APPENDIX 7.8

PTRM-weighted trailing average approach

PTRM-weighted trailing average approach

A JOINT REPORT FOR ENERGEX AND ERGON ENERGY - JUNE 2015

Summary

This report provides responses to issues raised by the Australian Energy Regulator (AER) in its Preliminary Decisions for Energex and Ergon Energy regarding the use of a post-tax revenue model (PTRM) weighted trailing average to determine the allowed return on debt.

The report concludes with a series of questions that should be addressed by the AER before determining how the allowed return on debt for Energex and Ergon Energy will be calculated from the start of the 2015–16 to 2019–20 regulatory control period.

Queensland Treasury Corporation's (QTC) main observations and conclusions are as follows:

- A simple trailing average compensates increases in the PTRM debt balance at the average cost of debt over the last 10 years. This approach will not promote the allowed rate of return objective because any meaningful estimate of efficient debt financing costs must reflect the costs that can be realistically achieved in the market.
- A PTRM-weighted trailing average correctly compensates increases in the PTRM debt balance at the prevailing cost of debt, which reflects the cost that can be realistically achieved in the market.
- Regardless of how the return on debt is calculated, the dollar value of the return on debt allowance will be based on the AER's forecast PTRM debt balances. As such, the AER must decide if the increases in PTRM debt balance are to be compensated at the prevailing cost of debt, which is also used to compensate 10 per cent of the existing PTRM debt balance that is refinanced at the same time, or the average (and unachievable) cost of debt over the last 10 years.
- The most appropriate return on debt approach is the one that produces the best estimate of the return on debt and provides better capex incentives in the most likely scenario and in the greatest number of plausible alternative scenarios.
- The AER has indicated that the approved forecast capex in the PTRM likely reflects the capex that a benchmark efficient entity will make during a regulatory control period. It follows that a PTRM-weighted trailing average will produce a better estimate of the return on debt and provide better capex incentives in the most likely scenario compared to a simple trailing average.
- If the actual capex of the benchmark efficient entity is consistently greater than 50 per cent of the AER's approved forecast capex, a PTRM-weighted trailing average will produce a better estimate of the return on debt and provide better capex incentives compared to a simple trailing average.

- A PTRM-weighted trailing average allows a service provider to incorporate any interest rate forecasts it may have into its financing decisions without departing from its planned capex profile. Consistent with incentive-based regulation, any gains or losses that result from these decisions should be borne by the service provider rather than consumers.
- If the prevailing cost of debt is higher than the average cost of debt over the last 10 years, a simple trailing average will:
  - under-compensate a service provider for funding capex at the prevailing cost of debt, or
  - incentivise a service provider to take a speculative interest rate position in the hope (rather than expectation) that it can issue 10-year fixed-rate debt within a reasonable timeframe at a cost that is closer to the simple trailing average.
- If the prevailing cost of debt is lower than the average cost of debt over the last 10 years, a simple trailing average will over-compensate a service provider for increases in the debt balance at the expense of consumers.
- The AER will use data from the Reserve Bank of Australia (RBA) and Bloomberg to make annual estimates of the 10-year BBB+ benchmark debt yield. If the prevailing benchmark debt yield is suitable for re-pricing 10 per cent of the existing PTRM debt balance that is refinanced each year, the same prevailing yield must also be suitable for compensating the annual increase in the PTRM debt balance, which is what occurs under a PTRM-weighted trailing average.
- Based on the PTRM debt balances and actual 10-year BBB+ yields since 2001, the annual difference between a simple and PTRM-weighted trailing average would have frequently exceeded the materiality threshold of 1 per cent of the annual revenue requirement.

A PTRM-weighted trailing average will produce a better estimate of the return on debt and provide better capex incentives in the most likely scenario (ie, actual capex equals forecast capex) and in the greatest number of plausible alternative scenarios (ie, actual capex is consistently greater than 50 per cent of forecast capex) compared to a simple trailing average.

In QTC's view, it is appropriate for the AER to use a PTRM-weighted trailing average to determine the allowed return on debt for Energex and Ergon Energy from the start of the 2015–16 to 2019–20 regulatory control period.

The role of QTC

QTC is the Queensland Government's central financing authority and corporate treasury services provider, with responsibility for:

- sourcing and managing the debt funding to finance Queensland's infrastructure requirements in the most cost-effective manner, and
- providing financial and risk management advice and services to the Queensland Government and Queensland's public sector bodies.

QTC is the largest Australian semi-government issuer of Australian dollar-denominated bonds in the domestic and offshore markets, with total outstandings of approximately $93 billion. Onlendings are made to a wide range of clients including regulated and unregulated government-owned corporations (GOCs), local government authorities, and Queensland Treasury.

QTC is active in the primary and secondary bond markets, and is a regular user of interest rate swaps, bank bill futures contracts and Commonwealth Government bond futures contracts to manage and hedge interest rate risk.

QTC is also responsible for managing the $8.9 billion QTC Capital Guaranteed Cash Fund, which invests in high quality assets including bank bills, commercial paper, corporate floating rate notes, and mortgage and asset-backed securities.

Simple and weighted trailing averages

The simple and weighted trailing average approaches aim to replicate the cost produced by a benchmark debt portfolio that is equally funded by 10 fixed-rate loans with annual maturities from 1–10 years.

Treatment of new borrowings

Both approaches assume that 10 per cent of the existing benchmark debt is refinanced each year with a new 10-year fixed-rate loan at the prevailing 10-year cost of debt. The main difference between the approaches is how increases in the benchmark debt balance are compensated:

- A simple trailing average assumes that the additional borrowing is made at the historical average 10-year cost of debt over the last 10 years.
- A weighted trailing average assumes that the additional borrowing is made at the prevailing 10-year cost of debt.

A borrower can only issue debt at the prevailing cost of debt. As a simple trailing average assumes that a borrower can issue debt at historical interest rates, this approach will not provide correct compensation for increases in the benchmark debt balance.

A weighted trailing average correctly compensates the annual refinancing of existing debt and the increase in the debt balance in the same year at the same prevailing cost of debt.

PTRM-weighted trailing average

Energex and Ergon Energy have proposed a weighted trailing average approach to determine the allowed return on debt, with weights based on the annual percentage changes in the AER's forecast PTRM debt balance.

This approach preserves the main features of the AER's preferred simple trailing approach, such as a 10-year debt term and an even debt maturity profile out to 10 years, while compensating increases in the PTRM debt balance at the prevailing cost of debt rather than the average cost of debt over the last 10 years.

Consistent treatment of refinancings and increases in the debt balance

A simple trailing average is an inconsistent return on debt approach because it compensates two new borrowings that are made at the same time at different costs of debt. The annual refinancing of 10 per cent of the existing debt balance is compensated at the prevailing cost of debt, while the increase in the debt balance for the same year is compensated at the average cost of debt over the last 10 years.

The AER will use data from the RBA and Bloomberg to make annual estimates of the 10-year BBB+ benchmark debt yield. If the prevailing benchmark debt yield is suitable for re-pricing 10 per cent of the existing PTRM debt balance that is refinanced each year, the same prevailing yield must also be suitable for compensating the annual increase in the PTRM debt balance, which is what occurs under a PTRM-weighted trailing average.

The allowed rate of return objective

The allowed rate of return objective requires the AER to determine a return on debt that is commensurate with the efficient financing costs of the benchmark efficient entity.

A return on debt approach that compensates new borrowings at historical rather than prevailing rates is contrary to the allowed rate of return objective because any meaningful estimate of efficient debt financing costs must reflect the costs that can be realistically achieved in the market. Compensating new borrowings at historical rates is also inconsistent with the AER's views on allocative efficiency:

> 'Allocative efficiency can be achieved by setting the allowed return on debt such that it reflects the lowest debt financing cost that a benchmark efficient entity **could realistically achieve.**' [1] [emphasis added]

As it is not possible for a borrower to issue new debt at historical interest rates, a simple trailing average will not promote the allowed rate of return objective or achieve allocative efficiency when the benchmark debt balance is increasing over time.

Choosing between approaches

The most appropriate return on debt approach is the one that[2]:

- better reflects the return on debt of the benchmark efficient entity, and
- promotes better capex incentives.

In not accepting Energex and Ergon Energy's proposal to use a PTRM-weighted trailing average to determine the allowed return on debt, the AER stated:

> 'Energex and Ergon Energy's proposals presented some evidence to suggest how the PTRM-weighted average might better promote these two factors. However, **we are not satisfied that the PTRM-weighted average will necessarily better promote these two factors in all circumstances.**' [3] [emphasis added]

QTC considers this to be an unrealistic standard of performance for assessing a return on debt approach. As all return on debt approaches make simplifying assumptions, no single approach, including the AER's preferred simple trailing average, will better promote these two factors in all circumstances.

Given the choice between two imperfect return on debt approaches, the AER's task is to determine the approach that *better* promotes these two factors in the most likely scenario and in the greatest number of plausible alternative scenarios.

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[1] AER (August 2013), *Better Regulation Explanatory statement - Draft rate of return guideline*, p. 77
[2] AER (April 2015), *Preliminary Decision – Energex distribution determination 2015-16 to 2019-20 Attachment 3 – Rate of return*, p. 138-39
[3] AER Preliminary Decision, p. 139

The AER has not made its assessment on this basis. Rather, it has applied an unrealistic standard of performance to the PTRM-weighted trailing average, but not the simple trailing average, and concluded that the latter should be adopted because the former does not meet the unrealistic standard of performance.

Reflecting the return on debt of the benchmark efficient entity

The allowed rate of return objective requires the AER to have regard to factors such as the desirability of minimising any difference between the allowed return on debt and the return on debt of the benchmark efficient entity.

In regards to whether a simple or PTRM-weighted trailing average will produce a return on debt that better reflects the return on debt of the benchmark efficient entity, the AER states:

> 'We consider that the PTRM-weighted average will produce an allowed return on debt that better reflects the return on debt of the benchmark efficient entity than that produced by the simple average both over time and at points in time if:
>
> (a) the amount of debt that the service provider was forecasted in its PTRM to have raised each year reflects
>
> (b) the amount of debt that would have been raised each year by the benchmark efficient entity.' [4]

QTC considers this to be a correct, but incomplete description of the conditions under which a PTRM-weighted trailing average will produce a return on debt that better reflects the return on debt for the benchmark efficient entity than a simple trailing average. Furthermore, the AER's statement implies that a simple trailing average will produce a better estimate of the return on debt if condition (a) *does not* reflect condition (b), however this is incorrect.

Most likely scenario

It is reasonable to assume that the approved forecast capex in the PTRM is the best estimate of the capex that the benchmark efficient entity will undertake during a regulatory control period. On this point the AER states:

> 'We agree that a service provider's approved [PTRM] capex forecast likely reflects the capex that a benchmark efficient entity at the beginning of a regulatory period would plan to make.' [5]

It follows that a PTRM-weighted trailing average will produce a return on debt that better reflects the return on debt for the benchmark efficient entity compared to a simple trailing average in the most likely scenario.

Plausible alternative scenarios

In practice, actual capex may be higher or lower than the AER's approved forecast capex:

> '… a benchmark efficient entity could react to new information over time so that its actual capex departed from its planned capex. Such new information could include changed conditions in the

[4] AER Preliminary Decision, pp. 443–44
[5] AER Preliminary Decision, p. 444

market for debt funding, changes in demand or other technical considerations. Accordingly, we are not satisfied that (a) will necessarily satisfy (b) in all circumstances.' [6]

Even if condition (a) does not satisfy condition (b), it does not follow that a simple trailing average will produce a better estimate of the return on debt for the benchmark efficient entity compared to a PTRM-weighted trailing average.

Example

Consider a scenario where the PTRM debt balance is forecast to increase by $100 million per annum over a regulatory control period, but the actual new borrowings in that period are only $70 million per annum (ie, actual capex is 70 per cent of forecast capex):

- A simple trailing average will provide compensation for new borrowings of $100 million per annum at the average cost of debt over the last 10 years.
- A PTRM-weighted trailing average will provide compensation for new borrowings of $100 million per annum at the prevailing cost of debt.
- As the actual borrowings of $70 million per annum were also made at the prevailing cost of debt, a PTRM-weighted trailing average will produce a return on debt that better reflects cost incurred by the benchmark efficient entity compared to a simple trailing average. This occurs even though condition (a) does not satisfy condition (b)[7].

The only scenario where a simple trailing average may produce a better estimate of the return on debt is when actual capex is *consistently* less than 50 per cent of the AER's approved forecast capex across multiple regulatory control periods. This is because the simple trailing average return on debt does not change when the PTRM debt balance increases (ie, it produces the same return on debt as when the PTRM debt balance is constant). If actual capex is consistently closer to zero than it is to the forecast capex, a simple trailing average *may* (accidentally) better reflect the return on debt of the benchmark efficient entity[8].

A PTRM-weighted trailing average will produce a return on debt that better reflects the return on debt for the benchmark efficient entity under the most likely scenario where actual capex equals forecast capex.

A PTRM-weighted trailing average will still produce a return on debt that better reflects the return on debt for the benchmark efficient entity if actual capex is consistently greater than 50 per cent of the forecast capex.

As the AER considers its approved forecast capex to likely reflect the capex that the benchmark efficient entity will undertake during a regulatory control period, it is highly likely that actual capex will be consistently greater than 50 per cent of forecast capex.

Based on these considerations, it is QTC's view that a PTRM-weighted trailing average will produce a better estimate of the return on debt in the most likely scenario and in the greatest number of plausible alternative scenarios compared to a simple trailing average.

[6] AER Preliminary Decision, p. 444

[7] A similar outcome will occur if the actual borrowings are higher than the approved forecast borrowings.

[8] Regardless of whether a simple or weighted trailing average is used, the dollar value of the return on debt allowance will be based on the AER's forecast PTRM debt balances. Even if actual capex is consistently closer to zero than it is to forecast capex, which is highly unlikely, the dollar value of the return on debt allowance under a simple trailing average will still be incorrect. This occurs even though the allowed return on debt (measured as a *rate* of return) better reflects the return on debt of the benchmark efficient entity. As such, it is unclear if a simple trailing average will produce a better estimate of the debt financing costs even if actual capex is significantly lower than forecast capex.

Capex incentives

The allowed rate of return objective requires the AER to have regard to the incentives that the return on debt may provide in relation to capex over the regulatory period, including as to the timing of any capex.

Capex planning vs. incentives to undertake capex

The AER appears to have equated the considerations relating to the capex planning process with the considerations relating to the undertaking of previously planned capex:

> 'Energex and Ergon Energy's proposals appear to suggest that the PTRM-weighted average's ability to more 'quickly' reflect changes in prevailing rates ... will **promote better capex planning incentives**. For example, Ergon Energy submitted:
>
> > *Achieving a better alignment between the return on debt that would apply to new capital expenditure and prevailing market rates provides a clearer investment signal. A significant mismatch between the regulated return on debt and the costs that a NSP would face in undertaking new borrowings is more likely to distort investment decisions.'* [9] [emphasis added]

and:

> '… if factors other than the form of the allowed return on debt are the primary drivers of capex planning, it is not clear how the PTRM-weighted average will necessarily **provide better capex planning incentives** relative to the simple average.' [10] [emphasis added]

By definition, the capex planning process occurs before the requirement to undertake the capex. The amount and timing of capex will depend on factors such as the replacement of existing assets and demand driven network augmentations. These factors are the basis for the capex proposals that are submitted to the AER prior to the start of each regulatory control period.

In the context of the return on debt approach, the incentives to undertake planned capex depend on whether the approach provides correct compensation for the cost that will be incurred by the benchmark efficient entity when it issues debt to fund the planned capex.

The investment distortion referred to by Ergon Energy relates to a situation where the prevailing cost of debt differs from the simple trailing average return on debt when a new borrowing is made. For example, if the prevailing cost of debt is 7.0 per cent and the simple trailing average return on debt is 6.0 per cent, a service provider will be incentivised to delay its planned capex or fund the capex with a short-term floating-rate bank debt facility and 'hope' that it can refinance with 10-year fixed-rate debt within a reasonable period of time at a cost that is closer to the simple trailing average.

A PTRM-weighted trailing average provides better incentives to undertake planned capex (or capex that is greater than 50 per cent of approved forecast capex) by compensating the associated borrowing at the prevailing cost of debt.

[9] AER Preliminary Decision, p. 445
[10] AER Preliminary Decision, p. 445

Incentives to follow or depart from the forecast capex profile

The AER suggests that a PTRM-weighted trailing average will not create an incentive for a service provider to defer planned capex if it considers the prevailing cost of debt to be 'high':

> It is also not clear to us that the PTRM-weighted average would provide better incentives to either adhere to or depart from capex forecasts. On this point, Energex submitted:
>
> > *[The PTRM-weighted average] reduces the likelihood that the timing of efficient investment is deliberately deferred because of an interest rate view **(compared to the simple average approach)**, which apart from having the potential to prove to be incorrect, could be in conflict with the objective of the NEL.*
>
> We understand Energex's remarks to mean that, under the PTRM-weighted average, a service provider will be less likely to defer investment when they assess the prevailing rate to be 'high'. However …. the deferral of capex when the opportunity cost of capital is high might be consistent with the NEO.' [11] [emphasis added]

QTC does not agree with the AER's understanding of Energex's remarks.

Efficiency of the corporate debt market

It is reasonable to assume that the corporate debt market is efficient and that the benchmark efficient entity has no ability to consistently and reliably forecast changes in the corporate cost of debt. Therefore, for the vast majority of the time:

- the prevailing cost of debt will be fairly priced when the benchmark efficient entity borrows to fund planned capex, and
- there will be no reason for the benchmark efficient entity to depart from its planned capex profile because of the level of the prevailing cost of debt.

Interest rate forecasts

Although the assumption of an efficient corporate debt market is reasonable, a service provider should be free to incorporate any interest rate forecasts it may have into its financing decisions. Consistent with incentive-based regulation, any gains or losses that result from these decisions should be borne by the service provider rather than consumers.

Under a PTRM-weighted trailing average, a service provider can incorporate interest rate forecasts into its financing decisions without departing from its planned capex profile. For example, if a service provider believes the cost of debt will fall over the next 12 months (ie, the prevailing cost is 'too high'), it can temporarily fund the planned capex with a short-term floating-rate bank debt facility and refinance with 10-year fixed-rate debt in 12 month's time at a lower cost, assuming its forecast is correct[12]. This decision is of no relevance to the compensation provided for increases in the PTRM debt balance, which must be based on the AER's estimate of the prevailing benchmark debt yield to be consistent with the allowed rate of return objective.

[11] AER Preliminary Decision, pp. 445–46

[12] It is unclear why a service provider would have superior information to the rest of the market regarding the 'correct' price for the prevailing cost of debt. Even if this was the case, the competitive nature of the market would mean that any mis-pricings would be small, infrequent and short-lived. Therefore, it is reasonable to assume that for the vast majority of the time the prevailing cost of debt will be fairly priced.

This scenario is very different to the 'interest rate view' referred to by Energex, which relates to a scenario where the prevailing cost of debt is higher than the simple trailing average return on debt when a new borrowing is made to fund capex. This does not mean that the prevailing cost of debt is 'too high' or mis-priced.

Consider again the scenario where the prevailing cost of debt is 7.0 per cent and the simple trailing average return on debt is 6.0 per cent. Even if the service provider considers the prevailing cost of debt to be fairly priced, which is reasonable in an efficient market, it will be under-compensated if it borrows at the prevailing cost of debt. In fact, doing so would be equivalent to undertaking a new project with a negative net present value[13].

When faced with the prospect of a certain loss the service provider may be incentivised to adopt a financing strategy 'as if' it expected the cost of debt to fall even though it considers the prevailing cost of debt to be fairly priced:

- The service provider may delay capex in the hope (rather than expectation) that the cost of debt will match the simple trailing average within a reasonable period of time.
- The service provider may temporarily fund the planned capex with a short-term floating-rate bank debt facility in the hope (rather than expectation) that it can refinance with 10-year fixed-rate debt within a reasonable period of time at a cost that is closer to the simple trailing average.
  - Although the capex is undertaken as planned, a simple trailing average has clearly distorted the financing decision of the service provider by incentivising it to speculate on changes in the corporate cost of debt.

A PTRM-weighted trailing average will correctly compensate a service provider who considers the prevailing cost of debt to be fairly priced when planned capex is undertaken, which is reasonable in an efficient market.

A simple trailing average is likely to distort the investment and/or financing decisions of the benchmark efficient entity when the prevailing cost of debt is higher than the average cost of debt over the last 10 years.

A PTRM-weighted trailing average allows a service provider to incorporate any interest rate forecasts it may have into its financing decisions without departing from its planned capex profile. Consistent with incentive-based regulation, any gains or losses that result from these decisions are borne by the service provider rather than consumers.

Based on these considerations, it is QTC's view that a PTRM-weighted trailing average will provide better capex incentives than a simple trailing average by compensating increases in the PTRM debt balance at the AER's estimate of the prevailing cost of debt.

Materiality

The definition of materiality in the National Electricity Rules (NER) refers to a change in costs in a regulatory year that exceeds 1 per cent of the annual revenue requirement for that regulatory year[14].

[13] Similarly, if the prevailing cost of debt is lower than the simple trailing average return on debt, the service provider will be over-compensated at the expense of consumers.
[14] National Electricity Rules, Chapter 10, p. 1170

Based on the debt balances and benchmark debt yields in Ergon Energy's return on debt model, the AER has estimated an average annual difference between a simple and PTRM-weighted trailing average of 0.4 per cent of the annual revenue requirement over the next five years, which is less than the 1 per cent materiality threshold.

The AER's analysis cannot be used to assess the materiality of the differences between a simple and PTRM-weighted trailing average:

- The benchmark debt yields in Ergon Energy's return on debt model are hypothetical yields that were only provided to demonstrate how the weighted trailing average calculation is performed. As such, these yields cannot be used to address the issue of materiality.
- The AER's proposed transition will usually produce relatively small differences in the first regulatory control period because the 10 initial yields in both trailing averages are the same. This does not provide an accurate estimate of the likely annual differences across multiple consecutive regulatory control periods.

QTC has used the PTRM debt balances and annual revenues for the last three regulatory control periods, and the upcoming 2015–16 to 2019–20 regulatory control period, to estimate the annual differences that would have occurred between a simple and PTRM-weighted trailing average that applies to the total 10-year benchmark debt yield[15].

QTC's analysis is based on the following assumptions:

- The 10 initial benchmark debt yields in the simple and PTRM-weighted trailing average equal the on-the-day allowed return on debt for the 2001–02 to 2004–05 regulatory control period.
- The prevailing benchmark debt yield in each subsequent year is based on the daily average extrapolated RBA and Bloomberg BBB yields and the allowed return on debt in 2001, 2005, 2010 and 2015[16].
- The benchmark debt yield is assumed to be 5.01 per cent in each year of the 2015–16 to 2019–20 regulatory control period, which equals the AER's proposed starting value of the trailing average for Energex and Ergon Energex.
- The PTRM debt balances and annual revenues are from the determinations for the 2001–02 to 2004-05, 2005–06 to 2009–10 and 2010–11 to 2014–15 regulatory control periods. The PTRM debt balances and annual revenues for the 2015–16 to 2019–20 regulatory control period are from the AER's Preliminary Decision.

Results

Figure 1 displays the simple and PTRM-weighted trailing average return on debt based on Energex's PTRM debt balances. The results for Ergon Energy (not shown) are essentially the same:

[15] Prior to 2010, the Queensland Competition Authority (QCA) used an on-the-day approach to determine the allowed return on debt for Energex and Ergon Energy.

[16] Prior to 2005 the benchmark debt yields are based on the extrapolated Bloomberg fair value curve. From 2005 onwards the benchmark debt yields are based on the estimates in CEG (April 2015), *Critique of the AER's JGN draft decision on the cost of debt*.

FIGURE 1: SIMPLE AND PTRM-WEIGHTED TRAILING AVERAGE (ENERGEX)

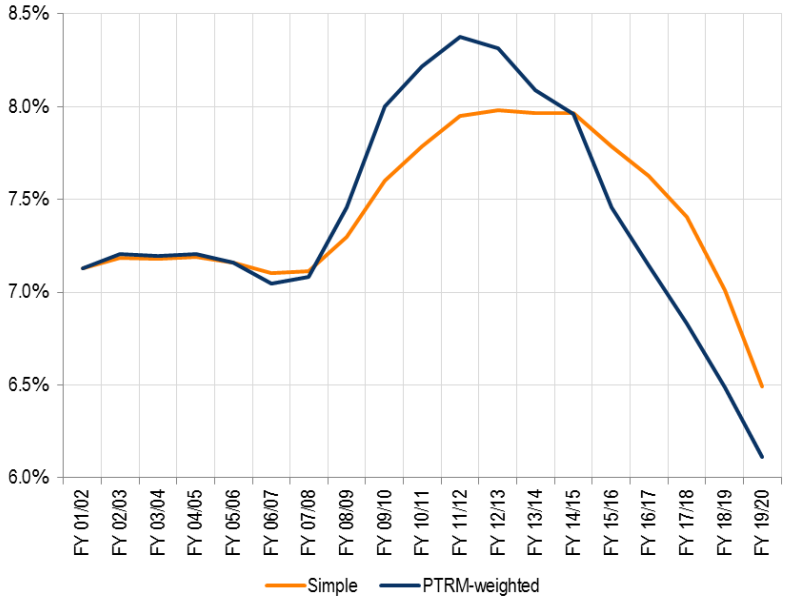


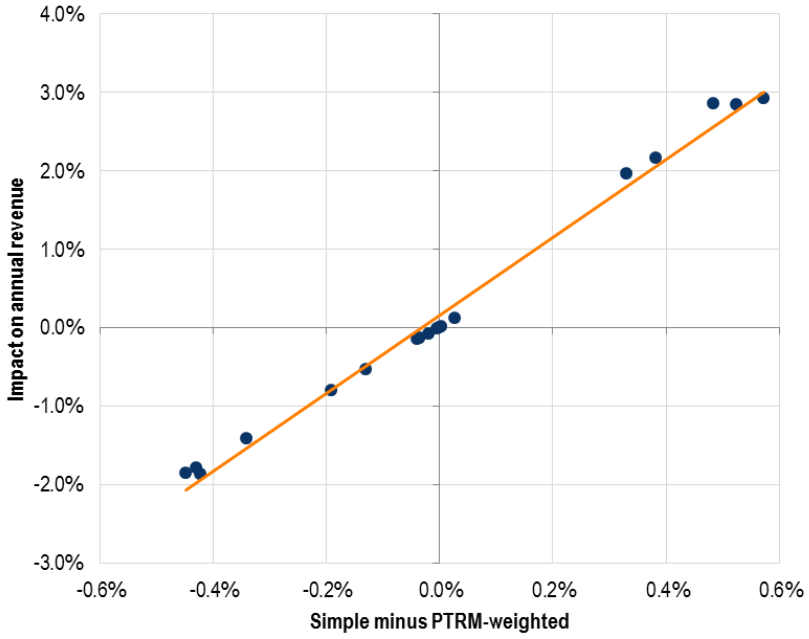
Table 1 displays the annual difference between the simple and PTRM-weighted trailing average as a percentage of the annual revenue requirement for Energex and Ergon Energy:

TABLE 1: MISMATCH AS A PERCENTAGE OF ANNUAL REVENUE REQUIREMENT

Financial year	Energex (%)	Ergon Energy (%)
2001–02	0.0	0.0
2002–03	(0.1)	(0.1)
2003–04	(0.1)	(0.1)
2004–05	(0.1)	(0.1)
2005–06	0.0	0.0
2006–07	0.2	0.2
2007–08	0.1	0.1
2008–09	(0.7)	(0.5)
2009–10	**(1.8)**	**(1.4)**
2010–11	**(1.8)**	**(1.4)**
2011–12	**(1.8)**	**(1.4)**
2012–13	**(1.4)**	**(1.2)**
2013–14	(0.5)	(0.4)
2014–15	0.0	0.1
2015–16	**2.0**	**1.8**
2016–17	**2.9**	**2.9**
2017–18	**2.9**	**3.0**
2018–19	**2.8**	**2.8**
2019–20	**2.2**	**2.1**

Figure 2 displays the relationship between the percentage impact on the annual revenue requirement and the annual difference between the simple and PTRM-weighted trailing average for Energex:

FIGURE 2: REVENUE IMPACT OF ANNUAL DIFFERENCE BETWEEN A SIMPLE AND PTRM-WEIGHTED TRAILING AVERAGE (ENERGEX)



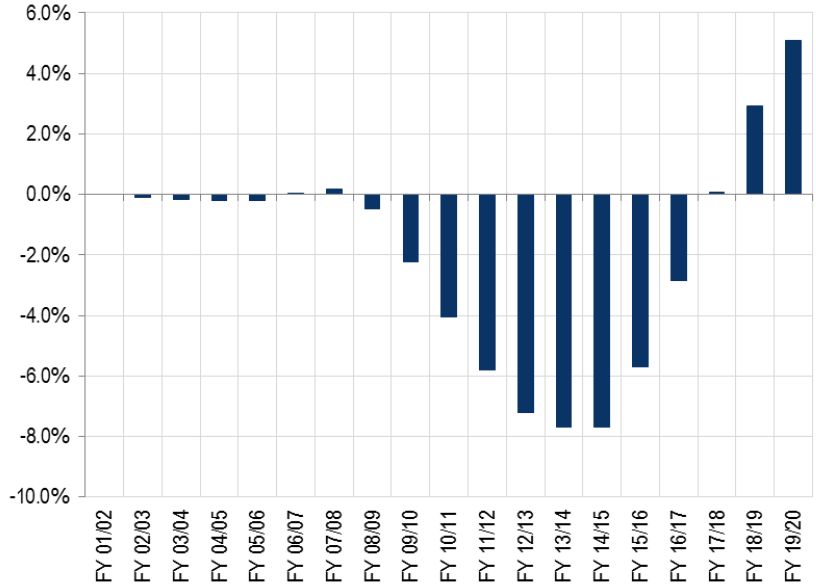
The main observations from Table 1 and Figures 1 and 2 are as follows:

- When the trailing averages are applied to the PTRM debt balances and actual historical yields across multiple regulatory control periods, the annual differences would have frequently exceeded the 1 per cent materiality threshold.
- Energex and Ergon Energy would have been under-compensated in each year between 2008–09 and 2013–14 (inclusive), resulting in a cumulative under-compensation of 7.9 per cent and 6.4 per cent of the allowed revenue requirement respectively.
- An annual difference between the simple and PTRM-weighted trailing average of just 0.2 per cent would have produced a cost mismatch of about 1 per cent of the annual revenue requirement (Figure 2). Over the last two regulatory control periods the annual difference would have been as large as 0.5 per cent, which is equivalent to about 2 per cent of the annual revenue requirement.
- Even if future changes in the 10-year BBB+ benchmark debt yield are not as large as the changes during the test period, it is still likely that annual differences between a simple and PTRM-weighted trailing average of 0.2 per cent will occur, which is equivalent to about 1 per cent of the annual revenue requirement.

Cumulative differences

Another important consideration is the strong positive correlation (+0.91) between the annual differences, which is due to the use of overlapping data in the trailing average calculations. The strong positive correlation will tend to produce large cumulative differences over time as shown in Figure 3:

FIGURE 3: CUMULATIVE DIFFERENCES AS A PERCENTAGE OF ANNUAL REVENUE REQUIREMENT (ENERGEX)



Based on the PTRM debt balances and actual 10-year BBB+ yields since 2001, the annual difference between a simple and PTRM-weighted trailing average would have frequently exceeded 1 per cent of the annual revenue requirement.

An annual difference between the simple and weighted trailing average of just 0.2 per cent will produce a cost mismatch that is equivalent to about 1 per cent of the annual revenue requirement. Historically, the annual difference has been as large as 0.5 per cent, which is equivalent to about 2 per cent of the annual revenue requirement.

Due to the strong positive correlation between the annual differences, a simple trailing average is likely to create large cumulative differences over time between the allowed return on debt and the return on debt of the benchmark efficient entity. This is relevant to the requirement for the AER to consider the desirability of minimising the difference between the return on debt and the return on debt of the benchmark efficient entity.

Perceived complexity of a PTRM-weighted trailing average

The AER refers to the perceived complexity of a PTRM-weighted trailing average:

> '… ultimately, they [Energex and Ergon Energy] did not satisfy us that the PTRM-weighted average will sufficiently advance the objective and requirements of the rules to warrant adoption of this more complex approach in place of our Guideline approach.' [17]

QTC does not consider a PTRM-weighted trailing average to be a 'complex' approach. This view is consistent with advice provided by the Competition Economists Group (CEG) to ATCO Gas:

> '…this "added complexity" [in a weighted trailing average] is, in reality, a very simple adding up problem which is no more complicated (and actually less complicated) than other aspects of building block models (such as the PTRM).' [18]

[17] AER Preliminary Decision, p. 138

The Economic Regulation Authority of Western Australia (ERA), which is now considering the use of a PTRM-weighted trailing average approach, concluded that the complexity of the approach:

> '… 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.' [19]

Energex and Ergon Energy have provided the AER with a simple spreadsheet model to calculate the PTRM-weighted trailing average return on debt. The required inputs are the AER's approved PTRM debt balances and the AER's annual estimates of the 10-year BBB+ benchmark debt yield. The underlying calculations are straightforward and have been explained in detail by the AER in its Preliminary Decisions.

Finally, it should be noted that the allowed rate of return objective requires the AER to make the best possible estimate of the return on debt for the benchmark efficient entity, not the return on debt that is the simplest to estimate.

Questions for the AER

In QTC's view, it is necessary for the AER to address the following questions before determining how the allowed return on debt for Energex and Ergon Energy will be calculated from the start of the 2015–16 to 2019–20 regulatory control period:

1. The allowed rate of return objective requires the AER to determine a return on debt that is commensurate with the efficient financing costs of the benchmark efficient entity. In the AER's view, is it reasonable to assume that efficient debt financing costs must reflect the costs that can be realistically achieved by a borrower in the market?
2. Two benchmark debt transactions will occur at the same time each year. First, 10 per cent of the existing PTRM debt balance matures and is refinanced with new 10-year debt. Second, an additional borrowing equal to the annual change in the PTRM debt balance is made. As the AER will apply its estimate of the prevailing benchmark debt yield to the first transaction, is it appropriate to apply the average benchmark debt yield over the last 10 years to the second transaction?
3. In the AER's view, will a simple or PTRM-weighted trailing average produce a better estimate of the return on debt and provide better capex incentives if actual capex is consistently greater than 50 per cent of the AER's approved forecast capex actual (ie, actual capex is *closer to* forecast capex than it is to zero)?

[18] CEG (November2014), *Cost of debt consistent with the NGR and NGL*, pp. 37-38
[19] ERA (March 2015), *Estimating the return on debt – Discussion paper*, p. 14