Ref.: TP/TML

28 August 2009

Mike Buckley
General Manager
Network Regulation North Branch
Australian Energy Regulator
GPO Box 3131
CANBERRA ACT 2601

Email: AERinquiry@aer.gov.au
QldSAdistribution@aer.gov.au

61 Mary Street
Brisbane QLD 4000
PO Box 15107
City East QLD 4002
Phone 07 3228 8222
Fax 07 3228 8118
Website www.ergon.com.au

Dear Mr Buckley

HEDGING INTEREST RATE RISK ON FUTURE BORROWINGS

Ergon Energy Corporation Limited (Ergon Energy) welcomes the opportunity to provide a submission to the AER in relation to our Regulatory Proposal for the 2010 to 2015 regulatory control period. This submission is being made in accordance with Clause 6.9.3(c) of the National Electricity Rules (NER).

A public and confidential version of the submission has been provided. This is because one of the reports supporting this submission (being the report by SFG Consulting) includes analysis using data from the post-tax revenue model (PTRM). As Ergon Energy's PTRM is confidential, the relevant sections of the report that present the results of the analysis using this data is also considered confidential.

In Ergon Energy's Regulatory Proposal section 28.2.1.1 Cost of Hedging Strategy, submitted on 30 June 2009, Ergon Energy indicated that we may seek to propose compensation for the costs of hedging the interest rate risk on future borrowings to be undertaken during the next regulatory control period. We did not have the opportunity to fully consider this matter as part of the Regulatory Proposal, which was partly due to the uncertainties posed by the global financial crisis and the significant increase in market volatility that has subsequently been experienced.

Ergon Energy has therefore sought assistance from Synergies Economic Consulting (Synergies), SFG Consulting (SFG) and Queensland Treasury Corporation (QTC) in considering this issue in more detail and developing this information which is supplementary to our Regulatory Proposal. This included addressing:

- what the magnitude of that exposure might be;
- whether it is efficient for the benchmark distribution network service provider (DNSP) to hedge the exposure, within the context of the National Electricity Law (NEL), the NER, the existing commercial and regulatory framework and wider market practice;
- how the efficient benchmark costs of hedging would be determined; and

Ergon Energy Corporation Limited ABN 50 087 646 062
Ergon Energy Queensland Pty Ltd ABN 11 121 177 802

- the requirements that we would need to satisfy in order to address the criteria set out in the NER.

These reports are attached.

As has been outlined in the accompanying reports, this is a significant issue for Ergon Energy in the next regulatory control period because our exposure to interest rate risk on future borrowings is material. This is because our forecast capital expenditure represents around 86% of the value of our existing Regulatory Asset Base. The projected borrowings for this expenditure are therefore also material, based on maintaining a target gearing level of 60%.

For this reason, the risks of not hedging could be significant. For example, QTC undertook an analysis assuming that interest rates rose by 2% during the first year of the regulatory period and then remain constant for the duration of the regulatory control period. Based on Ergon Energy's forecast borrowing profiles, the increase in total interest costs relative to the regulated cost would be approximately $88 million. This estimate does not include all of the costs that a firm may incur if exposed to financial distress.

SFG has examined the potential impact that increases in interest rates might have on key credit rating metrics. This has also been applied to the cash flow forecasts for Ergon Energy in the PTRM. The interest rate scenario assumed was that interest rates increase by 2% in year two of the regulatory control period, and then decline by 0.5% per year back towards the original year one rate. SFG's analysis shows that even if perfectly hedged, the key financial ratios (FFO/Total Debt and FFO/Interest Expense) are below what would be expected from a stand-alone investment grade utility (based on Standard and Poor's indicative metrics). If unhedged, the interest rate shock assumed above would result in these ratios being substantially below benchmark. For the efficient benchmark firm, this could trigger a credit rating downgrade.

Hence, the analysis that has been undertaken shows that the benefits of hedging – that is, the avoided costs that could otherwise be incurred if the exposures remain unhedged – could significantly outweigh the costs. Indicative costs have been estimated by QTC based on current forward rates and hedging 100% of the exposure (which is not proposed here). In present value terms, the current cost is $43 million (because it is not proposed that the benchmark hedging strategy should be based on hedging 100% of the exposure, the likely costs of that benchmark hedging strategy would be lower). We are therefore of the view that hedging at least some of these exposures could be efficient and prudent and will add value to our shareholders and ultimately our customers.

The report by Synergies further concludes that compensation for hedging costs is appropriate because:

- the assumption that hedging has no impact on firm value assumes perfect capital markets. It is in the presence of market imperfections, such as the costs of financial distress, that hedging may have a positive impact on firm value;

- hedging is a common practice employed by comparable businesses, including the AER's beta sample;

- this risk is not compensated via the beta, because:

- the betas of the comparator sample relied upon by the AER in the main, reflect an interest rate risk profile that includes some hedging. It is also considered unlikely that all or most of these businesses had capital expenditure programs of this order of magnitude at the time the betas were estimated;

- while it is impossible to precisely determine the level of compensation for interest rate risk that can be assumed to be covered via beta, the materiality of the exposures faced by Ergon Energy in the next regulatory control period are likely to well exceed any reasonable level of compensation that we might assume beta provides;

- given the magnitude of the exposures and current market rates, it cannot be assumed that there is sufficient compensation provided in the term structure of interest rates, even though we do not consider it appropriate to assume that these businesses fund themselves for an average term to maturity of only 7.37 years;

- to the extent that the risk is not otherwise compensated, it is considered appropriate for Ergon Energy to be compensated based on the efficient benchmark costs of reducing our likely exposure to interest rate risk, which, if not hedged, could have a far more material and adverse impact on the business in the long-run.

Overall, this is considered consistent with the revenue and pricing principles contained in the NEL, because these are efficient costs that are incurred in provision of the relevant services. This in turn is consistent with the promotion of economic efficiency, in particular, ensuring that efficient investment is undertaken in the distribution networks.

It is proposed that compensation is provided via a benchmark hedging cost allowance, in the same way that a benchmark allowance for debt and equity raising costs is provided in the operating expenditure allowance. In order to estimate this allowance, it is necessary to make an assumption regarding the efficient benchmark hedging strategy. The costs of this strategy are then estimated based on prevailing market rates.

It is therefore proposed that these benchmark costs are estimated over the same averaging period that is used to set the risk-free rate and debt margin, as this ensures that these costs reflect the market conditions prevailing close to the start of the regulatory control period.

For this reason, a cost allowance is not proposed in this submission. In the same way, we would not seek to lock in the regulated cost of debt for the next regulatory control period based on conditions prevailing today.

As addressed in the Synergies report, one of the key reasons evidenced in the literature for hedging is to reduce the costs of financial distress. One way this could materialise is via a credit rating downgrade. It is therefore proposed that for the purpose of estimating the benchmark hedging cost allowance, the assumed benchmark hedging strategy is the level of hedging that would preserve the assumed notional rating of BBB+, under a range of interest rate scenarios applied to the projected borrowings as set out in the regulatory proposal. This in turn can be linked to thresholds for some of the key credit metrics that can influence this rating (assuming a 60% gearing is maintained). It is important to emphasise that it is not proposed that 100% of the exposure would be hedged.

There is no optimal level of hedging that can be observed in the market given it is driven by factors specific to the industry, firm and prevailing market conditions. Further, the regulatory

framework does not prescribe how a business finances its activities or manages its commercial risks. However, an assumption will need to be made regarding the hedging profile/s that will achieve the stated objective (which is to preserve the notional credit rating), without necessarily restricting the business's reasonable commercial flexibility (as well as enabling it to satisfy its corporate governance requirements). We are happy to consider this issue further in consultation with the AER and stakeholders.

The framework is predicated on the need to demonstrate that the benefits of hedging outweigh the costs, which in turn will be driven by the size of the exposures and the prevailing market environment. We would therefore expect that the case for compensation would need to be reconsidered at the start of each regulatory control period. As noted above, this proposal is founded on the materiality of the proposed borrowings within the context of the existing business.

Ergon Energy would be happy to work with the AER to assist in further developing this framework. In the meantime, if you have any further questions regarding this matter, please contact Tony Pfeiffer or Troy McKay-Lowndes (07-4122 5312).

Yours sincerely

Greg Evans
Chief Finance Officer

Enc.:

Telephone: 07 3228 7711
Facsimile: 07 3228 8130
Email: tony.pfeiffer@ergon.com.au
RegDetermination@ergon.com.au

c.c Tony Pfeiffer
Carmel Price
Troy McKay-Lowndes
Kim Casey
Kylie Bryant

Hedging Interest Rate Risk on Future Borrowings

A Report for ENERGEX and Ergon Energy

August 2009
Synergies Economic Consulting Pty Ltd
www.synergies.com.au

Disclaimer

Synergies Economic Consulting (Synergies) has prepared this advice exclusively for the use of the party or parties specified in the report (the client) and for the purposes specified in the report. The report is supplied in good faith and reflects the knowledge, expertise and experience of the consultants involved. Synergies accepts no responsibility whatsoever for any loss suffered by any person taking action or refraining from taking action as a result of reliance on the report, other than the client.

In conducting the analysis in the report Synergies has used information available at the date of publication, noting that the intention of this work is to provide material relevant to the development of policy rather than definitive guidance as to the appropriate level of pricing to be specified for particular circumstance.

Contents

1 Introduction

Synergies Economic Consulting (Synergies), in conjunction with SFG Consulting (SFG) and Queensland Treasury Corporation (QTC), have been asked by ENERGEX and Ergon Energy (the businesses) to review the implications of interest rate risk for the borrowing requirements they have proposed to undertake in the next regulatory control period, including:

- is it appropriate that this risk should be hedged;
- is it appropriate for these costs to be compensated as part of the businesses' maximum allowable revenue (based on an assumed efficient benchmark hedging strategy); and if so,
- how would the costs of a benchmark hedging strategy be determined.

It is understood that each business raised this issue as part of their regulatory proposals, but indicated that further consideration was needed, particularly given the uncertainty that continues to pervade global capital markets. The case for compensation needs to be consistent with the principles of the National Electricity Law, and the more specific provisions contained in the National Electricity Rules.

The exposures faced by ENERGEX and Ergon Energy in the next regulatory control period are material. This is because each business is proposing a capital expenditure program for the five year period that is equivalent to more than 80% of their respective opening Regulatory Asset Values, with the projected borrowing requirement consistent with maintaining the target gearing level of 60%.

This report will set out to show that, particularly given the materiality of the exposures in this next regulatory control period:

1. depending on prevailing market conditions, it is efficient for the businesses to hedge at least some of the interest rate risk on their future borrowings using derivatives. This is consistent with empirical evidence as well as the risk management practices employed by other relevant businesses;
2. the benefits of hedging should exceed the costs of hedging, with these costs determined based on an assumed efficient benchmark strategy under a range of plausible future interest rate scenarios;
3. the benchmark hedging strategy will be based on reducing the probability of financial distress, which is the risk that unfavourable movements in interest

rates trigger a credit rating downgrade from the assumed benchmark credit rating of BBB+ based on key credit metrics (such as interest coverage);

4. it is not appropriate to assume that this risk is currently compensated via the Weighted Average Cost of Capital (WACC), or in the term structure of interest rates.

Given the benchmark hedging strategy, and the cost of hedging based on that benchmark strategy, is influenced by prevailing market conditions – and these conditions remain volatile and uncertain - we are not proposing to forecast a benchmark hedging cost allowance at this point.

Just as the risk-free rate and debt margin are set based on the conditions prevailing close to the start of the regulatory control period, we submit that the most appropriate strategy is to seek prior approval of the principles governing how the benchmark hedging costs might be determined. It is proposed that these costs would then be estimated over the same averaging period that is used to set the risk-free rate and debt margin, in order to ensure that they reflect prevailing market interest rates.

One of the key assumptions underpinning this proposal is materiality, based on the projected borrowings for the next regulatory control period. In subsequent regulatory periods it would need to be demonstrated that the magnitude of the borrowings required by the business are sufficient to increase the risk of financial distress, to the point where the benefits of hedging (that is, the risk potentially avoided by hedging) exceed the costs.

This report is set out as follows:

- section 2 provides an overview of the risks and the regulatory environment;
- section 3 addresses the question of whether it is efficient to hedge; and
- section 4 summarises the proposal.

Separate reports prepared by SFG and QTC accompany this report and should be read in conjunction with it. Curricula vitae of our consultants that have prepared this report are attached.

2 Overview

2.1 Capital expenditure requirement

ENERGEX and Ergon Energy have significant capital expenditure requirements during the forthcoming regulatory period. ENERGEX is proposing a capital expenditure program of $6,466 million for the 2010-2015 regulatory control period, relative to an opening 2010-11 Regulated Asset Base (RAB) of $7,887 million.[1] In other words, the projected expenditure is over 80% of the size of the opening RAB. Ergon Energy is proposing to spend a total of $6,180 million,[2] which is over 88% of the size of its opening RAB of $6,999 million.[3] In both cases the majority of the expenditure is for system assets.

The profile of the expenditure is shown below.

Table 1 ENERGEX: Proposed Capital Expenditure 2010–15 ($m)

2010-11	2011-12	2012-13	2013-14	2014-15
1,239.5	1,269.7	1,301.9	1,292.4	1,362.5

Source: ENERGEX (2009), ENERGEX Regulatory Proposal for the Period July 2010 – June 2015, July, p.209.

Table 2 Ergon Energy: Proposed Capital Expenditure 2010-15 ($m real 2009-10)

2010-11	2011-12	2012-13	2013-14	2014-15
1,086.2	1,199.9	1,177.3	1,228.0	1,341.5

Source: Ergon Energy (2009), Regulatory Proposal to the Australian Energy Regulator, Distribution Services for the Period 1 July 2010 to 30 June 2015, 1 July, p.192.

Given the size of these requirements, both businesses will need to raise additional borrowings to fund the expenditure. This borrowing requirement is determined based on the target gearing assumption of 60%. Hence, the businesses' total borrowings should increase by a similar order of magnitude as the projected growth in their total asset base.

---

1 ENERGEX (2009), ENERGEX Regulatory Proposal for the Period July 2010 – June 2015, July.

2 The capital expenditure is expressed in real $2009-10 in the regulatory proposal. This has been grossed up by the forecast inflation of 2.45% for the purpose of enabling a comparison with the value of the RAB, which is expressed in nominal terms.

3 Ergon Energy (2009), Regulatory Proposal to the Australian Energy Regulator, Distribution Services for the Period 1 July 2010 to 30 June 2015, 1 July.

Under the current regulatory framework, the cost of debt that is assumed to apply to the new expenditure is the rate that is set at the start of the regulatory control period. The cost of debt on these new borrowings, along with the existing debt, will then be reset at the beginning of the next regulatory control period (2015 – 2020).

2.2 Interest rate risk on new borrowings

It is extremely difficult to forecast future interest rates over the five years of the regulatory control period. However, what is almost certain is that the actual cost of the new debt when it is raised will be different from the regulated cost of debt. The businesses are therefore exposed to interest rate risk on these new borrowings. Given the amounts involved, this exposure is material.

Any large commercial organisation with future borrowing requirements is exposed to interest rate risk on those borrowings. This 'risk' is the risk that at the time the funds are drawn down, prevailing interest rates are higher than current interest rates, or, particularly in the case of a major project, higher than the interest rate assumption used in the cash flow analysis as part of the project evaluation. In the case of a regulated business, the risk is that the prevailing interest rates at the time of drawdown are higher than the regulated cost of debt.

An unregulated business may have a number of options here in mitigating its exposure to this risk, including:

1. deferring the expenditure;
2. increasing prices to reflect the increase in interest costs;
3. accepting the risk, on the basis that it has the capacity to absorb the losses within the business; or
4. hedging the risk upfront. The hedging costs are then reflected in the cost of the project.

As will be outlined further below, ENERGEX and Ergon Energy do not have the flexibility to do either of the first two options. As we will also demonstrate, given the materiality of these exposures, we do not consider it acceptable to assume that the financial consequences can or should be absorbed by the regulated business, or that these consequences will only ultimately flow through to its shareholders and not to its customers.

2.3 Materiality of the exposures

Both QTC and SFG have examined the potential materiality of the exposures faced by ENERGEX and Ergon Energy (refer accompanying reports).

For example, QTC undertook an analysis assuming that interest rates rose by 2% during the first year of the regulatory period and then remain constant for the duration of the regulatory control period:

> Based on the forecast borrowing profiles the increase in total interest costs relative to the regulated cost would be approximately $88 million and $69 million in present value terms for Ergon and ENERGEX respectively.[4]

In its report, SFG has examined the potential impact that increases in interest rates might have on key credit rating metrics.[5] This has also been applied to the cash flow forecasts for ENERGEX and Ergon Energy in each business's Post Tax Revenue Model (PTRM). The interest rate scenario assumed was that interest rates increase by 2% in year two of the regulatory control period, and then decline by 0.5% per year back towards the original year one rate.

SFG's analysis shows that even if perfectly hedged, the key financial ratios (FFO/Total Debt and FFO/Interest Expense) are below what would be expected from a stand-alone investment grade utility (based on Standard and Poor's indicative metrics). If unhedged, the interest rate shock assumed above would result in these ratios being substantially below benchmark. For the efficient benchmark firm, this could trigger a credit rating downgrade.

These exposures are clearly material and could expose the businesses to financial distress. The way in which we propose to interpret 'financial distress' is considered further in section 3.

2.4 Options within the regulatory framework

One way that this issue could be dealt with is some form of adjustment to regulated revenues for movements in the cost of debt. This is not currently provided for under the regulatory framework. This could be done in a number of ways, for example:

1. periodic and automatic resetting of the risk-free rate and debt margin during the regulatory control period, say once every twelve months;

---

[4] Queensland Treasury Corporation (2009), Hedging Cost Submission – Ergon Energy and ENERGEX Limited.

[5] SFG Consulting (2009), Consistency of Regulatory Assumptions in Relation to Debt Hedging Costs, Report Prepared for ENERGEX and Ergon Energy, August.

2. a 'trigger' mechanism, which resets the cost of debt only if rates move outside a certain band or threshold; or

3. treatment as a cost pass through event.

Regulators have been generally averse to re-opening the revenue cap during the course of the regulatory period, given this can lead to uncertainty for the consumers (and the regulated business). We have therefore not considered these options in any further detail at this stage.

In relation to cost pass throughs, the AER has previously explicitly excluded interest rate risk from the list of pass through events, because it was assumed that this risk is addressed by the Weighted Average Cost of Capital (WACC). As we will set out in section **Error! Reference source not found.**, we refute that this risk is fully compensated by the WACC, particularly in view of the materiality of the exposures faced by ENERGEX and Ergon Energy this regulatory control period. However, there are some other parallels that can be drawn with the treatment of cost pass throughs, which will be considered further below.

Another option is to set the cost of debt for the new borrowings upfront, based on the forward curve prevailing during the reset period. However, one of the practical difficulties with this approach is that different rates would apply to existing borrowings and new borrowings.

Presuming that the above options are not available to ENERGEX and Ergon Energy, hedging is the main strategy that is available to mitigate the impact of the risk. This also parallels the strategy that other large, commercial businesses are likely to employ when faced with these exposures and in our view, is consistent with what would be undertaken by an efficient benchmark firm (refer section **Error! Reference source not found.** below). However the benchmark costs of this are not currently compensated under the regulatory regime. Any case for compensation needs to satisfy the requirements under the National Electricity Rules (NER), which are set out below.

2.5 Criteria for compensation

2.5.1 Requirements under the National Electricity Law

The overarching principles governing the regulation of electricity distribution are set out in the National Electricity Law (NEL). The revenue and pricing principles (Part 7A) of the NEL provide that, amongst other things:

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

(a) providing direct control network services; and

(b) complying with a regulatory obligation or requirement or making a regulatory payment.

(3) A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—

(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and

(b) the efficient provision of electricity network services; and

(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

These principles provide that the regulated network service provider (NSP) should be able to be compensated for the efficient costs incurred in providing the relevant services. This is directly linked to the third principle, because if adequate compensation is not provided for efficient costs this could undermine ensuring efficient investment in, and utilisation of, the relevant infrastructure. In our view, this should also allow the NSP to implement appropriate risk mitigation techniques to manage the commercial risks faced by the business and be compensated for the reasonable and efficient costs of doing so. This is also consistent with regulation complementing appropriate commercial practice, rather than driving that practice.

A key objective of incentive regulation is providing regulated businesses with sufficient incentive to improve performance, including increasing efficiency. It is not appropriate to assume that providing compensation for the benchmark costs of hedging somehow reduces the incentive for the businesses to reduce their cost of debt. The cost of debt on future borrowings is completely beyond the control of the business. Unless interest rates fall at the time the funds are borrowed, the only way the business can reduce that future cost is to reduce the amount borrowed (or not undertake the expenditure). In our view, it is appropriate to provide sufficient incentive to implement a reasonable level of hedging for the risks that the NSP can't control and reduce the risk of financial distress, which also enables the NSP to focus on those activities that it is able to influence.

2.5.2 Requirements under the National Electricity Rules

Clause 6.5.2 of the NER provides that the debt risk premium:

> ...is the premium determined for that regulatory control period by the AER as the margin between the annualised nominal risk free rate and the observed annualised Australian benchmark corporate bond rate for corporate bonds which have a maturity equal to that used to derive the nominal risk free rate and a credit rating from a recognised credit rating agency.

Under Clause 6.5.4(e)(2), in undertaking its periodic review of the rate of return the AER must have regard to:

> ...the need for the return on debt to reflect the current cost of borrowings for comparable debt...

There is no provision in the rate of return for the benchmark costs of hedging interest rate risk on future borrowings. In our view, these costs need to be treated in the same way as debt and equity raising costs, which are considered as part of forecast operating expenditure. As will be evident from the analysis that follows, this is considered particularly appropriate given the case for compensation is not necessarily 'one size fits all'.

This in turn will require satisfaction of the operating expenditure criteria, which are set out in Clause 6.5.6(c) of the NER. This clause provides that:

> The AER must accept the forecast of required operating expenditure of a Distribution Network Service Provider that is included in a building block proposal if the AER is satisfied that the total of the forecast operating expenditure for the regulatory control period reasonably reflects:
>
> 1) the efficient costs of achieving the operating expenditure objectives; and
>
> 2) the costs that a prudent operator in the circumstances of the relevant Distribution Network Service Provider would require to achieve the operating expenditure objectives; and
>
> 3) a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

The following table sets out our interpretation of each of these requirements in relation to hedging the interest rate risk on new capital expenditure.

Table 3 NER operating expenditure criteria

NER criteria	What is needed to demonstrate satisfaction of criteria
1) the efficient costs of achieving the operating expenditure objectives	That it is efficient to incur these costs, which in turn requires demonstrating that: (a) it is efficient for the benchmark NSP to hedge the interest rate risk on future borrowings; (b) the assumed benchmark hedging strategy that is employed is in itself, efficient; and (c) these costs are not otherwise compensated elsewhere.
2) the costs that a prudent operator in the circumstances of the relevant Distribution Network Service Provider would require to achieve the operating expenditure objectives	That the costs are prudent and reasonable in the current market environment.
3) a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives	That the underlying rationale for the borrowing has been proven, which requires demonstrating that: (a) the capital expenditure forecasts meet the relevant requirements under the NER; and (b) the case for external borrowing to fund these requirements has been demonstrated, based on a target gearing level of 60%.

Satisfaction of the first two requirements will be addressed in this report. This will include addressing any relevant regulatory precedent in this area (which is limited). One of the most crucial aspects of this is establishing what is 'efficient' practice in managing future interest rate risk.

In relation to the rate of return, clause 6.5.4(e) of the NER provides that in reviewing the parameters, reference will be made to an efficient benchmark NSP. While this matter does not specifically relate to the rate of return, in examining the issue of efficient hedging practice we will consider this from the perspective of the 'efficient benchmark firm'. In its Statement of Regulatory Intent (SoRI), the AER defined this to be a large, stock market listed NSP "that does not impute support or advantage from its portfolio of other activities."[6]

Further to this, it is important to highlight that the 'costs' are 'efficient benchmark hedging costs', which in turn will be a function of establishing an 'efficient benchmark hedging strategy' and estimating the costs of that strategy based on prevailing market rates. This is consistent with the treatment of other costs, including debt and equity raising costs, under the regulatory framework. These costs are not necessarily specific to the regulated business. At the same time, we agree that each business needs to be able to put a case for compensation, as will be set out below. If this case is successfully

[6] Australian Energy Regulator (2009), Electricity Transmission and Distribution Network Service Providers: Statement of the Revised WACC Parameters (Transmission), Statement of Regulatory Intent of the Revised WACC Parameters (Distribution), May, p.79.

put (which will be largely driven by the materiality of the exposures faced at the time), the allowance provided will be based on these benchmark costs.

Satisfaction of the third requirement has already been addressed as part of the regulatory proposals, with borrowing assumptions incorporated in the post tax revenue model. As outlined above, the borrowing requirement is established based on the target gearing level of 60%.

3 Is it efficient to hedge

3.1 How can this risk be managed by the regulated business

Interest rate risk is beyond the control of the business. While a business cannot undertake any actions to reduce the probability of an adverse movement in interest rates (given this is market determined), it can potentially take actions to mitigate the *impact* of this risk on the business.

As outlined above, unregulated businesses have a number of options in relation to managing this risk. One option is to undertake the expenditure and then increase prices to compensate for the higher borrowing cost. This option is not available to a regulated business given there is no currently no provision to increase prices for this reason (this is considered further below). An unregulated business may not be in a position to do this if it is operating in a competitive market and its price elasticity of demand is high. At the same time, given its competitors are likely to be faced with similar increases in costs, at least some of those costs may be able to be passed through to consumers.

Another option that a regulated NSP does not necessarily have is to not undertake the expenditure. While the capital expenditure proposals submitted by the businesses must be approved by the regulator, most of that expenditure is not discretionary. This is because of the essential nature of the services provided. In other words, if a NSP chose not to invest because the economics of the project changed unfavourably relative to the assumptions that prevailed at the start of the regulatory control period, it may risk being seen to compromise the national electricity objective (as set out in the NEL), which is:

> …to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –
>
> 1. price, quality, safety, reliability, and security of supply of electricity; and
>
> 2. the reliability, safety and security of the national electricity system.

This situation was highlighted in Queensland with the political and community scrutiny that was applied with the commissioning of an Independent Panel to undertake the Electricity Distribution and Service Delivery Review.[7] One of the overall

[7] Independent Panel (2004), Summary Report of the Independent Panel, Electricity Distribution and Service Delivery for the 21st Century, State of Queensland, July.

conclusions reached in the report was that there had been insufficient expenditure on the networks to meet increased demand from growth.

A substitute for hedging using tools such as derivatives is operational hedging, for example, diversifying this risk across the business to the extent that different parts of the business have different exposures to interest rates (including operations that borrow in different markets). Alternatively, debt could be sourced from different jurisdictions. However, this will not necessarily provide protection from a major economic shock (such as the sub-prime crisis), which affects global capital markets.

The efficient benchmark firm is assumed to be a stand-alone business. It therefore cannot be assumed that this risk could be somehow spread or absorbed across a wider portfolio of activities. Further, the debt margin is set with reference to Australian corporate bonds. Based on the current method that is used to set to the cost of debt under the NER, the main way a NSP can reduce its exposure to this risk is by hedging.

3.2 Previous consideration by the AER

In its revenue proposal to the AER for the 2007 to 2012 regulatory proposal, Powerlink sought to claim additional compensation for the costs associated with refinancing its existing debt, as well as the costs of hedging the interest rate risks on future borrowings (by using instruments such as Forward Rate Agreements). The AER, based on the advice of its consultant (NERA)[8], rejected the claim.[9]

There were a couple of reasons provided for this. The first was that it was considered that Powerlink had not demonstrated that the value of the reduction of risk was greater than or equal to the cost of achieving that reduction. Further, even if was efficient to hedge the risk:

> ...it does not follow that customers should pay for it because the beneficiaries of this reduction in risk are not Powerlink's customers but rather its owners.[10]

Second, while there is evidence in the literature that the CAPM does not necessarily fully explain stock returns, it is not evident that it is optimal for a business is to eliminate all risk. Further, even if CAPM is a "poor predictor" of how the market prices risk, it already provides compensation for interest rate risk. While we intend to address the issue of the extent to which it can already be assumed to be compensated

[8] NERA (2007), Hedging for Regulated Businesses, 12 April.

[9] Australian Energy Regulator (2007), Decision: Powerlink Queensland Transmission Network Revenue Cap 2007-08 to 2011-12, June.

[10] ibid., p.96.

by the equity beta, we concur that it is not necessarily a prudent and efficient strategy to hedge 100% of the business's future interest rate exposure. The aim of this report is to demonstrate that it is efficient for the benchmark firm to hedge at least part of this exposure, but not necessarily all of it.

In order to address these concerns in the balance of this section we will examine the following:

- the empirical evidence on hedging strategy;
- actual hedging strategies of other relevant businesses;
- whether it is appropriate to assume that the risk is already compensated via beta;
- the benefits of hedging relative to the costs;
- whether it is appropriate for customers to bear the costs of hedging; and
- other regulatory precedent.

3.3 Empirical evidence on hedging

A review of the literature on hedging practices has been undertaken and is summarised in Attachment A. This shows that there is a considerable volume of literature that confirms that businesses do hedge in practice, and explores why they hedge. Again, implementing a hedging strategy is not necessarily assumed to imply hedging 100% of the exposure. However, there is clear evidence to show that hedging at least part of this exposure is prudent and consistent with commercial practice.

3.3.1 The rationale for hedging

The assumption that it is not appropriate to hedge – or that hedging has no impact on firm value – stems from Miller and Modigliani's proposition that corporate financial policy is irrelevant.[11] Under this model, it is unnecessary to hedge given investors can do this themselves (at no cost).

However, this assumes perfect markets. In the presence of market imperfections, such as contracting costs, taxes and financial distress, this proposition does not hold. Indeed, if regulators accepted Miller and Modigliani's proposition, there would be no consideration of optimal capital structure because we would assume that it would not

[11] M.Miller & F. Modigliani (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment", American Economic Review, Vol. XLVIII No. 3, pp. 261-97.

matter. We would assume that shareholders could undertake 'homemade leverage' themselves. The reality for regulated businesses (and all businesses), however, is the existence of market imperfections and these imperfections have a direct impact on how much capital they can raise, in what form, and at what cost.

There are a number of reasons discussed in the literature as to why firms hedge and they are all based on the existence of these market imperfections. One of the main reasons is to reduce the probability of financial distress, which in turn imposes costs on the business.[12] It is important to highlight that financial distress need not imply bankruptcy. While bankruptcy clearly involves costs, a firm can still experience costs arising from financial distress even if it can still remain solvent. These costs can erode firm value. Haushalter (2001) states:

> Even if the firm doesn't wind up in bankruptcy, shareholders of distressed firms are likely to bear indirect costs of financial distress, including lost sales or a further decline in a company's performance because of loss of managerial focus. Both of the interpretations of these results are consistent with hedging as a means to increase shareholder value.[13]

Financial distress can also result in restrictive covenants that can significantly reduce the firm's financial and commercial flexibility, which can compromise the maximisation of firm value. It has also been proposed that hedging reduces the variance in firm value.[14]

Another key reason that firms hedge is to avoid the underinvestment problem. In making investments, firms need some predictability in terms of future cash flows.[15] Unanticipated variations in these cash flows can reduce the debt capacity of the firm and reduce the amount of investment that is made. Berkman and Bradbury (1996) argue that an alternative way of looking at this is that it is not the presence of growth options per se that determines the hedging strategy, but the risks of not being able to convert growth options into assets in place.[16]

---

[12] C. Smith and R. Stultz (1985), "The Determinants of Firms' Hedging Policies", The Journal of Financial and Quantitative Analysis, Vol.20, No.4, December, pp.391-405.

[13] D. Haushalter (2001), "Why Hedge? Some Evidence from Oil and Gas Producers", Journal of Applied Corporate Finance, Winter, Vol.13.4, pp.87-92.

[14] H. Berkman, M. Bradbury, P. Hancock & C. Innes (2002), "Derivative Instrument Use in Australia", Accounting and Finance, Vol.42, pp.97-109.

[15] A. Dhanani, S. Fifield, C. Helliar & L. Stevenson (2007), "Why UK Companies Hedge Interest Rate Risk", Studies in Economics and Finance, Vol.24, No.1, pp. 72-90.

[16] H. Berkman & M. Bradbury (1996), "Empirical Evidence on the Corporate Use of Derivatives", Financial Management, Vol.25, No.2, Summer, pp.5-13.

Hedging can enable the firm to negotiate better contracting terms and lower borrowing costs.[17] Berkman et al (2002) argue:

> Since the firm's ability to generate internal cashflows can be disrupted by internal shocks, the firm's hedging policy is aimed at transferring funds from future states of the world with a surplus to states of the world with a deficit.[18]

In their paper examining international evidence on the motivations for derivatives use, Bartram et al conclude that the use of derivatives allows firms to undertake other value-enhancing financial policies that might involve risk.[19]

Other key reasons for hedging addressed in the literature include taxes (in reducing the variability of income, hedging avoids the deferral of tax losses to future periods)[20] and managerial risk aversion.[21] In most of the studies we examined that reviewed evidence of hedging in practice, there was also a correlation between firm size and hedging activity, given the economies of scale that larger firms can achieve.[22] Firms with higher leverage were also more likely to hedge, given this will naturally drive their exposure to financial price risk.[23]

Most of the literature deals with 'hedging' in general, rather than distinguishing between hedging existing exposures or future exposures. A number also encompass foreign exchange, interest rate and commodity price risks. However, the conclusions drawn here in relation to risk management practices by firms are seen to be just as applicable to hedging future exposures compared to existing ones. Some of the surveys did explicitly address this issue, for example, Mallin et al (2001)[24], observed that a number of firms in their sample hedged future transactions. De Ceuster et al (2000)

---

17 A. Judge (2006), "Why and How UK Firms Hedge", European Financial Management, Vol.12, No.3, pp.407-441.

18 H. Berkman, M. Bradbury, P. Hancock & C. Innes (2002), op.cit., p.99.

19 S. Bartram, G. Brown & F. Fehle (2009), "International Evidence on Financial Derivatives Usage", Financial Management, Spring, pp.105-206.

20 H. Berkman, M. Bradbury, P. Hancock & C. Innes (2002), op.cit.

21 C. Smith and R. Stultz (1985),op.cit.

22 For example, refer: A. Judge (2006), op.cit.; H. Berkman & M. Bradbury (1996), op.cit.; H. Berkman, M. Bradbury, P. Hancock & C. Innes (2002), op.cit.; G. Bodnar & G. Gebhardt (1999), "Derivatives Usage in Risk Management by US and German Non-Financial Firms: A Comparative Survey", Journal of International Financial Management and Accounting, Vol.10, No.3; A. Dhanani, S. Fifield, C. Helliar & L. Stevenson (2007), op.cit.; K. Grant & A. Marshall (1997), "Large UK Companies and Derivatives", European Financial Management, Vol.3, No.2; D. Haushalter (2001), op.cit.; S. Mian (1996), "Evidence on Corporate Hedging Policy", The Journal of Financial and Quantitative Analysis, Vol.31, September, ppp.419-439;

23 For example, refer: S. Bartram, G. Brown & F. Fehle (2009), op.cit.; H. Berkman & M. Bradbury (1996), op.cit.; H. Berkman, M. Bradbury, P. Hancock & C. Innes (2002), op.cit.; S. Mian (1996), op.cit.

24 C. Mallin, K.Ow-Yong, M.Reynolds (2001), "Derivatives Usage in UK Non-Financial Listed Companies", The European Journal of Finance, Vol.7, pp.63-91.

noted that a "large fraction" of their sample consider hedging interest rate exposures up to a time horizon of three years.[25]

A number of the studies that explore the rationale for hedging also considered the reasons why firms don't hedge. In most of those studies a key reason was that their financial exposures were not considered significant enough[26] (which supports hedging to reduce financial distress and/or avoid underinvestment). This also suggests that the benefits of hedging need to at least justify the costs.

Firms are also less likely to hedge if they hold larger cash balances (which will not necessarily be a value-maximising strategy). As outlined above, it may also be unnecessary to hedge if a firm has 'natural' hedges across the business, or can reduce risk via operational strategies.

3.3.2 Hedging and value maximisation

A number of studies cited above demonstrate how hedging can maximise firm value. Hedging can also enable the firm to undertake other value-maximising strategies that might involve risk.

The overall rationale for hedging is due to the presence of market imperfections. For example, to the extent that hedging can reduce the probability of financial distress (which imposes costs on the business) and/or avoids under-investment, it can increase the value of the firm, or at minimum, prevent this value from being eroded by risks that the firm cannot control. Froot et al (1993) summarise the reasoning for this as follows:

> If a firm does not hedge, there will be some variability in the cash flows generated by assets in place. Simple accounting implies that this variability in internal cash flow must result in either: (a) variability in the amount of money raised externally, or (b) variability in the amount of investment. Variability in investment will generally be undesirable, to the extent that there are diminishing marginal returns to investment (i.e., to the extent that output is a concave function of investment). If the supply of external finance were perfectly elastic, the optimal ex post solution would thus be to leave investment plans unaltered in the face of variations in internal cash flow, taking up all the slack by changing the quantity of outside money

[25] M. De Ceuster, D.Durinck, E.Laveren & J. Lodewycky (2000), "A Survey into the Use of Derivatives by Large Non-Financial Firms Operating in Belgium", European Financial Management, Vol.6, No.3, pp.301-318.

[26] For example, refer: G. Bodnar & G. Gebhardt (1999), op.cit.; M. De Ceuster, D.Durinck, E.Laveren & J. Lodewycky (2000), op.cit.; C. Mallin, K.Ow-Yong, M.Reynolds (2001), op.cit.; E.Sheedy (2002), "Corporate Use of Derivatives in Hong Kong & Singapore: A Survey" Macquarie University.

> raised. Unfortunately, this approach no longer works well if the marginal cost of funds goes up with the amount raised exterrnally. Now a shortfall in cash may be met with some increase in outside financing, but also some decrease in investment. Thus variability in cash flows now disturbs both investment and financing plans in a way that is costly to the firm. To the extent that hedging can reduce this variability in cash flows, it can increase the value of the firm.[27]

Graham and Rogers (1999), who found mixed evidence on the use of derivatives, did find that firms who use derivatives do so in a manner that is consistent with value maximisation.[28] They found that large firms that are subject to underinvestment problems and higher expected distress costs are more likely to use derivatives to hedge interest rate risk.

Notwithstanding the linkage between hedging and firm value, we cannot necessarily conclude that hedging is value-maximising for all firms, in all circumstances. This is because depending on these circumstances, hedging may not increase firm value, for example, because the exposures are not material and hence the risks (and potential costs) of financial distress are low relative to the cost of hedging.

Further, to the extent that some hedging may be considered optimal, we cannot draw general conclusions about the amount of hedging that should be undertaken by an efficient benchmark firm. Based on the evidence in the literature, this will depend on a number of things, including the competitive environment the firm operates in (and the hedging strategies employed by competitors)[29], the existence of growth options, the capital market environment and interest rate outlook, the firm's (and shareholders') tolerance for volatility in cash flows or accounting earnings, availability of operational or natural hedges, dividend policy, tax profile and the attitude of management and/or stakeholders towards derivatives use.

As noted above, it is not proposed that hedging 100% of the firm's exposures is the optimal strategy, nor is this suggested by the literature. However, this evidence clearly refutes the assumption that it is unnecessary to undertake any hedging, or that it will have no impact on firm value, particularly if it can be demonstrated that the benefits of hedging exceed the costs.

---

[27] K. Froot, D. Scharfstein & J. Stein (1993), "Risk Management: Coordinating Corporate Investment and Financing Policies", The Journal of Finance, Vol.48. (5), pp.1630-1631.

[28] J. Graham & D.Rogers (1999), "Is Corporate Hedging Consistent with Value Maximisation? An Empirical Analysis", June 25, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=170348.

[29] ibid.

While there are no clear rules as to what constitutes an optimal hedging strategy, it will be necessary to demonstrate that the proposed hedging strategy is optimal for the efficient benchmark firm. This is considered further in section **Error! Reference source not found.**.

3.3.3 Implications for Ergon Energy and ENERGEX

Given the magnitude of the interest rate exposures on future borrowings faced by Ergon Energy and ENERGEX, it is probable that adverse movements in interest rates could expose the firms to financial distress (particularly if the expenditure is not discretionary). It is also reasonable for the firms to desire some level of cash flow certainty in undertaking such a significant capital expenditure program over a five year period. It is reasonable to assume that the 'efficient benchmark firm" is a large firm. As we know, with an assumed 60% target gearing level this firm is relatively highly leveraged. The literature shows that large firms with higher leverage are more likely to hedge.

As noted above, financial distress does not necessarily imply bankruptcy. In this case, the most likely scenario is considered to be a deterioration in key credit metrics (while maintaining the target gearing level), triggering a downgrade in the credit rating. This in turn will impact the availability and cost of finance. It is also likely to influence the terms of the loan facility, including the inclusion of more restrictive covenants on activities. These costs will ultimately be borne by customers.

It is therefore proposed that the efficient benchmark hedging strategy for a regulated NSP with material future borrowing requirements will be partially hedging the exposures, to a level that minimises the likelihood that a credit rating downgrade would be triggered (from the notional benchmark credit rating of BBB+). This can be done by determining the level of hedging that maintains key credit metrics above a certain threshold, for a plausible range of future interest rate scenarios. This is considered further in section **Error! Reference source not found.**.

3.4 Existing compensation

3.4.1 Beta

As noted above, one argument that has previously been made by the AER in rejecting Powerlink's claim for hedging costs was that compensation for interest rate risk is already provided in the equity beta. This was also the reasoning behind the exclusion of interest rates from cost pass through events. In this regard, it is important to highlight that ENERGEX and Ergon Energy are not seeking any compensation for

hedging costs associated with managing the interest rate and refinancing risks on existing borrowings – this issue is limited to the interest rate risk on new borrowings that will be undertaken during the course of the regulatory control period.

We do not propose to debate the extent to which the Capital Asset Pricing Model (CAPM) effectively prices interest rate risk or fully explains stock returns. However, we are not of the view that the nature of the risk that we have highlighted here is contemplated by the CAPM. The risk that is created by the regulatory regime is unique – prices are set at the commencement of the regulatory period based on the prevailing cost of debt and remain unchanged for a five year period. This is a fundamental difference between a regulated and unregulated firm.

In saying this, we are of the view that it is reasonable to assume that some compensation for interest rate risk is provided via the equity beta, although we consider that it would be impossible to precisely determine what the assumed level of compensation might be.

In relation to the interest rate risk on existing borrowings, this risk is eliminated if the business is able to refinance all of its existing borrowings over the same averaging period that is used to reset the risk-free rate and debt margin, and then is able to implement the same strategy again at the end of the regulatory control period. As was evidenced in submissions made to the AER as part of the development of the SoRI, it is not considered reasonable to assume that the 'efficient benchmark firm' will be able to implement such a strategy (and even less so in the current environment). Hence, it is not appropriate to assume that the interest rate risk on existing borrowings is eliminated by the periodic reset of the cost of debt. It is therefore also not appropriate to assume that the only risk 'left over' to be compensated via WACC is the interest rate risk on future borrowings. At least some (if not all) of that compensation must be for the risk on the existing debt portfolio.

The issue here is not the interest rate risk on existing borrowings but future borrowings. As outlined in section 2, the borrowing requirements facing ENERGEX and Ergon Energy during this regulatory control period are substantial, exposing the businesses to material interest rate risk. While it may be considered appropriate for a benchmark efficient NSP to remain exposed to risks if the borrowings were only incremental in nature, we do not consider that this is appropriate where the expenditures represent such a significant proportion of its existing asset base.

An important issue that also needs to be examined is the interest rate risk that is borne by the comparator firms that have been used to determine the equity beta. As outlined above, QTC has examined the hedging disclosures made by the comparator firms that were referenced by the AER in setting its recommended equity beta and it is evident

that these firms are active hedgers of interest rate risk. Hence, the equity beta that has been set by the AER does not reflect the risk profile of an efficient benchmark firm that does not hedge its interest rate risk – instead, it reflects the risk profile of a business that does engage in some hedging.

The other relevant consideration here is whether these businesses had similar growth options to ENERGEX and Ergon Energy at the time their betas were estimated. We have shown that the materiality of the exposures faced by ENERGEX and Ergon Energy provides strong support for hedging, particularly if they have limited (if any) discretion in relation to their projected investments and want to (reasonably) reduce the risk of financial distress. If all (or at least most) of the comparator companies used to establish the equity beta did not have expenditures of a similar order of magnitude, the interest risk faced by these businesses in relation to future borrowings is not as significant as the risks currently faced by ENERGEX and Ergon Energy. We consider this unlikely. Therefore, we cannot assume that the equity beta already reflects this risk, and we can therefore not assume that ENERGEX and Ergon Energy are already fully compensated for it.

In conclusion, we do not consider it appropriate to assume that the equity beta already compensates ENERGEX and Ergon Energy for the interest rate risks faced in the next regulatory control period. Apart from the fact that the CAPM does not contemplate the nature of the interest rate risk posed by the regulatory framework, it is evident that the comparators referenced by the AER in setting the beta, which are assumed to approximate the "efficient benchmark firm":

- engage in some hedging of their interest rate risk; and
- did not have interest rate exposures on new borrowings of the same order of magnitude as ENERGEX and Ergon Energy face in the next regulatory control period (that is, at least most of these firms did not have capital expenditure programs of this magnitude).

3.4.2 Term structure

The AER has also suggested that compensation is already provided in the term structure of interest rates. This is because the risk-free rate and debt margins are set based on a ten-year term, yet it concluded that the average term to maturity of the businesses it referenced in its final SoRI was 7.37 years.

The Joint Industry Associations (JIA) has already submitted evidence to the AER to show that the average term to maturity for the relevant businesses exceeds ten years.

While we do not accept the average term assumption of 7.37 years adopted by the AER, we do not intend to revisit that issue here.

Even if a term of 7.37 years is assumed, the current term premium implied relative to the ten year bond rate (for Commonwealth Government bonds) has currently been estimated by QTC to be in the order of 0.08% per annum. This is inconsequential relative to the magnitude of the exposures faced by Ergon Energy and ENERGEX. In any case, to the extent that this is assumed to provide some compensation, it is reasonable to interpret from the AER's decision is that this relates to managing the interest rate and refinancing risks on existing exposures (to align with the regulatory cycle):

> On average a 10-year term assumption is expected to over-compensate the benchmark efficient energy network business on the cost of debt. The major source of over-compensation is the term premium on the base interest rate component of the cost of debt, which via hedging instruments is converted to a term matching the length of the regulatory period.[30]

While we dispute the AER's assumption of 'over-compensation', the hedging that is proposed here is not to align the interest cost to a term matching the length of the regulatory period, but to hedge the risk on future borrowings to be undertaken during that period.

Further, we cannot assume that a term premium is reflected in the debt margin. The AER continues to prefer to use Bloomberg data to estimate the yield on ten year BBB rated bonds. However, since the sub-prime crisis, liquidity has virtually dried up in the long-term BBB corporate bond market. As a consequence, the longest yield to maturity quoted by Bloomberg is eight years. The AER then adds the difference between the yield on A-rated eight and ten year corporate bonds in order to estimate a ten year BBB rate.

[30] Australian Energy Regulator (2009), op.cit., p.xiii.

Table 4 details the bonds included in Bloomberg's calculation of the eight year BBB yield on June 10 2009. It can be seen that there were only a small number of issues (seven) included and importantly, the longest dated bond was a four year bond, which is four years short of the period for which the yield is being estimated – eight years.

Table 4 Bonds included in the 8 year BBB yield calculation

Ticker	Coupon	Maturity	Price	Fair Value	Yield
FBG	6.25	3/17/2010	100.83	100.55	5.12
BQDAU	6.00	12/02/2010	99.86	99.76	6.10
DXSAU	6.75	2/08/2011	100.08	100.6	6.69
ORGAU	6.50	10/06/2011	99.38	99.03	6.79
TABAU	6.50	10/13/2011	98.59	98.99	7.16
WESAU	6.00	7/25/2012	96.48	95.69	7.28
SNOWY	6.50	2/25/2013	94.44	95.62	8.27

Source: Bloomberg

Apart from the issues associated with a small sample size, given the term structure of interest rates is normally upward sloping the use of shorter term instruments to estimate eight year BBB yields risks materially understating them.

Hence, while we recognise the difficulties associated with estimating ten year BBB bond yields at the current time, the methodology currently employed by the AER is most likely to be under-estimating them. We are certainly not of the view that sufficient compensation is provided in the implied difference between a yield based on a term to maturity of 7.37 years and ten years (if it was accepted that a 7.37 year term was appropriate).

3.5 Benefits relative to costs

As outlined above, we concur that in order for hedging to be value-adding, the benefits need to outweigh the costs. The benefits are the avoided costs if there is an adverse movement in interest rates. This in turn will be a direct function of the nature and extent of the exposures faced by the business.

As outlined in section 2.3, the magnitude of the exposures faced by ENERGEX and Ergon Energy in the next regulatory control period are significant. Further, these costs only reflect the additional interest costs that will need to be met by the business – they do not capture the additional costs that could arise due to financial distress, including the negative impact that the loss of commercial and financial flexibility could have on firm value (which is difficult to quantify). The estimates of the potential benefits of hedging should therefore be considered a 'lower bound' estimate.

The costs of hedging will vary with market conditions. In its accompanying report, QTC provides indicative costs based on the current margins between the spot and forward curve (the forward points). The indicative costs of **fully** hedging 100% of the

exposures are $43 million and $34 million (in present value terms) for Ergon Energy and ENERGEX respectively.

Given we are proposing that it only appropriate to assume that a proportion of the exposures might be hedged by the efficient benchmark NSP, the indicative costs of the actual hedging strategy, if implemented now, will be less than this. However, even if 100% of the exposures are hedged, the hedging costs still well exceed the potential costs that could be incurred by the business if the exposures remain unhedged and interest rates move adversely during the course of the regulatory period (recognising that those costs do not include the costs of financial distress).

As interest rates are inherently volatile, particularly in the current uncertain environment, the actual benchmark hedging costs cannot be predicted with certainty. The proposed means for dealing with this uncertainty as part of the regulatory proposal is addressed in section **Error! Reference source not found.**.

3.6 Is it appropriate for customers to bear this cost

One of the issues raised by NERA in its 2007 report to the AER was that the costs of hedging should not necessarily be paid for by customers, particularly given hedging primarily benefits the firm's owners.[31] Again, this argument assumes that the owners are already compensated for this risk via the equity beta. NERA is also making the assumption that 100% of the risk is being hedged, which would potentially guarantee the business's net cash flows.

We have already addressed the assumption regarding what is compensated by the equity beta in section 3.4. Further, we concur that it is not necessarily prudent or appropriate to hedge 100% of the interest rate risk on the future borrowings.

Reducing the probability of financial distress will not only benefit shareholders via firm value, but will also benefit customers. Given the magnitude of the exposures faced by ENERGEX and Ergon Energy, it is not appropriate to assume that any material and adverse movements in interest rates can be borne by the businesses. The costs of financial distress will ultimately be borne by customers and shareholders.

Assuming that it is not appropriate to assume that this risk is already compensated via the WACC – which we have established above – in our view, the situation here is no different from the situation faced in relation to cost pass through events.

[31] NERA (2007), op.cit.

Under the NER, a NSP can seek to obtain a pass through where certain exogenous events occur that will materially increase the costs of providing the relevant services. These events are assumed to be beyond the control of the firm, and primarily include changes in taxes, service standards, terrorism or insurance. According to the Position Paper developed by the AER in relation to pass through events for transmission, any reopening of the revenue cap is conditional on demonstration by the transmission NSP that it is materially adversely affected by the event.[32] The materiality threshold has been set at 1% of average maximum allowable revenue (MAR) for that year.

While we are not proposing that interest rate risk on future borrowings should be treated as a pass through event, there are some parallels that can be drawn here. Interest rate risk is beyond the control of the firm. However, it can mitigate the potential impact of this risk on the firm by hedging. Currently, however, there is no incentive for the business to do this as the costs are not compensated.

Provided the risk has not been compensated elsewhere, if it is considered appropriate to pass through the costs of material exogenous changes to customers, we question why it is not appropriate for the business to be compensated for reasonable and prudent costs of implementing a strategy that could actually reduce the impact of an material and adverse change in the interest costs on future borrowings (similar to insuring against other risks that cannot be controlled). Consistent with the treatment of other financing costs, that strategy, and the associated costs, should be based on an assumed notional strategy that would be undertaken by an efficient benchmark NSP.

We are not proposing that these benchmark costs are routinely reimbursed as a matter of course. Each business must still be able to demonstrate that the exposures are material (and cannot assume to be compensated via WACC).

3.7 Other regulatory precedent

UK regulators in water, rail and electricity have considered the potential impact of adverse changes in interest rates during the course of the regulatory control period on the regulated business. In August 2009, OFGEM released an issues paper in relation to its review of allowed revenues and financial issues for electricity distribution.[33] As part of this review, it commissioned a report from PriceWaterhouseCoopers (PWC) on the management of the cost of debt fluctuations. This has been considered particularly

[32] Australian Energy Regulator (2005), Statement of Principles for the Regulation of Electricity Transmission Revenues, Position Paper: Pass-throughs and Revenue Cap Re-openers, December.

[33] OFGEM (2009), Electricity Distribution Price Control Review, Initial Proposals – Allowed Revenues and Financial Issues, August.

important given the uncertainty and volatility in the markets following the sub-prime crisis.

OFGEM had previously indicated that if market conditions meant that the regulated businesses found their financeability was jeopardised, they could request a reopening of the revenue cap based on the existing 'disapplication' mechanism. OFGEM stated:

> The cause of financial distress is largely due to factors beyond the company's control. These might include…a material change in financial market conditions relative to those prevailing at the time a price control was set such that an efficient company with an investment grade credit rating would no longer be able to finance its activities. It would be for the applicant company to set out the evidence and to persuade us that the costs of financial distress were beyond its control.[34]

The PWC report addressed strategies that involved potential changes to the regulatory framework, including:

1. continuing with the existing approach;
2. raising the allowed cost of debt relative to the long-term average to reflect the recent market conditions;
3. introduce a cost of debt trigger mechanism (that is, an adjustment if rates moved beyond a certain band);
4. introduce a 'substantial effect' clause;
5. introduce a time based reopener (that is, periodic reviews within the regulatory period).

All of these options (with the exception of the first) contemplate some form of adjustment to allowable revenue to reflect changes in the cost of debt. The issue of hedging and compensation for hedging costs was not considered.

OFGEM's starting position in its issues paper is to retain the status quo:

> This is because we consider that long-term debt is available at rates that, if inflation returns to the levels typically seen over the last ten years, are consistent with recent price control decisions.[35]

---

[34] OFGEM (2008), Arrangements for Responding in the Event that a Network Company Experiences Deteriorating Financial Health, December.

[35] OFGEM (2009), op.cit.

This does not necessarily address the risk that future increases in interest rates (relative to the current market levels they are citing) could adversely impact the regulated business's ability to financing new borrowings. Alternatively, it could reflect an assumption that the businesses could hedge this risk at these rates. However, OFGEM remains open to feedback on the other options as part of its consultation process.

3.8 Summary: why hedging is efficient

To summarise, we consider that it is appropriate to assume that an efficient benchmark NSP, which has interest rate exposure of the order of magnitude faced by Ergon Energy and ENERGEX in the next regulatory control period, may hedge some of the interest rate risk on its future borrowings. We consider that it is appropriate that the businesses be provided with compensation for these costs as part of their operating expenditure allowance. These costs are based on a benchmark allowance, which requires establishing an efficient benchmark hedging strategy and then estimating the benchmark costs of that strategy based on current market rates.

The benchmark hedging strategy would based on reducing the probability of financial distress, which is the level of risk at which a credit rating downgrade from the assumed notional benchmark credit rating of BBB+ is likely to be triggered. These costs are prudently and efficiently incurred as part of the providing the relevant services.

We consider this to be appropriate for Ergon Energy and ENERGEX in the next regulatory period for the following reasons:

1. the exposures are material, to the extent that:

    a) not hedging could expose the businesses to the risk of financial distress. These costs cannot be avoided by not undertaking the expenditure given much of this is non-discretionary; and

    b) they are of a magnitude that will ensure that over a range of plausible interest rate scenarios, the benefits of hedging (via avoiding the costs of a material increase in actual future borrowing costs relative to the regulated cost of debt) exceed the costs (based on current indicative rates);

2. the assumption that hedging has no impact on firm value assumes perfect capital markets. It is in the presence of market imperfections, such as the costs of financial distress, that hedging may have a positive impact on firm value;

3. hedging is a common practice employed by businesses similar to Ergon Energy and ENERGEX. This is supported by empirical evidence as well as data from the AER's beta sample;

4. this risk is not compensated via the beta, because:

    a) the betas of the comparator sample relied upon by the AER in the main, reflect an interest rate risk profile that includes some hedging. Further, those businesses did not necessarily face a growth profile of this order of magnitude at the time the betas were estimated;

    b) the materiality of the exposures faced by Ergon Energy and ENERGEX in the next regulatory control period are likely to well exceed any reasonable level of compensation that we might assume beta provides;

5. given the magnitude of the exposures and current market rates, we can also not assume that there is sufficient compensation provided in the term structure of interest rates, even though we do not consider it appropriate to assume that these businesses fund themselves for an average term to maturity of only 7.37 years;

6. to the extent that the risk is not otherwise compensated, we consider that it is appropriate for the businesses to be compensated for the reasonable benchmark costs of reducing their likely exposure to interest rate risk, which, if not hedged, could have a far more material and adverse impact on the businesses in the long-run. While the businesses cannot control interest rate risk, they can employ reasonable strategies to mitigate the impact. This is considered to be in the best interests of consumers and stakeholders.

We consider that such compensation is consistent with the revenue and pricing principles contained in the NEL, because these are efficient costs that are incurred in provision of the relevant services. This in turn is consistent with the promotion of economic efficiency, in particular, assisting in providing a regulatory environment that encourages prudent risk management, which in turn contributes towards ensuring that efficient investment is undertaken in the distribution networks.

4 Determining the benchmark hedging costs

4.1 Approval of framework

Given that any hedging strategy, and the cost of hedging, is driven by prevailing market conditions – and these conditions remain volatile and uncertain - we are not proposing to forecast a hedging cost allowance at this point. The key issue with setting the costs now, is that it could under- or over-estimate the costs depending on how interest rates move between now and the end of the regulatory period.

In a similar way, we would not seek to set the regulated cost of debt on existing borrowings now. In order to satisfy the requirements of the NER (which is that rates reflect current market conditions), this is not done until a nominated point in time that is close to the expiration of the current regulatory control period. Further, this cost sets a benchmark allowance for the businesses. How the businesses then fund themselves in practice remains completely at their discretion. This similarly applies in relation to hedging.

We therefore submit that the most appropriate strategy is to consider how the methodology that would be applied in estimating the benchmark hedging costs would be established. Further work may need to be done in consultation with the AER and stakeholders to set out that framework. The key matters that this framework could address include:

1. how future exposures will be measured (given this must be done with reference to hypothetical interest rate scenarios);
2. the key credit metrics and the threshold levels that could trigger a credit rating downgrade;
3. the evidence that the businesses would need to submit to show that the benefits of hedging exceed the costs, within the context of the Post Tax Revenue Model (which we would propose is based on the modelling that has been done by SFG); and
4. any other requirements that would need to be satisfied in implementing the hedging strategy over the averaging period, such as how changes in forward points might influence the hedging strategy; and
5. how the actual costs of that assumed benchmark strategy would be estimated over the averaging period.

4.2 Hedging Profile

As noted above, there is no 'optimal' level of hedging that we can reference for an efficient benchmark firm. This is because it depends on the circumstances of the industry, the firm, and current market conditions.

Overall, our stated objective is that if any hedging is undertaken it would be based on the level of hedging that would reduce the probability of financial distress, as reflected in a downgrade in the notional benchmark credit rating. As we have outlined in this report, the proposal is to determine an efficient benchmark hedging strategy based on the level of hedging that would be reasonably expected to preserve a BBB+ credit rating, based on a reasonable range of future interest rate scenarios. This in turn would be linked to the key credit metrics, such as FFO/Total Debt and FFO/Interest Expense, which are addressed in more detail in the accompany report by SFG.

It is important to note that there is not necessarily a single 'optimal' hedging profile that would achieve this (nor do we consider it appropriate for the AER to be prescriptive in this regard). There could be a range of alternative hedging profiles that could achieve this. For example, one profile might involve hedging more of the closer exposures and less (or none) of the more distant ones. Alternatively, the business might seek to hedge the same proportion each year. It may also be appropriate to estimate the benchmark hedging cost based on the average costs of a number of alternative hedging profiles.

The primary objective of establishing an efficient benchmark hedging strategy is to estimate an appropriate benchmark allowance. Once this has been determined, the businesses should then be free to implement their desired benchmark hedging strategy based on their own circumstances and commercial requirements. It is not appropriate for the regulator to prescribe what the businesses actually do in practice. At the same time, if compensation is to be provided for implementing a strategy that could reduce risk (and improve efficiency), it is reasonable to expect that the businesses would take active steps to achieve the best outcomes for their customers and shareholders.

5 Conclusion

This report, in conjunction with the accompanying reports prepared by SFG and QTC, has considered the issues and costs associated with hedging interest rate risk on future borrowings. We have recommended that a framework is developed for approval of an efficient benchmark cost allowance as part of the operating expenditure allowance (along with debt and equity raising costs). The costs would be set with reference to an efficient benchmark hedging strategy, based on the prevailing market conditions over the same averaging period that is used to set the risk-free rate and debt margin.

The benchmark allowance would be sought on a case by case basis depending on the materiality of the exposures faced by the business. This could also mean that an allowance approved in one regulatory control period (when the business is undertaking significant capital expenditure) is not approved in the next (when growth is more incremental in nature).

Overall, we are of the view that compensation of a reasonable proportion (but not necessarily 100%) of future material exposures is consistent with the principles set out in the governing legislation, and will promote economic efficiency. It will also ensure that regulation complements, rather than drives, commercial financing practices, and also provides the businesses with an opportunity to reduce their exposure to a risk that they cannot directly control. Apart from avoiding the costs of financial distress or underinvestment, this frees the business to pursue other initiatives in areas that they can influence, in order to improve the overall efficiency of the services delivered.

A Summary of literature

S. Bartram, G. Brown & F. Fehle (2009), "International Evidence on Financial Derivatives Usage", Financial Management, Spring, pp.105-206.

- This primarily examines what motivates financial derivative usage. They examined foreign exchange (fx), commodity price and interest rate derivatives.
- Their review covered 7,319 companies, which is about 80% of the global market capitalisation of non-financial firms. They reviewed annual report data.
- Overall, their analysis showed that 60.3% of these firms used some type of derivative. 33.1% used interest rate derivatives.
    - In Australia, 66.6% used some type of derivative, and 42.3% used interest rate derivatives.
- Derivatives use was highest in the utilities and chemicals sectors.
- In terms of motivations, some of the results were consistent with theoretical predictions, but others weren't.
    - However, they did conclude that the use of derivatives allows firms to undertake other value-enhancing financial policies that might involve risk.
    - The use of derivatives can also reduce the need to carry additional cash, or can reduce or replace the need for operational hedging.
    - Firms with more leverage were also more likely to use derivatives.

Berkman & M. Bradbury (1996), "Empirical Evidence on the Corporate Use of Derivatives", Financial Management, Vol.25, No.2, Summer, pp.5-13.

- They examined the financial statements of 116 firms in New Zealand – one of the reasons they focussed on this jurisdiction was because the fair value and notional value of off- and on-balance sheet financial instruments must be disclosed.
- They assume derivatives are used after operating and financing decisions have been made.
- They hypothesised that there is a positive relationship between hedging and growth options.

  - This is based on the theory that hedging reduces underinvestment.
  - An alternative way of looking at this is that it is not the growth options per se that determine hedging, but the risk of not being able to convert those options into assets in place.

- The measures hedging activity based on fair and contract values of derivatives, scaled by the market value of the firm.
- They found that derivatives use increases with: leverage, size, tax losses, proportion of shares held by directors and dividend payout ratios.
- Derivatives use was found to decrease with: interest cover and liquidity.
- The found a positive relationship between the use of derivatives and growth options, but only when fair value is used as the measure of hedging activity.

H. Berkman, M. Bradbury, P. Hancock & C. Innes (2002), "Derivative Instrument Use in Australia", Accounting and Finance, Vol.42, pp.97-109.

- According to the theory, firm value would be independent of hedging strategy, if market imperfections did not exist.
- This study examines 158 firms, 158 industrials and 56 mining companies. They examined the use of fx, commodity and interest rate derivatives.
- They found that:
  - 52.8% of the industrials and 61.5% of mining firms were derivative users (holding at least one type).
  - 27.4% of the industrials and 15.4% of the mining firms use interest rate derivatives.
  - The industrials that used derivatives were more likely to have tax losses, are larger and less liquid.
  - For the mining companies, firm size and leverage were positive and significant.

Bodnar & G. Gebhardt (1999), "Derivatives Usage in Risk Management by US and German Non-Financial Firms: A Comparative Survey", Journal of International Financial Management and Accounting, Vol.10, No.3.

- Examined fx, interest rate and commodity price derivatives by non-financial firms in the US and Germany. To enable comparisons between the two jurisdictions, they matched the sample of firms in each country based on size and industry composition. The study was survey-based.
- 77.8% of the German companies use derivatives; 56.9% of the US.
  - 88.8% of the German users used interest rate derivatives; 75.9% of the US.
  - Usage increased with firm size.
- Of the users of interest rate derivatives, 45.6% of US respondents sometimes use derivatives to lock in a rate for future financing (another 1.1% do this frequently). This was also the case for 65.5% of German users (another 20.2% do this frequently).
- Most users indicated that they would sometimes alter the timing and size of their interest rate hedges based on future views on interest rates.
- When non-users were asked why they did not use derivatives, the most common response was that their exposures were not big enough (47.1% of US non-users, 61.1% of German non-users). The next main reason was because the exposure could be managed by other means. Public perception of derivatives use was another key concern.
- For those who user derivatives, most of the German firms indicated that they do so to manage accounting earnings. For the US firms, minimising variability in cashflows was most important.

M. De Ceuster, D.Durinck, E.Laveren & J. Lodewycky (2000), "A Survey into the Use of Derivatives by Large Non-Financial Firms Operating in Belgium", European Financial Management, Vol.6, No.3, pp.301-318.

- This survey of Belgian non-financial firms revealed that 65.8% use derivatives.
- The most important reason why they were used was to manage earnings volatility.
  - 68.2% used interest rate derivatives to lock in funding rates.

- Of those firms who do not use derivatives, the main reason was that they were able to hedge risk by other means. Policy restrictions imposed by treasurers or directors was also important. Other reasons included: the perceived risk of derivative products, insignificance of exposures.

S. Dhanani, C. Fifield, L. Helliar & L. Stevenson (2007), "Why UK Companies Hedge Interest Rate Risk", Studies in Economics and Finance, Vol.24, No.1, pp. 72-90.

- This study focuses on interest rate risk only. Interest rate risk is seen as an issue because:
  - increased volatility of interest rates;
  - increased use of corporate debt;
  - interest rate-based covenants are often present in lending agreements;
  - emphasis on financial risk in corporate governance codes.
- The two problems with Miller and Modigliani's conclusion that corporate financial policy doesn't matter are:
  - the time horizons of individuals are often shorter than what their model assumes;
  - market imperfections.

  Based on their assumptions, financial distress is costless.
- This study examined derivative use by 116 listed UK companies (based on the number of respondents).
- The key reasons for hedging were:
  - managing reported profits (most important);
  - reducing the risk of financial distress;
  - managing possible future acquisitions.
- They found that larger companies are more likely to use derivatives.
- Some firms will also look at global economic indicators in making decisions and seek to mitigate the impact of adverse movements.

- They also found some evidence to support the taxes and managerial incentives arguments.

J. Graham & D.Rogers (1999), "Is Corporate Hedging Consistent with Value Maximisation? An Empirical Analysis", June 25, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=170348.

- This study examines net notional derivatives (fx and interest rate) holdings by a broad cross-section of US firms.
- The objective of the study was to determine which market imperfections drive hedging.
- They found:
  - no relation between derivative holdings and tax function convexity;
  - hedging increases debt capacity (and hence potentially firm value);
  - most firms use derivatives in a manner that is consistent with value maximisation;
  - larger firms engage in more hedging.

K. Grant & A. Marshall (1997), "Large UK Companies and Derivatives", European Financial Management, Vol.3, No.2.

- Derivatives use in large companies is now well established.
- The most common reason for use was to reduce cashflow volatility.
- A survey of the top 250 UK companies by Record Treasury Management revealed that close to 100% of respondents used derivatives to hedge interest rate risk.

D. Haushalter (2001), "Why Hedge? Some Evidence from Oil and Gas Producers", Journal of Applied Corporate Finance, Winter, Vol.13.4, pp.87-92.

- Surveys 177 US oil and gas producers.
- This study finds that there is considerable variability in firms' risk management policies. This suggests that there may be differences in firm and manager characteristics that influence hedging.
- Hedging policies are highly correlated with financing policies, for example, those who used more derivatives hedged a greater proportion of their production (in

order to reduce the risk of distress and/or ensure sufficient future cashflows to fund investment).

- They find that larger companies are more likely to hedge.
- They did not find any clear relation between hedging policy and the shareholdings or compensation of managers.

A. Judge (2006), "Why and How UK Firms Hedge", European Financial Management, Vol.12, No.3, pp.407-441.

- The key motivations for hedging include:
  - reducing the transaction costs of financial distress;
  - reducing underinvestment costs;
  - reducing the level of exposure to financial price risk.
- Examined a sample of large non-financial firms listed on the FT500, using annual reports and direct surveying of corporate treasurers. Found that:
  - 77.9% of the firms reviewed using annual report data hedge financial price exposures;
  - 86.5% of survey respondents hedge financial price exposures;
  - note that 'hedging' includes derivatives and other methods.
- Judge concluded that:
  - this study confirms that reducing financial distress costs is a particularly relevant motivation when hedging;
  - larger firms, firms with less cash, and firms with a greater probability of financial distress are more likely to hedge using derivatives;
  - there is evidence that hedging may enhance firm value, although this is an area for further future work;
  - this study revealed that more UK firms hedge compared to US firms (based on some of the US studies). This could be due to jurisdictional differences, or the wider definition of 'hedging' applied here.

C. Mallin, K.Ow-Yong, M.Reynolds (2001), "Derivatives Usage in UK Non-Financial Listed Companies", The European Journal of Finance, Vol.7, pp.63-91.

- Surveys 231 UK non-financial firms.
- This revealed that hedging is a well-established practice amongst the larger companies. 60% of firms use at least one derivative instrument.
- A number hedged expected transactions:
  - 46.2% hedged future transactions of 12 months or les more than 50% of the time; 22% hedged these less than 50% of the time;
  - a smaller number hedged transactions of greater than 12 months;
- The main reason cited for hedging was to manage variations in accounting earnings.
- Of those who don't use derivatives, 72% cited a lack of significant exposure to financial risk as one of their top three reasons. 51.6% said this was their main reason.

S. Mian (1996), "Evidence on Corporate Hedging Policy", The Journal of Financial and Quantitative Analysis, Vol.31, September, ppp.419-439.

- Mian examined the annual reports of 3.022 firms.
- Found mixed evidence of models of hedging that emphasise the role of contracting costs and capital market imperfections. Also found mixed evidence on the tax savings motivation.
- Found that larger firms more likely to hedge. Hedgers of interest rate risk have more debt and longer debt maturities.
- There was also a positive correlation between dividend yield and payout, and a negative correlation with liquidity.
- Mian did not find that hedging was correlated with higher market to book ratios (which was used to proxy growth opportunities).

D. Nance, C. Smith & C. Smithson (1993), "On the Determinants of Corporate Hedging", The Journal of Finanace, Vol.48 (1), March, pp.267-284.

- They surveyed 169 US firms – 104 used hedging instruments.
- Their study found:

- consistency with the proposition that firms with more convex tax schedules hedge more;
- firms that hedge have significantly higher research and development expenditures;
- firms that hedge have more growth options;
- firms that hedge have less liquid assets and higher dividend payouts.

E.Sheedy (2002), "Corporate Use of Derivatives in Hong Kong & Singapore: A Survey" Macquarie University.

- Surveyed 131 non-financial firms in Hong Kong and Singapore.
- Overall, Sheedy found that more firms here use derivatives than in the US, and with more intensity. They are also more likely to implement strategies based on market views.
- Also found a higher rate of usage amongst small to medium sized firms (relative to the US), although usage still increased with size.
- The primary motivation is to reduce market risk. The management of interest rate exposures is more likely to be view based.
- Of those who don't hedge, it is mainly due to limited exposures or the use of operational strategies.
- The use of derivatives is concentrated in fx risk, although 55% use interest rate derivatives. It was suggested that this lower use may reflect a lower preference for debt finance in these jurisdictions.

C. Smithson & B. Simkins (2005), "Does Risk Management Add Value? A Survey of the Evidence", Journal of Applied Corporate Finance, Vol.17, No.3, Summer.

- This study reviewed the relevant research on this topic.
- Overall, while not all of the research is equally supportive of derivative use by corporates, "the bulk of the evidence reinforces the idea that corporate risk management is a value-adding activity."
- They addressed four questions:
    1. Is financial risk reduction reflected in stock price movements?

- Most studies examined this based on the market model, and then added factors, for example, to proxy for interest rate exposure.
- The evidence was mixed for industrials, however larger multinationals are more likely to have natural hedges.

2. Is the use of risk management tools (derivatives) associated with reduced risk?
   - 8 of the 9 studies examined showed this was the case for industrials.
3. Is cashflow volatility related to firm value?
   - Only 3 studies reviewed addressed this, and found a relationship between volatility and lower investment.
4. Is there are relationship between derivatives and firm value?
   - For interest rates and fx, found a positive relationship between risk management and firm value. This holds for financial and non-financial firms (using Tobin's Q to approximate firm value).
   - They acknowledged that the evidence on this is limited so far, with the evidence to date being more supportive of this for fx and interest rate exposures.

B Curricula vitae

Synergies ECONOMIC CONSULTING

Staff Curriculum Vitae

Name of Staff: JO BLADES

Position: Director

In Brief:

Jo joined Synergies in early 2005 from Queensland Treasury Corporation, where she worked in a number of different capacities including structured finance, customer account management, financial risk management advice and the development and delivery of customer training courses in corporate finance and financial risk management. She has also lectured and tutored at undergraduate level in finance and foundation economics at the Queensland University of Technology.

Skills and Capabilities:

- Corporate finance
- Economic regulation
- Financial analysis and risk management
- Strategic and commercial analysis
- Microeconomic analysis
- Public finance

Recent Related Projects:

- assisted Ergon Energy and ENERGEX in developing their cost of capital proposals to the AER as part of the current review;
- prepared a cost of capital submission for the Gladstone Area Water Board as part of their forthcoming review by the QCA;
- prepared a cost of capital submission to the QCA for Queensland Rail as part of the second review of their access undertaking;
- prepared a submission to the QCA reviewing the cost of equity that should apply to QR as part of the third review of its access undertaking;
- preparation of a cost of capital submission for GasNet as part of its regulatory review by the AER;
- undertook a review of the cost of capital to apply to Perth Airport
- undertook a review of the cost of capital to apply to Darwin Airport;
- undertook an assessment of an appropriate beta for a regulated airport facility in New Zealand (as part of a cost of capital review);
- prepared two cost of capital submissions for ARTC as part of regulatory reviews, one for the Hunter Valley coal network and the other for its interstate rail network;
- reviewed the cost of capital to apply to The Pilbara Infrastructure as part of its review by the ERA;
- undertook a cost of capital review for Cooperative Bulk Handling Limited;
- provided advice to a number of clients in relation to the implications of the form of regulation for the cost of capital;
- undertook an extensive review of SEQ Water Corporation's cost of capital, for both regulatory and commercial purposes.

Staff Curriculum Vitae

Name of Staff: MARK CHRISTENSEN

Position: Associate

In Brief:

Mark is an Associate at Synergies, and more recently was a senior lecturer in finance at QUT, where he spent several years in the Accounting and Economics & Finance faculties. He is also co-author of Australia's leading corporate finance text and developed the methodology used by the AGSM for the estimation of betas. He has extensive experience in advising regulated entities on the cost of capital.

Qualifications:

Bachleor of Business
Master of Financial Management
Fellow – Securities Institute of Australia
CPA

Appointments:

Member of the Queensland Competition Authority Board

Relevant Experience:

- Calculated an appropriate discount rate for SEQWater to use for analysing both bulk water storage and wastewater using a WACC methodology. Provided comments to Sunwater regarding the value of the asset beta, the value of gamma and the appropriate formula to use when undertaking asset impairment decisions.
- Provided an analysis to GAWB of what constitutes systematic risk and non systematic risk.
- Development of a financial model to access the impairment of water assets applying AASB136.
- Reviewed the cost of capital to apply to WestNet Rail as part of its review by the ERA.
- Reviewed the cost of capital to apply to The Pilbara Infrastructure as part of its review by the ERA.
-
- Provision of advice regarding the appropriate discount rate to use to value impaired water assets.
- Provided Brisbane Water a valuation of waste water plant to calculate lease payments to the end user of waste water. The model required calculation of the WACC, the effect of risk sharing and the calculation of the lease payment itself.
- Reviewed a number of submissions received by the QCA and have seen many suggestions regarding the calculation of WACC and the effects of regulatory decisions.
- Provided a valuation to Brisbane Water of a stand alone replication of water assets to supply a major end user.
- Provision of advice to Royal Dutch Shell. The advice was designed to improve the scoping of new explorations so that the final investment decision was undertaken with greater certainly this having the opportunity to add greater value to the organisation. The two year contract focused of the final investment decision and included a number of assignments.

Consistency of regulatory assumptions in relation to debt hedging costs

Report prepared for ENERGEX and Ergon Energy

28 August 2009

PO Box 29, Stanley Street Plaza
South Bank QLD 4101
Telephone +61 7 3844 0684
Email s.gray@sfgconsulting.com.au
Internet www.sfgconsulting.com.au

STRATEGIC FINANCE GROUP
SFG CONSULTING

Level 1, South Bank House
Stanley Street Plaza
South Bank QLD 4101
AUSTRALIA

Contents

1. Executive Summary

Context

1. The cost of debt is one of the key components in determining a regulated entity's allowable return on capital. At present, the approach of Australian regulators is to set the benchmark cost of debt equal to an estimate of the risk-free rate plus a debt margin. The risk-free rate is usually estimated as the yield-to-maturity on 10-year Commonwealth Government bonds, taken as an average over the 10 to 40 trading days prior to the determination date. Similarly, the debt margin is commonly calculated as the difference between the yield-to-maturity on 10-year BBB+ corporate bonds and the yield-to-maturity on 10-year Commonwealth Government bonds, taken as an average over the same 10 to 40 trading day period prior to the determination date. Both of these estimates are then held constant for the entire regulatory period, which is commonly five years. Effectively, prices are then set to enable the regulated entity to recover this assumed cost of debt financing. This is the approach that has been adopted by the Australian Energy Regulator (AER) in its recent review of weighted-average cost of capital (WACC) parameters.[1]

Current engagement

2. The Strategic Finance Group: SFG Consulting (SFG) has been engaged by ENERGEX Ltd and Ergon Energy Corporation Ltd to assist in examining the issue of consistency among assumptions in relation to the allowed cost of debt and debt hedging costs. In particular, the key issue is whether it is commercially realistic for the benchmark regulated entity to *simultaneously* maintain the assumptions that the firm can have:

   a. 60% gearing, which is approximately twice that of the average Australian listed firm;

   b. remain unhedged against potential future interest rate movements,[2] and

   c. maintain a strong investment grade credit rating of BBB+.

3. This is a particularly important consideration in the case where a regulated entity has large CAPEX requirements (relative to its regulatory asset base) over the regulatory period. In this case, the borrowing rate is effectively locked in (via the WACC) at the beginning of the regulatory period, whereas the actual borrowing will not (and cannot) occur until the expenditure is required. This is the circumstance currently facing both ENERGEX and Ergon.

4. If the maintenance of these three joint assumptions is considered to be commercially unrealistic, the inconsistency could be removed by either:

   a. reducing the assumed level of gearing;

   b. compensating regulated entities for the reasonable costs of hedging their interest rate exposure; or

   c. lowering the assumed credit rating.

[1] Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009.

[2] Due to the fact that regulated entities are currently not compensated for the cost of entering into hedging contracts, Australian regulators implicitly assume that regulated entities remain unhedged against interest rate movements.

Summary of key findings

5. As a result of our analysis, we conclude that there is a strong argument to suggest that the three joint assumptions as to gearing (60%), credit rating (BBB+) and hedging policy (no compensation for interest rate hedging costs) made in the AER's *Final Decision* is unlikely to hold in commercial practice, particularly in light of the current volatile credit market conditions.

6. The key contribution of this report is a scenario analysis that examines the impact that an increase in future interest rates might have on the key credit rating metrics of a number of firms. We show that a temporary shock to interest rates can have a substantial impact on a number of key financial ratios – substantial enough to affect the credit ratings of regulated firms.

7. We also examine the Post-Tax revenue Models (PTRM) for ENERGEX and Ergon in some detail. We show that for both firms an unhedged shock to interest rates during the regulatory period would have a substantial impact on financial ratios and ultimately the stand-alone credit rating. We compare the resulting financial ratios against indicative benchmarks and conclude that an unhedged interest rate shock could lead to a deterioration in financial ratios to the extent that they would no longer support an investment grade credit rating.

8. We also make the following observations and conclusions:

   a. In justifying the assumed BBB+ credit rating of the "benchmark" electricity distribution or transmission firm, the AER (and Australian regulators generally) rely on the actual credit ratings of a sample of regulated entities. We also note that the sample set selected for this purpose usually includes a high proportion of government-owned or government-backed firms, which have explicit or implicit support from government;

   b. Based on the indicative ratings methodology adopted by global ratings agency Standard & Poor's and information contained in the AER's final decision and other recent Australian regulatory determinations, a number of Australian regulated entities would be unlikely to sustain a BBB+ credit rating with 60% gearing and no hedging of interest rate risk unless their obligations were backed by the government or the firm's ultimate parent company;

   c. Due to the fact that the profits of regulated entities, as well as their solvency ratios, are highly sensitive to interest rate movements (arising because of the high level of debt these businesses are assumed to carry), a prudent regulated entity is extremely unlikely to remain completely unhedged over the regulatory period. We note that the vast majority of Australian firms subject to regulated revenue caps engage in substantial hedging arrangements to mitigate the consequences of adverse interest rate changes. Again, this is especially important where the CAPEX required during the regulatory period (which is not debt financed until required) is large relative to the regulatory asset base. This is precisely the present situation for both ENERGEX and Ergon;

   d. Compared with the regulated entity's other options for managing interest rate risk, the use of interest rate swaps, forward-start fixed rate loans, and other derivate contracts is both prudent and cost effective, especially when balanced against refinancing risk. We also note that regulated network firms do undertake substantial risk management activities.

9. We conclude that there are sound economic reasons for the benchmark firm to seek to hedge against downside risk arising from adverse changes in interest rates which is consistent with the reasonable costs of an efficient interest rate risk management program being included as an efficient cost in the regulatory process.

2. Regulatory principles and precedent

10. The values assumed by the regulator for the benchmark entity's credit rating and gearing levels are important in estimating the weighted average cost of capital (WACC). The assumed credit rating will impact on the debt margin which in turn affects the calculation of the cost of debt capital. As a general observation, the higher the assumed credit rating, the lower the calculated debt margin. This is due to the lower risk of default on higher rated corporate bonds, meaning a lower differential in risk between the corporate bond and risk-free government bonds. Similarly, in relation to gearing, the higher the company's assumed leverage, the more likely that the entity's WACC will be reduced (primarily due to the tax benefits of debt finance).

Australian regulatory precedent

11. At present, the vast majority of Australian regulators (including the AER) assume that regulated entities have 60% gearing,[3] remain unhedged against interest rate movements and also maintain a BBB+ credit rating. While not explicitly stated, Australian regulators implicitly assume that regulated entities do not engage in interest rate hedging because the regulated entities are not generally compensated for the cost of entering into hedging arrangements, either as an operating cost allowance or as part of the cost of debt capital.

12. The table below outlines the credit ratings and gearing levels assumed by various national and state regulators in their most recent regulatory determination.

Table 1. Regulatory decisions on gearing and credit rating

Regulator	Year	Sector	Gearing	Credit Rating
Australian Energy Regulator (AER)	2009	Electricity	60%	BBB+
Essential Services Commission (ESC)	2008	Gas	60%	BBB+
Office of the Tasmanian Energy Regulator (OTTER)	2007	Electricity	60%	BBB+
Essential Services Commission of South Australia (ESCOSA)	2006	Gas	60%	BBB+
Queensland Competition Authority (QCA)	2006	Gas	60%	BBB+
Independent Pricing and Regulatory Tribunal (IPART)	2005	Gas	60%	BBB/BBB+
Independent Competition and Regulatory Commission (ICRC)	2004	Gas	60%	BBB+/A

Source: AER, 2008. *Issues Paper – Review of the WACC parameters for electricity transmission and distribution,* Australian Energy Regulator, 2009, *Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision*, 1 May 2009.

13. We also note that in relation to the assumed credit rating, the National Electricity Code (NEC) deems that the initial method for calculating the debt margin (otherwise called the debt risk premium) for electricity transmission businesses was to take the difference between the yield to maturity on BBB+ corporate bonds and the yield-to-maturity on government bonds with the same maturity.[4]

Criteria for determining the benchmark credit rating

14. Most Australian regulators have converged towards adopting a BBB+ credit rating in determining the debt margin, primarily on the basis that this is consistent with past regulatory practice. For

[3] Australian regulators calculate gearing as total debt ÷ (total debt + total equity).
[4] NEC – Chapter 6, Clause 6A.6.2(e).

those regulators that explicitly attempt to estimate the benchmark credit rating, a set of comparable firms with actual credit ratings is usually chosen and the median value selected in order to derive the benchmark credit rating.[5] This is the approach that has been adopted by the AER in its recent WACC Review. By way of illustration, all Australian regulated electricity distribution and transmission entities with credit ratings from Standard & Poor's are listed in the following table. We have also included credit ratings from Fitch where available (which uses a similar ratings scale to S&P)

Table 2. Credit ratings of regulated Australian electricity businesses

Entity	Ownership	Credit Rating (S&P)	Credit Rating (Fitch)
Ergon Energy	Government	AA	N/A
Energy Australia	Government	AA	AA
Integral Energy	Government	AA	AA
Country Energy	Government	AA	AA
SP AusNet	Private/Government[1]	A–	BBB+
CitiPower Trust	Private	A–	N/A
ETSA Utilities	Private	A–	N/A
Powercor Australia	Private	A–	N/A
ElectraNet	Private	BBB+	N/A
United Energy	Private	BBB	N/A
	Median	**A–**	

[1] SP AusNet is 51% owned by Singapore Power Ltd (AA–) which itself has government support

15. In its recent WACC Review, the AER considered that the firms listed below are sufficiently close comparators to a benchmark efficient network service provider: Citipower Trust, Country Energy, Dampier Bunbury Natural Gas Pipeline Trust, Diversified Utility and Energy Trusts, ElectraNet Pty Ltd, Energy Australia, Energy Partnership (Gas) Pty Ltd (EPG), Envestra Ltd, Ergon Energy Corporation, ETSA Utilities, GasNet Australia (Operations) Pty Ltd, Integral Energy, Powercor Australia, Rowville Transmission Facility Pty Ltd, SPI PowerNet Pty Ltd, and United Energy.[6]

16. There are a number of difficulties that arise in using observed credit ratings of comparable entities to estimate an appropriate credit rating for the benchmark firm. As can be seen from the above table and list, a number of entities in the sample set are government-owned or government-backed entities. It is generally acknowledged that this introduces an upward bias in the median credit rating as those firms with government support will have higher credit ratings than they otherwise would if they were only a private-owned stand-alone entity.[7]

17. For example, Standard & Poor's have stated that "the stronger AA credit rating is predominantly given to a government-owned utility."[8] In relation to the four firms in Table 1 that have credit ratings of AA or above, ratings agencies Standard & Poor's and Fitch have explicitly stated that government support is the primary factor underpinning their respective credit ratings. For example, Fitch has stated that its AA credit rating of Integral Energy reflects "the strong and

[5] For example, see ACCC, 2005. *NSW and ACT Transmission Network Revenue Cap: Transgrid 2004/5 to 2008/9 Decision*, p. 141.
[6] Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009, pp. 361-362.
[7] AER, 2008. *Issues Paper – Review of the WACC parameters for electricity transmission and distribution*, p. 67.
[8] S&P, 2002. *Australian and New Zealand Electric and Gas Utilities Ripe for Rationalisation*, p. 1. This statement was acknowledged by the ACCC in its final 2005 Transgrid determination, p. 142.

continuing implicit support from the State of New South Wales."[9] More importantly, Fitch has stated that:

> Although Integral is not explicitly guaranteed by the NSW government, the links are so close that, under its Public Sector Entities (PSE) methodology, Fitch regards it as a dependent PSE. Therefore, Integral's rating is based on the rating of the state of NSW and the strength of the links between Integral and the government, rather than on its stand-alone credit profile.[10]

18. A further example is Ergon Energy (AA), with S&P stating that this credit rating "principally reflects the strong support of the company's owner, the State of Queensland."[11] S&P further noted that Ergon Energy's stand-alone business profile was only "satisfactory." These comments from ratings agencies indicate that, in assessing the credit-worthiness of government-backed firms, ratings agencies often focus on the financial strength of their government owner rather than the stand-alone characteristics of the regulated entity.

19. Moreover, the recent change in credit rating for Powerdirect Australia Pty Ltd as a result of its change from government to private ownership highlights the very strong influence of ownership on corporate credit ratings. In early 2007, the Queensland government (rated AAA) agreed to sell Powerdirect to AGL Energy (then rated BBB). Prior to the transaction, Powerdirect was assigned a AA+ rating by S&P. However, immediately after the transaction was completed, Powerdirect's credit rating was lowered a full *seven* notches from AA+ to BBB solely on the basis of its loss of implied government support. S&P stated that "the sale of Powerdirect Australia by the Queensland government will result in a withdrawal of the strong level of implied government support on which the [previous] rating was based." Again this provides strong evidence that government ownership results in a significant upward bias in observed credit ratings which is unlikely to be offset by other factors.

20. A further argument against relying on actual credit ratings in determining the benchmark credit rating is that credit ratings are not only positively influenced by government ownership but are also enhanced by having a stronger-rated parent entity. For example, S&P explicitly recognise that the credit ratings of ETSA Utilities, Powercor Australia and CitiPower Trust are all partially underpinned by the support of their majority owners Cheung Kong Infrastructure Holdings Ltd (rated A–) and CKI's affiliate Hong Kong Electric Holdings Ltd (rated A+).[12] However, the credit rating of a business can also be adversely affected by the behaviour of their parent company. For example, S&P noted that one of the weaknesses of United Energy Distribution's credit rating was its exposure to the aggressive risk appetite of its parent, DUET Group.[13]

21. In this report we do not directly address the issue of an appropriate assumed credit rating for the benchmark firm. Rather, our focus is on the effect that an unhedged shock to interest rates might have on the credit rating. To do this, we need an approach that indicates how the credit rating may change in light of an unhedged shock to interest rates. An examination of actual credit ratings of firms that have all engaged in extensive interest rate hedging activities cannot help in this regard. Also, examining the credit ratings of government-backed entities would not

[9] Fitch, *Credit Analysis on Integral Energy*, published on 16 April 2008.
[10] ACCC, 2008. *Final Decision: GasNet Australia – revised access arrangement 2008-12*, p. 68.
[11] S&P Credit Research, Ergon Energy Corp Ltd, published on 15 April 2008. Note, at this time Ergon Energy had a credit rating of AA+ and the State of Queensland was rated AAA.
[12] S&P Credit Research, ETSA Utilities, published on 30 April 2008; S&P Credit Research, CitiPower Trust, published on 22 May 2008; S&P Credit Research, Powercor Australia, published on 22 May 2008.
[13] S&P Credit Research, United Energy Distribution, published on 19 February 2007.

help in this regard even if the entity had not hedged against interest rate shocks. Consequently, we examine alternative approaches.

Alternative approaches for assessing the benchmark credit rating

22. In its recent WACC review, the AER considers two alternative approaches. The AER effectively rejects the use of an ordered logit regression approach due to the lack of sufficient data to make the results statistically reliable.[14] The AER then considers the best comparators approach, which involves examining a number of financial ratios that have a strong bearing on the firm's credit rating. The AER concludes that:

> the 'best comparators approach' is a satisfactory approach which can be used to inform the credit rating of a benchmark efficient NSP.[15]

23. In this report, we take the indicative credit rating matrix developed by Standard & Poor's in its 2008 publication *Corporate Ratings Criteria* and to apply it to a set of comparator firms in order to derive the likely credit rating. We adopt an expanded set of financial ratios and examine a number of comparable firms. Consequently this may be considered to be an expansion of the "best comparators approach."

24. This methodology appears has the advantage of being based primarily on transparent quantitative ratio analysis rather than more subjective qualitative analysis. Also, unlike actual credit ratings, this method avoids the problems of the effects of ownership structure because the implied credit rating of the firm can be calculated without reference to the firm's actual ownership structure – it is based only on a range of financial ratios and benchmarks provided by Standard and Poor's.

25. Moreover, our ultimate goal is to examine how an unhedged interest rate shock might affect credit metrics and the ultimate credit rating. This obviously cannot be done by examining actual credit ratings – unless we have a sample of firms that have experienced interest rate shocks while being unhedged. But since all of the firms in the set of comparables have extensive interest rate risk management programs in place, we have no observations at all for unhedged comparables. Consequently, we adopt a financial ratio based approach. This allows us to examine how a range of key financial ratios would be affected by an unhedged interest rate shock. That is, we adopt a variation of an approach that the AER considers to be appropriate and which also allows us to address the question of how a lack of interest rate risk management might affect the credit rating of the 60% levered benchmark business.

26. In determining the indicative credit rating for any given firm, S&P considers both the "business risk" and the "financial risk" profile of the firm.[16]

Business Risk Profile

27. In determining the business risk profile of the entity, S&P has regard to the following factors:

a. Country risk – the riskiness of the operating environment in the particular country;

[14] Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009, p. 357.
[15] Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009, p. 360.
[16] See Standard & Poor's, 2008. *Corporate Rating Criteria.*

b. Industry factors – assessment of the industry's prospects and the risks facing participants;

c. Competitive position – based on company size and market influence and is used in determining the expected revenue and cash flow stability of the firm;

d. Management evaluation – assessed for its role in determining operational success and also for its risk tolerance; and

e. Profitability/peer group comparisons – the ability of the firm to attract scarce capital due to its out-performance of its competitors

28. By considering all of these indicators, the business will be assigned either an excellent, above average, satisfactory, weak or vulnerable business risk profile rating. Because they have low volatility in future cash flows and face a relatively low level of competitive pressure relative, regulated businesses are likely to be assigned a business risk profile of "above average" or "excellent."

Financial Risk Profile

29. In assessing the financial risk profile of the entity, S&P will consider the following factors:

a. Governance, risk tolerance and financial policies – focuses on management's policies towards managing financial risk;

b. Accounting characteristics and information risk – reviews whether ratios and statistics derived from the company's financial statements are reliable;

c. Cash flow adequacy – the ability to service debt;

d. Capital structure and/or asset protection – the financial flexibility and the amount of leverage in the company's financial structure; and

e. Liquidity and other short-term factors – sundry considerations and contingencies.

30. In addition to these factors, S&P provides a matrix for determining indicative financial risk profiles:

Table 3. S&P Corporate Ratings Criteria – Financial risk indicative profile

Financial risk profile	Minimal	Modest	Intermediate	Aggressive	Highly Leveraged
FFO/Debt[1] (%)	AAA	AA	A	BBB	BB
Gearing (%)	BBB	BBB–	BB+	BB–	B
Debt[1]/EBITDA (x)	BB	B+	B+	B	B–

[1] Where debt includes both short-term and long-term debt and is not netted off against cash. See S&P, 2008. *Corporate Ratings Criteria*, p. 43 – 44.

31. After making an individual assessment of these two risk factors, S&P will then combine these separate assessments to derive an indicative corporate credit rating as follows:

Table 4. S&P Corporate Ratings Criteria – Business Risk/Financial Risk

	Financial risk profile				
Business risk profile	**Minimal**	**Modest**	**Intermediate**	**Aggressive**	**Highly Leveraged**
Excellent	AAA	AA	A	BBB	BB
Above Average	AA	A	A–	BBB–	BB–
Satisfactory	A	BBB+	BBB	BB+	B+
Weak	BBB	BBB–	BB+	BB–	B
Vulnerable	BB	B+	B+	B	B–

32. Obviously these indicative ratings are not the sole factors taken into account by S&P. However, these criteria at least provide a transparent framework within which to assess the reasonableness of the joint assumptions that the regulated entity has 60% gearing, is unhedged against interest rate movements and maintains a BBB+ credit rating.

33. Standard and Poor's have provided a number of useful benchmarks to determine the likely credit rating for a given set of key financial ratios. Their Corporate Ratings Criteria sets out the median values of various key ratios for all of the utilities that they have rated by each class. This is set out below. Standard and Poor's does not undertake that a particular firm with a particular set of ratios will be awarded a particular rating. Rather, the values set out below are simply the median ratios for all utilities that have a particular rating.

Table 2—**Key Utility Financial Ratios, Long-Term Debt**

Three-year (2002 to 2004) medians

	AA	A	BBB	BB	B
EBIT interest coverage (x)	4.4	3.1	2.5	1.5	1.3
FFO interest coverage (x)	5.4	4.0	3.8	2.6	1.6
Net cash flow/capital expenditures (%)	86.9	76.2	100.2	80.3	32.5
FFO/average total debt (%)	30.6	18.2	18.1	11.5	21.6
Total debt/Total debt + equity (%)	47.4	53.8	58.1	70.6	47.2
Common dividend payout (%)	78.2	72.3	64.2	68.7	(4.8)
Return on common equity (%)	11.3	10.8	9.8	4.4	6.0

Source: Standard and Poor's, Corporate Ratings Criteria, p.43.

34. As well as reporting median ratings, Standard and Poor's also set out ranges within which the majority of rated firms fall. Again, a firm is not guaranteed a particular rating by producing a set of ratios within a particular range, but these ranges from S&P are clearly very useful in any consideration of a firm's likely credit rating based on a set of financial ratios.

Table 2

Ratio Ranges for Distribution Utilities

	'AA'	'A'	'BBB'
Pretax* interest coverage (x)	4.0 to 5.5	2.0 to 4.0	1.3 to 2.5
FFO interest coverage (x)	5.0 to 7.0	3.0 to 5.0	2.0 to 3.0
FFO to total debt (%)	30 to 40	13 to 25	8 to 16
Total debt to total capital (%)	20 to 40	40 to 60	55 to 80

*Earnings before interest and tax. FFO-funds from operations.

Source: Standard and Poor's, Utilities: International utility ratings and ratios, via S&P Ratings Direct.

35. Finally, in its recent WACC Review Final Decision, the AER notes that Standard and Poor's have defined the two most important credit metrics that it applies to the relevant comparator firms as follows:

> Based on the current business profile of ElectraNet, where unregulated business represents less than 15% of total revenue, credit metrics of 2.3x-2.5x FFO interest cover and 9%-10% FFO to total debt would be expected for the 'BBB+' rating.[17]

3. Credit analysis based on past regulatory determinations

36. Irrespective of whether the comparable firm sample set used in determining the credit rating of the benchmark electricity distribution and transmission firm should focus solely on stand-alone privately-owned businesses, we will, for the purposes of our analysis, consider *all* electricity distribution and transmission businesses (for which we can obtain the required data) that have a credit rating from Standard & Poor's, *regardless* of their ownership structure. This means that our sample set comprises of Energy Australia, Integral Energy, Country Energy, SP AusNet, CitiPower Trust, ETSA Utilities, Powercor Australia, United Energy and ElectraNet. In the subsequent section, we apply a similar analysis to the PTRM for ENERGEX and Ergon Energy in the context of the current AER determination.

37. We conclude from our ratio analysis that it would be improbable that regulated entities would have 60% gearing, remain unhedged against interest rate movements *and* maintain a BBB+ credit rating. It is far more likely that regulated entities would, at the very least, enter into extensive hedging agreements in order to mitigate their interest rate exposure.

Methodology

38. In order to test the feasibility of maintaining a BBB+ credit rating while also having 60% gearing and remaining unhedged against interest rate movements, we have used the data contained in the latest regulatory determinations for nine regulated electricity distribution and transmission entities to construct the financial statements and calculate the key financial ratios of these entities over the length of the regulatory period (generally five years). From these ratios, we apply the indicative ratings criteria provided by Standard & Poor's (set out above) to estimate the financial risk profile that these regulated entities would be deemed to possess. Combined with an assumption that these regulated entities have a very favourable business risk profile (of "excellent" or "above average"),[18] we use these two risk profiles to calculate the likely credit rating that would be given to an entity with those business and financial characteristics.

39. We adopt the process described above for a number of reasons.

---

[17] Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009, p. 374.

[18] We emphasise that we have not formally evaluated the appropriateness of assuming that a regulated electricity distribution and transmission business has an "excellent" or "above average" business risk profile. However, we note that the ACCC, in conducting a credit ratio analysis its 2005 TransGrid regulatory determination, made the assumption that TransGrid had an "above average" business risk profile. See ACCC, 2005. *NSW and ACT Transmission Network Revenue Cap: Transgrid 2004/5 to 2008/9 Decision*, p. 199. To maintain a particular credit rating, Standard and Poor's requires distribution firms to maintain superior financial ratios relative to distribution firms. This implies that S&P considers transmission firms to have at least the same business risk profile as distribution firms. Consequently, it may be more appropriate to assume an "above average" business risk profile rather than "excellent." Alternatively and analysis assuming an "excellent" business risk profile is likely to be conservative.

a. By examining the leverage and cash flow adequacy ratios implied by regulatory determinations, we can isolate the inherent level of financial risk that Australian regulators assume that regulated entities can bear. That is, by using numbers taken directly from regulatory determinations, we can highlight the reasonableness of the regulatory assumptions as to credit rating, gearing and hedging policy given the other assumptions as to revenue, rates of return, depreciation, capital expenditure and operating costs.

b. Our methodology controls for the upward bias that would ordinarily be present due to the inclusion of government-owned entities in the sample set. In other words, our method for calculating the implied credit rating does not make any implicit assumptions as to whether the firm is government or privately-owned or whether it is a subsidiary or a stand-alone entity. This is compared to an analysis that is based on the actual credit ratings of regulated firms, which does implicitly assume that the benchmark firm enjoys at least partial government or parent company support.[19] By focusing on objective, quantitative criteria for determining the financial risk profile, we ensure that the assumed credit rating does not depend on who owns the regulated entity.

c. We prefer to calculate credit ratios by relying on the data contained in regulatory determinations rather than relying on the data contained in a regulated entity's audited financial statements. This is because a number of adjustments would need to be made to the figures contained in the audited financial statements of each individual firm in order to identify the appropriate figures that would be used by credit ratings agencies to calculating key financial risk ratios. Using regulatory determinations ensures that figures are comparable across the sample firms, minimises the number of adjustments that need to be made and ensures the transparency of how ratios are calculated. Again, we apply this same methodology to the present PTRM for ENERGEX and Ergon in the subsequent section.

Explanation of the calculation of key financial ratios

40. Based on the input definitions published by Standard & Poor's, we estimate that the following key inputs into the relevant credit ratios are as follows:

[19] In using as a basis for the estimation of the benchmark credit rating the ten regulated electricity distribution and transmission entities with credit ratings from Standard & Poor's, the credit rating derived from this sample set will be positively influenced by the inclusion of government-backed firms. We note that Integral Energy is now rated By Fitch Ratings, although we have the S&P rating at the time of its last regulatory determination.

Table 5. Glossary of ratio definitions

Term	Definition
Cost of debt capital (r_d)	Risk-free rate (r_f) *plus* Debt margin
Debt margin	Yield on 10-year BBB+ corporate bonds *less* yield-to-maturity on 10-year government bonds, *excluding* any debt raising costs forming part of weighted average cost of capital (WACC)
Earnings before interest, tax, depreciation & amortisation (EBITDA)	Notional revenue cap *less* operating expenditure allowance
Earnings before interest and tax (EBIT)	EBITDA *less* depreciation
Funds from operations (FFO)	Net income (after tax) *plus* depreciation
Gearing (%)	Total debt *divided by* total capital
Interest cost	Cost of debt capital (r_d) *multiplied by* total debt
Net income (after tax)	EBIT *less* interest cost *less* tax payable
Tax payable	If no specific tax allowance is made in the determination, tax payable equals: (EBIT *less* interest cost) *multiplied by* tax rate
Total capital	Total debt *plus* total equity
Total debt	Opening regulatory asset base *multiplied by* 60% gearing
Total equity	Opening regulatory asset base *multiplied by* (1 – 60% gearing)

Source: Adapted from Standard & Poor's (2006), *Australian Corporate Ratios Explained.*

41. All of these figures, including any underlying assumptions (for example, the regulator's gearing assumption of 60%), have been taken directly from the relevant regulatory determinations without any adjustment being made. We have adopted the 30% statutory corporate tax rate throughout the analysis.

42. Once these input figures have been derived, we estimate the key financial ratios of these regulated entities in the following manner:

Table 6. Financial risk ratios

Ratio	Definition
FFO to Total debt (%)	FFO ÷ Total debt
Total debt to Total capital (%)	Total debt ÷Total capital
Total debt to EBITDA (x)	Total debt ÷ EBITDA
EBITDA interest cover (x)	EBITDA ÷ Interest cost
EBIT interest cover (x)	EBIT ÷ Interest cost
Funds flow debt payback (years)	Total debt ÷ FFO
FFO interest cover (x)	FFO ÷ Interest cost
Internal financing ratio (%)	(Net income + depreciation) ÷ Capital expenditure

Source: Standard & Poor's (2006), Australian Corporate Ratios Explained

43. We note that the two key ratios that are used in the best comparators approach in the AER's recent WACC Review are FFO interest cover and FFO to total debt, both of which are included in Table 6 above.

Scenario analysis

44. In order to test the reasonableness of the assumption that regulated entities would remain unhedged throughout the regulatory period, we calculate credit ratios for sample businesses in a base case scenario and a downside case scenario. We then compare these ratios with the credit

ratings criteria provided by Standard & Poor's to determine the likely credit rating that a firm with these financial characteristics is likely to be given.

Base case scenario

45. In the base-case scenario, we assume that all assumptions made by the relevant regulator as to the various components of the building block methodology are perfectly realised. For example, if the assumed cost of debt capital over the period was 8%, we presume that, for the purposes of this scenario, interest rates remain constant at 8% for the entire regulatory period, and so on.

Downside case scenario

46. In the downside scenario, we make the same assumptions as in the base case scenario except for one important change – an "interest rate shock" occurs. In Year One, we assume that the market interest rate exactly equals the cost of debt assumption in the regulatory determination. However, in Year Two we assume that interest rates increase by 2%. Over Years Three, Four and Five, we assume that interest rates decline by 0.5% per year back toward the original Year One interest rate. We assume that the regulated entity is completely unhedged against these interest rate changes to examine the size of the impact that interest rate changes might have on key financial ratios and ultimately the credit rating. In relation to our assumed interest rate shocks, we note that the size of the shock is conservative relative to the shocks that have occurred over the previous regulatory cycle.

Results

47. Based on the above assumptions, we present a range of credit ratios for the base case and the "downside" case. The metrics reported for the downside case are the average values over the first two years of the interest rate shock (i.e., Years 2 and 3 of the regulatory cycle).

Table 7. Impact of interest rate shock on credit metrics relating to previous regulatory determinations

	Energy Australia		Integral Energy		Country Energy		SP AusNet		CitiPower Trust	
Credit Metric	***Base***	***Down***	***Base***	***Down***	***Base***	***Down***	***Base***	***Down***	***Base***	***Down***
FFO/Total Debt (%)	10%	9%	12%	11%	12%	10%	16%	15%	14%	12%
Debt leverage (Total debt/Total capital) (%)	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Total Debt/EBITDA (x)	5.7	5.7	4.9	4.9	5.3	5.3	3.5	3.5	4.6	4.6
EBITDA/Interest Expense (x)	2.6	2.0	2.9	2.3	2.8	2.2	3.4	2.8	3.3	2.6
EBIT/Interest Expense (x)	1.5	1.2	1.5	1.2	1.3	1.0	2.8	2.3	1.8	1.4
Funds Flow Debt Payback (years)	10.2	11.7	8.1	8.9	8.6	9.7	6.4	6.9	7.4	8.1
FFO/Interest Expense (x)	2.4	2.0	2.8	2.3	2.7	2.2	2.9	2.5	3.1	2.5
Internal Financing Ratio (%)	65%	57%	66%	60%	74%	66%	142%	131%	90%	82%

Credit Metric	ETSA Utilities		Powercor		United Energy		ElectraNet	
	Base	*Down*	*Base*	*Down*	*Base*	*Down*	*Base*	*Down*
FFO/Total Debt (%)	13%	12%	14%	13%	17%	15%	9%	8%
Debt leverage (Total debt/Total capital) (%)	60%	60%	60%	60%	60%	60%	60%	60%
Total Debt/EBITDA (x)	4.6	4.6	4.4	4.4	4.0	4.0	4.6	4.6
EBITDA/Interest Expense (x)	3.0	2.4	3.4	2.7	3.8	3.0	2.3	1.9
EBIT/Interest Expense (x)	1.6	1.3	1.9	1.5	1.9	1.5	2.0	1.7
Funds Flow Debt Payback (years)	7.6	8.3	7.0	7.6	6.1	6.6	10.7	12.4
FFO/Interest Expense (x)	2.8	2.3	3.2	2.6	3.5	2.8	2.0	1.7
Internal Financing Ratio (%)	134%	122%	78%	71%	128%	118%	50%	43%

48. In both the base case and the downside case, a strict application of the S&P credit ratio system to the above credit ratios would imply that the median regulated entity would have a "highly leveraged" financial risk profile. That is, a firm with FFO to total debt below 15%, total debt to total capital above 55% and total debt to EBITDA of greater than 4.5 times would prima facie be deemed to have a "highly leveraged" financial risk profile. More importantly, even if the regulated entity was deemed, on the basis of countervailing qualitative factors, to have an "aggressive" financial risk profile, the median regulated entity could not have a credit rating above BBB even with an "excellent" business risk profile. To the extent that the regulated entity was considered to have an "above average" business risk profile, a BBB rating in this scenario would be even more unlikely.

49. We note that one of the key criteria that Standard & Poor's takes into account when determining financial risk profile is the company's financial risk management strategy. For example, S&P states that:

> Tolerance for risk extends beyond leverage. The mixture of fixed-rate and floating-rate debt (*including the use of derivatives to manage that*) offers an example. Generally speaking, long-term assets such as factories are best financed using fixed-rate debt, while short- term working capital financing may be accomplished using floating-rate borrowings. Management should develop an appropriate maturity schedule and liquidity targets[20]

50. It is unlikely that ratings agencies (or debt holders for that matter) would look favourably on a firm that has a high amount of leverage in its capital structure yet remains unhedged against potentially crippling movements in interest rates. As illustrated in the table above, given the sensitivity of firms to changes in interest rates, prudent risk management would suggest that the firm would be actively engaged in swapping its floating-rate interest obligations for fixed-rate ones using a variety of techniques such as interest rate swaps, forward-starting fixed rate loans, and so on.

[20] S&P, 2008. *Corporate Rating Criteria*, p. 36.

51. Another important aspect of these results is that the cash-flow adequacy ratios of the median regulated entity come under significant pressure if the entity decides to remain unhedged and interest rates unexpectedly increase. For example, both the FFO interest cover and the EBIT interest cover ratios decline substantially as a result of the unhedged change in interest rates.

52. We pay particular attention to ElectraNet (which receives attention as the "best comparator" in the AER's Final Decision) and to the two ratios that are shaded in the table above (which the AER recognises as the most important). We note that an unhedged interest rate shock would drive the ElectraNet FFO interest coverage ratio to 1.7 and the FFO to Debt ratio to 8%. These values are unlikely to support an investment grade credit rating in light of the Standard and Poor's benchmarks set out above.

53. It is much more likely that the firm would take precautionary action to prevent cash flow ratios dropping to such low levels, most probably through interest rate hedging. Indeed we do not suggest that any of the firms in the table above are in any danger of being downgraded. This is precisely because they *do* hedge interest rate risk specifically to avoid the types of outcomes that are illustrated above.

54. Moreover, in determining credit ratings, ratings agencies place great weight on the firm's ability to service its debt obligations. For example, S&P states that among all of its factors for determining credit ratings, cash-flow analysis and ratios are "usually the single most critical aspect of credit rating decisions." [21]

55. We also note that we have made the simplifying assumption that all the regulated entities in the sample set do not pay dividends over the regulatory period. Obviously cash reserves would be further pressured if these companies were obliged to make distributions of profit.

56. We also note that the overall profitability of these regulated entities is significantly affected by changes in interest rates. Given the high levels of debt that these entities are assumed to carry, even relatively small changes in interest rates can have a large impact on profitability. The total profitability of these regulated firms is reduced substantially if interest rates were to move to levels assumed in the downside case scenario and the regulated entities remained unhedged.

57. Overall, our analysis indicates that even in benign interest rate environments, it is very difficult for regulated entities to maintain a 60% gearing ratio, possess the key credit ratios as calculated above and still maintain a BBB+ credit rating *unless* the entity has government or parent company support. Moreover, given the already high leverage assumed to be carried by regulated entities, combined with the possibility of firms suffering a severe decline in profitability and having its solvency being tested, we conclude that it is highly unlikely that a prudent risk manager of these entities would remain unhedged against interest rate movements. This is particularly the case in the current volatile interest rate environment.

58. Again, we do not suggest that any of the firms in the table above are in any danger of being downgraded. The firms in our sample do hedge interest rate risk specifically to avoid the types of outcomes that are illustrated above. A summary of the hedging policies of a number of Australian transmission and distribution utilities is set out in the table below.

[21] S&P, 2008. *Corporate Rating Criteria*, p. 24.

Table 8. Hedging policies of transmission and distribution utilities

Company	Reference	Comments
Envestra	*Page 46 of 2006 Annual Report*	The Group manages its cash flow interest-rate risk by using floating-to-fixed interest rate swaps. Such interest rate swaps have the economic effect of converting borrowings from floating rates to fixed rates. Generally, the Group raises long-term borrowings at floating rates and swaps them into fixed rates that match the rates used in the relevant regulatory determination for a term matched to relevant regulatory period. Under the interest-rate swaps, the Group agrees with other parties to exchange, at specified intervals (mainly quarterly), the difference between fixed contract rates and floating-rate interest amounts calculated by reference to the agreed notional principal amounts.
ETSA Utilities	*Page 28 of 2007 Annual Report* *Page 44 of 2007 Annual Report*	The Group hedges a portion of the loans using cross-currency interest rate swaps exchanging US dollar fixed rate interest for Australian dollar variable rate interest and interest rate swaps exchanging variable rate interest for fixed rate interest. [Interest rate] risk is managed by the group maintaining an appropriate mix between fixed and floating rate borrowings and by the use of interest rate swap contracts. If interest rates had been 50 basis points higher or lower and all other variables were held constant, the group's net profit would increase/decrease by $5.058m.
SP AusNet	*Page 44 of 2008 Financial Report*	"The objective of hedging activities carried out by the Stapled Group in relation to these businesses is to minimise the exposure to changes in interest rates by matching the actual cost of debt with the cost of debt assumed by the regulator when setting the rate of return for the relevant business. The exposure is managed by maintaining an appropriate mix of fixed and floating rate borrowings and by the use of interest rate swaps." If interest rates increased/decreased by 0.63% with all other variables held constant, net after tax profit would fall by $2.994m/increase by $3.004m.
Country Energy	*Page 97 & 103 of 2007 Financial Report*	The Corporation enters into contracts to manage cash flow risks associated with the interest rates on borrowings that are floating, or to alter interest rate exposures arising from mismatches in repricing dates between assets and liabilities. Interest rate swap transactions entered into by the Corporation exchange variable and fixed interest payment obligations to protect the fair value of long term borrowings from the risk of fluctuating interest rates. Variable and fixed interest rate debt is held and swap contracts are entered into to receive interest at both variable and fixed rates. Responsibility for management of the debt portfolio and associated derivative instruments has been outsourced to NSW TCorp.
Energy Australia	*Page 60 of 2007 Annual Report* *Page 64 of 2007 Annual Report*	Interest rate risk is managed using futures instruments and interest rate swaps. All derivatives are managed through T-Corp in accordance with Board policies for the purpose of managing interest rate exposure associated with external debt raised. At 30 June 2007, it is estimated that a general increase of one percentage point in interest rates would decrease the consolidated entity's profit before tax by approximately $7.2m (2006: $6.4m). Interest rate swaps have been included in this calculation.
Powercor / CitiPower Trust	*Page 70 of 2007 Annual Report* *Page 71 of 2007 Annual Report*	Consolidated Entity is exposed to interest rate risk as it invests and borrows funds at both fixed and floating interest rates. The risks are managed by maintaining an appropriate mix between fixed and floating rate borrowings and through the use of interest rate swap and forward interest rate contracts. Under interest rate swap contracts, the Consolidated Entity agrees to exchange the difference between fixed and floating interest amounts calculated on agreed notional principal amounts. Such contracts enable the Consolidated Entity to mitigate the risk of changing interest rates on the fair value of issued fixed rate debt held and the cash flow exposures on issued floating rate debt held.

GasNet	*Page 45 of 2005 Annual Report*	GasNet Australia Group's policy for the core transmission business is to hedge between 80% and 100% of its borrowings at fixed rates for the duration of each five year regulatory rest period. To manage this risk in a cost-efficient manner, the Group enters into interest rate swaps, in which the Group agrees to exchange, at specified intervals, the difference between fixed and variable interest amounts. These swaps are designated to hedge underlying debt obligations.
DUET Group	*Page 42 of 2007 Financial Report*	Bank loans and guarantee notes of the group currently bear an average variable interest of 6.25%. It is group policy to protect the loans from exposure to increasing interest rates. Accordingly, the group has entered into interest rate swap contracts under which it is obliged to receive interest at variable rates and to pay interest at fixed rates. Swaps in place cover approximately 80% of the loan principal outstanding and are timed to expire as the loan repayments are due or to coincide with the next prevailing reset.
	Page 84 of 2007 Financial Report	The Group manages its cash flow interest-rate risk by using floating-to-fixed interest rate swaps. Such interest rate swaps have the economic effect of converting borrowings from floating rates to fixed rates. Generally, the Group raises long-term borrowings at floating rates and swaps them into fixed rates that are lower than those available if the Group borrowed them at fixed rates directly.
Alinta	*Page 56 of 2005 Financial Report*	The consolidated entity enters into interest rate swaps…in order to manage interest rate exposures on Australian dollar borrowings (and the currency exposures from its US dollar borrowings in 2004). Interest rate swaps are used to convert a portion of the consolidated entity's floating interest rate exposures to fixed rate exposures, thereby reducing the volatility of interest costs between financial reporting periods.

4. Post-tax Revenue Models for ENERGEX and Ergon

59. In this section, we compute a range of credit metrics for ENERGEX and Ergon using the AER's Post-Tax Revenue Model (PTRM) supplied to us by the companies. For each company, we compute the range of financial ratios that is examined by Standard and Poor's when assessing credit ratings in two scenarios:

a. Assuming that the firm is perfectly hedged against future changes in interest rates, in which case interest expense in future years is based on the assumed cost of debt that is used in the WACC calculation; and

b. Assuming that the firm is unhedged against future changes in interest rates in a scenario in which interest rates remain consistent with the WACC assumption (8.96%) in Year 1 of the regulatory period; increase by 2% in Year 2 and then fall by 0.5% in Years 3, 4, and 5 back towards the starting rate.

60. We note that the increase in interest rates used in our second scenario is not large in light of what has occurred over the last regulatory period.

61. In the table below, we summarise a number of figures from the ENERGEX PTRM and set out the set of financial ratios that Standard and Poor's uses to assess credit ratings. This table assumes that all interest costs (including interest on borrowings related to new CAPEX) are perfectly hedged and that all interest will be at the assumed rate of 8.96%.

Table 8. ENERGEX credit metrics from Post-Tax Revenue Model assuming constant cost of debt

All amounts are stated in millions ($)	2011	2012	2013	2014	2015
Revenue Cap (notional revenue requirement)					
Operating expenditure					
Earnings before interest, tax & depreciation (EBITDA)					
Depreciation					
Earnings before interest and tax (EBIT)					
Interest Cost					
Profit before tax					
Estimated tax paid					
Profit after Tax/Net Income					
Net Capital expenditure					
Funds from Operations (FFO)					
Opening RAB					
Total Debt (60% of total assets)					
Total Equity (40% of total assets)					
Nominal cost of debt	8.96%				
Assumed Level of Gearing	60%				
Estimated Tax Rate	30%				
Ratio analysis					
FFO/Total Debt (%)	8.3%	8.2%	8.2%	8.2%	8.0%
Debt leverage (Total debt/Total capital) (%)	60%	60%	60%	60%	60%
Total Debt/EBITDA (x)	5.2	5.2	5.2	5.2	5.3
EBITDA/Interest Expense (x)	2.2	2.2	2.1	2.1	2.1
EBIT/Interest Expense (x)	1.8	1.8	1.8	1.7	1.7
Funds Flow Debt Payback (years)	12.1	12.2	12.2	12.3	12.5
FFO/Interest Expense (x)	1.9	1.9	1.9	1.9	1.9
Internal Financing Ratio (%)	30%	33%	36%	40%	40%

62. The following table summarises a number of figures from the ENERGEX PTRM and sets out the set of financial ratios that Standard and Poor's uses to assess credit ratings after allowing an interest rate shock. As above, in Year One, we assume that the market interest rate exactly equals the cost of debt assumption in the regulatory determination. However, in Year Two we assume that interest rates increase by 2%. Over Years Three, Four and Five, we assume that interest rates decline by 0.5% per year back toward the original Year One interest rate. We assume that the regulated entity is completely unhedged against these interest rate changes to examine the size of the impact that interest rate changes might have on key financial ratios and ultimately the credit rating.

Table 9. ENERGEX credit metrics from Post-Tax Revenue Model after unhedged interest rate increase

All amounts are stated in millions ($)	2011	2012	2013	2014	2015
Revenue Cap (notional revenue requirement)					
Operating expenditure					
Earnings before interest, tax & depreciation (EBITDA)					
Depreciation					
Earnings before interest and tax (EBIT)					
Interest Cost					
Profit before tax					
Estimated tax paid					
Profit after Tax/Net Income					
Net Capital expenditure					
Funds from Operations (FFO)					
Opening RAB					
Total Debt (60% of total assets)					
Total Equity (40% of total assets)					
Nominal cost of debt	8.96%	10.96%	10.46%	9.96%	9.46%
Assumed Level of Gearing	60%				
Estimated Tax Rate	30%				
Ratio analysis					
FFO/Total Debt (%)	8.3%	6.8%	7.1%	7.5%	7.7%
Debt leverage (Total debt/Total capital) (%)	60%	60%	60%	60%	60%
Total Debt/EBITDA (x)	5.2	5.2	5.2	5.2	5.3
EBITDA/Interest Expense (x)	2.2	1.8	1.8	1.9	2.0
EBIT/Interest Expense (x)	1.8	1.5	1.5	1.6	1.6
Funds Flow Debt Payback (years)	12.1	14.7	14.0	13.4	13.0
FFO/Interest Expense (x)	1.9	1.6	1.7	1.7	1.8
Internal Financing Ratio (%)	30%	27%	31%	36%	38%

63. In the table below, we summarise a number of figures from the Ergon Energy PTRM and set out the set of financial ratios that Standard and Poor's uses to assess credit ratings. This table assumes that all interest costs (including interest on borrowings related to new CAPEX) are perfectly hedged and that all interest will be at the assumed rate of 8.96%.

Table 10. Ergon Energy credit metrics from Post-Tax Revenue Model assuming constant cost of debt

All amounts are stated in millions ($)	2011	2012	2013	2014	2015
Revenue Cap (notional revenue requirement)					
Operating expenditure					
Earnings before interest, tax & depreciation (EBITDA)					
Depreciation					
Earnings before interest and tax (EBIT)					
Interest Cost					
Profit before tax					
Estimated tax paid					
Profit after Tax/Net Income					
Net Capital expenditure					
Funds from Operations (FFO)					
Opening RAB					
Total Debt (60% of total assets)					
Total Equity (40% of total assets)					
Nominal cost of debt	8.96%				
Assumed Level of Gearing	60%				
Estimated Tax Rate	30%				
Ratio analysis					
FFO/Total Debt (%)	9.3%	9.2%	8.6%	8.6%	8.5%
Debt leverage (Total debt/Total capital) (%)	60%	60%	60%	60%	60%
Total Debt/EBITDA (x)	5.5	5.4	5.3	5.2	5.3
EBITDA/Interest Expense (x)	2.0	2.1	2.1	2.1	2.1
EBIT/Interest Expense (x)	1.4	1.5	1.5	1.6	1.5
Funds Flow Debt Payback (years)	10.7	10.9	11.6	11.6	11.8
FFO/Interest Expense (x)	2.0	2.0	2.0	2.0	1.9
Internal Financing Ratio (%)	34%	34%	37%	39%	38%

64. The following table summarises a number of figures from the Ergon Energy PTRM and sets out the set of financial ratios that Standard and Poor's uses to assess credit ratings after allowing an interest rate shock. As above, in Year One, we assume that the market interest rate exactly equals the cost of debt assumption in the regulatory determination. However, in Year Two we assume that interest rates increase by 2%. Over Years Three, Four and Five, we assume that interest rates decline by 0.5% per year back toward the original Year One interest rate. We assume that the regulated entity is completely unhedged against these interest rate changes to examine the size of the impact that interest rate changes might have on key financial ratios and ultimately the credit rating.

Table 11. Ergon Energy credit metrics from Post-Tax Revenue Model after unhedged interest rate increase

All amounts are stated in millions ($)	2011	2012	2013	2014	2015
Revenue Cap (notional revenue requirement)					
Operating expenditure					
Earnings before interest, tax & depreciation (EBITDA)					
Depreciation					
Earnings before interest and tax (EBIT)					
Interest Cost					
Profit before tax					
Estimated tax paid					
Profit after Tax/Net Income					
Net Capital expenditure					
Funds from Operations (FFO)					
Opening RAB					
Total Debt (60% of total assets)					
Total Equity (40% of total assets)					
Nominal cost of debt	8.96%	10.96%	10.46%	9.96%	9.46%
Assumed Level of Gearing	60%				
Estimated Tax Rate	30%				
Ratio analysis					
FFO/Total Debt (%)	9.3%	7.8%	7.6%	7.9%	8.1%
Debt leverage (Total debt/Total capital) (%)	60%	60%	60%	60%	60%
Total Debt/EBITDA (x)	5.5	5.4	5.3	5.2	5.3
EBITDA/Interest Expense (x)	2.0	1.7	1.8	1.9	2.0
EBIT/Interest Expense (x)	1.4	1.2	1.3	1.4	1.5
Funds Flow Debt Payback (years)	10.7	12.8	13.2	12.6	12.3
FFO/Interest Expense (x)	2.0	1.7	1.7	1.8	1.9
Internal Financing Ratio (%)	34%	29%	32%	36%	37%

65. The tables above show that even with perfect interest rate hedging, the key financial ratios are inferior to what would be expected from a stand-alone investment grade utility. In its Final Decision, the AER concludes that FFO to total debt and FFO interest coverage are "likely to be the most relevant for the credit rating decision." [22] Consequently, we focus our discussion on these two metrics.

66. We note that with perfect hedging under the PTRM, the FFO interest coverage ratios range between 1.9 and 2.0. These values are already below the benchmark of 2.3 to 2.5.[23] An unhedged interest rate shock decreases these coverage ratios to 1.6 or 1.7, substantially below the benchmark.

67. Similarly, with perfect hedging under the PTRM, the FFO to debt ratios range between 8-9%. These values are already below the benchmark of 9-10%.[24] An unhedged interest rate shock decreases these coverage ratios to 7-8%, substantially below the benchmark.

[22] Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009, p. 359.
[23] AER Final Decision, p. 374.
[24] AER Final Decision, p. 374.

68. We conclude from this analysis that a completely unhedged benchmark firm that suffered the type of interest rate shock examined above would be unlikely to maintain a stand-alone investment grade credit rating.

69. In our view, there are many sound economic reasons for the benchmark distribution or transmission firm to seek to maintain an investment grade credit rating. In this report, we establish that the benchmark firm with 60% debt financing is barely able to support an investment grade credit rating on a stand-alone basis (with no express or implied support from government or parent). The two key ratios of FFO interest cover and FFO to debt are already below the benchmarks for an investment grade credit rating in the PTRM for both ENERGEX and Ergon. Moreover, this analysis is based on the PTRM proposed by the firms. If the firms were allowed lower revenues, the ratio would deteriorate further. For example, the firms have proposed a gamma estimate of 0.2. If gamma is set to 0.65 and revenues are reduced, the key financial ratios would decline further.

70. In summary, our conclusion is that:

a. There are sound economic reasons for the benchmark distribution or transmission firm to seek to maintain an investment grade credit rating;

b. The financial ratios for the benchmark firm are presently barely (if at all) able to support an investment grade rating; and

c. Any further unhedged interest rate shock that further deteriorated the key financial ratios for the benchmark firm would put severe pressure on the investment grade rating.

Consequently, there are sound economic reasons for the benchmark firm to seek to hedge against downside risk arising from adverse changes in interest rates. This sort of risk management activity is standard practice among the set of comparator firms. It also comes at a cost. In our view the reasonable costs of an efficient interest rate risk management program should be included as an efficient cost in the regulatory process.

5. References

Australian Competition and Consumer Commission, 2008. "Final Decision: GasNet Australia – revised access arrangement 2008-12," www.accc.gov.au.

Australian Competition and Consumer Commission, 2005. "NSW and ACT Transmission Network Revenue Cap: Transgrid 2004/5 to 2008/9 Decision," www.accc.gov.au.

Australian Energy Regulator, 2008. "ElectraNet transmission determination 2008-09 to 2012-13," www.aer.gov.au.

Australian Energy Regulator, 2008. "Issues Paper – Review of the WACC parameters for electricity transmission and distribution," www.aer.gov.au.

Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Explanatory Statement, 10 December 2008.

Australian Energy Regulator, 2009, Electricity transmission and distribution network service providers: Review of the weighted-average cost of capital (WACC) parameters – Final Decision, 1 May 2009.

Australian Energy Regulator, 2008. "SPAusNet transmission determination 2008-09 to 2013-14," www.aer.gov.au.

Essential Services Commission, 2005. "Electricity Distribution Price Review 2006-2010 – Final Decision," www.esc.vic.gov.au.

Essential Services Commission of South Australia, 2005. "2005 – 2010 Electricity Distribution Price Determination," www.escoca.sa.gov.au.

Independent Pricing and Regulatory Tribunal, 2004. "NSW Electricity Distribution Pricing 2004/05 to 2008/09 – Final Report," www.ipart.nsw.gov.au.

National Electricity Code, 2001 (Cth).

Queensland Competition Authority, 2005. "Final Determination – Regulation of Electricity Distribution," www.qca.org.au.

Standard & Poor's, 2002. "Australian and New Zealand Electric and Gas Utilities Ripe for Rationalisation."

Standard & Poor's, 2006. "Australian Corporate Ratios Explained"

Standard & Poor's, 2008. "Corporate Rating Criteria"

Appendix: Author of report

71. This report has been prepared by Professor Stephen Gray, Professor of Finance at the University of Queensland Business School. I have Honours degrees in Commerce and Law from the University of Queensland and a Ph.D. in financial economics from the Graduate School of Business at Stanford University. I am also Managing Director of Strategic Finance Group (SFG Consulting), a corporate finance consultancy specialising in valuation, regulatory and litigation support advice.

72. I have extensive practical experience in advising firms, regulators and government bodies on valuation issues generally and I have written expert valuation reports and appeared as an expert valuation witness in several Court proceedings. A curriculum vitae is appended to this report.

73. For the purposes of preparing this report I was provided with a copy of the Federal Court guidelines *Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia* dated 5 May 2008. I have reviewed those guidelines and this report has been prepared consistently with the form of expert evidence required by those guidelines. In preparing this report, I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld.

Stephen F. Gray

University of Queensland
Business School
Brisbane 4072
AUSTRALIA
Office: +61-7-3365 6586
Home: +61-7-3890 1030
Fax: +61-7-3365 6788
Email: s.gray@business.uq.edu.au

Academic Qualifications

1995 Ph.D. (Finance), Graduate School of Business, Stanford University.
Dissertation Title: Essays in Empirical Finance
Committee Chairman: Ken Singleton
1989 LL.B. (Hons), Bachelor of Laws with Honours, University of Queensland.
1986 B.Com. (Hons), Bachelor of Commerce with Honours, University of Queensland.

Employment History

2000-Present	Professor of Finance, UQ Business School, University of Queensland.
1997-2000	Associate Professor of Finance, Department of Commerce, University of Queensland and Research Associate Professor of Finance, Fuqua School of Business, Duke University.
1994-1997	Assistant Professor of Finance, Fuqua School of Business, Duke University.
1990-1993	Research Assistant, Graduate School of Business, Stanford University.
1988-1990	Assistant Professor of Finance, Department of Commerce, University of Queensland.
1987	Specialist Tutor in Finance, Queensland University of Technology.
1986	Teaching Assistant in Finance, Department of Commerce, University of Queensland.

Academic Awards

2006 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.
2002 Journal of Financial Economics, All-Star Paper Award, for Modeling the Conditional Distribution of Interest Rates as a Regime-Switching Process, JFE, 1996, 42, 27-62.
2002 Australian University Teaching Award – Business (a national award for all university instructors in all disciplines).
2000 University of Queensland Award for Excellence in Teaching (a University-wide award).
1999 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.
1999 KPMG Teaching Prize, Department of Commerce, University of Queensland.
1998 Faculty Teaching Prize (Business, Economics, and Law), University of Queensland.
1991 Jaedicke Fellow in Finance, Doctoral Program, Graduate School of Business, Stanford University.
1989 Touche Ross Teaching Prize, Department of Commerce, University of Queensland.
1986 University Medal in Commerce, University of Queensland.

Large Grants (over $100, 000)

- Australian Research Council Linkage Grant, 2008—2010, Managing Asymmetry Risk ($320,000), with T. Brailsford, J.Alcock, and Tactical Global Management.
- Intelligent Grid Cluster, Distributed Energy – CSIRO Energy Transformed Flagship Collaboration Cluster Grant, 2008-2010 ($552,000)
- Australian Research Council Research Infrastructure Block Grant, 2007—2008, Australian Financial Information Database ($279,754).
- Australian Research Council Discovery Grant, 2006—2008, Capital Management in a Stochastic Earnings Environment ($270,000).

- Australian Research Council Discovery Grant, 2005—2007, Australian Cost of Equity.
- Australian Research Council Discovery Grant, 2002—2004, Quantification Issues in Corporate Valuation, the Cost of Capital, and Optimal Capital Structure.
- Australian Research Council Strategic Partnership Grant, 1997—2000, Electricity Contracts and Securities in a Deregulated Market: Valuation and Risk Management for Market Participants.

Current Research Interests

Benchmark returns and the cost of capital. Corporate Finance. Capital structure. Real and strategic options and corporate valuation. Financial and credit risk management. Empirical finance and asset pricing.

Publications

Feuerherdt, C., S. Gray and J. Hall, (2009), "The Value of Imputation Tax Credits on Australian Hybrid Securities," *International Review of Finance*, forthcoming.

Gray, S., J. Hall, D. Klease and A. McCrystal, (2009), "Bias, stability and predictive ability in the measurement of systematic risk," *Accounting Research Journal*, forthcoming.

Treepongkaruna, S. and S. Gray, (2009), "Information volatility links in the foreign exchange market," *Accounting and Finance*, 49, 2, 385-405.

Costello, D., S. Gray, and A. McCrystal, (2008), "The diversification benefits of Australian equities," *JASSA*, December.

Gray, S. and J. Hall, (2008), "The Relationship Between Franking Credits and the Market Risk Premium: A Reply," *Accounting and Finance*, 48, 1, 133-142.

Gray, S., A. Mirkovic and V. Ragunathan, (2006), "The Determinants of Credit Ratings: Australian Evidence," *Australian Journal of Management*, 31(2), 333-354.

Choy, E., S. Gray and V. Ragunathan, (2006), "The Effect of Credit Rating Changes on Australian Stock Returns," *Accounting and Finance*, 46(5), 755-769.

Gray, S. and J. Hall, (2006), "The Relationship Between Franking Credits and the Market Risk Premium," *Accounting and Finance*, 46(3), 405-428.

Gray, S. and S. Treepongkaruna, (2006), "Are there non-linearities in short-term interest rates?" *Accounting and Finance*, 46(1), 149-167.

Gray, P., S. Gray and T. Roche, (2005), "A Note on the Efficiency in Football Betting Markets: The Economic Significance of Trading Strategies," *Accounting and Finance*, 45(2) 269-281.

Duffie, D., S. Gray and P. Hoang, (2004), "Volatility in Energy Prices. In V. Kaminski," (Ed.), *Managing Energy Price Risk: The New Challenges and Solutions* (3rd ed.). London: Risk Books.

Cannavan, D., F. Finn and S. Gray, (2004), "The Value of Dividend Imputation Tax Credits in Australia," *Journal of Financial Economics*, 73, 167-197.

Gray, S. and S. Treepongkaruna, (2003), "Valuing Interest Rate Derivatives Using a Monte-Carlo Approach," *Accounting and Finance*, 43(2), 231-259.

Gray, S., T. Smith and R. Whaley, (2003), "Stock Splits: Implications for Investor Trading Costs," *Journal of Empirical Finance*, 10, 271-303.

Gray, S. and S. Treepongkaruna, (2003), "On the Robustness of Short-term Interest Rate Models," *Accounting and Finance*, 43(1), 87-121.

Gray, S. and S. Treepongkaruna, (2002), "How to Value Interest Rate Derivatives in a No-Arbitrage Setting," *Accounting Research Journal* (15), 1.

Gray, P. and S. Gray, (2001), "A Framework for Valuing Derivative Securities," *Financial Markets Institutions & Instruments*, 10(5), 253-276.

Gray, P. and S. Gray, (2001), "Option Pricing: A Synthesis of Alternate Approaches," *Accounting Research Journal*, 14(1), 75-83.

Dahlquist, M. and S. Gray, (2000), "Regime-Switching and Interest Rates in the European Monetary System," *Journal of International Economics*, 50(2), 399-419.

Bollen, N., S. Gray and R. Whaley, (2000), "Regime-Switching in Foreign Exchange Rates: Evidence from Currency Options," *Journal of Econometrics*, 94, 239-276.

Duffie, D., S. Gray and P. Hoang, (1999), "Volatility in Energy Prices. In R. Jameson," (Ed.), *Managing Energy Price Risk* (2nd ed.). London: Risk Publications.

Gray, S. and R. Whaley, (1999), "Reset Put Options: Valuation, Risk Characteristics, and an Example," *Australian Journal of Management*, 24(1), 1-21.

Bekaert, G. and S. Gray, (1998), "Target Zones and Exchange Rates: An Empirical Investigation," *Journal of International Economics*, 45(1), 1-35.

Gray, S. and R. Whaley, (1997), "Valuing S&P 500 Bear Market Warrants with a Periodic Reset," *Journal of Derivatives*, 5(1), 99-106.

Gray, S. and P. Gray, (1997), "Testing Market Efficiency: Evidence from the NFL Sports Betting Market," *The Journal of Finance*, 52(4), 1725-1737.

Gray, S. (1996), "Modeling the Conditional Distribution of Interest Rates as a Regime- Switching Process," *Journal of Financial Economics*, 42, 27-62.

Gray, S. (1996), "Regime-Switching in Australian Interest Rates," *Accounting and Finance*, 36(1), 65-88.

Brailsford, T., S. Easton, P.Gray and S. Gray, (1995), "The Efficiency of Australian Football Betting Markets," *Australian Journal of Management*, 20(2), 167-196.

Duffie, D. and S. Gray, (1995), "Volatility in Energy Prices," In R. Jameson (Ed.), *Managing Energy Price Risk*, London: Risk Publications.

Gray, S. and A. Lynch, (1990), "An Alternative Explanation of the January Anomaly," *Accounting Research Journal*, 3(1), 19-27.

Gray, S. (1989), "Put Call Parity: An Extension of Boundary Conditions," *Australian Journal of Management*, 14(2), 151-170.

Gray, S. (1988), "The Straddle and the Efficiency of the Australian Exchange Traded Options Market," *Accounting Research Journal*, 1(2), 15-27.

Teaching

Fuqua School of Business, Duke University, Student Evaluations (0-7 scale):

- Financial Management (MBA Core): Average 6.5 over 7 years.
- Advanced Derivatives: Average 6.6 over 4 years.
- Empirical Issues in Asset Pricing: Ph.D. Class

1999, 2006 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.

UQ Business School, University of Queensland, Student Evaluations (0-7 scale):

- Finance (MBA Core): Average 6.6 over 8 years.
- Corporate Finance Honours: Average 6.9 over 8 years.

2002 Australian University Teaching Award – Business (a national award for all university instructors in all disciplines).
2000 University of Queensland Award for Excellence in Teaching.
1999 Department of Commerce KPMG Teaching Prize, University of Queensland.
1998 Faculty Teaching Prize, Faculty of Business Economics and Law, University of Queensland.
1998 Commendation for Excellence in Teaching, University-wide Teaching Awards, University of Queensland.
1989 Touche Ross Teaching Prize, Department of Commerce, University of Queensland.

Board Positions

2002 - Present: Director, Financial Management Association of Australia Ltd.
2003 - Present: Director, Moreton Bay Boys College Ltd. (Chairman since 2007).
2002 - 2007: External Risk Advisor to Board of Enertrade (Queensland Power Trading Corporation Ltd.)

Consulting

Managing Director, Strategic Finance Group: www.sfgconsulting.com.au.

Consulting interests and specialties, with recent examples, include:

- **Corporate finance**
  - ⇒ **Listed multi-business corporation:** Detailed financial modeling of each business unit, analysis of corporate strategy, estimation of effects of alternate strategies, development of capital allocation framework.

- **Capital management and optimal capital structure**
  - ⇒ **State-owned electricity generator:** Built detailed financial model to analyze effects of increased leverage on cost of capital, entity value, credit rating, and stability of dividends. Debt of $500 million issued.

- **Cost of capital**
  - ⇒ **Cost of Capital in the Public Sector:** Provided advice to a government enterprise on how to estimate an appropriate cost of capital and benchmark return for Government-owned enterprises. Appearance as **expert witness** in legal proceedings that followed a regulatory determination.
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony on issues relating to the cost of capital of a cable TV business.
  - ⇒ **Regulatory Cost of Capital:** Extensive work for regulators and regulated entities on all matters relating to estimation of weighted-average cost of capital.

- **Valuation**
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony. The issue was whether, during a takeover offer, the shares of the bidding firm were affected by a liquidity premium due to its incorporation in the major stock market index.
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony in relation to valuation issues involving an integrated mine and refinery.

- **Capital Raising**

⇒ Produced comprehensive valuation models in the context of capital raisings for a range of businesses in a range of industries including manufacturing, film production, and biotechnology.

- **Asset pricing and empirical finance**
  - ⇒ **Expert Witness:** Produced a written report on whether the client's arbitrage-driven trading strategy caused undue movements in the prices of certain shares.

- **Application of econometric techniques to applied problems in finance**
  - ⇒ **Debt Structure Review:** Provided advice to a large City Council on restructuring their debt portfolio. The issues involved optimisation of a range of performance measures for each business unit in the Council while simultaneously minimizing the volatility of the Council's equity in each business unit.
  - ⇒ **Superannuation Fund Performance Benchmarking:** Conducted an analysis of the techniques used by a large superannuation fund to benchmark its performance against competing funds.

- **Valuation of derivative securities**
  - ⇒ **Stochastic Volatility Models in Interest Rate Futures Markets:** Estimated and implemented a number of models designed to predict volatility in interest rate futures markets.

- **Application of option-pricing techniques to real project evaluation**
  - ⇒ **Real Option Valuation:** Developed a framework for valuing an option on a large office building. Acted as arbitrator between the various parties involved and reached a consensus valuation.
  - ⇒ **Real Option Valuation:** Used real options framework in the valuation of a bio-tech company in the context of an M&A transaction.

QUEENSLAND
TREASURY
CORPORATION

26 August 2009

Mr Mike Buckley
General Manager
Network Regulation North Branch
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

Dear Mike

HEDGING COST SUBMISSION - ENERGEX LIMITED AND ERGON ENERGY CORPORATION LIMITED

Queensland Treasury Corporation (QTC) as the financier to ENERGEX Limited (ENERGEX) and Ergon Energy Corporation Limited (Ergon) welcomes the opportunity to contribute to a submission on the businesses recent regulatory proposals.

ENERGEX and Ergon's regulatory proposals flagged an intention to submit a claim for the cost associated with hedging the interest cost on borrowings undertaken to fund new capital expenditure during the 2010-2015 regulatory period. QTC has provided qualitative and quantitative research to underpin the position that it is prudent for regulated businesses to hedge against fluctuations in interest rates and that compensation for the costs incurred are not already provided for in the regulatory methodology. QTC's analysis and recommendations are attached in the following report.

QTC fully supports the arguments contained in the submissions lodged by ENERGEX and Ergon.

Sincerely

Stephen Rochester
Chief Executive

LEVEL 14, 61 MARY STREET, BRISBANE QUEENSLAND AUSTRALIA 4000
GPO BOX 1096, BRISBANE QUEENSLAND AUSTRALIA 4001
T: 07 3842 4600 · F: 07 3221 4122 · WWW.QTC.QLD.GOV.AU

QUEENSLAND TREASURY CORPORATION

HEDGING COST SUBMISSION

An advisory paper prepared for the Australian Energy Regulator

INTRODUCTION

In this report we present a case for providing compensation to Ergon Energy and ENERGEX Limited for the cost of hedging the interest rate risk on new borrowings required during the 2010-2015 regulatory period. The volume of new debt is large relative to the current debt balances and, as a consequence, the total interest cost will be heavily influenced by the interest rates paid on these borrowings.

It is prudent for these businesses to hedge fluctuations in interest rates as they have no capacity to adjust prices if higher interest costs are incurred. Although the Australian Energy Regulator (AER) sets the cost of debt based on a spot interest rate, this rate cannot be locked in during the reset period on borrowings that will be made during the regulatory period unless the yield curve is perfectly flat. The cost of hedging is reflected in the margin between the spot and implied forward interest rates. The forward margins exist in addition to normal transaction costs (such as buy/sell spreads) that will be incurred when hedging the existing and new debt. The forward margins are a core component of the actual cost of debt prevailing during the rate reset period.

Compensation for this risk is not provided for by the AER in the proposed equity beta. For beta to capture this risk would require it to be estimated from historical returns of comparable businesses that do not engage in interest rate risk hedging. We present evidence to confirm that the comparator companies do hedge their interest rate risk.

It is reasonable to expect consumers to pay a price based on spot and forward interest rates because they reflect the actual interest costs prevailing during the rate reset period. Ignoring the forward rates will cause prices to be set in a way that makes it impossible for a regulated business to recover the assumed cost of debt. In saying this, it is not proposed that 100% of the future borrowings required during the regulatory period will be hedged, which means that the businesses will still remain exposed to some risk.

MATERIALITY OF THE INTEREST RISK EXPOSURE

The debt volumes for Ergon Energy and ENERGEX Limited are expected to almost double over the 2010-2015 regulatory period. The interest rates paid on the new borrowings will have a significant impact on the total cost of debt and, ultimately, their net cash flows. Not hedging a large portion of these borrowings will greatly increase the risk of the actual cost of debt exceeding the regulated cost of debt. To highlight the materiality of this risk, changes in the actual cost of debt have been estimated assuming that interest rates rise by 2% during the first year of the regulatory period and remain constant for the remaining 4 years1. Based on the forecast borrowing profiles the present value of the additional cost would be approximately ***$88 million and $69 million*** for Ergon Energy and ENERGEX Limited respectively.

HEDGING STRATEGIES

The interest rate risk on future borrowings can be hedged with derivative instruments such as interest rate futures contracts and forward interest rate swaps. When new borrowings will be made over a 5 year period, forward interest rate swaps are suitable hedging instrument, although t may also be possible to lock in the interest rate on a physical borrowing (such as a bond or fixed rate loan) that will be made in the future. Futures contracts on 3 and 10 year Commonwealth Government bonds are only traded for forward periods of up to 3 months and cannot be used to hedge longer dated exposures. The hedging analysis that follows is based on interest rate swap data sourced from Bloomberg as at 14 August 2009.

THE COST OF HEDGING

The AER's revenue building block model allows a return on capital to compensate for future debt borrowings. Because the return on future debt is based upon prevailing interest rates and credit spreads over a 5-40 day period at the start of the rate reset period, it is prudent for a regulated business to hedge the interest cost on known borrowings at this time. This is especially the case for Ergon Energy and ENERGEX Limited as the amount of new borrowings is relatively large in both dollar terms and as a percentage of existing debt at the start of the regulatory period. When the yield curve is positively sloped, there is a cost (in addition to transaction costs) associated with entering into hedging transactions. The cost is the margin between the spot and implied forward interest rates during the rate reset period.

It is incorrect to apply a spot interest rate to borrowings that will be made in the future. The spot interest rate does not reflect the interest rates that can be locked in during the rate reset period on borrowings that will be required during the regulatory period. The table below displays the spot and implied forward swap rates for a range of forward starting dates. A common maturity date of 14 August 2014 has been assumed for each borrowing to reflect the length of the regulatory period:

[1] It is assumed that all points on the yield curve increase by the same amount.

Forward Period (Years)	Loan Tenor (Years)	Implied Forward Swap Yield	Implied Forward Margin (pa)
0.00	5.00	**5.75%**	**0.00%**
0.25	4.75	5.89%	**0.14%**
0.50	4.50	6.02%	**0.27%**
0.75	4.25	6.13%	**0.38%**
1.00	4.00	6.23%	**0.48%**
1.25	3.75	6.32%	**0.57%**
1.50	3.50	6.39%	**0.64%**
1.75	3.25	6.45%	**0.70%**
2.00	3.00	6.50%	**0.75%**
2.25	2.75	6.56%	**0.81%**
2.50	2.50	6.60%	**0.85%**
2.75	2.25	6.64%	**0.89%**
3.00	2.00	6.66%	**0.91%**
3.25	1.75	6.66%	**0.91%**
3.50	1.50	6.63%	**0.88%**
3.75	1.25	6.61%	**0.86%**
4.00	1.00	6.53%	**0.78%**
4.25	0.75	6.54%	**0.79%**
4.50	0.50	6.49%	**0.74%**
4.75	0.25	6.53%	**0.78%**

The hedging costs are material and exceed the current 0.08% per annum term premium between 7.37 and 10 year Commonwealth Government bond yields. Based on the forecast borrowing profiles and the above implied forward swap rates the present value of the cost of fully hedging these borrowings is approximately ***$43 million and $34 million*** for Ergon Energy and ENERGEX Limited respectively. These costs are low when compared to the potential increase in interest costs that would arise if the borrowings were not hedged and subsequently made at higher interest rates during the regulatory period.

In practice it would be unlikely for 100% of the expected future borrowings to be hedged. To the extent that some uncertainty exists over the size and/or timing of the borrowings, hedging a portion of the expected borrowing requirement is a more prudent course of action. In addition, borrowings occurring towards the end of the regulatory period may be left unhedged as their impact on the total interest cost over the regulatory period is likely to be small. The actual hedging costs incurred are therefore expected to be less than the figures quoted in this report.

IS COMPENSATION ALREADY PROVIDED BY THE EQUITY BETA?

The AER notes that changes or volatility in interest rates are a macroeconomic risk factor which affects the systematic or non-diversifiable risk of the business. As such, the equity beta is assumed to compensate for interest rate risk. As the equity beta is estimated empirically from the returns on a sample of comparable companies, it is useful to examine the hedging practices of those particular companies in relation to interest rate risk. If the equity beta is based on historical returns that have been generated by companies which engage in interest rate hedging then it cannot be argued that the equity beta is reflective of interest rate risk. If those companies did not hedge then presumably their historical returns would be riskier, leading to a higher equity beta. This is not to say that the equity beta is too low for entities hedging interest rate risk, but rather that it has (to some extent) already been purged of the effects of interest rate risk.

The following table summarises the interest rate risk hedging practices of the comparator companies sampled by the AER to estimate the equity beta that will determine the cost of equity for Ergon Energy and ENERGEX Limited:

	Comparator	*Hedging Practice*
1	SP AusNet	Risk Management Policy to hedge 95 per cent of all interest rate exposures using interest rate swaps
2	Envestra	Risk Management Policy requires them to hedge between 80 to 100 per cent of their interest rate exposures
3	CitiPower and Powercor	Typically issue debt at a 10 year maturity and they issue interest rate swaps with terms that reflect a 5 year reset period
4	APA Group	Stated that 66 per cent of all interest rate exposures were either hedged or at fixed rates at year end. Also stated that any floating rate exposures would be swapped out by interest rate swaps.
5	AGL	Stated that long term debt is hedged via interest rate swaps.
6	Duet	States that at year end they had interest rate hedging contacts in place for 95 per cent of outstanding debt commitments.
7	Hastings Diversified	Stated that they utilise interest rate swaps to hedge against floating rate exposures.
8	Spark Infrastructure	Stated that 89 per cent of total debt was hedged at year end.

Source:
1 - Standard & Poors RatingsDirect report dated October 6, 2008, (Pge 6)
2 - AER submission – Statement by Gregory Damien Meredith (Pge 5)
3 - AER submission – Statement by Andrew Noble (Pges 3,4)
4 - APA Group Annual Report 2008, (Pge 30, and Note 38 Pge 95-96)
5 - AGL Annual Report 2008, (Note 34, Pge91)
6 - Duet Group Annual Report 2008, (Pge 7)
7 - Hastings Diversified Utilities Fund Annual report 2008, (Note 26, Pge 51)
8 – Spark Infrastructure Annual Report 2008, (Pge12)

Providing a definitive answer on which risks are compensated for by the equity beta is an impossible task, however, it is difficult to claim that the interest rate risk is a compensated risk when the equity beta is derived from the historical returns of companies that engage in interest rate hedging for a significant proportion of their exposures. The hedging practices of the comparator companies do not support the argument that Ergon Energy and ENERGEX Limited will be compensated for the interest rate risk associated with new borrowings via the equity beta.

The AER also refers to the pass through nature of borrowing costs for regulated utilities as being a key factor reducing the level of the equity beta for the benchmark NSP (network service provider) relative to a business operating in a non-regulated environment. In its final Review of the weighted average cost of capital (WACC) parameters for electricity transmission and distribution businesses (pp250-251), the AER notes:

'…an additional aspect of the regulatory regime is that the cost of debt is based on ***prevailing market conditions*** *as sourced from a reliable data service provider at the time of the determination. The AER considered this 'pass-through' nature of borrowing costs was likely to reduce exposure to financial risk, compared to an unregulated business (or the market in general) with the same benchmark level of gearing [emphasis added].'*

In order for a benchmark network services provider (NSP) to effectively pass through its borrowing costs to prices there is the implicit assumption that a benchmark NSP will hedge its interest rate exposure so that its base interest rate is in line with the AER determined risk free rate. However, a benchmark NSP is not only exposed to movements in interest rates on its existing debt. In an

environment where capital expenditure requirements over the 5 year regulatory period constitute a significant portion of the existing regulated asset base, the benchmark NSP is also heavily exposed to movements in interest rates on future borrowings. As such, the pass through assumption should be extended to future borrowing costs otherwise it cannot be argued that the cost of debt is based on 'prevailing market conditions'.

Although the AER has repeatedly specified that hedging *transaction* costs are adequately compensated for by the provision of a 10 year risk free rate versus the average debt portfolio term to maturity of 7.37 years (assuming the yield spread is positive), the forward margins on future borrowings are an additional cost that is not captured in the WACC.

SHOULD THESE COSTS BE PAID BY CUSTOMERS?

A key regulatory pricing principle is for prices to be set in a way that allows the assumed efficient costs to be recovered. A correctly specified regulated cost of debt should be reflective of the interest rates during the rate reset period for existing and new debt. It is reasonable to expect customers to pay a price that incorporates the forward margins because they form part of total interest cost that exists during the rate reset period. As the forward margins are currently excluded from the regulated cost of debt, the only way for prices to reflect the true cost of debt is by way of an operating expenditure allowance based on the actual hedging costs incurred.

SUMMARY

Ergon Energy and ENERGEX Limited will require significant new borrowings during the 2010-2015 regulatory period. The interest rates paid on these borrowings will have a large impact on the total cost of debt paid by these businesses. The risk of the actual cost of debt exceeding the regulated cost of debt will be very high unless a significant portion of the interest rate risk is hedged during the rate reset period. The spot interest rate during the rate reset period is not reflective of the forward interest rates that must be paid when hedging the new borrowings. The positive slope of the yield curve will cause the forward interest rates to be higher than the spot interest rate used to determine the regulated cost of debt. The forward margins are a hedging cost that will be incurred *in addition* to normal transaction costs such as buy/sell spreads.

Ergon Energy and ENERGEX Limited are not in the business of taking interest rate risk, nor are they compensated to do so (particularly for the magnitude of the exposure each business faces in the next regulatory period). The companies used to estimate the equity beta do hedge their interest rate risk, and therefore it is difficult to argue that compensation for this risk is provided by the equity beta. The level of risk associated with new borrowings is very high due to the large volumes involved. It is for this reason that hedging is a prudent course of action, especially when neither business has the ability to adjust prices to compensate for higher than expected interest costs. Hedging is also consistent with the AER's view that a regulated business has the ability to 'pass though' its borrowing costs. For this view to hold, the incremental costs associated with locking in the interest rate on new borrowings should be reflected in the regulated price.

It is therefore appropriate that consumers pay these costs because they represent the actual interest costs that exist during the rate reset period. If it is accepted that prices should be set in a way that allows a regulated business to recover their costs, it is reasonable for the cost of the forward margins to be reflected in the regulated price.