New South Wales
TREASURY

Weighted Average Cost of Capital

Response to the Australian Energy Regulator Review of Electricity Transmission and Distribution WACC Parameters

January 2009

CONTENTS

1. INTRODUCTION

This submission represents a high level NSW Treasury response to the AER's 'Review of Electricity Transmission and Distribution Weighted Average Cost of Capital Parameters'. NSW Treasury refers to individual and joint submissions from NSW Government owned network energy businesses (TransGrid, EnergyAustralia, Integral Energy and Country Energy) for detailed responses to the issues raised in the AER's Explanatory Statement.

The AER's determination on WACC will not take effect in NSW until 1 July 2014. At this time, NSW Government owned network energy businesses are projected to have combined regulated assets valued at $36.6 billion.[1] Relatively small reductions in the regulated rate of return translate to significant reductions in regulated earnings and business value.

The national electricity market objective is to *promote efficient investment in*, and efficient use of, *electricity services for the long term interests of consumers of electricity* in respect to price, quality, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system.[2] [emphasis added]

The weighted average cost of capital (WACC) provided by the AER is a critical parameter in terms of providing incentives for efficient infrastructure investment. NSW Treasury considers it important that the AER adopt a consistent approach to setting WACC parameters, thereby creating a more certain investment climate required to promote efficient investment in long life infrastructure assets, consistent with the national electricity market objective.

The National Electricity Law (NEL) provides that a regulated network service provider should be provided with a reasonable opportunity to recover *at least* the efficient costs the operator incurs[3] [emphasis added]. This is consistent with the Productivity Commission's observation that regulators should err on the side of promoting long-term efficient investment:

> 'Third party access and the resulting benefits to service users are only possible over the longer term if there is continuing investment in the essential infrastructure services themselves. On the other hand, while denial or monopoly pricing of access imposes costs on the community, such behaviour cannot threaten the continued availability of the services concerned. This asymmetry in potential outcomes highlights the priority that access regulation must give to ensuring that there are appropriate incentives for efficient investment.'[4]

Existing WACC parameters have been determined by jurisdictional regulators and codified in the NER (transitional rules for NSW distribution networks) based on well-established regulatory precedence. NSW Treasury is concerned that despite current volatility in financial markets and investor uncertainty, the AER has proposed four individual changes to WACC parameters that each contribute to a material reduction in regulated earnings and hence an

[1] AER Draft decision, TransGrid transmission determination 2009-10 to 2013-14, 31 October 2008; AER Draft decision, NSW draft distribution determination 2009-10 to 2013-14, 21 November 2008
[2] National Electricity Law, Section 7
[3] National Electricity Law, Section 7A
[4] Productivity Commission, Review of the National Access Regime, Inquiry Report, 17 September 2002, Overview XIX

adverse incentive on future efficient investment. Although the proposed changes will not apply to network businesses until 2014 in NSW, the signalling of future lower regulated returns will potentially impact on investment decisions well before then.

Based on market parameters as at 16 January 2009, the AER's proposed changes translate to a nominal post tax WACC of 7.2%.[5] This compares to:

- a nominal post tax WACC of 8.9% determined by the ACCC for NSW transmission networks for the 2004/05 to 2008/09 regulatory period,[6]
- a nominal post tax WACC of 8.8%[7] determined by IPART for NSW distribution networks for the 2004/05 to 2008/09 regulatory period,[8]
- a nominal post tax WACC of 9.72% determined by the AER in its November 2008 draft distribution determination for NSW electricity distribution networks for the 2009/10 to 2013/14 regulatory period.[9]

NSW Treasury acknowledges that the reductions in WACC are partially due to downward movements in the nominal risk free rate subsequent to previous determinations. However, the AER's proposed adoption of a 5 year risk free rate term and decision not to adjust for the current downward bias in Commonwealth Government Security (CSG) yields, have exacerbated WACC impacts associated with movements in the risk free rate.

The significant reduction in WACC arising from the AER's proposed WACC parameters is concerning given the considerable increases in credit spreads since previous jurisdictional determinations. Evidence suggests that the market is currently repricing risk due to the credit crisis and that investors now expect higher (rather than lower) returns on their investments. Relative to the AER's November 2008 draft WACC decision, a 7.2% WACC translates to reduced regulated earnings for NSW electricity networks of over $4.5 billion (nominal) over the five year regulatory period commencing in 2014/15.[10] This excludes further reductions in regulated earnings arising from the AER's proposed increase in gamma that are not captured in the post tax WACC formulation.

The AER's Explanatory Statement presents a vast quantity of highly technical and often conflicting academic advice and market evidence from a wide range of stakeholders. It is relatively easy to justify either higher or lower individual WACC parameters based on selective use of the wide ranging evidence available. Ultimately, the regulator needs to apply regulatory judgement in determining a reasonable final outcome that satisfies the National Electricity Objective of encouraging efficient investment for the long-term interests of customers. **In this regard, NSW Treasury strongly contends that a 7.2% nominal post-tax WACC does not reflect a reasonable commercial return to investors.[11]**

[5] Based on 3.65% nominal risk free rate and 2.79% debt margin (based on 20-day averages at 16th January 2009)
[6] ACCC, NSW and ACT Transmission Network Revenue Cap 2004–05 to 2008–09, Final Decision, 27 April 2005
[7] Extrapolated based on recommended real pre-tax WACC of 7.0%
[8] IPART, NSW Electricity Distribution Pricing 2004/05 to 2008/09, Final Report, June 2004
[9] AER Draft decision, NSW draft distribution determination 2009-10 to 2013-14, 21 November 2008
[10] Based on projected opening RAB of $36.6 billion as at 1 July 2014
[11] Based on interest rates and debt margin as at 16 January 2009

2. PERSUASIVE EVIDENCE

The NER provides that where a value, method or credit rating level cannot be determined with certainty, the AER must have regard to the need to achieve an outcome that is consistent with the national electricity objective and the need for persuasive evidence before departing from the value, method or credit rating level that has previously been adopted for it.[12]

The task of demonstrating 'persuasive evidence' for change to existing WACC parameter values is challenging given:

- the wide range of often conflicting academic advice and market evidence presented to the AER,
- existing parameter values were determined with reference to well established regulatory precedence and academic empirical research and theory, and
- the AER itself concluded that 'it is unlikely that any of the WACC parameters can be determined with certainty' (Explanatory Statement – Page 44).

NSW Treasury supports Gilbert and Tobin's view that persuasive evidence 'would need to establish, more likely than not, that a previously adopted value was incorrect'.[13] In NSW Treasury's view, the AER has not demonstrated how the proposed WACC parameters have been determined with any greater certainty relative to previously adopted values, let alone demonstrate that previously adopted values are incorrect.

The Joint Industry Association retained highly regarded academics including Professor Bob Officer, Dr Steven Bishop, Professor Stephen Gray (Strategic Finance Group), the Competition Economists Group (CEG), the Allen Consulting Group (ACG) and NERA in support of its submission. In many areas, the AER rejected the expert advice submitted, based both on its own analysis and alternative academic advice received. NSW Treasury is not in a position to undertake a detailed evaluation of the relative merits of the often-conflicting expert advice presented. However, in order to satisfy the 'persuasive evidence' test, NSW Treasury strongly contends that in the absence of greater consensus between academic experts for change, or evidence that proves a previously adopted parameter was 'incorrect', the AER should use values previously adopted.

By applying the 'persuasive evidence' test in this manner in setting WACC parameters, the AER would create a more certain investment climate required to promote efficient investment in infrastructure assets, consistent with the national electricity market objective, and minimise investment uncertainty for network service providers.

3. EQUITY BETA

The NER deemed the initial value of the equity beta for all transmission networks and the NSW and ACT distribution networks to be 1.0.

[12] Clause 6.5.4(e)(4) National Electricity Rules
[13] Gilbert and Tobin, Legal opinion 1, 22 September 2008(a), page 18.

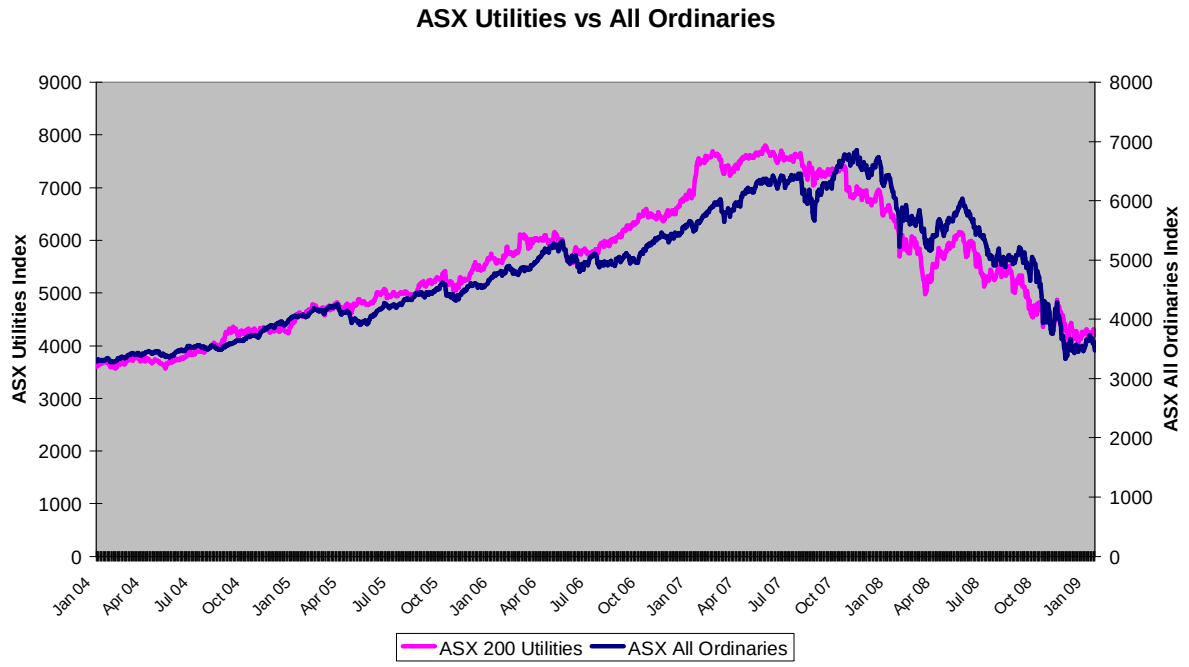
On page 194 of the Explanatory Statement, the AER concluded:

> ‘taking into account the nature of the industry and key features of the ex ante regulatory regime under the NER, the AER considers that the exposure of a benchmark efficient service provider to the systematic risk components of business risk and financial risk is, overall, less than that of the market. That is, that the equity beta is likely to be less than one.’

NSW Treasury is concerned that the AER has not given adequate consideration to the impact of financial risk on the equity beta. There is no question that the business risk of regulated electricity networks is well below the market average. This is reflected in a significantly lower asset beta (of 0.4) relative to the market average (of around 0.7).

On the other hand, the long-term debt gearing benchmark of 60 per cent compares to the market average of 30-35 per cent, noting that the market average is likely to fall given widespread de-leveraging in response to the credit crisis. The above average financial risk and below average business risk attributes of regulated energy networks have cancelling effects on the equity beta, consistent with the 'null hypothesis' construct that companies trend towards the average equity risk position (i.e. equity beta of 1.0) by adjusting gearing levels to reflect their relative systematic business risk.

A comparison of movements in the ASX 200 Utilities Index versus the ASX All Ordinaries index shows a strong correlation between the two indices over the past five years. NSW Treasury acknowledges that the ASX 200 Utilities Index may not be directly comparable to NSW electricity networks as it includes businesses with elements of unregulated activities. However, the strong correlation between the all ordinary and utility indices demonstrates that ‘low risk’ utilities are not immune to market volatility and broadly supports the 'null hypothesis' construct:



NSW Treasury acknowledges market evidence presented by the AER suggesting an equity beta of less than one. However the AER acknowledges that Australian comparator businesses suffer from a number of problems and that there is a wide range of conceptual and methodological issues that need to be considered.

NSW Treasury has concerns that:

- there are only a limited number of energy utility companies traded on the Australian Stock Exchange,
- these companies have a relative short listing period, and
- these businesses are not always directly comparable to regulated electricity networks.

Furthermore, available market estimates of beta can display a high degree of statistical imprecision and volatility from one period to the next. The AER acknowledges the trade-off between the potential loss in relevance of using older data in reflecting forward looking expectations (which would suggest a shorter period), and having sufficient observations in order to obtain a robust and statistically reliable equity beta estimate (which would suggest a longer period).

Considerable uncertainty remains in terms of the usefulness of market data in determining robust equity beta estimates. The Explanatory Statement outlines the ACG's conclusions that 'the reliability and stability of the beta estimates in Australia has remained depressingly poor' (page 226) and that 'equity beta estimates are unstable and rising' (page 237). In contrast the AER concludes, 'there is little evidence of parameter instability in the point estimate of the equity beta', although warn, 'extreme caution should be used when considering confidence intervals.' (page 238).

The Explanatory Statement further outlines a range of often-conflicting academic views on a large range of key conceptual and methodological issues, including:

- whether high levels of noise (i.e. low R squared outcomes) make the equity beta estimates unreliable,
- the impact of variations in market gearing between countries,
- whether the 'technology bubble', 'commodities boom' or 'sub prime' crises should be considered as 'unrepresentative events',
- the appropriate length of the estimation period,
- the use of weekly or monthly observations,
- whether confidence intervals or point estimates are required to demonstrate 'persuasive' evidence,
- whether the low level of market volatility (driven by macroeconomic stability) has resulted in the level of uncertainty to be understated in confidence intervals,
- whether the Newey-West or Whites approaches should be used to adjust standard errors for both autocorrelation and heteroskedasticity,
- whether the Blume adjustment should be used to adjust 'raw' beta estimates towards the market average,
- whether the Vasicek adjustment should be used to adjust 'raw' beta estimates towards the beta of a prior distribution,
- whether simple or value-weighted averages should be used when examining portfolio equity betas,

- whether forecasts based on the Sharpe CAPM result in biased estimates of the returns actually observed in capital markets.

Given uncertainty relating to the statistical reliability of market evidence and often conflicting academic views on a wide range of conceptual and methodological issues, NSW Treasury contends that a persuasive argument for change has not been satisfied and that an equity beta of 1.0 should be retained for NSW electricity transmission and distribution networks.

4. GAMMA

The previously assumed utilisation of imputation credits for transmission and distribution networks in all jurisdictions is 0.5. After analysing the empirical data available at the time, jurisdictional regulators have cited as key reasons for adopting a gamma value of 0.5:

- the complexity of the issues,
- the wide divergence of expert views, and
- the need to maintain consistency with previous decisions.

NSW Treasury contends that above mentioned issues have yet to be resolved. The AER acknowledges on page 291 of the Explanatory Statement:

> ' the complexity of the issues in this area and the ongoing debate in the academic literature regarding the appropriate recognition of the value of imputation credits in the Australian regulatory context.'

Pages 291-292 of the Explanatory Statement provide that:

- Most recent estimates of the payout ratio quoted by Australian energy regulators have ranged between 0.39 and 1.00, and

- The most recent estimates of the utilisation rate (commonly referred to as 'theta') in the finance literature and in regulatory decisions have ranged between 0 and 0.81.

The resultant range for gamma based on these estimates is between 0 and 0.81. Submissions to the AER Review proposed gamma values ranging from 0.15 to 0.25 (JIA) and 0.72 to 1.0 (MEU).

The AER proposes to increase gamma from 0.5 to 0.65, largely based on advice received from Professor John Handley that the payout ratio should be set at one, consistent with an assumption of full distribution of free cash flows. This conflicts with advice presented by NERA, Wheatley and the SFG that retained imputation credits have no value to the shareholder and therefore should not be included in the final gamma value.

In order to satisfy the 'persuasive evidence' test, NSW Treasury contends that there should be greater consensus for change between academic experts. Given the ongoing debate in the academic literature regarding the appropriate recognition of the value of imputation credits and resultant wide range of expert views, NSW Treasury remains unconvinced that the AER's proposed gamma of 0.65 has been determined with any greater certainty relative to the previous value of 0.50.

5. SOURCE OF NOMINAL RISK FREE RATE

NSW Treasury has concerns regarding both:

- The AER proposal to adopt a term for the risk free rate that matches the length of the regulatory period (i.e. five years), and

- the current usefulness of Commonwealth Government Securities (CGS) yields as a proxy for the nominal risk free rate in Australia.

5.1. Risk Free Rate Term

The currently adopted methodology under the NER for estimating the risk free rate is based on a ten year term assumption. There is also strong Australian regulatory precedence in support of a ten year risk free term given:

- a longer term risk free rate better reflects the investment horizon of network businesses given the long term nature of the underlying assets, and

- the need to maintain consistency with the estimation of other WACC parameters (i.e. the market risk premium).

The AER propose to adopt a five year risk free term on the basis that:

- the current ten year term assumption will result in incorrect compensation for the risks faced over the regulatory period, and

- a five year term better reflects the financing strategies of network businesses.

Commercial practice dictates that when evaluating a new investment, investors will apply a discount rate that compensates for risks over the life of the investment, not the length of the regulatory period. In the case of long-lived electricity network assets, the 10 year CGS is the longest dated government bond available.

Ex-ante, investment decisions can only be made with reference to risk free rates available at the time of investment, not based on the date or frequency of future regulatory resets. In this regard, it is largely irrelevant whether the regulatory reset period is one, five or ten years, as ex-ante an investor will not know whether such resets will result in upward or downward revisions to the risk free rate.

The actual financing strategies of individual energy network businesses are also largely irrelevant. It is illogical that financing decisions of network businesses should impact on regulatory decisions. Rather, regulatory decisions should impact on the financing strategies of network businesses and incentivise them to outperform the regulatory allowances. Some businesses may adopt financing decisions that align average debt maturities with the length of the regulatory period whereas others may adopt longer or shorter debt maturity profiles

depending on market conditions and appetite for risk, with the aim of outperforming the cost of debt revenue allowance.[14]

Following the AER's logic, should network businesses adopt average 12 month debt maturity profiles, then a 12 month risk free period should be adopted. Should network businesses adopt average 20 year debt maturity profiles, then a 20 year risk free rate should be used. This is not only inconsistent with incentive based regulation, but also ignores the long-term rate of return expectations of equity holders.

In support of retaining the ten year risk-free rate period, NSW Treasury also refers to the 2003 merits appeal against the ACCC by GasNet Australia where the Australian Competition Tribunal ruled that the ten year government bond rate is the appropriate benchmark for the risk free rate, not the five year government bond rate determined by the ACCC:

> 'The Tribunal is satisfied that the use by GasNet of a ten year Commonwealth bond rate to determine a Rate of Return on equity under s 8.30 of the Code was a correct use of the CAPM and was in accordance with the conventional use of a ten year bond rate by economists and regulators where the life of the assets and length of the investment approximated thirty years in the MRP calculation and the risk-free rate.'[15]

5.2. Risk Free Rate Proxy

NSW Treasury acknowledges that standard commercial and regulatory practice has long regarded Commonwealth Government Securities (CGS) yields as the best proxy for the CAPM risk free rate. However, recent market evidence suggests an increasing downward bias in CGS nominal yields, reflecting safe-haven buying and heightened demand for good collateral following the US credit crisis and resultant turmoil in financial markets.

The downward bias in nominal CGS is evidenced in current breakeven inflation rates, that are currently well below true inflation expectations. For example, reported CGS nominal and indexed CGS yields on 16 January 2009 are tabled below:-

Maturity	**Nominal CGS**	**Indexed CGS**	**Break-even inflation**
August 2010	2.620%	1.730%	0.875%
April 2015	3.575%	2.330% (a)	1.217%
March 2019	3.975%	2.285% (b)	1.652%

(a) August 2015
(b) August 2020

The resultant break-even inflation expectations are clearly below the RBA's inflation guidance, demonstrating either a downward bias in nominal CGS yields or an upward bias in indexed CGS yields. Evidence provided in recent regulatory determinations suggests that if

[14] NSW Treasury Corporation has recently reviewed the debt management strategy of NSW electricity network businesses and recommended that funding duration be lengthened considerably to better align with the economic life of assets and reduce refinancing risk, a risk that has had punishing consequences for many private sector companies over the past year.
[15] Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6 [48]

anything, indexed CGS yields are currently downward biased. This lends further support to the supposition of downward bias in nominal CGS yields.

The Explanatory Statement noted recent debate stemming from a series of reports from NERA which sought to examine alternatives to the use of CGS, primarily due to a belief that CGS yields understate the true risk free rate due to a 'convenience yield'.[16] A report from the CEG submitted on behalf of the JIA also concluded that CGS are inappropriate as a risk free proxy in a CAPM context, due to the existence of a 'convenience yield' that depresses CGS yields relative to fair value based on an unobservable 'zero beta' benchmark.[17] In response, the AER received advice from Professor Handley that:

> '…at this stage, there is insufficient evidence to justify CEG's claim that the observed Government bond yield is an inappropriate proxy for the CAPM risk free rate.'

NSW Treasury contends that subsequent to analysis undertaken for the AER's review, there has been further evidence of downward bias in nominal CGS yields, as evidenced in current break-even inflation forecasts derived using nominal and indexed CGS yields. NSW Treasury recommends that the AER give further consideration to the adoption of alternative proxies, as proposed by the CEG, during periods when CGS yields clearly underestimate the true risk free rate.

6. CREDIT RATING

The NER requires the AER to have regard to credit rating levels based on a benchmark efficient distribution network service provider.[18] Competitive neutrality principles dictate that the AER should only use the 'stand alone' credit rating of Government businesses in determining a benchmark credit rating to assess benchmark cost of debt. The AER acknowledges this on page 269 of the Explanatory Statement:

> 'The AER considers that it is appropriate to also examine the standalone credit ratings of government owned businesses as these credit ratings are used to apply a competitively neutral cost of debt.'

The AER appear to have mistakenly assumed that Standard & Poor's include stand-alone ratings for government owned businesses in its industry report cards. This is not the case for NSW Government owned electricity network businesses.

Stand-alone credit ratings are currently determined by Fitch Ratings for NSW electricity networks that exclude any credit rating enhancement associated with Government ownership. The public rating used in Standard and Poor's industry report card is not a stand-alone rating but rather assumes implicit support from the NSW Government.

The stand-alone ratings of NSW electricity network businesses are confidential. However, NSW Treasury can disclose that the median stand-alone rating of the four NSW energy

[16] NERA, Bias in indexed CGS yields as a proxy for the CAPM risk free rate, March 2007; and NERA, Absolute bias in (nominal) Commonwealth Government Securities, June 2007.
[17] CEG, Establishing a proxy for the risk free rate, A report for the APIA, ENA and Grid Australia, 17 September 2008, page 14
[18] Clause 6.5.4(e)(3) National Electricity Rules

networks businesses is BBB+, consistent with the median ratings of the private energy network businesses reported in Table 9.4 of the Explanatory Statement, and materially different to the AA median credit rating reported for Government businesses.