Major Energy Users Inc.

AER Review of Parameters

for

Weighted average cost of capital (WACC)

AER Issues Paper

A Submission

from

Major Energy Users Inc

In conjunction with some members of

National Consumers Roundtable on Energy

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The views expressed in this document do not necessarily reflect the views of the Consumer Advocacy Panel or the Australian Energy Market Commission.

The content and conclusions reached in this submission are entirely the work of the MEU, noted members of the Roundtable and the consultants.

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Executive Summary

The Major Energy Users and some members of the National Consumers Roundtable on Energy welcome the opportunity to provide comments on the AER Issues Paper on the WACC Parameters.

Consumers – whether they be residential or business and industrial consumers – have been concerned with the high rates of return that regulated network businesses have been awarded by regulators. Analyses provided show that Utilities, as a group, have outperformed the ASX 200 index, and are earning higher returns and paying out higher dividends than the market average.

The AEMC was in error when establishing higher than reasonable WACC parameters, on top of determining Chapter 6A Rules that significantly incentivize network businesses to make large capital expenditure claims, and proscribing the ability of the AER to exercise independent regulatory oversight over key areas. This thrust, over supportive of TNSPs, was then replicated by the MCE for the distribution Rules in developing the Chapter 6 Rules, following the AEMC direction and widening the impact of the AEMC changes. These errors can be readily seen in the ambit claims in capital expenditure proposals from network businesses and the related escalation in the Regulatory Asset Base, in this current regulatory cycle.

This submission argues that the AER should take a holistic view in determining the WACC parameters, rather than simply taking a mechanistic approach.

The AER should avoid compounding the impact of using conservative biases for each parameter (and therefore overall inflating the WACC outcome) by using parameters which are balanced. If then deemed necessary, the AER could add a single separately assessed conservative bias to the WACC outcome. In this way, all stakeholders can transparently identify the extent of the bias rather than for it to be hidden (and compounded in impact) from implementing bias in every input.

The WACC should also reflect the relevant provisions in the Rules that have an impact on the network businesses, especially the Chapters 6 and 6A Rules, to avoid compounding the incentives awarded to network businesses which reduce risk to the businesses but are outside of the WACC development.

The submission points to many changes that should be undertaken in developing the WACC. For example, there should be recognition about the ownership realities of network businesses in Australia – i.e. predominantly government-owned – the higher than currently applied debt/equity ratios, the implications of the financial engineering models seen in a number of privately-owned businesses which drive the businesses into highly geared and high debt positions, and the

impact on the regulated costs that have to be serviced by consumers in the event of earnings shortfalls and lower service standards.

This submission considers the WACC parameters to be as follows:

Parameter	**Value**	**set point**
Risk free rate	Based on the nominal 10 year CGS	
Debt premium	Based on S&P A+	
Equity premium	Within the range 5-6%	5.5%
Gearing	Within the range 65-75%	70%
Inflation	Using RBA data, then trend to 2-3% target range	
Gamma	Within the range 0.72-1.0	0.85
Equity raising	No allowance	
Debt raising	Mid range estimate gross underwriting fees only	

1. Introduction

1.1. The Parties to this submission

The Major Energy Users and members of the National Consumers Roundtable on Energy have decided that on the issue of the Weighted Average Cost of Capital (WACC) parameters review, the large and small consumers of electricity (and gas) have very similar interests.

The Major Energy Users (MEU) is an incorporated body representing the views of large energy consumers. The MEU comprises some 20 major energy using companies in NSW, Victoria, SA, WA, NT, Tasmania and Queensland. MEU member companies – from the cement, steel, aluminium, paper and pulp, auto, mining and the mining explosives industries – are major manufacturers in Australia and are significant employers, especially in many regional centres. With this in mind, the members of the MEU require their views to not only represent the views of large energy users, but also those of smaller power using facilities, and even at the residences used by their workforces.

The National Consumers Roundtable on Energy is a forum to share information and develop collaborative advocacy strategies to ensure the interests of small end-users of energy (particularly low-income and disadvantaged consumers) are incorporated in the development of policy and regulation of the national energy market. Roundtable participants include consumer organisations, social welfare organisations and environmental organisations, and essentially it includes all organisations representing small end-users with an interest in national energy regulation and policy.

This submission incorporates the views of many of the members of the National Consumers Roundtable on Energy and it has been circulated to all members because the outcome of the WACC review has a major impact on the cost for providing the services needed by the constituents of each of the member groups of the Roundtable. Specific issues were raised by some Roundtable member groups and these have been addressed within the submission. On completion of their review of the draft submission, the following members of the National Consumers Roundtable on Energy have specifically advised endorsement of the submission – Consumer Action Law Centre, Public Interest Advocacy Centre, Consumer Utilities Advocacy Centre, Australian Council of Social Services, and Uniting*Care* Wesley Adelaide.

Analysis of the electricity usage by the parties involved in this response shows that in aggregate they consume a significant proportion of the

electricity used in the NEM. As such, they are highly dependent on the electricity transport networks to deliver efficiently the electricity so essential to their needs. Large consumers are predominantly exposed to either the transmission or the distribution networks, whereas small consumers are more directly exposed to the distribution networks.

The parties represented in this response have identified that they have an interest in the **cost** of the energy networks services as this comprises a large cost element in their electricity (and gas) bills.

Electricity is an essential source of energy required by all consumers to maintain their operations (whether residential or production), and a failure in the supply of electricity (or gas) effectively will cause each consumer significant hardship. Thus the **reliable supply** of electricity (and gas) is an essential element of each consumer's operations.

With the introduction of highly sensitive equipment required to maintain the usage of energy, the **quality** of energy supplies has become increasingly important with the focus on the performance of the distribution businesses, because they control the quality of electricity and gas delivered. Variation of electricity voltage (especially voltage sags, momentary interruptions, and transients) and gas pressure by even small amounts now has the ability to shut down critical elements of many production processes and damage many consumer durables. Thus all consumers have become increasingly more dependent on the quality of electricity and gas services supplied.

Every consumer of electricity and gas has invested considerable capital whether in residences or in production facilities, and to garner the maximum benefit from their investment, long-term **sustainability** of energy supplies is required. If sustainable supplies of energy are not available into the future, these investments will have little value.

Accordingly, although both the MEU and the Roundtable recognise the natural tensions between the four competing issues, they are keen to address aspects of energy supplies that impact on the **cost, reliability, quality** and the long term **sustainability** of their gas and electricity supplies.

1.2 A specific view of consumer's needs in this review

All consumers (large and small) view that their long term interests (ie, the NEL objective) is advanced by ensuring continuous access to the affordable, reliable and safe supply of energy, in recognition that energy is an essential service to the community. Given the increasing pressure on household and industry budgets and upward pressure on energy prices (due to a range of

new imposts), the regulator should focus on ensuring that the WACC is set at a level that delivers prices that are efficient and do not allow for over-recovery.

There has been a general acceptance in the past by various regulators that, if there should be an error in any assessment, then it should err on the side of regulated businesses (ie take a conservative view), as a failure of a business will have a worse impact on consumers than by requiring them to pay a small premium by way of awarding a higher WACC. In principle, this approach can be accepted but it becomes controversial when it is noted that there appears to be evidence that the regulated businesses are already recovering a significant premium when compared to the returns of entities operating in the competitive energy markets (eg retailers and generators) and in the wider market environment[1].

Thus the AER's analysis needs to be more than purely a mechanistic exercise in assessing each element in isolation. It needs to take a holistic approach. To assess the parameters in isolation has the potential (and risk) of building into the outworkings of the WACC multiple conservative factors.

For example, there is a view that the MRP has been set at 6% on a conservative basis (ie that it is set to have a bias towards the firm). At the same time an equity beta of 1.0 is also seen as conservative and therefore has a bias towards the firm. When the two parameters are taken in conjunction, the outcome is a built-in conservatism that is greater than the sum of the parts. Accordingly, consumers consider that the mid point inputs from an acceptable range should be used for individual parameters and then a single premium added to create the deemed conservatism.

Unless such a holistic approach is taken, then the built-in conservatism is increased geometrically, resulting in an overall conservative position which is far beyond the intent of the conservative position originally intended. When the conservatism of the inputs is applied to the inherent conservatism implicit in the overall structure of the Chapter 6 and 6A Rules and related guidelines (both of which were subsequently determined by the AEMC and AER respectively), then the overall degree of conservatism (and hence the rewards for the regulated firms) becomes excessive and no longer typical of the overall risk the sector is exposed to. This issue is expanded on in section 2.5 (changes since the last review of WACC inputs).

[1] See attachment 2 – longitudinal comparative data on ASX indexes - which shows that on average the Utilities sector provides a dividend higher than that of the market average (all ords) and is one of the highest of all sectors.

Consumers (i.e. business, industry, and residential consumers) have reviewed the Rules and the changes made to them. They have also seen first hand that the electricity transport businesses are very financially secure in that they have (especially after the changes to Chapters 6 and 6A) virtually no competition risk and very low investment risk. Combining this with a guaranteed high-powered income stream, makes these businesses reflect all of the advantages of legislated monopolies. Consumers consider that these advantages should be reflected in the returns the firms make to their shareholders.

1.3 Summary

Consumers expect that Rule makers and regulators will manage the regulatory bargain with equity and fairness. Indeed, the NEL objective requires the interests of consumers to be considered. But the reality has been that the AEMC (and then the MCE) allowed regulated firms a return which is not reflective of the risks inherent with the service being provided.

In this review, the MEU and Roundtable expect that the AER will assess the WACC parameters on the basis of equity and the regulatory bargain, without providing excessive conservatism to the benefit of the regulated firms[2].

[2] The MEU believes that the AEMC erred badly in the setting of both the WACC parameters and the Chapter 6A Rules, which compounded the over-generous incentives to regulated networks with a high return on investment. The recently seen explosion in capital expenditure claims and in the Regulatory Asset Bases in the current regulatory reset round, is a clear manifestation of the AEMC's error in proceeding with a generous WACC determination, rather than either carrying out a review at the time or requiring the AER to immediately conduct an independent review, with a holistic view of the entire approach embedded in the AEMC-determined Chapter 6A Rules.

2. Observations regarding the Utilities sector

As noted above, it is essential that a holistic approach is taken in the setting of the WACC parameters. If a purely mechanistic approach is made to assessing valuations for the various parameters, the overall outcome will inevitably be an excessively conservative determination of the WACC itself.

Thus before any observations can be made of what should be the value of individual parameters it is important to examine the entire market performance of regulated firms and how they are seen by investors in listed regulated businesses and entities.

2.1 Essential Context for this review

The return regulated businesses are granted on their investments is developed using the Capital Asset Pricing Model (CAPM) and this has a number of parameters within it that are used to quantify an outcome. Under the National Electricity Rules, the AER is charged with assessing whether the values currently set within the Rules should be maintained or varied to reflect movements in the economy.

With this in mind, this submission initially examines the fundamental basis behind what is considered an appropriate return for a regulated business.

The reason why the electricity (and gas) transport businesses are regulated stems from the very basic feature that the most economical way to transport energy is in bulk, rather than by multiple pathways. A direct outcome of this feature is that energy transport businesses are natural monopolies. If there are multiple pathways to deliver the energy, then it would be possible for the transport businesses to be subject to competitive pressures. In the absence of such competitive pressures (because it is uneconomic to duplicate such networks), economic regulation is essential to provide a surrogate for competition, in order to drive the businesses to the lowest (efficient) cost for the required service levels.

Reform of the energy markets is intended to provide a benefit to energy consumers, by the dismantling of the government owned vertically integrated monopolies into elements better able to provide for the needs of energy consumers. In its report[3] to the CoAG the MCE stated (page 7):

> "Effective economic regulation is a key to successful market reform. The regulation of network access (prices and standards) seeks to balance energy users'

[3] Ministerial Council on Energy Report to COAG on Reform of Energy Markets – 11 Dec 2003

> short-term interests in price benefits with their long-term interests in a reliable supply, service enhancements and timely investment in new capacity. The making of market and regulatory rules aims to provide reasonable stability to market participants, while ensuring that the rules can evolve to meet challenges that will inevitably arise. The enforcement of those rules maintains an important discipline on market conduct."

This admirable goal was incorporated into the new National Electricity Law as its objective. In the second reading speech for the introduction of the new Law, the Hon. J.D. Hill, for the Hon. P.F. Conlon (Minister for Energy), stated[4] that:

> "The national electricity market objective in the new National Electricity Law is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity, and the safety, reliability and security of the national electricity system.
>
> The market objective is an economic concept and should be interpreted as such. For example, investment in and **use of electricity services will be efficient when services are supplied in the long run at least cost,** resources including infrastructure are used to deliver the greatest possible benefit and there is innovation and investment in response to changes in consumer needs and productive opportunities.
>
> **The long term interest of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised.** If the National Electricity Market is efficient in an economic sense the long term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised." (Emphasis added)

This raises the very basic question – at what point will the long term economic welfare of consumers be maximized? In this regard, it is important to recognise that:-

1. The outcomes from investment in income-producing activities can be measured by the actual performance of publicly listed investment vehicles operating in a competitive environment, such as on the ASX stock exchange.

[4] Hansard, SA House of Assembly, Wednesday 9 Feb 2005, page 1452

2. Monopoly businesses providing electricity transport have effectively no competition[5]. As a result they have very stable cash flows based on the regulatory decisions made on a five year (or longer) cycle. The value of this stability in cash flow must not be underestimated.
3. It is important to realise that monopolies have the incentive to seek and garner monopoly rents (effectively an ability to tax) by manipulation of the regulatory regime.

Of the current $52 billion (valued in terms of RAB) invested in electricity transport business assets in the NEM, it is worth noting that all electricity transport businesses (transmission and distribution) are government owned except in Victoria and SA. In terms of the value of assets employed, this means that over 65% (in terms of RAB) of the electricity transport assets are government owned. Therefore, whilst government ownership does imply a degree of responsibility to the wider public (i.e. the broad public interest), it is still essential to ensure that the monopoly businesses do not impose unreasonable imposts on electricity consumers.

- There are only privately owned electricity NSPs operating in Victoria and SA, as well as the three privately owned interconnectors between Queensland and NSW, SA and Victoria and Victoria and Tasmania. As such, in proportionate terms, the privately owned businesses are heavily outweighed in terms of capitalization and asset values in comparison to government owned businesses.
- There are five listed companies owning some electricity transport assets – APA Group (Murraylink and Directlink), SP Ausnet, Spark Infrastructure (part owner of three distribution assets in Victoria and SA), Hastings Fund Management (part owner of SA transmission business with government owned Powerlink), and DUET (majority owner of one Victorian distribution business).
- There are four offshore investors in electricity NSPs – Singapore Power (effectively controlled by the Singapore government) holding part of SP Ausnet, and all of Jemena), Cheung Kong half owner of ETSA, Powercor and Citipower, YTL part owner of ElectraNet, and CitySpring (effectively controlled by the Singapore government) owner of Basslink.

[5] It is alleged that electricity businesses have competition from gas and other fuels but this competition is at the margin for the bulk of electricity used is for purposes where there is no competition, especially for light and static motive energy. Competition for electricity is effectively only in the aspect of heating, where gas conveyed by another monopoly transport business does provide some competition.

2.2 The impact of financial engineering

Of the privately owned assets, over $10 billion (in terms of RAB) are held in financially engineered entities, such as Spark Infrastructure (ETSA, Powercor and Citipower) and SP Ausnet (PowerNet, Vic eastern electricity distribution and some gas assets)[6]. In both cases Cheung Kong Infrastructure and Singapore Power retain controlling interests (either directly or indirectly) in the regulated companies, complete with management arrangements. ElectraNet (SA transmission business) is >40% owned by Powerlink, Queensland's government owned transmission business.

It has also been observed that where electricity transport businesses are held by private businesses and then part listed, they have been identified as having to potentially pay trailing fees (usually in the form of management fees) to their parent (or originating entity). Additionally, a feature of the sale process used by such financial engineers has been a guarantee of a minimum dividend payment, often unrelated to the actual likely dividends.

The impact of these trailing fees and guaranteed dividends is quite pervasive. At the very least they cause a significant payment to be made out of the operating revenue of the business, thereby reducing available cash for the business. Often, additional borrowings are effected to provide the guaranteed returns and fees, and the assets are frequently revalued upwards. Whilst regulators have identified that these fees and dividends may be a cause of higher than underlying opex claims (and therefore might not include the fee or part of the fee in the regulated revenue) they are still a cost the business is required to pay. Such payments eat away part of the funds generated by the business, causing them to increase their debt levels[7].

Ultimately, it is consumers that are exposed to this form of financial engineering, by:

- having to pay a higher price for the service provided,
- receiving a lesser standard of service than implied by the cost
- being exposed to increased risk due to the business retaining less profits which could be used for capex, causing higher debt levels

[6] The privately owned electricity interconnector Basslink is now effectively controlled by the Government of Singapore, and interconnectors Directlink and Murraylink are owned by Australian Pipeline Trust, an Australian listed company.

[7] As has been widely reported in the press in regard to a number of well known financially stressed businesses (eg Babcock and Brown, Allco, and others), part of the financial stress is attributed to the practice of trailing fees and guaranteed dividends paid out from either new equity or increased debt, often carrying higher than normal risk premiums

- receiving a lesser standard of service due to less than optimal management of the business causing unnecessarily reduced opex or capex, or overstated capex needs included in the regulatory decision

There is no doubt that the approaches used by financial engineers has caused consumers increased costs. But it should be accepted that as the overwhelming share of the electricity transport businesses are held by governments, great care needs to be taken that the outcomes of the financial engineering approaches are not used as the basis to enhance the returns to government owned regulated electricity transport businesses.

2.3 External assessments of privately owned infrastructure

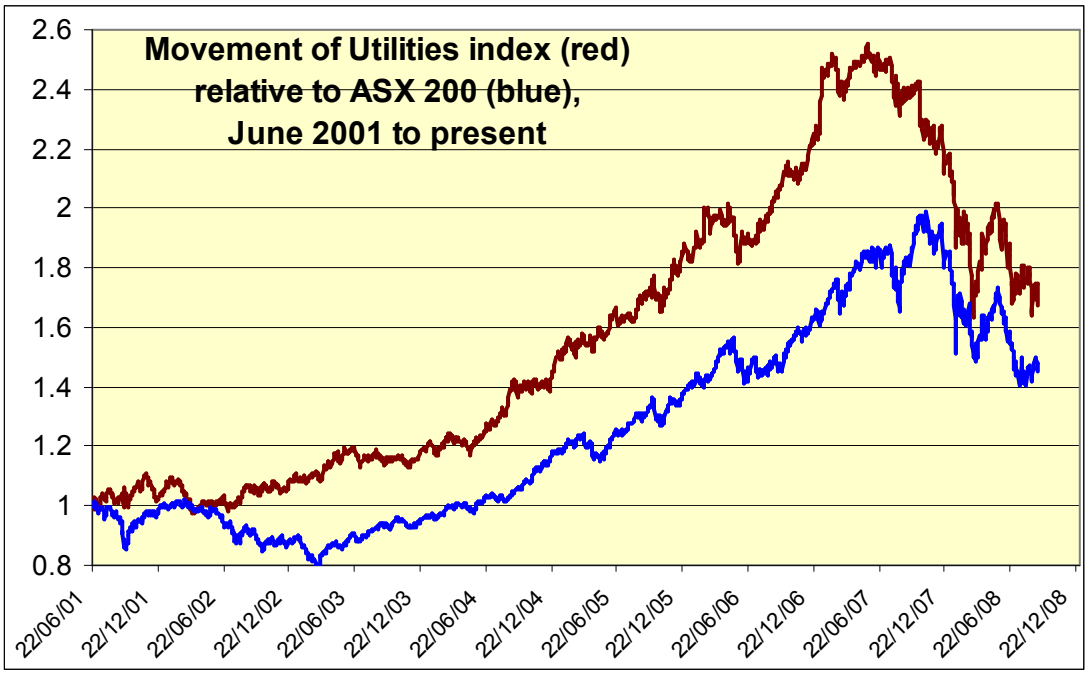
Since 2002 (when the ASX introduced the Utilities index) there has been an independent market perception of how investors see the strength of these natural monopolies. Unfortunately, even though the Utilities index provides some guidance, there still needs to be some care taken in the use of this index. In this regard, it is important to note the structure of the Index and some fascinating aspects of the way these privately owned monopolies were structured and then listed.

The index comprises the bulk of the listed energy transport firms, including Spark Infrastructure, SP Ausnet, DUET and Hastings which all include electricity transport businesses. Additionally, the index includes natural gas transport businesses, APT (which has both regulated and unregulated assets) and Envestra, which only hold regulated assets. It also includes B&B Infrastructure, which holds both regulated and unregulated infrastructure assets.

In recent times the index has undergone some massive changes, the main one being the removal of Alinta from the Index which was a very large component of the index. These Alinta assets were shared between Jemena (a subsidiary of Singapore Power) and which is not in the index and Babcock and Brown and its satellites – some of which are not in the index.

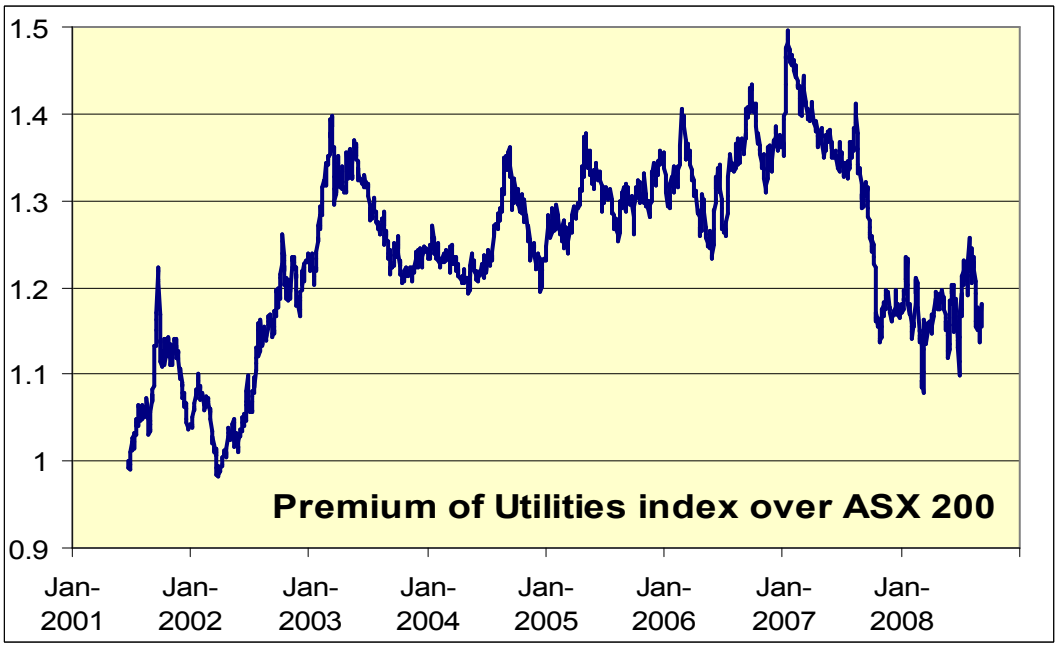
The index also includes the AGL retail business which holds no infrastructure assets as such, and a number of other very small businesses. Notwithstanding the inclusion of these other firms, the Index does provide better guidance than has been historically available for this asset class.

Notwithstanding its shortcomings, the Utilities Index (XUJ) is the only available indicator on how the market assesses Utilities as an investment class. The following chart shows the movement of the Utilities Index relative to its ASX equivalent, the ASX 200 (XJO), since it was introduced in 2001.



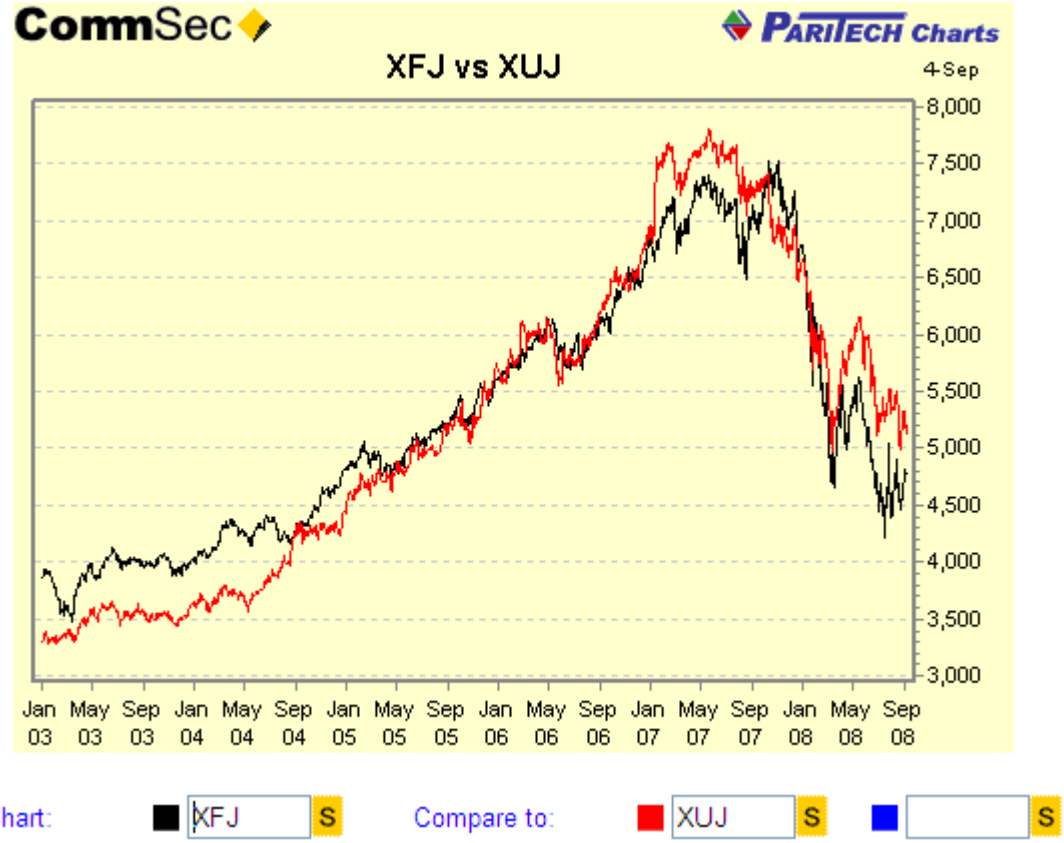
Source: CommSec using ASX data

The relativity can be shown in another way, using the same data



This second chart clearly highlights two key issues –

- The impact of the AEMC modification of the Chapter 6 Rules (to develop the Chapter 6A Rules) at the end of 2006, and the associated market spike at the beginning of 2007,
- The impact of the sub-prime issue late in 2007, which has caused a significant impact on highly geared businesses, such as Utilities. As a comparison the ASX index for Financials – XFJ – shows how closely the two matched during this period of tight credit. The following chart shows how the impact of the sub-prime issue impacted equally on the Utilities and the banking sector. Because of this exogenous issue, care should be taken when extrapolating data and trends of the Utilities index for the past 9-12 months.



Additionally, what all the charts show is the impact of the loss of Alinta from the index in September 2007, with many of the assets being excluded from the Index due to their private ownership by Singapore Power.

The impact of this movement out of the index can also be seen in the trends for asset beta and gearing for the index. In the past 6 months, the asset beta for the Utilities index has risen from the long term range of 0.3-0.4 to nearly

twice this and gearing has reduced by more than half. In attachment 2 – longitudinal comparative data on ASX indexes - to this submission there is a longitudinal recording of asset beta, dividends and gearing for all of the indexes used by the ASX. This shows the impact of the recent credit squeeze initiated by the sub prime issue.

2.3.1 Analysis of the longitudinal data MRP and β_e

MRP is derived from the value of the ASX accumulation index relative to the risk free rate. The accumulation index aggregates the change in value of the equity and the dividend, assuming the dividend is reinvested in the equity. The change in the ASX plus the dividend is indicative of the accumulation index.

In this regard, it is noted above that the Utilities index has consistently outperformed the average index by some 15-35%, averaging ~25% outperformance since the index was established.

The table in attachment 2 shows that the dividend provided by the Utilities index has consistently been higher than the dividend provided by the market average.

The clear implication is that the rewards achieved by the Utilities index are significantly higher than the rewards resulting from the market average. Yet the implication of the cash flow certainty of Utilities is that this certainty should result in lesser rewards than the more risky market average.

As the actual premium of the return on equity from a regulated firm is the multiple of the MRP and β_e, this clearly implies that either MRP used for regulated businesses is too high or equity beta used is too high or both apply.

2.3.2 Down spike from sub prime c/f "tech boom" spike in 1998-2000

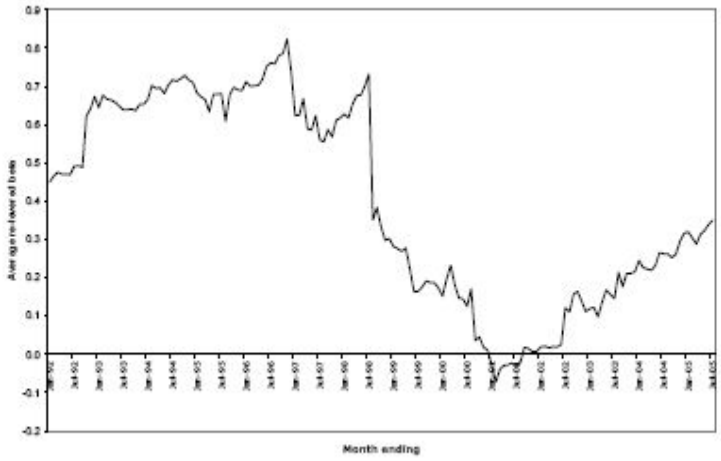
In 2000, there was the experience of the "tech boom". An outworking of the "tech boom" was the deflation of β_e for utilities, particularly in the US. As a direct result of the impact of the "tech boom" regulators elected not to use the equity beta outworkings calculated from equity betas identified from actual firms providing utility services[8].

[8] ESCoV October 2005 Final Decision Electricity Distribution Price Review 2006-10 Final Decision Volume 1 Statement of Purpose and Reasons pages 350 and 351

"First, a number of submissions raised the concern that equity beta estimates for utility stocks measured over the period of the technology 'boom and bust' are likely to be downward biased. The rationale for this bias is that, while technology stocks rose during the stock market 'bubble' and then slumped during the subsequent correction, safe stocks like utilities moved in the opposite direction (and, as such, opposite to the market as a whole). To the extent that the technology bubble is not expected to repeat periodically, the measured covariance between utility stocks and the market would understate the expected covariance (and hence, expected equity beta).

Both ESCOSA (2005a) and the QCA (2005) have accepted that the technology 'boom and bust' is likely to have led to a downward bias in measured equity betas over that period. The behaviour of the equity betas for the Australian firms, as set out above, appears consistent with the anticipated effect of the technology 'boom and bust'. In addition, ESCOSA (2005a) also investigated the behaviour of the betas for US electricity distribution businesses over this period. Analysis of equity betas of firms in the US has the advantage of being able to make use of a much larger set of listed entities, as well as information over a longer period (of the Australian comparable firms used to derive the average equity beta above, only AGLE existed prior to August 1997). The information presented by ESCOSA (2005) is extended in Figure 9.2.

Figure 9.2: Average equity beta for US electricity distribution businesses



Note: The chart reflects the average equity beta (re-levered for gearing of 60 per cent debt-to-assets) across a group of 12 US electricity distributors, measured using monthly return observations.

Figure 9.2 shows that, while the re-levered equity beta averaged across the sample of firms fluctuated within a band of about 0.6 to 0.8 over the period prior to the technology 'boom and bust', the equity beta estimates

> dropped substantially after about mid 1998, which is consistent with the proposition that the 'boom and bust' depressed measured equity betas.
>
> The Commission accepts that the recent technology 'boom and bust' is likely to have had a depressing impact on measured equity betas over the relevant period, and which is likely to lead to an understatement of the expected (forward-looking) equity beta where observations over the 'boom and bust' period are included in the sample."

That it was widely decided that exogenous issues should be excluded from analysis developing a fair level of β_e to be used for regulatory purposes, now should work in the opposite direction. There is little doubt that the current level of β_e is probably higher than it was 12-18 months ago. Yet, as it was earlier in the cycle, regulatory consistency should apply and therefore exogenous issues such as the current credit squeeze and its impact on equity beta should be excluded from consideration of it into the future.

2.4 The WACC in a competitive environment

What has been identified in previous regulatory reviews, is that the WACC has been essentially developed on a mechanistic basis. The development of the WACC is not just the development of a series of inputs and multiplying, adding, dividing and subtracting. The final WACC must provide sufficient reward to the business for investing and maintaining the assets in good working order, taking into consideration, all the relevant provisions in the Rules that affect the business. Equally, the WACC should not over-reward the business.

Thus as a first order issue a monopoly should not be allowed to attract a better return on their investments, compared to businesses operating in a competitive environment facing equivalent risks, and there is a strong argument that regulated businesses with their inherent financial stability and insulation from competitive pressures, should receive a lower return on their investments than businesses operating where competition is strong.

This can be seen very clearly when comparisons are made in the money markets. Here, very secure money investments attract a lower rate of return than those with a higher risk profile. For example:-

- A secured loan will be provided at a lower cost than an unsecured loan

- Lending at a personal level will attract a higher rate than lending to a government.

The reasons for this are obvious – the greater certainty there is for repayment of the loan, the lower the rate of return. Likewise, a business which has a higher certainty of being able to repay a loan, will pay a lower rate.

The rate of return a business attracts follows a similar pattern. A firm with effectively a guaranteed income is seen by investors as attractive, and due to the greater certainty of being able to provide a dividend, the investor expects a lower dividend than from a more speculative investment.

It is therefore a fundamental aspect of a WACC review that after the mechanistic development, there must be a holistic oversight to ensure that the mechanical approach has not delivered an inappropriate outcome.

In this regard, it is essential that the AER recognise that it is seeking to set a WACC that is reflective of a **notional business** providing the monopoly services. It must disassociate the performance of any one business of the financial structure used by firms providing such monopoly services, and develop criteria reflective of **the typical business** providing the services. In this regard, it is essential that due cognizance be made of the fact that the majority of the electricity transport businesses are owned by governments, rather than private enterprise.

It is alleged that care must be taken to allow for potential competition to the electricity transport businesses, and that as a result, the outcomes of regulation should allow for such competition to develop. Essentially, this is not a convincing observation. If competition develops then there will be no requirement for regulation. But at the same time, it is incorrect to allow a higher return to monopoly energy transport businesses, in the expectation that competition will develop, as this provides a cost penalty on current consumers. The single market objective does not permit this to occur – it requires only that the outcomes be in the long term interests of consumers. It is not the function of regulators to anticipate competition for the provision of monopoly services. In fact, at the most fundamental level it has been tacitly accepted that a single service provider should be the most economical way of providing the service.

The history of electricity transport businesses over the past 12 years since deregulation commenced, has demonstrated the truism of this tacit assumption. Despite there being the potential for market developed network services to be implemented in the NEM, the two market based NSPs (Murraylink and Directlink) have not been successful, and have elected to

become regulated. The only other non-TNSP owned network provider – Basslink – was developed on the basis that its revenue was underwritten by Hydro Tasmania, a generation business owned by government. There has been no significant competition developed between electricity distribution businesses, nor by those external to the monopoly businesses established by governments in the de-regulation process.

That such an outcome has been observed is not surprising, but it highlights that regulation of these monopolies should be based purely on the observable facts, and the AER should assess the WACC parameters based on the actuality of the current market – that is it should assess the returns to the firms providing a network service, based on a typical or notional business structure actually operating in this market sector.

2.5 Changes since the last review of WACC inputs

In the development of the new Chapters 6 and 6A of the National Electricity Rules, there was a significant reduction in risk for the regulated businesses. This risk reduction was deliberate as the AEMC stated quite openly that it was taking this view to encourage efficient investment.

The AEMC observed in its final determination on the Chapter 6A Rules (page 54):

> "TNSPs, like most businesses, operate in an uncertain environment. Uncontrollable, external events as diverse as changes in economic growth, climate and regulatory obligations can alter the quantity and nature of the services required to be provided by TNSPs. In a normal competitive market, production and pricing behavior adjusts in response to these changes. In these markets, efficient producers are able to recover their costs and should generally earn at least a normal return on their investments[9]. As highlighted above, the regulatory arrangements need to mimic the operation of a competitive market as closely as possible. That is, if TNSPs are required to respond to market demand by altering their production behavior and this requires unexpected investment in new network capacity, the arrangements need to provide for this[10]."

[9] This statement is somewhat absurd. Even very efficient businesses, when the economy slows, suffer considerably. A cursory read of the newspaper shows that in light of the slowing economy in 2008 many efficient and well run businesses are taking stringent steps to reduce costs (such as shedding labour) and restraining capital works because of falling demand. Despite a slowing demand for electricity none of these impacts are being seen by NSPs as they seek larger opex and capex allowances.

[10] But doesn't the converse apply? If there is falling demand, shouldn't the NSPs be reducing costs? In a static, even falling economy, costs should be restrained, yet the NSPs are not constrained by the Rules and are increasing opex and capex requests.

Whilst this is a laudable aim, the AEMC failed to recognise that in a competitive environment, decisions made now could well be incorrect in the future. Unfortunately, the AEMC does not understand the competitive environment at all well, and has made decisions that reduce the risks for TNSPs significantly. Further, as feared, the MCE SCO in the development of the Chapter 6 Rules for distribution businesses decided to emulate the AEMC Rules. The MCE SCO process was not at all transparent and tended to purely use the AEMC changes with little analysis of the thought processes behind the changes. This is further compounded by the basic issue that there are some governance concerns surrounding MCE decision-making due to the large proportion of ownership of regulated energy transport businesses held by certain States.

The new Rules were designed to insulate TNSPs and now DNSPs from exogenous issues, yet in doing so the changes also insulate errors the regulated businesses make. The competitive environment is unforgiving, but NSPs are now being protected from poor investment decisions due to their unique position of having no competition to punish them for errors as well as having the regulator constrained from providing that punishment.

The regulator is now constrained from providing discipline because they:-

1. Are not able to review (ex post) decisions made earlier and subsequently proven to be wrong. Optimisation was intended to provide this discipline but this has now been eliminated. In a competitive environment, if an incorrect decision is made the business has to write down the expenditure and take the write down as a loss. Regulated NSPs no longer face this discipline.
2. Apply an ex ante capex program which is designed to allow the NSP to develop an amount of capex that the regulator approves. Once approved the regulator is not permitted to provide any discipline should the NSP elect to spend in a totally different area. Further, if a project used as the basis for developing capex for one regulatory period is deferred by the NSP, then it is permitted to use the same project for it to develop its capex for the next period. In a competitive environment capital is provided once the need is fully developed and proven. This reduces the need (and therefore risk) for the NSP to be disciplined in using capital for defined needs.
3. Must accept the concept of contingent projects. These are where the NSP thinks it might want to embark on a project but the timing is “soft”. It is allowed to bring such projects into the revenue allowance. In a competitive environment there is a fixed ability on the business to raise capital. If it is necessary for one project to be brought forward,

then anther project is deferred. This reduces the discipline (and therefore risk) on the NSP to use its allowed capex wisely.

4. Must accept any and all capex incurred and which must be automatically rolled into the regulatory asset base, never to be assessed for subsequent prudency. Therefore, errors made by the NSP are never brought to account. If capex was imprudently incurred (such as if capex was different to that planned, over ran on cost, was inefficient or timing was deferred to give a better profit) there are no comebacks on the NSP. In a competitive environment, such errors are severely punished by the investors in the business and by its customers. They are, in effect, the drivers of efficiency for the business.
5. Are constrained in assessing capex (and opex) claims from the NSPs. It is required to accept the claim regardless of its build up, if the amount claimed is seen as reasonable. If the regulator is too constraining, then the NSP has a strong case to appeal the regulatory decision.
6. Must accept that NSPs are granted significant unilateral powers to decide on issues (eg depreciation, pricing, etc) yet many of the aspects where they have these powers have a significant impact on consumers.
7. Must require TNSPs (and allow some DNSPs) to operate under a revenue cap regulatory regime. As such, these NSPs are insulated entirely from exogenous impacts such as a weakening economy or climatic issues. A revenue cap approach hands the risks for these issues directly to consumers.

The impact of the changes made in the Rules to provide this protection has been clearly seen in the way the Utilities Index changed with the release of the changes in the Chapter 6A Rules[11]

Overall, the risks that the AEMC refers to as applying to NSPs in its final determination have little relationship to the risks that are faced in a competitive environment. In fact, the whole approach by the AEMC has been to reduce the risks faced by NSPs and to allow them easy access to claim more revenue from consumers. A competitive environment would see the NSPs attempting to restrain their appetites for revenue with the goal of retaining their customer base. But a monopoly does not need to consider its customer base and its ability to pay for a service which is classed as essential.

[11] Attached as attachment 1 is a monograph prepared by MEU in early 2007, showing this impact

Thus in assessing the WACC inputs, the AER should assess the risks faced by the NSPs under the new Rules (and the related WACC inputs seen as appropriate) as compared to the risks faced by the NSPs under the now superseded Electricity Code and the WACC inputs used then.

2.6 The Capex effect

A regulatory reset is required to be carried out using the Building Block approach. The first two elements for setting the allowed revenue are the return on capital (or WACC) and capex forecasts.

The rate of return on capital (the weighted average cost of capital – WACC) has embedded in it all of the base profit the Network Service Provider (NSP) receives for providing the service. Compared to this, the allowance for opex is provided for only at cost, the return of capital (depreciation) is at cost and the regulated asset base is fixed. Therefore the WACC combined with the capex program provides the only way for a regulated business to increase the quantum of profits a business will receive.

This building block approach therefore, implicitly incentivises spending capital. That this effect has now been recognised can be clearly seen from the following table, which reflects the amount of capex allowed (claimed) in every transmission reset since regulation for electricity transport businesses commenced.

TNSP	Allowed capex/RAB at each reset *claimed		
	First reset	Second reset	Third reset
TransGrid (NSW)	46	40	62*
SPA (Vic)	26	40	
PowerLink (Qld)	46	60	
ElectraNet (SA)	43	48	
Transend (Tas)	56	69*	

In this regard it should be noted that the capex increases are reference back to the RAB at the time of the reset, and the RAB for all businesses are increasing in real terms.

In particular the increase in WACC permitted as a result of the Chapters 6 and 6A changes has led to a large increase in capex since the new values were set. For instance some $3.8Bn in new capex has already been approved by the AER at the resets for SP Ausnet, ElectraNet and Powerlink. To this must be added the ambit claims from TransGrid and Transend of another

$3.3 billion. The NSW/ACT electricity distribution businesses review currently underway seeks another $18.53 Bn. Each of these businesses has a WACC which over rewards them for investing new capital, and the outcomes is as expected – a very large capital program.

It is alleged that this capital investment is needed due to the constraints on earlier investments when the businesses were under the direct control of governments. It is now over a decade since most businesses were corporatized and removed from such constraints (if they ever occurred). Most electricity transport businesses have been regulated at least once and some now three times. For the capex claims to be the result of inadequate investment while under government control, is no longer and adequate excuse. This submission posits that it is a result of the high WACC that is driving this demand for more capital investment rather than the so called "bow-wave" effect which has now lost the bulk of its energy.

In fact the WACC should not be set at a level which creates an incentive to invest. Nor should it be set at a level which does not provide sufficiently to source needed capital. It should be set at a value which is just adequate to source funds, but does not provide an incentive to invest regardless.

This submission points out that a mechanistic approach to setting WACC parameters in isolation is totally inappropriate, and that a holistic assessment is also required. Such a holistic review would identify such issues as the increasing claims for more and more capex.

2.7 What is the notional business?

Regulation is required to assess the revenue that the notional electricity transport business should receive. The reason behind this is that it should be the regulated business which decides on its financial and corporate structure to ensure it meets the needs of the shareholders. It is not the role of the regulator to decide what constitutes the best structure for any regulated business.

This requires analysis as what the "notional business" is. From this comes the decision as to the parameters which best reflect the notional business.

The notional business can take many forms, and therefore the financial corporate structure which comprises the notional business must be one that is most commonly used by proponents providing the regulated service.

The following table provides a snapshot of the current gearing structures used by regulated businesses.

	Regulated Business	Gearing[12]
Public ownership		
Qld Government	Powerlink	62%
	Ergon	69%
	Energex	42%
NSW government	TransGrid	56%
	Country Energy	83%
	EnergyAustralia	72%
	Integral Energy	68%
Tas government	Transend	32%
	Aurora	70%
Private ownership		
Electricity	SP Ausnet (PowerNet, Vic east DB, gas)	65%
	Spark Infrastructure (ETSA, Powercor, Citipower)	54%
	ElectraNet (41% owned by Powerlink)	96%[13]
	DUET (66% United Energy, gas)	79%
	CitySpring (Basslink)	82%
	APT (Murraylink, Directlink, gas)	78%
Gas	Envestra	91%
	Jemena (Singapore Power)	80%
Other	B&B Infrastructure	67%

This table highlights three fundamental aspects:-

1. The clear import of this table is that gearing (debt share of total assets) for regulated energy transport businesses is not 60% and on average is closer to ~70%, implying that the notional (average) business is geared to 70% rather than the historically assumed 60%.
2. The table highlights that the majority of regulated electricity transport assets are held by government. It also highlights that much of the privately owned assets (which are geared more heavily, and significantly higher in some cases) are held by financially engineered structures[14] designed to acquire investment in stapled securities from shareholders keen to have stable incomes. From a banking (debt

[12] Gearing is measured as total liabilities/total assets and detailed in the latest published financial accounts of the entities

[13] Deduced from Powerlink AR 2007 note 12

[14] In this regard it is important to assess the basis on which these financially engineered structures were floated. Specifically high yields with a stable income stream are features that were described in such prospectuses. These structures appeal to investors seeking defensive assets for there portfolios.

provision) perspective[15], a stable cashflow is essential to attract low premiums for the provision of debt.

3. It highlights that there is an overwhelming ownership of the assets by Australians, either through the government ownership or Australian shareholders of Australian listed investment vehicles. Direct overseas ownership of the electricity transport assets is quite limited, and similarly for investment in the Australian listed entities.

Thus the typical electricity transport asset is:

- Geared to 70%
- Government owned (~70%) with perhaps less than 10% directly owned by an off shore business (which is likely to be government owned anyway). Of the balance of ownership, 20-25% is owned by Australian listed businesses, which have a large proportion of their shares held by Australian tax payers.
- Exposed to the provision of debt, reflecting its secure ownership structure, with very stable cash flows.

Of concern to consumers is that the AER will assess the WACC parameter inputs in terms of "what is" being used rather than "what should be" based on the notional structure. In this regard, we point to the decision of the AEMC in setting the debt premium indicator in Chapter 6A at "BBB+" rather than "A" used previously by the ACCC. The argument put was that BBB+ was the lowest level of indicator granted to any of the electricity transmission businesses (in this case ElectraNet with its gearing >90%). To use the lowest level granted was not reflective of the gearing used in the "notional business".

It is of concern to consumers that there is an assumption that all of the electricity transport assets are owned privately and that therefore the WACC should represent this feature. Any analysis undertaken must reflect the actuality of the NEM electricity transport asset ownership, with its preponderance of government ownership.

2.8 Regulatory circularity

Analysis of the listing of regulated firms in the electricity (and gas) transport business is very limited. There are 15 firms providing gas and electricity transport in the NEM regions. Of this 15, 9 are government owned, and 6 are

[15] It is important that the AER recognise that credit rating agencies (eg, S&P, Moody, Fitch) point out that their ratings are not assessments of debt risk, but more a rating of the certainty that the debt can be repaid.

listed entities. As such, the number of the listed firms is really too small to provide an independent assessment of the performance of the sector. In fact, it is the outcome of the regulatory decisions that provides the bulk of the outcomes in the Utilities index. This then implies that the performance of the index bears a direct relationship with regulatory decisions.

There are only 15 Australian electricity transport businesses. Australian energy regulators have consistently only benchmarked each of these businesses against its Australian peers (and usually the regulators only benchmark against those businesses in the same class further reducing the number of comparator businesses), making allowance for the differences between the business under review to the very few other equivalent businesses. The regulator then provides an assessment of what is considered appropriate to the review. There is no involvement in assessing the performance of the Australian regulated business against those firms exposed to competition or even international best practice. The approach taken by regulators basically allows the regulated businesses to maintain average performance, without the driving imperatives inherent in competitive enterprises to continuously strive for best practice – ie to operate in the lowest cost quartile.

Because of the risk of regulatory circularity, the AER has no option but to seek performance standards external to the small pool of Australian businesses. That the ACCC and jurisdictional regulators (with support from ACG) have elected to seek inputs (for example equity betas) applying in comparable[16] overseas jurisdictions highlights the need to overcome regulatory circularity.

This submission urges the AER to seek such comparable input data to support its decision making processes.

2.9 Variability of inputs over time

It has been a feature of the many assessments of WACC development by regulators in Australia that all regulators refer to the need for regulatory consistency and to reflect the long term nature of the investment.

The issue of regulatory consistency is an interesting aspect of Australian regulation. Regulation is a surrogate for competition. Therefore regulatory consistency would seem to imply that competition is consistent. Yet anyone that has been involved in a competitive market will observe that the only constant in a competitive environment is that there is always change. The

[16] Comparable would cover similar legal and financial structures, industry segmentation and regulatory practices

competitive market is such that as soon as the market identifies that one sector or firm is seen to have a competitive advantage, the competition quickly increases to erode this competitive position and bring the sector or firm back to having the average outcome. In fact, to maintain a competitive position requires continual striving for competitive advantage by a firm, so that just to "remain static" in terms of the market requires significant effort. In contrast, the approach of regulators has been one of allowing the regulated monopolies not to have to strive to "remain static" but to assume that this is a right. To impose competitive pressure regulation should always be providing continuous pressure to improve rather than allowing the firm to "remain static" and rewarding even the smallest improvement.

Regulators make much of the need for consistency in their decision making, and this is necessary. What is not so necessary is for regulators to hold onto using WACC inputs which are no longer relevant, just for the sake of consistency. In this regard regulators have, up to the middle of this decade, retained the view that equity beta of 1.0 must be retained just because this amount was used in a previous decision even though there was adequate market support for the value to be reduced. That jurisdictional regulators finally recognised that an equity beta of 1.0 was no longer a sustainable value and commenced a program for its reduction is to be supported as it was finally recognised that the higher value was over compensating regulated firms. It then became of greater concern to consumers that the downward trend towards a long term sustainable (and appropriate) level for equity beta now was being constrained on the basis of the need to provide regulatory certainty, to the exclusion of regulatory equity.

Regulators make regular reference to the life of the assets involved in the electricity transport business as if this long life is unique to the electricity transport industry. In fact, most businesses and residences are built for the long term by their owners so that the asset will remain viable over the span of the expected investment. For example, a simple residence is built by a new owner so that the house will be available for multiple generations of owners. Yet, the electricity transport industry is expected to replace in their entirety assets which are considered to be more than 40-50 years old, and this is considered to be a long lifetime. At the other end of the scale a firm in a competitive environment might decide to build a new facility (or replace an exiting one) and plan its depreciated life time over 20-25 years. This does not mean that in this period of time the assets will be fully replaced. In fact, what happens is that the assets built are improved and expanded and it is not uncommon that assets will have a life extending into many decades, with some even lasting over a century.

Unfortunately, regulators allow assets that have reached their planned economic life to be replaced, regardless as to whether they still have a useful life ahead of them. The regulatory structure actually encourages this to occur. In a regulated business a fully depreciated asset no longer provides any income to a regulated business and so the firm is encouraged to replace the old (but still useful asset) which no longer delivers a return with a new asset which does. In a competitive business to use an asset which is fully depreciated (and therefore has a low cost) is the goal as this returns to the owner, an enhanced return due to the now low input costs.

Consumers expect that in this review the AER will not allow itself to be constrained to including conservative WACC input parameters on the basis that regulatory consistency or certainty is an over-riding aspect.

2.10 Basis for responses to AER questions

The foregoing sections were deliberately detailed as they provide the basis for the following responses in the following sections which follow the structure of the AER Issues Paper.

2.11 Summary

There is little doubt that the current parameter settings used in the WACC development are individually biased towards the regulated business. The outcome of this individual bias has been to create a large aggregated bias in favour of the businesses. The overall outcomes for the regulated business have been further inflated by generous Rules provisions determined by the AEMC, e.g. the Chapter 6 and 6A Rules. To overcome this, the AER should assess each parameter on its merits, and at the end add a single bias (if deemed necessary) to the final outcome rather than bury many biases in the workings of the WACC.

There is a residual concern the AER will decide that in the interests of regulatory certainty and to avoid price shocks, it is appropriate to move slowly towards what might be seen as the correct parameters. To take such a step is seen as totally inappropriate. A solution out of this review which is only a trend towards the right answer will condemn consumers to further maintaining a situation of paying monopoly rents for the provision of essential services. Already consumers are facing significant financial disadvantage because of the credit squeeze resulting from the sub prime crisis, from rising energy prices (gas, oil and power), and soon will be added the impact of greenhouse gas mitigation (ETS and MRET). In such a climate, it is totally unacceptable to reduce the impact of fair changes to the WACC input parameters just because the regulator is concerned that ‘too much too fast’ is inappropriate.

The AER has been charged under the NEL and NER to set the correct WACC parameters, and not to influence the way they are to be introduced.

3. Multi-parameter considerations

AER question	Response
2 Multi-parameter considerations	
Consistency between parameters in estimation – Form of the CAPM (domestic or international) The AER points out that the there needs to be an assessment whether the rewards available in the Australian Utilities should be reflective of the Australian capital market or the international market. The rationale for putting this question is that (particularly for debt service provisions) they should reflect the reality that a proportion of the funds made available to regulated firms are sourced on the international market. As a counterpoint, due to the internationalization of the debt markets, it has been observed that the Australian market is itself harmonizing with the international markets as a result of the changes made in national laws addressing this issue since the 1980s, and particularly in the 1990s. With a market driven exchange rate, easier access to off shore funds and greater ease in transferring funds to and from Australia, many of the aspects affecting the historical settings implicit in the CAPM do need to be assessed in light of changes made in the past two decades or so. This then implies that rather than simply attempting to set the inputs in terms of international settings of CAPM, the AER should be examining the more recent trends in the CAPM inputs to reflect the reality of the changes made at a macro level. It is also important to note that by far the bulk of the energy transport businesses are still Australian owned (either privately of by government) and to use international settings does not reflect the reality of ownership of Australian Utilities.	
2.1 Given that foreign investors are likely to influence the market data upon which the estimates of a number of WACC parameters are based, is it appropriate, feasible and practical to adopt either a fully segmented or a fully integrated version of the CAPM?	Australian utilities are predominantly owned by Australian entities – either government or Australian listed entities. Although there may be some ownership of the utilities off shore, the great majority of utilities are owned by Australians. On this basis it is more appropriate to use Australian derived inputs to CAPM

2.2 Is the AER's proposed approach to adopt a domestic form of the CAPM with foreign investors recognised appropriate from a theoretical and practical point of view? If not, what are the alternatives?	Yes.
Consistency between parameters in estimation – definition of the benchmark efficient service provider As noted in section 2 above (particularly section 2.6) it is important that the "notional business" has some relevance to the market. In this way, issues such as being regulated, having certainty of cash flow, monopoly position, etc are recognised. Further, there is a relationship between the various inputs (eg gearing, debt rating, equity beta, etc) that can only be captured for the business sector. To attempt to "mix and match" from specific source in some aspects and from general aspects for another, has the potential to create distortions. The level of gearing for a utility can be higher for the same credit rating of a lower geared entity which does not have the same certainty of debt repayment highlights the importance of consistency within the sector.	
2.3 Is it appropriate that the businesses included in the sample to obtain a WACC parameter for a benchmark efficient service provider may vary depending on the parameter being considered? For example, is it appropriate to use an energy industry benchmark to estimate the equity beta, but to use a broader benchmark which includes non-energy businesses to estimate the gearing and credit rating levels?	Generally "No" except as noted in the next section 2.4. The fact that a higher level of gearing of a utility can be achieved due its unique features (eg monopoly status, secure revenue stream) does differentiate it from the market in general which does not have these unique and attractive features. It is essential that there be consistency between all settings of the input parameters to reflect the unique features of the utility sector.
Consistency between parameters in estimation – nature of industry benchmarks: selecting businesses with similar characteristics The approach appears to be contradictory. It is inappropriate to apply some features from the utility sector with those of the market in general. The exception to such an approach is where the derivation of some of the inputs is of a general nature. In this regard, risk free rate and MRP are quite distinctly related to the market in general, rather than being specific to any sector.	
2.4 Which characteristics should be considered and what amount of weight to particular characteristics should be given when selecting sample businesses?	The only parameters that should not be industry specific are those which by their very derivation (eg risk free rate and MRP) are of a general nature and not related to any specific sector.

2.5 Is it appropriate to pool electricity and gas distribution and transmission businesses in selecting the sample of businesses for some of the WACC parameters? For which parameters is it appropriate?	The assumption made in regard to this question asserts a difference between gas and electricity. In fact, the sector data that can be used is the regulated monopoly utilities sector, as distinct from supply and retailing of energy which do have similarities with other sectors. The focus should be on regulated energy transport monopolies rather than on the electricity or gas sectors. What is being developed is a set of inputs for a unique sector of the market.
2.6 Should a hierarchical approach or another approach be used to select benchmark businesses?	Each utility sector has its own features, and as a result to cross reference these can lead to distortions. The energy sector monopoly utilities have their own unique features which are not necessarily replicated with other utilities. For example, toll roads do have competition from government owned roads, and airports have competition from other forms of transport (eg rail, road). In contrast, energy supplies are essential services, and this clearly highlights that there should not be an attempt to compare (or dilute) the unique features of energy transport with other utilities (e.g. coal loaders).
Consistency between parameters in estimation – nature of industry benchmarks: unregulated activities and mergers and acquisitions Whilst this was an issue in regard to AGL and its demerger, it is no longer apparent. The only businesses now in the energy transport sector are regulated electricity distribution businesses in NSW and Tasmania. Notwithstanding that the issue is no longer significant, the principle that should apply is that the WACC inputs apply to the regulated part of a mixed business, and therefore only inputs derived from regulated monopolies should be applied. To use inputs from other businesses is distortionary	
2.7 Should businesses with significant unregulated activities be included in the sample used to obtain an industry benchmark?	No, except where the regulated sector within the business can be clearly segmented away from the unregulated business.

2.8 If businesses with significant unregulated activities are included as part of the industry benchmark, should specific observations be removed or should specific adjustments be made?	Yes. See above.
Consistency between parameters in estimation – nature of industry benchmarks: foreign comparators Although it appears that this issue has most relevance in relation to equity beta, the issue of using foreign derived comparators is not just related to equity beta. Regulation is intended to replicate competition and drive the regulated business to world's best practice. So using overseas data (especially where it is comparable and replicates what occurs in Australia) has relevance. Where data which can be compared to the Australian scene can be identified and used, then it should be. The sample of the Australian market is just too small to derive a market based answer based just on Australian businesses, especially as so much of the energy transport lies in government hands. It is also important to note that the average asset beta must be 1.0 regardless of the location in the world. Thus a sector asset beta is only relative to the market average. It is important to have a large sample on which to base a realistic average as too small a sample will permit significant distortions.	
2.9 Which foreign businesses could be considered for the purposes of cross-checking WACC parameters estimated based on domestic data?	Where the businesses can be compared in their entirety they have relevance. Thus a "pure" energy transport business in the US has relevance to an energy transport business in Australia, as do such businesses in the UK. The important element is to identify that the conditions applying to the off shore businesses are similar to those applying to the regulated businesses in Australia.
2.10 Which criteria (i.e. similar markets and legal systems) should be used to pool foreign comparator businesses?	
2.11 Other than the use of direct estimation and foreign comparators, is there another method that could be used to check the reasonableness of WACC parameters?	

4. Gearing

The level of gearing used by an entity has an impact on a number of other WACC inputs, such as debt premium, and the level of risk associated with entity and hence the return expected from the equity element of the investment.

It has been seen that a business will gear itself as high as possible as the higher the debt level the better the overall return to the equity investor. The level of debt a lender will tolerate is related to the amount of the cashflow the business makes relative to the amount of debt provided, and the level of certainty of the cash flow to the business.

A regulated monopoly has a very high level of certainty of the amount of cashflow it will receive and a lender can identify with certainty the security of the asset and the degree the interest charge is covered by the cashflow. The lender is also comforted by the fact that the assets being used as collateral have certainty of future use in the event that the borrower defaults. Assets used with no risk of competition and providing an essential service (and therefore very unlikely not to have a future use), are seen by lenders as the most attractive.

A key feature of lending against electricity transport assets is that the bulk of the assets are government owned and either implicitly underwritten by government or by a very large population of users without any alternative further increases their attractiveness to a lender.

Analysis of the actual gearing used by regulated entities implies that gearing higher than 60% debt is not only feasible, but economically efficient. Just using an average of the gearing currently in use implies gearing is actually closer to 70% debt. That entities are successfully operating at gearing levels higher than 70% (for example ElectraNet is rated by credit agencies at BBB+ - the current benchmark used in the NER) at a gearing of >90% debt indicates that the current level used by regulators is not economically efficient, and that a higher level should be used. The financially engineered businesses tend to be more highly geared operations.

AER question	Response
3 Gearing	
Data availability	
3.1 What is an appropriate time period and frequency for estimating the benchmark gearing ratio from available market data?	It is not so much the length of time that historic data may be relevant, but more the cross sectoral extent that the gearing levels applies. For example, to assess the gearing level of a single entity over a period of

	years does lead to issues that are raised as concerns. However, where the level of gearing is averaged across a number of entities (both government and privately owned) tends to reduce the longitudinal aberrations. The credit rating of an entity also provides some indication as to what is an acceptable level of gearing, in that the higher the level of gearing the lower the credit rating. Thus rather than using a longitudinal basis to assess gearing, it is more appropriate to use cross sectoral assessments and credit ratings with some longitudinal assessment.
Measurement of gearing – valuation methodologies In regard to valuation of gearing, there are two elements that need to be recognised. Firstly, credit rating agencies use accounting data as the basis of their assessment, and secondly (as AGC notes) regulated businesses have now increased their accounting asset bases to reflect the regulatory asset bases, avoiding the concern that using accounting data is inconsistent with regulatory values	
3.2 Are objective market valuations for debt and equity available to estimate gearing ratios?	It is important that all debt and assets are included in the assessment of actual gearing used in a sector. Just because current liabilities might not be in the form of borrowings, this still does not reduce the level of debt a firm has, as liabilities include the involuntary lenders (such as unpaid suppliers) and liabilities due to employment issues – this debt is a non-cash debt but is still a debt the firm has – just as assets should include amounts due to the business from its debtors. On this basis the relationship between total assets and total liabilities is the best indicator of the level of gearing a firm has. Credit rating agencies use accounting data as the primary approach to gearing, although they also use many other indicators as well.

3.3 If an objective market valuation measure does not exist, then should the percentage of debt be measured relative to the value of the RAB be applied or book values of debt to debt and equity?	A review of the most recent financial accounts of the regulated energy transport businesses shows some consistency between the depreciated value of plant and equipment and RAB. Where there is inconsistency between the two, this is most commonly treated as an intangible asset. Unless a firm can demonstrate that the intangible asset can generate an income, a lender is unlikely to lend against an intangible asset. Accounting data treats an intangible asset as an asset, and would become included in the book value for gearing.
Measurement of gearing – definition of debt and equity In establishing the notional firm financial structure, it is not an issue for the regulator to determine what comprises debt and equity. How a business develops its own financial structure is its business and a regulator should not attempt to second guess what structure is most suited to a specific firm. The only time the regulator needs to be involved in assessing how debt and equity is structured, is when assessing the longitudinal and cross sectoral actuality of gearing.	
3.4 What definition of debt and equity should be applied where data is available?	For the purpose of assessing gearing for the each business, all liabilities should be treated as debt, just as all assets should be treated as assets. It does not matter whether a liability is sourced from a formal lending arrangement as many liabilities are involuntary lending from unpaid suppliers or a debt due to staff in the future for employment payments. From this assessment, a gearing level for the notional business can be developed.
3.5 Which items should be excluded and or included when measuring an industry benchmark gearing ratio?	All liabilities should be included as debt and all assets included as assets.
3.6 If hybrid securities and other forms of quasi debt are included in the measurement of the benchmark gearing ratio, how should specific types of hybrid securities be classified in terms of debt or equity?	If all liabilities are treated as debt, this creates a clear and concise approach to assessing gearing in the sector. The same approach provides clarity in relation to assessing the value of assets.

5. Nominal risk free rate

Historically, the Commonwealth government (CGS) 10 year bond rate has been used as the basis for the "risk free" rate for investment. There has been some debate as to whether there is an underlying bias in the CGS both in the nominal rate and the indexed rate.

The Australian Treasury and the Reserve bank had advised that they consider there may be a bias in the CGS indexed rate as the volume of these securities was falling significantly. However, both Treasury and RBA opined that there was no bias in the nominal bond rate, and that there was sufficient volume and trade in this CGS to obviate any bias. On this basis it becomes an assessment as to whether NERA (a consultant to the supply side entities seeking a higher "risk free" rate to be used in the WACC) is correct or whether Treasury and the RBA (which are both independent of the issue) are correct.

NERA provided a view that the (higher valued) CDS and other instruments might be used in preference to the CGS. This submission does not support the NERA view and considers that Treasury and RBA views are more acceptable.

However, there is a relationship between risk free rate and market risk premium. MRP is assessed as the outperformance of the accumulation index[17] for the share market above the value of the risk free rate. Thus if the MRP is based on using a specific definitional value for the risk free rate, then that is the risk free rate that must be used.

The 10 year CGS has been consistently used as the benchmark from which MRP has been calculated from the share market. If there is a decision to move to another "risk free" rate then it is axiomatic that the MRP be re-assessed in terms of the new basis used for the risk free rate.

Other than the NERA assessment, there would appear to be no "persuasive evidence" to cause a change from the consistently used approach, particularly when it is considered that to make such a change would require a recalculation of MRP using the new basis. As the calculation of MRP tends to "wash out" any implicit bias (whether real or imagined) from the setting of the risk free rate, it is considered that there is no substantive reason to change from current practice.

[17]The a accumulation index is derived from the market value of a share in a firm plus the value derived from reinvesting the dividend back into the firm. This the accumulation index is a reflection of the total value a shareholder receives from the business from both dividends and share appreciation.

AER question	Response
4 Nominal risk free rate	
Proxy for the risk free asset	
4.1 Are there any viable alternatives to Commonwealth Government Securities (excluding using Credit Default Swaps) as an appropriate proxy for the nominal risk-free asset in the context of a domestic Australian CAPM?	No, and any change would require MRP to be recalculated using the new basis.
Term of the risk free proxy – matching the term with asset lives and the 'present value principle' It must be noted that the value (and the derivation) of the MRP is dependent on the value and derivation of the risk free rate. Therefore if a long term MRP is to be used, the value and derivation of the risk free rate used to calculate the MRP must be consistent.	
4.2 What is the typical term over which a regulated network business in Australia refinances its debt? How relevant is this term in a regulatory setting?	The AER suggests that the low risk financing option is to match the debt duration with the asset life duration. Implicitly this is not an economically efficient approach to financing. The wider market does not follow this trend as there is traditionally a "rising" rate curve, where shorter term debt is priced at lower rates that longer terms debt, reflecting the term risks inherent in lending long. The NER requires the AER to ensure that the costs it allows are economically efficient, and therefore to use a duration for the risk free rate beyond a reasonable level is not efficient. Analysis of debt terms used by firms generally indicates that terms are commonly of the duration of 5-8 years. Therefore, using a 10 year CGS as the basis of the risk free rate, would be a conservative duration. It is inappropriate to use the approach to debt terms used by the regulated firms as this provides a circular argument. It is more appropriate to assess debt terms as used in the wider market as this replicates the competitive environment, which is what regulation is supposed to

	emulate.
4.3 What is the true extent of interest rate and refinancing risk faced by regulated network businesses as a result of the regulatory regime? Can regulated network businesses manage their refinancing risk via swaps and other financial instruments?	The assumption that regulated businesses would as a matter of preference seek long term debt is incorrect as a firm operating competitively will always seek to minimise its costs. The wider market implements a mix of short and longer term debt (but seldom longer than 8-10 years in duration) as this is efficient. This does not appear to place a higher refinancing risk on firms, or they would not do so. It is inappropriate for a regulator to attempt to second guess what any firm might do. It is sufficient only to recognise that in the wider market firms do satisfactorily refinance debt on a regular basis as this is the most efficient basis to secure debt.
4.4 As the nominal risk free rate is reset at the commencement of each regulatory period, should the term of the nominal risk free proxy (all else equal) be the same as the term of the regulatory period?	Whilst such an approach has both regulatory precedent and some attraction, to do so would create inconsistency with the derivation of MRP which is derived from the 10 year CGS.
Term of the risk free proxy – maintaining consistency with the market risk premium	
4.5 What is the significance of consistency between the risk free rate proxy and the MRP from both a theoretical and a practical point of view?	Regulatory consistency has been an issue that has been to the forefront for many years. In a like manner it is seen that internal consistency within the regulatory framework is to be desired. There is strong logic supporting a move that the risk free rate should be aligned to the regulatory period, and if the derivation of MRP was changed to be based on the 5 year CGS then such a change could be implemented with internal consistency.
4.6 How does the objective of maintaining consistency with the MRP interact with the 'present value principle' in determining an appropriate term for the risk free rate in the CAPM?	
Measuring the risk free rate of return – averaging period	

4.7 Does the current regulatory practice of effectively accepting any averaging period to calculate the nominal risk free rate of between 5 and 40 days in length (and commencing as close as possible to the start of the regulatory period) require re-consideration?	Allowing the regulated firm to select the averaging duration for setting the risk free rate is inconsistent with regulatory certainty. This approach provides a bias in favour of the firm to the disadvantage of consumers. Regulatory certainty for both firm and consumers is achieved by the fixing of an averaging period.
4.8 In determining an appropriate averaging period, are there certain times of the year (e.g. the Christmas period) that should be excluded?	Rather than creating uncertainty by excluding specific "unattractive" periods, it would be preferable to commence regulatory periods when there are no "unattractive" periods.
Measuring the risk free rate of return – method of interpolation from published data	
4.9 In calculating the nominal risk-free rate over the agreed averaging period, are there any alternative methodologies (other than linear interpolation) that should be considered?	

6. Market risk premium

Market risk premium is the difference between the accumulation index from the share market average return from share growth and share dividends.

The MRP has been calculated for Australian shares over more than a century. Using a long term average does not recognise the exogenous changes that have impacted the share market over this time. Jurisdictional regulators (notably ESCV[18]) have observed that MRP does vary over time. The same regulators have pointed out that there are many ways of calculating MRP, with some academics (usually employed by supply side entities) arguing for a higher MRP and some pointing out the errors, erroneous approaches used and misapprehensions highlighting that a lower MRP should apply. For example, ESCV stated[19]:

> "The new material provided to this price review would suggest that there are reasons to believe that the long term average may overstate the expected equity premium (even on the assumption that the expected premium has remained the same throughput history) as well as additional arguments for placing greater weight on the information from more recent observations (which would imply a premium of less than 6 per cent). The other evidence the Commission has considered has remained unchanged since its last consideration of the issue."

This observation implicitly recognises that there have been a number of exogenous impacts on the Australian equities markets over the years since the equities market was first implemented. Such causes of impacts would be:

- Two world wars which had a major impact on the equities market
- The depressions in 1890s and 1930s
- Floating of the Australian dollar;
- Banking and financial systems deregulation;
- Integrating Australian industry into the world market by the virtual elimination of all tariff protection; and
- A major overhaul of the tax structure
- Introduction of tax imputation
- The "tech boom" of 1998-2000
- The sub-prime crisis of 2007-2008.

Of these, the last four all occurred in the past 2-3 decades indicating that this period has tended to harmonize the Australian economy with the rest of the

[18] For example, Final Decision Electricity Distribution Price Review 2006-10 Final Decision Volume 1 Statement of Purpose and Reasons October 2005
[19] Electricity Distribution Price Review 2006-10 Draft Decision June 2005, page 306

world. As a result there is considerable doubt at the relevance of market performance data prior to the massive deregulation of the capital markets of the past 25 years or so.

Of all the jurisdictional regulators, it is probably the Victorian regulator (ESCV and its predecessor ORG) which has devoted the most resources and analysis to the issue of MRP and its setting, in the reviews of the electricity and gas distribution pricing resets, and it is recommended that the AER analyse in detail the work carried out by the ESCV.

In addition (and probably supporting the ESCV conclusion the MRP should be 6.0%), some recent work carried out by Brailsford, Handley and Maheswaran[20] provides a current view on market risk premium. This work (and that of the ESCV) points to the need to recognise that there is a relationship between MRP values and gamma used to adjust for imputation credits, and the view that:

- more weight should be placed upon more recent observations as the market has changed substantially;
- geometric means should be used to interpret past data and then adjusted to an equivalent arithmetic mean in order to avoid bias; and
- unexpected asset price inflation over the averaging period has led to an upward bias in the estimate of the equity premium

In its observations as to whether such aspects should or should not be accepted the ESCV observed[21]:

> "Turning to the adjustments proposed… the Commission does not accept the argument … that such adjustments should be ruled out, but rather accepts that this is an area where experts in the area may disagree."

This observation highlights the difficulty the AER will have in determining a single value for MRP – that experts do not agree and their arguments all have validity.

Experts have identified that MRP shows significant variation between periods. There are various ways to smooth these variations (eg by extending the timeframe which therefore introduces the impact of historical exogenous factors) or by mathematical approaches (eg geometric averaging). Because it is essential to ensure that the MRP values used for the forecasting into the next regulatory period are relevant, the shorter the timeframe used for identifying MRP values,

[20] A RE-EXAMINATION OF THE HISTORICAL EQUITY RISK PREMIUM IN AUSTRALIA, April 2007
[21] Final Decision Electricity Distribution Price Review 2006-10 Final Decision Volume 1 Statement of Purpose and Reasons October 2005, page 361

the more relevant. Thus using geometric averaging over a relatively short time frame is more likely to result in a more realistic estimate for the short term future.

Because of this wide variation between experts this submission reverts to the need to assess outcomes on a holistic basis to identify if the assumptions made in setting the parameters do in fact return an answer which can be sensibly related to outcomes of the competitive market.

AER question	Response
5 Market risk premium	
Historical measures – selection of the appropriate proxy for the market portfolio	
5.1 Is the data source for Australian historical market returns an issue of contention? Are there certain data sources that should be preferred over others?	Australian data should be used as the primary source of deriving MRP. There is a view that historical data prior to the 1980s has minor relevance due to the massive deregulation of the financial markets since that time.
5.2 Should foreign stock market data be used as a 'cross-check' on the use of Australian excess market returns as a proxy for the domestic MRP? Are there particular foreign studies that should be considered? What characteristics should be considered in selecting foreign countries as a cross-check?	Yes, this is appropriate especially where the overseas countries have similar legal and financial structure to Australia. The move to harmonize stock trading and dual listing has led to a reduction of regional differences in stock values and expectations of stock returns. This has been further enhanced by the reduction in cross border financial dealings.
Historical measures – length of estimation period	
5.3 What factors should be considered in determining the length of the estimation period?	Data which is applicable to the current conditions of tax, cross border trading, extent of financial deregulation should be used in preference to data based on different market conditions, supporting the view noted above that data over the past 25 years has particular relevance to the expectation over the next five years. To use data which results from a more constrained market (such as prior to 1980 or so) has the potential to create distortions. As noted there have been periods of

	high inflation, recession, and other exogenous issues which make the data over the past 25-30 years typical of the expected short term future.
5.4 Should a shorter term or longer term data series be considered?	Data from the past 25-30 years is most relevant
5.5 What start and end dates should be considered?	
Historical measures – method of averaging returns over multiple periods (arithmetic or geometric)	
5.6 Is an arithmetic or geometric average of historical excess returns more appropriate as an estimate of a forward looking MRP?	Geometric averaging reflects: • the impact of time on changes in the market which arithmetic averaging does not • it therefore provides a better indicator of the real returns that the market exhibits. • it provides a less volatile outcome and therefore provides a better indicator of the market movements over time. Because of these features geometric averaging will give a better indicator of future MRP values.
Historical measures – interaction between MRP and term of the risk free rate	
5.7 Could the MRP be estimated for different terms? For example, could a distinct forward-looking MRP for 1, 5, and 10 year terms be determined? Or do the various estimation difficulties limit the precision of estimates to a 'current' MRP?	It has been seen that MRP assessed over short terms exhibits considerable volatility. Smoothing, such as by geometric averaging.
5.8 Should the term of the risk free rate proxy used in estimating the historical excess returns must be consistent with the term of the 'first' risk free rate? What other considerations are relevant in determining the risk free rate proxy used in estimating historical excess returns?	
Adjusted historical measures – treatment of unexpected returns or one-off events in historical data: arguments against adjustments to historical estimates	
5.9 Should adjustments be made to historical excess returns to account for significant unexpected or one-off events?	There is no doubt that to include "one-off" exogenous impacts which are unlikely to be repeated in the forward timeframe in developing the MRP, will create distorted outcomes.

	For example in assessing equity beta, the aspect of the "tech boom" on equity beta was seen as an impact that should be excluded from the assessments of equity beta. Regulators consistently excluded the tech boom impact from equity beta assessments. If such an approach is seen as appropriate for equity beta then for regulatory consistency, the same approach should be used for MRP. This submission supports the view that exogenous impacts should either be excluded from all assessments or included in all. Regulatory precedent is clearly supportive of excluding such exogenous impacts.
5.10 If yes, are the adjustments proposed by Hathaway and by Hancock appropriate? If no, why? Are there any other relevant adjustments?	Yes.
Adjusted historical measures – evidence of a declining MRP	
5.11 Is the MRP declining? What quantitative data or qualitative factors suggest that the MRP is, or is not, declining?	Data sets provided by many experts show there is a clear trend in a reducing value for MRP. Work analysing actual returns earned by listed and unlisted firms using NPBT/assets as a comparator to WACC over a 15 year period[22] confirms this trend. That this is occurring is to be expected as the Australian market is both less protected by tariffs and more exposed to overseas competition, which must have the impact of reducing profitability of local firms.
5.12 How should any decline affect the MRP the AER adopts?	The approach to assessing MRP based on relatively short term data

[22] For example, see "Further capital markets evidence in relation to the market risk premium and equity beta values used by regulators for regulated businesses in the National Electricity Market" by Headberry Partners P/L and Bob Lim & Co P/L for Electricity Consumers Coalition of South Australia, December 2003

	sets (eg 20-30years) using geometric averaging to provide smoothing is seen as a reasonable proxy for a short term (5 year) forecast of future MRP.
Adjusted historical measures – interaction between MRP and gamma The introduction of imputation was to overcome the inconsistency in the previous tax approach where shareholders were effectively double taxed on dividends. Imputation particularly provided a benefit where individuals were paying tax at a higher rate than company tax rate. However, since introduction of imputation ownership of shares has shifted considerably with the subsequent introduction of compulsory superannuation contributions. Now the bulk of share holdings are with superannuation funds and the value of tax imputation has been significantly reduced as super funds pay a tax rate no more (and often less) than the company tax rate. Thus to assess the real current impact of imputation needs a close assessment of the ownership structure of firms through superannuation funds and their ability to benefit from imputation. Again, there is a divergence of opinion between the experts.	
5.13 How should historical excess returns be adjusted, if at all, to reflect the value of imputation credits, if using historical excess returns as a proxy for the MRP?	
5.14 Is there an inconsistency between the values of gamma, MRP and the assumed tax rate of 0.50, 6.0 per cent and 30.0 per cent, respectively? If yes, how should this inconsistency be addressed?	
Survey measures Survey measures only reproduce what "experts" consider is the "correct" or desired outcome. Such assessments have limited value in that they are qualitative rather than quantitative. Quantitative measures based on market outcomes are much preferred to qualitative assessments. Using recent history sensibly adjusted and smoothed provides a more independent view of what is likely to occur than a survey of "desired" outcomes	
5.15 What weight should be given to surveys in estimating the MRP?	Very little.
5.16 Are there particular surveys that should be considered? How should the AER determine which surveys to place greater weight on?	
Cash flow based measures	
5.17 What weight should be given to cash flow based measures in estimating the MRP?	
5.18 Are there particular studies that should be	

considered? How should the AER determine which studies to place greater weight on?	
Weighting different measures	
5.19 What weight should be placed on each measure of the MRP raised in this paper? Should some measures be used as 'primary estimates' with other measures used as 'cross-checks'?	
5.20 Are there any other ex post or ex ante measures of the MRP that should be considered?	

7. Equity beta

Along with the valuation for market risk premium, equity beta is probably the most contentious element of the WACC parameters. Initially, Australian regulators determined equity beta for regulated businesses at 1.0., but over the past few years jurisdictional regulators have identified that the setting of this value at the average of all businesses, was inappropriate as the regulated businesses were seen to have very stable incomes, with a high degree of predictability. One reason for this has been the consistency of regulation and a recognition that regulators were prepared to take a conservative stance.

The AER makes the (very valid) point that the equity beta should represent the non-diversifiable risk of the regulated firm. This in effect supports the view that the equity beta will be assessed on the basis of notional business rather than any specific enterprise. Thus the equity beta used should reflect how the notional business is impacted by exogenous changes rather than those initiated by a firm.

In regard to the level of risk faced by regulated electricity businesses under the recently revised National Electricity Rules, it must be recognised that the risk to these regulated electricity businesses has been further reduced. These changes to the risk profile are detailed in section 2.5 above but have been introduced since the jurisdictional regulators recognised the need to reduce the equity beta.

The trend away from using an equity beta of 1.0 has in part been driven by a recognition that the initial value used was considered to be extremely conservative, but as the ESCoV noted in its 2005 electricity distribution review[23]:

> "Inevitably, equity beta estimation requires judgement and, given the Commission's concern for stability and predictability in decision making, particularly judgement as to whether and to what extent any new information would justify a change from previous decisions."

The ESCoV went on to state (page 356):

> "In view of the problems with interpreting recent market evidence and the Commission's view of the importance of creating a stable, predictable and replicable regulatory regime, and having regard to the results of more sophisticated estimation methods, the Commission has again adopted an equity beta of 1 to estimate the cost of capital associated with the distributors' regulated activities. That said the Commission remains of the view it has expressed in previous decisions that it would envisage placing more weight on market evidence on equity betas as the problems with the quality of data are remedied, the extent

[23] Op cit, page 345

> of information available improves and techniques for interpreting that evidence are refined."

Some 18 months later, the ESCoV in its 2007 gas distribution review[24]:

> "The Commission has relied upon a report from ACG in its consideration of methodological and empirical information. The Commission has relied upon this report in preference to the study referred to by the distributors (Gray et. al. 2005) given that the former makes use of more recent data, demonstrates the results from applying a greater range of methods (i.e. the effects of several techniques for adjusting for outliers, including that used by Gray et. al. 2005) and presents its results without the Blume adjustment being applied."

Thus it is clear that the ESCoV has now identified that there is a persuasive argument to vary its assessment of equity beta. That it took the ESCoV so long to reach this decision when other jurisdictional regulators (eg ESCoSA) and governments (eg SA Treasury when required to review the decision of ESCoSA) had reached a view that there had been sufficient information to reach this decision earlier, is indicative of the high level of conservatism that has pervaded this setting of this WACC parameter since the first review of it was held in 1998 (the "Great WACC Debate of '98").

Despite the clear evidence that equity beta of 1.0 was too high for such a stable sector, the ACCC refused to move from this value, and the AER was prevented from doing so by the AEMC decreeing in Chapter 6A Rule change that equity beta of 1.0 was to be used.

It is noted that although the ESCoV has decided that equity beta should be 0.7, it also allowed for a "soft landing" for the businesses by effectively converting this value to 0.8 by the provision of other funding.

There is now a trend amongst regulators that equity beta of 1.0 is too high, and there is persuasive evidence that the equity beta should be no more than 0.7 for regulated energy transport businesses. There is now market evidence from the relative few Australian listed energy transport businesses that the equity beta is of this value[25], replicating the observations of similar firms in overseas jurisdictions. In fact when the impact of the reduced risk profile resulting form the changes to the NER is added to the work by ESCoSA and ESCoV, there is a strong argument that even an equity beta of 0.70 could be too high.

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[24] GAS ACCESS ARRANGEMENT REVIEW 2008-2012 FINAL DECISION – PUBLIC VERSION 7 MARCH 2008, pages 475 476

[25] See attachment 2

AER question	Response
6 Equity beta	
Conceptual issues	
6.1 What influence does the regulatory regime have on a DNSP's or TNSP's sensitivity to non-diversifiable risk? Has this been increasing or decreasing over time?	The recent changes to the NER have further reduced the risk faced by these firms, and that the risk profile of regulated energy transport businesses has always been lower than the market average.
6.2 What influence, if at all, does the form of control have on a DNSP's or TNSP's sensitivity to non-diversifiable risk?	At its most basic level, revenue control has a lower risk profile than price control. Under price control, the firm is faced with the risk of lower volume, but equally it has the ability to manage this risk through tariff rebalancing and has the potential to increase its rewards by encouraging greater usage. Through regulatory gaming the price controlled firm has the incentive to minimise the expected usage. On balance there is only a marginal difference between the two forms of control.
6.3 Excluding the effects of financial leverage, on a conceptual basis would a DNSP's or TNSP's sensitivity to non-diversifiable risk be expected to be less than that of the market, equal to that of the market, or greater than that of the market? That is, would the asset beta of a DNSP or TNSP be expected to be less than, equal to, or more than the asset beta of the overall market?	Energy transport businesses have a very secure cash flow, with revenue being automatically adjusted for inflation. Firms in the general market do not have this protection. It has been shown that energy usage is relatively insensitivity to exogenous impacts, other than weather. The growth in usage of electricity and gas exceeds general population growth indicating that overall the risk of reducing usage is very modest. Energy transport businesses are not exposed to investment decisions or cost overruns as the actual cost of investment is automatically added to the asset base and a return provided. It is quite clear that energy transport businesses have a much lower risk profile than the market average. On

	this basis the asset beta would be much lower than the average and this is clearly demonstrated.
Empirical issues – frequency and number of observations	
6.4 What frequency of observations (daily, weekly or monthly) is appropriate to estimate a benchmark beta? Why is this appropriate?	Sort term trends do need to be averaged out, and longer period averages are more stable and therefore preferred as a basis for developing a forward looking assessment. One month averages should be used.
6.5 Is the 'technology bubble' still relevant going forward? If yes, what are the start and end dates of the technology bubble?	There is a strong argument that the "tech bubble" should never have been accommodated, as by doing so it causes questions such as this. The impact of the tech bubble was seven years ago.
6.6 Are there other 'unrepresentative events' that may have biased the estimation of beta? Such events could include mergers and acquisition activity, terrorist acts and natural disasters. How should this issue be addressed (i.e. use weekly data over a shorter period, select years prior to the event, or compare both approaches)?	Attempting to "second guess" market outcomes is fraught with dangers. However regulators have consistently allowed for "one-off" events (such as the tech bubble) to be excluded from assessments. It would therefore create regulatory inconsistency to change and now include for all market events.
6.7 What length (in years) is appropriate to estimate a benchmark beta?	The Australian market has provided an index for the utilities sector since the tech bubble occurred. And this has shown reasonable correlation with asset betas of comparable overseas entities.
Empirical issues – estimation techniques and outliers	
6.8 Should the OLS approach be used as a first step when estimating a benchmark beta?	
6.9 Which estimation methods should be used and which should not be used to ensure that the benchmark beta is robust and statically reliable?	
6.10 Are there any other estimation methods that could be used to ensure that the benchmark beta is robust and statistically reliable?	
Empirical issues – Blume adjustment	
6.11 Is there any validity applying the Blume	The Blume adjustment has little

adjustment in estimating an equity beta for regulatory purposes?	relevance to regulated monopolies as the internal decision making in the notional business is assumed to reflect continuing practice. This assumption therefore tends to act against the Blume observation which assumes that internal moves will be made to change the risk profile. While it is expected that individual regulated firms may take actions to suit their own needs, the notional business does not do so. On this basis the Blume adjustment is not a valid approach.
Empirical issues – portfolio estimation	
6.12 Should equity betas from sample businesses be value-weighted, equally weighted or should a median value be used?	Providing a value weighted approach gives greater impact from the decisions made by the largest firm in the sample, (eg such as a merger or acquisition) which is not representative f the sector. On this basis simple averaging provides a more representative sample of the sector.
Empirical issues – other conceptual or empirical issues	
6.13 Are there any other conceptual or empirical issues that should be considered in determining an equity beta for regulatory purposes?	

8. Credit rating level

The current Rules determine that a credit rating of BBB+ is to be used in assessing the debt premium for regulated electricity businesses. This is assumed to apply to the notional business geared at 60%.

There is no doubt that the credit rating used is well below the actual level that would be applied to a regulated business with 60% gearing. A recent review of S&P ratings for Australian electricity utilities shows the following publicly available data[26]:

Business	Gearing	S&P rating
Ergon	69%	AA+
SP Ausnet	65%	A-
Spark	54%	A-
ElectraNet	96%	BBB+

QIC which provides funds to the Queensland utilities (Powerlink, Energex and Ergon) has a credit rating of AA+, matching the same rating that Ergon has directly.

Earlier credit ratings for other electricity entities show a similar trend with the NSW electricity businesses having a credit rating of AA (noting that three – EA, IE and CE also have retail businesses)

In its last independent assessment of credit rating, the ACCC for the TransGrid reset in 2005, determined that a credit rating for TransGrid should be A, a step down from the AA rating granted its distribution colleagues. In this same report the ACCC observed[27]:

> The ACCC considers that relevant Australian electricity transmission and distribution companies should be used as the basis for calculating a benchmark TNSP's credit rating. There are also an insufficient number of 'transmission only' entities with publicly available credit ratings to provide a reliable industry sample. It could be argued that the inclusion of distribution companies in the sample may provide a lower credit rating (that is they have the effect of biasing the sample towards TNSPs) because distribution is regulated by way of a price cap rather than a revenue cap (which is more likely to provide a stronger business profile). According to Fitch Ratings, while distribution operations typically involve a low business risk similar to transmission operations:

[26] S&P has rated other businesses but the ratings are not publicly available
[27] Final Decision NSW and ACT Transmission Network Revenue Cap TransGrid 2004–05 to 2008–09 Date: 27 April 2005, pages 141-142

> "…they have more exposure to volume risk than transmission companies (i.e. volumes are sensitive to mild winters or summers)

Therefore a transmission company is expected to have a stronger credit rating than other players in the electricity industry.

In its sampling of the average credit rating for electricity network businesses the ACCC has included both private and government owned entities. The ACCC considers that choosing stand-alone and private companies would provide too small a sample to obtain an appropriate average credit rating for the electricity industry. The ACCC acknowledges that the inclusion of some government owned companies in the sample is likely to create an upward bias to the credit rating. For instance, Standard and Poor's has stated that the stronger 'AA' credit rating is predominantly given to a government owned utility.[24]

Offsetting this is the inclusion of distribution companies in the sampling of credit ratings. In most Australian states, other than South Australia and Victoria, the distribution companies are bundled with retail operations. According to Standard and Poor's, retailers operate in a highly competitive market and their credit quality will always be at the riskier end of the credit spectrum.[25] Further it is Fitch Ratings' experience that there would be only limited situations where the existence of a retailing capacity would strengthen a distributor's stand-alone credit profile. Therefore the ACCC's sampling, which includes the credit ratings of bundled distribution network companies, is likely to provide a conservative credit rating for the purposes of a benchmark TNSP.

Notwithstanding this, government/parent ownership is only one factor which may affect a credit rating. According to Standard and Poor's, the method used to rate power companies incorporates an assessment of both the financial and business risk characteristics of the entity. The financial risk assessment focuses upon the ability of an entity to generate sufficient cash flows to service its debt and therefore involves consideration of the stability of an entity's revenue and gearing levels. The business risk assessment typically considers a broader range of issues which affect the key business or operating characteristics such as:

- regulation;
- markets;
- operations; and
- competitiveness.

By taking into account these additional factors, the ACCC is satisfied that the Standard and Poor's credit rating does not simply reflect the ownership structure, but considers more broadly, the stability of the entity's operations."

This assessment implies that ownership and credit rating are not closely related. This view extends the concept of what a credit rating really is. As S&P and the others (Moody's and Fitch) all observe, a credit rating is not an assessment of the risk of a loan but a rating of the credit quality or the potential that the loan will be repaid.

As S&P advise[28]:

> "A Standard & Poor's issue credit rating is a current opinion of the creditworthiness of an obligor with respect to a specific financial obligation, a specific class of financial obligations, or a specific financial program (including ratings on medium-term note programs and commercial paper programs). It takes into consideration the creditworthiness of guarantors, insurers, or other forms of credit enhancement on the obligation and takes into account the currency in which the obligation is denominated. **The opinion evaluates the obligor's capacity and willingness to meet its financial commitments as they come due**, and may assess terms, such as collateral security and subordination, which could affect ultimate payment in the event of default." (emphasis added)

When viewed in this light, the ACCC observation that the credit rating has less to do with the ownership and more to do with the likelihood that loans will be repaid, is a correct deduction, and one that particular application in the assessment of credit ratings.

There is no doubt that the credit ratings of less highly geared firms should be higher than those highly geared. That ElectraNet (geared as highly as 96% has a credit rating of BBB+ puts the lie to that all electricity transport businesses should be rated at this level. Even the assessment that the ACCC makes that the rating of A for such businesses is seen as extremely conservative. When the NSW retailer/distribution businesses are all rated AA (and the same Queensland businesses (without their retail functions) are rated AA+, it raises the question whether the level of A+ or AA is a more appropriate credit rating level for the notional business geared at 60% or even 70%.

There is no doubt that when an assessment of all the electricity businesses are reviewed (including the Victorian electricity transport businesses and the SA distribution business) a higher rating than BBB+ or even A is too conservative. When it is recognised that the higher credit rated government owned businesses account for 65% of the electricity assets in the NEM, it seems odd that the lower geared notional business were assessed as BBB+ by the AEMC in the Rules – the same level as the highly geared ElectraNet.

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[28] S&P website Ratings definitions
http://www2.standardandpoors.com/portal/site/sp/en/au/page.article/2,1,1,4,1204838693805.html#ID219

Based on the actual credit ratings of the bulk of the electricity businesses and then proportioning these to the assets involved, there is no doubt that the rating of BBB+ is too low for the notional business and so is the rating of A used by the ACCC.

What is of significant concern to consumers is a view that the regulator will set a credit rating set at the bottom of the scale (ie the lowest common denominator). Such a course of action will unreasonably penalise consumers as the majority of the electricity transport businesses are actually rated much higher than the worst and by using the lowest common rating, it provides an unearned premium for the many higher rated businesses.

One of the concerns raised is that a business involved in refinancing should not be penalised from benefitting by earning a higher credit rating. This point is accepted, but this is an issue for the business – whether it wants to structure itself for a lower WACC by structuring such that it might incur a higher credit rating. This is not an issue for the regulator. The regulator is about structuring a notional business which reflects the actuality of the industry sector the regulated businesses operate in.

The whole concept of regulation is to allow the businesses to seek best practice and to use this comparison as the basis to apply competitive pressure. If the lowest common denominator approach is used this provides no incentive to improve performance and nor does it replicate the competitive pressure that regulation is to provide as a surrogate for competition.

AER question	Response
7 Credit rating level	
Benchmark credit rating – selection of benchmark businesses	
7.1 To what extent will the inclusion of government owned business or private businesses that are not stand alone businesses bias the estimate of credit ratings? Should this be a concern?	As noted by the ACCC this is not a major aspect. When it is recognised that the rating is not about the risk of the loan but of the potential it will be paid, an entity with a guaranteed cashflow would (and should) receive a high rating.
Benchmark credit rating – selection of financial measures and qualitative factors	
7.2 Which financial measures and qualitative factors should the AER consider when setting a benchmark credit rating?	There are relatively few electricity transport businesses in the NEM. To secure a credit rating for all is not therefore a challenging task. The ratings thus secured can then be weighted in proportion to the assets

	involved and so a median credit rating can be developed. Such an approach will allow the regulator to stay out of the credit rating business and leaves it to the experts to balance these competing aspects.
7.3 How should those financial measures and qualitative factors be applied and what weight should be given to each of these? To what extent should Standard and Poor's rating criteria be applied to set the benchmark credit rating?	See above. Actual credit ratings for the businesses can be used, avoiding this concern.
Benchmark credit rating – analytical methods	
7.4 What method should be used to set a credit rating benchmark?	The concern raised is that the outliers will have too much on an impact on the analysis. In fact there are no significant outliers as such (except for ElectraNet at BBB+. All the other businesses are rated A- to AA+. Thus the issue appears for one of form rather than actuality. What is essential is that all of the businesses should be included and weighted on the assets involved to reach a notional business credit rating.
7.5 Are there any other methods not mentioned above that could viably be used to set a benchmark credit rating?	
7.6 How should a 'best comparators' benchmark be determined?	See above

9. Assumed utilisation of imputation credits (Gamma)

This issue has created significant debate, almost rivaling that on market risk premium and equity beta. It is quite apparent that there is no clear answer, and that the experts differ widely.

In its decision on the gas distribution reset in Victoria, the ESCoV states[29] (after an extensive analysis of the issue on page 509):

> "Accordingly, the Commission concludes that the empirical evidence implies a gamma range of either up to 1.00 or 0.72. All of the distributors' proposed values for gamma fall materially below these figures, and so the Commission does not consider those estimates to be 'best estimates … arrived at on a reasonable basis' of the benefit that the distributors should be assumed to derive through the dividend imputation system."

It goes on to say:

> "Regarding the value that the Commission considers to be appropriate, the Commission notes that it has previously used an assumption of 0.50 for gamma. While the Commission has not been persuaded that the theoretical and empirical propositions justify a downward revision to gamma as proposed by the distributors, the Commission has also formed the view that, given the range of assumptions implicit in the empirical estimates, it would be inappropriate to raise the gamma assumption from the previous value of 0.50."

While the debate detailed in the ESCoV decision revolved around assumptions as to the extent as to the take up of credits and the implications that would apply if the regulator determined that the tax implications deliberately disadvantaged foreign owners, such a s the Nash equilibrium as asserted by SFG on behalf of distributors[30] (page 505, 506):

> "…the Nash equilibrium that SFG evokes to establish a market clearing environment (which is satisfied only if gamma is assumed to be zero) would appear to over simplify the investment making decision process. The constraints applied by SFG do not recognise that investors make investment decisions on the basis of both risk *as well as* return, and that the risk of a particular asset will depend upon the portfolio of stocks that is held by that investor. Such an observation means that, in a world where there is some foreign investment but not perfect integration of financial markets, foreign (or non-resident) investors (who

[29] GAS ACCESS ARRANGEMENT REVIEW 2008-2012 FINAL DECISION – PUBLIC VERSION 7 MARCH 2008
[30] Ibid

are likely to hold a portfolio of stocks that are dominated by foreign firms) may require a different return from Australian stocks than that required by Australian residents (which are likely to hold portfolios of stocks that are dominated by Australian firms). Under the Nash equilibrium scenario, SFG determined that:

- Australian resident investors will always hold Australian stocks because they receive an imputation return that is denied on foreign stocks. Where share prices attribute (capture) a value for imputation credits, Australian residents may only earn their required return; whereas if share prices do not value imputation credits, the value attributable to imputation credits represents the equivalent of a consumer surplus. In either case, Australian resident investors will prefer Australian stocks.
- In contrast, if Australian stocks attribute a value to imputation credits, then nonresidents will not earn their required returns and will sell (or not hold) Australian stocks. Consequently the only Nash equilibrium is the one that ensures that nonresident investors earn their cost of capital, which is one that implies a zero gamma."

Where this very basic assumption falls down is by examining the actuality of investments made by Australian investors and foreign investors. In practice, Australian investors do invest overseas, as part of diversification of risk. It is common to see that an investment portfolio clearly identifies that it invests 30% or more of its portfolio overseas as a diversification strategy. In making such statements the investment business does not declare that it is diversifying in full knowledge that this will result in a reduction of return due to the loss on imputation credits.

Conversely, many overseas investors do buy into Australian equities in the full knowledge that they will receive a lower benefit than Australian residents due to the existence of imputation credits that they cannot use. This has not prevented investment in Australian equities.

Overall, it is not the existence of imputation credits that determines an investment profile, but the need to diversify in order to hold a portfolio of investments that meets the return criteria determined.

The returns currently available to foreign investors in Australian utilities (see section 2.3) are so high as to actively encourage foreign investment, even in the absence of imputation credits. That the regulated assets of the Alinta portfolio were acquired by Singapore Power (even after any experiences they had after the acquisitions for the SP Ausnet portfolio) attests to this, and clearly disproves some of the assumptions used by SFG.

In making investment decisions, it is clear that the market as a whole attributes only a minor value to the value of imputation credits; rather the market examines

the totality of the returns that it will receive from its investment. As the current dividends from the utilities sector are amongst the highest for any sector, it is patently obvious that imputation is one of the least concerns to foreign investors.

In light of the actual market decisions in relation to imputation, the examination of the issues by Lally[31] provides some very clear views about the assumptions made in developing a value for gamma. Lally is of the view that effectively no cognizance (ie that gamma should be 1.0) should be given as to whether imputation credits should be a factor in the allowance of costs when using CAPM.

The evidence of the market is that foreign investors do invest in the Australian market and do so knowing full well that (except in the case of regulated assets) they will forgo imputation benefits that Australian residents will accrue. This has not prevented investment by foreign investors entering the Australian market. It therefore seems incongruous that special consideration be given to foreign investors in regulated assets. Lally comes to the same conclusion from a theoretical direction

AER question	Response
8 Assumed utilisation of imputation credits (Gamma)	
The appropriate benchmark – industry average approach	
8.1 Do regulated utilities have different characteristics from the 'average firm' in the Australian market which suggests that the use of an industry-average value for F is more appropriate than a market-average?	
8.2 What firms should be included in calculating a benchmark industry-average value for F?	
8.3 Is it reasonable to use firm-specific estimates of F as a cross-check on the benchmark value for F established?	
8.4 In calculating an industry-average value for F, is it more appropriate to assume that imputation credits are generated once tax is paid rather than as tax expense is incurred?	
The appropriate benchmark – the impact of tax changes	
8.5 Given the likely impact of the July 2000 tax change, is it more appropriate to focus on the post-2000 period in calculating F?	

[31] REVIEW OF PARAMETERS IN THE NATIONAL ELECTRICITY RULES 11 September 2007 Martin Lally

8.6 Has the July 2000 tax change increased F for regulated utilities?	
The appropriate benchmark – methods of distribution	
8.7 Are off-market share buybacks prevalent in the utilities sector? Are there other dividend streaming methods utilised in the utilities sector?	
8.8 Does the ability of firms to distribute imputation credits via off-market share buybacks suggest a benchmark value for F closer to 100 per cent for utilities for arbitrage reasons?	
Estimating the utilisation rate (theta) – recognition of foreign investors	
8.9 Is it more appropriate to focus on empirical evidence in estimating theta rather than considering the theoretical values of either one or zero?	
8.10 Does the current value for theta adopted in Chapter 6A of the NER (implicitly assumed to be 0.6) lead to over-compensation for regulated firms compared to the full segmentation and full integration scenarios?	
Estimating the utilisation rate (theta) – average or marginal investor	
8.11 Given the differential valuation placed on imputation credits by different groups of investors (i.e. resident / foreign), is it more appropriate (in theory) to place more weight on studies focusing on the valuation of the average investor in the Australian market?	
8.12 Is it correct to say that the average investor concept can only apply in a full post-personal tax version of the CAPM? What about if theta is inferred from dividend drop-off studies?	
Estimating the utilisation rate (theta) – valuation of imputation credits at the margin	
8.13 Does the dividend drop-off methodology provide sufficiently robust empirical evidence of the value for theta in the Australian economy?	
8.14 Given the tax changes in July 2000, is it appropriate to place more weight on data from the post-2000 period in estimating theta from dividend drop-off studies?	

8.15 Does a cash dividend value of less than 100 per cent necessarily imply that dividends and capital gains are not taxed equally?	
8.16 Is the empirical result that cash dividends are not fully valued a valid result in theoretical terms? If an adjustment is required, what is the most appropriate adjustment?	
Estimating the utilisation rate (theta) – valuation of imputation credits at the margin: inference from derivatives	
8.17 Is it possible to infer the value of imputation credits from derivative securities, given the potential for significant clientele effects?	
Estimating the utilisation rate (theta) – valuation of imputation credits for the average investor: other issues with estimating the valuation of the average investor	
8.18 Do the currently available studies that use taxation statistics provide sufficiently robust empirical evidence of the value for theta in the Australian economy?	
8.19 Given the most recent changes to the tax regime, is the assumption of 100 per cent utilisation for domestic investors in the post-2000 period reasonable?	
8.20 When using tax statistics to estimate theta, should an adjustment be made for the time value of money between when a franked dividend is paid and when the investor receives the associated tax benefit? If so, what is the appropriate discount rate to apply?	
Consistency with the MRP	
8.21 Is there an inconsistency between the currently adopted values for gamma and the MRP? If so, can the inconsistency be reliably addressed in the estimate of gamma?	

10. Forecast inflation

In its preamble on this issue the AER makes reference to its SP Ausnet transmission review where the issue of using indexed bonds as the basis of calculating forecast inflation. It was identified that the forecast inflation using indexed bonds and the Fisher equation gave an estimate of inflation that was too high. However 12 months on, the forecast of inflation using the Fisher equation seems prescient as inflation is currently in excess of 4% and the RBA forecasts that it will take until 2010 until inflation is back within the target range of 2-3%.

Whilst acknowledging that there were some reasonable grounds for not using the Fisher equation to forecast inflation, the AER should have provided some analysis demonstrating that its decision not to use previous practice was in fact incorrect and the outcome of using its new approach is likely to significantly underestimate average inflation for the five year period of the SP Ausnet reset period.

AER question	Response
9 Forecast inflation	
General approaches to forecasting inflation	
9.1 Is there another market-based method that could be used to forecast the CPI (other than the application of the Fisher equation)?	
9.2 If a general approach is adopted:	
a. should the term of the inflation forecast continue to be matched to the maturity of the risk free rate?	The risk free rate is currently based on nominal 10 year CGS. Expectations of inflation should match the regulatory period only.
b. should forecasters other than the RBA be considered in determining the forecast CPI for the PTRM?	This raises the questions as to what degree of independence should the party making the assessment have from the outcome of the assessment. The risk is that the forecaster has a vested interest in a specific outcome. If this is the case then the forecast has limitations.
c. for years where forecast data is unavailable, should the midpoint of the RBA's target be used or another method (such as a shaped CPI)?	The assumption implicit in this observation is that there will be assumed to be a quantum change from the last forecast figure to the mid range. Analysis on previous inflation trends should be undertaken to assess the actual shape of inflation

	changes over time. From this analysis a profile can be developed and this is more likely to reflect future changes than a static jump from the last forecast to the mid point of the RBA target range.
d. should weights be placed on different CPI forecasts? How should these weights be objectively determined?	This presupposes the AER can identify who is more likely to be correct in a forecast. Such an approach supposes prescience on the part of the AER.

11. Debt and equity raising costs

As a core element of assessing the costs to source debt and equity, it is essential to identify the sources of these fund types, and from this identify how these costs relate to firms operating in a competitive sector.

Debt is sourced from potential borrowers – both conventional and involuntary. Each tranche of borrowing has a term related to it. Based on the term and the type of borrowing each has its own unique cost to implement. For the purposes of establishing the debt raising costs, the AER should identify a probable duration for the bulk of the debt raised and to use this as the basis of its debt raising cost. An appropriate approach would be for the AER to seek advice from potential lenders of large tranches of debt to identify the typical term of a debt facility for a regulated (ie cash stable) business. From this the development of debt raising profile for a regulated business can be established. In the absence of such development of a profile, the AER will be continually encouraged to maximise the debt raising costs at each regulatory reset.

Equity is sourced from the depreciation account (whilst depreciation is an item on the P&L it is a non-cash item, allowing the cash to retained in the business and used for other purposes), retained earnings and new equity raisings. It is the minimization of equity raisings that tends to constrain the amount of capital a firm accesses to provide for future investments. Most firms do not go to market to raise new equity except under exceptional circumstances, as traditionally seeking an equity raising is often accompanied by a reduction in the share price, even f for a relatively short time.

Thus when assessing the costs of equity raising, it must be recognised that the bulk of the equity raised by a firm incurs little or no cost at all. On this basis the costs of equity raising should as a minimum only allow for equity used in excess of the amount of regulatory depreciation included in the regulatory accounts.

It is accepted that the amount of earning retained by a firm will vary from firm to firm, and on the dividend payment policy. Notwithstanding this, it still possible for the regulator to make an assessment (such as for the notional business) which identifies the likely return on equity the business will earn from the regulatory decision, and against this net off the dividend paid by the sector as a whole and so derive an indication of the retained earnings that can be used for a share of the equity.

Of concern in this regard is that consumers have seen the approaches used by regulated businesses ever seeking to find reasons why they are worthy of a higher debt or equity raising cost than was awarded at the previous reset. Such

an ever increasing spiral is to the advantage of the regulated business and to the detriment of consumers.

AER question	Response
10 Debt and equity raising costs	
Equity raising costs – initial regulatory asset base and forecast capex As noted equity required for a business (especially one operating in a competitive environment) is usually derived internally from retained earnings and the depreciation account. Using either of these sources imposes no cost to the business to raise the equity, especially in the case of the depreciation account which is effectively funded through the regulatory process (return of capital). On this basis it is considered that to reimburse a regulated firm for a cost that it does not incur, is neither economically efficient nor permitted under the Rules. In particular, the depreciation account should also be accessed for the provision of equity.	
10.1 If equity raising costs are applied to forecast capex, should these costs be treated as:	
a. a once off opex expenditure	) No see above.
b. an opex allowance as an annuity	)
c. part of forecast capex or	)
d. a cost pass-through.	)
Equity raising costs – equity funding of capital expenditure	
10.2 Is the pecking order theory an appropriate first step in determining equity raising costs?	No see above.
10.3 Is another approach (such as businesses demonstrating that external equity was required and how the costs are paid for under benchmark financing assumptions) more appropriate?	In the event that the capex program is so large that an external equity raising is necessary, the AER should examine whether the capex program can be efficiently implemented. The AER should assess the cost of the equity raising as part of the capex program.
10.4 Should only SEOs be considered for the funding of capex in determining an allowance for equity raising costs in circumstances where an allowance is appropriate?	See above.
Equity raising costs – cash flow analyses Adjusting the gearing of the notional business to reflect actual operational observation will reduce the amount of equity notionally needed for capex. The cash flow analysis provides a guide as to whether external equity will be required. If an analysis shows that external equity is requited and the firm actually does raise additional equity, then there may be a case for allowing reimbursement for the surplus equity required above the amount derived from internal sources. Table 10.2 in the AER Issues Paper should be expanded to include cash from the	

depreciation account	
10.5 Should the dividend yield approach be modified or replaced by a different method (such as a dividend payout ratio on net profit)?	The dividend yield approach replicates the approach used by most firms. The issue that confronts the AER is that firms tend to limit their capex to match retained earnings + depreciation account reserves plus the amount of borrowings possible. Applying the practice to regulated businesses by NOT permitting any new equity raising costs, this has the potential to drive the regulated firm towards practice driven by competitive pressure.
10.6 If a dividend yield approach is proposed, which businesses should be considered in the sample to calculate the dividend yield?	See above.
10.7 If a payout ratio assumption is proposed, which businesses should be considered in the sample to estimate the benchmark payout ratio?	See above.
Equity raising costs – components of equity raising costs	
10.8 Are there any other transaction costs (other than those costs associated with the SEOs, listed above) that should be included in measuring equity raising costs?	If the above practice is implemented then this is not an issue.
10.9 Should underwriting fees be compensated for in equity raising costs?	If the above practice is implemented then this is not an issue. However, it is a concern that the more costs are permitted to be recovered from consumers, the less care the firm takes in the amount of funding used. That the AER allowed 3% for equity raising costs when estimated costs for a prudent firm were between 1.7-2.9% is concerning. That the AER allowed for the worst case scenario is not allowing for prudency and efficiency to apply.
10.10 Will the size of the equity issue lead to increased, stable or decreased costs?	

Debt raising costs – components of debt raising costs Most businesses have a portfolio of debt, but overall the duration of the average of the debt portfolio is relatively long, averaging between 5-8 years. Securing debt for a five year period (especially for a stable business such as electricity transport businesses) would be readily accommodated. On this basis an assumption of securing debt once each regulatory period is not an unreasonable position.	
10.11 Are there any other transaction costs (other than those listed above) that should be included in measuring debt raising costs?	
10.12 Should any of the above transaction costs be excluded in measuring debt raising costs?	The more funding that is provided by the regulator the less notional competitive pressure is applied to the business. Already the dividends in the utility sector are higher than the industry average, so the difficulty in raising debt will be less than for other firms. As a result it is considered that only direct "gross underwriting fees" (ie costs in actually acquiring the debt) should be included. Many of the costs listed as associated with the debt acquisition may not be required and could well be used for other purposes.
10.13 Should transaction costs relating to the raising and servicing of debt capital be assumed to be incurred more than once during a regulatory period?	No see above. It is probable that this is a conservative position, but the timing of the regulatory resets predicates this as a sensible compromise.
10.14 To what extent do regulated businesses utilise private issues and are there any substantial differences in the fees between private and public issues?	
10.15 Is there any other data available to calculating these fees?	
10.16 Should another amount (other than $200 m) be used to determine the number of issues?	For the purpose of the notional business, it should be assumed that the total amount of debt required for the new regulatory period is raised once each regulatory period, in one tranche.

12. Conclusions

Overall the analysis undertaken by the AER in its Issues Paper demonstrates a good understanding of the issues. It has been noted that regulated firms have devoted considerable effort and cost to provide regulators with reasons why there should be increases in each of the areas associated with the financial side of the regulatory review.

The regulatory reviews have consistently taken a conservative view on each of the parameters involved, and in principle this recognises that the cost to consumers for a failure of the electricity transport systems will incur a greater cost. However, by arriving at conservative positions for every element involved in the financial elements of a reset, the regulators have compounded the overall conservatism to such an extent that regulated energy transport businesses are seen as extremely profitable enterprises, much more so than their counterparts operating in a competitive environment. Coupled with other provisions in the Rules that substantially favour the network businesses (such as the Chapters 6 and 6A Rules), the overall outcome is very distortive and inefficient. The effects of over-investment in networks will become more apparent and national welfare adversely affected.

The AER is charged with developing a series of WACC inputs which are prudent and efficient, but not to include such levels of conservatism that the outcome is inefficient. Because of this concern this submission makes the point that a holistic review is required on completion of the assessment of each element in order to test whether the whole is comparable to the returns earned in the competitive environment. In this submission, it is clear that regulated businesses do enjoy better returns than would be achieved if competition applied to the sector. As an initial assessment this submission is of the view that the following WACC parameters should be set as follows for the notional electricity transport business

Parameter	**Value**	**set point**
Risk free rate	Based on the nominal 10 year CGS	
Debt premium	Based on S&P A+	
Equity premium	Within the range 5-6%	5.5%
Gearing	Within the range 65-75%	70%
Inflation	Using RBA data, then trend to 2-3% target range	
Gamma	Within the range 0.72-1.0	0.85

Equity raising	No allowance
Debt raising	Mid range estimate gross underwriting fees only

Attachment 1

MAJOR ENERGY USERS INC.

THE VOICE OF ENERGY CONSUMERS

The Securities Market's Analysis of the AEMC's Determination on Electricity Transmission Revenue

By

The Major Energy Users Inc

January 2007

This monograph has been prepared for Major Energy Users Inc by Headberry Partners and Bob Lim & Co.

The conclusions reached are those of MEU and the authors.

Before market data on Utilities was available

Prior to 2001, there was no suitable ASX index available to Australian energy regulators to assist in establishing an equity beta for the class of energy transport **Utilities** from which could be calculated a regulated revenue stream (arising from the economic regulation of monopoly network businesses). Because there was no such specific asset class regulators had to interpolate an appropriate equity beta from indices published for other asset classes.

For example, in 2002[32] the ACCC used the following chart of equity betas prepared by the AGSM in order to develop a specific **Utilities** equity beta.

[32] As used in the draft decision for ElectraNet in 2002

Table 2.2 Average equity beta by industry listed on the ASX

Industry	Average Equity Beta
Property Trusts	0.366
Alcohol and Tobacco	0.420
Food and Household	0.424
Transport	0.463
Diversified Industrials	0.719
Engineering	0.756
Building Materials	0.857
Paper and Packaging	0.953
Developers and Contractors	0.954
Banks and Finance	0.967
Infrastructure and Utilities	0.983
Tourism and Leisure	1.084
Chemicals	1.128
Investment and Financial Services	1.131
Retail	1.269
Mining and Energy	1.305
Insurance	1.394
Other Metals	1.502
Miscellaneous Industrials	1.568
Diversified resources	1.571
Gold	1.678
HealthCare and Bio-Technology	1.899
Media	2.076
Telecommunications	2.772

Source: Australian Graduate School of Management centre for research in finance; risk measurement service

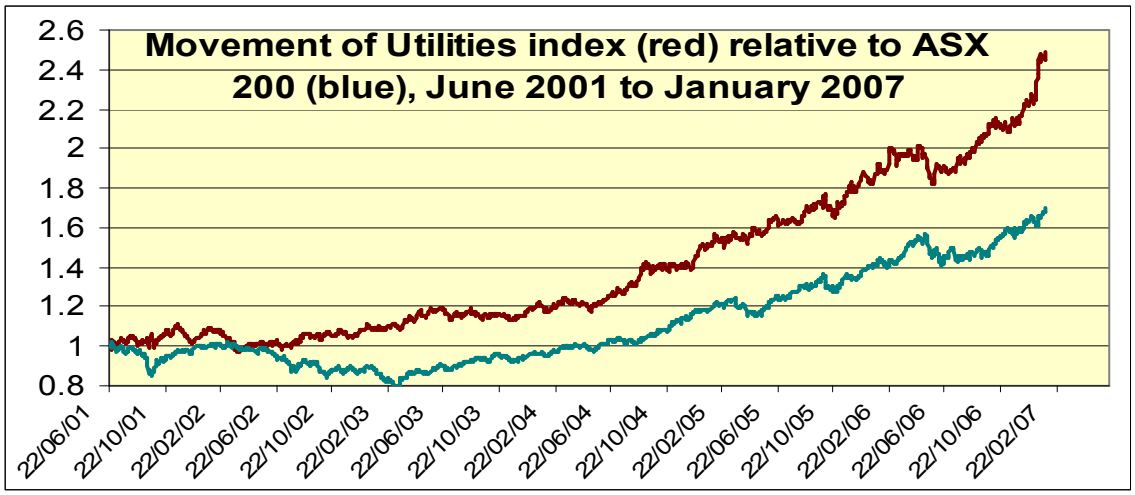
Based on the above listing, the ACCC determined that an equity beta of **unity** was appropriate as this was about the same as the equity beta for the index for **Infrastructure and Utilities**. The ACCC has not changed this value for equity beta since that time. Almost all jurisdictional regulators have used an equity beta less then 1.0 in recent decisions, using equity betas as low as 0.8 for electricity utilities (eg ESCoSA on ETSA Utilities although this was revised to 0.9 on appeal) and 0.75 for water Utilities (eg ESCoV).

The clear import was that an equity beta of 1.0 was seen by most regulators as being too high.

Market data is now available for Utilities

Since June 2001, the ASX (with Standard and Poors) has published details of an asset class (and an index) purely for **Utilities** coded XUJ. This index comprises the listed gas utilities such as APT, Envestra, Alinta and the listed electricity utilities such as Spark and SP Ausnet. These asset owning companies cover electricity and gas Utilities in Victoria, South Australia, Western Australia, Northern Territory, Queensland and NSW. The movement of this index relative to the ASX 200 is best shown using the starting point of both indices as unity.

Analysis of the financial performance of **Utilities** compared to the market average shows that **Utilities** have significantly out performed the market (as typified by the ASX 200). In fact, the **Utilities** index has increased at a rate 50% more than the rate of increase of the ASX 200 over a period of nearly six years of its existence. Based on five year trend lines the performance of the **Utilities** index implies a market risk premium (MRP) of 11.26% using the equity beta of 1.0 as used by ESCoV, whereas the ASX 200 shows an MRP of 4.5% at an equity beta of 1.36 derived from an asset beta of 1.0 and gearing of 36%[33].



Source: CommSec

The ASX200 was used as the surrogate index for the average of the market performance as it comprises the companies comprising the bulk of the ASX's market capitalisation.

The Major Energy Users Inc. (MEU) has previously provided information to the AEMC (during its review of electricity transmission revenue and pricing) that the outworkings of the performance of the **Utilities** index implied a market risk premium (based on an equity beta of 1.0 used by AER and ESCoV) of nearly twice that used by regulators of 6%.

[33] See appendix 1 showing gearing of the "All Ords" as D/E = 36%

The impact on equity beta

Analysis of the risk and stability performance of the **Utilities** index by the independent assessor CommSec implies an asset beta of 0.3 is typical for this class of assets as measured over the past 5-6 years. This compares well with the observed asset beta for similar utilities operating in other countries, such as the US. The following table 9.5 provided by the ESCoV in its recent decision on electricity distribution companies, demonstrates this clearly.

Table 9.5: Lally (2005) asset beta estimates, with equity beta estimates

Source	Data Period	Number of firms in sample	Electricity Utilities Asset Beta	Electricity Utilities Equity Beta	Gas Asset Beta	Gas Equity Beta	Overall Asset Beta	Overall Equity Beta
Value Line	1999 – 2003	83	0.35	0.88	0.17	0.43	0.29	0.73
Value Line	1994 – 1998	147	0.26	0.65	0.26	0.65	0.26	0.65
Bloomberg	2002 – 2003	93	0.27	0.68	0.20	0.50	0.25	0.63
Alexander	1990 – 1994	35	0.33	0.83	0.22	0.55	0.27	0.68
Ibbotson	1999 – 2003	50	0.12	0.30	0.06	0.15	0.11	0.28
Ibbotson	1993 – 1997	108	0.32	0.80	0.33	0.83	0.32	0.80
S&P	1999 – 2003	80	0.18	0.45	0.19	0.48	0.19	0.48
S&P	1994 – 1998	73	0.19	0.48	0.32	0.80	0.26	0.65
S&P	1989 – 1993	65	0.34	0.85	0.29	0.73	0.32	0.80
Median			0.27	0.68	0.22	0.55	0.26	0.65

Source: Lally (2005, p. 14). The Commission has generated equity betas consistent with 60 per cent gearing.

A continuing view has been that the lower levels of historic equity betas, such as those available from the US market were a result of a “tech boom and bust” in the equities markets resulting from the impact of technology stocks of the late 1990s.

Whilst accepting that this “tech boom and bust” might have impacted assessment of equity betas in the early part of this century, nearly six years of recent market data in Australia and overseas supports that the impact of this “tech boom and bust” might well have been grossly overstated (or at least been quite short lived) as equity betas derived after many years since the “boom and bust” period still maintain the similar levels (see appendix 1) as they were during the period of the “tech boom and bust”.

CommSec has also noted that the current (30 Jan 07) gearing of the **Utilities** sector is 102% (Debt/Equity) which when used with the current (30 Jan 07) asset

beta of 0.39, results in an equity beta of 0.79. Previous values of asset beta developed by CommSec were significantly lower than the current 0.39, implying that the current equity beta of 0.79 is on the high side of the average. Attached as appendix 1 is a summary of the ASX sector analysis provided by CommSec on three separate dates, all some 6 months apart.

Much of this information was provided to the AEMC as part of its review of transmission revenue, but it elected not to investigate this issue at all. Without undertaking any of its own assessment, the AEMC determined in the transmission revenue Rules that transmission companies should be granted a market risk premium of 6% and an equity beta of 1.0, and locked these into the Electricity Rules, preventing any changes being made, although it has required the AER to undertake another review of the CAPM inputs by 2008. **In the meantime all AER reviews must use these AEMC prescribed inputs.**

The AEMC stated that by fixing these inputs in the Rules it created more certainty for transmission companies, and therefore it was likely that increased investment would result. Certainly this would result in more profits for the electricity transmissions businesses!

But there was even more from the AEMC

The AEMC also determined that the AER should be more influenced by the claims of the transmission companies for opex and capex to be included in the revenue application and determined that the AER role in oversighting past capex incurred should be prudent and efficient, should be minimal. Again, the AEMC concluded that this would provide an incentive for the transmission companies to invest – it certainly enables the businesses to "gold-plate" investments and make life easier for the businesses!

The MEU had pointed out to the AEMC that there had already been significant investment in transmission assets and that transmission companies were in fact not constrained in investing by the regulatory approach, but more by their own inability to manage the investment programs already approved. The MEU requested the AEMC to identify where investment had been constrained, but the AEMC did not undertake any research which might have supported their view.

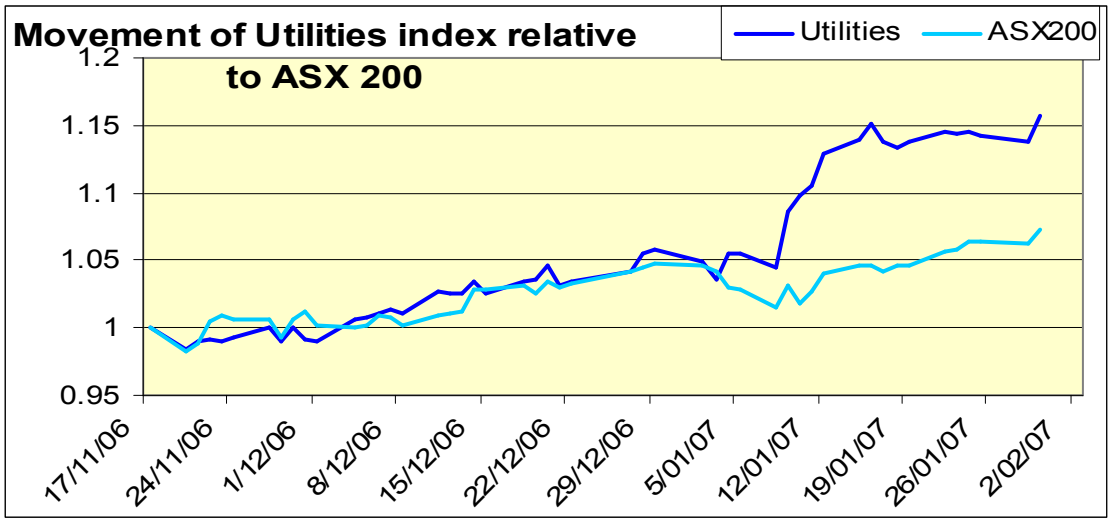
The MEU had also advised the AEMC that its proposed Rule changes would increase the profitability of transmission companies and not necessarily result in expanding investment. The AEMC ignored this contention.

The AEMC released its final determination and rules on electricity transmission revenue on 17 November 2006 and on transmission pricing on December 21, 2006. Since then, the **Utilities** index has risen so significantly compared to the

market average that the release of the AEMC Rule changes and this increase cannot be dissociated from each other.

The following chart shows that the decisions of the AEMC have contributed to a significant increase in the market value of Utilities. Allowing for the time for market analysts to assess the outcome of the AEMC decisions, the chart clearly shows that the market recognises that Santa (in the guise of the AEMC) has delivered an excellent present to Utilities and their investors.

Investors can clearly see that the utilities will be even more profitable businesses, (relative to risk) than before. The chart shows a massive outperfomance of the Utilities Sector relative to the ASX 200.



Source: CommSec

The chart relates both the Utilities index and the ASX 200 back to unity at 17 November, the day the AEMC released its decision on transmission revenue. On 17 December the AEMC released its decision on transmission pricing. The fact that after an early surge in January as the AEMC decisions were analysed, the spike flattened and the two indices resumed similar but parallel tracking as before.

Whilst the AEMC can state that their decision only relates to electricity transmission, there can be no presumption that this decision will not flow (in whole or part) to all energy transport services of gas transmission and gas and electricity distribution. The earlier efforts by the jurisdictional regulators (ICRC, IPART, ESCoSA and QCA) in reducing equity beta for regulated energy transport businesses and to control any excesses of the regulated energy businesses have come to nought.

It is quite clear that the market has seen the AEMC decision as a Christmas present of the first order.

Appendix 1

Data sourced from Commonwealth Securities Web site								
	ASX code of typical company in sector	Beta			Sector div yield			sector gearing D/E % 30 Jan 07
		27-Feb-06	23-Aug-06	30-Jan-07	27-Feb-06	23-Aug-06	30-Jan-07	
All ords		**1.08**	**1.04**	**1.02**	**4.3**	**4.3**	**3**	**36**
Consumer discretionary								
Automobiles and components	BOS	1.02	0.86	1.45	6.2	6.2	0.8	
consumer durables and apparel	GUD	1.75	1.39	1.42	5.3	5.2	5.3	44
consumer services	TAH	0.93	1.19	0.96	4.3	3.9	3.3	38
Media	PBL	1.51	1.39	1.03	4.5	4.4	3.9	21
Retailing	HVN	1.18	0.99	0.98	4.6	4.7	3.2	32
Consumer staples								
Food and drug retailing	WOW	0.62	0.64	0.64	3.8	3	3	75
Food beverage and tobacco	LNN	0.58	0.51	0.6	4.3	3.9	3.1	46
Energy		**0.96**	**1.04**	**1.21**	**3**	**2.8**	**2.8**	
Energy Equipment and services	HZN							
Oil and Gas	ORG							
Financials ex property								
Banks	CBA	0.86	0.68	0.82	4.3	4.1	4.4	
Diversified financials - resources	BNB	1.19	1.16	1.17	3.5	3.7	3.6	
Diversified financials - holdings	SOL	1.19	1.16		3.5	3.7		
Insurance	AMP	1.58	1.54	1.44	4.2	4	3	
Property Trusts		**1**	**1.04**	**1**	**6.9**	**6.9**	**3.8**	
Investment trusts	WDC							
management and development	CEQ							
Health Care								
Equipment and services	SHL	1.19	1.09	1.01	2.8	3	2.7	7.2
Pharma & Biotech	SIP	1.81	1.52	1.01	2.3	2.9	2.7	7.2

Data sourced from Commonwealth Securities Web site								
	ASX code of typical company in sector	Beta			Sector div yield			sector gearing D/E % 30 Jan 07
		27-Feb-06	23-Aug-06	30-Jan-07	27-Feb-06	23-Aug-06	30-Jan-07	
Industrials								
Capital goods	COA	1.11	1.12	1.04	4	4.1	3.6	34
Commercial services and supplies	BXB	1.11	1.19	1.27	4	3.9	3.4	28
Transportation	ADZ	0.9	0.99	0.96	4.7	4.9	3.4	40
Info Tech								
Software and services	CPU	1.82	1.61	1.34	4.6	4.6	3.4	54
hardware and equipment	KYC	1.15	1.02	0.89	4.4	3.9	2.7	0.7
Semiconductors	LGD	1.15	1.02	0.89	0	0	0	58
Materials		**1.39**	**1.15**	**1.22**	**3.1**	**3.2**	**3.1**	
Chemicals	ORI							
Construction materials	ABC							
Containers and packaging	AMC							
Aluminium	AWC							
Diversified metals and mining	BHP							
Gold	NCM							
Precious metals and minerals	ERA							
Steel	BSL							
paper and forest products	PPX							
Telecomms		**0.44**	**0.29**	**0.37**	**5.7**	**6.2**	**3**	**15**
Diversified	ENG							
Wireless	HTA							
Utilities		**0.31**	**0.23**	**0.37**	**5.2**	**5**	**4.1**	**102**
Electric	HDF							
gas	ALN							
Multi	SPN							
Unclassified	BQF	**1**	**0.98**		**6.9**	**6.9**		

Attachment 2 - Longitudinal comparative data on ASX indexes

Data sourced from Commonwealth Securities Web site

	Sector Beta						Sector div yield						sector gearing D/E %			
	27/ 2/ 06	23/ 8/ 06	30/ 1/ 07	18/ 6/ 07	17/ 1/ 08	4/ 9/ 08	27/ 2/ 06	23/ 8/ 06	30/ 1/ 07	18/ 6/ 07	16/ 1/ 08	4/ 9/ 08	30/ 1/ 07	18/ 6/ 07	16/ 1/ 08	4/ 9/ 08
All ords	**1.08**	**1.04**	**1.02**	**1.05**	**1.08**	**1.04**	**4.3**	**4.3**	**3**	**3.4**	**4.2**	**5.8**	**36**	**37**	**36**	**42**
Utilities	**0.31**	**0.23**	**0.37**	**0.37**	**0.37**	**0.71**	**5.2**	**5**	**4.1**	**5.8**	**8.3**	**8.5**	**102**	**104**	**110**	**52.2**
Consumer discretionary																
Automobiles and components	1.02	0.86		0.96	0.96	1.13	6.2	6.2		5.6	5.1	6.1		55	41	91.4
consumer durables and apparel	1.75	1.39	1.42	1.42	1.42	1.1	5.3	5.2	5.3	4.8	6.3	8.6	44	43	49	50.6
consumer services	0.93	1.19	0.96	0.96	0.96	1.08	4.3	3.9	3.3	3.4	3.9	5.7	38	32	43	38.2
Media	1.51	1.39	1.03	1.03	1.03	0.81	4.5	4.4	3.9	3.8	4.5	7.2	21	22	20	26.7
Retailing	1.18	0.99	0.98	0.98	0.98	1.07	4.6	4.7	3.2	2.9	4.4	5.9	32	32	29.0	29.1
Consumer staples																
Food and drug retailing	0.62	0.64	0.64	0.64	0.64	0.79	3.8	3	3	2.5	3	5.3	75	50	61	50.8
Food beverage and tobacco	0.58	0.51	0.6	0.6	0.6	0.5	4.3	3.9	3.1	2.5	3.8	4.6	46	49	48	54.1
Energy	**0.96**	**1.04**	**1.21**	**1.21**	**1.21**	**1.16**	**3**	**2.8**	**2.8**	**2.4**	**2.3**	**2.2**				
Financials ex property																
Banks	0.86	0.68	0.82	0.82	0.82	0.75	4.3	4.1	4.4	4.3	5.3	6.7				
Diversified financials - resources	1.19	1.16	1.17	1.17	1.17	1.41	3.5	3.7	3.6	3.4	4.6	6.3				
Diversified financials - holdings	1.19	1.16		1.17	1.17	1.41	3.5	3.7	4.6	3.4	4.6	6.3				
Insurance	1.58	1.54	1.44	1.44	1.44	0.98	4.2	4	3	3.7	3.7	4.7				
Property Trusts	**1**	**1.04**	**1**	0.96	0.96	0.88	**6.9**	**6.9**	**3.8**	5.5	8.1	11				
Health Care																
Equipment and services	1.19	1.09	1.01	1.01	1.01	0.76	2.8	3	2.7	2.4	3.2	4.1	7.2	6.9	4.6	7.6
Pharma & Biotech	1.81	1.52		1.45	1.01	0.76	2.3	2.9	2.7	2.4	3.2	4.1	7.2		4.6	
Industrials																
Capital goods	1.11	1.12	1.04	1.04	1.04	1.31	4	4.1	3.6	3.4	4.2	5.4	34	35	47	41.2
Commercial services and supplies	1.11	1.19	1.27	1.27	1.27	1.11	4	3.9	3.4	3.2	4	4.9	28	28	36	37.8
Transportation	0.9	0.99	0.96	0.96	0.96	0.92	4.7	4.9	3.4	3.3	4.5	5.7	40	61	54	55

Info Tech																
Software and services	1.82	1.61	1.34	1.34	1.34	1.03	4.6	4.6	3.4	3.1	3.6	4.6	54	1.4	1.1	1
hardware and equipment	1.15	1.02	0.89	0.89	0.89	1.68	4.4	3.9	2.7	3.3	8.8	16.3	0.7	1.9	6.3	10.3
S'conductor	1.15	1.02	0.89	0.89	0.89	1.68	0	0	0	0			58	58	31	50.9
Materials	**1.39**	**1.15**	**1.22**	**1.22**	**1.22**	**0.94**	**3.1**	**3.2**	**3.1**	**2.8**	**3.7**	**4.4**				
Telecomms	**0.44**	**0.29**	**0.37**	**0.37**	**0.37**	**0.52**	**5.7**	**6.2**	**3**	**3.6**	**6.2**	**7.2**	**15**	**5.3**	**8.8**	**11.1**