Major Energy Users Inc.

Australian Energy Markets Commission

RELIABILITY PANEL

2010 REVIEW OF RELIABILITY STANDARD AND SETTINGS (MPC)

Comments on RP Draft Report and ROAM Consulting Analysis and Recommendations

Submission by

The Major Energy Users Inc

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Executive Summary

The Major Energy Users Inc. considers that the reliability settings used in relation to electricity – such as the amount of unserved energy – is only a small part of the overall reliability of the supply of electricity. Consumers see overall reliability of the electricity system as comprising reliability of the generation supply, the transmission system and the distribution networks.

Whilst the Reliability Panel (RP) is responsible for generation supply reliability, its decisions on unserved energy must be made within the context of the overall reliability of the electricity supply chain and, in particular, take into account the cost and benefit to consumers.

The NEM is already a very volatile and risky (and hence costly to consumers) market. It is also susceptible to price spikes, economic withdrawal of capacity and experiencing increasing incidence in the exercise of generator market power. Such attributes raise severe concerns about the efficiency of the NEM, and the associated economic damage to consumers and to the economy. Any further increase in MPC will accentuate these attributes to the detriment of consumer interests and the national economy.

Implementing ROAM Consulting's recommendations to raise the Maximum Price Cap (MPC) to $16,000/MWh and then to $20,000/MWh will be a classic case of poor public policy and rule-making, as it is based on simplified assumptions that are not reflected in real market evidence. As detailed at the Reliability Panel's Public Forum and in this submission, the MEU considers the modeling work to be inadequate and flawed, amongst other reasons, and does not provide the "analytical basis to support the Reliability Panel's recommendations" should a decision be made to raise the MPC in line with ROAM's recommendations. In fact, real market evidence was provided to the RP at the public forum that there is no need to increase MPC at all, as the current level of MPC has already resulted in significant and sufficient generation investment.

The MEU points out that there is a coalition of stakeholder interests – representing consumers, retailers and generators – opposed to any increase in the MPC.

Origin Energy's view that the current level of MPC is sufficient to signal new investment must not be lightly dismissed. Origin Energy has been the single largest investor in new generation in recent years, as well as being one of the largest energy retailers in the NEM, and its concern that a higher MPC will have perverse outcomes must be borne in mind.

The MEU is also very concerned that other reviews – the AEMO minimum reserve levels and the AEMC/MCE extreme weather events – with different degrees of transparency, consultation, access to peer review, and time lines, will have important bearing on this current Reliability Panel Review outcomes, but there is, as yet, no ability to provide comment, let alone have an integrated view of the whole issue of reliability and its settings.

Overall the MEU has already received feedback from its members that they view another increase in MPC as quite detrimental to their aspirations and potential new investments. Already, under the current market settings, large energy consuming businesses are looking at locating new investments offshore, due in part to the high electricity (and gas) costs they are currently experiencing and from the impact of government inspired climate change policies.

In particular large electricity users are seeing their investments lose value as the increasing trend of rising costs, driven by the extreme volatility seen in the NEM, have to be offset by reducing demand at times of extreme peak pricing. Such demand reductions, have the impact of reducing output and thereby having large investments standing idle for significant periods of time, often made longer as the business winds down demand prior to high price periods and then has to restart their normal activity when the high price period is over. Whilst demand reduction is seen as a natural adjunct to economic electricity supplies, it does have the impact of reducing the national production and productivity.

The MEU's submission provides comments on other aspects of the issues raised by the Reliability Panel and its consultant.

1. Introduction

1.1 About the MEU

The Major Energy Users Inc (MEU) represents some 20 large energy using companies across the NEM and in Western Australia and the Northern Territory. Member companies are drawn from the following industries:

- Iron and steel
- Cement
- Paper, pulp and cardboard
- Aluminium
- Processed minerals
- Fertilizers and mining explosives
- Tourism accommodation
- Mining

MEU members have a major presence in regional centres throughout Australia, e.g. Western Sydney, Newcastle, Gladstone, Port Kembla, Mount Gambier, Whyalla, Westernport, Geelong, Launceston, Port Pirie, Kwinana and Darwin.

The articles of the MEU require it to focus on the cost, quality, reliability and sustainability of energy supplies essential for the continuing operations of the members who have invested $ billions to establish and maintain their facilities.

1.2 The MEU view on reliability

The MEU and its members recognise that the reliability settings used in relation to electricity supply (such as the amount of unserved energy to the NEM) are only a small part of the overall reliability of the supply of electricity at its point of use. Consumers of electricity see the impact of the reliability of the electricity system as comprising reliability of the generation supply, the transmission system and the distribution networks. While it is acknowledged that the Reliability Panel (RP) only looks at generation supply reliability, the MEU considers that its decisions on unserved energy (USE) or other reliability measures must be made in relation to the overall reliability of the supply chain., and in particular, taking into account the cost and benefit to consumers including any reliability measures involving generation supply reliability.

The MEU is especially concerned that by focusing on USE and the market settings needed to achieve that level of generation supply reliability in isolation, the RP will be instituting such levels of supply reliability on the basis of costs incurred which, when taken across the entire supply chain, do not deliver value for the costs involved.

For instance, the setting of USE of 0.002%, means that the average consumer will not get supply for notionally 10 minutes each year. If the SAIDI for a network supply is 104, (as proposed by AER for ETSA urban supplies) this means that the network

reliability provides a network USE of 0.02% and that the average consumer can expect to be off supply for 104 minutes each year, it would be false economy to look at reducing the generation USE by half as the impact would be minimal to the average consumer. Equally, if the cost to maintain generation USE at the nominal 0.002% is too great, then there is an economic argument to increase the generation USE as the slight loss in generation reliability will be insignificant overall, as seen by the consumer embedded in the distribution delivery system.

Therefore as the direct and indirect costs[1] of the generation reliability setting are carried by consumers the MEU considers that the RP must examine its reliability settings in the context of the overall reliability of supply at the end of the supply chain, and not at a notional point well up the supply chain.

A report by McGregor Tan[2] for ESCoSA in 2007 specifically addressed the issue of consumer preparedness to pay for improved reliability. This report quantifies the amounts consumers would be prepared to pay for improved reliability. This report shows very clearly that consumers are not prepared to pay more for increased reliability. The report specifically addressed the whole of the supply chain as consumers do not care where the supply problems occur, only that supply has ceased.

Therefore, the RP, in order to meet the requirements of the NEO, must look at the price consumers are prepared to pay for reliability, including the generation supply element of the supply chain. For the RP to look at reliability purely in terms of generation supply is insufficient as it does not allow it to see the overall impact on consumers – yet the NEO is about the long term interests of consumers.

1.3 The MEU view of the market as a whole

Consumers are already seeing electricity costs rising very quickly, from a range of causes, such as:

- Generator market power (the AER has identified that Torrens Island Power Station in SA has market power when regional demand exceeds 2500 MW)
- Steeply rising transmission and distribution network prices – on average these will rise in real terms by ~50% over the next five years
- Implementation of the carbon emission reduction program (CPRS)
- Implementation of the 20% renewable electricity target (eRET)
- The indirect costs for network augmentation to meet the CPRS and eRET

Overall, there is a general expectation that electricity supply costs will rise in real terms by 100% or more over the next few years as a result of these changes.

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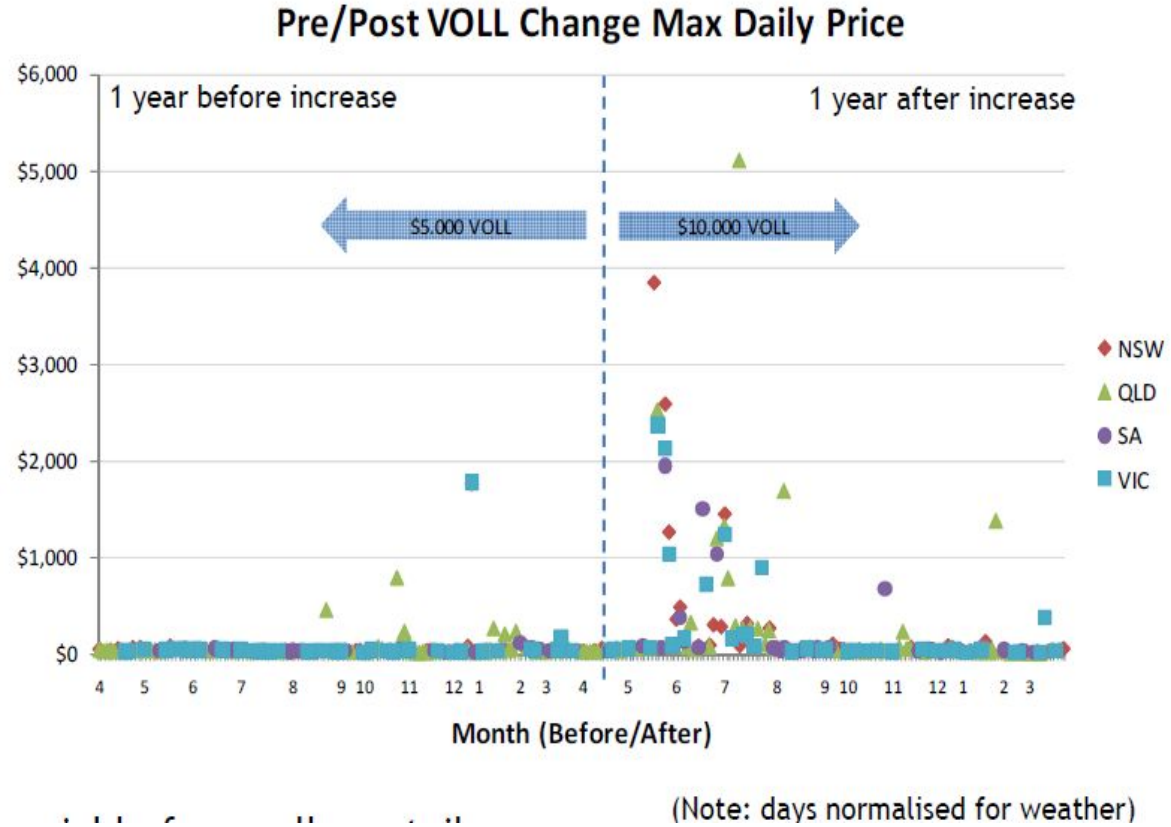
[1] The indirect costs are those due to increased volatility in the spot market, increased risks across the NEM, increased prudential requirements, and the impact of increased incidence in the exercise of generator market power.

[2] McGregor Tan Research for ESCoSA "Consumer Preference for Electricity Service Standards", November 2007

This raises the question as to whether against an expectation of a doubling of electricity supply and delivery costs, consumers will remain content to pay for the same reliability at an even higher cost level or would prefer a reduction in price but with less reliability. This is a particularly important issue as the RP is reliant on changes to the Maximum Price Cap (MPC) to meet changes in the Reliability Standard.

A review of the NEM over the past 5 years shows that a significant proportion of the annual spot price in each region, is driven by a very few high price events. The magnitude and frequency of these high price events significantly increases the risk of operating in the NEM. The setting of the MPC has a major impact on the degree of risk in the NEM and hence costs paid by consumers.

The degree of the frequency and extent of the market volatility can be seen in the tables provided in appendix 1. What is quite clear is that volatility in the NEM is becoming more frequent and severe. This point is reinforced by the observation made by Origin Energy at the RP forum on 12 February, who pointed out that the volatility after the MPC increase, also increased.



Source: Origin Energy RP presentation 12 Feb 10

Overall, the NEM is clearly more expensive as a supplier of power and is more risky to be a stakeholder than it has been in past years, and is becoming more so.

1.4 What is the impact of this increased volatility?

Due to the existing levels of volatility and spot prices, consumers are finding the resultant contract price increases on offer from retailers becoming less and less acceptable. As a result, more and more large consumers are moving to take spot market exposure and reducing demand when high price events occur as a risk management technique. One outcome of this is that retailers are seeing a reduction in the amount of electricity they can contract with generators.

Retailers advise:

- Some (small) retailers have left the NEM entirely and in some regions (eg SA) even large retailers are opting out due to the high risks[3]
- It is almost impossible to offer longer term contracts than 2-3 years due to the risk and shortage of stock
- Contract market liquidity is reducing
- Higher costs are resulting in higher prudential requirements for being in the NEM and as a result credit is becoming more difficult to obtain
- Increasing prudential limits are preventing small retailers entering (or even remain in) the NEM
- In the past two year there have been two RoLR events after none for the first nine years of the NEM

Generators are seeing greater risks and as a result are contracting less generation and maintaining standby generation as a back up in the case of failure.

However, under the current MPC, new generation has been built. As Origin Energy observes some 4800 MW of generation has either been built or is to be built in the four years 2008-11. This increases the stock of generation in the NEM by over 12%, and this generation was committed with an expectation of an MPC of $10,000/MWh for most of the new generation.

		2007	2008	2009	2010	2011	2012	Builder or Off Taker
QLD	Mount Stuart 3				123 MW			Origin
	Darling Downs				630 MW			Origin
	Braemar 2				519 MW			Origin
	Condamine				138 MW			AGL
	Kogan Creek A		750 MW					CS
NSW	Tallawarra			435 MW				TRU
	Uranquinty			664 MW				Origin / Built with PPA in place
	Munmorah/Colangra				668 MW			Delta
VIC	Bogong				140 MW			AGL
	Mortlake					565 MW		Origin
SA	QPS 5				120 MW			Origin

Source: AEMO generator information (existing, committed & proposed projects)

[3] In recent times, large consumers with steady load profiles are not getting retail offers except from the three large national retailers, and some get even less. Interstate based retailers have largely withdrawn from the SA market

Discussions with those providing new generation have advised that they can only get debt funding if the bulk of the generation is contracted to a "bankable" off taker. This makes sense. Banks see that there must be a certainty that the debt repayments must be secure. This certainty is not provided by assuming the new generator will get the spot price as the spot price could be affected by the new generator coming on line. Whilst the banks only provide debt, those providing the equity have similar requirements – that of a certainty of getting the equity repayments.

Thus new generation will only be built if there is a high certainty of recovering the investment. This certainty can only be provided by contracts with "bankable" counterparties. This then raises the question as to whether changing MPC is the tool that provides the incentive for investment in new generation.

1.5 Summary

There is only one "lever" available to the RP to attempt to ensure the market reliability meets its setting – that is the MPC. This raises three basic questions:

1. How influential is MPC in incentivising new generation investment?
2. How long should the MPC be held static in order to give sufficient time to see if the settings are achieving their expected outcome?
3. At what point does increasing MPC no longer improve reliability but creates (perverse) incentives to exit the market?

Significant new generation has occurred under an MPC of $10,000/MWh. There is an increase in MPC to occur on 1 July 2010 to $12,500/MWh indexed to CPI each following year. This predetermined step increase will increase volatility and its severity to an extent not yet seen, but might have influenced some new generation commitments.

A further increase in MPC could make matters worse for all – consumers, retailers and generators, and yet might not deliver more generation than is already being provided.

2. An overview of the RP and consultants reports

The **Draft Report** notes that the objectives of this review (p vi) are to:

- "Determine whether the existing Reliability Standard is appropriate for current market arrangements given that the existing annual standard was exceeded as a result of the South Australian/Victorian heatwave in January 2009;
- Determine the form and level the Reliability Standard that should apply from 1 July 2012;
- Determine, given the Reliability Standard chosen to apply in the National Electricity Market (NEM) from 1 July 2012, the appropriate reliability settings to achieve the Reliability Standard; and
- Propose processes for implementing any changes arising from the review."

In addition, it is stated (ROAM, p 2) that:

> "The current review will consider changes to the form and level of the Reliability Standard based on comments raised by stakeholders during consultation. Following this analysis the RP will make recommendations for the form and level of the Reliability Standard to apply in the NEM in the future".

and also (ROAM, p 3) that:

> "ROAM's modeling provides an analytical basis to support the Reliability Panel recommendations".

The above extracts clearly state the importance of ROAM's modeling and stakeholder comments in informing the Reliability Panel's recommendations for the form and level of the Reliability Standard/

2.1 Related Reviews and Critical questions

This current review on the Reliability Standard and settings is being undertaken at the same time as (to our knowledge) two other important but related reviews.

The first review concerns the minimum reserve level (MRLs) review being conducted by AEMO. It was only revealed at the 12 February Public Forum that ROAM is undertaking modeling work for AEMO on the MRLs, but that this would not be completed in time to be considered part of the Reliability Panel's current Reliability Standard and settings review.

The second review (Effectiveness of National Electricity Market Security and Reliability arrangements in the light of extreme weather events) is being undertaken by the AEMC at the request of the MCE. Unfortunately, the AEMC is carrying out this review without apparently seeking consultation from stakeholders. This report raises

issues and questions that have an important bearing on the current Reliability Panel review. Below are pertinent extracts from the letter (dated 14 August 2009) from MCE to AEMC providing the terms of reference for the AEMC to undertake the review:

> "NEM Rules, including those for setting the level of the MPC, are made by the AEMC on the basis that the Rule will or is likely to contribute to the achievement of the National Electricity Objective (NEO). The NEO promotes efficient investment in electricity services for the long term interest of consumers with respect to two criteria:
>
> (i) Price, quality, safety, reliability, and security of supply; and
> (ii) The reliability, safety and security of the national electricity system.
>
> When considering the impacts of Rule changes on affordable prices for electricity and security of supply, it is possible for these objectives to conflict. The National electricity Law (NEL) provides for the AEMC's Rule making activities to weight any aspect of the NEO as appropriate, having regard to any relevant MCE statement of policy principles.
>
> To date, the MCE has not provided any policy advice to the AEMC or the Reliability Panel as to how potentially conflicting objectives in the NEO should be balanced when reviewing reliability related market parameters.
>
> The AEMC's Comprehensive Reliability Review (CRR), as published on 21 December 2007, and subsequent related work on incremental adjustments to the reliability settings, have taken into account expectations of public willingness to accept electricity price increases in return for greater security and reliability of supply. The AEMC has also noted industry concerns about the economic costs of the inherent volatility of pricing in the NEM under the current market design."

The letter goes on to state:

> "….a number of energy policy matters will require consideration by the MCE, including whether:
>
> - The NEM reliability standard, which was set at the commencement of the NEM in 1998, and subsequent interpretations of the price component of the NEM reliability settings, confirm with contemporary public expectations of supply reliability;
> - the MCE should provide related policy advice to the AEMC on the relative weighting of price and reliability objectives in the NEO in the determination of the reliability settings in the NEM; or

- Vary the terms of reference for the extreme weather events review to include provision for the AEMC to recommend changes to the NEL or NER that would strengthen the processes for determining the NEM reliability settings and MPC.

> …the MCE will require … detailed information on the potential costs that would be associated with a range of reliability levels in the NEM"

As the AEMC has apparently decided that it need not consult with stakeholders regarding this review, the MEU has not had an opportunity to provide input into (nor to assess the work of) this AEMC review, but we understand that a draft report was to be released mid week commencing 15 February 2010 (but is still not available), presumably for public consultation in view of the myriad critical issues involved.

The MEU is very concerned with the various different reviews being undertaken by different institutions with different degrees of transparency and consultation and with different timelines, yet all having a significant bearing on the others. The result is that related issues cannot be comprehensively and holistically assessed and interrogated.

2.2 The need to address issues holistically

The importance of addressing related issues in a holistic way can be exemplified by the recent debate over the contents of the fourth report from the Intergovernmental Panel on Climate Change. This example is apposite to the Reliability Panel because its report must be rigorous and be based on transparent, quality and reliable expert advice, exposed to stakeholder review and interrogation.

In this regard the MEU attaches in appendix 2 an article (Climategate Is Just The Tip Of The Iceberg: A litany of climate science flaws can't be ignored and highlight the need for an open review and evolutionary policies) in The Australian 16 February 2010 by David Henderson, formerly head of the OECD Economics and Statistics Department. In this article, Henderson points to two recent episodes that have given rise to concerns about the quality and reliability of expert advice in relation to climate change. The article concludes:

> "The chief moral to be drawn is simple. In an area of policy where so much is at stake, and so much remains uncertain and unsettled, policies should be evolutionary and adaptive, rather than presumptive as they are now: and their evolution should be linked to a process of inquiry and review that is more thorough, balanced, open and objective."

The MEU strongly urges the RP to heed this advice in relation to its own review on standards and settings, particularly with so many other related reviews being undertaken concurrently (and with varying degrees of transparency and peer review).

3. Form of the Reliability Standard

In an earlier submission to the RP[4], the MEU said that:

> "…. the value of USE needs to be seen in context with the reliability of the entire supply chain as consumers (who are the beneficiaries of the electricity supply industry and are the focus of the National Electricity Law objective) see the reliability of electricity supply at the end of the supply chain ie after the electricity has been transported on the transmission system and the distribution system. The reliability of the transmission and distribution system is much less than that of the supply **into the transmission system** which is where USE is measured.
>
> The NEL Objective relates to what the consumer sees in relation to the supply of electricity. Therefore the setting of USE should to some degree reflect the much lesser standards of reliability achieved in the transport of electricity and the costs of any enhancements in USE that might result from increasing MPC.
>
> Effectively increasing MPC will reduce USE but the costs of reducing USE will be significant. However reducing USE will have marginal effect (if any) of the reliability of supply as seen by consumers after the electricity has been transported on the transmission and distribution networks.
>
> When the lower reliability of transport is considered there is a view that increasing USE will have a negligible impact on reliability as seen by consumers but cause a significant reduction in the cost of electricity.
>
> The MEU considers that this trade off needs to be examined in more detail, with perhaps alternative approaches assessed for allowing voluntary load shedding to accommodate extreme weather events".

The MEU reiterates the above view, notwithstanding the comments contained in the Reliability Panel's draft report. In the MEU's view, a proposal to raise the MPC to $16,000/MWh and then to $20,000/MWh is a very significant impost and the economic costs associated with meeting the level of the standard set at 0.002% USE per annum are very substantial.

The draft report (p 16) recognises certain considerations:

> "Another important consideration of reliability in the NEM is that the level of USE is randomly distributed. The current specification of the Reliability Standard is in terms of an expected level of USE in a given year. This means that when a level of 0.002% USE is targeted it is possible to have actual USE

[4] MEU, 6 October 2009, AEMC project EM00010 – Review of the Effectiveness of NEM Security and Reliability Arrangements in Light of Extreme Weather Events.

> outcomes of more than 0.002%, with a low probability of several times 0.002% actually occurring. Therefore, to achieve a very low probability of exceeding 0.002% USE it would be necessary to target a level of expected USE that is significantly less than 0.002%."

The report goes on to state (pages 16 and 17):

> "The Panel agrees with the NGF and the MEU that the setting of the level of the Reliability Standard should take into account the economic costs associated with meeting that level of the standard. Therefore, to inform the debate, the Panel sought advice on the costs of changing the Reliability Standard from ROAM Consulting (ROAM). ROAM Consulting is:
>
> - Performing the market simulation studies necessary for the Panel to review the Reliability Settings; and
> - Recalculating the MRLs for AEMO.
>
> ROAM Consulting advised the Panel on the costs saving of a change to the Reliability Standard. Figure 7.8 of the ROAM Consulting report shows that a reduction of the generation capacity across the NEM of approximately 750 MW would be expected to increase the expected level of USE from 0.002% to 0.003%. If this reduction in generation capacity was provided by open-cycle gas turbines (OCGT) then the capital cost savings would be approximately $750m, at 2009 price levels. This represents annual cost savings of approximately $75m.
>
> A reduction in the installed OCGT capacity of 750 MW would be implemented over time under the existing NEM market arrangements by reducing the level of the MPC, thus reducing the signal for new peaking generator investment. There may also be other cost savings associated with a lower MPC including lower contracting risk premiums."

The Draft Report, however, said that the RP "did not receive any compelling evidence to consider changing the Reliability Standard in the submissions…" (p.17). **However, it should also be noted that the RP has assessed the potential capital costs for a reduction in USE, it has failed to consider the economic costs as seen by consumers of <u>not</u> doing so and has not provided any evidence in support of its decision.**

In this regard, the RP requested ROAM to carry out an analysis of the impact on the spot market of increasing MPC to $16k/MWh and ROAM has provided this value. The RP could have requested ROAM to calculate the impact on the spot market if the settings were changed and the costs to increase USE. As increasing USE would entail a reduction in the MPC, there is an expectation that the impact on the spot market would be a reduction of costs, along with a reduction in volatility giving a reduction in risk, both of which would reduce the costs to consumers.

The RP has observed (page 17) that it is not contemplating changing the level of the Reliability Standard as it considers there is no compelling evidence to do so, but the RP is(page 18):

> "…seeking stakeholder feedback on the advice it obtained from ROAM Consulting. That is, whether:
> - Tightening the Reliability Standard is expected to provide benefits to customers that would outweigh the cost of the required additional generator investment; or
> - Slackening the Reliability Standard is expected to reduce the cost of generator investment by more than the reduction to the benefits to customers."

The ROAM report and the following advice it provided to the RP, indicates that just maintaining the value of USE at 0.002% will require an increase in MPC. ROAM commented at the public forum that the cost of this increase in MPC is likely to be some $3/MWh. It would be expected that as the value of USE is already extremely low, reducing USE is likely to increase rapidly. On pages 19 and 20 of its report ROAM provides some sensitivity analysis of the impacts of increasing USE, and as ROAM indicates there is a non-linear relationship between USE and change in generation, it is expected that the costs to reduce USE from 0.002% would increase exponentially. Unfortunately, ROAM does not provide any analysis of what reducing USE might mean in terms of cost.

As the survey results from McGregor Tan point out consumers (at least in SA) are satisfied with the current levels of reliability and they would not pay significantly more for improved reliability. The MEU points out that improving reliability in generation supply will have a very marginal impact on the overall reliability of the supply chain, and therefore the significant costs that would be incurred in improving generation supply would make little difference to consumers.

The MEU considers that there is no sustainable argument to warrant a reduction in USE. The benefits from doing so will be not seen by consumers, and the costs will be massive.

As the current level of USE is so much tighter than the reliability settings in the networks, there is an argument that supports allowing the reliability standard to be relaxed. In relative terms a reduction of the USE to 0.003% would have a marginal impact of the level of reliability seen by consumers who are at the end of the supply chain, as the reliabilities in the network elements are a magnitude greater (as discussed in section 1.2) than the level of USE used for generation supply. Whilst ROAM advises what the capital savings from increasing USE from 0.002% to 0.003% might be $750m, based on a reduction of 750 MW in generation needs, it provides no equivalent analysis as to the impact on the spot market that it has for the increase in MPC it sees is needed just to maintain the current level of USE.

Thus the ROAM analysis is insufficient for stakeholders to make an informed comment on the two questions posed. However, based on trends, and its own analysis, the MEU could respond to the first question quite simply: there is no support for the level of USE to be reduced from the current level of 0.002%, as the costs to do so are likely to be very large, and the benefits at the consumer end of the supply chain will be extremely modest at best.

In response to the second question, the MEU considers there has been insufficient analysis undertaken by the RP to base a response. However, intuitively the MEU considers that an increase in USE would have a marginal impact on reliability seen at the consumer end of the supply chain, and that the financial benefits could be significant as measured in terms of reductions in cost and risk.

Therefore the MEU considers that the Reliability Standard should be no less than 0.002% and could well be higher.

4. Review of the Reliability Settings

The MEU notes, from the presentations made at the 12 February Public Forum, that there is good deal of opposition to an increase in the current level of MPC.

In particular, the comments from Origin Energy are very persuasive, given that Origin has been the single largest investor in new generation in recent years. It has invested in some 2,600 MW out of the 4,700 MW new generation provided in the last four years, and is also one of the largest retailers of electricity in the NEM.

		2007	2008	2009	2010	2011	2012	Builder or Off Taker
QLD	Mount Stuart 3				123 MW			Origin
	Darling Downs					630 MW		Origin
	Braemar 2				519 MW			Origin
	Condamine				138 MW			AGL
	Kogan Creek A		750 MW					CS
NSW	Tallawarra			435 MW				TRU
	Uranquinty			664 MW				Origin / Built with PPA in place
	Munmorah/Colangra					668 MW		Delta
VIC	Bogong				140 MW			AGL
	Mortlake						565 MW	Origin
SA	QPS 5				120 MW			Origin

Source: AEMO generator information (existing, committed & proposed projects)

In particular, Origin makes the following points in its summary presentation slide #2:

- "The NEM is already one of (if not) the most volatile commodity markets in the world.
- A higher MPC to encourage investment must be balanced against the potential for increased volatility resulting in perverse and costly outcomes.
- Given the subjective nature of modeling, greater weight must be placed on real market evidence which shows the current market settings are delivering capacity when required and the evidence does not suggest this is likely to change in the future.
- New investment is driven by the contract price not spot price. A focus on spot revenues by ROAM means the modeling overestimates the required MPC level.
- An MPC that is too high unnecessarily increases participant risk levels for no material benefit to investment.
- Effective retail competition is likely to suffer as a consequence of the financial stresses from greater risk capital, working capital and prudential

requirements – combined with an already constrained supply of bank guarantees.

- An increase in the MPC will increase the cost for all market participants operating in the NEM. This cost will ultimately be borne by consumers for no material reliability benefit."

It is also noted that, whilst members of the National Generators Forum have divided views on whether an increase in the MPC is required or not, the members that do not support an increase in MPC provide the following reasons:

"Divided view on whether an increase in the MPC is required

Some members support an increase in the MPC because they agree:

- Generator costs have increased by 22% in real terms in the past two years
- MPC is a nominal value whose real value decreases over time
- Demand will be peakier in the NEM over the next 10 years which will reduce the number of hours an OCGT can run to recover its costs ;

Other members do not support an increase in the MPC because:

- The market is currently delivering the reliability standard at $10,000/$12,500 per M/Wh
- Generators face an increase in market risk due to transmission congestion
- Generators face an increase in their generation risk due to an increase in the MPC
- Demand drives investment to a much greater extent than MPC"

The Energy Retailers Association of Australia noted that their members have differing views but pointed to possible retailer implications from any MPC increase:

"Members have differing views about the desired level of the MPC; these will be put in individual submissions.
Collectively, the ERAA has identified possible retailer implications from any MPC increase:
– Potential increased market volatility: Adverse impacts may include:

- Greater prudential burden.
- Potential reductions in generator contracting: Liquidity impacts.
- Premature market exit: implications for competition.
- The viability of smaller retailers as the MPC increases.

– Drivers for investment are complex – current approach may oversimplify
- Some members note that the current MPC appeared to be delivering sufficient investment to meet the 0.002% USE standard

- Contract market seen as a key investment driver. More exploration of contract / spot linkages warranted
- Accept conceptual link that and MPC too low may limit investment – but note that the increased risk profile of a high MPC may also be counterproductive
- More comprehensive consideration of these impacts is required"

Alinta Energy has also noted the adverse implications arising from an MPC that is set too high:

"If the MPC is set too high there are implications

- **Transmission congestion** - in transmission congested networks, a constrained generator may loose the opportunity to supply ad much energy as bid (potentially removing the MPC event) or may loose real money as a result of having to buy energy at the time of the MPC event to cover a contract
- **Small Retailer risk** – risk management practices would need to reflect the greater potential for value loss with the higher MPC, thinly capitalised retailer may go out of business – which potentially may lessen competition
- **Retail price cap regulation** – apart from Victoria, there is a delay in cost recovery for retailers from any increase in the MPC which flows through energy costs
- **Generator delivery risks –** OTC contracts not offered or risk premium too high".

Although there were some mixed views presented, the overall tenor of the presentation to the RP at its forum can be summarized as follows:

- There is a value for MPC where it will not incentivise more investment in generation and risks will be too great for retailers and generators, reducing competition
- The current market settings appear to be delivering the necessary investment in generation
- Increasing the MPC will have detrimental impacts on the market as a whole such as increasing volatility and generators reducing the amount of generation contracted
- The risks of operating in the market, whether as a retailer and a generator, will increase as the MPC increases
- The contract market and/or demand drives investment in generation, not MPC, as new investment in a generator needs to have a "bankable" revenue stream. A contract with a "bankable" counterparty provides this certainty but relying on revenue from the spot market alone is insufficient for being "bankable".
- There are many other aspects that need to be addressed such as transmission congestion and prudential impacts

In addition, discussion from the floor at the Public Forum was more in favour of retaining the current settings, although some RP members appeared to be leading the advocacy for an increase in MPC.

5. MEU Views

The MEU considers that the NEM is a highly risky electricity market, reflecting the high volatility in the spot market, which in turn is due to having the highest MPC in the developed world and being an energy-only market. Highly risky markets also lead to high prices, reflecting amongst other things, high prudential risks for generators and retailers, with the cost premiums pass-through to consumers.

Appendix 1 provides a snapshot of the extent to which the NEM performance shows an increasing volatility in the spot market in recent years, with a highly volatile pool price. The rise in MPC in recent years has also enhanced the incentives for some generators to exercise market power. This has been referred to by the AER, as follows[5]:

> "The exercise of market power by some generators is a continuing concern. There is evidence that it is leading to increased market volatility and higher spot prices in some regions"

The MEU considers that raising MPC to $16,000/MWh and then to $20,000/MWh will further enhance the incentive for the exercise of generator market power, thereby causing substantial economic damage to consumers and to the economy.

5.1 A hypothetical view

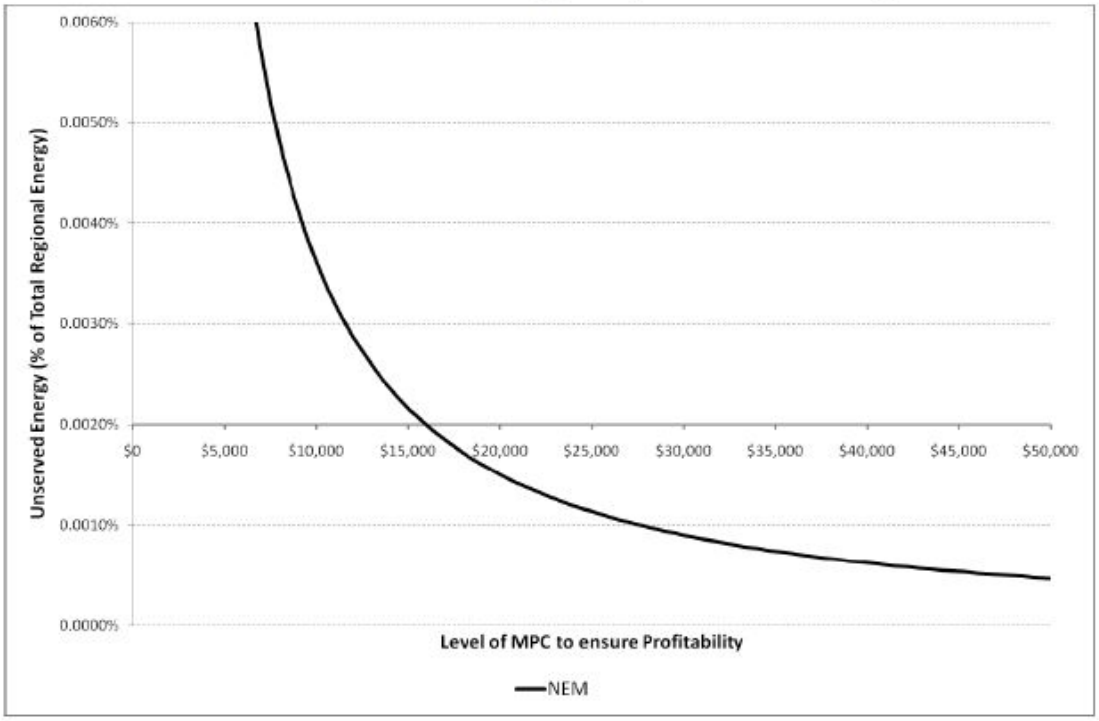
In market structures other than the NEM (eg a capacity market) reliability can be achieved by direct means, such as paying for new generation to be provided. In the energy-only market that the NEM uses, reliability must be incentivised by indirect means, such as by increasing the market price cap allowed. In some markets (including some energy-only markets) there is no price cap.

There appears to be a mindset amongst some in government and some of the NEM practitioners that continually increasing MPC will lead to increased investment in new generation. It is on this assumption that the only lever available to the RP to deliver the targeted reliability standard, is to adjust MPC.

ROAM attempts to show this relationship in the graph on slide 25 of its presentation at the forum. This shows the USE-MPC curve asymptoting towards USE = 0.0000% at an MPC of infinity.

[5] State of he Energy market 2009, page 4)

Relationship between USE and MPC – NEM Average (2013-14)



Source: ROAM presentation

Whilst at some level, the assumption of increasing MPC decreases USE may have validity (eg when MPC is too low, there will be little or no investment) there must come a point at which increasing MPC will not increase reliability at all as it will not further increase investment.

That the MPC can affect the reliability at low values is easy to test. If the MPC is set so low that a generator cannot make a reasonable return on its investment, then there will be no new generation investment. As the MPC rises above the long run marginal cost (LRMC) of the various forms of generation, so investment will occur in each generation type.

The assumption made by the NEM aficionados is that reliability is achieved by adjusting the MPC. But if there is no price cap, then how to incentivise generation investment and thereby ensure reliability?

The belief of the NEM aficionado (as shown graphically by ROAM above) loses credibility when there is no MPC (ie it is unlimited and so high it has no value). Without a price cap, the NEM aficionado would conclude that USE should be zero as ROAM shows. This is patently a false assumption. In fact, what this hypothetical example shows is that there must be some point at which increasing MPC further, will not increase reliability at all and, indeed, there will be perverse outcomes. This view is

supported by the observations made by market participants presenting other than ROAM at the forum.

The reason why an unlimited MPC does not give zero USE lies in what the real drivers for generation investment are. As Origin and others noted at the forum, investment in new generation will occur when the investor (and debt provider) can be assured that the new generation will provide sufficient revenue to underwrite the debt and the equity provided. The only way this assurance can be achieved, is by a "bankable" counterparty writing a contract to be the off-taker of the power generated. There was a general acceptance of this view at the forum.

Therefore, what is needed, is to identify at what point further increasing the MPC does not further increase investment. Origin made this point quite clearly, that the RP needs to look for real market evidence rather than rely on supposition and assumption. To this end Origin highlighted recent market commitments to new generation at the current level of MPC (ie $10k/MWh). Origin pointed out that it had invested itself by committing to some 2600 MW of new generation. Other retailers (AGL and TRUenergy) have also committed to new generation of recent times, and earlier.

Under the current regime we are seeing:

- Adequate amounts of new generation have been committed
- Retailers are exiting some regions in the NEM due to the high risks they face (especially in the SA region),
- Some retailers have left the market (creating the first two RoLR events since market start)
- Generators are contracting less generation output than in times past

Real market evidence is clearly saying that the current level of MPC is adequate for new generation, but so high that perverse impacts are being seen.

5.2 Analysis of the proposed increase in MPC

The MEU considers that the RP review is fundamentally flawed, as all of the analysis undertaken on MPC is only based on supply-side solutions. This flaw is further accentuated by its terms of reference to ROAM Consulting's modeling work, which is to provide:

> "an analytical basis to support the Reliability Panel recommendations"[6].

Some members of the RP have sought to defend the ROAM terms of reference on the basis that the RP review is to determine what MPC level will satisfy the Reliability Standard and that it is not a commercial review. The MEU would beg to differ. The Reliability Standard can only be set when the commercial implications of its value have been assessed. As the outworking of changing the Standard is to adjust MPC

[6] (ROAM, page 3).

(which does have commercial implications) then to state that this review is not a commercial review, is dissembling in the extreme.

Setting of the Standard and the assumed MPC to achieve it can be assessed empirically (based on real market evidence) or by modeling. Modeling work based on assumptions can only provide conditional guides, and no more. Market realities, such as demand side inputs, need to be considered. These RP members sought to "defend" their position by reference to the possibility that some generators may "drop off" under the ROAM scenario, for any number of reasons, and thereby attempting to emphasize the need to raise MPC to drive new investment.

However, if assumptions (such as generators "dropping off") are introduced, it is even more pertinent that other assumptions (such as significant demand side responses) are introduced to enable more realistic modeling to be undertaken. Sensitivity testing could also be undertaken.

In particular, aspects such as real market evidence is showing that more and more consumers are taking spot market exposure and limiting their risk by load shedding, and this must be added to the modeling. Real market evidence is that retailers are contracting with large end users to be called at times for load shedding. End users get a lower contract price for power but are required to provide load shedding on demand by its retailer. Another demand side response occurring in recent times, is that commercial enterprises (as well as retailers) are aggregating load shedding capacity for the time when the spot market is high, or when involuntary load shedding is being implemented.

That such commercial demand side responses are being ignored in the NEM (but used in other jurisdictions) is of clear concern to a well run market. Yet it is clear there is an appetite for demand side responsiveness that the ROAM modeling has ignored entirely

The debate here is a timely reminder to observers and practitioners to refer to the recent controversies over climate change research and official reporting, which is the reason why the MEU had introduced such issues in this debate.

5.3 MEU conclusions

The MEU believes that:

- There is a point where further increase in MPC will not create investment and will create a perverse outcome
- Under the current MPC (ie $10k) there has been significant generator investment, but also a significant withdrawal of retailing and generation contracting from the market
- Under the current MPC, many end users are either opting for full spot market exposure or accepting retail contracts that include for demand reduction on demand by their retailer

- An investor needs to have a bankable revenue stream, and the MPC generator has no certainty of revenue at all if it relies purely on the last few hours of generation each year. This is uncertain (under a 10% PoE there is an assumption that the generator would get dispatched only once every 10 years) and therefore would not be built because there is no certainty of revenue to fund the debt portion
- Increasing MPC will increase volatility (Origin showed this). This increases risk for retailers (Origin and ERAA both observed this) and they in turn increase costs for consumers,
- Increasing MPC has the effect of generators contracting less and supplying more of their output to the spot market (observed by both Origin and NGF) reducing the contracted volume to retailers
- Increasing MPC will put more generator revenue at risk and therefore reduce the certainty of being able to service debt
- Generators are likely to build to N-1 reliability to provide the output they have contracted for or to meet the output they need for most of the time. So the small amount of extra generation needed at peak times will be provided by this surplus generation.

These conclusions are not hypothetical or deduced from modeling, but are empirically derived from real market evidence. The RP must recognise that real market evidence must be superior to assumptions based on modeling.

6. MEU comments on ROAM modeling

6.1 ROAM'S Modeling Assumptions

6.1.1 Static, Partial Equilibrium Model

The MEU notes that the ROAM modeling is essentially static, partial equilibrium rather than a dynamic equilibrium. ROAM (p 25) acknowledges, as follows:

> "ROAM has not considered the impact that the change in MPC may have on the level of demand side participation. This review has assumed that peaking capacity is the lowest cost option of avoiding unserved energy, however at the MPC recommended by this report some DSP may provide a lower cost alternative21. Increasing participation in demand side management may reduce the necessity for the MPC to be increased to the recommended level. On the other hand, such stimulation of DSP would still assist in delivering the Reliability Standard. Furthermore, the assumptions which NIEIR have used when developing the 2009 peak demand forecasts for AEMO (subsequently used in this report) may not hold true at a materially different price point such as the MPC level recommended in this report. **The impact that the increased MPC may have on demand elasticity is beyond the scope of this report**." (our emphasis).

The MEU expresses it's very deep concern that the ROAM modeling (ROAM page 3) which is intended to:

> "… provide an analytical basis to support the Reliability Panel recommendations …"

is inadequate, as it is a partial, static, and purely a supply side driven model.

6.1.2 Provide Sufficient Revenue Running For A Few Hours

The MEU notes that the objective in setting an appropriate MPC (ROAM p 4) is to:

> "…provide sufficient revenue in the very few running hours which the last generator to e dispatched would need to achieve so as to recover its capital, fixed and variable operating costs and achieve its investor's required rate of return".

The MEU is not clear about this assumption. How many hours have been assumed for the last generator to run? How much revenue is assumed to be required? There is no attempt to quantify the cost to consumers to provide the theoretical supply side solution of having an OCGT running for a few hours each year.

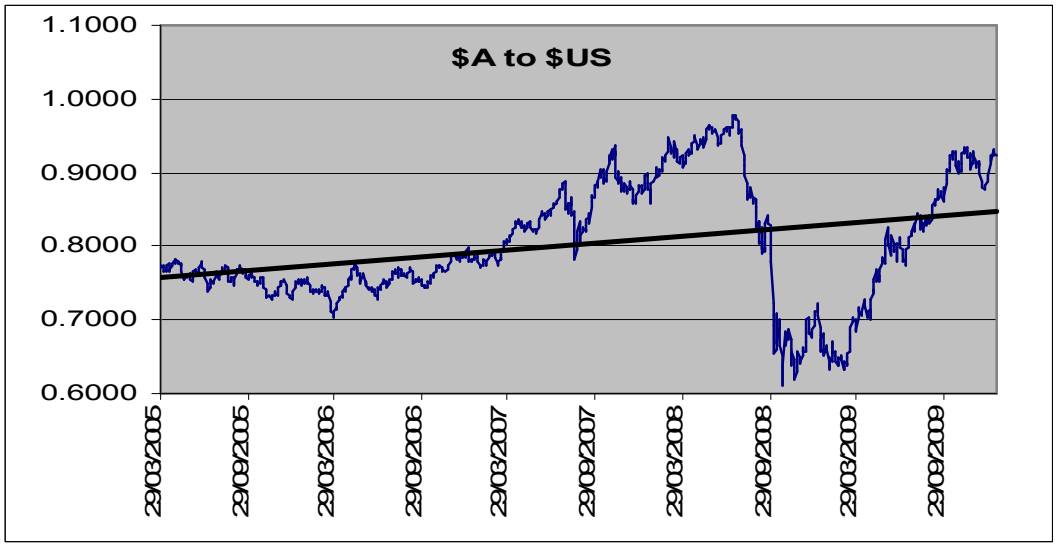
The MEU notes that the ACIL Tasman report to NEMMCO 2009 states that the annual capital and fixed cost for an OCGT is about $100,000/MW/year and as the MPC generator only runs for a few hours each year SRMC is negligible. An MPC of $16,000/MWh implies that the last generator will operate for 6 hours/year – with no other income. MPC at $12,500/MWh implies that it will run for 8 hours per year.

Accordingly, is the assumption of an OCGT waiting to run for the last 6 hours without any other income too conservative? **Is this assumption realistic?** Would the owner of the last generator be looking for other income? Other revenue for such a generator comes from fast start, regional islanding, intra-regional constraints, voltage support and the like.

The whole construct behind the ROAM approach is that generators will be dispatched in order of SRMC, ie that the lower cost generator will be dispatched before higher cost generators, with the "extreme" OCGT being only needed for "a few running hours" each year, and on this basis the approach has some validity.

But the real market evidence is that low cost generators can and do bid to increase the spot price above the spot price expected based on the SRMC of the generator that should have been dispatched based on the ROAM assumption. The NEM Rules permit generators to withhold economic capacity thereby spiking spot prices and requiring higher cost generators to be dispatched. ROAM later accepts that generators do not get dispatched based on SRMC and uses historical data but excludes the Cournot concept that generators will use market power to set spot prices. This is a wrong assumption and the point is developed later.

The ACIL Tasman report to NEMMCO 2009 on hardware costs assumes the $A/$US exchange rate to be 0.75 US cents over the next 20 years. ROAM is looking forward just 10 years (ROAM p 18) and models only 6 years (2012/13 to 2018/19) (ROAM p 12). Some financial analysts are projecting an exchange rate moving to parity over the short term, so that over the 10 year period used by ROAM, the ACIL Tasman estimate seems low when for the last 5 years the $A has been $ US0.8 and trending up after a severe downturn due to the GFC impacting on commodities.



The MEU notes that changing the exchange rate would reduce the capital cost by 10-12% and therefore reduce the needed MPC by a similar proportion.

MPC will rise to $12,500 (set in 2008) on 1 July 2010, and is indexed to CPI. This means that the new value for MPC in future will remain constant in real terms and accommodate some of the movements seen in the real market.

6.1.3 MPC is Set Nationally and the Level Applied in all Regions

The discussion on setting the MPC raises the question why the MPC is set nationally (i.e. NEM-wide) with the same level applied in all regions, even though demand and supply conditions differ in each region, inter-connectors have differing capacities, thereby producing differing inter-state supply constraints. Moreover, the mix of generating capacity in each region is different, as is the degree of vertical integration, ownership profit differences, and hence different degrees of market power that can be exercised in different regions.

The MEU asks the question why a USE of 0.002% is sacrosanct? The MEU had sought in its earlier submission to the Reliability Panel for it to take a wider approach to reliability and assess it in terms of **delivered** electricity. A low USE is incongruous when the transportation system is **less** reliable – and a marginal improvement in **supply** reliability achieves little if any in improving **delivered** reliability but the cost to consumers provide such high level of USE is very high.

Figure 6.1 of the ROAM report shows that actual USE levels are different in each NEM region, thereby raising the question why is it conceptually correct to apply a uniform MCE and or CPT?

Moreover, Figure 7.3 of the ROAM report demonstrates that different regions have different relationships between USE and MPC, thereby suggesting that a

uniform NEM-wide USE/MPC is irrelevant. For instance on page 11 ROAM states:

> "Figure 7.3 shows that there is a relatively wide range across regions for the study period as to the estimated MPC to meet the Reliability Standard in that region".

And that, on the same page, it adds:

> "New South Wales and Victoria show the need for a higher MPC owing to a combination of higher overall demand levels and more peaking demands (fewer periods of extreme weather".

The MEU further notes ROAM's remarks (p7) that:

> "The availability of each region's marginal generator has an impact on the profitability of the generator and the level of USE in the NEM".

However, we observe that economic withdrawal of capacity and exercise of market power makes the two measurements meaningless, as supply availability and profitability levels can be altered depending on the exercise of generator market power.

The concept that the last generator dispatched gets only 6 hours of operation, and therefore the underlying assumption that all other generation will be dispatched in cost merit order (ie lowest cost first, ranging to highest cost last) is not sustainable.

The MEU categorically states that the ROAM assumptions do not match real market evidence that economic withdrawal by lower cost generators requires high priced OCGT to be dispatched more frequently than the ROAM modeling assumes. For example in 2008 and again in 2009, a mid merit generator in the SA region, economically withdrew capacity for 39 hours in each year forcing all OCGT plant in the region to commence generating. The outcome of this activity, is that for a number of extended periods, the mid merit generator effectively became the MPC generator and OCGT plant had extensively augmented revenue.

The outworking of the ROAM modeling indicates that the MPC generator would operate for 6 hours each year, but in SA region, the notional MPC generator had 6-7 times this necessary time for at least two years.

The real market evidence is that ROAM's assumptions are not borne out in practice and this strengthens the MEU concerns with the ROAM approach.

6.1.4 Impact of Demand Side Management

Notwithstanding that ROAM's modeling excludes demand side management influences, there is an erroneous assumption implied in the report on pages 25 and 26 to the effect that as MPC rises, more consumers will contract to reduce risk and that this will reduce demand side participation.

In fact, as retail contract prices increase to reflect increased pool risks, more large users are taking pool exposure with spot pricing combined with curtailment arrangements when spot prices reach particular high levels (but less than $500/MWh!), and others are signing up to discounted contracts with demand reductions on call.. This real market evidence is that large end-users are reducing demand to manage risks during high price events. The MEU has a number of members with such contractual arrangements for exposure to the spot market or demand reduction at call, and there is substantial scope to curtail demand completely with some members reporting an ability to reduce their demand by as much as 85% during high price events.

6.1.5 Constructing Generator Bids

The MEU notes (on p 23) that:

> "ROAM considers it appropriate to … construct generator bids by using a bid analyser process. This process models the bids of generators at different times based upon historical information with the objective to match observed outcomes as closely as possible. This strategy yields results which accurately model the real market behaviour for the majority of the time and ensures generators offer their available capacity into the market at or below the MPC. It therefore provides an appropriate method for modeling generator bids for this project." (p 23)

The MEU points out that this approach excludes the Cournot principle that generators will seek to maximize revenue even at the cost of reducing output. Roam notes that most generators bid within a tight band around SRMC. However, this assumption does not recognize that with a very high MPC, the Cournot principle only has to operate relatively occasionally (eg in SA in 2008 39 hours of high prices contributed to 57% of the annual average volume weighted price of $93/MWh, whereas the SRMC in SA is $40-50/MWh[7].

In fact, the MEU has observed that in the NEM where a generator perceives it can spike the price it will. An analysis of the NEM in operation for 2005 to 2009 show that a few price spikes has a massive impact on the average spot prices. Data supporting this observation is provided in Appendix I. ROAM also assumes that an end user will be driven to contract its demand as the risks in the NEM increase.

[7] The SRMC in SA is higher than in other regions due to the large amount of generation fuelled by gas.

However real market evidence points to generators contracting less as the risks increase, and consumers opting to manage their risks themselves rather than buying risk management from a retailer.

This real market phenomenon has been observed and as a result generators less contracted will seek to spike the price.

ROAM also states (on p 22) that:

> "Analysis of bidding behaviour shows that the majority of generating capacity is offered at prices which are in a reasonably tight range around the level of short run marginal costs of generators. Only a small percentage of capacity is withheld to prices that are near the level of the MPC".

But, as noted above, such a high proportion of revenue can be earned from the price spikes, that a generator only has to spike the prices occasionally because the rewards are so high (a multiple of 250 times at MPC of $12,500.

Despite their assumption that generator bidding behaviour will follow SRMC for the bulk of the time, ROAM then qualifies its assumption by its observation (p 23) that:

> "Concept Economies has reported that changes to the MPC may increase the incentives for aggressive trading strategies by generators, which would serve to increase the spot price of energy"

The ROAM assumptions are clearly being surrounded by qualifications that appear not to reflect real market evidence.

6.1.6 Have Relevant Risks been Taken into Account?

ROAM states (p 26) that:

> "The risks associated with the demand and supply sides of the NEM must be carefully considered before reaching a final recommendation"

But ROAM then (on p 23) states that:

> "ROAM has not considered the impact that the change in MPC may have on the level of demand side participation".

The market is already showing that it does see demand side responses – by taking spot price exposure and reducing demand to mitigate risk, having discounted contracts with remand reduction at call, and by commercial enterprises aggregating demand side responses. So the real market evidence runs counter to the assumption made by ROAM in regard to DSR.

6.1.7 Outage Rates

Table A3 of the ROAM report shows the assumed forced outage rates.

The MEU considers that the values used by ROAM are a major issue that needs resolution.

CCGT is rated with a forced outage at 4.24%. OCGT which uses the same GT technology as CCGT (but without the reliability issues associated with the CCGT steam turbines) and should have a much lower forced outage rate than the quoted 27.88%. The MEU acknowledges that the FOR used are those provided from real market performance provided by AEMO. If these are correct, then they need greater investigation, especially where there is so much new OCGT plant being added to the NEM fleet in recent times.

When assessing long term financial viability of generation plant, modeling usually assumes a long term average availability of 92-94%, allowing for higher availability of new plant and slightly lower before refurbishment. If bankers accept 92-94% availability of OCGT plant then so should ROAM. In this regard ROAM has assumed 97% availability for the marginal OCGT used for setting MPC.

This raises a major inconsistency. If an OCGT owner expected that the bulk of its revenue was likely to come when peak demand was likely, the MEU can't see it would assume it would miss 1 in 4 opportunities to generate revenue. This point is made by ROAM (p vii) when it says about the extreme peaker:

> "As the extreme peaker has only very few hours in which it expects to operate, it has a far greater incentive to be able to respond to price signals when called upon, and therefore it is considered appropriate to factor a significantly higher availability for these notional generators …"

This view is further developed by ROAM in appendix B.3

ROAM continues with a comment (p vii):

> "… less than half of all new entrant capacity is peaking capacity, with a significant capacity of combined cycle and renewable generation also included in the build programme.".

Accepting this at face value, implies that about half of the new entrant OCGT generation will be unavailable for nearly 30% of the time – this is highly questionable.

Further, ROAM comments that it has modeled the extreme OCGT generator as available at 97%. The MEU notes that most of new dispatchable generation is

GT based and much of the GT based generation in the NEM is new. So why discount OCGT so heavily?

The MEU considers that the AEMO data reflects the performance of a large proportion of OCGT plant built in the 1970s and 1980s (such as SA's Dry Creek, and Victoria's Jeeralang). These OCGT plants (even though now privately owned) were built by government owners and may not have the same commercial driver to ensure they deliver high availability, nor the recent technological improvements that allow higher availability.

In contrast, much of the recently built OCGT plant was by private owners and they would require significantly lower FOR to satisfy the debt and equity providers. A significant proportion of OCGT has been built in the past 4-5 years and would have a significantly higher availability than the older plant.

The MEU considers that ROAM should model OCGT plant based on its actual performance rather than assuming an industry wide value which is heavily biased by older OCGT plant.

Reducing the FOR for recently built plant will have a significant impact on the outcome of its modeling.

6.2 Outcomes of the ROAM assessment

6.2.1 Economic efficiency is required

Despite observations made by some RP members at the public forum, the NEL requires decisions made regarding the NEM to be made economically efficient. The RP is not devolved from this responsibility. To assert that the RP can make recommendations without assessing the commercial implications of its recommendations, is clearly not permitted under the NEL. The second reading speech introducing the NEL is quite clear about this aspect:

> "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."

This clearly requires the RP to ensure that the outcome of its investigations is economically efficient. It is not permitted under the NEL for the RP to recommend outcomes that increase costs to consumers without assessing whether such are economically efficient.

ROAM has developed a model that indicates in 2013/14, the MPC should be $16k/MWh in order to achieve a NEM wide reliability standard of USE = 0.002%.

Based on the calculated price rises for each region for the next four year, ROAM modeling indicates that the change in MPC from $12,500/MWh to $16,000/MWh will cause an average increase in spot price of $2.70/MWh.

AEMO forecasts that the NEM will consume some 230,000 GWh of electricity in 13/14, and that demand at 10% PoE will need to be 44,000 MW.

The outcome of these forecasts is that the increase in MPC from $12.5k to $16k (with no other changes) will cost the NEM some $620m in the year 2013/14 based on the spot market. Using the costing rate for new OCGT generation of $100,000/MW pa, this means that the increase in MPC would provide some 6,200 MW of new generation, or 15% of the total NEM generation pool of 44,000 MW.

Under the NER, the RP is to ensure that its recommendations are economically efficient, yet to increase the MPC such that the market would provide the cost equivalent of 6,200 MW of new generation, is not efficient.

6.2.2 What does the market see as needed for the last 6 hours of generation?

An MPC of $16,000/MWh at a cost rate of $100,000/MW implies that the extreme generator would have to operate for 6 hours each year to earn its base revenue. On the same basis an MPC of $12,500/MWh implies operation of the extreme generator for 8 hours each year.

Analysis of the NEM operations for the last 11 years (1999 to 2009) shows that the market results are as follows:

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	average
Peak NEM demand MW	25712	26977	27503	27230	28479	29702	30994	31705	33171	34292	35432	
Increase in MW needed for the last 6 hours of demand ie with MPC = $16k/MWh	863	486	617	201	610	942	533	513	636	1919	658	725
Increase in MW needed for the last 8 hours of demand ie with MPC = $12.5k/MWh	929	626	692	260	758	1184	732	613	830	2005	738	853
MW difference	66	140	75	79	148	242	199	100	194	86	80	128

Source: data from NEM Review, MEU analysis

The table shows the peak demand in the NEM each year of operation. The third row shows the difference in generation needed between the highest peak demand, and the demand recorded up to the six hours of highest demand. The fourth row shows the amount of demand for the last eight hours each year.

As the period shows 11 years, it could be assumed that the highest demand represents the 10% PoE. Year 2008 shows the highest amount of generation needed for the last 6 hours of operation (1919 MW) and also the highest amount of generation to provide for the last 8 hours of operation (2005 MW).

Therefore it can be assumed that the additional $620m the increase in MPC causes, provides for 2000 MW. This is a cost of $310,000 MW pa whereas the annual cost is $100,000/MW. This is clearly inefficient.

Looking at the issue another way, ROAM calculated that there was a need to increase MPC to $16k/MWh from $12.5k/MWh to ensure the reliability standard is met. On average the NEM actually show that over an eleven year period at worst (2004) the amount of additional generation needed to move from the last 8 hours to the last 6 hours, would be 242 MW.

Assuming this represents the 10%PoE differential, the additional $620m the spot market costs for the change from $12.5k to $16k, would have to provide for 242 MW. The cost for this 242 MW would be $24m pa. This compares with the $620m cost ROAM calculates for the change.

The RP is required to ensure its recommendations are economically efficient, yet ROAM modeling indicates the cost for its recommendation (ie MPC rising from $12.5k to $16k) will be $620m.

If alternative approaches result in a cost of $200m using one approach based on real market evidence, or $24m using another, then the RP must reassess the modeling work, its underlying assumptions to ensure that its recommendations are economically efficient.

The current ROAM outcomes clearly are not efficient.

6.2.3 The market settings

6.2.3.1 Uniform USE and MPC

ROAM points out that to achieve the same reliability standard for all regions, requires differing MPC settings. Alternatively if a single value for MPC is used, then different levels of USE will occur in each region. The MEU agrees that this would be the case for the reasons ROAM provides.

The regulatory bargain implies that all consumers will be provided the same service for the same cost. However, the achievement of such a laudable goal is more difficult for many reasons, especially due to the geographical variety within the regions, the extent of interconnection between regions and the generation mix in each.

This creates the dichotomy of whether uniformity is preferable to equity. On balance, the MEU considers that the benefits of uniformity outweigh the need to create perfect equity.

The reliability standard should be common to all consumers throughout the NEM as this is the basis of the NEM regulatory bargain – that all consumers have the same reliability regardless of where they are located.

The presentations at the forum indicated that contracts underpin new rather than the level of MPC, provided MPC is high enough that it does not lead to underinvestment in generation. Therefore, there is a view that providing MPC exceeds a base level, the value of MPC has marginal if any impact on new investment.

The implications of this analysis is that commonality of USE is effectively a commitment of the regulatory bargain. In contrast the value of MPC has an indirect and possibly minor effect on new investment, and therefore the need for variations between regions for MPC implied by ROAM will have a marginal effect, if any.

With these in mind, the MEU considers that the same USE should apply to each region and so should the same MPC.

6.2.3.2 CPT

Cumulative Price Threshold (CPT) is essentially a risk management tool to limit the exposure of a market participant to a sustained period of high spot prices.

ROAM essentially recommends that the same relation between CPT and MPC should be retained as used in previous decision on setting CPT ie that CPT should be 15 times MPC.

There is no logic behind the value of 15. Its use implies that if MPC applies for 15 consecutive hours, then the market has failed and administered pricing should be applied.

Increasing CPT as proposed by ROAM increases the risk exposure to the market of market participants. If it is accepted that CPT is a risk management tool, then there is no reason to increase CPT just because MPC is increased.

The MEU considers there is no need to “couple” MPC and CPT in perpetuity, and CPT should be set to cap the risk a market participant is exposed to as a result of continuous high prices.

The MEU considers that just increasing MPC does not provide sufficient justification for an increase in CPT, and that if the current level of CPT is seen as an adequate risk management tool, then the current value should be retained.

7. Conclusions

The MEU is very concerned that the report issued under the guise of being a RP draft report is in fact a report prepared by AEMC staff as some RP members have sought both more information and have not been able to formulate their views prior to it being released. Stakeholders have not been provided with information regarding the true status of this report.

The MEU notes that there are a number of other reviews being carried out concurrently with the RP review, and the outcomes of these other reviews could have a significant impact on the decisions reached by the RP. To make a decision on USE, MPC and CPT in isolation of these other related reviews is poor regulatory practice. In addition, there are very substantial concerns about the lack of transparency and exposure for peer review of at least one of these key reviews.

The MCE has advised the AEMC that it requires to make a number of policy decisions, which will impact on the way the AEMC and its subsidiary Panels (such as the RP) will exercise their powers under the NEL and NER. For the RP to make decisions in the absence of the MCE policy decisions could lead to the RP making inappropriate recommendations.

The modeling by ROAM is intended to provide "an analytical basis to support the Reliability Panel recommendations" but it is clearly:

- Inadequate as it totally excludes the impact of demand side actions,
- Incomplete as it has not addressed the implications of its recommendations and
- Unrealistic as it is distorted by some key but unsustainable assumptions.

There is a clear need to carryout a cost/benefit analysis of the recommendations, addressing the costs for alternative approaches rather than just increasing MPC, complete with appropriate sensitivity testing of key variables other than just dispatch pricing.

The financial implications of increasing the MPC have been identified as part of the ROAM modeling. These indicate that the likely costs of increasing MPC will far exceed the costs needed to provide the new generation that increasing the MPC is supposed to create.

The overwhelming outcome of the presentations made by market participants at the RP forum, is that an increase in MPC is not warranted, and is unlikely to result in the outcomes considered to arise from its increase.

As a result of the work done to date, the need for more analysis and modeling, and the views of market participants, the MEU considers the RP is not able to confidently recommend an increase in MPC as suggested by ROAM, and implied in the RP draft report.

Consumers already have the perception that the RP is contemplating increasing the value of MPC – they view this with great trepidation. As a result the implication of an increase in MPC is already having a chilling effect on investment by MEU members and other large electricity users.

APPENDIX 1

Analysis of the NEM operation

The data shows that the impact of a very few price spikes has a massive impact on the average spot prices. In particular, 78 high price events in SA in 2008 (ie for 0.5% of the time) caused over half (57.1%) of the average volume weighted price.

The time weighted price reflects the spot price to a user with a flat load. The volume weighted price reflects the spot price to a user with a load that matches the regional average.

If the flat loads are excised from the average demand, a typical residential user would exhibit a load which has more peak demand than the average state demand shape and so would pay a higher price than the volume weighted average

2009 data	Qld	NSW	Vic	SA	Tas	NEM (excl Tas and Snowy)
% of average annual volume weighted price caused by >$300 price spikes	24.2%	42.5%	34.4%	66.5%	31.9%	39.9%
% of average annual volume weighted price caused by >$1000 price spikes	23.5%	41.0%	34.1%	65.7%	27.9%	38.9%
Av annual time weighted regional price $/MWh	34.13	43.92	36.48	60.47	50.20	43.75
Av annual volume weighted regional price $/MWh	37.42	51.63	43.68	89.84	53.82	48.34
# price spikes >$300/MWh in 2009	42	89	37	129	103	297
# price spikes >$1000/MWh in 2009	33	56	27	78	64	196

2008 data	Qld	NSW	Vic	SA	Tas	NEM (excl Tas and Snowy)
% of average annual volume weighted price caused by >$300 price spikes	22.9%	14.1%	10.3%	57.1%	0.7%	24.3%
Av annual time weighted regional price $/MWh	43.87	39.12	40.24	66.37	49.73	47.41
Av annual volume weighted regional price $/MWh	48.81	42.13	43.45	92.70	50.67	47.70
# price spikes >$300/MWh in 2008	62	23	21	78	4	184

2007 data	Qld	NSW	Vic	SA	Tas	NEM (excl Tas and Snowy)
% of average annual volume weighted price caused by >$300 price spikes	25.9%	27.3%	19.7%	12.1%	4.5%	24.1%
Av annual time weighted regional price $/MWh	66.84	67.07	63.40	57.49	56.85	63.70
Av annual volume weighted regional price $/MWh	72.73	76.01	69.58	64.89	58.97	72.68
# price spikes >$300/MWh in 2007	160	213	132	78	36	583

2006 data	Qld	NSW	Vic	SA	NEM (excl Tas and Snowy)
% of average annual volume weighted price caused by >$300 price spikes	18.2%	20.6%	20.9%	19.4%	20.1%
Av annual time weighted regional price $/MWh	25.97	31.01	34.13	38.68	31.02
Av annual volume weighted regional price $/MWh	28.23	34.81	37.65	44.68	34.49
# price spikes >$300/MWh in 2006	27	32	47	62	168

2005 data	Qld	NSW	Vic	SA	NEM (excl Tas and Snowy)
% of average annual volume weighted price caused by >$300 price spikes	19.6%	36.6%	7.6%	10.1%	24.6%
Av annual time weighted regional price $/MWh	25.17	35.83	26.29	33.60	30.22
Av annual volume weighted regional price $/MWh	27.12	40.84	27.83	36.76	33.44
# price spikes >$300/MWh in 2005	26	67	24	35	152

APPENDIX 2

Climategate is just the tip of the iceberg

- David Henderson
- From: *The Australian*
- February 16, 2010 12:00AM

A litany of climate climate science flaws can't be ignored and highlight the need for an open review and evolutionary policies

TWO recent episodes have given rise to concerns about the quality and reliability of expert advice on climate change.

First was the unauthorised release of a mass of emails from the Climatic Research Unit at the University of East Anglia: the contents have put in question the conduct of CRU scientists and some of their correspondents.

Second is the discovery that statements made in the fourth and most recent assessment report (AR4) from the Intergovernmental Panel on Climate Change were based on sources that should not have been given weight. In relation to what was said about Himalayan glaciers, the IPCC has issued a formal admission of error.

The concerns raised by these episodes are well founded. However, Climategate and Glaciergate are not to be viewed in isolation. They are instances of a more fundamental and deeply entrenched phenomenon.

In relation to climate change, the established official expert advisory process governments have commissioned and relied on has shown itself to be not professionally up to the mark. The situation is one of unwarranted trust.

The main headings of unprofessional conduct within the process, identified and documented before the recent revelations, are:

- Over-reliance on in-group peer review procedures that do not serve as a guarantee of quality and do not ensure due disclosure
- Serious and continuing failures of disclosure and archiving in relation to peer-reviewed studies.
- Resistance to disclosure of basic information that reputable journals insist on as a precondition for acceptance. (In the CRU emails, participants discuss a range of arguments, pretexts and devices that could be used to fend off disclosure, including the deletion of emails containing material that had been sought under FOI requests, requests made only because authors had not followed accepted scholarly procedures).
- Basic errors in the handling of data, through failure to consult or involve trained statisticians.
- Failure to take due account of relevant published work documenting these lapses, while disregarding IPCC criteria for inclusion in the review process.
- Failure to take due note of comments from dissenting critics who took part in the AR4's preparation.
- Resisting the disclosure of professional exchanges within the AR4 drafting process, despite the formal instruction of member governments that the IPCC's proceedings should be "open and transparent".
- Failure by the IPCC and its directing circle to acknowledge and remedy these deficiencies.

In the light of Glaciergate, one could add to the list reliance on worthless (non-peer-reviewed) sources. But mere insistence on peer review would leave in place the other basic flaws.

Comprehensive exposure of these flaws has come from a number of independent commentators. Particular mention should be made of Canadian authors Stephen McIntyre and Ross McKitrick: separately and in joint publications, going back to 2003, they have made an outstanding contribution to public debate. Together with a

perceptive British critic, David Holland, they are the subject of unfavourable references in the CRU emails. But their work and that of other critics has been disregarded by governments and commentators in academic journals and the media alike.

The glaring defects in the expert advisory process have gone unacknowledged and unremedied by what I call the environmental policy milieu. This high-level failure and the defects themselves have resulted from chronic and pervasive bias. Right from the start, members of the milieu, and of the IPCC's directing circle, have been characterised by what has been well termed "pre-commitment to the urgency of the climate cause". Although the IPCC in particular is now under fire, this is too restricted a focus.

It is true that the panel's work forms the leading element in the official expert advisory process. But the basic problem of unwarranted trust goes further: it extends to the chronically biased treatment of climate change issues by responsible departments and agencies that the panel reports to, and in nationally based organisations that they finance (such as the CRU).

It is not just the environmental policy milieu that is to blame for the mishandling by governments of climate change issues. As a former Treasury official and international civil servant, I have been surprised by the failure of economic departments in OECD member countries to audit the evidence bearing on climate change issues, their uncritical acceptance of the results of a process of inquiry so obviously biased and flawed, and their lack of attention to the criticisms of that process voiced by independent outsiders -- criticisms they ought to have been making themselves. A similar lack of resource has characterised the research department of the IMF and the economics department of the OECD. There has been a conspicuous failure of due diligence.

The chief moral to be drawn is simple. In an area of policy where so much is at stake, and so much remains uncertain and unsettled, policies should be evolutionary and adaptive, rather than presumptive as they are now; and their evolution should be linked to a process of inquiry and review that is more thorough, balanced, open and objective.

David Henderson was formerly head of the OECD economics and statistics department. He is a fellow of the Institute of Economic Affairs in London and chairman of the Academic Advisory Council of the Global Warming Policy Foundation.