 and 3 respectively;
- and so on;
- until at year 10, the trailing average is estimated with equal 10 per cent weights for each of the 10 annual updates;

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[69] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 141.

[70] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 122.

- at year 11, the year 1 estimate drops off, and is replaced by the year 11 annual update;
- at year 12, the year 2 estimate drops off, and is replaced by the year 12 annual update;
- and so on *ad infinitum*.

137. If a transition were to be adopted, then this approach appears to be well understood and logical.

138. A 10 year transition could be adopted for a hybrid trailing average approach, consistent with the QTC transition weights method. No change in approach would be considered prior to the end of the 10 years (two regulatory periods).

New capex transition weights

139. DBP proposes a transition consistent with the AER method, but with 'one minor adjustment'.[71] DBP proposes that a transition be adopted for any capital investment more than 10 per cent of the total RAB. That is, any such major addition to the RAB would start with the prevailing rate in the first year, following the QTC transition mechanism.

140. However, as noted in Box 1 at paragraph 66 above, the Authority does not accept DBP's argument that any investment less than 10 per cent of the RAB will have the prevailing rate as its marginal cost of capital.

141. That said, the Authority considers that investment incentives are of major importance, such that the marginal cost of capital does need to be addressed. This is considered in the next section.

Weighting the hybrid trailing average to reduce investment distortions

142. By weighting the trailing average to account for new capex, it can be made to ensure that the cost of capital for new capex reflects prevailing rates. This efficiency consideration is a key concern under the NGL and NGR.

143. Weights may be based on:

- actual debt issuance data;
- actual changes in the debt component of the RAB, consistent with the benchmark gearing; or
- weights based on the (forecast ex ante) debt issuance assumptions in the PTRM.

[71] Dampier Bunbury Pipeline, *Proposed Revisions: DBNGP Access Arrangement: 2016 – 2020 Access Arrangement Period: Access Arrangement Proposal: Submission 12: Rate of Return*, 31 December 2014, p. 39.

144. QTC proposed that the weighting method should be based on the forecast new PTRM capex approved as part of the access arrangement:

> QTC considers that a weighted average based on the PTRM debt balances is appropriate to ensure that changes in the debt balance are correctly compensated at the prevailing cost of debt. An example of the proposed approach is provided in Appendix B.[72]
>
> …This approach is computationally simple and transparent, which should alleviate any concerns around complexity. A simple spreadsheet model can be used to perform the calculations.
>
> The return on debt would be calculated as a simple average of the adjusted rates. This approach is consistent with the use of a single set of weights (eg, 10 per cent for each annual observation based on a 10-year debt tenor), but still results in the changes in the PTRM debt balance being compensated at the prevailing cost of debt.
>
> Worked example
>
> Consider an example where the PTRM debt balance increases from $100 to $115 over a 1-year period. The service provider is assumed to have been operating under the trailing average approach for at least 10 years, so the underlying interest rates in the trailing average reflect the historical rates over the last 10 years. For the purpose of this example, a series of hypothetical rates have been used to populate the trailing average.
>
> Regardless of how the return on debt is calculated, the final estimate will be applied to the PTRM debt balance to determine the dollar value of the return on debt allowance. As such, the following weights will apply (either explicitly or implicitly) to the interest rates associated with the existing and new debt:
>
> Weight applying to existing debt = $100 ÷ $115 = 0.8696
>
> Weight applying to change in debt = $15 ÷ $115 = 0.1304
>
> Table 4 displays the adjustments to the rates in the trailing average based on QTC's proposed method, which compensates the increase in the debt balance at the prevailing cost of debt (6.25 per cent).[73]

[72] Queensland Treasury Corporation, *Submission to the Draft Rate of Return Guideline*, 11 October 2013, p. 21.

[73] Queensland Treasury Corporation, *Submission to the Draft Rate of Return Guideline*, 11 October 2013, p. 28.

TABLE 4: ADJUSTED RATES USING THE PREVAILING COST OF DEBT AND CHANGE IN THE PTRM DEBT BALANCE

Observation	Rates before new borrowing (%)	Rate adjustments based on change in PTRM debt balance	Rates after new borrowing (%)
-9	8.00	8.00 x 0.8696 + *6.25* x 0.1304	7.77
-8	8.50	8.50 x 0.8696 + *6.25* x 0.1304	8.21
-7	9.00	9.00 x 0.8696 + *6.25* x 0.1304	8.64
-6	8.00	8.00 x 0.8696 + *6.25* x 0.1304	7.77
-5	6.00	6.00 x 0.8696 + *6.25* x 0.1304	6.03
-4	6.00	6.00 x 0.8696 + *6.25* x 0.1304	6.03
-3	7.00	7.00 x 0.8696 + *6.25* x 0.1304	6.90
-2	8.00	8.00 x 0.8696 + *6.25* x 0.1304	7.77
-1	7.00	7.00 x 0.8696 + *6.25* x 0.1304	6.90
Prevailing	6.25	6.25 x 0.8696 + *6.25* x 0.1304	6.25
Return on debt	**7.38**		**7.23**

145. However, the AER opted for a simple trailing average on the basis that:[74]

> 1. All three of the alternative approaches imply that the weights used in a trailing average would be different for each individual service provider. We do not consider that differences in investment Better Regulation | Explanatory Statement | Rate of Return guideline 116 profiles of individual service providers justify adoption of different benchmark definitions. Since we propose to use a single definition of the benchmark efficient entity, there should be a single weighting scheme.
>
> 2. Weighting schemes based on actual data (the first two approaches) may not provide a service provider with incentives to review the efficient timing of investment in response to the cost and availability of finance (as we further discuss below). In addition, these approaches would need to be implemented via a retrospective true up, since such weights can only be computed after the parameters they are based on have been observed.
>
> 3. Service providers may not (and indeed, often do not) follow their forecast PTRM profile. We consider the relative complexity of the PRTM–based weighting scheme, and forecast imprecision outweigh potential benefits of the approach.

146. A key advantage of the PTRM approach would be that it allows for prevailing rates to apply to new investments, without an ex post true up. This occurs because the prevailing rate is increased in the weighting, at the time of the access arrangement review, to the extent that the forecast capex adds to outstanding debt in the PTRM. The result is that the prevailing rate becomes the marginal cost of debt for the new forecast capex.

147. While PTRM weightings may add incentives to game the capex estimates and their timing under some circumstances, it may also provide incentives to stick to capex forecasts in others. For example:

- If the cost of debt was expected to rise over the forecast period, then there would be an incentive to increase capex forecasts, all other things equal.
- If the cost of debt was expected to decline, then there would be an incentive to defer capex.

[74] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 115.

- However, ultimately, such deviation could be a fairly non-productive game, given the difficulties associated with predicting interest rate changes and their exact timing.

148. The question arises as to whether weights should be revised ex post, at the next regulatory reset, based on actual capex outcomes. Adjusting the weights could provide incentives to bring forward or over-invest, when the cost of debt was relatively high, and vice versa. However, offsetting this effect, higher costs of debt would discourage additional investment, as projects would be less likely to be profitable at the margin. Overall, it would seem sensible to adjust PTRM weights ex post for actual PTRM outcomes, in order to have an accurate estimate of the return on debt going forward for the next access arrangement. Such an approach would be consistent with the treatment of capex at each regulatory reset in the PTRM more broadly (where actual historic capex is substituted for the previous forecast capex, in order to achieve appropriate returns on and of capital going forward).

149. However, it is not intended to true up the previous period's tariffs ex post for any resulting change in PTRM weights, as this would run counter to the incentive properties of the regulatory regime. Not changing tariffs ex post would also align with the treatment of capex in the PTRM more broadly – where tariffs are not adjusted retrospectively for differences between forecast and actual capex.

150. With regard to the PTRM weights based approach, the AER was not convinced that the approach would perform better than a simple trailing average, as:[75]

> Service providers may not (and indeed, often do not) follow their forecast PTRM profile. Moreover, there are circumstances when it might be efficient for a service provider to do so.
>
> PTRM forecast debt balances of individual service providers are not a substitute for debt financing profile of the benchmark efficient entity.
>
> Given the above, PTRM–based weighting scheme might not minimise the mismatch between the expected return on debt of the benchmark efficient entity and the allowed return on debt.
>
> Implementation of the PTRM–based weighting scheme is relatively complex.

151. The AER also noted that:[76]

> Further, in the case of an increasing or decreasing RAB, the potential mismatch between the benchmark efficient entity's efficient debt financing costs and the equally–weighted return on debt allowance would be smaller:
>
> - the longer is the benchmark term of debt
> - the smaller is the growth rate of RAB/debt balances.

152. In conclusion, the Authority considers that the PTRM weights approach is, on balance, desirable, in order to ensure appropriate incentives for new capex. PTRM weights could be based on the forecast capital expenditure ex ante, and then trued up for actual capital expenditure ex post.

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[75] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 117.

[76] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline*, December 2013, p. 118.

Averaging period

153. There is a need to agree the averaging period applying to the estimator for the prevailing risk free rate and the annual trailing average estimates, just prior to each regulatory year.

154. ATCO argues that it is irrelevant whether the period is 20 or 40 days, but that 40 days just adds administrative costs. ATCO therefore proposes a 20 day averaging period.

155. The reason the Authority moved from 20 to 40 days in the Guidelines was in recognition that the portfolios of the larger service providers, such as DBP or Western Power, could raise issues for efficient base rate swaps management. (DBP has a debt portfolio approaching $2.5b – implying a need to finance more than $100m every day for 20 days).

- For a smaller network such as ATCO, there is no issue under either the on the day or hybrid approaches (only $600m of debt to swap, implying just $30m per day over the 20 days).
- For larger networks such as Western Power and DBP, if the trailing average approach is accepted, then an alternate solution to extending the length of the averaging period could be to move to the full trailing average. That precludes the need for hedging.

156. This would mean that the averaging period could be reduced back to 20 days.

157. The estimates of the annual DRP (in the case of the hybrid) and the annual cost of debt (for the full trailing average) for each of the 10 years in the trailing average would be based on the same 20 days each year (assuming that holidays did not require minor adjustment).

158. The AER set out the following principles for the averaging period:

> The proposed averaging period will be subject to the following principles to be included in the guideline:[77]
>
> - The period must be specified prior to the commencement of the regulatory control period.
> - At the time the period is nominated, all dates in the averaging period must take place in the future.
> - The averaging period should be as close as practical to the commencement of each regulatory year in a regulatory control period.
> - A period needs to be specified for each regulatory year within a regulatory control period.
> - The specified periods for different regulatory years are not required to be identical, but should not overlap.
> - Each agreed averaging period is to be confidential.
> - The allowed return on debt averaging periods can be either:
>   - proposed by the service provider during the Framework and Approach process or in its initial regulatory proposal, and agreed by the AER; or
>   - determined by the AER, and notified to the service provider within a reasonable time prior to the commencement of the regulatory control period, if the periods proposed by the service provider are not agreed by the AER.

159. It could be reasonable for the Authority to set out a set of less prescriptive principles such as this in any decision.

Conclusions

160. The Authority considers that a hybrid trailing average approach could offer an alternative to the Authority's current approach, for the ATCO final decision, if suitably formulated. The Authority considers that the features of a hybrid trailing average which might best meet the requirements of the NGL and NGR are as follows:

- the term of the trailing average should be based on the average term at issuance of energy infrastructure debt – which is around 10 years;
  - the hybrid approach should then have a 10 year trailing average of the 10 year term DRP (spread over 10 year swap), with the base rate estimated once at the start of the regulatory period;
  - the base rate for the hybrid approach should be the five year BBSW;
- the averaging period for both the base rate and the DRP should be 20 days, just prior to each regulatory year, with the exact date agreed with the service provider on a confidential basis;
- debt raising costs of 12.5 bps per annum should be awarded, consistent with the Guidelines;

[77] Australian Energy Regulator, *Explanatory Statement Rate of Return Guideline,* December 2013, p. 130.

- a one off hedging cost each regulatory period should be included in operating expenditure, based on the debt proportion of the forecast closing RAB at the end of the regulatory period;
- the trailing average component of the return on debt estimate should be annually updated;
- a 10 year transition should be adopted for the hybrid trailing average approach, consistent with the QTC 'transition weights' method;
- 'PTRM weights' should be adopted ex ante for the trailing average components, in order to ensure that forecast capex faces the prevailing cost of capital;
  - the PTRM weights should then be trued up ex post, at the next access arrangement review, in order to align the treatment of weights with the treatment of capex more broadly.