**EUAA
ENERGY USERS
ASSOCIATION
OF AUSTRALIA**

AUSTRALIAN ENERGY REGULATOR REVIEW OF ELECTRANET REVENUE PROPOSAL 2008/09 TO 2012/13

20 September 2007

TABLE OF CONTENTS

LIST OF TABLES

EXECUTIVE SUMMARY

The Energy Users Association of Australia (EUAA) welcomes the opportunity to respond to Electranet's revenue application for the regulatory period 1 July 2008to 30 June 2013 and to participate in the associated AER review. The EUAA is the national association of energy users and has some 90 members, including many with significant operations in South Australia. Our South Australian members have a significant interest in the outcome of this review as they rely on the transmission system for competitive and reliable energy, pay significant amounts in transmission charges and contribute substantially to the South Australian economy.

We welcome the detailed assessment provided in the Electranet application and the significant effort they have obviously put into it. We also would like to acknowledge the constructive engagement that we have had with Electranet to date. We note that ElectraNet is faced with some significant challenges including the ageing assets that comprise parts of its transmission network, the challenges posed by the radial nature of the network and the low population density in regional areas. The EUAA acknowledges the thoroughness of ElectraNet's application and the fact that ElectraNet has explored options to extend asset life and find alternatives in developing the capital program. We note, however, that many of the underlying parameters on which the modeling in the Application is built are subjective and do not appear to have been subject to robust sensitivity analysis.

We are disappointed that ElectraNet has not identified any network support opportunities to relieve the pressure on the substantial capex program proposed in the Application. This is particularly so given that ElectraNet uses the reliability obligations that it has to meet under the revised Electricity Code as a prime driver of the capex program and the Code specifically provides ElectraNet with flexibility on how it meets these obligations.

The EUAA has major concerns about the large increase in the capex program and doubts as to ElectraNet's ability to deliver on such an ambitious program. ElectraNet's proposed capital expenditure program for the next regulatory period is some $778 million, a 117% increase over the $358 million approved for the current regulatory period. In addition, another $1 billion dollars is earmarked as contingency projects. Unfortunately, the EUAA does not have the technical expertise to evaluate whether the engineering solutions are the most efficient option, as we were not provided with funding for this project by the Advocacy Panel. We urge the AER to take a critical approach to this aspect of the review to

ensure that what is being proposed is the most efficient option and that there is no gold plating built into the system.

In addition to the magnitude of the capital expenditure, we are also concerned at the proposed spend over the regulatory period which is heavily biased to the initial years. Analysis of delivery of projects for the current regulatory period shows that the first three years were heavily underspent compared with the program approved by the ACCC. The forecast capital expenditure shows a program heavily weighted to the first two years of the regulatory period. In particular, ElectraNet is proposing to spend over $200 million in the first year, more than 149% than they are spending in 2007-08.

ElectraNet argues in its submission that the spending pattern over the current regulatory period demonstrates their ability to be able to ramp up their capital program. We note, however, that the level of magnitude of the increase in the current regulatory periodis no where near the magnitude as what is proposed for the next regulatory period, nor the possible constraints faced as great.

The EUAA is also concerned at the forecast increases in input costs in respect of both capex and opex. ElectraNet has basically forecast that labour and material costs will increase at high rates, annually, for the life of the regulatory period. This is not a view shared by many financial experts and is not supported by the recent severe fluctuations in financial markets. The so called shortages in South Australia must also be questioned. In comparison to the rosy outlook taken by ElectraNet, a recent report by the ANZ Bank shows the State to be in recession. In addition, there is uncertainty about the anticipated mining boom and ElectraNet has quite correctly placed projects associated with the boom on the contingency list. However, we note that ElectraNet has used the high prices resulting from the boom in calculating input costs.

In addition, we do not understand why high labour and material costs should affect Electranet more than other companies. Companies in a competitive environment cannot simply increase prices otherwise market share will be lost as customers seek more efficient and lower cost suppliers. Such companies will only increase prices as a last resort after exhausting all means to increase their efficiency and productivity. Regulated monopoly companies, on the other hand, have the luxury of going to a regulator to seek a cost pass through. Any so-called efficiency gains simply improve the profitability of the company.

Some of our specific concerns are as follows:

- The EUAA strongly opposes the easement value adjustment of $81.9 million and believes that the arguments advanced by ElectraNet (Page 7 of Appendix S) are not of sufficient merit to justify any change. The EUAA considers that the expectations of investors, when acquiring the business, would have

factored in the risk of "expectations" as to revaluations not being realized. The letter from the ACCC cited by ElectraNet as support for their position is nothing more than a commitment to "consider" the issue.

- The capital expenditure program proposes an amount of $70.4 million for increased physical security of critical infrastructure compared with a current spend of $1.9 million. The EUAA acknowledges that physical security is a priority issue but the proposed spend appears to be very high when in the current regulatory period less than $2 million has been required. It is not clear from the application whether the required standard has been set by government or how the program was put together.

- Opex increases by over 31% over the next regulatory period. Controllable opex increases by around 20% for each year of the regulatory period. As much of this increase is due to increased labour costs, we challenge these figures. In addition, ElectraNet has selected 2005-06 as the base year. However, 2004-05 year was the year that the savings programs implemented by ElectraNet took effect and logically this would be the efficient year to use as a base.

- End users believe that it is important that electricity users obtain a reasonable level of service from the transmission system. We welcome steps taken to require TNSPs to implement some (limited) service standards, but believe that further steps are needed to establish a more effective and meaningful system of incentives for service.

- Should any pass through events be accepted by the AER, customers would expect that the AER also ensure that cost reductions are also passed through to customers. Simply depending on ElectraNet to inform the AER and customers that costs for these events were lower than expected are not sufficient. The AER needs to consider that regulated businesses, such as ElectraNet, will have little if any incentive to draw such matters to the attention of the regulator and end users are not in a well informed enough position to do so.

Electranet has sought an increase in the risk free rate of 20 basis points, used to calculate the inflation rate, on the basis that the risk free rate is biased downwards. The EUAA is strongly opposed to this increase. The attached submission that the EUAA has submitted to the AER demonstrates fundamental flaws in the arguments advanced by ElectraNet and we believe makes a fallacy of this claim.

In making the claim for an increase in the risk free rate in the application, we consider that ElectraNet has thrown open the question of all the WACC parameters. The EUAA has long argued that the WACC parameters are over generous to the network service providers, a view shared by consultants to the

ACCC but not acted on. The decision by the Essential Services Commission of Victoria on 28 August 2007 in respect of its Draft Decision on the Gas Distribution Access Arrangements reinforces this point. The Essential Services Commission concluded:

> *"While consideration of the Australian data alone may indicate a range for the beta that extends below 0.5 and not above 0.7, the Commission considers that the US evidence makes it less plausible that the beta would is below 0.5, but also makes it plausible that the beta may extend up to 0.8. Accordingly, the Commission considers that the empirical evidence suggests that the 'best estimate arrived at on a reasonable basis' that is consistent with prevailing conditions in the market for funds and the risk involved in delivering the Reference Services' for the beta lies between 0.5 and 0.8."[1]*

The ESC has used an equity beta of 0.7 in its modelling and also concluded that a market risk premium of 5% was the appropriate value.

We are aware that the AER is to undertake a review of the WACC in 2009. However, this timing will mean that some prices will be set out to 2015. The cost to end users is too great and given that the network service providers have opened the issue we consider that it is time for the AER to bring forward a Rule Change to at least alter the equity beta and gamma to less generous levels.

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[1] Essential Services Commission Victoria Draft Decision p396-7

1   INTRODUCTION

We appreciate the opportunity to provide comments for consideration in response to Electranet's transmission revenue proposal to the Australian Energy Regulator (AER).   We are undertaking further investigation of the appropriate level of gamma and equity beta used in the Weighted Average Cost of Capital (WACC) calculation and will provide a supplement to this submission.

The transmission system is critical to the proper functioning of the NEM, not just in the reliable bulk transportation of electrical energy but also in stimulating competition, trade and liquidity. Its importance goes beyond the direct costs of transmission use of system (TUoS) but also impacts on the wholesale cost of energy when inter-regional transmission constraints are relaxed.   Recognizing this, customers may be prepared to accept some degree of "over investment" if we can be assured of offsetting benefits in higher reliability and lower wholesale energy market prices.   However, allowing for this, Transmission Network Service Providers' (TNSP) costs still need to be "efficient" and subject to close regulatory scrutiny and the role of the AER is critical role in balancing these factors.

Electranet has submitted a lengthy and comprehensive application covering some complex issues. Its application provides a useful starting point for this review but , in our view, it has some gaps and raises some important questions. We are of the opinion that the AER should accept the positive aspects of ElectraNet's operations but also subject the application to close scrutiny. In particular, ElectraNet has utilized many modeling packages in the compilation and justification of its capex and opex programs. However, the robustness of the models is dependent on the parameters on which the modeling is based. We note that many of these parameters are subjective and based on "judgement". The AER must subject these parameters to rigorous analysis as invariably there will be many different views as to what is the "right" level for these parameters.

ElectraNet also stresses the impact of changes to the Electricity Transmission Code (ETC) as a key driver for the proposed capex program.   While we acknowledge that ElectraNet, under the terms of its license, has to comply with the new standards, the Code allows flexibility for how ElectraNet meets the required standards. Accordingly, we consider that where ElectraNet has used changes to the ETC as justification for a project, the AER should investigate whether the standards could be met in some other way, for example by demand side management initiatives.

Customers expect the AER to take into consideration the impact transmission price rises will have on the input costs of major energy users, as well as the competitiveness of the Australian economy. We also expect the AER to recognize

that all businesses in Australia face similar cost pressures to ElectraNet, but are not able to pass through such costs via a regulatory determination; they might pass through some proportion but must also look to make greater efficiencies in their operations or lose competitiveness and market share.

Our submission addresses the key issues of concern to our members and we seek to ensure that these issues are considered by the AER prior to making its draft decision. Our major issues discussed in this submission are:

- Capital Expenditure (capex) has significantly increased compared with the current regulatory period. In addition, the capex spend in the next regulatory period is heavily skewed to the early years and represents a large ramp up over the last years of the current period.

- The Weighted Average Cost of Capital (WACC) requested by ElectraNet is not justified considering the risk reward trade off. In particular, the increase of 20 basis points in the Risk Free rate can not be justified.

- The significant increase in Operation and Maintenance (O&M) expenditure over the next regulatory period.

- The importance of ElectraNet's performance standards in servicing end users and the inadequacy of placing only 1% of revenue at risk.

- The increase in average TUoS charges faced by consumers as a result of the current revenue cap application.

In its proposal, ElectraNet claims that it faces unique circumstances. These include:

- Geographical size and smaller population

- Low energy density

- Low load factor

- Increased regulatory obligations.

ElectraNet then argues these unique factors result in a number of cost drivers that will increase efficient transmission costs in the forthcoming regulatory period. These cost drivers include:

- The combination of demand growth and new mandated reliability standards;

- Assets nearing the end of their useful lives;

- Higher input costs including wages growth, and;

- Concerns about the physical security of critical infrastructure.

We note that all these "unique" factors have a cost increasing impact. However, we have to ask how unique is ElectraNet? While we do not doubt that all the above factors have an impact, other TNSPs have other "unique" issues and have

raised them with the regulator at every review. This has been our experience in every TNSP price review as demonstrated most recently in the Powerlink and SP Ausnet applications.

The AER also needs to test that there are no offsetting factors where costs can be lowered and generally ensure that ElectraNet has efficient costs and these will continue over the next regulatory period. There do not appear to be any reductions in the application for the one off factors claimed in the previous regulatory reset.

In assessing the proposal, the AER also needs to ask how companies in a competitive industry behave in response to such cost pressures. Do they simply raise prices by adopting a cost-plus approach? Or will they seek to:

- Increase productivity/efficiency;

- Seek innovative ways to manage the increases; and

- Absorb some cost pressures.

Companies in a competitive environment cannot simply increase prices otherwise market share will be lost as customers seek more efficient and lower cost suppliers. Such companies will only increase prices as a last resort after exhausting all means to increase their efficiency and productivity. Regulated monopoly companies, on the other hand, have the luxury of going to a regulator to seek a cost pass through. Any efficiency gains simply improve the profitability of the company. The AER needs to asses the ElectraNet application carefully in light of this.

2 REGULATORY ASSET BASE AND CAPEX

2.1 Asset Base Roll Forward

The AER should already be aware that customer groups have always held the view that the historical Optimised Depreciated Replacement Costs (ODRC) method used to determine the asset base at the start of the sectors reforms overstates the value of assets. While we agree that constant revaluations create uncertainty and adversely impact on the cost of equity, it is our view that the AER still needs to check that the roll forward is robust and justified. The Revenue Application includes a "prudent" expenditure on assets under construction to be rolled into the RAB as at 1 July 2008 of $44.4 million. This change should be accompanied by removal of interest payments during construction. There is no mention of current policy or whether this has changed in the cost estimates used in the submission. Confirmation is required that future capital forecasts do not include interest payments during construction.

The value of assets under construction will only get larger as the capex programme expands. There also seems to be a logical inconsistency with these assets under construction being depreciated even before they are completed and put into service! As a result of this change, customers are required to pay for these assets even before they provide any service! We urge the AER to review this capitalisation policy, especially since it does not comply with any accounting standards.

ElectraNet states that, during the regulatory control period, it has changed its accounting system and as a consequence different asset classes have been adopted at an aggregated level in the Asset Base Roll Forward Model and the PTRM. Consequently, the asset base roll forward has been conducted with the new asset classes. This adjustment has implications for the composition of the asset classes and economic depreciation, and the AER needs to ensure that these adjustments do not result in a revaluation of assets over what they would have been under the old accounting arrangements.

The EUAA strongly opposes the easement value adjustment of $81.9 million and consider that the arguments advanced by ElectraNet (page 7 of Appendix S) are not of sufficient merit to justify any change. ElectaNet argues that "Investors purchased ElectraNet with a reasonable expectation that the easements would be revalued". The investors at the time of due diligence would have made many projections as to what may or may not happen and would have factored these projections into their investment decision. Just because one particular scenario did

not eventuate does not mean that they should automatically receive compensation for that aspect as they made an investment decision on the basis that these assets were in the books at a certain value. If the investors feel they were deceived in this regard their recourse is with the vendor of the asset, not end users. ElectraNet further argues that there is an implicit understanding from the regulator that these assets would be revalued and that if they are not revalued it will raise doubts as to the treatment of future investments with resultant implications for efficient investment. The letter from the ACCC to ElectraNet of 3 August 2004 states quite clearly that "the ACCC *would consider* revaluation of ElectraNet's asset base" (emphasis added). Consideration does not amount to doing. The impression that ElectraNet staff gained from meetings with the ACCC that there would be a revaluation is certainly not supported by the letter of 3 August 2004.

Following changes to the National Electricity Rules, Chapter 6A codifies in great detail how the regulatory regime is to be applied and it is difficult to think of any competitive industry where its operating environment is so clearly spelt out. The lack of certainty argument is nothing more than a furphy.

Finally, ElectraNet attempts to justify its position by showing a comparison of TNSP easement values. Ignoring the fact that the above arguments make this irrelevant, ElectraNet itself states that one of its disadvantages is radial lines through sparsely populated areas. As a kilometre of saltbush desert outside Port Augusta has a significantly lower value than a kilometre of prime Sydney real estate this is not a strong validation for such a substantial revaluation.

ElectraNet has applied for re-admittance of optimised assets of $21 million. While the EUAA is not in a position to comment on the technical aspects of the revaluation undertaken by GHD, the Davenport to Cultana 275 kv double circuit reversal, in particular, needs to be examined closely in respect of the forecast load requirements.

2.2 *Ex-ante* Capital Cap

The rationale behind switching to an *ex-ante* cap on capex is that this will impose greater discipline on TNSPs capital expenditure, and also provide certainty to users in terms of capex and hence future regulated TUoS. There are, however, a couple of potential weaknesses in this approach:

- The proposal, and hence accepted value, is based on forecast growth and project costs. If growth or delivered costs are lower (and the probability should be equal that it be higher or lower if we are using the forecast growth figures), then (in theory) TNSPs could spend in excess of what is strictly "prudent", up to the accepted cap. (To overcome this, would require a detailed *ex-post* assessment on

top of the current *ex-ante* assessment). That is, the *ex-ante* cap does not necessarily guarantee only prudent levels of future expenditure.

- If growth is higher than expected, TNSPs are likely to hold back on projects not included in the *ex-ante* approved budget, until they can be approved in the next regulatory period. That is, flexibility to adapt is constrained during a 5 year planning horizon, which given historical experience with the accuracy of load forecasts, is not necessarily a prudent approach.

In South Australia, demand growth is forecast to be high and, as a result, ElectraNet is likely to apply for a higher *ex-ante* cap to ensure that the approved *ex-ante* cap is sufficient to meet unexpectedly higher growth. If, however, this growth does not eventuate, customers will be bearing the additional costs this methodology has imposed.

2.3 Capital Expenditure

The EUAA commends ElectraNet on the detailed information that it has provided and the thorough review process that it has undertaken in compiling the capital expenditure program. We also acknowledge that ElectraNet has undertaken a comprehensive vetting program and evaluated options for containing the capital expenditure. However, the proposed capital expenditure program for the next regulatory period is some $778 million, a 117% increase, over the $358 million approved for the current regulatory period. In addition, another $1 billion dollars is earmarked for contingency projects.

While the CBD upgrade will account for nearly 20% of the capital expenditure program, the EUAA has concerns about the extent of the program and ElectraNet's ability to deliver, particularly if the constraints on labour and equipment used to justify increases in input costs eventuate. Unfortunately, as mentioned earlier, the EUAA was not able to obtain any funding from the Advocacy Panel for this project and consequently we are not able to provide a technical assessment of individual capital expenditure projects as requested by the Chairman of the AER at the Public Forum held in Adelaide on 24 July 2007. It should be noted that we had requested funding from the Panel for the express purposes of a technical and engineering evaluation of the Electranet application – this request was rejected.

Accordingly, the assessment in this submission is necessarily more subjective and higher level than we had hoped.

We understand that ElectraNet's Capex forecast has been based on the following:

- Load forecast based on connection point demand forecasts provided by ETSA Utilities and ElectraNet's direct connected customers

- Modelling to identify generation and load developments through the application of a probabilistic scenario analysis methodology

- New ETC standards requiring investment to meet mandated reliability standards

- A suite of likely augmentation projects developed by Electranet

- Replacement of aging assets

- Security / Compliance and other non-load driven investments

In general, the reasons given for increased capital expenditure within ElectraNet's submission appear to reflect similar issues facing other networks around Australia. However, there are a number of areas of concern. In general, we consider that the AER needs to pay particular attention to key aspects, namely:

- The interpretation and application of the new ETC standards, and;

- Cost increases resulting from wages growth and equipment and materials.

At a minimum, the AER should consider commissioning its engineering consultant to undertake a study of the reasons for the large increase in capex and evaluate the efficiency of all of the capex ElectraNet spent (and is claiming will be spent) in the current regulatory period.

This needs to go beyond what is "reasonable" to what is "efficient" in terms of ElectraNet's privileged role as a monopoly TNSP in South Australia.

Based on the outcome of the evaluation study, the AER should only allow rolling in of any increased costs of capex related to meeting increases in customer demand. The cost of alternatives to network augmentation, for example, demand management and distributed generation, should be considered in determining capex. It is important that the cost of network augmentation should only be allowed where it can be shown to be the lowest cost alternative.

2.4 Electricity Transmission Code

ElectraNet notes that "growth in customer demand together with the ETC clause 2 reliability standards are the key driver for connection point reinforcement and transmission system augmentation. Over 50 per cent of ElectraNet's expenditure forecast is driven by these requirements (Page 22). While the EUAA recognizes that there is a statutory requirement on ElectraNet to meet the requirements of the ETC, the Code provides flexibility to ElectraNet on how they meet these standards. It does not appear from the application that ElectraNet has comprehensively explored demand side management options that would possibly allow the deferment of some capital expenditure. While recognizing the constraints imposed

by Chapter 6A of the National Electricity Rules, this aspect should be thoroughly scrutinised by the AER.

Once again, we would have preferred to have access to advice on the detail of this but the rejection of our application by the Advocacy Panel made this impossible.

2.5 Cost Increases

We do acknowledge that material costs associated with transmission lines have significantly increased above the rate of CPI in recent years. We, however, do not believe that these increases justify the almost 100% increase in capex sought.

The AER needs to determine:

- How relevant these cost increases are?

- Are they realistic?

- How would more competitive industries address similar increases in their costs?

The forecasting of input costs is always going to be difficult and contentious and there is going to be many schools of thought. However, under an *ex,ante* system the incentive is for a competent manager to err on the high side in their projections. The increases in both ElectraNet's capex and opex have a significant element of increase from input costs, particularly wage cost. However, as the following quote from the August 2007 edition of the ANZ Australian Property Outlook in respect of South Australia shows, this view of increasing cost pressures is not shared by all

> *"In recent quarters employment has stalled and economic growth has weakened sharply. The rising Australian dollar is making life increasingly difficult for the manufacturing sector, the drought has hurt farm incomes and the state is now in technical recession following two consecutive quarters of negative growth[2]. Moreover, while state government programs to attract international projects have been very successful, South Australia is still losing significant population numbers to other states (2765 in 2006) and the trend is rising sharply. Diminished relative employment growth may exacerbate this outflow in 2007/08."*

This is counter to the arguments advanced in Appendix D by BIS Shrapnel who forecast wages growth (AWOTE) in the South Australian utilities sector to average 5.9 per cent over the next regulatory period. To arrive at this high rate of growth BIS Shrapnel has placed great emphasis on the pressure on the skilled labour market from the mining boom. The current turmoil in financial markets places even greater uncertainty on whether the forecast mining boom is going to eventuate. ElectraNet has correctly identified that it is by no means certain that the mining boom will eventuate and has consequently relegated the capex required

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[2] As measured by trend state final demand plus net international exports.

to facilitate the major mining projects to contingent projects. Despite this, the growth in wage rates that is supposed to occur from the perceived shortage of skilled labour as a result of the mining boom are fed in to both the capex and opex calculations.

The EUAA considers that the AER must review critically the arguments advanced in Appendix D of the application. In particular, we disagree with the arguments advanced by BIS Shrapnel in Section 6 as to why they believe that the Access Economics projections commissioned by the AER in respect of the Powerlink revenue reset are wrong. Compared with Queensland – with the exception of Olympic Dam and Prominent Hill – the projected mining activity in South Australia is more at the exploration stage. ElectraNet outsources most of its engineering work. ElectraNet is a large player in the market and can exert pressure to get the best price. Unlike regulated TNSP's, the associated service providers compete in a competitive market and will respond accordingly. We note that ElectraNet has detailed in its applications areas where it has been able to extract savings on contracts but the forward projections are still based on the perceived skill shortage. A further argument advanced by BIS Shrapnel is the desire for utilities to increase "in-house" skills. How relevant is this argument in respect of ElectraNet with its outsourcing policy?

The EUAA was disappointed with the AER's decision to change its position on this critical cost factor in the Powerlink final determination. The some arguments are again advanced by BIS Shrapnel and they would appear to be even less validity in the South Australian environment than they do in Queensland. The EUAA considers that the AER must again undertake a critical analysis of projected wage costs and challenge the arguments advanced in Appendix D.

2.6 Timing of proposed capital expenditure program

In addition to the magnitude of the capital expenditure, we are also concerned at the proposed spend over the regulatory period which is heavily biased to the initial years. *Table 4.1 Annual capitalisation ($m nominal)* shows that, in the first three years of the current regulatory period, ElectraNet heavily underspent the approved amounts followed by a heavy overspend in 200.

Table 2.1: Annual capitalisation ($m nominal)

	2003-04	2004-05	2005-06	2006-07	2007-08	Total
Approved ($2002-03)	68.2	87.8	78.6	68.6	45.4	358.3
CPI Escalation	70.5	92.6	84.8	76.2	52.0	385.9
Actual/Forecast	34.9	42.8	65.5	98.0	146.5	389. 8
Variation	(7.6)	(49.8)	(19.3)	21.7	94.4	3.9

The proposed capex program is heavily front loaded. *Table 5.11: Forecast capital expenditure*, in the ElectraNet application shows a program heavily weighted to the first two years of the regulatory period. In particular, ElectraNet is proposing to spend over $200 million in the first year –149% more than they are spending in 2007-08. ElectraNet argues in its submission that the spending pattern over the current regulatory period demonstrates their ability to be able to ramp up their capital program. We note, however, that the level of magnitude of the increase in the current regulatory period is nowhere near the same as what is proposed in the early years of the next regulatory period nor the possible constraints faced as great.

Table 2.2: Forecast Capital Expenditure

Category	2008-09	2009-10	2010-11	2011-12	2012-13
Network	183.3	212.2	157.7	123.5	60.7
Non-Network	16.9	6.8	7.2	6.2	4.9
Total Cape x	200.2	218.2	164.6	129.5	65.6

This is not an insignificant issue for end users as prices are based on the projected revue streams which are, of course, based on the projected spend patterns.

2.7 Risk and Escalation Modelling

ElectraNet contracted Evans and Peck to provide a risk review of the capital works program and escalation review. The consultant's undertook sophisticated modelling to derive their findings. However, the robustness of modelling is dependent on the value of the parameters used and these are not transparent. For example, in *Appendix E Escalation and ElectraNet Infrastructure Projects*, Evans and Peck make the following statement:

*"Based on the relative movement in various Australian Bureau of Statistics and industry indices over recent years and the various trends that can be drawn from this information, **Evans & Peck has developed and modelled the trends to assist in predicting the rates of escalation for ElectraNet projects.** (Page 3, Emphasis added)."*

The EUAA urges the AER to thoroughly examine the underlying information on which the sophisticated modelling is undertaken. Where it is based on expert opinion, there will invariably be other experts who hold different views. Sensitivity analysis must also be undertaken on the base parameters. For example,on Page 17 of Appendix E, when discussing the application of a Monte Carlo simulation Evans and Peck state:

"To provide rigour and transparency in establishing appropriate levels of escalation we have utilised the historical trend information from the previous nine years ….."

Why nine years? What happens if you used five years or ten years? Similarly, Appendix E contains bullish projects for future metal prices that would not appear to reflect the thinking of many financial commentators nor the recent downturns on metals markets.

In addition, the "justifications" argued must also be dissected and tested by the AER. We do not accept as a "justification" for the robustness of the current application the fact that their past history shows that they underestimated their capital program by 22%. We consider that this "fact" is entirely irrelevant in assessing the veracity of the current application. The application provides for a Risk Adjustment factor of $36.6 million. Evans and Peck suggest that ElectraNet adopting a P50 level is being conservative but examining the inherent and contingent risk factors detailed on Page 9 of Appendix F, we question to what extent these factors are applicable to ElectraNet's capital program, how much could be mitigated by good planning and project management, and what portion of the risk should be worn by the end user. In short, is this "guarantee" of $36.6 million justified?

2.8   Proposed Capital Program

Table 2.3 shows that Augmentations and Connections are showing an increase of 80% and 268% respectively with a total projected spend of $385.8 million compared with a historic spend of $169.7 million. ElectraNet places the justification for the increase in Augmentations as "increased expenditure largely driven by the mandated Adelaide CBD reinforcement", while for Connections they say it is "largely driven by the connection component of the mandated Adelaide CBD reinforcement and other projects driven by the new ETC standards" (page 68). Yet the total value of the CBD project is only $138 million.

Table 2.3 Historic and forecast capital expenditure for augmentation and connection

$M ($2007-08)	2004	2005	2006	2007 (f)	2008 (f)	2009 (f)	2010
Augmentation	7.5	10.2	32.5	38.0	35.0	57.9	73.9
Connection	26.7	10.0	16.4	6.2	12.0	56.1	47.4

The AER needs to thoroughly examine the projects identified as being driven by ETC requirements and consider whether more efficient options could be implemented. We are aware that the ETC provides timelines in which ElectraNet must meet the standards and that it will not be possible to meet these timelines with the size of the proposed capital program. It would appear that other options, such as demand side initiatives, may offer more efficient solutions. As mentioned previously, it is not evident from the application as to what extent these options were investigated.

The capital expenditure program proposes an amount of $70.4 million for increased physical security of critical infrastructure compared with a current spend of $1.9 million. The EUAA acknowledges that physical security is a priority issue, but the proposed spend appears to be very high when, in the current regulatory period, less than $2 million has been required. It is not clear from the application whether the required standard has been set by government or how the program was put together. It also raises the issue that, if required by government, should the cost of these upgrades be met from the government budget rather than being slotted home to end users.

The program also includes an amount of $13.3 million principally for an extension to the head office building to accommodate the increase in staff requirements to deliver a larger capital program. The EUAA is aware that at present ElectraNet staff are accommodated in three buildings and that this is not a desirable situation, but we question whether this refurbishment should be proceeding at the current time in view of the large increase in the capital program and the increase in prices that will result?

Finally, ElectraNet identifies a number of initiatives that it has implemented to contain costs such as:

- Design standardisation;

- Program management;

- Supply chain management, and;

- Increased outsourcing.

Whilst welcome, it is not clear, however, as to what extent these cost savings have flowed through given the importance placed on increased costs in the application.

2.8.1 Load and generation Scenario Analysis

In general, the probabilistic scenario approach taken by ROAM seems acceptable, and a reasonable way of dealing with the high level of complexity and uncertainty regarding future generator options, locations, and timing. However, the sophistication of this analysis tends to take the focus away from the assumptions underlying it, which is likely to have a high degree of impact on the outcomes. Specifically:

- *The prudence of individual projects.* Details regarding the need for individual projects are not included. Details should be provided based on objective planning criteria, and whether each project passes (or is likely to pass) the Regulatory Test criteria at the projected completion date. Likewise, there is no discussion of alternatives considered for each project, nor whether the scope (design, specification, etc) is prudent and in accordance with best industry practice.

- *The timing of individual projects.* There is no discussion of the timing of individual projects, and whether this is optimum, or if some could be cost effectively deferred. The timing of projects appears to be "fixed" under all scenarios, when it would seem likely that different projects would occur at different times under varying scenarios, especially if demand forecasts are one of the variables used to generate the 18 scenarios.

- *Cost estimates for individual projects.* The basis for cost estimates is not discussed in detail for many projects, nor whether these have been independently reviewed, or benchmarked against recent projects to ensure prices are realistic and efficient.

It is likely that the above issues could have at least as big an impact on the final outcome as the probabilistic scenario; however, the discussion focuses on the scenarios and probabilities, rather than the underlying projects.

2.9 Regulatory Asset Base

As previously noted, the EUAA is strongly opposed to the easement revaluation adjustment sought by ElectraNet and does not believe that the letter from the ACCC (dated 3 August 2004) constitutes anymore than a commitment to consider the issue. In our view, the easement revaluation should not be allowed.

We also note that ElectraNet has changed its accounting practices and that the asset base roll forward has been conducted with the new asset classes. We further note that details of the asset class mapping are supporting information that is available

to the AER "upon request". While not opposed to the setting of new asset classes, we are concerned that there maybe some *de facto* revaluation of assets in the remapping process and urge the AER to avail itself of the opportunity to thoroughly examine this aspect.

ElectraNet has included an amount of $44.4 million as its forecast of prudent expenditure on assets under construction. While we are not in a position to be able to form a judgment on this amount, we consider that this figure should be able to be determined with a high degree of accuracy and verified by the AER.

3   OPERATING AND MAINTENANCE EXPENDITURE

3.1   Historical Opex

The ACCC approved ElectraNet's O&M expenditure amounting to inflation adjusted $242.8 million over the five year period from 2003/04 to 2007/08. Over this period, ElectraNet's actual opex is estimated to be around $222.8 million, $20 million, or 8.2 per cent less than the ACCC allowed amount.

Of equal concern is the fact that ElectraNet had forecast expenditure of $96.1 million in the first two years of the regulatory period but actual spend was only $77.4 million, ie an underspend of 19.3 per cent. In other words, ElectraNet was able to enjoy revenues from costs that had not been incurred.

Of even greater concern is that, as can be seen from figure 4.2 on Page 37 of ElectraNet's application, a marked year on year reduction in opex expenditure commencing in 2002 -03 has been replaced by a steady yearly increase that is forecast to continue through the next regulatory period.   The "savings" from the various programs implemented by ElectraNet do not seem to be delivering the initial expectations.

ElectraNet 's revenue cap application in 2002 explained the need to increase operating expenditure in a number of areas including:

- Increased expenditure on asset refurbishment and network monitoring to address an ageing network and maintain reliability;

- Higher insurance costs; and

- Additional obligations under the National Electricity Rules to co-ordinate planning and operation of the transmission network with the National Electricity Market.

In Section 4 of the application, ElectraNet notes that long term sustainable savings, primarily in corporate costs, have been achieved through the restructuring of business operations and other initiatives.   If the significant underspend in the first two years of the regulatory period were the result of these savings initiatives, then this should form the base year for the projected opex requirements.

In explaining the increased spending requirements over the last three years of the current regulatory period, ElectraNet claims that this reversal is due to the new maintenance regime and various external factors including:

- Increasing labour costs;

- Increasing plant and equipment costs;

- Increasing legislative obligations including changes in safety legislation and growth in environmental restrictions; and

- Growth in its network.

On the information provided it is hard to see how such a quantum leap in opex spending over the current regulatory period occurred in such a short time frame. While we acknowledge that the asset maintenance program may have advantages in being able to stretch the life of some existing assets, this extension has been used as a step increase for the next regulatory period and needs to be justified by the AER.

3.2   Future Opex

We do not believe that the application adequately explains the rapid reversal from the position achieved in 2004-05 following the implementation of the savings initiative to a continual growth extending over the next regulatory period.

ElectraNet has identified the following key cost drivers:

- Asset growth;

- Ageing asset base;

- Labour skills shortages and real wages growth; and

- A number of cost scope changes.

While we do not doubt that ElectraNet faces some cost pressures, all enterprises in the economy face similar ones.   Nevertheless companies in a competitive environment cannot simply pass on their higher costs by increasing prices.   Cost increases must be addressed by productivity gains and improved efficiencies. Indeed, this is one of the key objectives of 'incentive regulation' and reasons why end users have supported its use. The alternative for non-regulated firms is losing market share and reduced profits.   It is only when productivity gains and efficiencies are greater than cost increases that such enterprises would enjoy improved returns.   If Electranet cannot find sufficient productivity gains and efficiencies to offset its operating costs, then its returns should similarly suffer.

Is this not what "incentive regulation" is meant to promote – the incentive to find efficiencies and achieve productivity gains so as to improve returns?

Enterprises in a competitive environment cannot turn to a price regulator to increase prices to maintain profits in the face of cost pressures.

3.3   Selection of Base Year and Scope of Changes

ElectraNet has chosen 2005-06 as the base year for its forecast of future expenditure and argues that the expenditure in that year was approximately 4 per cent ($1.8 million) less than the efficient level of expenditure included in the ACCC's revenue cap decision CPI adjusted (the inflation figure appears to be high). We note, however, that the 2005-06 year marked a significant increase, 23.3 per cent ($8.8 million) in expenditure over the 2004-05, the year in which savings programs initiated by ElectraNet took effect. It is our view that 2004-05 represents a far better representation of the "efficient" benchmark than the inflated 2005-06 year and should be used for the base year.

A trend that has been apparent in revenue resets is to identify and factor in a number of "changes" which all seem to have one thing in common, ie that they are all increases in costs and therefore revenue. The ElectraNet application continues this trend with such added extras as a progam for generator tests and revenue reset costs. Are we to believe that ElectraNet incurred no costs in preparation of their last reset application or the current application did not include one off justifications that seemed to have been built into the "efficient" base year? The AER should not accept such arguments but should look for the corresponding offsets. The AER then needs to apply a rigorous test as to what extent cost increases that legitimately exist should be absorbed through improved management efficiency.

3.4   Controllable Opex

Over the next regulatory period, ElectraNet has forecast that controllable opex would be over 31% ($69.3 million) greater than the controllable opex in the current regulatory period. As can be seen in Table 3.1, over the regulatory period, in trend terms, ElectraNet's proposed opex increases on a steady basis. This trend, which would appear to reflect the compounding in the increase of input costs off a consistent base, does not demonstrate the efficiencies that ElectraNet claims to be extracting from its contractors in respect of the outsourced maintenance program.

Table 3.1: ElectraNet's Controllable Operating Expenditure Forecast & Percentage Increase Over Preceding Year

ElectraNet's Controllable Operating Expenditure Forecast ($m 2007-08)					
2008-09	2009-10	2010-11	2011-12	2012-13	Total
54.2	55.8	58.4	61.3	62.5	292.1

These increases also do not appear to be justified given the asset mix and taking into account increased input costs. Increases in opex of the magnitude sought by ElectraNet need to be examined closely by the AER and pared back significantly to

reasonable and efficient levels before consumers would accept them as reasonable. Application of techniques such as benchmarking, external assessment of proposals, comparisons with past trends, and detailed examination of the explanations, reasons, or claimed sources of cost pressures and the like are required. As noted previously, we consider that the base year for this analysis should be 2004-05 as this represents the year reflecting the implementation of the savings initiatives and would best represent the "efficient" benchmark.

Once again, the AER needs to determine:

- How relevant these cost increases are?

- Are they realistic?

- How would more competitive industries address similar increases in their costs?

3.4.1 Field Maintenance

Field maintenance will account for roughly half of the controllable opex expenditure in the next regulatory period. As can be see from Table 4.5 in ElectraNet's application, Field Maintenance roughly doubles for each of the last three years of the current regulatory period. ElectraNet notes that the cost drivers for maintenance projects are the age profile of assets, and the design parameters of the plant and its sub-components. However, ElectraNet does not provide any detail on the individual cost components nor how much is the result of labour cost increases.

As ElectraNet outsources most of this work, it is hard to understand how increasing labour costs could be so quickly written into long term contracts or how the maintenance asset program could continue to require such a high level of resources given the changing composition of the assets. This is particularly so given that, in a small economy like South Australia, ElectraNet would account for a large percentage of infrastructure work and could be expected to extract substantial savings from contractors interested in the long term. In this context we note an article in the *Financial Review* on 4 September 2007, "Telstra cost-cutters wield the axe on contractors" where the telco reports it expects to save over $140 million over an initial two year contract term. A breakdown of the drivers and the relative contribution of each driver, would be informative.

Table 3.2: Field Maintenance ($m) as percentage of Total Controllable Expenditure

2005-06	2006-07	2007-08	2008-09	2009-2010	2010-2011	2011-2012	2012-2013
$18.0m	$21.0m	$21.4m	$23.6m	$24.2m	$25.3m	$26.4m	$26.4m
38.6%	43.8%	42.1%	43.5%	43.4%	43.4%	43.1%	42.2%

3.4.2   Increase in Opex due to Network Growth and Replacement of Ageing Assets

ElectraNet has escalated its 2005-06 base year operating expenditure to account for asset growth over the next regulatory period and has applied economy of scale factors based on ElectraNet's experience and judgement. The EUAA considers that these factors need to be thoroughly examined by the AER. Recent Sinclair Knight Mertz (SKM) studies have indicated there are economies of scale in opex related to the size of the network. These studies indicate that opex should increase by no more than 75% of the relative increase in the size of the network. Based on an augmentation capex of $228 million on a forecast RAB of $1,276.5 million at 1 July 2008, this equates to an increase in the size of the network by some 17.9% (this figure is overstated because it does not allow for depreciation). On this basis, an opex increase of 13.4% is explained by the growth in the network. The ElectraNet costings need to be considered against this benchmark.

The 31% increase cannot be explained solely by network growth but has to result from the other factors, which we believe have not been substantiated. Replacement capex of $240.4 million over the period 2008-09 to 2012-13 accounts for 32.6% of the total capex program in 2007-08 dollars. This is a 30% increase over the $184.1 million projected to be spent in the current regulatory period and 18.8% of the opening RAB amount of $1,276.5 million and we would expect would have a major effect on the composition of the asset mix, leading to a reduction in maintenance given the different requirements of more modern equipment. This is a significant part of the asset base and, while we acknowledge ElectraNet's advice that the average age of the asset base will only reduce by two years, it is the breakdown of the categories, the life expectancy within the categories and the different maintenance requirements of the categories that are the crucial determinants. Such a large asset replacement program would also seem to flow through to the extended maintenance program that ElectraNet has introduced to manage the aged assets with consequent savings. These factors are central to the projected increases in the opex program and need to be thoroughly examined by the AER.

3.4.3 Land Tax Forecast

While relatively insignificant in itself, the land tax obligation needs to be looked at in the context of ElectraNet's property valuation estimate. As noted previously, the closing value of $57 million in 2012-13, a 173% increase over 2007-08, needs to be subject to critical analysis.

3.5 Opex/RAB

ElectraNet's opex to RAB ratio shows a marked improvement from 4.4% to 3.4% over the regulatory period and supports ElectraNet's claims to having implemented a number of "savings" programs. While we commend ElectraNet on this significant improvement, we note that based on the AER's April 2006 regulatory report on TNSP's, ElectraNet 's ratio of 3.4% in 2012-13 would only put it equivalent to the average of the NEM TNSPs at the end of the regulatory period. We have previously commented on ElectraNet's arguments as to its many "unique" factors, particular the radial nature of the network, but we reiterate that all TNSP have claims to the "uniqueness" of their operations.

Table 3.3: OPEX vs RAB ratio

		2008	2009	2010	2011	2012	2013
Opening RAB	$m	1,276.5	1,468.0	1,687.9	1,859.7	1,998.6	2,057.5
ElectraNet Opex	$m	55.7	59.6	61.5	64.4	67.8	70.5
Opex/RAB	%	4.4%	4.1%	3.6%	3.5%	3.4%	3.4%

3.6 Network Support and Demand Side Management

Apart from the provision of $27.3 million for network support services for Port Lincoln, we are disappointed that ElectraNet has failed to identify any additional demand management and embedded generation opportunities and embed this in its business strategy for the next five years. This is particularly so given that ElectraNet is provided with this flexibility in meeting its reliability requirements under the SA Electricity Code.

Exploiting these opportunities more effectively would allow ElectraNet to better manage some of the cost pressures and avoid the pass through of the high cost of capital to all South Australian users and better meet the reliability requirements imposed on it by the Code. We note that the benefits of embedded resources on a $/kWh avoided are greater when networks are exposed to short duration and infrequent peaks that are typical of extremely hot days, a situation that is found in South Australia.

While we acknowledge that there may be some issues with how the system can ensure that non-network alternatives will be available during times of system stress, more needs to be done to encourage a solution which will lead to an overall lower cost and allow the capex program extended over a longer and more manageable timeframe.

That network operators' revenue is dependent on network expansion, in large part because of the incentives in the current regulatory regime, is a significant impediment to the development of demand side response even though such development would almost certainly lead to lower overall cost.[3] Based on our experience and exposure to these matters over time (in both transmission and distribution), it is also our view that there are certain significant ways in which non-network solutions do not encounter a level playing field. This includes inadequate notice periods of potential opportunities to allow non-network solutions to be developed, a lack of information about opportunities, a lack of direct contact and interaction with potential providers of demand side response (eg end users, retailers and aggregators), a lack of players with the ability to co-ordinate such options, a lack of end-user knowledge and education, and other factors.

Regulatory measures to encourage Demand Management and aimed at providing NSPs with sharper incentives to peruse non-network options and aggregation providers (such as Energy Response), are all worth serious consideration and should be encouraged by the AER's regulatory decisions.

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[3] It is also clear from our discussions on the matter that network solutions, especially in sensitive areas, can create a plethora of planning, technical, infrastructure, environmental regulatory hurdles that can delay construction and increase costs.

4 WEIGHTED AVERAGE COST OF CAPITAL

Return on capital (WACC X Asset Value) is a prime determinant of annual revenue requirements over the next regulatory period. End users believe that several of the WACC parameters are over generous to the TNSP's. This position is supported by the Allen Consulting Group in its report to the ACCC, *Empirical Evidence on Proxy Beta Values for Regulated Gas Transmission Activities*, dated July 2002.

ElectraNet and SP AusNet have both sought an increase in the risk free rate based on research conducted by NERA consulting. If any aspect of the WACC is to be changed the EUAA believes that all parameters and other aspects should also be opened for change.

We provide some comments on specific components of WACC in the following sections.

4.1 Risk Free Rate

In its application, ElectraNet has argued that based on research undertaken by NERA, the yield on indexed bonds is biased downward by the order of 20 basis points. Consequently, ElectraNet in determining the expected inflation rate, has made a 20 basis point adjustment applied to the real risk free rate to determine an assumed inflation rate of 2.97 per cent.

The EUAA strongly opposes this adjustment as we believe that the NERA analysis is flawed. The EUAA commissioned Professor Martin Lally to undertake an analysis of the NERA paper and a copy of his review is attached.

NERA has argued that nominal and indexed government bonds are poor proxies for nominal and real risk free assets, and that upward adjustments should be made to the costs of equity and possibly also the costs of debt on account of this. In particular, they favour an upward adjustment of 66 basis points for the nominal cost of equity. Also, in so far as expected inflation is estimated from the difference in yields on nominal and indexed government bonds, they favour an 86 basis point increase in the real cost of equity and a 20 basis point increase in the real cost of debt. They also believe that reductions in the supply of, and increases in the demand for, government bonds aggravate the problems here.

We consider these arguments are invalid, for the following principal reasons. Firstly, a reduction in the supply of an asset, or an increase in the demand for it, has no bearing upon its suitability as a proxy for the risk free asset within the context of the CAPM. Changes in the demand for, or supply of assets, and therefore in the equilibrium prices for them, are simply part of the financial landscape and are entirely consistent with the CAPM.

Secondly, the relevant criteria for choosing a risk free asset within the context of the CAPM are that the asset is risk free, liquid, that there are no restrictions upon the purchase of the asset by investors, and that investors are not attracted to or repelled from the asset for reasons other than the probability distribution over its return. Nominal government bonds trivially violate the first requirement, and also the fourth requirement on account of their value as collateral. Indexed government bonds may also violate the second requirement on account of relatively low liquidity. However, NERA's preferred alternative (insured corporate bonds) violates all of these requirements. Thus, government bonds would seem to be a much better proxy for the risk free asset than NERA's preferred alternative.

Thirdly, even it were true that insured bonds were a better proxy for the risk free asset than government bonds, this conclusion would both raise the risk free rate within the CAPM and lower the market risk premium. NERA wrongly judges the latter effect to be zero and therefore overestimates the increment to the cost of equity for a regulated firm.

A detailed explanation of our views is contained in a separate submission, that also contains Professor Lally's review, that we have made to the AER on this issue (copy attached).

In the SRP, the AER proposes to estimate the risk free rate with reference to the 10-year bond rate. This proposal, however, ignores the fact that refinancing of debt can readily be undertaken in a financially mature market like Australia. Given the five yearly regulatory cycle, it is more appropriate for 5 year bond rates to be used as refinancing can occur to coincide with the regulatory cycle. Over the long term (October 1993 and April 2006), 5 year Treasury Bonds average about 28 basis points (bp) lower than the 10 year bond.[4] Recently (January to April 2006), however, the difference between the two yields is just 3 bp. Nevertheless, using 5 year bond yields can be expected to lead to a slightly lower WACC. There is no reason why the bond yield period should be different from the regulatory period under consideration.

4.2   Market Risk Premium (MRP)

ElectraNet uses the MRP prescribed in the SRP at 6%. The AER, however, should be aware that customers have never agreed that 6% is an appropriate MRP value. Customers have always contended that a 6% MRP is based on backward looking

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[4] http://www.rba.gov.au/Statistics/OP10_update.xls

historical data, which tells us what the MRP was in the past but may have little relevance to how markets might behave in the future in the presence of significantly lower inflation and interest rates. We note that whilst other WACC parameters are forward looking, the estimation of the MRP remains the only WACC parameter that still relies on backward looking historical trends.

The AER should note that UK regulators have all adopted a forward-looking market view in estimating the MRP. UK regulators adopt substantially lower values for the market risk premium (of 3.5% - 4.0%) than do Australian regulators, who all adopt values around 6.0%.

In its SRP Discussion Paper, the ACCC stated that it believed that this difference is due to segmented stock markets, and that investors require a higher risk premium to invest in the Australian market. We, however, see no evidence of this segmentation, neither of stock markets nor of investors requiring a higher risk premium in Australia. Indeed, while there is evidence that debt costs are different (and this is taken into account by the risk free rate and debt premiums), there is no evidence that Australia is not fully integrated into competitive international debt and equity markets. We thus do not see any evidence that financial markets see Australian utilities as being 'less efficient' or 'more costly' than their UK and US counterparts, particularly when other capital-intensive (but unregulated) Australian companies are able to compete internationally for capital and debt funding.

In its report for the Electricity Consumers Coalition of South Australia, *Further Capital Market's Evidence in Relation to the Market Risk Premium and Equity BETA Values*, dated December 2003, Headberry Partners and Bob Lim & Co found that the average MRP over the period 1970 - 2001 is 3.30% (as measured against 5 year bonds) and 3.03 (measured against 10 year bonds). Inflation over the same period averaged 3%.

Recent regulatory decisions using an MRP of 6% grossly inflate the returns on equity above the level required by the market. Australian regulators should consider adopting a forward-looking MRP value, as implemented by overseas regulators, which would also be more consistent with the methodology applied in determining the other WACC parameters. We note that the recent ESC draft decision on Victorian gas distribution access prices includes a MRP of 5%.

4.3 Equity Beta

ElectraNet also propose an equity beta of 1.0 consistent with the SRP. Again customers do not accept that an equity beta of 1.0 is appropriate for a regulated monopoly with a guaranteed level of revenue.

By definition, the market as a whole has an equity beta of 1. Applying an equity beta of 1.0 for a regulated monopoly with guaranteed level of revenue implies that the AER believes that TNSPs are as risky as the market as a whole. This is incongruous when 99% of TNSP revenue is guaranteed and total compensation for its costs of service assured by the regulatory arrangements. We cannot emphasis strongly enough that there is no risk in this business!

Accordingly, the equity beta should be significantly less than one.

This position is supported by the Allen Consulting Group which, in its report to the ACCC, *Empirical Evidence on Proxy Beta Values for Regulated Gas Transmission Activities*, dated July 2002, suggested an equity beta of under 0.7 for Australian gas transmission companies based on Australian market data.

Prior to handing over its energy responsibilities to the AER, the ACCC had also suggested that it was willing to consider equity betas as low as 0.35 (see discussions on the draft Statement of Regulatory Principles[5]). In addition, we note that the ACCC agreed in the GasNet case before the Australian Competition Tribunal that an equity beta of 1 was overly generous. That the ACCC had chosen to ignore its own consultant's advice and its own research into this matter in its past decisions is regrettable and has imposed additional cots on consumers.

These views are supported by other regulatory authorities. The Essential Services Commission in its draft decision of 28 August 2007 on Victorian Gas Distribution Access Arrangements states:

"While consideration of the Australian data alone may indicate a range for the beta that extends below 0.5 and not above 0.7, the Commission considers that the US evidence makes it less plausible that the beta would is below 0.5, but also makes it plausible that the beta may extend up to 0.8. Accordingly, the Commission considers that the empirical evidence suggests that the 'best estimate arrived at on a reasonable basis' that is consistent with prevailing conditions in the market for funds and the risk involved in delivering the Reference Services, for the beta lies between 0.5 and 0.8."[6]

In its Economic Models, the ESC has used an equity beta of 0.7 for the four Victorian gas distribution entities.

We also note the ACCC statement in its Final Decision on Transend's transmission revenue application indicated that in future regulatory decisions it would incorporate equity betas, which reflect market information more accurately[7].

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[5] ACCC *Discussion Paper, Review of the draft Statement of Principles for the Regulation of Transmission Revenues*, 2003,p.78

[6] Essential Services Commission Victoria Draft Decision p396-7

[7] ACCC, *Tasmanian Transmission Network Revenue Cap 2004-2008/9: Decision, 10 December 2003*

The implications for end users are very costly. If an equity beta of 0.85 had been used in the recent Powerlink decision this would have reduced the revenue over the regulatory period by over $100 million. We urge the AER to use the ElectraNet determination to place a 'line in the sand' on this matter and show that it will be setting equity betas in its regulatory decisions that match reality, that is, they recognise the low risk nature of TNSPs and are set at substantially less than unity.

While acknowledging that the AER is to undertake a review of the WACC parameters in 2009 this will set some prices out to 2015. ElectraNet has raised issues related to the Risk Free Rate and in our opinion this opens the whole issue of the WACC parameters and the AER needs to bring forward a Rule change in respect of the equity beta and level of gamma.

5 SERVICE STANDARDS AND PERFORMANCE INCENTIVE

Consumer groups believe that it is important that electricity users obtain a reasonable level of service from the transmission system. We welcome steps taken to require TNSPs to implement some (limited) service standards, but believe that further steps are needed to establish a more effective and meaningful system of incentives for service.

The AER is aware of our strong views on the need for regulated transmission entities to be provided with incentives or service standards, particularly related to the impacts on the energy market (for example, due to outages for scheduled maintenance). This is axiomatic given the large impact, relative to transmission costs, that the actions of transmission companies can have on energy prices and their risk premiums. We have submitted a submission to the AER's current review of market incentives. In our submission we state that an incentives scheme is warreneted and that the actions to be targeted should cover the whole range of TNSP activities that affect the reliability of service:

1. Technology development.
2. Network planning and design to minimise exposure to outages on an economic basis.
3. Scheduling outages to minimise energy market impacts.
4. Contingency response planning including the holding of spare equipment and provision of personnel to respond to outages.
5. Maintenance of equipment as it affects exposure to failure.
6. Regular testing and maintenance of secondary equipment.

The primary focus would be on activities related to the minimisation of forced outages and the control of timing of scheduled plant outages that affect the energy market.

We have also previously recommended that performance incentives for transmission entities would be more effective if applied uniformly across the NEM. Completing reviews and revenue re-sets for all regulated TNSPs at the same time would best do this. This highlights once again that the current arrangement of piecemeal review of individual TNSPs at different times is costly, inefficient and substantially reduces the benefit to end users of regulation. The benefits we see in aligning the regulatory review includes:

- Enabling better benchmarking of cost and performance

- Consistent service standards for all TNSPs

- Consistent with MCE's desire to have a common regulatory standard across jurisdictions

- Avoid some of the costs of conducting individual reviews

We urge the AER to ensure the alignment of regulatory reviews for all TNSPs to be undertaken at the same time.

Traditionally, TNSPs have achieved fairly high reliability levels. Consumer complaints regarding reliability are largely directed at distribution networks rather than the transmission system. However, an area where the transmission system has a significant impact is the effect planned and forced transmission network outages have on the pricing of energy in the wholesale electricity market. Inappropriately timed outages on the transmission system could significantly affect energy prices in the various energy market nodes leading to increased risk faced by retailers (and consumers). This results in a higher premium charged to consumers as retailers seek to cover their exposure through higher cost one way hedge products. Accordingly, effects of transmission outages on the wholesale electricity market should be taken into account in assessing the performance of TNSPs, including ElectraNet.

The AER needs to resolve this question of outage scheduling as a matter of priority. While there seems to be two sides to this debate; one advocating the predictability of outage scheduling and the other promoting outage scheduling in response to spot pool prices, is it not possible that a combination of both positions may produce the best result? That is, outages may be scheduled on a number of option dates, with the final decision made in response to forecast spot pool prices in the pre-dispatch or reserve margins in the short-term PASA.

In its previous six revenue cap decisions (PowerNet, ElectraNet Transend, EnergyAustralia, TransGrid and Powerlink), the ACCC has placed 1% of allowed revenue at risk for under performances. This implies that 99% of the TNSP's revenue is guaranteed regardless of the level of performance. In the extreme event that Powerlink's performance deteriorates dramatically, consumers are still required to fund 99% of the allowed revenue.

That the 99% of full revenue is achieved by just meeting the average historical performance level shows just how much the regulatory framework protects the TNSPs. In the normal competitive environment that most of ElectraNet's consumers operate in, just meeting the average historical performance level would not guarantee past market share. Enterprises in a competitive economic environment must constantly improve their performance just to maintain their position. Only when its performance improvements are greater than its competitors would an enterprise begin to enjoy growth in revenues. Incentive regulation is meant to mimic the competitive market place and the AER needs to apply this competitive discipline to the businesses it regulates.

In previous decisions, the ACCC had structured its performance incentive scheme to achieve "revenue neutrality", whereby the TNSP's revenue over the regulatory

period would be largely unaffected should the TNSP meet its historical performance levels. Consumers, however, would expect that, with consistently increasing capex and opex, TNSP's performance would generally be improving. As a result, the performance incentive scheme would serve to provide up to a 1% increase in revenue to the TNSP on the back of investments that consumers are already paying for, with little downside. Meaningful "stretch factors" need to be applied to ensure that consumers are not simply paying an incentive bonus for the better performance that the increased investments would, in any event, bring.

ElectraNet has raised a number of issues, in particular the radial nature of the network in South Australia, that it believes warrant special consideration. In addition, it is proposing different caps and collars to reflect what it believes is the asymmetry between the higher potential for service performance to deteriorate and the lesser potential for further service improvements. ElectraNet is also proposing that target values be set based on the average performance of the network over the preceding 11 years for the loss of supply event frequency parameters and the preceding 9 years for the average outage duration parameter. adjustments to the loss event frequency targets for the impact of material connection point changes. The EUAA believes these factors should be challenged in the context of the above discussion.

6   CUSTOMER IMPACT

6.1   Average Transmission Prices

For consumers, the main impact of the AER's determination on this and every other transmission issue is what this application means for prices. It is unfortunate that the ElectraNet application reflects the common practice and makes very little comment on this important aspect.

Transmission charges represent about 10 per cent of the average customer cost of delivered electricity in South Australia. Under the ElectraNet Revenue Proposal, the average TUoS payable will increase from the $13.30/MWh (forecast 2007/08) to $18.50/MWh in 2012/13, an increase of about 39 per cent, or 6.8 per cent per annum, over the regulatory period.   ElectraNet has calculated the average customer price impact for various customer classes[8] as follows (Table 6.1)

Table 6.1: Average Customer Price Impact

Customer Class	Average Annual Bill*	Indicative Impact of Revenue Proposal	
Residential	$1,058	$7.50	0.7%
Small Business	$2,685	$19.00	0.7%
Large Business	$120,000	$1,600.00	1.3%

Source: ESCOSA 2005-06 Annual Performance Report – SA Retail Market, November 2006

However, the use of "average figures" conceals the full extent of the effect on large end users who invariably wear most of the cost increase. Some EUAA members in South Australia are directly connected to the transmission network and TUOS charges would be a much larger cost.

With average price increases of this order of magnitude, the AER must recognise the impact it would have on South Australian customers including EUAA members. The impacts on South Australian and Australian economic competitiveness when transmission prices increase by over 39% over the next 5-years must be taken into consideration in the AER's decision.

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[8] Note we do not believe that an energy spend of $120,000 constitutes a large business. For example, to become a full member of the EUAA requires an energy spend of at least $5 million.

6 August 2007

Mr Chris Pattas
General Manager - Network Regulation (South)
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3001

BY EMAIL: aerinquiry @aer.gov.au

Dear Chris

Real Risk Free Rate: SP Ausnet and ElectraNet Revenue Resets

The Energy Users Association of Australia (EUAA) appreciates the
opportunity to provide a submission to the Australian Energy Regulator
(AER) on the issues raised in both the SP Ausnet and ElectraNet revenue
reset applications on the potential bias in Treasury Indexed Bonds as a
proxy for the real risk-free rate.

As you no doubt will agree, this is a complex issue that needs thorough
examination by the AER. To assist the EUAA in preparing our
submission, we commissioned Professor Martin Lally, Associate Professor,
School of Economics and Finance, Victoria University of Wellington, to
provide expert comment on the NERA work and the arguments advanced
by SPAusnet and ElectraNet. A draft copy of Professor Lally's report is
attached.

You will note in the report that Professor Lally rejects the proposition advanced by NERA that indexed insured bonds are a better proxy for the real risk free rate than government bonds and their resulting conclusions that there should be an 86 basis point increase in the real cost of equity and a 20 basis point increase in the real cost of debt. Professor Lally considers that the arguments are invalid as:

- Firstly, a reduction in the supply of an asset or an increase in the demand for it has no bearing upon its suitability as a proxy for the risk free asset within the context of the CAPM. These are "simply part of the financial landscape and are entirely consistent with the CAPM."

- Secondly, the relevant criteria for choosing a risk free asset within the context of the CAPM are that the asset is risk free, liquid, that there are no restrictions upon the purchase of the asset by investors, and that investors are not attracted to or repelled from the asset for reasons other than the probability distribution over its return. Overall, based on these criteria government bonds would seem to be a much better proxy for the risk free asset than NERA's preferred alternative as they are more consistent with them.

- Thirdly, even if it were true that insured bonds were a better proxy for the risk free asset than government bonds, this conclusion would both raise the risk free rate within the CAPM and lower the market risk premium. NERA, in Professor Lally's opinion, wrongly judges the latter effect to be zero and therefore overestimates the increment to the cost of equity for a regulated firm.

We believe that the arguments advanced by Professor Lally support the continued use of the government bonds as the appropriate proxy and are strongly opposed to the acceptance of the proposition put forward by SP Ausnet that the current approach leads to the "use of biased raw yields" and that there should be an 86 basis point increase in the real cost of capital and a 20 basis point increase in the real cost of debt.

It is not clear from your email seeking submissions as to what action the AER is intending in response to SP Ausnet's letter of 31 May 2007. Our understanding is that, as the WACC parameters are set in the National

Electricity Rules, the only issue that can be addressed without a Rule Change is the issue of the increase of 20 basis points in the real cost of debt and that SP Ausnet and Electranet have both included this increase in their revenue reset applications. As Professor Lally clearly demonstrates the premise on which this increase is based is fundamentally flawed and the EUAA strongly opposes the increase of 20 basis point increase in the real cost of debt contained in the revenue reset applications.

We do, however, agree with the statement in the SP Ausnet letter of 31 May 2007 namely that "the weighted average cost of capital for regulated infrastructure businesses is an issue of critical importance for the energy industry". As you are aware the EUAA considers that the WACC parameters are extremely generous to transmission network service providers at the cost of end users and, in particular, large end users. We are aware that the AER is to undertake a review of the WACC parameters in 2009 but, as SP Ausnet and Electranet have opened the issue in their reset applications, we consider that the AER should not limit itself to the consideration of the risk free rate but should also address all other aspects that can be varied within the National Electricity Rules
Professor Lally is undertaking some further work on this aspect and we propose to bring forward further submissions in respect of both SP Ausnet and Electranet when that information is available.

We would appreciate if the AER could treat this submission as confidential at this time.

Yours sincerely

Roman Domanski
Executive Director

ABSOLUTE AND RELATIVE BIASES IN GOVERNMENT BOND YIELDS

Martin Lally

Associate Professor

School of Economics and Finance

Victoria University of Wellington

5 August 2007

EXECUTIVE SUMMARY

NERA has argued that nominal and indexed government bonds are poor proxies for nominal and real risk free assets, and that upward adjustments should be made to the costs of equity and possibly also the costs of debt on account of this. In particular, they favour an upward adjustment of 66 basis points for the nominal cost of equity. Also, in so far as expected inflation is estimated from the difference in yields on nominal and indexed government bonds, they favour an 86 basis point increase in the real cost of equity and a 20 basis point increase in the real cost of debt. They also believe that reductions in the supply of, and increases in the demand for, government bonds aggravate the problems here.

These arguments are invalid, for the following principal reasons. Firstly, a reduction in the supply of an asset or an increase in the demand for it has no bearing upon its suitability as a proxy for the risk free asset within the context of the CAPM. Changes in the demand for or supply of assets, and therefore in the equilibrium prices for them, are simply part of the financial landscape and are entirely consistent with the CAPM.

Secondly, the relevant criteria for choosing a risk free asset within the context of the CAPM are that the asset is risk free, liquid, that there are no restrictions upon the purchase of the asset by investors, and that investors are not attracted to or repelled from the asset for reasons other than the probability distribution over its return. Nominal government bonds trivially violate the first requirement, and also the fourth requirement on account of their value as collateral. Indexed government bonds may also violate the second requirement on account of relatively low liquidity. However, NERA's preferred alternative (insured corporate bonds) violates all of these requirements. Thus, government bonds would seem to be a much better proxy for the risk free asset than NERA's preferred alternative.

Thirdly, even it were true that insured bonds were a better proxy for the risk free asset than government bonds, this conclusion would both raise the risk free rate within the CAPM and lower the market risk premium. NERA wrongly judges the latter effect to be zero and therefore overestimates the increment to the cost of equity for a regulated firm.

1. Introduction

NERA (2007a, 2007b) has recently argued that yields on Australian government nominal and indexed bonds are downwardly biased estimates of the nominal and real risk free rates, and therefore upward adjustments are warranted. This paper seeks to review their work. Section 2 summarises their arguments concerning nominal bonds. Section 3 reviews them. Section 4 summarises their arguments concerning indexed bonds. Section 5 reviews these arguments. Section 6 concludes.

2. NERA's Arguments Concerning Nominal Bonds

NERA presents five significant arguments concerning nominal Australian government bonds. Firstly, they argue that Australian government bonds have unique features that lower their yields, most particularly their high liquidity, their value as collateral securities, and their "simplicity" (NERA, 2007a, page 33). Secondly, they argue that the supply of Australian government bonds has fallen (NERA, 2007a, Figure 5.1), that this has induced a fall in the yield to maturity (ibid, page 40), and this yield is therefore below the true risk free rate. Thirdly, they argue that "insured bonds" (corporate bonds coupled with a credit default swap) are a better proxy for the risk free rate because they lack these unique features of government bonds (ibid, page 35). Fourthly, they argue that the yields on these insured bonds exceed those on government bonds by 66 basis

points (NERA, 2007b, section 2.3). Fifthly, in so far as the market risk premium is estimated by historical averaging, they argue that no adjustment is required to the market risk premium because the historical average downward bias in yields on government bonds would have been small (ibid, section 3.2).

Although NERA do not explicitly link the first and second arguments, the first argument underpins the second, i.e., without the first argument concerning the uniqueness of government bonds, any reduction in their supply would be inconsequential. Consequently, the role of the second argument is merely to amplify the first, i.e., the recent reduction in the supply of government bonds aggravates the (alleged) downward bias in the yields on government bonds (as an estimator for the risk free rate) that already exists simply on account of their unique features of high liquidity etc.

3. Review of NERA's Arguments Concerning Nominal Bonds

3.1 Introduction

Much of what is claimed by NERA in the previous section is uncontroversial. In particular, it is uncontroversial that the supply of Australian government bonds has fallen in recent years. It is also uncontroversial that a reduction in the supply of a bond that is unique in certain respects will induce an increase in its price and therefore a reduction in its yield to maturity. It is also uncontroversial that government bonds differ from insured bonds in various ways, including those described by NERA, and that the effect of these differences would be to generate higher yields on insured bonds than on government bonds.

The principal controversial question here is whether insured bonds or government bonds are the better proxy for the risk free asset. If NERA are correct in asserting that insured bonds are the better proxy, then it might be important to assess the extent to which their yields currently exceed those on

government bonds, and it might be important to assess whether the historical average difference was smaller. However, if government bonds are the better proxy, then it becomes irrelevant to what extent the yields on insured bonds are currently higher and it also becomes irrelevant whether the historical average was lower.

3.2 The Appropriate Choice of the Risk Free Asset

To assess this question, it is necessary to consider the context within which the risk free rate is being sought. This context is that of the Capital Asset Pricing Model (CAPM: see Sharpe, 1964; Lintner, 1965; Mossin, 1966). The CAPM embodies the concept of a risk free asset, but it does not designate any particular asset of this type. In choosing an asset to provide the risk free rate, the only explicit requirement within the CAPM is that the rate of return on that asset be free of risk. There is an implicit requirement relating to liquidity, i.e., a very illiquid asset would be unsuitable because illiquidity is (inter alia) a manifestation of high transaction costs and the CAPM assumes that there are no transactions costs. In addition, there is an implicit requirement that no investor faces restrictions upon the purchase of this asset because the model assumes that no such restrictions exist. In addition, there is an implicit requirement that investors are not attracted to or repelled from the asset for reasons other than the probability distribution on its return, because the model assumes that investors choose portfolios solely according to their return distributions. However, the model does not impose any requirements whatsoever (whether explicit or implicit) relating to the *supply* level of the risk free asset, i.e., it does not require the supply of the risk free asset to meet some minimum level, as NERA seems to believe. This follows from the fact that the supply of the risk free asset is exogenous to the CAPM (see Mossin, 1966, pp. 772-773; Hirshleifer, 1970, pp. 299-300). Thus, whilst a reduction in the supply of government bonds may lower their yield, it does not disqualify such bonds as a suitable proxy for the risk free asset within the context of the CAPM.

Consider the following example. Suppose that the supply of government bonds is 60% of GDP and the yield to maturity is 5%. Furthermore, these bonds satisfy all of the requirements for a risk free asset stated or implied in the CAPM, i.e., they are risk free, liquid, free of purchase restrictions, and devoid of characteristics other than their return that attract or repel investors. In addition, the expected return on the market portfolio is 11%. Accordingly, the risk free rate would be 5% and the market risk premium (being the expected return on the market portfolio net of the risk free rate) would be 6%. Now suppose that the supply of government bonds falls to 5% of GDP and their yield to maturity thereby falls to 4%. The reduction in supply does not disqualify government bonds as a suitable proxy for the risk free rate. So, the risk free rate has fallen to 4%. The expected return on the market portfolio might also fall by 1%. If it does, the market risk premium remains 6%. If the expected return on the market portfolio does not change, then the market risk premium rises to 7%. So, changes in the supply of an asset may change the expected returns on some assets but they do not change the definition of the risk free asset and therefore do not disqualify an asset that previously qualified as a good proxy for the risk free rate.

In summary, the CAPM asserts or implies that the following properties should be satisfied by the risk free asset:

(a)   the return on the asset is certain
(b)   the asset is liquid
(c)   there are no restrictions upon the purchase of the asset by any investor
(d)   investors are not attracted to or repelled from the asset for reasons other than the probability distribution on its return.

Australian government bonds do not satisfy the first requirement, but the possibility of default would seem to be very low. The effect would be that the yield on government bonds overestimates the risk free rate. In respect of the second and third requirements, Australian government bonds would seem to

satisfy these. In respect of the fourth requirement, NERA (2007a, page 33) suggests that this is not met, because government bonds are desired not merely because of their return but also because they can be used as collateral and because of their "simplicity". The point concerning collateral is uncontroversial, and the effect would be that the yield on government bonds underestimates the risk free rate. However, the reference to the "simplicity" of government bonds is perverse. If government bonds are simple, as opposed to complex, then investors fully understand their probability distributions and can act accordingly. Thus, requirement (d) is satisfied rather than violated. By contrast, if an asset is complex, some investors may be unable to comprehend its actual probability distribution and therefore may be repelled from the asset on grounds other than its actual probability distribution. Requirement (d) would then be violated. Thus, it is not the simplicity of an asset that should disqualify it as a good proxy for the risk free rate but its complexity.

Turning to insured bonds, they do not seem to satisfy *any* of these four requirements. In respect of default risk, Hull et al (2004) note that "insured bonds" are not insured against loss of accrued interest and are subject to the possibility of default by the "insurer". They go on to argue that the latter effect is extremely small (ibid, page 2800) but they do not characterise the former effect in that way. Consequently, insured bonds may be subject to non-trivial default risk. The yield on these bonds therefore overestimates the risk free rate. In respect of liquidity, Blanco et al (2005, p 2259) notes that corporate bonds are relatively illiquid, particularly outside the US, and insured bonds are therefore relatively illiquid. Remarkably, NERA (2007a, page 33) do acknowledge the superior liquidity of government bonds but interpret this as grounds for not using government bonds as the proxy for the risk free asset! Since liquidity is a desirable feature of an asset, the effect of illiquidity is to raise the yield and therefore to overestimate the risk free rate. In respect of restrictions upon the purchase of assets, Blanco et al (2005, p 2278) notes that "fund managers are often not permitted to trade CDS contracts either by national law or mandate". The

effect of this would be to raise the yield on these bonds, and therefore to overestimate the risk free rate. Finally, in respect of investors being attracted to or repelled from assets for reasons other than the probability distribution of their returns, NERA (2007b, p 8) apparently approvingly quotes from a Financial Times article to the effect that "CDS are derivatives, and derivatives still make many people nervous". If this is true, the effect of it would be to raise the yield on insured bonds, and therefore to overestimate the risk free rate.

In summary, a reduction in the supply of an asset has no bearing upon its suitability as a proxy for the risk free asset within the context of the CAPM. The relevant criteria are otherwise and Australian government bonds satisfy two of the four requirements. In respect of the two violations, the effect of one of them is to generate yields on these bonds that overestimates the risk free rate whilst the effect of the other is to induce an underestimate. By contrast, insured bonds violate all four requirements for a risk free asset, and the effect in all cases is that the yield on these bonds overestimates the risk free rate. Accordingly, Australian government bonds would seem to be a much better proxy for the risk free asset than insured bonds within the context of the CAPM.

3.3 Adjustments to the MRP

Having argued in the previous section that government bonds are a better proxy for the risk free asset than insured bonds, it does not then matter whether the average historical difference in yields is less than it currently is, let alone zero. However, if one were to conclude that insured bonds constituted the better proxy, then it might matter whether the average historical difference in yields is less than it currently is, and in particular whether that difference is zero. The argument is as follows. Since the generally employed equity beta in Australian regulatory determinations is 1, then the cost of equity for a regulated firm is

$$k_e = R_{f0} + \phi \qquad\qquad (1)$$

where R_{f0} is the current risk free rate and ϕ is the market risk premium. If the market risk premium is estimated from historical average outcomes (of market returns net of risk free rates), then the estimate for k_e (denoted $\hat{k}_e$) is as follows

$$\hat{k}_e = R_{f0} + (\overline{R}_m - \overline{R}_f)$$

where $\overline{R}_m$ is the historical average market return and $\overline{R}_f$ is the historical average risk free rate. Thus, if the yield margin for insured over government bonds has not changed over time, then any switch from the use of government bonds to the use of insured bonds will raise the current risk free rate and the historical average risk free rates by the same amount, with zero net effect upon the estimated cost of equity. On the other hand, if the historical average yield margin is zero, as argued by NERA, then a switch to the use of insured rather than government bonds will raise only the current risk free rate, and therefore will raise the estimated cost of equity for a regulated firm. In view of this, we review NERA's argument that the average historical difference in yields on insured versus government bonds is zero along with NERA's presumption that the market risk premium is estimated through historical averaging.

NERA's argument is reflected in NERA (2007b, Figure 3.1). The argument is motivated by a belief that the yield margin for insured over government bonds is negatively related to the level of government bonds relative to GDP. So, NERA has regressed Y (the yield margin for insured over government bonds in basis points) on R (the ratio of nominal government bonds to GDP) for the five years

for which Y is determinable (2002....2006). The result from doing so is as follows[1]

$$Y = 102 - 915R \qquad (2)$$

Extrapolation of this relationship over higher values for R reveals that the yield margin Y reaches zero at $R = 0.11$. NERA then note that the average value for R over the period since 1976 was 0.17, which implies that the average value for Y over the period since 1976 was zero. Thus, if the market risk premium is estimated over the period from 1976, then the use of insured rather than government bonds has no impact upon the estimate of the market risk premium.

The difficulties in this line of argument are fourfold. Firstly, estimates of the market risk premium arise from a range of methodologies other than historical averaging, and some of these alternatives imply that any impact upon the current risk free rate from adopting insured bonds as the proxy for the risk free rate will be completely neutralised by the impact upon the market risk premium. For example, suppose that the market risk premium is estimated through forward-looking methods (eg: Cornell, 1999; Claus and Thomas, 2001), in which the expected return on the market portfolio is estimated ($\hat{k}_m$) and the current risk free rate R_{f0} then deducted from it. For a regulated firm with an equity beta of 1, the estimated cost of equity is then as follows.

$$\hat{k}_e = R_{f0} + (\hat{k}_m - R_{f0})$$

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[1] NERA (2007b) do not provide the results of their regression but the data is apparent from their Figure 3.1, and use of the data generates this regression relationship.

Thus, any effect upon the current risk free rate R_{f0} from adopting insured bonds as the risk free asset would have no effect whatsoever upon the estimated cost of equity for a regulated firm.

Secondly, the relationship between Y and R cannot be linear because Y must always be positive; this follows from the fact that all of the features that differentiate insured bonds from government bonds (greater default risk, inferior liquidity, restrictions upon purchase, and the lack of collateral value) induce a positive value for Y, even at high levels for R. Thus, even if it was true that the average historical value for R was 0.17, the average historical value for Y would have to be positive. Accordingly, if insured rather than government bonds were used as the risk free asset, the effect would be to lower the market risk premium as well as to raise the current risk free asset. It follows that NERA's analysis, which treats the impact upon the market risk premium as zero, would overstate the impact upon the cost of equity. For example, a function that closely fits NERA's data in their Figure 3.1 and yet ensures that Y is always positive is as follows.

$$Y = \frac{2.75}{R} \tag{3}$$

Invoking this function, with a historical average value for R of 0.17, implies that the historical average value for Y is 16 basis points rather than zero.

Thirdly, conducting the analysis underlying equation (2) using data from 1976 implies (wrongly) that estimates of the market risk premium determined through historical averaging invoke data from 1976. In fact, the two dominant sources of such estimates are Officer (1989) and Dimson et al (2002); the former draws upon data from 1887 and the latter from 1900. Had NERA considered comparable historical periods rather than simply the period from 1976, the average value for

R may have been lower than the figure of 0.17 used by them. If this was the case then their overstatement of the effect of shifting from government to insured bonds would be even greater than suggested above. For example, suppose that the average value for *R* over the relevant historical period was 0.10 rather than 0.17. Substitution of this into equation (2) then yields an estimate for the historical average value for *Y* of 28 basis points rather than zero.

Fourthly, because the yield margin *Y* depends upon features of the two classes of bonds as well as the value of *R*, and some of these comparative features are likely to have been more pronounced in the past, the historical average yield margin *Y* is likely to have been higher than suggested by the historical average level of *R*. For example, the historical average liquidity advantage of government bonds over insured bonds is likely to have been much greater than it currently is. Thus, NERA's regression model (2) or even the alternative model (3) will understate the historical average value for *Y*. Accordingly, the impact upon the estimated cost of equity from shifting from government to insured bonds will be further overstated.

In summary, even if it is true that insured bonds are a better proxy for the risk free rate than government bonds, and therefore the term R_{f0} in equation (1) must be raised, the impact upon the market risk premium ϕ must be considered. NERA's argument that the latter impact is zero is wrong, because it wrongly assumes that the market risk premium is estimated solely by historical averaging, because it wrongly assumes that the period of averaging is from 1976, because it wrongly assumes that the yield margin for insured over government bonds is linearly related to the ratio of nominal government bonds to GDP, and because it wrongly assumes that this relationship has not changed over time. Recognition of these points implies that the impact on the estimated market risk premium from using insured bonds (as the proxy for the risk free rate) is downwards, and

therefore NERA have overestimated the impact of using insured bonds upon the estimated cost of equity for a regulated firm.

4. NERA's Arguments Concerning Indexed Bonds

NERA (2007a) also consider the situation in respect of inflation-indexed bonds. These may be significant in setting the costs of equity and debt for regulated firms because nominal costs of equity and debt are converted to real costs of equity and debt by deducting forecast inflation, and some regulators use the spread between the yields on nominal and indexed bonds to estimate forecast inflation. If this is the case, then the real cost of equity is determined by the indexed rather than the nominal government bond yield and therefore will be affected by any biases in this yield as a proxy for the real risk free rate. In addition, the real cost of debt will be affected by any relative bias in indexed versus nominal government bond yields as proxies for the real and nominal risk free rates.

In view of all this, NERA has sought to determine whether the yields on indexed government bonds are more or less biased estimators of the real risk free rate than are the yields on nominal government bonds. Accordingly, NERA compares the yield spread on indexed bonds (corporate versus government) with the yield spread on nominal bonds (corporate versus government). In particular, they calculate the following spread

$$S = (Y_d^I - Y_g^I) - (Y_d - Y_g) \tag{4}$$

where Y_d denotes the yield on nominal corporate bonds, Y_g the yield on nominal government bonds, and the superscript I denotes a real yield on an inflation-indexed bond. Unstated but implicit in their analysis is that the cost of a credit

default swap (C) is the same for both nominal and indexed corporate bonds. In this case, S can be written as follows

$$S = (Y_d^I - C - Y_g^I) - (Y_d - C - Y_g)$$

The term $(Y_d - C - Y_g)$ is the excess yield on an insured nominal corporate bond relative to a government bond, and is considered by NERA to represent the extent to which the yield on nominal government bonds underestimates the true nominal risk free rate. Similarly, the term $(Y_d^I - C - Y_g^I)$ is the excess yield on an insured indexed corporate bond relative to an indexed government bond, and this would presumably be interpreted by NERA as an estimate of the extent to which the yield on indexed government bonds underestimates the true real risk free rate. Consequently, NERA interprets S as a measure of the extent to which the downward bias on indexed government bond yields exceeds the downward bias on nominal government bond yields, i.e., a measure of the "relative bias" on indexed versus nominal government bonds. NERA (2007a, section 2.4) calculates S as defined in equation (4), and the results are summarised in their Table 2.3. They indicate a current value for S of about 20 basis points.

NERA (2007a, section 2.2) attributes this "relative bias" of 20 basis points to a reduction in the supply of indexed government bonds and to increasing demand from institutions with inflation indexed liabilities. This bias is in addition to the bias of 66 basis points on nominal government bonds. Consequently, they estimate the bias on indexed government bonds at 86 basis points. Thus, in so far as inflation is estimated from the difference between the yields on nominal and indexed government bonds, NERA (2007b, p 2) concludes that the real cost of equity should be raised by 86 basis points and the real cost of debt should be raised by 20 basis points. Implicit in the 86 basis point adjustment is the belief that insured indexed corporate bonds are a better proxy for the real risk free rate than indexed government bonds.

5. Review of NERA's Arguments Concerning Indexed Bonds

NERA's arguments concerning indexed bonds suffer from the following three difficulties. Firstly, even if it were true that the 20 basis points spread to which they refer is attributable to a reduction in the supply of indexed government bonds and/or an increased demand for these bonds from certain institutions with inflation-indexed liabilities, this would not disqualify indexed government bonds as a good proxy for the real risk free asset within the context of the CAPM. As noted in section 3.2, the CAPM does not impose any requirements whatsoever (whether explicit or implicit) relating to the *supply* level of the risk free asset, i.e., it does not require the supply of the risk free asset to meet some minimum level, as NERA seems to believe. This follows from the fact that the supply of the risk free asset is exogenous to the CAPM (see Mossin, 1966, pp. 772-773; Hirshleifer, 1970, pp. 299-300).

In respect of demand, the changes referred to by NERA are simply part of a wider set of changes in investors' preferences for particular assets (based on their probability distributions) and the CAPM does not assume that such preferences are fixed. If an asset has a particular probability distribution for its returns, this will give rise to a demand function for that asset and therefore an equilibrium price. The demand function may change. If it does, the equilibrium price changes. The new price is different but it is not "biased". Similarly, if investors change their consumption preferences in favour of future rather than current consumption, the demand for risk free assets (and other assets) will increase, and their equilibrium yields will then decline. The new yields are not "biased" estimators of the risk free rate simply because investors' consumption preferences have changed. Changes in demand functions, and therefore in equilibrium prices for assets, are simply part of the financial landscape and are entirely consistent with the CAPM. By contrast, if NERA had argued that certain

institutions were *compelled* by law to purchase indexed government bonds, then this situation would have been inconsistent with the CAPM assumption that investors face no restrictions upon their portfolio choice. Accordingly, one could argue that indexed government bonds were not a good proxy for the real risk free asset. However, NERA have not suggested that there was any compulsion here.

Secondly, and as discussed in section 3.2, the relevant criteria for choosing a risk free asset within the context of the CAPM are that the asset is risk free, liquid, that there are no restrictions upon the purchase of the asset by investors, and that investors are not attracted to or repelled from the asset for reasons other than the probability distribution over its return. Indexed government bonds violate the first requirement (albeit trivially) and may violate the second requirement on account of relatively low liquidity. However, NERA's implied alternative (insured indexed corporate bonds) violate all of these requirements for the same reasons discussed in section 3.2 in respect of insured nominal corporate bonds. Thus, indexed government bonds are a better proxy for the real risk free asset than NERA's implied alternative.

Thirdly, if the real cost of equity was based upon the real risk free rate and NERA's contention that 86 basis points should be added to the real risk free rate was correct, then there must be implications for the market risk premium as well. As discussed in section 3.3, consideration of the (downward) impact on the market risk premium mitigates the upward impact on the risk free rate and NERA have wrongly judged this impact on the market risk premium to be zero. Thus, even if NERA's contention that 86 basis points should be added to the real risk free rate was correct, NERA would have overestimated the cost of equity by wrongly judging the market risk premium effect to be zero.

Having said all of this, a quite different line of argument in this area might have been offered. At least some Australian regulators estimate expected inflation from the difference between the yields on nominal and indexed government bonds. However, the difference in yields also reflects liquidity differences between these two types of bonds and risk differences. Taking account of these points, it may be that the difference in the yields overestimates expected inflation and NERA (2007a, section 2.3) presents some evidence to that effect. If expected inflation has been overestimated, then the real cost of capital for regulated firms will have been underestimated. Accordingly, some upward adjustment to the real cost of capital would be warranted. However, this argument is quite unrelated to the question of whether yields on nominal and indexed bonds are downwardly biased estimators for nominal and real risk free rates.

6. Conclusions

NERA has argued that nominal and indexed government bonds are poor proxies for nominal and real risk free assets, and that upward adjustments should be made to the costs of equity and possibly also the costs of debt on account of this. In particular, they favour an upward adjustment of 66 basis points for the nominal cost of equity. Also, in so far as expected inflation is estimated from the difference in yields on nominal and indexed government bonds, they favour an 86 basis point increase in the real cost of equity and a 20 basis point increase in the real cost of debt. They also believe that reductions in the supply of, and increases in the demand for, government bonds aggravate the problems here.

These arguments are invalid, for the following principal reasons. Firstly, a reduction in the supply of an asset or an increase in the demand for it has no bearing upon its suitability as a proxy for the risk free asset within the context of the CAPM. Changes in the demand for or supply of assets, and therefore in the

equilibrium prices for them, are simply part of the financial landscape and are entirely consistent with the CAPM.

Secondly, the relevant criteria for choosing a risk free asset within the context of the CAPM are that the asset is risk free, liquid, that there are no restrictions upon the purchase of the asset by investors, and that investors are not attracted to or repelled from the asset for reasons other than the probability distribution over its return. Nominal government bonds trivially violate the first requirement, and also the fourth requirement on account of their value as collateral. Indexed government bonds may also violate the second requirement on account of relatively low liquidity. However, NERA's preferred alternative (insured corporate bonds) violates all of these requirements. Thus, government bonds would seem to be a much better proxy for the risk free asset than NERA's preferred alternative.

Thirdly, even it were true that insured bonds were a better proxy for the risk free asset than government bonds, this conclusion would both raise the risk free rate within the CAPM and lower the market risk premium. NERA wrongly judges the latter effect to be zero and therefore overestimates the increment to the cost of equity for a regulated firm.

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