

16 April 2012



Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

Dear Mr Pierce

Reference code: ERC0134

Queensland Treasury Corporation (QTC) welcomes the opportunity to provide responses to the Australian Energy Market Commission's Directions Paper in relation to the Economic Regulation of Network Service Providers rule change proposal.

QTC is the Queensland Government's central financing authority and corporate treasury services provider. QTC does not formulate Government policy and the views in this submission represent those of QTC and do not necessarily represent the views of the Queensland Government.

QTC's comments relate to the issues raised in relation to the rate of return frameworks and the cost of debt discussed in chapters 5 and 6 of the Directions Paper. Our submission comprises the following attachments:

- **Attachment 1** contains responses to the questions raised in chapters 5 and 6, and includes appendices, which provide further detail in relation to debt risk premium estimates on recent debt issues (Appendix A) and information on a credit margin sample that is undertaken by QTC as part of its administration of the Competitive Neutrality Fee, which applies to Queensland Government-owned corporations (Appendix B).
- **Attachment 2** contains a draft Design Paper in relation to an alternative moving average approach, which would provide regulated networks with the option to set their return on capital (return on debt and equity) based on a moving average over 5 years.

The moving average approach developed by QTC differs from the rule change proposal put forward by the Energy Users Rule Change Committee (EURCC) in that it would apply to both the return on debt and equity, and it does not specify the manner in which individual parameters would be calculated. There are a number of other design features, which have been incorporated to ensure that the moving average approach is consistent with the incentive based regulatory framework.

The current approach of setting the rate of return using over a short period of time once every five years creates significant interest rate mismatch risks for electricity networks. For networks with relatively smaller regulated asset bases, these risks can be managed through the use of interest rate swaps. However, for owners of large regulated asset bases, the continuing impacts

of the Global Financial Crisis on capital markets have impacted on the ability to manage interest rate risk. Under the current regulatory model, in order to eliminate interest rate risk before the start of the next regulatory period, Queensland distribution networks would need to reprice around \$15 billion to \$20 billion of debt over a relatively short period of time. QTC does not consider this to be an appropriate strategy.

The current averaging approach also affects consumers because network charges may be fixed at a higher level if the rate reset period coincides with a period of above-average interest rates with correspondingly higher prices. Alternatively, if the rate reset period occurs when the yield on the Commonwealth Government 10 year bond is substantially lower than average because of investor preferences for highly-rated sovereign debt (as is currently the case), there is a risk that prices are set below the economic level. This creates the potential for under-investment and over-utilisation. From a consumer perspective we see no reason why the prevailing rate over a short period of time should have a major bearing on the cost of inputs which account for a significant percentage of the retail electricity price.

The moving average approach proposed by QTC seeks to address these issues by setting the return on capital based on one-fifth of the cost of capital estimate for the current year and the preceding four years. The resulting return on capital would provide potentially lower volatility in network prices and returns, while still being responsive to changes in market conditions over time. In QTC's view, the moving average still provides strong incentives to networks to efficiently manage their funding costs, and does not increase the potential for investment distortions, having regard to the significant issues with the current five-yearly reset approach.

From discussions with other interested parties, including at the AEMC's public hearing, it has become apparent that implementing a moving average approach within the context of the current rule change process may be challenging, given the need to consider a broad range of issues relating to the regulatory model, implementation in the rules and the impact on funding strategies used by networks. QTC would welcome the opportunity to discuss our moving average proposal in more detail with the Commission and its consultants to begin addressing these issues.

Should you have any queries in relation to our submission please contact Brian Carrick on (07) 3842 4716 or David Johnston on (07) 3842 4782.

Sincerely



Steven Tagg
Acting Chief Executive

*Encl: Attachment 1 – Responses to AEMC Questions
Attachment 2 – Moving Average Proposal Design Paper*

Attachment 1 – Response to the AEMC Directions Paper

QTC has provided responses to the AEMC’s questions relating to rate of return frameworks (Chapter 5) and the cost of debt (Chapter 6).

Our response focusses on the areas that are relevant to an electricity Network Service Provider (NSP). We have not provided detailed responses to matters relating to the National Gas Rules (questions 24, 25, 27 and 28).

QTC is proposing an alternative moving average approach to updating the cost of capital, which is quite different to the Energy Users Rule Change Committee (EURCC) rule change proposal. Further details of the design are set out in our Design Paper, which is included as Attachment 2. References in this submission to the moving average approach are to QTC’s proposal, unless otherwise noted.

Chapter 5: Rate of return framework

Question 20: *Are some WACC parameter values more stable than others, and sufficiently stable to be fixed with a high degree of confidence for a number of years into the future? Would it be practical for periodic WACC reviews to cover only some parameters that are considered relatively stable in value, and require others to be determined at the time of each regulatory determination?*

A periodic WACC review should be undertaken but values should be updated as required

It is likely that a number of the variables listed in section 6.5.4(d) of the National Electricity Rules (Rules), which are already the subject of the periodic WACC review, are reasonably stable over time. However, it is not possible to state with a high degree of confidence that these variables will not change, and QTC does not support these variables being fixed, for reasons discussed by SFG Consulting. QTC considers it is sensible for the AER to develop estimates for these parameters as part of a periodic WACC review, such as currently occurs under the statement of regulatory intent process required by section 6.5.4. This review process affords stakeholders the ability to provide arguments and evidence in favour of particular parameter values as part of a consultative process.

QTC agrees with the AEMC that the approach under Chapter 6A, where the variables are fixed for five years, is unreasonable and does not serve the interests of consumers or NSPs. QTC agrees with the analysis undertaken by SFG, which shows that the current Chapter 6A framework does not deliver reasonable outcomes for transmission NSPs.

The presumption of parameter stability may limit the ability to produce the best WACC estimate

In general, QTC considers that stability in parameters, like stability in the cost of capital framework, is a positive feature of the regulatory environment. However, there will be cases

where the presumption of parameter stability, which is implied in the process of undertaking a periodic WACC review, may prevent the best WACC estimates being made. A good example is the market risk premium.

The market risk premium measures the additional return required over the risk-free financial asset to hold risky financial assets, and prior to the global financial crisis, the market risk premium was thought to be a relatively stable, long-term value. This assumes that the factors that affect investors' required rate of return, are the same across financial assets, with the only difference relating to the systematic risk of each asset. However, the 'flight to quality effect' has seen the yield on Commonwealth Government securities fall at the same time as the cost of equity is likely to have risen. A similar effect has been observed in other countries, where the price of highly-rated sovereign credit assets has risen due to the need for investors to hold only the most liquid assets. For these assets, the ability to achieve a return of capital (ie, through liquidating assets) has affected the required return on capital. This liquidity premium effect has been observed in both 2008/2009 and 2011/2012, when for example the yield on US Treasuries remained at very low levels despite a credit downgrade from Standard & Poors amid concerns about the sustainability of the US fiscal position.

The problem in calculating the appropriate return on equity under the Rules arises for two reasons. Firstly, the 10 year Commonwealth Government bond, which is subject to the liquidity premium effect, is used as the proxy for the risk-free rate. Secondly, given the market risk premium is difficult to estimate and is typically estimated using long-term data, there has been a presumption against changing this value. A 50 basis point increase was allowed in the 2009 statement of regulatory intent on cost of capital, however, in recent draft and final determinations the AER has sought to revert to the 6 per cent value, which has typically been used by regulators.

If the market risk premium is defined as the excess return required over a point estimate of the Commonwealth Government bond yield then it will inevitably be subject to variation. The liquidity premium effect will make the variation more pronounced. The true market risk premium, after abstracting from the liquidity premium effect, is likely to be more stable. However, the presumption of stability that arises from the periodic reviews of this parameter and the need for persuasive evidence to adopt a new value is, in this instance, leading to poor outcomes.

In light of the measurement difficulties relating to the market risk premium, in QTC's view the solution should be based on adopting a different proxy for the risk-free rate or making an explicit adjustment to the Commonwealth Government bond yield. While the Commonwealth Government bond has typically been used as the risk-free rate in corporate finance practice, there are recent examples where practitioners have not used the prevailing market rate for the bond, instead substituting long-term average values or making an explicit adjustment to increase the risk-free rate.

Adjusting the risk-free rate is simpler and more transparent than attempting to adjust the market risk premium, because there are a number of risk-free assets available (eg, Commonwealth Government guaranteed bonds issued by other entities, including QTC). Given the problem has occurred twice since the start of the global financial crisis, the AER should be considering other

means to estimate the risk-free rate, which corrects for the ‘flight to quality’ effect, in order to allow a relatively stable market risk premium to be used.

Question 21: *Would it be useful if the AER periodically published guidelines on its proposed methodologies on certain WACC parameters as opposed undertaking periodic WACC reviews that locks in parameter values for future revenue/pricing determinations?*

The current approach to the debt risk premium methodology is not producing the best outcomes

The guidelines process suggested by the AEMC can be contrasted with the recent process of setting a new methodology during the course of a regulatory determination, which occurred during the Victorian distribution determinations and gas NSP decisions. More recently, in the draft determinations for Aurora Energy and Powerlink, the AER has proposed an entirely new methodology to estimate the debt risk premium, and these NSPs were required to respond in the short period of time allowed under the NER to submit a revised regulatory proposal.

The current approach of developing debt risk premium estimation methodologies during the determination process does not afford the NSP or other stakeholders with sufficient time to develop a proper response. The decision by the AER to adopt a new methodology also affects other NSPs, because if it is adopted for Powerlink and Aurora Energy, it is likely to be continued in future determinations, and will be more difficult over time for other NSPs to persuade the AER to adopt another approach. However, it is unlikely that the other regulated NSPs would have had the time to consider and respond to the AER’s methodology for Aurora Energy and Powerlink.

The Australian Competition Tribunal has been critical of the current approach to developing methodologies. In *Application by Envestra Limited (No 2)* [2012] ACompT 3 (11 January 2012), the Tribunal stated (at paragraph 95):

If the AER were to decide that the EBV [extrapolated Bloomberg fair value curve] was an unreliable indicator for the purposes of deciding that DRP, it would be desirable in the longer term to develop an alternative coherent and consistent methodology, in consultation with the relevant regulated entities and other interested parties. Although the DRP must be determined at a particular point in time, the use of a consistent and acceptable methodology would ensure regulatory consistency, and in relation to particular matters would also facilitate efficient decision making and in turn reduce the number of reviews of the DRP decisions by the AER brought to the Tribunal. While such a task would be a complex and lengthy one, it is one the Tribunal commends to the AER.’

Guidelines should be developed in consultation with stakeholders, following the WACC review

It would be useful if the AER published guidelines on how it intends to estimate parameters for which values are not specified in a WACC review, such as the debt risk premium. This should follow a consultative approach, involving an issues paper, draft guidelines and final guidelines. This type of approach would allow the AER to consider a range of views and suggested

methodologies, and provide a reasonable timeframe to for stakeholders to develop a considered response.

Developing estimation methodology guidelines as part of a consultative process is likely to produce higher quality outcomes and therefore should reduce the number of matters that are taken to merits review. This would need to follow after the statement of regulatory intent process under section 6.5.4, as the estimation methodologies may be different depending on what benchmark has been chosen.

Question 22: *Given the uncertainty in estimating certain parameters, should the AER be required to produce the best possible values for all parameters or adopt a range from which it can choose a preferred estimate? Which WACC parameters are inter-related and should the rules recognise the inter-relationships of these WACC parameters?*

The AER should not produce a range of estimates

The AER should be required to produce the best estimate of each WACC parameter, and should not be required or permitted to produce a range. Estimating a WACC requires the exercise of professional judgement, and in some cases a professional may decide to offer a range in which the WACC outcome may lie. The range may be attributed to ranges in particular parameters or to the final outcome. However, these ranges are likely to be set around the best estimate of each parameter or of the total WACC, rather than calculating a WACC or parameter, which is deliberately at the higher or lower end, such as to offset another parameter.

Interrelationships should be recognised but not in the Rules

There are several relationships between WACC parameters, such as:

- A higher level of gearing will be reflected in a higher equity beta and potentially a lower credit rating.
- The level of refinancing risk borne by equity providers increases as the average debt tenor at the time of issue decreases.
- There is a negative relationship between the debt risk premium (DRP) and the risk-free rate¹.
- The forward-looking equity market risk premium, while difficult to estimate, is also negatively related to the risk-free rate. A negative relationship is consistent with the observed relationship between the DRP and the risk-free rate.

In the directions paper the AEMC indicated that the rules should reflect guiding principles rather than prescribing specific methodologies or parameter values. QTC agrees with this view and suggest that rather than recognising specific relationships the rules could require all WACC outcomes to be tested against the fundamental principle that higher risks must be compensated by higher expected returns.

¹ Since 2001 the correlation between the DRP from the Bloomberg 7 year BBB Fair Value Curve and the 7 year risk-free rate has been -0.4 based on monthly data.

Testing WACC outcomes against this principle will avoid the counter-intuitive outcomes that can arise when the CAPM is applied mechanically, such as the cost of debt being set above the cost of equity. Similarly, relatively low cost of equity estimates that are made during periods of heightened risk aversion and historically low risk-free rates may indicate that the equity market risk premium should be increased.

The interrelationships between WACC parameters should be recognised when parameters are changed from one statement of regulatory intent to the next or as part of a determination. For example, a higher level of gearing is likely to be reflected in a higher equity beta and potentially lower credit rating, therefore impacting on the DRP. Similarly, a change in the benchmark funding strategy based to one which is based on shorter term funding would be expected to result in a higher beta (although given beta is typically measured over a four to five year period, it would take time for the change to become apparent in the historical data). Therefore, if the AER were to propose a shorter benchmark funding strategy, we would expect to see a corresponding increase in the equity beta.

Any time there is a change in one parameter, each of the other parameters should be checked to ensure that any follow-on effects are taken into account. However, although there is likely to be some agreement about which relationships exist, we consider it would be quite difficult to reach an agreed formulation of these relationships for inclusion in the Rules.

Question 23: *How do the outcomes with the persuasive evidence test applying at the time of the regulatory determinations in Chapter 6 of the NER differ from the NGR rate of return framework? Does the persuasive evidence test make it less likely that values of WACC parameters will be updated as quickly as under the NGR framework, or vice versa?*

Stability in the parameters used to calculate the cost of capital is a positive feature of the regulatory environment in Australia. The estimation of WACC is not an exact science, and developments in finance theory often take time to evolve and gain widespread acceptance. It is unlikely that new evidence would emerge that renders previous estimates materially incorrect.

However, the presumption in favour of stability of parameters can in some cases prevent the best WACC estimates being developed. As noted in response to Question 21, the presumption that the market risk premium is a stable, long-term value may be problematic when this is combined with a risk-free rate, which is calculated as a point estimate of the yield on Commonwealth Government bonds. However, it is difficult to develop persuasive evidence that the forward looking market risk premium has changed from the long-term average. In this case the better approach is to consider a different method to calculate the risk-free rate that provides a result, which is more stable and therefore more likely to produce reasonable results when paired with a stable, long-term market risk premium.

Question 24: *How has the rate of return framework under the NGR worked alongside the NER frameworks?*

We do not offer any views on this matter.

Question 25: *Are there any concerns about the lack of guidance in the NGR on how the AER and ERA will approach the rate of return decision? To what extent is the rate of return framework under the NGR influenced by the WACC approach adopted for the electricity sector by these regulators?*

We do not offer any views on this matter.

Question 26: *Are there reasons to adopt a WACC definition other than the vanilla post-tax nominal definition that is used under the NER? Alternative proposals should explain why that alternative is likely to result in a better WACC estimate.*

In QTC's view, the vanilla post-tax nominal WACC provides a reasonable framework to estimate the required returns for regulated NSPs. We do not consider that there is any need to change to another form of WACC.

Question 27: *Should the AER/ERA be given discretion to consider models other than the CAPM when estimating the required return on equity under the NGR? What prescription or principles could the rules contain to guide the way in which information from other models might be used to produce a better WACC estimate?*

We do not offer any views on this matter.

Question 28: *Are there any reasons why an appropriate WACC estimate cannot be provided to NSPs and gas service providers from a common WACC framework, without necessarily requiring the same parameter values to be adopted across the electricity transmission, electricity distribution and gas sectors?*

We do not offer any views on this matter.

Question 29: *Which rate of return framework would best meet the key attributes identified? Are there any other attributes that should be considered?*

QTC broadly agrees with the five attributes of a good rate of return framework identified by the AEMC.

To these five attributes, QTC would add that the rate of return framework should recognise the interactions between the regulatory process of setting the return on capital and the actual circumstances of regulated NSPs. These interactions arise in a number of ways, including:

- The stability of the rate of return framework allows regulated NSPs to maintain relatively high credit ratings and a relatively low equity beta, notwithstanding the high level of gearing assumed for the benchmark firm. If the rate of return framework was changed to allow greater variations to cost of capital parameters to occur (ie, removal of the persuasive evidence test, or abolition of the DRP benchmark), there would be a consequential impact on the perceived riskiness of regulated NSPs potentially leading to weaker credit ratings and higher equity betas. This would lead to a higher rate of return and therefore higher prices for consumers.
- Prudent financial managers will take into account the regulatory framework in making decisions regarding their capital structure. Regulated NSPs currently tailor their interest rate

risk management practices to minimise the risk arising from the five yearly rate reset. If the term of the DRP benchmark is shortened, it is reasonable to expect that NSPs would adopt shorter term funding structures to avoid incurring costs, which are not compensated under the regulatory framework. In turn, the increase in refinancing risk could lead to higher required equity returns, which could lead to an overall increase in the benchmark efficient rate of return and, once again, higher prices for consumers.

- Regulated NSPs seek to raise capital in competition with other long-life assets including property and infrastructure classes, which provide appropriate returns for long-term investment. In deciding matters relating to the return on capital framework, primacy should always be given to the observed funding practices of NSPs, as the managers and boards of these firms are directly responsible to shareholders for managing refinancing risk.

The regulatory framework should always be based on the assumption of the benchmark efficient firm, in order to maintain incentives for NSPs to adopt the most efficient financing practices. However, this should not be taken to mean that any recognition of the actual circumstances faced by regulated entities is inappropriate and will necessarily lead to weaker incentives. It should be possible to distinguish between practices that involve a NSP bearing risks in order to outperform the benchmark from practices which are adopted in order to minimise the risk of deviating from the benchmark. If the regulatory framework leads to increased risks or costs for regulated NSPs, these will lead to increases in the required return on capital for the benchmark efficient firm.

A key example of this is the resetting of the cost of capital over a relatively short period once every five years, which leads prudent NSPs to adopt financing practices, which are more risky or costly than would otherwise occur. In particular, locking in a fixed base interest rate on the entire debt portfolio over a short period of time is a strategy that would rarely (if ever) be used by a borrower in a competitive or non-regulated industry, especially for an existing asset. The moving average approach proposed by QTC is a direct response to this problem.

There are a number of factors that could potentially be taken into account in determining the cost of capital for all NSPs, or for a specific NSP, without necessarily rewarding NSPs for risks or costs associated with inefficient financing practices. These may include:

- The value of the regulated asset base. The ability for a regulated NSP to minimise risks associated with the five yearly rate reset is affected by the volume of debt, which the benchmark efficient NSP would need to reprice during the rate reset period (whether through physical debt transactions or derivatives). This could be recognised by providing a longer averaging period to determine the cost of capital for NSPs with larger regulated asset bases.
- The prudent strategy or strategies that could be adopted by the benchmark efficient NSP to manage risks including interest rate risk and refinancing risk. If a benchmark is adopted is not capable of being followed in practice (for example, resetting long-term interest rates on an annual basis, such as the EURCC's proposal for State-owned NSPs) then it is not consistent with an incentive based framework, because whether a NSP outperforms or underperforms the benchmark will be entirely due to luck.
- The ability of the benchmark efficient firm to hedge risks arising because of the five yearly reset process. For example, relatively smaller NSPs have typically been able to hedge the base

interest rate risk by executing swaps during the reset period. However, there is no practical way for a NSP to hedge against movements in the DRP between the reset period and actual debt issuance under a prudent strategy. Based on continued challenging market conditions and increasing regulatory asset bases, it is looking increasingly unlikely that NSPs with large regulated asset bases will be able to hedge their allowed cost of debt using either physical debt or swaps. These risks can be more effectively managed if the cost of debt is based on a moving average.

Debt risk premium

Question 30: *Is the benchmark DRP approach likely to overstate the prevailing cost of debt, having regard to the suggestion that the overstatement may be a reflection of shorter maturity debt leading to a higher refinancing risk for NSPs? What weight should be placed on the views of market analysts on the ability of stock market listed NSPs to out-perform their cost of debt allowances?*

Comparison of historical debt risk premiums on a term-adjusted basis

QTC has attempted to analyse whether the DRPs awarded in recent regulatory determinations systematically exceed the DRPs paid by NSPs, after adjusting for the difference in term (ie, actual term of issued debt compared to the ten year benchmark assumed in regulatory determinations). The central premise of this analysis is that long-term assets should be funded by long-term debt to minimise refinancing risk, and that issuing shorter-term debt (ie, departing from the optimal debt funding strategy) does not reduce the overall cost of capital because any reduction in the DRP is at least offset by increased refinancing risk, which would be reflected in a higher cost of equity. Unfortunately, it is not possible to measure changes in the cost of equity, because point estimates are not readily observable, however, in QTC's view it is very unlikely that a switch from long-term funding to short-term funding would not be reflected in investors' risk perceptions of a company, especially following the Global Financial Crisis.

There are several points that should be considered when addressing the AEMC's question, including:

- Given the lack of reliable data on long-term corporate interest rates and the AER's use of different estimation methodologies and data sources, it is likely that individual benchmark DRPs could involve a high level of estimation error.
- NSPs rarely (if ever) issue debt during a rate reset period. General movements in the credit markets make it difficult to compare the DRP on a specific debt issue with the benchmark DRPs awarded by the AER. To the extent possible, actual and benchmark DRPs should be averaged over common time periods to reduce the effect of market movements.
- Refinancing risk is the risk that a firm cannot raise new funds on the required terms or in a cost-effective manner to repay a maturing borrowing. By definition, shorter-term debt must carry a higher level of refinancing risk compared to longer-term debt. The increased frequency of the refinancing task increases the risk of the firm having to raise new funds during adverse market conditions or being unable to refinance a maturing loan.

- The level of refinancing risk associated with a debt issue is the same regardless of whether the base interest rate is fixed or floating.
- The margin between DRPs on debt with different tenors issued by the same entity is cost of reducing refinancing risk for that entity. It follows that the DRP on long-term debt should be higher than the DRP on shorter-term debt².
- Calculating the DRP on a floating rate borrowing requires converting the base interest rate to a fixed rate for the term of the borrowing.
- The term to maturity of the CGS rate used to calculate the DRP should equal the term to maturity of the corporate borrowing.
- The current equity beta does not compensate for the higher refinancing risk associated with shorter-term debt. Compensation is provided by the margin between the actual DRP on shorter-term debt and the 10 year benchmark DRP.

The current benchmark DRP will not overstate the prevailing cost of debt if the margin between actual DRPs on shorter-term debt and the benchmark DRP provides fair compensation for the higher refinancing risk on shorter-term debt.

Measuring the cost of reducing refinancing risk

Interest rate swaps allow NSPs to separately manage refinancing risk and interest rate risk. Refinancing risk can be managed through the choice of debt tenor while interest rate swaps can be used to lock in a fixed base interest rate for the term of the regulatory control period.

To illustrate this point, consider an NSP that can issue 5 and 10 year floating rate debt at swap margins of 240 basis points and 300 basis points respectively. In order to reduce refinancing risk by securing funding for 10 years instead of 5 years the NSP must pay an additional 60 basis points per annum. Swapping the base interest rate from floating to 5 year fixed will not change the level of refinancing risk associated with 10 year debt. This is an important point because it demonstrates that the cost of reducing refinancing risk is independent of the cost of reducing interest rate risk (which is measured by the term premium between short and long-term swap rates).

When the slope of the swap and CGS yield curves are the same, the difference in swap issue margins will equal the difference between the DRPs for the same tenors³. On average this tends to be the case, so it is reasonable to also view the margin between short and long-term DRPs as the cost of reducing refinancing risk.

² In practice it is the additional *swap* margin that must be paid to secure long-term debt relative to short-term debt that represents the cost of reducing refinancing risk for a corporate borrower. In our response we have used the DRP rather than the swap margin to allow comparisons to be made with the benchmark DRPs.

³ In this example the slope of the swap yield curve is measured by the margin between the 5 and 10 year fixed swap rates. Similarly, the slope of the CGS curve is the margin between 5 and 10 year fixed CGS rates.

Observing the market-based cost of reducing refinancing risk

There are corporate borrowers in the Australian market that have multiple outstanding bonds with a range of maturity dates. The margin between the DRPs on these bonds is the market-based cost of reducing refinancing risk for those firms.

For example, the DRPs on Telstra's 15 April 2015 and 15 July 2020 bonds are currently 195 basis points and 245 basis points respectively. The 50 basis point per annum difference is the cost that Telstra must pay to reduce refinancing risk by securing funding for 8 years compared to 3 years⁴.

If Telstra issues 3 year debt the equity providers will be exposed to a higher level of refinancing risk relative to issuing 8 year debt. The 50 basis point margin should be used to reduce the risks associated with having to refinance the 3 year debt more frequently. This can be done by:

- Progressively pre-issuing new debt well in advance of the scheduled maturity date and investing the funds in a risk-free asset until required. The margin will reduce the negative interest differential between the borrowing and investment rates.
- Maintaining a cash balance to reduce the size of future refinancings or remove the need to raise new funds in the market⁵.

The point of this example is that additional costs will be incurred to reduce refinancing risk when shorter-term debt is issued, and these costs should be considered when measuring the total cost of shorter-term debt.

The same reasoning applies to the margin between the DRPs on shorter-term debt issued by NSPs and the 10 year benchmark DRP. If the margin provides correct compensation for the higher refinancing risk, NSPs will not generate excess profits simply by issuing shorter-term debt.

Comment on the EURCC's updated calculations

The EURCC has provided additional information to the AEMC regarding the 'margin to CGS' for the debt issues listed in Table 5 of their original submission⁶. A weighted average margin of **198** basis points was calculated based on rates from the Reserve Bank of Australia's (RBA) website. The margin is significantly lower than QTC's original DRP estimate of 278 basis points based on data from Bloomberg.

We have re-calculated our estimate using the RBA's closing CGS yields and the official end of day fixed swap rates published by the Australian Financial Markets Association (AFMA). The revised DRP estimate is **281** basis points.

⁴ Interest rate swaps can be used to lock in a fixed base interest rate for 8 years to remove interest rate risk over this period. However, this does not affect the DRP.

⁵ Harford, J., Klasa, S., and Maxwell, W.F., Refinancing risk and cash holdings, July 2011. The authors document an inverse relationship between the maturity of a firm's debt and the market value of their cash holdings. The relationship strengthens when refinancing risk increases as a result of tightening credit market conditions.

⁶ A copy of the letter from Brian Green to Richard Khoe (dated 17 February 2012) can be found on the AEMC website.

The EURCC appears to have used floating interest rates to measure the total cost of debt. Fixed 10 year CGS rates have been subtracted from these costs even though most issue tenors are significantly shorter than 10 years. This approach is inconsistent with the definition of the DRP, which requires the use of fixed interest rates and equal tenors for the corporate and risk-free rates. Therefore, meaningful conclusions cannot be reached by comparing the EURCC's estimate with the AER's benchmark DRPs.

A complete analysis of the EURCC's margin to CGS estimate and associated commentary is presented in Appendix A.

Has the benchmark DRP overstated the prevailing cost of debt?

The benchmark DRP may overstate the prevailing cost of debt if the margin between short and long-term DRPs systematically over-compensates equity providers for the higher refinancing risk on shorter-term debt. Testing this empirically requires estimating a shorter-term benchmark DRP at the same time as the AER's 10 year benchmark DRP calculations.

We have produced shorter-term benchmark DRPs by using credit margin survey data to estimate statistical relationships between 3, 5 and 10 year DRPs for a generic BBB+ rated borrower. These relationships have been used to calculate an implied 3 and 5 year BBB+ benchmark DRP based on each 10 year DRP awarded by the AER. The use of survey data to estimate the DRP was noted by the Australian Competition Tribunal in ActewAGL:

*'There are various ways to estimate the debt risk premium. Estimates based on historical averages are one of the most common proxies for the debt risk premium. Surveying market participants is another method and has the advantage of better reflecting prevailing market conditions.'*⁷

The shorter-term benchmark DRPs have been compared to the average actual DRP on shorter-term debt issued by NSPs. We have also compared the margin between the short and long-term benchmark DRPs with the observable DRP margin based on bonds issued by Telstra.

QTC performs a quarterly survey of debt capital market specialists as part of the administration of the competitive neutrality fee (CNF), to determine indicative margins on generic corporate borrowings with various tenors and credit ratings. Between three and six survey participants are asked to provide indicative swap margins for new issuance based on the following criteria:

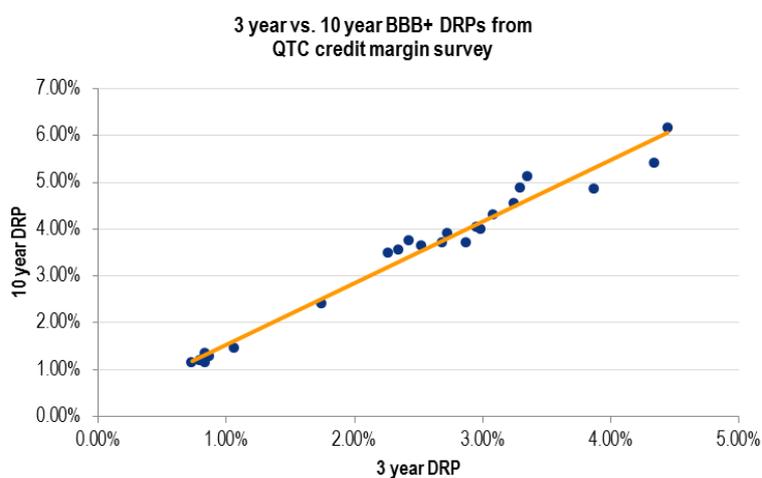
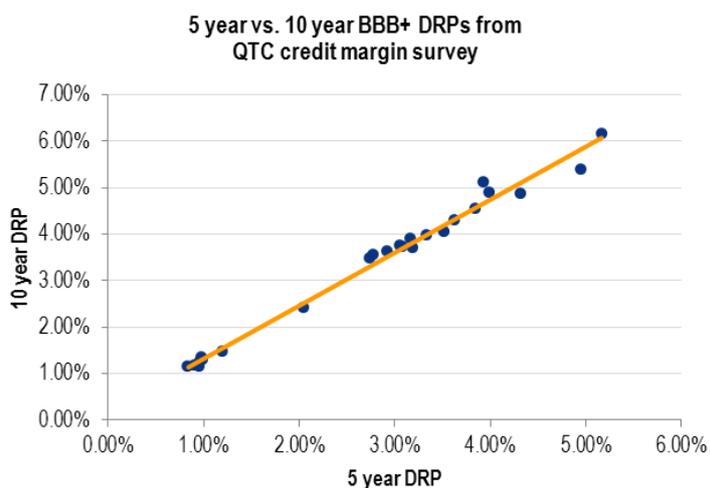
- A minimum total annual borrowing program of A\$1 billion
- Credit ratings ranging from AAA to BBB-
- Tenors ranging from 3 months to 10 years
- Exclude any margins for facility, underwriting or Commonwealth guarantees

An overview of the survey data is presented in Appendix B.

⁷ Application by ActewAGL Distribution [2010] ACompT 4 (17 September 2010) – paragraph 10.

Relationship between generic 3, 5 and 10 year BBB+ DRPs

The QTC survey data has been used to measure the contemporaneous relationship between 3, 5 and 10 year BBB+ DRPs. The following graphs plot the 3 and 5 year DRPs against the 10 year DRP for each quarterly observation from the survey between March 2006 and December 2011:



Despite the significant variation in the DRPs over the sample period there is a strong linear relationship between the DRPs at a given point in time. The strength of the relationship indicates that for a given 10 year DRP it is possible to estimate the 3 and 5 year DRPs that would have prevailed at the same point in time. A simple linear regression based on the DRPs produced the following relationships⁸:

$$10 \text{ year DRP} = 19 + 1.1393 \times 5 \text{ year DRP}$$

$$10 \text{ year DRP} = 22 + 1.3120 \times 3 \text{ year DRP}$$

⁸ The regression results are summarised in Appendix B.

Both slope coefficients are significantly greater than 1.0. This indicates that a proportional relationship exists between short and long-term DRPs, and that the cost of reducing refinancing risk increases as the shorter-term DRP increases:

TABLE 1: IMPLIED COST OF REDUCING REFINANCING RISK

5 year DRP (bp pa)	Implied 10 year DRP from regression equation (bp pa)	Implied cost of reducing refinancing risk (bp pa)
100	133	33
150	190	40
200	247	47
250	304	54
300	361	61
350	418	68

Analysis of actual DRPs on debt issues in the EURCC sample

The debt issues in Table 5 of the EURCC's original submission were made between June 2008 and February 2010. During this period the AER awarded an average final DRP of **348** basis points (including variations). The weighted average DRP on the actual debt issues is **281** basis points and this corresponds to a weighted average issue tenor of 5.4 years⁹.

It should be noted that 55 per cent of the debt in the sample was issued by SP Australia and SP AusNet. Both entities are majority-owned by Singapore Power and have the implied credit support of the Singapore Government. As a consequence, the 281 basis point DRP on the actual debt is likely to understate the DRP for a stand-alone BBB+ rated benchmark NSP. Excluding these issues reduces the weighted average tenor to 3.8 years and increases the weighted average DRP to **297** basis points. The DRP calculations are summarised in Table 2:

TABLE 2: DEBT ISSUES FROM TABLE 5 OF THE EURCC'S ORIGINAL SUBMISSION

Issue date	Issuer	Amount (M)	Tenor (years)	DRP (bps)
Jun 08	DUET	\$685	4.0	329
Jun 08	SP Australia	\$535	10.0	302
Jun 08	Spark Infrastructure	\$200	3.0	224
Nov 08	Spark Infrastructure	\$50	2.0	178
Nov 08	Spark Infrastructure	\$50	3.0	190
Dec 08	United Energy	\$150	5.0	320
May 09	SP AusNet	\$275	3.0	299
Jun 09	SP AusNet	\$50	3.0	293

⁹ Details of the DRP calculations can be found in Appendix A.

Issue date	Issuer	Amount (M)	Tenor (years)	DRP (bps)
Feb 10	SP AusNet	\$520	5.5	214
	Weighted average excluding SP entities	\$1,135	3.8	297
	Weighted average including SP entities	\$2,515	5.4	281

We have used the regression equations to estimate the implied 3 and 5 year BBB+ DRP based on each final 10 year DRP awarded by the AER during this period. If the AER's benchmark DRPs are unbiased the average actual DRP on the shorter-term debt issues should not differ materially from the implied shorter-term benchmark DRPs.

Straight line interpolation has been used convert the average actual DRP to a 5 year DRP to allow direct comparisons to be made with the implied benchmark DRP. Our calculations are summarised in Table 3. The shading represents the pricing determinations that relate to the EURCC's sample period:

TABLE 3: IMPLIED 3 AND 5 YEAR BENCHMARK DRPs

Issuer	Rate reset period		Final total cost of debt (%)	Final 10 year DRP	Implied 5 year DRP	Implied 3 year DRP	Benchmark 5/10 year DRP margin
	Start	End					
ElectraNet	04 Mar 08	17 Mar 08	9.62	342	284	244	58
Transgrid	27 Jan 09	27 Feb 09	7.78	349	290	249	59
Country Energy	02 Feb 09	20 Feb 09	7.77	348	289	248	59
EnergyAustralia	02 Feb 09	20 Feb 09	7.77	348	289	248	59
ActewAGL	02 Feb 09	27 Feb 09	7.78	349	290	249	59
Integral Energy	02 Mar 09	20 Mar 09	7.84	352	292	252	60
Ergon Energy	01 Feb 10	26 Mar 10	8.97	333	276	237	57
ENERGEX	01 Feb 10	26 Mar 10	8.97	333	276	237	57
ActewAGL **	15 Feb 10	12 Mar 10	9.52	389	325	280	64
Country Energy	22 Feb 10	12 Mar 10	8.98	336	278	239	58
ETSA	29 Mar 10	23 Apr 10	8.87	298	245	210	53
JGN **	08 Apr 10	06 May 10	10.02	417	349	301	68
JEN **	19 Apr 10	31 May 10	9.99	434	364	314	70
CitiPower **	02 Aug 10	27 Aug 10	8.97	389	325	280	64
Powercor **	02 Aug 10	27 Aug 10	8.97	389	325	280	64
United Energy **	02 Aug 10	27 Aug 10	8.97	389	325	280	64
SP AusNet**	13 Sep 10	08 Oct 10	9.36	422	354	305	68
Envestra **	25 Feb 11	10 Mar 11	10.23	467	393	339	74
Amadeus	07 Mar 11	01 Apr 11	9.33	380	317	273	63
APT Allgas **	04 May 11	31 May 11	9.77	437	367	316	70
EURCC sample average			8.50	348	289	249	59
Full period average			8.97	375	313	269	62

** denotes DRPs that were varied from the AER's final decision.

The weighted average DRP for the actual debt issues when the entities that are majority-owned by Singapore Power are excluded is 297 basis points, and this corresponds to a weighted average issue tenor of 3.8 years. Extending the tenor to 5 years produces an average DRP of **321** basis points¹⁰. Although the DRP is significantly higher than the average implied 5 year DRP of 289 basis points, it is difficult to reach a meaningful conclusion due to the small sample size.

Broader analysis of actual and benchmark DRPs

Between March 2008 and May 2011 the AER awarded an average final 10 year DRP of 375 basis points (including variations). Using the regression equation to calculate the implied benchmark 5 year BBB+ DRP at each pricing determination during this period produced an average 5 year benchmark DRP of **313** basis points.

If the AER's DRPs are unbiased the results indicate that if a BBB+ rated benchmark NSP was able to raise 5 year debt at an average DRP of 313 basis points at the same time as the pricing determinations, an average 10 year DRP of 375 basis points would compensate equity providers for the higher refinancing risk associated with 5 year debt. The benchmark cost of reducing refinancing risk is 62 basis points.

The DRPs on a broader sample of debt issued by NSPs over this time period are summarised in Table 4. This sample is based on the EURCC's sample and the debt issues presented in Table 7.5 of the AER's original rule change submission¹¹. Three additional DUET issues have also been included. The weighted average DRP and tenor has been calculated for all issues, and excluding entities which are majority-owned by Singapore Power, to highlight the effect of the implied parent company support:

¹⁰ The average implied 3 and 5 year benchmark DRPs are 249 basis points and 289 basis points respectively. Straight line interpolation produces a 3.8 year benchmark DRP of 265 basis points. The 24 basis point margin between the 3.8 year and 5 year benchmark DRPs has been added to the actual DRP of 297 basis points to produce an average actual 5 year DRP of 321 basis points. The same approach has been used to estimate the 5 year DRP on the broader sample of debt issues in Table 4.

¹¹ AER submission – page 80.

TABLE 4: DRPs FOR A BROADER SAMPLE OF NSP DEBT ISSUES

Issue date	Issuer	Amount (m)	Tenor (years)	DRP (bps)
Jun 08	DUET	\$685	4.0	329
Jun 08	SP Australia	\$535	10.0	302
Jun 08	Spark Infrastructure	\$200	3.0	224
Nov 08	Spark Infrastructure	\$50	2.0	178
Nov 08	Spark Infrastructure	\$50	3.0	190
Dec 08	United Energy	\$150	5.0	320
Mar 09	DUET (Multinet)	\$100	3.0	340
Apr 09	DUET (DBP)	\$264	3.0	388
Apr 09	DUET (DBP)	\$216	5.0	452
May 09	SP AusNet	\$275	3.0	299
Jun 09	SP AusNet	\$50	3.0	293
Feb 10	SP AusNet	\$520	5.5	214
Mar 10	SPI	\$100	10.0	218
Mar 10	SPI	\$300	7.5	209
Jul 10	APA	\$300	10.0	290
Aug 10	SPIAA (Jemena)	\$500	5.0	235
Sep 10	DUET	\$550	5.0	356
Sep 10	SKI	\$165	3.0	228
Sep 10	SKI	\$85	4.0	258
Mar 11	ETSA	\$250	5.5	181
Mar 11	SPI	\$250	10.0	218
Apr 11	DUET	\$380	3.0	214
Apr 11	DUET	\$120	7.0	306
	Weighted average excluding SP entities	\$3,565	4.6	302
	Weighted average including SP entities	\$6,095	5.6	279
	Weighted average of SP entities only	\$2,530	6.9	248

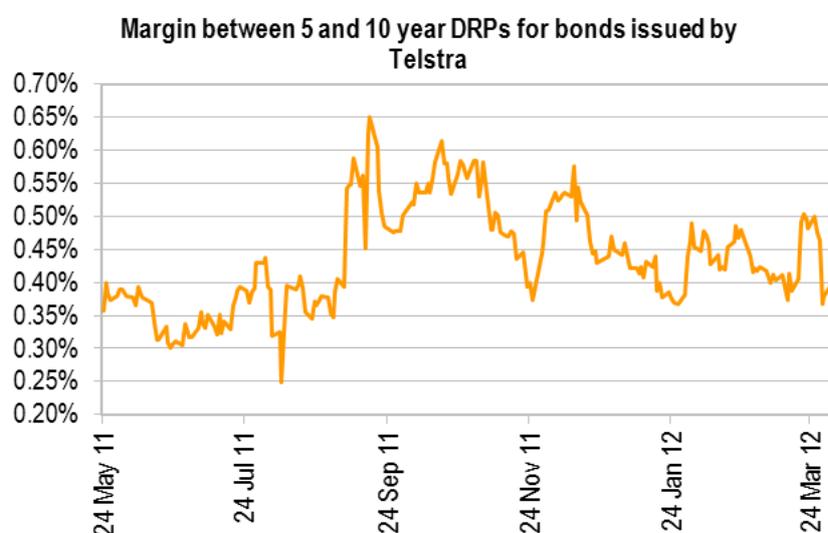
The weighted average issue tenor and DRP for the Singapore Power entities is 6.9 years and 248 basis points respectively. These entities have been able to issue longer-term debt at an average DRP that is *lower* than the average DRPs on shorter-term debt issued by the other entities. Based on this observation we consider that excluding the Singapore Power entities will produce a better estimate of the DRP for a stand-alone BBB+ rated benchmark NSP.

Excluding the Singapore Power entities produces an average DRP of 302 basis points and this corresponds to a weighted average issue tenor of 4.6 years. Extending the tenor to 5 years produces an average DRP of **311** basis points, which is in line with the average implied 5 year benchmark DRP of 313 basis points.

These results suggest that NSPs have not been overcompensated for the higher refinancing risk on their shorter-term debt issues.

Comparison with observable DRPs on Telstra bonds

To determine if the survey-based regressions are producing reasonable estimates of the 5 year benchmark DRP, we have compared the margin between the 5 and 10 year benchmark DRPs with the observable DRP margin between 5 and 10 year bonds issued by Telstra.¹²



The average 5 and 10 year DRPs are 220 basis points and 265 basis points respectively. The DRPs reflect Telstra's A credit rating and the relatively high level of secondary market liquidity in Telstra bonds compared to other corporate bonds.

Over the last 12 months the average cost for Telstra to reduce refinancing risk by securing funding for 10 years compared to 5 years has been **45** basis points per annum. The cost for a BBB+ rated benchmark NSP should be higher than 45 basis points due to the lower credit rating and lower level of secondary market liquidity for NSP debt.

The AER awarded an average 10 year DRP of 375 basis points between March 2008 and May 2011. Based on these figures the regression equation produced an average 5 year benchmark DRP of 313 basis points (Table 3). The survey data also displays a strong proportional relationship between short and long-term DRPs. Applying a similar relationship based on the Telstra DRPs produces an implied 5 year DRP of **311** basis points ($375 \times 220 \div 265$) and an implied margin between 5 and 10 year benchmark DRPs of **64** basis points.

¹² We have followed the standard approach of using the DRPs on the 2 August 2016 and 15 July 2020 Telstra bonds to estimate the DRP margin. As the difference in the tenor of these bonds is 3.95 years, the margin has been scaled by ($5.00 \div 3.95$) to estimate the margin between 5 and 10 year DRPs.

The implied 5 year DRP is consistent with the results produced by the regression equation, and the implied DRP margin is consistent with the average margin of 62 basis points reported in Table 3.

Conclusions on analysis of actual debt issuance

Shorter-term debt carries a higher level of refinancing risk compared to long-term debt. The DRP on longer-term debt should be higher than the DRP on shorter-term debt, and the margin between the DRPs is the cost of reducing refinancing risk. The current benchmark cost of equity does not provide compensation for the higher refinancing risk on shorter-term debt.

Compensation is provided by the margin between the actual DRP on shorter-term debt and the 10 year benchmark DRP.

Our analysis shows that, on average, the benchmark DRP has not overstated the prevailing cost of debt. The implied 5 year benchmark DRPs based on the 10 year DRPs awarded by the AER (including variations) are consistent with the average DRP on 5 year debt issued by NSPs. The margin between the actual and benchmark DRPs is also consistent with the margin that can be observed on bonds issued by Telstra. These results indicate that the current benchmark DRP has not overcompensated equity providers for the higher refinancing risk on shorter-term debt.

Comparisons with actual debt costs need to reflect the circumstances of listed entities

Comparing the cost of debt awarded in regulatory determinations to the actual cost of debt incurred by regulated entities may be complicated by the different ownership structures, which mean that many NSPs may not correspond to the benchmark efficient NSP service provider. The Queensland and New South Wales entities are government-owned. In Victoria, a number of the regulated NSPs are listed on the Australian Stock Exchange with a significant share of the company held by a major overseas entity.

In the case of SP AusNet, the ultimate owner of 51 per cent of the shares is the Singapore Government and the companies are managed by Singapore Power. Standard & Poors noted in its rating report that the implicit support provided a one-notch upgrade in the credit rating, from BBB+ to A-. The impact of Singapore Government ownership has been noted by consultants to the AER. Analysis undertaken by QTC indicates the yields at which Singapore Power debt trades in the market are comparable to A rated entities such as Telstra. In the case of Spark Infrastructure, which is also listed on the Australian Stock Exchange, the company is a co-investor in various assets with CKI, which holds 51 per cent to Spark's 49 per cent. In a research note on 20 October 2011, Macquarie Equities noted of Spark that its *Balance sheet [is] strong supported by CKI as a parent of the underlying companies*.

In terms of defining the benchmark efficient NSP service provider, the correct approach is still to assume that it operates a stand-alone entity. This approach is favoured by the AER.¹³ If a different approach was taken, which assumed that the risk of the benchmark efficient NSP was lower

¹³ AER, *Final Decision: Electricity transmission and distribution NSP service providers, Review of the weighted average cost of capital (WACC) parameters*, page 155

because it would more likely than not be included as part of a group of companies, potentially with a large highly-rated owner, then this would over time become the default model for NSP ownership. Stand-alone NSPs would be undercompensated for risk, and would under-invest or potentially cease to exist.

This could also make the sector unattractive for investment to large highly-rated entities. If a highly-rated entity invests in a risky business with a higher cost of capital, there may be a synergy benefit because the highly-rated entity can use its own lower cost of capital to fund the entity and earn a higher return. However, this is not an arbitrage profit, because the risks relating to the underlying NSP are only reduced because of an attribute of the parent entity. There is an opportunity cost to the parent entity, because it can only invest in so many higher-risk ventures before its own cost of capital increases. If highly-rated entities cannot obtain any synergy benefit by investing in an Australian regulated NSP (because the cost of capital is already adjusted down to reflect the fact that highly-rated entities make these type of investments), then they would be deterred from investing in the sector, and would invest in other sectors where they can obtain an advantage from their lower cost of funds.

If it is accepted that the benchmark entity should be a stand-alone NSP, which is the position taken by the AER and in QTC's view is the correct position, this increases the challenge of isolating systematic over-compensation in the debt risk premium. It is possible that the difference between the allowed cost of debt is attributable to the entity bearing increased refinancing risk (by borrowing for shorter terms), or attributable to an attribute of the parent entity, or attributable to superior debt management skills (as SFG identify in paragraph 173). Only once these factors can be discounted, or eliminated by statistical analysis, would it be possible to conclude that over-compensation occurs.

It is unlikely that the benchmark debt strategy has changed

It may be possible to show over-compensation in the DRPs awarded if it could be proved that regulated NSPs no longer intend to issue long-term debt, and that the benchmark has changed. It is QTC's view that the recent issuance of more short-term debt is more likely to be driven by funding market conditions rather than a change in the optimal debt funding strategy for regulated NSPs. Further, there is evidence that NSPs are continuing to issue long-term debt, albeit in international markets when the opportunities arise. However, if both of these factors could be discounted, and a shorter benchmark could be demonstrated, then it may be open to the AER under the current WACC rules to specify a new benchmark in the next statement of regulatory intent. No rule change is required to accommodate this situation.

Enterprise value to RAB multiples should be interpreted with caution

One of the key pieces of evidence that is cited as supporting the view that the current model provides over-compensation is the existence of enterprise value (EV) to RAB multiples of more

than 1.0 times. The AER has taken the view that *'a trading multiple above one implies that the market discount rate is below the regulated WACC.'*¹⁴

There may be a range of factors that contribute to this phenomenon, including:

- differences between the listed entity and the benchmark efficient NSP service provider, including
 - ownership of multiple regulated NSPs or other non-regulated assets
 - the benefit of implied parent company support on the ability to issue debt or the extent of refinancing risk
- the company's ability to perform better than its regulatory capital and operating expenditure allowances
- the ongoing benefit of debt raised prior to the start of the global financial crisis at lower interest rates
- the prevailing cost of capital being below the cost of capital at the time of the regulatory determination

Market analyst reports should be treated with caution

While there may be merit in considering the views of market analysts, given that these parties are independent to the regulatory process, there are a number of significant risks involved in relying on information published in analyst reports.

In the draft determination for Aurora Energy, the AER made the following comment:

*'These reports include a range of information and analysis on the current position of these companies, as well as forecasts or predictions of future performance. However, the broker reports generally do not state the full assumptions underlying their analysis, or provide thorough explanations of how they arrive at their forecasts and predictions. As such, caution should be exercised in the interpretation of these broker reports.'*¹⁵

QTC agrees with the AER's statement that caution should be exercised in relation to broker reports. In particular, we note the following issues which may arise:

- Market analyst reports can be easily mis-interpreted, given that they are short reports, which do not typically contain full explanations, assumptions and references. For example, in the draft determination for Powerlink, the AER referred to three analyst reports that apparently cited a debt risk premium, which was substantially lower than the figure sought by Powerlink. Closer analysis indicated that it was most likely that the reports were quoting the margin to swap, rather than the spread to Commonwealth Government bonds.
- Analyst reports do not generally provide calculations and assumptions that allow their estimates to be scrutinised. In a number of reports reviewed by QTC, analysts cited DRPs

¹⁴ Page 256, Aurora Energy Draft Determination

¹⁵ Page 255, Aurora Energy Draft Determination

which they thought would be paid by the regulated firm, however it was not clear whether they were referring to a ten year term, or a three or five year term.

- While most analyst reports are produced by banks which also have substantial debt capital markets activities, it should not be assumed that debt margins quoted by the analysts represent the views of the debt capital markets experts within the firm.
- Differences between the timing of actual debt issues and the calculation of the AER's benchmark DRP make it difficult for analysts to directly compare actual and benchmark debt costs. For example, an NSP may issue new debt during a regulatory control period at a lower DRP than the benchmark DRP awarded at the start of the control period. A market analyst would be correct in stating that the NSP had outperformed the benchmark on this particular debt issue. However, the difference in DRPs may be due general movements in the credit markets and/or an actual debt tenor that is shorter than the benchmark tenor. The issue in this instance relates to the current approach of fixing the DRP for five years, and not the calculation of the benchmark DRP.
- A similar problem may arise when analysts are observing the base cost of debt. An NSP may have locked in a base swap rate on an expected future borrowing using a forward starting swap during the last rate reset period. As a consequence, the fixed swap rate at the time of the new borrowing will not be relevant to the NSP's total cost of debt. It is unclear if NSPs disclose the details of hedging strategies to market analysts, and if they do, whether this is reflected in the analyst reports. In both cases, observed differences between the actual and benchmark cost of debt do not indicate that the benchmark cost has been incorrectly estimated.
- Market analysts are typically concerned with factors that have immediate influence on the company's share price or which are likely to impact the share price over the next few years. The reports examined by QTC do not as a general rule examine the overall debt maturity profile of the companies, but rather focus on refinancing obligations over the next two to three years. This is in sharp contrast to the focus of the listed companies and their corporate treasurers on maintaining diversified profile of bond maturities. Statements by market analysts that shorter term funding facilities at lower debt margins involve an 'arbitrage' of the DRP allowance should be considered in this context.
- While the independence of market analysts from the regulatory process may be seen as a benefit, it also means that their conclusions and supporting calculations cannot be subject to scrutiny by the parties to the determination.

The views of market analysts are more likely to be relevant in relation to matters in which the analysts have direct expertise, including the required return on equity and the valuation of equities. One trend which has been identified by QTC from market analyst reports is the use of long-term average values for the risk-free rate to determine the cost of equity.

For example, in the Credit Suisse report titled '*Regulated Utilities: Debt risk premium at risk in future WACCs*', the analysts state that a DRP of around 330 basis points is appropriate for 'BBB' rated entities. However, on page 11, the WACC parameters for APA include a risk-free rate of 5.3 per cent, which produces a cost of debt of 8.55 per cent. This is 113 basis points higher than the cost of debt awarded in Aurora Energy's draft revenue determination, which was issued at around the

same time. The cost of equity for APA in Credit Suisse's report is 10.55 per cent, while the return on equity allowed by AER for Aurora Energy is 9.08 per cent or 147 basis points lower. It is not clear from the report whether the analysts have considered the impact of the very low Commonwealth Government bond rate on their estimated DRPs, or whether the margins quoted in their report are against a long-term average risk-free rate.

A recent Credit Suisse report titled *'Regulated Utilities Monthly: Gov bonds to steal gas distribution revenues'* highlighted the issues with using the Commonwealth Government bond as the basis for determining regulatory revenues. The report noted that while regulated utilities use swaps to attempt to match the regulated cost of debt allowance, the increase in the spread between Commonwealth Government bonds and the swap rate would reduce their ability to match the low cost of debt allowance. It is uncertain whether estimates of the difference between the regulated debt allowance and actual cost of debt reflect the impact of movements in the swap spread. The report also notes that 'most analysts do not tend to use point estimates for a WACC (we are in that group), but instead use a through the cycle type approach'. It is possible that the DRPs quoted by analysts are based on a 'through the cycle' risk-free rate.

A formal survey approach may assist in developing high quality estimates

The AER's task is to produce the best estimate of the benchmark cost of debt at the time of each regulatory determination. If the views of market analysts are to be used to assist in this task, we believe this is best achieved with a formal survey. The main benefit of a survey is that it allows the context to be clearly defined by asking specific questions and informing the survey participants of the assumptions, caveats and constraints that should be considered when formulating their response.

Debt capital market (DCM) specialists are likely to provide more valuable information on debt costs compared to analysing broker reports. DCM specialists have regular discussions with domestic and international borrowers and investors, with a view to bringing new issuance to the market. These discussions often focus on issuance levels that are being targeted by borrowers and investors for various tenors and credit ratings. Specific information such as this is likely to be of greater value than broker reports.

For example, one of the main problems faced by the AER is the limited availability of data on long-term corporate bond yields, while more reliable data seems to be available for shorter tenors. We have shown that it is possible to use survey-based data to allow reasonable estimates of the 10 year DRP to be calculated based on more reliable shorter-term DRPs. As indicated by the Australian Competition Tribunal, survey data can be used to assist the AER in estimating a benchmark DRP that reflects prevailing market conditions, especially when observable market data is limited or unreliable.

Question 31: *What are the pros and cons of the recent approaches taken by IPART and the ERA in estimating the DRP?*

The use of a five year benchmark is not supported by debt issuance practices

For both of the approaches used by IPART and the ERA, a 5 year debt risk premium has been used, notwithstanding that there is continuing support from theory and practice that long-term NSP assets should be funded with long-term debt. While the impact of the GFC has resulted in increased use of shorter term bank debt, there is evidence that NSPs continue to issue long-term bonds, where the opportunity presents itself, such as in the US private placement market. IPART's conclusion that the appropriate debt term is based on the length of the regulatory period is inappropriate, is not supported by actual debt issuance patterns, and if adopted in the Rules this would undercompensate NSPs which continued to adopt a prudent risk management strategy using long-term bonds.

The combination of data sources used by IPART may improve the quality of the estimate

A positive feature of the IPART approach is the use of a combination of a sample of domestic bonds, the Bloomberg Fair Value Curve and data from US issues. The use of domestic bond data may improve the quality of an estimate, compared to relying on a single indicator, however, this is subject to these considerations:

- The domestic bond market is illiquid, and much of the so-called 'data' is actually indicative non-binding prices from rate sheets. We have observed that for bonds, which do not typically trade, the margin to swap in the rate sheet remained unchanged over long periods (up to 9 months was observed for a number of bonds) even when it is clear that the debt margin has changed for more liquid bonds. There is no obligation on banks that publish rate sheets to ensure that the margin to swap estimate is re-assessed on a continual basis, and for non-trading bonds this would be a pointless exercise. This type of stale data does not provide an estimate of the prevailing cost of funds, even if stale data from a range of bonds and providers is considered.
- Financial market information providers such as Bloomberg are experts at constructing fair value yield curves and have been doing so across multiple markets for well over a decade. Typically their decision to discontinue publishing particular curves or curve points is based on an assessment of the poor quality of the bond yield data. Therefore, by implication if the regulator was attempting to develop an estimate of a bond curve or curve point that information providers like Bloomberg had discontinued, we would question whether the estimate had a significant probative value in relation to the benchmark bond yield.
- Based on the current bond market, it may be reasonable to estimate the yield on a bond of 5 years term to maturity, as IPART have attempted, however, a 10 year yield would be problematic. Therefore, the IPART approach may not be relevant to the Rules, unless liquidity in longer term bonds increases. Alternatively, the DRP on a ten year benchmark bond could be estimated by extrapolating the result of a five year bond using a 'bond pairs' approach or based on longer-term historical relationships between 5 and 10 year DRPs.

Unlike IPART, the ERA has not limited the sample to only fixed rate bonds, and has increased the sample size by using floating rate notes and bonds with redemption features. A broader sample increases the likelihood that an estimate that will be more in line with the benchmark bond. However, care still needs to be taken when choosing the sample as although data is present it may not reflect current trading data.

In summary, the use of a sample of bonds as a second method for estimating the debt risk premium could be considered, provided that the weighting given to the bond sample approach was reflective of its relative data quality. However, any shorter-term DRP estimates would need to be adjusted to produce a 10 year DRP estimate.

Data from international markets may be used, though caution is required

There are now a number of Australian companies, including regulated NSPs, that issue bonds into the US private placement market, and therefore it may be reasonable to incorporate data from this market to estimate the Australian cost of debt. If overseas bond data is included, it is essential that all of the costs of converting the funds and interest rate exposure to an Australian dollar equivalent are taken into account to determine the comparable debt margin over the Commonwealth bond. The approach adopted by IPART in this regard appears to be consistent with financial markets practice.

The ability of regulated entities to access offshore capital markets was discussed in a report issued by Moody's Investors Service titled *'Australian Regulated Electricity and Gas Networks Outlook 2012'* (16 November 2011):

*'Whilst we have observed the availability of the USPP market as a source of longer dated debt at an advantageous margin level relative to the regulated return on debt, we also noted that any potential margin-benefit was more intermittent in nature, given the recent volatilities seen in both exchange rates and money markets. As such, Moody's expects that the financing costs of issuers as they refinance these wrapped bonds will continue to increase.'*¹⁶

...
*'In practice, the opportunity for issuers to outperform the regulated WACC on a consistent basis had already contracted following the closure of the wrapped bond market, which was a steady source of cheap funding in the past. Whilst the offshore capital markets – such as the US Private Placement (USPP) market have at times offered lower cost funding to issuers in the sector, opportunities to tap these markets have been, and are expected to remain sporadic.'*¹⁷

The use of international bond market data, and the weighting applied to the results, should take into consideration the following factors:

- Bond market data should only be used where there is evidence that a number of Australian firms (especially firms that do not enjoy the implicit support of large multinational parent

¹⁶ Page 10

¹⁷ Page 15

companies) are actively issuing in the market around the time when the estimate is being calculated.

- It is typical in the US private placement market that bonds are acquired by insurance companies or other long-term financial investors and held until maturity. Trading volumes are relatively small and the market is not liquid. It would not be appropriate to rely on trading data, which is likely to amount to only indicative non-binding bid and offer quotes. It is more likely that only data for bonds, which have been issued during the period by Australian issuers can be relied upon.
- The 'basis swap' cost between US dollar and Australian dollar interest rates can vary significantly over short periods of time, and it is critical that current values are used to estimate an Australian dollar equivalent cost of debt.
- The ability for firms to execute the swap transactions required to convert US dollar proceeds into an Australian dollar interest rate exposure will be impacted by the introduction of Basel III, because of increased capital requirements. This may increase the cost of funding from international markets, and may limit the proportion of the funding program, which can be sourced from overseas.

In relation to the weighting that could be applied to international data, the maximum would be based on the proportion of debt that firms have sourced from those markets in recent issuance. For example, it may be unreasonable to conclude that where Australian firms have issued into a market several years ago (but not since), that the benchmark efficient firm would be able to issue debt during the reset period.

While the use of international bond issuance data may be appropriate, especially while Australian NSPs are active issuers in international markets, there is the risk that this could disadvantage NSPs if at the time of their revenue determination the opportunities to issue in international markets have been impacted by changing market conditions. In the case of bond data from any overseas market, expert financial market input should be sought regarding the current ability of Australian firms to issue into that market.

Question 32: *What evidence is there that the DRP benchmark in the NER may have changed? Would it be appropriate for the regulator to specify the DRP benchmark in any periodic reviews or would it be more appropriate to specify it at the time of the determinations?*

The Australian corporate bond is still the appropriate benchmark

The mix of funding sources used by Australian corporates has changed continually in response to changes in capital markets. Recent trends include the demise of credit wrapped bonds, increased use of shorter-term bank funding (both of which occurred during the GFC), reduced availability of bank debt from European financial institutions (an emerging trend), and the increased opportunities in the US private placement market. In the past twelve months, a number of regulated NSPs and other infrastructure owners have issued bonds in the domestic market. In its *'Australian Regulated Electricity and Gas Networks Outlook 2012'*, Moody's Investors Service presented data showing that over the period from 2009 to 2011 domestic capital markets accounted for around one-third of issuance by regulated NSPs in each year, with the bank market and offshore

markets providing the remaining two thirds. The proportion of bank debt funding was highest in 2009, but in 2011, issuance in the US private placement market and other international markets accounted for a greater share than the bank market.

The current benchmark in the NER is based on an Australian corporate bond, with a term and credit rating set by the AER at ten years and BBB+ respectively. In QTC's view, the Australian corporate bond is still the best benchmark for measuring the debt risk premium under the NER, for the following reasons:

- While the proportion of domestic bond funding is not the dominant funding source (ie, more than 50 per cent) for regulated NSPs, it is unlikely in the post-GFC environment that regulated NSPs following a prudent risk management strategy would focus on a single source of debt funding. It is therefore unreasonable to require that the DRP benchmark must be based on the dominant debt funding source.
- The use of long-term domestic bond funding is consistent with corporate finance practice and theory, notwithstanding that current market conditions have limited the ability of Australian corporates to raise long-term debt in this market.
- There are no other valid alternatives for the DRP benchmark. Bank funding is typically only available for terms of no more than 3 to 5 years, and is inconsistent with the requirement for long-term funding to mitigate refinancing risk. The availability of funding from international capital markets is subject to sudden changes driven by global factors, and issuance in these markets is based on opportunities at the time rather than representing a core source of funding.
- It is appropriate to continue to specify a single benchmark, as it confines the issues for debate between the parties. The NER provides the AER with powers to determine the term and credit rating of the benchmark Australian corporate bond, which are the single largest determinants of the DRP. Removing the benchmark altogether could in QTC's view create significant uncertainty and the potential for open-ended dispute, although we note that in the NGR (which does not specify a benchmark) the AER has used the domestic corporate bond to measure the DRP.
- The lack of 10 year BBB+ rated Australian corporate bonds at the time of a rate reset makes it more challenging to determine the DRP that would exist, however, recent Tribunal decisions and the AER's recent practice confirm that it is reasonable to estimate the DRP based on data from bonds with similar attributes to the benchmark bond. It may also be appropriate to use international bond market data to assist in developing an estimate of the DRP for the domestic corporate bond, subject to the limitations discussed previously.

There are risks from adopting a shorter benchmark

The current 10 year tenor for the benchmark DRP reflects sound financial risk management principles that have been tested in practice, both domestically and internationally, over several decades and across multiple industries. These practices are confirmed by long-term data that clearly shows that NSPs have a preference to issue long-term debt to reduce refinancing risk.

It is critical that a full and unbiased analysis is undertaken before any proposal to shorten the benchmark from ten years. Using a shorter benchmark is likely to lead to a change in behaviour towards issuing more short-term debt because in this situation NSPs will not bear uncompensated costs associated with issuing long-term debt. The change to a shorter term benchmark, if it does not reflect a change in issuance, which has already occurred, will itself drive a change in future issuance behaviours. There is a risk that, if a shorter benchmark is a sub-optimal capital structure, then a change in financing practices, which is driven by regulatory change, could increase the equity beta and lead to a higher WACC for regulated NSPs.

As we stated in our original submission to the AEMC, it is to be expected that market conditions will occasionally constrain the choice of debt tenor for NSPs, but it is unreasonable for the AER to do so. NSPs should always have the option to issue long-term debt if the opportunity arises and for the cost of this debt to be adequately compensated by the benchmark DRP.

Question 33: *Is the EURCC's proposal of establishing the cost of debt using historical trailing average compatible with the overall framework for estimating a forward-looking rate of return? What are the potential benefits of using a trailing average and do they outweigh the potential costs if the estimate is less reflective of the prevailing cost of debt for NSPs?*

The EURCC's trailing average cost of debt proposal should not be adopted

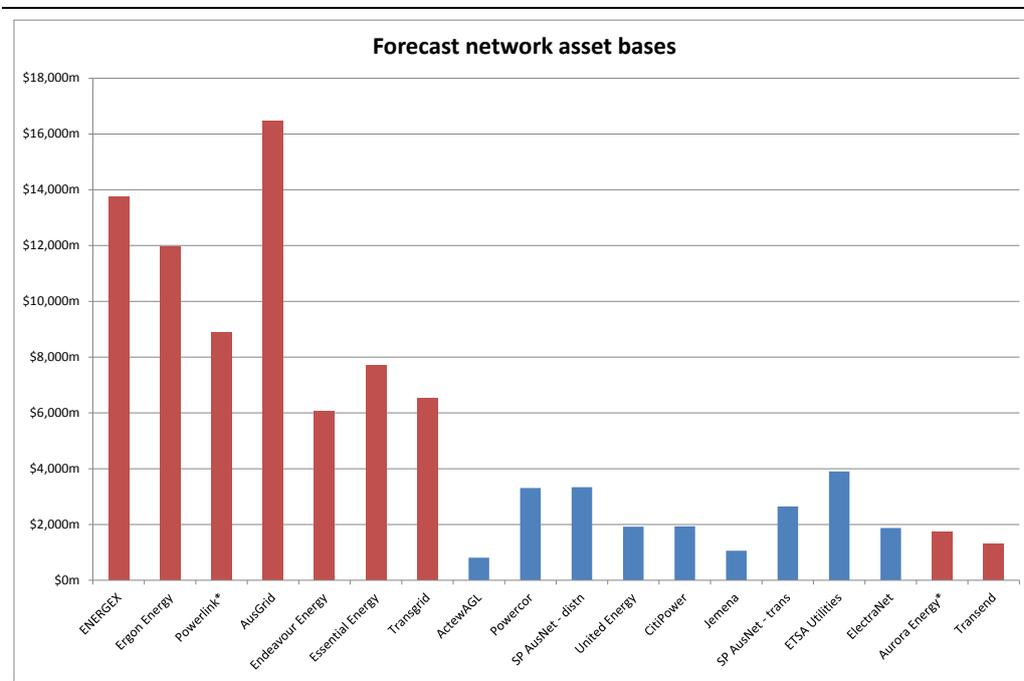
QTC does not support the particular approach advocated by the EURCC. In QTC's view, while the proposal would address the refinancing risk that arises due to the short rate reset window every five years, the volatility inherent in the current WACC approach should be addressed on a holistic basis, rather than creating separate and potentially inconsistent frameworks for the return on debt and return on equity. In addition, the EURCC approach specifies a methodology for determining the DRP, which is not supported by the evidence regarding the benchmark efficient funding strategy for NSPs.

The current five yearly reset creates interest rate risks, which are increasingly difficult to manage

To reduce interest rate risk, NSPs are required to reset the base interest rate on their borrowings at the same time as its regulatory rate reset. However, the use of a relatively short rate reset period once every 5 years presents a particular challenge for re-pricing the significant volumes of debt associated with large regulated asset bases. This is particularly an issue for State-owned NSPs, because of the size of their regulated asset bases and the basis risk that arises from the use of interest rate swaps. Basis risk exists for State-owned NSPs because their debt is priced at the relevant State government yield curve plus a debt margin, rather than as a margin above the swap curve, which is the case for privately-owned NSPs.

The chart below shows the size of regulated asset bases for electricity transmission and distribution NSPs as at the end of their current regulatory period (or the next regulatory period in the case of Powerlink and Aurora Energy). The combined forecast regulatory asset base (using the final 2010–15 determination data) for ENERGEN and Ergon Energy at the time of the next reset in 2015 is around \$25 billion, compared to a total of \$20 billion for the privately owned NSPs in

Victoria, South Australia and ACT. The combined regulatory asset bases of NSW distributors and transmission entities at the next reset in 2014 will be around \$37 billion.



* Forecast asset bases for Powerlink and Aurora Energy are for the next regulatory period commencing on 1 July 2012, based on the draft determinations issued in November 2011.

The impact of the Global Financial Crisis on capital markets and the size of the debt requirements means that the length of time to execute debt transactions is a significant issue even for State treasury organisations, which in the past have enjoyed greater flexibility in funding markets. Assuming a debt to RAB of 60 per cent, around \$15 billion to \$20 billion would need to be repriced in a relatively short period prior to the next reset if ENERGEN and Ergon Energy sought to hedge their full interest rate exposure in line with the regulatory reset period. QTC does not consider this to be an appropriate funding strategy. This funding requirement compares to a task of less than \$9 billion for the five Victorian distributors at the end of 2015, assuming a 75 per cent debt to RAB ratio.

Privately-owned NSPs have traditionally used interest rate swaps to manage interest rate risk separately from refinancing risk, which is managed through a diversified portfolio of bonds spread across a range of maturities. Given the volumes of debt funding associated with larger regulated asset bases, QTC does not consider that transacting large swap volumes over a short period of time is a prudent way of managing interest rate risk.

The current approach disadvantages NSPs with large asset bases

The current method of setting the rate of return over a short period of time disadvantages NSPs with larger regulated asset bases, because of the resulting larger volumes of debt or derivatives that must be transacted during that period to minimise interest rate mismatch risk. There is a limit

to the amount of duration that can be absorbed in the debt capital markets and the swap market over a short period of time, especially given that the benchmark interest rate hedging strategy requires ultimate investors which are willing to take on exposure to five year interest rates. While the Australian swap market is generally quite liquid for reasonable volumes, this liquidity has not been tested for the large volumes of debt which are associated with large regulated NSPs. It is QTC's view that attempting to transact the required volume of swaps for large regulated NSPs over a forty day trading period would involve high transaction costs and is likely to result in opportunistic pricing by market participants. If the market becomes aware that a NSP (or central treasury body) is attempting to deal large volumes of swaps each day within a fixed period of time, the swap rate is likely to rise as market participants identify an opportunity to realise significant profits at the expense of the NSP.

The hedging strategy which is assumed to be applied by the benchmark efficient NSP is not available to NSPs with large regulated asset bases. By implication, the benchmark efficient NSP is effectively defined by reference to the relatively smaller regulated asset bases of the listed NSPs¹⁸, and larger NSPs are required to bear a higher level of interest rate mismatch risk because of their inability to follow the same strategy. However, in relation to the ability to obtain capital, there is no basis to suggest that the efficiency of a NSP is related to its size. Competitive markets do not generally discriminate against larger firms. The increased level of interest rate mismatch risk is not due to inefficiency in larger NSP businesses, but rather due to the size of the Australian debt capital market and swaps market.

The ability for NSPs to elect to use either the current five yearly reset or the moving average approach is designed to address the current bias in the rules towards NSPs with relatively smaller regulated asset bases.

A moving average approach for updating the cost of capital should be considered

QTC supports the use of a moving average approach to update the cost of debt and cost of equity on an annual basis, in order to reduce the interest rate risk that arises due to the five-yearly rate reset process. The features of the preferred moving average approach are set out in Attachment 2. References in this submission to the moving average approach are to QTC's proposal, unless otherwise noted. The comments below discuss a number of the benefits of the moving average proposal, and address concerns raised by SFG in relation to the use of moving averages to set regulatory cost of capital allowances.

The moving average approach significantly reduces refinancing/repricing risk for NSPs

Under the current five yearly reset approach, NSPs are exposed to the risk that the cost of debt calculated during the rate reset period will be lower than their cost of debt. This risk can be mitigated by resetting the interest rate on the NSPs debt portfolio. For privately-owned NSPs, this is achieved by transacting interest rate swaps during the rate reset period, with typical volumes

¹⁸ AER, *Final Decision, Electricity transmission and distribution NSP service providers, Review of the weighted average cost of capital (WACC) parameters*, May 2009, pages 166 to 169

around \$1 billion to \$2 billion. For Queensland Government-owned NSPs, this is achieved by replacing shorter-term bonds with a mix of longer-term bonds before and during the rate reset period.

Under the moving average approach, the cost of capital would be updated each year by 20 per cent of the prevailing rates. For a private sector NSP to implement a similar interest rate profile, it could execute a rolling portfolio of swaps, with 20 per cent replaced each year. For State-owned NSPs, a similar result would be achieved by replacing shorter term bonds with longer term bonds on a rolling basis.

The requirement for private sector NSPs to use swaps under the moving average approach is because the averaging period of 5 years is shorter than the benchmark funding strategy, which uses 10 year bonds. Under this strategy, only 10 per cent of the portfolio would be rolled over each year, so to achieve an effect, which is similar to the moving average, the proceeds of fixed rate bonds will continue to be liability swapped to create a floating rate exposure, with a second set of fixed-for-floating swaps executed in a rolling 5 year basis. As discussed in the draft Design Paper, QTC considered the use of a 10 year moving average, which would eliminate the need for swaps, however, such a long averaging period could increase the potential for investment distortions.

The moving average is consistent with the benchmark efficient funding strategy

It has been generally acknowledged, including by the AER that the benchmark efficient firm would use a diversified debt portfolio with a portion of its debt maturing in each year. However, this does not correspond to the calculation of the prevailing cost of debt at the time of the reset.

The issue is particularly relevant in relation to the DRP, as private sector NSPs are typically able to match their base cost of debt to the rate reset period using interest rate swaps. Using the prevailing DRP during the rate reset period to determine the benchmark DRP implies the use of a funding strategy, which in QTC's view, is inefficient.

Setting the benchmark DRP based on prevailing rates implies that the benchmark firm can fully refinance their entire debt portfolio during each rate reset period. This would require all borrowings to have been funded with a single five year borrowing that matures during the rate reset period. This strategy involves a very high level of refinancing risk, especially for firms with above-average gearing levels.

As a consequence, basing the benchmark DRP on prevailing rates implies the use of an inefficient debt funding strategy that cannot (and should not) be implemented in practice. A benchmark that does not reflect efficient practices is an inappropriate benchmark.

The prevailing DRP is the forward-looking cost for a firm that intends to make a single new borrowing at a point in time, but this does not describe the position of the benchmark NSP at the time of each rate reset period. By maintaining a diversified debt portfolio, the forward-looking cost of debt that is relevant to the benchmark NSP (ie, the cost that will actually be paid in the

future) must reflect historical DRPs. A moving average of the DRP will provide a better estimate of this cost, despite the fact that it does not equal the prevailing DRP.

The problems that arise from using the prevailing DRP are a consequence of assigning economic significance to the length of the control period when calculating the benchmark cost of debt. The benchmark efficient funding strategy is based on sound financial risk management principles, while the length of the control period has been chosen for other reasons. As noted by SFG Consulting:

*'Yet there seems no reason why the term of the regulatory period, which **represents a trade-off between administrative efficiency and timeliness of reviews**, would bear any relationship to the prices which would prevail in a competitive market.'* [emphasis added]¹⁹

Similar problems will occur when calculating the benchmark cost of equity if the investment horizon for investors in long-term NSP assets is mistakenly assumed to be a function of the length of the control period.

The use of a moving average is consistent with a sound regulatory cost of capital allowance

In QTC's view, switching to a moving average approach for setting the cost of capital does not come at the expense of ensuring NSPs are provided with a reasonable rate of return and with appropriate incentives to manage their funding costs and risks. SFG have raised a number of concerns regarding compatibility between moving average approaches and the incentive based regulatory framework. However, in QTC's view these concerns are capable of being satisfactorily resolved, and there are significant practical benefits of the moving average approach (in particular, the reduction on interest rate risk).

SFG have identified the following criteria for an estimation process to produce a high quality WACC estimate:

- a. Reflects current market circumstances
- b. Utilises all of the relevant data
- c. Considers all relevant estimation methods
- d. Ensures internal consistency
- e. Is open and transparent
- f. Has been subject to scrutiny
- g. Has been cross checked for reasonableness

The key difference in relation to the moving average approach compared to the current five-year rate reset arises in relation to the criteria a), namely that the cost of capital would not be set at the prevailing rate at the start of the regulatory determination. However, as discussed below, we do not consider that this is an essential requirement to ensuring that regulated firms are allowed to

¹⁹ SFG Consulting report – page 43

earn a return, which is commensurate with the risks borne by the benchmark firm. Further, the current approach does not meet this criteria, because the cost of capital only reflects current market circumstances once every five years.

In relation to criteria b) through f) the moving average approach outlined in Attachment 2 does not specify the values that should be used for individual parameters, or the methodologies that should be used to calculate parameters. The cost of capital would continue to be estimated in the same way, and the rights and obligations of the NSPs and the AER are unchanged. If there are deficiencies in the current process for estimating WACC, these will be imported into the moving average approach. Therefore, the proposals in this paper to improve estimation methodologies should continue to be pursued, whether or not the moving average approach is supported. We note that the moving average approach may provide a higher quality WACC estimate because it would reduce the impact of estimation errors in relation to individual parameters and may also provide a better estimate of the cost of equity. These issues are discussed in more detail below.

In regards to criteria d), the moving average approach discussed in Attachment 2 applies to both the return on equity and the return on debt, and therefore has greater internal consistency than the EURCC's approach, which only applies to the return on debt.

In regards to criteria f), the moving average approach discussed in Attachment 2 provides that the annual updating of the risk-free rate and debt risk premium would be based on methodologies set out in the regulatory determination. This is to avoid a process where the NSP and AER need to engage in an annual process to determine the best estimation methodology. While we agree with SFG's general comment that a higher quality WACC outcome would be produced if the methodologies are open to scrutiny at each occasion, if this occurred in the annual updating of these parameters, this would involve a significant increase in administrative cost and uncertainty for little practical benefit. In any case, the current approach does not provide for an annual review of the WACC parameters (ie, the values are fixed in the regulatory determination for five years) and therefore the moving average approach is no worse in this respect.

The moving average approach is consistent with incentive-based regulation

The moving average approach proposed by QTC is not intended to provide compensation for actual debt costs and is not determined by reference to the actual debt portfolios of NSP businesses, unlike the UK approach discussed by SFG (at paragraphs 212 onwards). The moving average approach provides a benchmark, which can be replicated by businesses, albeit without the need to attempt to reset interest rates on total borrowings over a period of 40 trading days. In any case, it could be said that the Australian approach provides compensation for actual debt costs, provided the debt is borrowed (or interest rates are set through swaps) immediately prior to the start of the regulatory period.

There are already a number of WACC parameters, which are estimated using historical data, when strictly speaking the CAPM requires the use of forward looking estimate. For example, the equity beta is typically estimated by analysing the movement of historical returns on the share compared to the market index, and the market risk premium is usually measured using long-term excess

returns on the stock market. As noted in relation to Question 20, combining a spot estimate of the risk-free rate with a long-term estimate of the market risk premium does not produce the best WACC outcome.

A good regulatory framework does not require the use of prevailing rates at the time of the determination

The critical issue raised by SFG in relation to the use of a moving average is that it:

'represents a fundamentally different approach to setting regulated rates of return than has been previously adopted. It would mean that the debt component of the regulated rate of return provides compensation for interest rates prevailing in the past, rather than compensation for the risk of providing debt finance in the future.' (at paragraph 197)

At paragraph 205, SFG observes that:

'if the objective is to estimate the cost of capital, which is the only rate which will equate the net present value of expected cash flows with the regulated asset base, then we will likely have a more reliable estimate by estimating the current yield to maturity than referring to a trailing average estimate.'

QTC acknowledges that the purpose of the moving average approach is not to provide an estimate of the cost of capital at the time of the determination. Further, we acknowledge that under the moving average model, the present value of future cash flows may not equal the value of the regulatory asset base at the time of the determination, depending on the relative levels of the prevailing and moving average rates. However, neither of these are evidence of flaws in the moving average model.

SFG considers that the high quality WACC estimate must reflect current market circumstances, stating:

'By definition, the WACC is a forward-looking opportunity cost. It is an estimate of the expected return that investors would require in order to commit capital to the firm in the current environment. Since market circumstances vary over time, a firm's cost of capital will also vary over time. For this reason it is important that any WACC estimate properly reflects the current market circumstances. The current Rules recognise this where they refer to the need for the regulatory rate of return to be "a forward looking rate of return that is commensurate with prevailing conditions in the market for funds." The reference to prevailing conditions is important in providing the correct incentives for investment, operation, and use of the regulated NSPs and pipelines.'

QTC agrees that the WACC, as it is applied in the standard investment decision context is a forward looking opportunity cost, however, it does not automatically follow that the same approach must be applied in the regulatory context. In QTC's view the critical issue is whether the regulatory framework provides a reasonable return on capital to the regulated NSP on its asset base. As QTC and a number of other stakeholders noted, the *'basic premise is that the regulator is attempting to estimate the per unit price which would prevail in a competitive market'*. It does not appear to us

to be essential to meeting either of these criteria that the return on capital must equal the prevailing cost of capital at the time of making the regulatory determination. In this regard, it is worth re-visiting the process by which cost of capital theory developed for competitive markets is applied by analogy to regulated monopolies.

The current process is explained by SFG in these terms:

‘The framework used to make this estimate is to ask, “If an investment equal to the regulated asset base were made today, what per unit price would allow the investor, in expectations, to receive cash flows with net present value equal to that regulated asset base.” This is achieved by setting the regulated rate of return equal to the cost of capital at the time of the regulatory determination.’

In essence, contemporary cost of capital theory is applied by deeming a decision to occur. This is relevant because standard corporate finance theory assumes that a decision to outlay funds is made, and that the relevant rate is the opportunity cost of investing those funds (rather than the cost at which the funds were raised). Importantly, this deemed decision point is also relevant because funds invested prior to the decision being made are ‘sunk costs’ and are ignored in calculating the net present value. If the investor was not deemed to have invested in the regulatory asset base at the time of the determination, its value under contemporary corporate finance theory would be nil.

In practice, no such decision occurs. The decision to invest in the opening regulated asset base was made typically over a period of decades as the NSP was developed. Investments in future capital expenditure are made in the future after applying the regulatory test to the expenditure, and are not at the time of the determination (although the cost of debt may be hedged at the time of the regulatory determination).

Arguably, the closest approximation to the competitive markets, which avoids the deemed decision at the start of each regulatory period, is to set the cost of capital for each individual asset as the prevailing rate at the time of the decision to build the asset, and fix that rate for the asset’s life. Such an approach is both administratively unworkable and not capable of being implemented in practice in funding markets. However, in aggregate it is more likely to resemble a moving average than a periodic rate reset.

Another analogy that is applied is the concept of new entrant pricing, which requires that the cost of capital is set at the prevailing cost of capital. In a competitive market new entrants can raise funds at the prevailing cost of capital, and the entry and exit of market participants would cause prices to converge at the level, which provides a rate of return equal to the prevailing cost of capital. Like the deemed decision at the time of the regulatory reset, the existence of potential new entrants must be assumed, because the NSP has a monopoly position within its franchise area. However, in a competitive market new entrants can arrive at any time, unlike the current approach, which implicitly assumes that new entrants can only enter at the time of the regulatory reset every five years. Arguably, the model applied by ERA is closer to the new entrant model, because the cost of capital is updated on an annual basis.

Prevailing rates are relevant at the time of the decision to adopt the moving average model

SFG's criticism of the moving average model, that it reflects historical rates rather than prevailing cost of funds, is in QTC's view only relevant if historical information is incorporated at the point when a firm switches from the existing framework into the new model. Absent any transitional rules, a decision by a firm to switch into the moving average method therefore allows a choice to be compensated at the prevailing cost of funds or a historic cost of funds (albeit that from one year's time the moving average will over time start to reflect prevailing rates). This issue can be addressed by assuming that, at the point of switching over, the rates for all previous periods are equal to the prevailing rate. This type of transitional rule is incorporated in QTC's proposal to avoid any short-term unintended consequences.

The moving average approach should not materially increase the potential for investment distortions

The main practical argument against the use of the moving average approach is that the use of prevailing market information is critical to reducing incentive distortions in the regulatory setting. However, in QTC's view the potential for investment distortions is not significantly different under the current model compared to the moving average model.

Discussion of the potential for investment distortions under the regulatory model should recognise that the ability for NSPs to over-invest is constrained by regulatory oversight of expenditures, and under-investment is constrained by the need to maintain NSP reliability and limit penalty payments under the Service Target Performance Incentive Scheme (STPIS). Investment distortions are unlikely to be significant if the deviation of the allowed return on capital from the prevailing cost of capital is expected to be temporary, given that most NSP assets have long lives. The potential for over- or under-investment will be minimised where the return on capital is set at a rate, which is expected to provide reasonable return over the life of long-term NSP assets.

Under the current model, there is the potential for investment distortions for a number of reasons, including:

- The WACC is fixed for a period of five years, and movements in rates following the reset period may result in investment distortions. For example, if the WACC is set for five years at a period when the risk-free rate and debt margin are relatively high, NSPs may be incentivised to increase expenditure if borrowing costs fall during the regulatory period.
- While the CAPM is based on the assumption of a forward looking market risk premium and a forward looking equity beta, in practice both of these parameters are estimated using historical data, while there are reasonable arguments that the equity risk premium increases during times of financial market stress. This is recognised as a problem by SFG Consulting.²⁰ The increase in the cost of risk can be observed via increased DRPs, and while equity risk

²⁰ SFG Consulting, *Preliminary analysis of rule change proposals*, paragraph 66

premiums are not readily observable, it would be unusual if these did not also increase as the cost of equity should not be less than the cost of debt.

- Spot estimates of the WACC may be subject to estimation error, especially in relation to the return on equity. If the WACC is set at a period that coincides with a low Commonwealth Government bond yield (ie, the current risk-free rate proxy), the return on equity may be set at a level which does not provide an adequate return on investments, because the market risk premium is not typically increased to produce an overall reasonable return on equity.

Under the moving average model, the potential for over- or under-investment may exist when the prevailing cost of funds is below or above the moving average rate, although these factors should be taken into account:

- As the moving average will be updated on an annual basis it would be expected to converge with the market rate over time, so that any advantage is temporary (ie, similar to the current five yearly reset, where the advantage is eliminated at the next reset). As a rule of thumb, if the prevailing WACC is 1 per cent less than the moving average, the over-compensation would be around 2 per cent of the asset's value.
- The decision to adopt a five year averaging period is expected to reduce the potential for investment distortions compared to a longer (eg, ten year) moving average period.
- It should also be recognised that while the CAPM may produce a low cost of equity estimate, due to a low Commonwealth Government yield and a market risk premium estimated using historical data, this does not mean that the company could raise equity from investors based on expected equity returns of only 9.08 per cent per cent (ie, the Aurora draft decision). By way of comparison, Credit Suisse uses a cost of equity of 11.63 per cent for Envestra, and Merrill Lynch uses a cost of equity of 11 per cent for SP AusNet.²¹

QTC has modelled the potential investment distortions that may arise under the current model compared to a moving average. In the example modelled, the WACC is set at 9 per cent in the determination, but one year later when the asset is built the prevailing WACC has fallen to 8 per cent. Under the current model, the NSP owner earns 9 per cent for the first four years of the asset life, after which time the rate of return reverts to the market rate of 8 per cent. Assuming a 30 year asset costing \$100, the present value of cash flows is \$102.56. Under the moving average model, the prevailing WACC starts at 9 per cent and falls to 8 per cent over the next four years. The present value of cash flows earned by the asset owner is \$101.71. If the sudden fall in rates and asset construction instead happened in the last year of the reset, under the current model the excess return would only be earned for 1 year (present value of \$100.93), while under the moving average model a declining portion of the excess return would continue to be earned for four years (ie, present value is still \$101.71).

The moving average approach reduces the impact of parameter estimation errors

Another important advantage of the moving average approach is that the potential for estimation error in relation to parameters is reduced, because the parameter is estimated five times over the

²¹ Credit Suisse, *Regulated Utilities: Model updates on regulatory outcomes*, 2 February 2012, page 6; Merrill Lynch, *SP AusNet: Soft volumes offset by tariff increases*, 9 November 2011, page 9

regulatory period. The reduction in estimation error is recognised by SFG as one of important practical benefits of the moving average approach (paragraph 199).

In recent years, the 10 year benchmark DRP has been difficult to estimate particularly at times of very low liquidity in corporate bond markets, and there has been significant disagreement between NSPs and the AER on the correct interpretation of the data. Under the current model, if a parameter such as the DRP is over-estimated during the regulatory rate reset period, that value continues to apply for five years and prices are set at a higher level than is economically efficient. Conversely, if the DRP is under-estimated, the NSP is unable to recover its efficient costs for five years. If a moving average approach is used, the number of sample periods increases, and the likelihood of consistent over-estimation or under-estimation of a parameter is greatly reduced.

The moving average approach reduces volatility in the rate of return and electricity prices

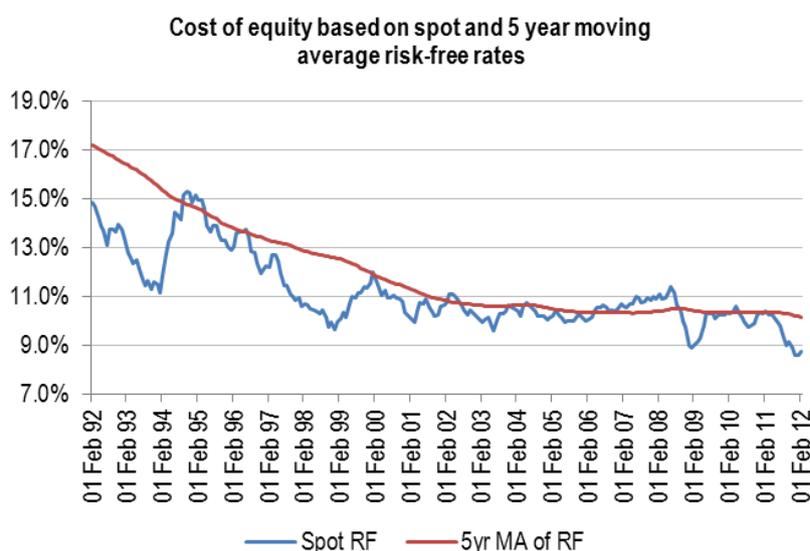
Under a moving average approach, the potential variation in the return on capital from one year to the next will be much less than the current model, where the return on capital can vary significantly between regulatory periods. This makes it difficult for NSPs to forecast future revenues and potential future prices, even if capital and operating expenditures can be estimated, as the revenue forecasts are subject to significant uncertainty following the next reset because of the use of the prevailing cost of capital.

It could be argued that the current approach of fixing the WACC for five year periods based on prevailing conditions may be inconsistent with paragraphs (6) and (7) of the Revenue and Pricing Principles, especially where the WACC is based on the yield on Commonwealth Government securities. Recent experience has shown that the yield on Commonwealth Government securities can be quite volatile. As a consequence, the rate reset period used by the AER can result in very low WACC estimates. The use of a very low risk-free rate means that the revenue earned by NSPs, and charges paid by customers, are lower than they would have been had the reset occurred six or twelve months earlier, creating the risk of under-investment and over-utilisation. Conversely, had the reset occurred in early 2008, prior to the global financial crisis when the yield on Commonwealth Government securities was much higher, then there would have been a risk of over-investment and under-utilisation when the prevailing cost of funds subsequently fell.

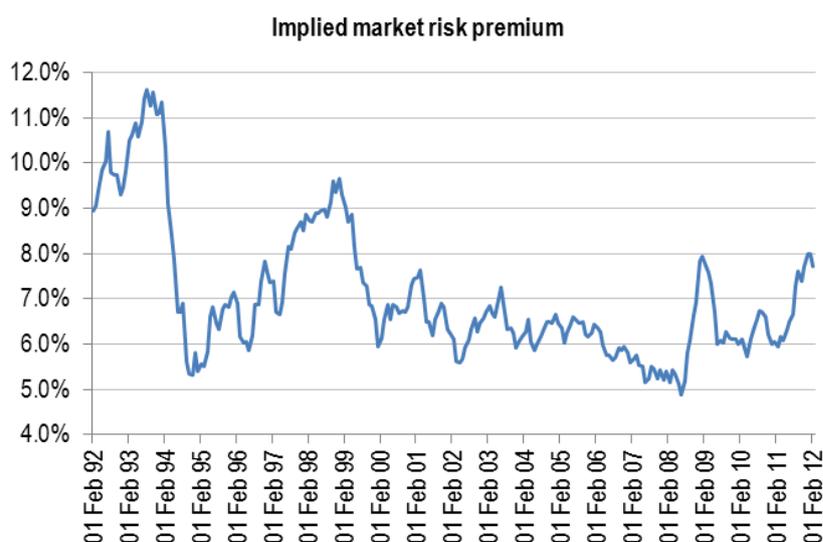
The moving average approach may provide a better estimate of the return on equity

The current use of a spot risk-free rate and a fixed historical market risk premium results in a perfect positive correlation between changes in the risk-free rate and changes in the benchmark cost of equity. As a consequence, this approach may understate the benchmark cost of equity during periods of heightened risk aversion, of which there have been several over the past few years. These periods are typically characterised by a sharp fall in risk-free interest rates and a simultaneous increase in the expected returns on risky assets such as corporate bonds and equity. Stated differently, forward-looking risk premiums tend to be negatively correlated with changes in risk-free rates and this correlation strengthens as the level of risk aversion increases.

The following graph compares the cost of equity based on a five year moving average of the 10 year risk-free rate and the spot risk-free rate over the last 20 years. Both estimates are based on a market risk premium of 6.0 per cent and an equity beta of 0.8:



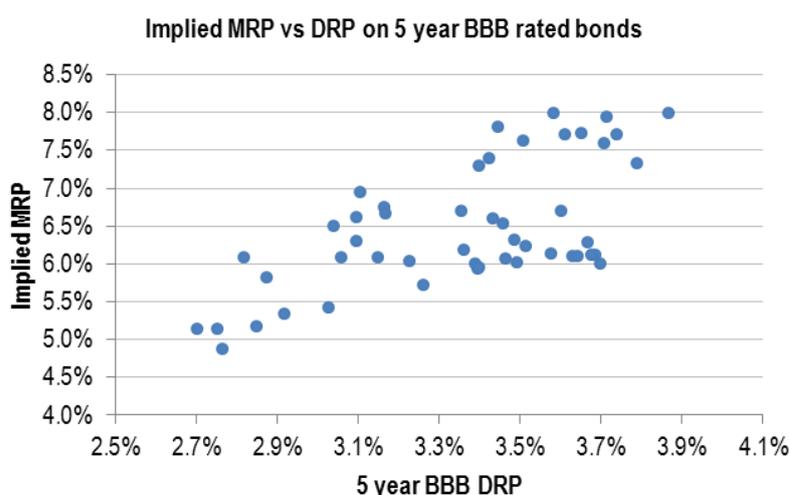
A moving average of the risk-free rate will create a negative relationship between the ‘implied’ market risk premium and the prevailing risk-free rate²². The implied market risk premium can be calculated by subtracting the prevailing risk-free rate from the moving average-based cost of equity estimate and dividing by the beta:



²² This estimate should not be confused with the implied market risk premium that can be estimated using the dividend growth model.

The current implied market risk premium of 7.7 per cent is intuitively appealing given the historically low level of the 10 year risk-free rate. A similar relationship can be observed in early 2009 when the 10 year risk-free rate was trading close to 4.0 per cent.

Since the start of 2008 the implied market risk premium has displayed a positive relationship with observable risk premiums such as the DRP on 5 year BBB rated corporate bonds. This is to be expected as the DRP is a forward-looking risk premium:



It is QTC's view that using the prevailing risk-free interest rate and a fixed historical market risk premium will not produce the best estimate of the forward-looking cost of equity, especially during periods of heightened risk aversion. A better outcome will be achieved with a moving-average based approach.

In paragraph 66, SFG notes that the regulatory estimate of some WACC parameters may change slowly over time because they are a long-term estimate, such as the market risk premium. In contrast, the risk-free rate and debt risk premium are estimates at a point in time. SFG acknowledges that during financial crises, the market risk premium would be expected to increase, while it has been observed that the Commonwealth Government yield used as the risk-free rate has decreased (to fifty year lows). In paragraph 221, SFG notes that the stability in the market risk premium is artificially imposed. The cost of equity calculated using a long-term market risk premium and a spot estimate of the risk-free rate during a financial crisis will therefore be lower than the long-term average, while intuitively it would be expected to be higher.

Problems with the current spot estimate of the risk-free rate were discussed by the Australian Competition Tribunal in the *Energy Australia* decision:

'The Tribunal considers that an averaging period during which interest rates were at historically low levels is unlikely to produce a rate of return appropriate for the regulatory period.'

Even if economic conditions were to deteriorate again, there would be no basis at this stage for assuming that historically low interest rates will be representative of each of the five years commencing on 1 July 2009.’²³

In a research note issued on 5 March 2012 titled ‘Gov bonds to steal gas distribution revenues’, Credit Suisse noted that lower risk-free rate would impact on revenues, with some ability to offset this through lower debt cost (using swaps):

We also note that even if the debt hedge were 100% effective, then operating cashflow would still fall (leverage is <100%). Thus equity cashflows will fall, with the off-setting factor being a lower WACC. We note that most analysts do not tend to use point estimates for a WACC (we are in that group), but instead use a through the cycle type approach.’

Similarly, Merrill Lynch in a note dated 9 November 2011 indicated that their valuations of DUET Group, SP AusNet and Spark were based on costs of equity of 10.5 per cent, 11 per cent and 11 per cent respectively.

The implications of very low yields on the 10 year Commonwealth Government bond have also been recognised in a recent Independent Expert Report. In its report of 21 October 2011 regarding Coal & Allied Industries Ltd, Lonergan Edwards and Associates used a risk-free rate of 5.0 per cent rather than prevailing rates of around 4.2 per cent. The rationale for this decision was stated in the following terms:

While the yield for 10 year government bonds in mid-September 2011 was around 4.2%, for the purpose of this report we have adopted a rate of 5.0% per annum given that:

(a) the 10 year government bond rate has been particularly sensitive to developments in the US and the US Government’s fiscal position and has decreased as a result; and

(b) the average 10 year government bond rate was 5.2% and 4.7% for the year and three months to 20 September 2011 respectively. ‘

In a footnote, the firm also stated that ‘If we were to adopt a risk-free rate of 4.2%, in our opinion it would be appropriate to adopt a correspondingly higher market risk premium.’ QTC has reviewed a number of other expert reports prepared during late 2008 and late 2011/early 2012, and there is not a consistent approach to the risk-free rate, ie, a number of other reports use the prevailing risk-free rate.

As an alternative, a longer averaging period for the risk-free rate may be appropriate

QTC recognises that making a moving average approach available to NSPs is a significant change. In QTC’s view, there is a critical need to make the moving average approach available prior to the regulatory reset for large State-owned NSP businesses (including Queensland distributors in 2015)

²³ Application by EnergyAustralia and Others (includes corrigendum dated 1 December 2009) [2009] ACompT 8 (12 November 2009) – paragraph 114.

to reduce the potential impact of interest rate risk. However, we recognise that further consideration may be required to ensure that concerns raised in relation to the moving average approach can be addressed to the satisfaction of all stakeholders.

As an alternative approach to mitigating the impact of the short averaging period, the AEMC could consider whether the rules should allow the AER to adopt a longer averaging period in relation to NSPs with large RABs in circumstances where reduced market liquidity may impact their ability to manage interest rate risk.

The use of a longer averaging period is both consistent with corporate finance theory as well as providing important practical benefits.

In the 2009 statement of regulatory intent, the AER advised that it would accept an averaging period length of between 10 and 40 business days. The AER also requires that the period occurs as close as practically possible to the start of the regulatory period, in order to ensure that it provides a reasonable estimate of the prevailing cost of funds.

In its Issues Paper (page 36) the AER expressed the need for an averaging period in these terms:

'In theory, taking the published risk-free rate of return on the day that the regulatory determination comes into effect is likely to give the best expectation of future interest rates. This is because this rate is not influenced by information that may no longer be relevant going forward which is implicit in past prices. However, the risk-free rate on a given day may also have a high standard error due to market volatility. Hence in determining the period over which the risk-free rate of return is measured, there may be a direct trade-off between 'volatility driven error' and 'old information driven error' in interest rate estimates.'

The use of prevailing interest rates as an estimate of future rates is not supported as a theoretical rationale by SFG (at paragraph 205):

'However, the yield on debt at any point in time is not intended to be a predictor of future interest rates. Rather it reflects the costs of securing funds today over a given future time period.'

This is a different rationale from that expressed by the AER. If the current risk-free rate is an estimate of the future cost of funds, as the AER suggests, then the period of measurement needs only be sufficient to eliminate short-term measurement errors. However, if the prevailing rate relates to the cost of securing funds, as SFG suggests, this brings into consideration the period over which an entity would be able to secure the requisite funds.

The ability for NSP businesses to manage interest rate risk over a 40 day period was considered in the 2009 WACC review, where the AER concluded that 'it is reasonable to expect that regulated energy NSP businesses can manage their exposure to interest rate risk over the regulatory period' (page 132). The AER based its conclusions on advice from Deloitte, outlined as follows:

'Deloitte advised that there is in fact sufficient liquidity in interest rate swap markets:

From discussions with market makers a NSP business with a solid BBB+ rating and strong balance sheet, hedge facilities for large volumes should be available through the OTC market via the large banks.

Specifically, Deloitte advised that liquidity in these markets is sufficient for large amounts of debt (e.g. \$11 billion) to be hedged over a 5-40 business day period.'

QTC did not agree with Deloitte's findings at the time, and in our view it is extremely unlikely that sufficient liquidity exists in the market to hedge interest rate risk on the combined debt and future borrowings for ENERGEX and Ergon Energy at the next regulatory reset. In addition, the pending introduction of Basel III rules may reduce liquidity in the swap markets and increase the transaction costs because of the need for banks to allocate additional capital to swap positions.

It is not possible to test whether the swap market is capable of absorbing \$11 billion of five year interest rate swaps in advance of undertaking the transactions. QTC is not aware of any situations where this volume of interest rate swaps has been dealt over a short period, and as such it would be difficult for market makers to provide an informed view. In QTC's view, an appropriate averaging period to accommodate the need to transact the required debt and interest rate derivatives for Queensland distribution businesses would be around six months, although this estimate could vary if market conditions change.

While it is not possible to determine with precision the reasonable length of time for a given volume of debt, provided the period is specified in advance, it would not reward inefficient practices or provide an arbitrage opportunity for NSPs. For example, if a six month period is agreed, the NSP would need to spread debt or interest rate swap transactions across the full period to ensure that it is not exposed to interest rate mismatch risk, even if it was possible to complete the transactions in a shorter period.

Question 34: *What possible changes would be required in the NER to implement the EURCC's trailing average approach?*

Our proposed moving average approach would require changes to a number of rules

The ability for a moving average approach to be implemented in the current Rules was considered by the AER in the 2009 WACC review, in response to a proposal by QTC that the cost of debt should be updated on a moving average basis over five years. The AER found that 'it is not permissible under the NER as currently written' (page 132, Draft Explanatory Paper). In particular, clause 6.5.2 requires that the rate of return is calculated for the regulatory control period, which is not less than five years, as stated in paragraph 6.5.2(a):

'The return on capital for each regulatory year must be calculated by applying a rate of return for the relevant Distribution Network Service Provider for that regulatory control period (calculated in accordance with this clause 6.5.2) to the value of the regulatory asset base for the relevant distribution system as at the beginning of that regulatory year (as established in accordance with clause 6.5.1 and schedule 6.2).

The key change would likely involve separating paragraph (a) into two parts, by adding a section sub-paragraph that applies to NSPs, which have elected to use the moving average approach. The second sub-paragraph would provide that the return on capital for each regulatory year would be calculated by applying the moving average rate of return for that year, which is calculated by applying a 20 per cent weighting to the weighted average cost of capital worked out under clause 6.5.2 for that year, and a 20 per cent weighting to each of the previous four years.

It should be noted that we do not anticipate any other changes would be required to paragraph 6.5.2, on the basis that the moving average proposal is not intended to affect how the prevailing cost of capital is estimated each year.

A transitional rule would be required such that the moving average approach would take effect from the start of a regulatory control period, and that in the first year the weighting on the prevailing cost of capital would be 100 per cent, progressively reducing by 20 per cent each year. This would ensure that the NSP's rate of return is not calculated by data, which relates to periods before the election was made. A corresponding transitional rule would be required for NSPs, which elect to exit the moving average regime at the start of a subsequent regulatory period, under which the prevailing rate of return in the first year would be weighted at 20 per cent, increasing by 20 per cent each year after that (ie, historic data from the prior regulatory period is gradually phased out).

In practice, the revenue determination would be made assuming that the moving average rate of return at the start of the period applied throughout the period. However, as the moving average is updated each year, the difference between the return on capital estimated in the determination and the return on capital calculated using the latest moving average each year would be added to or subtracted from the maximum allowable revenue.

There would likely be other consequential amendments required to the Rules to ensure that the moving average approach operates effectively.

Full development of the moving average approach may be challenging within the current rule change process

A number of issues have been raised by SFG Consulting regarding the trailing average proposal put forward by the EURCC, and some additional issues were raised by attendees at the AEMC's consultation forum on 2 April 2012. The last section of QTC's draft Design Paper discusses how these issues have been taken into account in our moving average approach.

One important issue that has been raised is the need for thorough consideration of the full implications of the moving average approach on NSPs before developing a rule change. This includes addressing issues relating to the potential for investment distortions as well as responding to concerns regarding the ability for a moving average approach to provide an incentive-based framework.

Depending on the feedback that is provided to the AEMC's Directions Paper, it is possible that these issues cannot be properly addressed within the current rule change approach.

Notwithstanding this, in light of the significant interest rate risks faced by Queensland distribution NSPs at the next regulatory reset, QTC encourages the AEMC and other stakeholders to continue to engage on the use of moving average approaches. If the moving average approach cannot be formulated into a specific rule change within this process, QTC requests that the AEMC consider whether it can form an in-principle view on the merits of a moving average approach.

As an interim step, the length of the rate reset period should be increased

As noted in relation to Question 33, the interest rate risk that arises due to the 40 day averaging period could be mitigated by allowing the use of a longer averaging period. Arguably the Rules already permit the AER to specify a longer averaging period, although this is uncertain. Paragraph 6.5.4(e)(3) of the Rules states in setting the cost of capital parameters the AER must have regard to the efficiency of the benchmark efficient NSP. If it is accepted that the size of the regulated asset base (and hence the debt funding requirement) is unrelated to the question of efficiency, then it would be inappropriate to assume that the benchmark efficient NSP has a regulated asset base which is equivalent to the listed NSPs. In this case, it would be reasonable for the AER to take into account the size of the regulated asset base of the NSP, in making its assessment of the appropriate length of the averaging period for a particular NSP.

However, we consider that it would be useful for the Rules to explicitly recognise that practical implications of the volumes of debt which need to be raised to fund the NSP. This could involve an additional sub-paragraph under section 6.5.3(e), which recognises that WACC parameters should be determined over a period which takes into account the ability of the NSP to raise the benchmark efficient amount of debt to fund its regulatory asset base.

Appendix A: Analysis of the EURCC spread to CGS estimate

The EURCC claim that the difference between their spread to CGS estimate of 198 basis points and QTC's 278 basis point DRP estimate is due to differences in data sourced from Bloomberg and the RBA.

We have re-calculated our weighted average DRP estimate using the closing CGS yields from the RBA website and the official end of day fixed swap rates published by the Australian Financial Markets Association (AFMA)²⁴. The updated estimate is **281** basis points and this corresponds to a weighted average issue tenor of 5.4 years. This suggests that the difference cannot be attributed to the different data providers used.

Incorrect interpretation of QTC's analysis

The EURCC incorrectly claim that QTC's original DRP estimate was based on a spread to 10 year CGS. On page 16 of our original submission we clearly state that the swap and CGS yields match the tenor of each debt issue, which is consistent with the definition of the DRP.

Summary of the EURCC's calculation methodology

The EURCC has used data from the 'Interest Rates and Yields – Money Market - F1' spreadsheet from the RBA website. This spreadsheet contains historical floating interest rates for 1, 3 and 6 month tenors. No information is provided on fixed swap rates.

Although the specific calculations were not provided, the EURCC appears to have taken the following approach:

1. The swap issue margins have been added to the 3 month *floating* interest rate on each issue date to determine a total cost of debt.
2. The floating interest rates are assumed to remain unchanged for the term of each issue, which range between 2 and 10 years.
3. The prevailing 10 year CGS yield on each issue date has been subtracted from the total cost of debt despite most issues having a term to maturity significantly shorter than 10 years.
4. The CGS yields and total cost of debt estimates have not been annualised.

Based on these steps we were able to produce a weighted average margin to CGS of **199** basis points, which is in line with the EURCC's estimate.

According to this approach if a firm simultaneously issues fixed and floating rate debt with the same tenor and margin to swap, a different DRP estimate will be produced for each issue. This

²⁴ Linear interpolation has been used to estimate a CGS yield for the same tenor as each debt issue.

result violates arbitrage pricing principles, which were discussed by the Australian Competition Tribunal when considering the use of floating rate borrowings to estimate the benchmark DRP:

Briefly summarised, the law of arbitrage says that if an investor has a choice between a fixed bond and a floating bond that are identical other than their yield, he/she could buy the floating rate bond and enter into a swap arrangement, which would give him/her a fixed income stream.'

'This theory is supported by empirical evidence'²⁵

The Tribunal's comments indicate that, for the purpose of calculating a DRP, floating rate borrowings should be swapped into an equivalent fixed rate borrowing.

Calculating the DRP on floating rate debt

We believe the correct approach for calculating the DRP on a floating rate debt issue is as follows:

1. The swap issue margin should be added to the *fixed* swap rate with the same term to maturity as the debt issue to produce a fixed total cost of debt.
2. The total cost of debt should be converted to an annualised cost.
3. The fixed annualised yield on a CGS with the same term to maturity as the debt issue should be subtracted from the fixed annualised total cost of debt.

Although the benchmark DRP is based on a 10 year tenor it does not follow that the DRP on shorter-term debt issues should also be measured relative to a 10 year CGS rate. If this approach is taken the shorter-term DRPs will be understated by an amount equal to the CGS term premium. As the term premium in the base yield curve represents the cost of reducing interest rate risk, it is not relevant when calculating the DRP (which is related to the cost of reducing refinancing risk).

Comparison of QTC and EURCC estimates

QTC's updated results, which are based on the steps outlined above, are presented in Table 6. The implied results from the EURCC's approach are presented in Table 7.

²⁵ Application by ActewAGL Distribution [2010] ACompT 4 (17 September 2010) – paragraph 53.

TABLE 5: QTC CALCULATIONS

Issue date	Parent	Amount (m)	Tenor (years)	Swap issue margin	Quarterly fixed swap rate on issue date	Total fixed rate on issue date	Annualised total fixed rate on issue date	Annualised CGS rate on issue date	Annualised DRP on issue date (bp)
10-Jun-08	DUET	\$685	4.0	1.85%	8.14%	9.99%	10.37%	7.08%	329
13-Jun-08	SP Australia	\$535	10.0	1.95%	7.57%	9.52%	9.87%	6.85%	302
16-Jun-08	Spark Infrastructure	\$200	3.0	1.05%	8.02%	9.07%	9.38%	7.14%	224
10-Nov-08	Spark Infrastructure	\$50	2.0	1.03%	4.60%	5.63%	5.74%	3.96%	178
10-Nov-08	Spark Infrastructure	\$50	3.0	1.03%	5.03%	6.06%	6.20%	4.30%	190
09-Dec-08	United Energy	\$150	5.0	2.20%	4.72%	6.92%	7.10%	3.90%	320
07-May-09	SP AusNet	\$275	3.0	2.50%	4.24%	6.74%	6.91%	3.92%	299
04-Jun-09	SP AusNet	\$50	3.0	2.50%	4.43%	6.93%	7.11%	4.17%	293
05-Feb-10	SP AusNet	\$520	5.5	1.52%	5.56%	7.08%	7.27%	5.13%	214
	Weighted average	\$2,515	5.4	1.81%	6.64%	8.45%	8.73%	5.92%	281

TABLE 6: IMPLIED EURCC CALCULATIONS

Issue date	Parent	Amount (m)	Tenor (years)	Swap issue margin	Floating bank bill rate on issue date	Floating rate plus swap margin on issue date	10 year CGS rate on issue date	Floating rate plus swap margin minus 10 year CGS rate
10-Jun-08	DUET	\$685	4.0	1.85%	7.95%	9.80%	6.68%	313
13-Jun-08	SP Australia	\$535	10.0	1.95%	7.84%	9.79%	6.73%	306
16-Jun-08	Spark Infrastructure	\$200	3.0	1.05%	7.82%	8.87%	6.78%	209
10-Nov-08	Spark Infrastructure	\$50	2.0	1.03%	4.92%	5.95%	5.19%	77
10-Nov-08	Spark Infrastructure	\$50	3.0	1.03%	4.92%	5.95%	5.19%	77
09-Dec-08	United Energy	\$150	5.0	2.20%	4.64%	6.84%	4.32%	253
07-May-09	SP AusNet	\$275	3.0	2.50%	3.18%	5.68%	4.90%	78
04-Jun-09	SP AusNet	\$50	3.0	2.50%	3.25%	5.75%	5.42%	34
05-Feb-10	SP AusNet	\$520	5.5	1.52%	4.11%	5.63%	5.39%	24
	Weighted average	\$2,515	5.4	1.81%	6.19%	8.00%	6.01%	199

Comparisons with DRPs awarded by the AER

The DRP is defined as the margin between an annualised fixed corporate bond yield and the annualised fixed yield on a CGS with the same term to maturity. The EURCC's spread to CGS estimate is based on floating interest rates and unequal tenors for the corporate and CGS rates. Therefore, we do not believe that meaningful conclusions can be reached by comparing the EURCC's spread to CGS estimate with the benchmark DRPs awarded by the AER.

The use of floating interest rates is also inconsistent with the EURCC's proposal for calculating the benchmark cost of debt, which is based on 5 year fixed corporate interest rates.

Consistency with DRP estimates produced by PwC

PricewaterhouseCoopers (PwC) calculated the DRP for some of the bonds in the EURCC sample in a report prepared for the Victorian electricity distribution businesses in September 2010²⁶. QTC's DRP estimates are consistent with those produced by PwC:

TABLE 7: COMPARISON OF DRP ESTIMATES

Issue date	Parent	Tenor (years)	QTC DRP estimate (bp)	PwC DRP estimate (bp)	Implied EURCC margin to CGS (bp)
10-Nov-08	Spark Infrastructure	2.0	178	181	77
10-Nov-08	Spark Infrastructure	3.0	190	192	77
09-Dec-08	United Energy	5.0	320	326	253
07-May-09	SP AusNet	3.0	299	297	78
04-Jun-09	SP AusNet	3.0	293	295	34
05-Feb-10	SP AusNet	5.5	214	222	24

Effect of DRPs on entities which are majority-owned by Singapore Power

The 281 basis point average DRP is likely to understate the DRP for a stand-alone BBB+ rated benchmark NSP as 55 per cent of the debt in the EURCC's sample was issued by SP Australia and SP AusNet. Both entities are majority-owned by Singapore Power and have the implied credit support of the Singapore Government.

In a recent report for the AER, Oakvale Capital reviewed the attributes of a 2017 bond issued by the SP AusNet Group, noting that ²⁷:

Looking at the combination of qualitative and quantitative analysis as previously described, in our opinion, the factors that an investor would have given greatest weight too [sic], therefore dictating that the bond was priced during the averaging period would be, in no particular order:

- *Strength of the company guarantee, this was a key driver in where the bond traded as market perception (the qualitative analysis) is that the risk is in fact the risk of the Government of Singapore.'*

Oakvale concluded that the 'key feature supporting the bond was the parental support of the issuer's owners and the link to the Government of Singapore'²⁸.

Excluding the entities that are majority-owned by Singapore Power increases the weighted average DRP to **297** basis points and decreases the weighted average issue tenor to 3.8 years.

²⁶ Submission in response to the Mountain Report on DRP prepared jointly by the Victorian Electricity Distribution Businesses – September 2010.

²⁷ Oakvale Capital, Report on the cost of debt during the averaging period: the impact of callable bonds, prepared for the Australian Energy Regulator, February 2011, pages 23-24.

²⁸ Oakvale Capital report - page 24.

Time period for comparisons with DRPs awarded by the AER

We maintain our view that it is more informative to compare actual and benchmark DRPs over a common time period. Using different periods will result in DRP differences that may be the result of general movements in the credit markets. These differences will exist even if the AER's DRP estimates are unbiased.

We accept that an average final benchmark DRP of 348 basis points is more appropriate than the 330 basis point figure used in our original submission. The difference between our revised DRP and the average final DRP awarded by the AER is **67** basis points (348 basis points minus 281 basis points). Excluding the firms that are majority-owned by Singapore Power reduces the margin to **51** basis points.

The EURCC suggest that the appropriate date range to consider when calculating the average DRP awarded by the AER is June 2008 to the present. Our analysis of a broader sample of debt issued over this period shows an average actual 5 year DRP of 311 basis points and an average final 10 year benchmark DRP of 375 basis points.

The analysis presented in our response to Question 30 does not indicate that these DRP margins overcompensate for the higher refinancing risk on shorter-term debt.

Removal of potential outliers

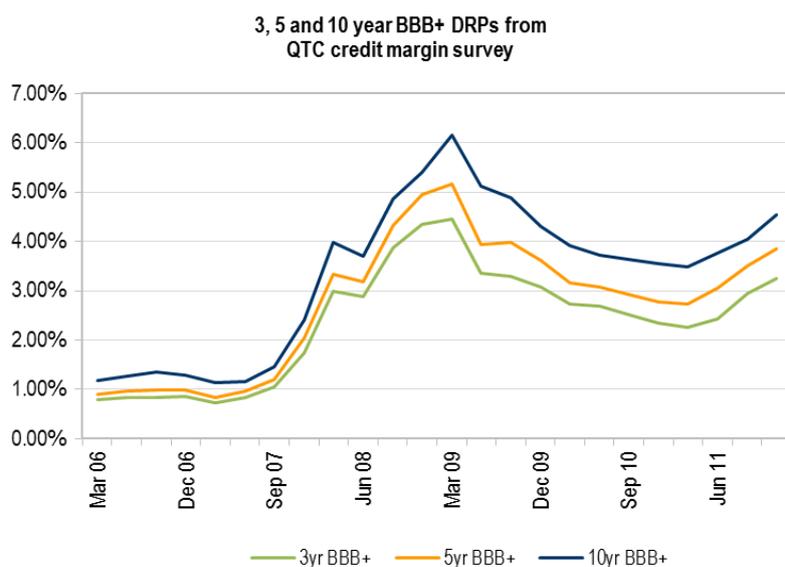
The EURCC suggest that there are now reasons to consider the debt issues which occurred over the six days in June 2008 to be outliers. Excluding these issues reduces the weighted average DRP to 251 basis points and the weighted average tenor to 4.4 years. The proportion of debt that was issued by SP AusNet in the remaining sample increases to 77 per cent.

Relevance of the total cost of debt

The EURCC conclude by stating that the relevant issue is the total cost of debt, rather than the DRP. The average fixed total cost of debt for the issues presented by the EURCC is **8.73** per cent, which is higher than the **8.50** per cent average final cost of debt awarded by the AER over the same time period. Although timing differences make it difficult to directly compare costs, the figures do not indicate that the AER has systematically overstated the benchmark cost of debt.

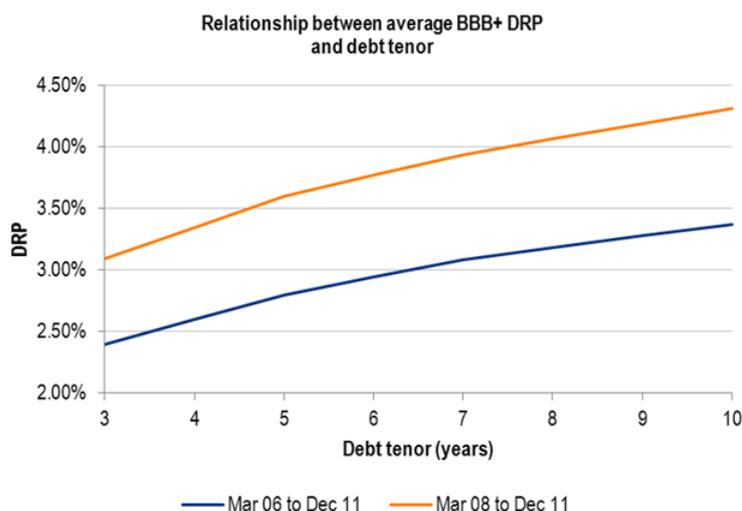
Appendix B Summary of QTC credit margin survey data

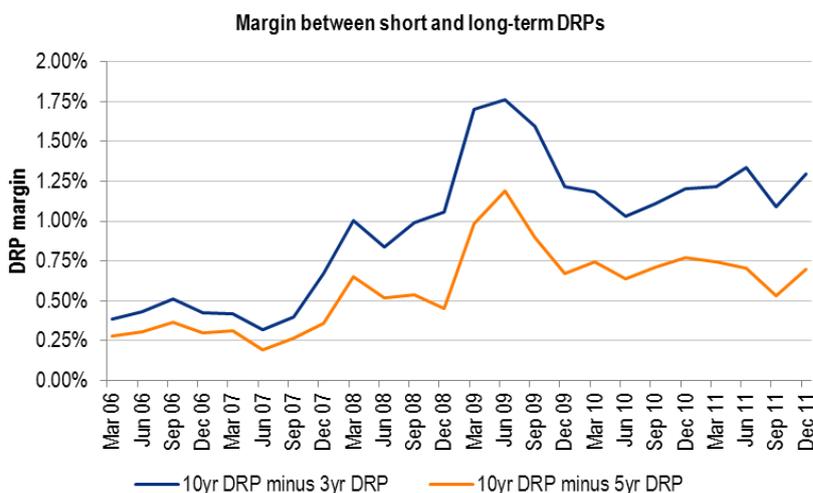
The 3, 5 and 10 year BBB+ swap margins from QTC's credit margin survey between March 2006 and December 2011 have been converted into DRPs using the closing CGS yields from the RBA's website and the end of day fixed swap rates published by AFMA:



Relationship between debt tenor and the DRP

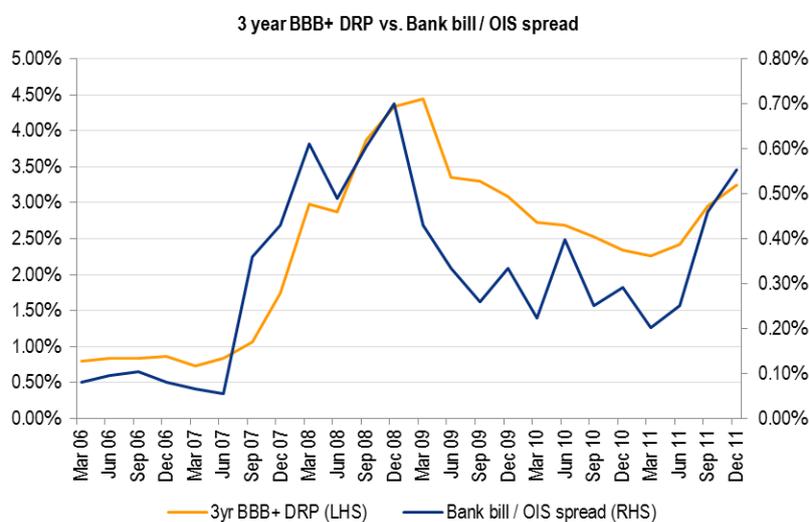
The following graphs display a consistently positive relationship between the DRP and debt tenor out to 10 years. The relationship supports QTC's view that borrowers must pay an additional cost to reduce refinancing risk by securing funding for longer tenors:





Relationship between DRPs and other risk measures

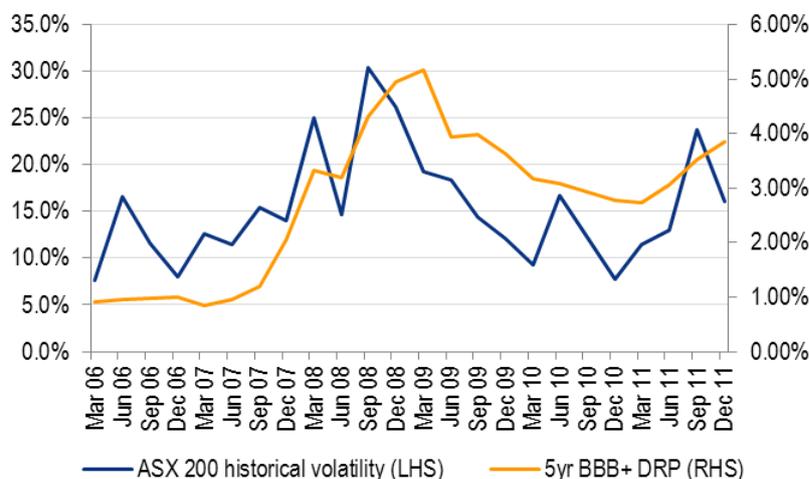
The survey data closely tracks observable credit risk premiums such as the margin bank bill rates and the fixed rate on overnight index swaps (OIS)²⁹:



The survey data also correlates well with other measures of risk such as historical stock market volatility:

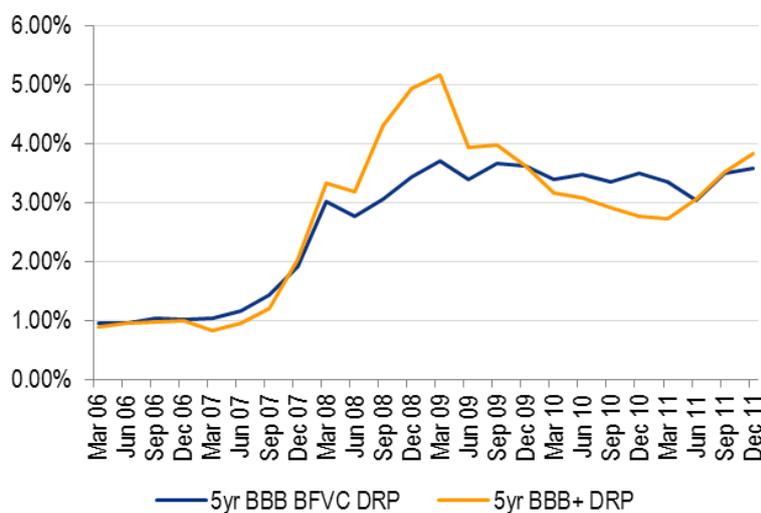
²⁹ An overnight index swap (OIS) is an agreement between two parties to exchange single net cash flow based on the difference between a fixed interest rate and the average overnight cash rate. Most transactions are for tenors of 1, 3 or 6 months. An OIS has a very low level of credit risk as there is no exchange of principal. In contrast, purchasing a physical bank bill involves a higher level of credit risk because funds are transferred to the borrower. As a consequence, the margin between the bank bill rate and the fixed OIS rate for the same tenor tends to increase when market perceptions of credit risk rise.

5 year BBB+ DRP vs. ASX 200 historical volatility



Comparisons between survey data and Bloomberg Fair Value Curves

5 year BBB+ DRP vs. Bloomberg 5 year BBB FCV DRP



There was a brief divergence between the DRPs from the survey and the Bloomberg Fair Value Curve between September 2008 and June 2009. During this period most risk premiums rose sharply while the DRP from the 5 year BBB FVC was relatively stable. Since the end of 2009 the relationship between the survey and Bloomberg DRP estimates appears to have normalised.

Regression results

Y	X	Intercept (bp)	Standard error	t-stat	Slope	Standard error	t-stat	Adjusted R- squared	Regression standard error (bp)
10yr DRP	3yr DRP	22	12	1.94	1.3120	0.0436	30.06	0.9762	24
10yr DRP	5yr DRP	19	8	2.31	1.1393	0.0267	42.65	0.9881	17

Attachment 2: Moving Average Approach Design Paper (draft)

This paper sets out QTC's proposed methodology for the moving average approach to calculate the benchmark weighted average cost of capital (WACC) for regulated network service providers (NSPs).

The proposal involves updating the WACC on an annual basis using a moving average, however, it does not prescribe values for the WACC parameters, including the terms to maturity of the risk-free interest rate and debt risk premium. These would continue to be determined through the statement of regulatory intent and determination processes.

The main aspects of the proposal, assuming that the current WACC parameters apply, are as follows:

1. The use of the moving average approach would be optional, and transitional rules would apply to NSPs, which switched between the current approach and the moving average approach. The use of the moving average approach would be at the election of NSPs similar to the ability to elect between a revenue or price cap.
2. In the regulatory determination, a Provisional WACC would be calculated. Each year during the regulatory control period, the Updated WACC would be calculated using the approach outlined in this paper. To the extent that the return on capital for a regulatory year calculated using the Updated WACC exceeds the return on capital calculated using the Provisional WACC, the difference shall be an increase in allowed revenue for the regulatory year, and vice versa.
3. The risk-free interest rate used to calculate the benchmark cost of equity equals the 5 year moving average of the annualised spot yield on a 10 year Australian Commonwealth Government bond.
4. The risk-free interest rate used to calculate the benchmark cost of debt equals the 5 year moving average of the annualised spot yield on a 10 year Australian Commonwealth Government bond.
5. The debt risk premium (DRP) used to calculate the benchmark cost of debt equals the 5 year moving average of the margin between the annualised yield on a 10 year BBB+ rate corporate bond and the annualised yield on a 10 year Australian Commonwealth Government bond.
6. All moving averages are calculated using quarterly/monthly/daily data with the risk-free interest rate and DRP estimates updated annually at the end of March to determine the benchmark WACC for the next financial year.
7. The WACC calculation is based on the equity beta, market risk premium, level of gearing and benchmark credit rating specified in the regulatory determination, and the risk-free interest rate and DRP estimates outlined above.

A 5 year moving average is proposed to maintain consistency with the length of the regulatory control period. This is considered to be an appropriate balance between stability and

responsiveness to changing market conditions. A longer moving average would represent a significant change from the current approach, and QTC believes a more incremental change will be viewed favourably by the AEMC.

It is proposed that the use of the moving average will be optional. In part, this is designed to assist NSPs, which are in favour of the approach to achieve the required rule changes. Not all NSPs may be in favour of the moving average for their own business, as some NSPs may decide that they are familiar with the current methodology and capable of operating within the five year rate reset process. NSPs with larger debt balances, including State government-owned NSPs may prefer the moving average approach.

Design principles

QTC's proposal is based on the principle that regulated networks are long term assets financed by investors seeking stable returns over a long term investment horizon. The moving average approach provides a forward looking rate of return, which is relatively stable yet responsive over time to changes in market conditions. The approach is an incentive based method, which has the benefit that it is also capable of being replicated in the financing strategy of a benchmark efficient NSP, without creating significant costs or risks.

In QTC's view this proposal would overcome some of the weaknesses associated with the current WACC calculation methodology. In particular:

- Estimating the risk-free rate and DRP over a short rate reset period and locking these values in for five years exposes energy users to the risk of prices being set during periods of elevated risk-free rates and/or DRPs. A moving average will significantly reduce this risk.
- Similarly, NSPs are exposed to significant pricing and basis risks when using interest rate swaps to lock in a fixed base interest rate during the rate reset period. The return on the equity capital component cannot be similarly hedged against short term volatility.
- The limited availability of reliable data on long-term corporate interest rates results in the benchmark DRP being subject to high risk of estimation error. A moving average is a simple way of reducing the impact of individual measurement errors (ie, the measurement is unlikely to be consistently too high or too low over five years).
- In addition to the high risk of estimation error, fully resetting the benchmark DRP once every five years is inconsistent with the assumed benchmark efficient funding strategy where the total borrowings are spread across multiple maturity dates spanning a 10 year period.
- Using the spot risk-free rate and a fixed historical market risk premium may significantly understate the true benchmark cost of equity during periods of heightened risk aversion, where sovereign debt yields used as the proxy for risk-free rate tend to fall sharply. Using a 5 year moving average of the risk-free rate produces a cost of equity estimate that is not as volatile as the spot risk-free rate.

Reducing the sensitivity of the benchmark DRP to 'point in time' estimates may also increase the scope for consideration of fair value yield curve approaches as the basis for the DRP calculations

(rather than the ad-hoc approaches employed by the AER over the last few years) because the likelihood of persistent errors is lower.

The proposal is not expected to increase incentives for over or under-investment compared to the current approach. NSPs can still expect to earn over the life of an asset a rate of return, which is consistent with the long term required rate of return. Further, as NSPs can achieve a debt funding profile, which matches the moving average rate of return (without incurring significant costs or risks), the potential for excess returns is temporary and limited to the return on equity component, which would in any case revert to market levels because of the moving average approach.

Regarding the cost of equity, QTC believes that a value which is based on a 5 year moving average of the risk free rate is a better forward-looking estimate than a cost of equity based on the prevailing risk-free rate at a point in time. This is based on analysis of equity analyst reports and independent expert reports, which commonly use a long term average risk free rate. Accordingly, QTC does not consider that our proposal will lead to investment distortions by creating incentives for over or-under investment.

Design issues

Calculating the benchmark cost of equity

Under QTC's proposal, based on the current WACC parameters, the risk-free rate would equal the 5 year moving average of the annualised spot yield on a 10 year Commonwealth Government bond.

The moving average could be calculated using twelve months of quarterly/ monthly/ daily data, or a set averaging period. The risk-free rate estimate will be updated annually at the end of March to produce the benchmark cost of equity to apply for the next financial year.

The cost of equity will be calculated using the equity beta and market risk premium specified in the regulatory determination, and the 5 year moving average risk-free rate.

Calculating the benchmark cost of debt

Under QTC's proposal, using the current WACC parameters, the benchmark cost of debt would equal the sum of:

- a 5 year moving average of the annualised spot yield on a 10 year Australian Commonwealth Government bond, and
- a 5 year moving average of the margin between the annualised yield on a 10 year BBB+ rate corporate bond and the annualised yield on a 10 year Australian Commonwealth Government bond.

Both moving averages will be calculated using twelve months of quarterly/daily/monthly data, or a set averaging period, and the risk-free rate and DRP estimate will be updated annually at the end of March to produce the benchmark cost of debt to apply for the next financial year.

Length of the moving average period

A 5 year moving average length is proposed primarily because it maintains consistency with the length of the regulatory control period. A longer moving average term could be viewed as a significant change from the current approach, and may be viewed less favourably by the AEMC and other stakeholders.

A 5 year moving average is considered to provide a reasonable balance between stability in the rate of return and responsiveness to changes in the market, and should therefore not increase investment distortions.

For an entity that issues 10 year debt (the benchmark funding approach), this funding strategy would involve 10 per cent of the total borrowings being refinanced each year. Strictly speaking, the average spot DRP over the last 10 years will produce the best estimate of the DRP for this benchmark funding strategy.

While the 5 year moving average is not a perfect match for the benchmark funding strategy, the use of a 5 year moving average of the 10 year spot DRP will still produce a reasonable estimate of the benchmark DRP. Furthermore, a 5 year moving average will be a significant improvement on the current approach of fully resetting the benchmark DRP once every five years.

Simple versus weighted moving average approach

Our proposal is for a simple average approach, which applies a 20 per cent weighting of the latest year data and 20 per cent weightings to each of the preceding four years.

While it has the benefit of being relatively easy to understand and apply, a simple moving average may not adequately reflect changes in the regulated asset base (RAB) due to new capital expenditures if there are significant investments in a given year. In a report prepared for the AEMC, SFG Consulting suggested that basing certain WACC parameters on moving averages rather than prevailing market rates may lead to investment distortions. This may arise when prevailing cost of funds is lower than the moving average, which may incentivise over-investment.

Although QTC does not consider that the potential for investment distortions is materially different under the moving average model or the current approach, a weighted moving average could be used to account for changes in the RAB. This would further reduce the potential for investment distortions (because increased investment at a time of low rates would result in a higher weighting on those low rates, and therefore a lower moving average WACC) though at the expense of some increased complexity.

Changes to the assumed interest rate swap strategy

The rationale for proposing a moving average approach is that the current approach leads to volatility in the WACC and significant risks and costs for NSPs attempting to replicate the regulatory return on debt. While the moving average approach is not intended to be an ‘embedded debt costs’ approach, it does have the advantage of being easier to replicate, without bearing the risks inherent in the current approach.

QTC understands that NSPs often issue debt on a floating rate basis either directly or synthetically by combining a fixed rate borrowing with an interest rate swap. During each rate reset period the NSPs enter into another interest rate swap to lock in a fixed base swap rate for the term of the control period. In the case of NSPs with very large borrowings, the ability to execute the required swap transactions may be limited, especially if other NSPs have a reset period occurring at the same time.

Under the moving average approach, the NSP would initially enter into a portfolio of interest rate swaps with evenly spaced maturities out to five years. By replacing each maturing swap with a new 5 year swap, the average term of the swap portfolio will be relative constant at around 2.5 years.

Depending on the number of maturity dates chosen, the average swap rate on the portfolio will broadly move in line with the 5 year moving average of the risk-free rate used to calculate the benchmark cost of debt. The NSPs will continue to be exposed to basis risk due to the changes in the swap/CGS margin.

Alternatively, if the resulting moving average WACC is considered to be sufficiently stable, the NSP could decide to not hedge its interest rate risk in line with the regulatory cost of debt allowance (ie, issue fixed rate debt without executing any swap transactions). This would avoid transaction costs associated with the interest rate swaps, although it would leave the NSP exposed to risk in the event of a sustained rise in interest rates (ie, the moving average would increase at a slower rate).

Transitional issues

Transitional issues relating to the starting risk-free rate and debt risk premium would need be considered when moving to the proposed approach. These issues apply to the cost of debt and equity.

General approach

The transitional issues arise because the moving average approach must be applied prospectively, rather than referring to historical data at the time the election is made to adopt this method.

Therefore, the general transitional rule that is proposed would be that in the year in which the entity elects to use the moving average approach (ie, the start of its next regulatory period), the data from that year would be given 100 per cent weighting, reducing by 20 per cent each year.

This ensures that only forward looking data is used. It would produce the same starting result as the current method, except that the cost of capital would be updated after the first year and thereafter under the moving average approach.

A single general transitional rule has the advantage of being simple to understand and apply. However, there may be consequences for NSPs entering into the new regime, which may require consideration of whether the general approach is appropriate or if alternative approaches could apply. This is discussed below.

Implications for current swap strategy (cost of debt – risk-free rate component)

QTC understands that some NSPs may have used interest rate swaps to lock in a base interest rate, and that these swaps will mature prior to the start of the next control period. As the NSPs cannot enter into new interest rate swaps based on historical interest rates, it is appropriate that the starting risk-free rate should be based on the average spot risk-free rate over a nominated averaging period (similar to the current approach) prior to the start of the next control period.

If this approach is taken the NSPs can enter into a portfolio of new interest rate swaps over the averaging period, to ensure their base interest cost is locked in at the same time as the setting of the starting benchmark risk-free rate.

With the passage of time, each maturing swap will be progressively replaced with a new 5 year swap. At the same time, the new risk-free interest rates will also be progressively averaged into the benchmark cost of debt.

Therefore, QTC's initial analysis suggests that the general transitional rule should apply to NSPs that have used the swap-based strategy.

Cost of equity – risk-free rate component

There are two transitional approaches that can be taken with the benchmark cost of equity. Firstly, the general rule could apply such that the starting risk-free rate could be set over a nominated averaging period just prior to the start of the next control period (same approach as used for the risk-free rate used in the cost of debt). This approach may be more acceptable to the AEMC and other stakeholders as the starting point reflects prevailing rates. From this point onwards the risk-free rate would progressively reflect the prevailing risk-free rates as the moving average is applied.

Alternatively, the starting cost of equity could be based on the 5 year moving average of the risk-free rate as at the end of March just prior to the start of the next control period. As noted previously, QTC believes that a cost of equity, which is based on a 5 year moving average of the risk free rate, is a better forward-looking estimate than a cost of equity based on the prevailing risk-free rate at a point in time, because the cost of equity does not move lock step with the risk free rate.

Cost of debt – DRP component

The average DRP associated with the benchmark funding strategy is more likely to match the 5 year moving average DRP rather than the spot DRP. As such, it could be argued the benchmark DRP that should apply from the start of the next regulatory control period should be based on the 5 year moving average of the spot DRP calculated as at the end of March (just prior to the start of the next control period).

This approach may be acceptable to the EURCC as it is consistent with the concerns raised in their submission to the AEMC regarding the impact of embedded debt costs. However, as noted previously, it is not the intention of the moving average approach that it should provide a recovery of embedded debt costs. Therefore it is suggested that the general transitional rule should apply, consistent with other WACC parameters.

Further development of the proposed methodology

QTC will consider the issues raised in the responses to the Directions Paper by other parties, to assess whether the moving average approach can be adopted within the existing regulatory framework in the Rules. Changes to Chapters 6 and 6A of the Rules would be required to allow the moving average approach to be used as an optional method at the election of the NSP.

In their report for the AEMC, SFG Consulting raised a number of concerns regarding the suitability of a trailing average approach in the Australian context. QTC has considered these issues and in our view the moving average approach QTC is advocating is a sound theoretical approach, which also has the advantage of reducing financial risks for NSPs, and reducing volatility in electricity network prices. However, critical to the success of this approach will be the ability to address any concerns regarding the ability of the moving average to produce a reasonable forward looking rate of return.

Costs associated with the proposed methodology

QTC considers the main cost of the proposed methodology is an increase in complexity relative to the current approach. However, given the significance of the cost of capital allowance as a percentage of the allowed revenues, QTC believes every effort should be made to produce the best WACC estimate, rather than an estimate that is the easiest to calculate and apply.

Another cost relates to how the underlying data for the benchmark DRP calculation would be produced in practice. The use of a moving average will require spot estimates to be made on a daily or monthly basis. It would be difficult for the AER to produce estimates with this frequency unless a fair value curve is used to estimate the spot DRP.

As outlined earlier, a 5 year moving average will reduce the sensitivity of the benchmark DRP to 'point in time' estimates. This may increase the scope for using fair value yield curves as the basis for the DRP calculations rather than using a particular sample of bonds or other approaches that may change over time.

Moving average approach – design and implementation issues

A number of concerns have been raised regarding potential moving average approaches. The proposed moving average approach under development by QTC has been designed to address these concerns to the extent possible.

The moving average approach is not an incentive-based approach

This concern arises because the return on capital is based on prior year data, therefore it is seen providing a pass through for actual costs, rather than an efficient benchmark. However, the current five yearly reset of the cost of capital also provides a cost pass through opportunity for firms, at least for those firms which can re-price their debt over a 40-trading day period. Under the moving average approach, the cost of capital would continue to be calculated annually based on the benchmark efficient firm, not the actual costs incurred by a network.

In some respects, the current five yearly reset does not provide an incentive approach, because debt margins may be set at a high point in the cycle, in which case the network derives a windfall gain on future debt issuance.

The moving average approach will result in investment distortions, especially for large capex programs

The potential for investment distortions exists where the moving average rate is higher than the prevailing cost of capital, and the impact may be magnified for networks with large capex programs (because the potential only arises in relation to new borrowings). However, this potential also exists under the current five yearly reset, because funding costs can fall during the regulatory period after the rate of return has been determined, especially if the debt margin is set during a period of market stress. Alternatively, if the rate reset occurs when the yield on the risk free rate proxy is very low (such as is currently the case), the network's return on equity may be fixed at a rate, which is lower than shareholder expectations regarding a reasonable return on equity.

Under the moving average approach, the average will converge with the prevailing rate, and therefore the period of potential over-compensation is temporary. The total excess return over the asset's life is less than 2 per cent of its cost for every 1 per cent difference between the prevailing rate and moving average rate.

If the risk of investment distortions is considered to be a critical issue, it could be significantly reduced by applying a weighting based on forecast new borrowings during the regulatory period (rather than one-fifth per annum), though at the cost of increased complexity. Ultimately, the potential for investment distortions should be mitigated by a well-functioning regulatory regime, which only rewards efficient capex, combined with penalties for lower reliability resulting from capex underspends (eg, Service Target Performance Incentive Scheme).

Regulated businesses already face larger risks such as demand risk

The decision to bear demand risk is made by a network, which chooses price cap regulation rather than a revenue cap, presumably because it expects that it can achieve a demand forecast in its determination, which is lower than what will eventually result.

In contrast, the interest rate risk under the five yearly reset model is not borne by choice. Although the risk is faced by all networks, smaller, privately-owned networks are typically better able to manage the risk because their cost of debt is based on the swap curve and they can execute the required swap volumes. In contrast, State-owned networks would be exposed to basis risk by using swaps, because their cost is based on the State government yield curve.

QTC is proposing that the use of a moving average will be at the election of the network, similar to the choice to use a price cap or revenue cap. A moving average approach, which was mandatory or applied at the discretion of the regulator could have implications for the funding strategies used by NSPs.

Under a moving average approach, the benchmark cannot be change over a reasonable timeframe

Under our proposed approach, the cost of capital parameters would be decided in each reset and would apply prospectively. The new benchmark would phase in over five years, and would apply to 60 per cent of the cost of capital calculation during that five year reset.

Businesses can hedge their base interest cost using interest rate swaps

As noted above, this option is most relevant to private-sector networks, because their debt volumes are smaller than State-owned networks, and their cost of debt is determined based on the swap curve, which eliminates basis risk.

The moving average approach would require prices to be recalculated each year

The difference between the preliminary cost of capital set out in the determination and the actual cost of capital for the year determined under the moving average, multiplied by the forecast regulatory asset base, would be an adjustment to revenue. However, there are already a number of items, which are adjusted each year (including CPI indexation), particularly for businesses, which operate under a revenue cap framework, therefore this is not a new concept.

To apply the moving average, parameters for the last ten years would need to be agreed

The moving average approach would only be applied prospectively. In the first year, that year's data would be weighted 100 per cent, then progressively new data would be weighted in. There is no need to determine prior year values, and in fact to do so would allow the potential for arbitrage, if the election to use the moving average approach resulted in a higher starting rate.

The moving average may result in higher rate of return because of Global Financial Crisis data

Historical data for the Global Financial Crisis would not be incorporated, because the transitional rule only allows the use of current data at the time of the election to use the moving average approach.

Transitioning into the moving average approach would be a major challenge

QTC anticipates that the election to use the moving average approach would be made in a revenue determination. At this point, for private-sector networks, swaps dealt at the start of the previous regulatory period would be expiring. A portfolio of new swaps with staggered maturity dates would be dealt and progressively replaced during the first five years until the moving average was fully in effect. If the moving average was implemented, firms which are concerned about their ability to manage interest rate risk could elect to stay within the five yearly rate reset process.

The moving average approach changes the current rights and obligations of NSPs and the regulator

The moving average approach does not specify the parameter values, and these would continue to be determined in the revenue determination. The determination would also set the mechanism for calculating the risk free rate and debt risk premium each year. As such, the cost of capital would be mechanically updated according to these pre-determined parameter values and methodologies, rather than creating an opportunity to change parameters mid-way during the regulatory period.

Implementing a moving average approach by October is impracticable

Each of the issues identified above, and other issues not yet identified, need to be addressed to the satisfaction of stakeholders if a moving average is to achieve broad support. QTC recognises that the rule change process may not provide sufficient time to work through all of the necessary design and implementation issues. The purpose of continuing with the development of the moving average approach is an attempt to gain increased in-principle support, even if it is not capable of being incorporated in the AEMC's rule change recommendations (if any).