Major Energy Users Inc.

Australian Energy Markets Commission

Review of the Effectiveness of NEM Security and Reliability Arrangements in light of Extreme Weather Events

Response to Consultation Paper

Submission by

The Major Energy Users Inc

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Executive Summary

The Major Energy Users (MEU) welcomes the AEMC action in seeking stakeholder input into what is clearly an important review of the NEM operations. The MEU considers that the lack of gaining such stakeholder input into the preparation of the first and second interim reports was an error of judgment by the AEMC.

The fact that the Ministerial Council on Energy (MCE) was sufficiently concerned about the loss of generation supply in January 2009 to seek AEMC commentary is supported, but it is incumbent on the AEMC to highlight:

- The loss of supply in January 2009 was in fact a minor loss, when measured over the long term, and well within the expected limits of reliability. This highlights that reliability must be seen over an extended period, because unless this is done, short term issues can drive decisions which are not appropriate.

- The current reliability standard of unserved energy (USE = 0.002%) is an historical value and has been used by the NEM since inception. There is an implicit assumption that there will be significantly more "extreme weather events" in the future, and that these will impact generation supply as measured by the amount of USE. This raises the question as to whether the standard used in the past should be assessed against the expectations of the new environment where extreme weather events may be more the norm.

- Based on empirical observations, the impacts of extreme weather events seen to date have been more focused on networks rather than generation supply. This raises the concern that focusing purely on generation supply will result in very large cost increases for consumers to bear, but receiving little real benefit[1].

- Incentivizing generation exclusively needs careful consideration, including the issue of increased inter-regional connection and the impact in improving regional reliability. Currently regional pricing (or market price cap – MPC) is not related to incentives to augment inter-connectors yet interconnection capacity and reliability have a significant impact on regional reliability as measured by USE.

- The entire focus for remedying the loss of supply has been on (generation) supply side initiatives. But as there is a growing number of consumers who are already supplying increasingly significant demand side responsiveness or who are prepared to accept voluntary load shedding it would be more productive to see why this is occurring and how to harness it, than increasing the risks and costs in the NEM simply by increasing the (MPC)

[1] It is recognised that consumers are greatly more affected by loss of supply through failures in the distribution networks, than by loss of generation supply.

- There are already many potential improvements set in place by the AEMC which will impact on the level of reliability and the ability of AEMO to manage such potential losses in future, including the earlier decision in increasing MPC to $12,500/MWh. But we are still to see the benefits of these changes, and the MEU would urge caution in taking precipitate action which is not in the long term interests of consumers

- State and Federal governments have introduced a number of major policy decisions which have distorted the electricity market, but the impact of these decisions in creating widespread uncertainties in the NEM is yet to fully emerge and the consequences worked through. For example, there is a great deal of uncertainty in demand arising from the on-going significant increases in wholesale and network prices. Against this background, it is incumbent on the MCE to wait until these affects can be adequately assessed.

- There is an implicit assumption that there is a close and mathematical relationship between USE and MPC. In fact there are other aspects of the market which both impact on USE and MPC, and where MPC has a significant impact. The NEM has shown empirically that once the value of MPC exceeds a certain value, its relation to USE is tenuous, and other (some perverse) impacts in the market occur. These impacts are related to the outcomes of increased volatility and risk which not only increase costs to consumers but also tend to reduce the incentive to invest in new generation.

- Increasing MPC will increase costs to consumers, but as noted the link between increasing MPC and incentivizing new generation investment is not only weak but is quite indirect – there is no certainty that an increase in MPC will result in more generation being built[2]. As the costs are high from an increase in MPC, there is a need to assess the cost benefit of this as an option to ensure reliability, against other approaches. Such a cost benefit analysis needs to incorporate the degree of certainty the reliability outcome will eventuate and at what price consumers will trade off reduced generation supply reliability (especially where the network reliability is the main cause of loss of supply).

- There are a number of outcomes that increasing MPC will cause many of them detrimental to consumers and other stakeholders such as retailers and generators. These negative impacts have to be assessed and balanced against the reliability changes that might result.

[2] This is in contrast, for example, to a capacity market where there is a direct link between the incentive and new generation being provided, and where actual demand side responses can be contracted.

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 of supply of electricity as seen at the points of supply into the networks (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 AEMC review of the reliability of supply in light of extreme weather events tends to concentrate on the market settings used to provide reliability of supply into the electricity transport system, the MEU considers that 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, take into account the total cost and total benefit to consumers, including any reliability measures involving generation supply..

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 AEMC review will concentrate on such levels of supply reliability on the basis of costs incurred which, when taken across the entire supply chain, do not necessarily deliver value for the costs involved. A cost benefit analysis across the entire supply chain is, therefore, essential - especially as the costs involved in measures to address only one part in the whole energy chain, are very substantial.

For instance, the setting of USE = 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 the AER for ETSA urban supplies in its current pricing review) 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 who is embedded in the distribution delivery system.

Therefore as the direct and indirect costs[3] of the generation reliability setting are carried by consumers the MEU considers that the AEMC review must address 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[4] 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.

As reliability of supply as seen by consumers at the end of the supply chain, includes generation, transmission and distribution, then all elements of the supply chain need to be addressed in terms of the potential of extreme weather to impact any one of the supply chain elements. The clear import of the MCE terms of reference (ToR) is that it seems to consider only the element of generation, as the ToR seems to imply an increase in the market price cap (MPC) might be a solution. However, extreme weather events also impact the transport systems and so to examine the issue solely in terms of generation only, clearly provides an incomplete analysis.

For this reason, the AEMC should not view the impact of extreme weather purely in terms of generation supply, but should be looking to see the overall impact on consumers – after all, 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:

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[3] 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.

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

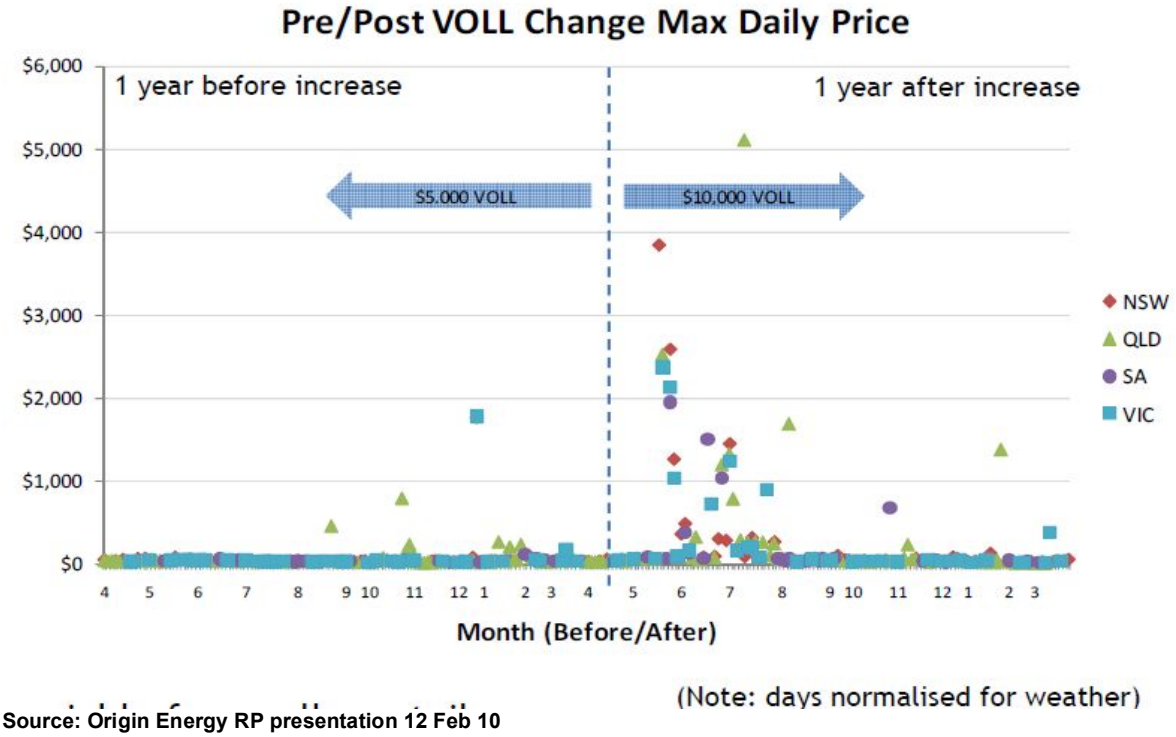
- Generator market power (the AER has identified that Torrens Island Power Station in SA has market power when regional demand exceeds 2500 MW)
- Steeply rising transmission and distribution network prices – on average these will rise in real terms by ~50% over the next five years
- Implementation of 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
- Increased variability and volatility of spot market prices, thereby increasing retail risks and costs, thereby causing increases in retail offers to consumers.

Overall, MEU members calculate that electricity supply costs could rise in real terms by 100% or more over the next few years resulting from these changes.

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

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 Reliability Panel Forum on 12 February 2009, 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 materially more expensive now as a market to supply power and is materially more risky for stakeholders than it has been in past years, and is becoming even more so.

1.4 What is the impact of this increased volatility?

Due to the rising levels of variability and volatility of spot prices, consumers are finding the resultant contract price increases on offer from retailers becoming less and less acceptable as they threaten the viability of their operations. As a result, more and more, large consumers have been 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[5] in the market
- It is almost impossible to offer longer term contracts than 2-3 years due to the material risks and shortage of hedged supply
- 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

[5] 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

- 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 event of failure.

However, under the current MPC level, 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)

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 The relationship between USE and MPC

The MEU has come to the conclusion that the generally held view that there is a relationship between USE and MPC has only limited legitimacy. Appendix 1, provides excerpts from the response the MEU made to the Reliability Panel in February 2009 detailing the reasons why there is a limited relationship between USE and MPC.

These excerpts posit the view that further increases in MPC are unlikely to increase new generation investment.

In particular, the MEU views reflect those of many other market participants (eg Origin Energy) who advise that their new generation investments are not driven by MPC, but by firm contracts for electricity supply from "bankable" counterparties.

The MEU does consider that the MPC needs to be high enough that generation investment will occur. Once the MPC is high enough, further increases in MPC have a minimal or perverse effect on new generation investment decisions. The fact that nearly 5,000 MW of new generation has been built or committed in the last four years, indicates that an MPC of $10,000/MWh is high enough not to prevent new generation investment.

1.6 Summary

There is only one "lever" available 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 scheduled to occur on 1 July 2010 to $12,500/MWh indexed to CPI in each of the following years. This predetermined step increase will materially 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. Key aspects of the MCE revised ToR

In its letter dated 14 August 2009, the MCE referred to the first interim report made by the AEMC in relation to the extreme weather events of late January 2009 in SA and Victoria. The purpose of the initial request of the AEMC was to establish whether there was a need to increase the market price cap (MPC) in order to reduce the risk of future events such as had occurred.

One of the key observations made by the MCE was that the elements of the National Electricity Objective (NEO) are in conflict, especially the element of price when compared to the elements of safety, reliability and security. The MCE went on to state

> 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 MCE went on to comment that the load shedding events might be an indicator that "…investment in generation and transmission in these regions may not be occurring in a timely manner" although it went on to comment that exogenous issues might be a factor.

As a result of their concerns the MCE noted policy decisions required consideration by it, such as:

- Whether the reliability standard is contemporary with public expectations
- Whether it needed to advise AEMC on the relative weighting of price and reliability objectives (presumably for AEMC future guidance),
- AEMC recommended changes to the Law and Rules to strengthen the processes for determining the reliability settings and MPC, and
- Having more information so that it can see the cost implications of differing reliability levels.

As part of the detailed direction to the AEMC the MCE has implied that an increase in MPC to $20,000/MWh might have prevented the load shedding in SA and Victoria, although it notes AEMC advice there are industry concerns "… about the economic costs of the inherent volatility of pricing in the NEM under the current market design" with the current levels of MPC. It also directed that the AEMC should advise on mechanisms for addressing the price/reliability trade off.

What is absent from the ToR prepared by the MCE is:

1. Any appreciation that MPC is only part of the issue as consumers do not "see" the outworking of MPC settings, but do see the impact of reliability of the entire supply chain, and that the reliability of the supply element is much higher than that of the transport systems of transmission and especially distribution.
2. The ToR do not recognize that the MPC is to rise to $12,5000/MWh (indexed to CPI) from 1 July 2010, so there is no appreciation as to whether this recent increase will have an impact on reliability.

3. Any recognition that increasing MPC is not a costless issue. The ROAM modeling carried out for the current Reliability Panel review, indicates that increasing MPC from $12,500/MWh to $16,000/MWh will cost consumers some $1 Bn/year for an identified need of some 55 MW added generation in the SA/Vic region.
4. An appreciation that increasing MPC may no longer have the desired effect of increasing reliability, and that perverse outcomes (such as causing less investment due to less certainty of a return due to extreme volatility) may result from further increases.
5. A requirement that the AEMC should consult with stakeholders at all stages of the AEMC review.

In relation to point 5, the MEU contacted the AEMC to seek to provide input into the review process and was advised that the AEMC did not intend to consult at all prior to sending its second interim report to the MCE. Despite this, the MEU wrote to the AEMC proffering its views. It is pleasing to note that a number of the issues raised by MEU in its unsolicited submission were included in the second interim report to the MCE.

It is also noteworthy that the AEMC has decided to consult with stakeholders prior to preparing the final report to MCE.

With regard to the issues, the MEU has consistently:

- Been an opponent of increasing MPC to levels where there is excessive volatility and strong incentives to exercise market power by generators.

- Maintained that to assess MPC and generation supply reliability in isolation of the transport systems is a mechanism to increase costs to consumers without introducing improved reliability <u>as seen by consumers</u>.

- Commented that there are more cost effective ways of ensuring supply reliability than simply assuming that increasing MPC is the only solution. Such options as assessing the actual extent of demand side responsiveness and implementing ways of encouraging more demand side involvement are obvious and low cost solutions. As it is, the AEMC's separate review of demand side participation has not been integrated into the Reliability Panel's or the AEMC's current reviews

It is unfortunate that the ToR do not specifically require AEMC to address these aspects holistically as part of its review and advice to MCE.

3. A Review of the two AEMC Interim Reports and the MEU letter

3.1 The First Interim Report

In the first interim report the AEMC posited two issues were fundamental to its report:

- Under an expectation of increased numbers of extreme weather, are the current market arrangements adequate?

- If not, what is needed to achieve the desired outcome?

The AEMC commented that its response to the MCE on current considerations being assessed and any short term changes needed would be the focus of the interim report and the final report would focus on the longer term.

The AEMC then identified three key messages from its review, viz:

1. The bulk of all supply disruptions measured on a time lost basis (>90%) are caused in the distribution networks

2. There are mechanisms in place to address loss of generation supply in an energy-only electricity market such as the NEM – the amount of unserved energy allowed (USE), the market price cap (MPC), the market operator's ability to intervene (reserve trader) and the financial incentives on transmission businesses to invest in the network to improve reliability.

3. The AEMC observes that all of these tools are reviewed regularly and tested to identify if they are current and appropriate. There have been some recent changes and enhancements introduced which are yet to be tested for long term efficacy.

The AEMC provides details of 12 changes to the market frameworks which will impact on the reliability of the NEM generation and transmission. None of these changes has been in operation for more than 6-7 months and many have yet to be implemented (such as the increase in MPC to $12,500/MWh to commence on 1 July 2010).

There are, as pointed out by the AEMC, many important changes which will impact on the NEM. Many of these are policy-induced changes, such as:

- The CPRS and the effects of carbon emissions reductions
- The eRET scheme and the required new investment to augment, replace high carbon emitting and aging power generating network infrastructure
- Renewable policy changes, including solar panel rebates, feed-in tariff schemes, etc.

Equally critical will be the need for massive financing requirements for new capital expenditure approved by the regulator as part of its reset reviews of network costs, as well as even more massive refinancing requirements for both networks and generation.

There are also other major considerations such as the impact on networks of the large new wind generation to meet the eRET scheme requirements which have the following effects:

- The wind generators are less geographically concentrated
- There are major difficulties in forecasting production levels, including voltage support and controllability of wind generators.

Demand impacts are also likely to change and are major considerations:

- Potentially large price increases from wholesale electricity and network investment costs will impact in the price elasticity of demand
- Should the MPC be further increased to $16,000/MWh from the current levels, the chilling effect on downstream investments, as well as the increased extent of risk and volatility in the NEM on generation investments?
- Energy efficiency developments, especially by the building and manufacturing industries
- Introduction of smart grids and smart meters
- Investments in micro generators and embedded generators

All of these have an impact on the NEM and must be assessed as part of a holistic approach to overall reliability of supply to consumers..

The MEU assessment of the first interim report

1. Although the AEMC points to a number of enhancements which are expected to improve the ability to maintain reliability in the NEM, few if any have been tested to deliver the benefits they are targeted to deliver. This raises a very important question. Before making any further changes to the NEM should the current changes be allowed to operate for sufficient time to assess whether they will deliver the expected benefits?

   The MEU considers that the AEMC must allow sufficient time for the new and planned changes to operate to see if they are sufficient for the need before recommending any new changes to be implemented.

2. The MEU considers the AEMC has failed in its first interim report, to raise the question as to whether in an environment where extreme weather events become more frequent, whether the current market design is the most appropriate for the NEM. All the AEMC has done is to provide a view

that the current structure can accommodate change, but not whether it is the most efficient way of achieving the end result.

For example, are financial incentives provided in the current NEM design sufficiently robust and cost effective to deliver the required outcomes, or should a more direct approach used in other electricity markets (eg capacity payments to generators and large electricity consumers) be implemented to ensure the reliability standard is met?

3. The MEU considers the AEMC failed to address the materiality of the issue raised by the MCE.

   When the amount of unserved energy is calculated over a number of years and over all the regions in the NEM, the amount of unserved energy at the time which initiated this review, was well within the expected limits of unserved energy. Indeed, the AEMC failed to identify that the shortages of supply in SAVic region for January 2009 were effectively within the normal operating expectations of a NEM wide the reliability setting of USE = 0.002% over a number of years.

4. The AEMC also failed to note that on the days when involuntary load shedding was being implemented there were offers from commercial enterprises (eg Energy Response) which offered voluntary load shedding as an alternative to the involuntary load shedding NEMMCo enacted.

   Due to the design of the NEM, NEMMCo was unable to avail itself of this offer of voluntary load shedding, causing hardship for those consumers who lost power. It is quite probable that the cost of load shedding offered by these commercial enterprises would have been at a lower cost than the costs suffered by the consumers who lost power.

5. The MEU is aware there a number of large electricity using businesses in the SAVic region which are operating either in the spot market (and load shed when the spot price is high) or have formal agreements to load shed on demand. The modeling done to date by AEMO and its consultants exclude these demand side responses and are totally aimed at assessing a supply side response to forecast shortages.

   The MEU considers that the first interim report failed to address that already a number of large electricity consumers are already providing a demand side response, especially in the SAVic region.

6. Most of the financial incentives to maintain or increase reliability are focused on new investments such as generation. Some is focused on incentivizing augmented transmission, but little (if any) is specifically targeted at increasing interconnector capacity. For example, the AEMC points out that Basslink was shut down due to thermal considerations when

load shedding occurred. Upgrading the thermal ability of Basslink may be a lower cost option than increasing MPC.

The MEU considers that the AEMC first interim report could have identified approaches that specifically incentivize the augmenting of interconnectors rather than just focusing on generation options.

7. The MEU members (particularly in SA) have seen that the currently high value of MPC of $10,000/MWh has incentivized dominant generators to use their market power to set prices when regional demand exceeds a certain level[6].

   The AEMC has not addressed the implications of generator market power in the NEM, and the potential that exercise of market power (which increases spot prices) can have the perverse effects of reducing incentives for generation investment.

3.2 MEU letter dated 6 October 2009

The MEU was concerned with the omissions in the First Interim Report that when the MCE changed the terms of reference for the AEMC review, the MEU decided that it needed to provide the stakeholder input that was absent when the AEMC carried out the first review.

In its letter to the AEMC the MEU highlighted the following aspects that should be addressed in the second interim report, viz:

- The AEMC should seek stakeholder input into such an important review.
- The impact (including cost) of the current planned rise of MPC to $12,500 needs to be assessed.
- The AEMC should seek more effective solutions than the "blunt instrument" of MPC.
- There are more cost effective solutions available to address the impacts of infrequent extreme weather events.
- The value for USE and the setting of MPC to achieve that value need to be assessed in terms of the overall delivered reliability, including distribution. This means that a small increase in USE (and lower MPC and lower resultant cost to consumers) would not be "seen" by consumers due to the overwhelming impact of distribution reliability.

[6] The AER has advised that it considers Torrens Island Power Station in SA owned by AGL, has the ability to set the spot price when regional demand exceeds ~2500 MW

- The cost impact of increasing MPC and generation supply reliability needs to be an integral part of any assessment rather than just being commented about "in passing". The review should recognize that price has to have equal weighting along with reliability and security.

- Addressing extreme weather events (which by definition are occasional) by demand side solutions is a more cost effective approach than implementing supply side actions. Voluntary load shedding (even where a cost might be involved) is a far preferable outcome to involuntary load shedding.

The MEU considers that its observations made at that time are still relevant.

3.3 The Second Interim Report

In the second interim report the AEMC posited five issues were fundamental to its report:

- NEM reliability forecasting methodologies and outcomes;

- Modelling projections of the price-reliability trade-offs of a phased increase in the NEM market price cap to a number of specified levels;

- The interpretation of the NEM reliability standard in the past and its appropriate interpretation and specification into the future;

- The feasibility of mechanisms for recognising differences in jurisdictional expectations regarding the price-reliability trade-off and delivery outcomes consistent with those expectations

- The appropriate roles of the MCE, the AEMC, AEMO and the Reliability Panel in policy decision-making on reliability standards and settings;

The AEMC then identified six key messages from its review, viz:

1. The reliability standard (USE) and the market settings must be considered holistically and not examined in isolation

2. MPC is seen as the key setting in terms of assessing reliability,

3. USE sets the tradeoff between cost and reliability. To date the setting of USE has been assumed to be a longitudinal moving average, although it has also been used as an annual target. The AEMC proposes that the USE be assessed annually with deviations from the Standard being identified and analyzed annually

4. The AEMC advised in its report to the MCE, that it could not provide modeling projections of the price-reliability tradeoff. However, this matter has been addressed subsequent to the AEMC report by the Reliability Panel in its review.

5. The AEMC comments that it has addressed the potential of each region in the NEM having different values for USE and MPC, and considers that it is a feasible approach. It then warns that such a change, while providing some efficiency at the regional level, may result in inefficiencies from a NEM wide perspective. Until modeling is carried out the AEMC advises that it cannot comment on these NEM wide inefficiencies.

6. The AEMC recommends to the MCE that the AEMC be given the role of decision maker in relation to reliability parameters with MCE providing policy principles to allow it to develop and implement the parameters

The MEU assessment of the second interim report

- The absence of any quantitative modeling and assessments makes it very difficult to carry out any meaningful assessment of the AEMC views on the cost versus reliability trade off. However, the later information released by the Reliability Panel on its assessment as to whether MPC should be increased, has been used by the MEU to provide quantitative analysis and comment.

- It is acknowledged that the AEMC second interim report did not have accurate costing for inclusion before publication, but it does have indicative costs.

  Table 2 of the AEMC report shows there was a maximum shortfall of generation in the SAVic region of 420 MW on 29 and 30 January, some of which was caused by a lack of capacity on Basslink due to thermal ratings.

  Analysis by ROAM for the Reliability Panel shows that increasing the MPC from $12,500 to $16,000 will cost about $2 Bn over the two years 2012/13 and 2013/14, an average of $1 Bn/year. The cost of peaking generation needed to address an assessed shortfall is about $100k/MW/a. Thus to provide the “missing” 420 MW of generation would cost about $42m/year.

  This shows that an increase in MPC from $12.5k to $16k (costing $1 Bn per year) to incentivize new generation is very cost inefficient, and has the disadvantage of uncertainty as to whether the added generation would in fact be provided[7].

[7] This is a view put by a number of stakeholders (eg Origin Energy and MEU) to the 2010 Reliability Panel review of reliability settings and standards, warning against any proposal to increase MPC, especially as the impact of the next increase has yet to be seen

- In section 2.4 of the second interim report, the AEMC makes an extremely telling case about the actual achievement of reliability as measured by USE. Table 2.1 highlights that in the 45 regional periods in the last 10 years, there have been only 5 incidences where there was unserved energy, and only 2 where these had exceeded the 0.002% target – these two incidents were in SA and Victoria in January 2009. The AEMC points out that when USE is averaged over 10 years, the reliability of the NEM is very high, and well below benchmark.

  Even if USE were to be averaged over 2 years, there would be no incidents where the reliability standard would have been breached. On this basis alone, there would appear to be no issue.

  Table 2.2 further refines the causes of loss of supply in 2008/09, highlighting that only one instance of loss of supply was caused by insufficient generation and/or inter-regional transmission capacity. The loss of Basslink due to exceeding thermal ratings was a significant contributor to the problem. Increasing MPC will have minimal if any impact to encourage investment on Basslink, but will have a significant cost impact to consumers. .

  This raises the very question as to whether there is a problem at all.

  If NEMMCo could have used demand side options that were available at the time (but was prevented by the NER) there would have been no load shedding caused by insufficient generation capacity in January 2009.

- The AEMC comments that it will only assess reliability in terms of installed generation and inter-regional transmission. It goes on to state that it will address the issue of reliability on a holistic basis from an end user viewpoint in the final report.

  The MEU sees that examining the MPC in isolation runs counter to the AEMC recognition that all aspects of reliability (standard and settings) need to be assessed on a holistic basis as they are all inter-related.

- The AEMC implies that the reliability standard should be USE, and the MEU would agree with this decision as USE looks at reliability from a consumer viewpoint. Where the MEU has concerns regarding the use of USE, is that the current setting of 0.002% has been used by the Reliability Panel, initially based on a historical basis and, more recently, in isolation of other reliability elements in the transport of electricity.

  At no time has the Reliability Panel ever looked at the level of 0.002% for USE in terms of a cost/reliability tradeoff, especially in terms of what a consumer will see in terms of delivered reliability.

Further, the Reliability Standard has never been assessed as part of an overall reliability of supply as seen by consumers at the consumer's end of the supply chain; in all assessments the Reliability Standard has always been assessed purely in its own right and not as part of a system.

- There is a fundamental assumption made by the AEMC and others that changes in MPC will directly relate to changes in USE, and all modeling done is based on this assumption. There is no doubt that at low values of MPC this will negatively impact new generation investment, but once MPC exceeds a certain value, further increases in MPC will not impact the level of USE.

  This aspect is discussed in section 1.5 above, and in more detail in appendix 1.

  In section 2.2.1 of the second interim report, the AEMC perpetuates the assumption that ever increasing MPC is needed to incentivize new generation. For example, the AEMC makes the observation on page 9,

  > "... a regulated maximum price is designed to address the risk that too much capacity would be built if the market were uncapped (driven by unacceptably high peak prices)"

  This is indeed a bold assumption, driven by theoretical argument but totally disproven by empirical evidence. The AEMC goes on to speculate (because there is no evidence to support it) on page 10

  > "The challenge of maintaining the reliable performance of the NEM then becomes an empirical question as to what level of price cap is likely to deliver a level of generation capacity consistent with meeting the reliability standard."

  The clear implication of such a statement is there is a clear and even mathematical relationship between USE and MPC. Empirically, there is severe doubt as to such a relationship existing.

  As Origin Energy points out to the Reliability Panel in its submission dated 24 February 2010, new generation investment is driven by a bankable counterparty contracting for capacity. Under an MPC of $10,000/MWh Origin points out there has been sufficient new generation built to ensure the reliability standard has been met over a significant period both across the NEM and in each region.

- There is an implicit assumption that CPT needs to increase in grid step with MPC. Currently the relationship is CPT = 15*MPC. There is no evidentially based reason why this relationship should be perpetuated, or why the multiplier of 15 has been selected.

The AEMC needs to develop some rationale for tying CPT and MPC together, and if it does, what should be the basis of such a tie.

- The AEMC quite rightly points out that the USE of 0.002% is an annual target that should not be exceeded in the long term (ie 10 years) as calculated on a moving annual average basis. The MEU agrees with this approach, but, as does the AEMC, recognizes that a 10 year MAV might be too slow to enable appropriate reactions to reflect potential shortages, especially when the time needed to install new generation is included. Equally, the concept of ensuring a USE level of 0.002% being an average target over the long term provides a sensible recognition that there will be annual variations, ands short term fluctuations should not be the driver of investment.

  These two needs (a long term average performance, but a shorter term signal to initiate action) are to a high degree in conflict, so an approach is needed to accommodate both. The MEU considers that shorter terms for assessing an MAV would require higher levels of USE being set to ensure short term fluctuations are not used to incentivize inefficient investment.

- The current level of reliability is 0.002% measured as a MAV over 10 years. The AEMC on page 37, states that there was no call "…including those of consumer representative groups …" to the Reliability Panel CRR for the level to be changed. This is true, but it should be noted that in that review, the RP did not provide any indication of the cost to consumers as what a change in USE might incur, nor what an increase in MPC might cause. Thus the decision to use the historical level of 0.002% for USE was made in isolation of any price/reliability assessment.

  However, on the same page 37 the AEMC disingenuously comments that in the current RP review,

  > "To date only one submission to that review proposed a change to the level of the reliability standard (a relaxation of the standard)."

  This is true, but the submission was from the only consumer representative group actively involved in the review to date. The only other consumer submission could not address the issues in depth and concentrated on stating an opposition to an increase in MPC.

  What the AEMC report does not comment about that submission suggesting relaxation, is that the suggestion was made to reflect the price/reliability equation – a necessary observation made because the RP consultant had advised a significant cost of $1 Bn pa would result from maintaining the current USE level. The suggestion was that the level of USE should reflect the AEMC observation that reliability in the distribution networks is the major cause of loss of supply to

consumers, and that a relaxation of USE might not be seen by consumers.

- The AEMC comments that it is possible to have different levels of the Reliability Standard and Settings in different regions of the NEM and that to implement such is feasible.

  However, as the AEMC rightly points out, an introduction of different values in different regions has the potential to create significant economic inefficiencies which could create unintended consequences such as reduced operational efficiencies, differing regional drivers for investment and increased complexity. At a qualitative level, the MEU does not consider that the potential benefits of such an approach outweigh the disadvantages, but the MEU does agree that much more detailed modeling work would be needed to prove this qualitative assessment.

  One of the issues raised by the AEMC is an implicit assumption that all consumers in a region value reliability at the same amount. In fact, reliability of supply is valued by the same consumer dependent on the time of any loss of supply, the duration of any loss and the frequency such losses occur. When such a variety of outcomes for the same consumer are evident, it is virtually impossible to identify that one value for reliability of supply can be developed. As a result, any assessment must be an average and to set different values for each region is merely an apparent construct with more of a relationship to form than reality.

- The MEU supports the concept that MCE should be the policy making entity and providing guidance to other operating entities in the NEM such as AEMC making rules, AER regulating and AEMO carrying out the daily operational aspects.

  However, each of these entities must implement sound procedures for ensuring they obtain rapid and considered input from stakeholders who are affected. Thus in the case of reliability settings, the AEMC has established a Reliability Panel which comprises representatives of stakeholders.

  In relation to the Reliability Standard, the MCE provides guidance as to the community expectations for reliability. This is consistent with the current practice of regional NEM ministers establishing distribution network reliability requirements in each region. However, this approach has one major drawback – NEM ministers decide on the distribution standard in isolation of the cost of its achievement as the AER is tasked with allocating each distribution network operator with the funds to achieve the standard. This means that there is no single entity which can assess the cost and benefit of setting Reliability Standards. In the case of the Reliability Panel, it has commented that it is not responsible to assess the cost implications of its recommendations, so long as tits recommendations ensure the Reliability Standard is met.

With this in mind, the MEU considers that the decision on setting the Reliability Standard (whether for electricity supply, transmission reliability or distribution reliability) must rest with the party that also assesses the cost of implementing the standard. To separate these two elements, is inefficient and can lead to excessive but unnecessary costs for consumers. To have any other process is patently unacceptable.

4. A Response to the Consultation Paper

Questions raised by the AEMC consultation Paper

The AEMC has raised 10 questions. These are:

1. Do you have any observations in relation to the interaction between the investment regimes (for reliability) between each stage of the electricity supply chain.
2. Do you consider setting the MPC as a ten year trajectory as more appropriate to provide investment certainty in the future?
3. Do you consider the current two year reviews of the MPC as appropriate or would less frequent reviews provide greater investment certainty?
4. What do you consider are the wider non-reliability impacts to the NEM of raising the MPC as a mechanism to achieve reliability, in a future of more frequent extreme weather events?
5. Do you consider the current reliability standard as appropriate in the context of more frequent extreme weather events in the future?
6. Do you have any specific issues which you consider should be reviewed in a review of technical and performance standards in the NEM
7. Do you consider that it is appropriate for the MCE to provide a statement of policy principles regarding the community's expectations and valuation of reliability? If so, what should be the form and level of that guidance?
8. Do you consider it more appropriate for the AEMC to make NEM reliability parameter decisions given the energy market framework governance arrangements established through the AEMA and NEL?
9. Do you consider that the current tools regarding demand and capacity forecasting/information as appropriate and useful in informing investment and outage timing decisions. Please explain your view including reasoning for any suggested improvements.
10. Do you consider that there are any other measures that could be implemented to improve reliability and security in the NEM with respect to more frequent extreme weather events in the future?

The MEU responses to each are detailed in each of the following sections:

4.1 Do you have any observations in relation to the interaction between the investment regimes (for reliability) between each stage of the electricity supply chain?

There are two basic issues to be addressed in response to this question – the first is the differential in the levels of reliability set for each element of the supply chain, and the second relates to the way incentives are provided in the NEM.

4.1.1 Levels of reliability in the supply chain elements

As noted above, it is quite clear that the reliability for supply of power, **as measured by consumers**, is seen at the point of connection between the consumer and the supply system. In most cases this is after power has been transported in the distribution network. At the same time, consumers pay for the all the costs incurred of generating and transporting electricity. From a consumer viewpoint, this measures the cost/reliability equation recognizing all of the costs incurred, against the reliability of all elements.

Equally, consumers do not differentiate their power supply in terms of reliability or security, but that the power is either available or not available. Therefore, although the AEMC makes the point that reliability and security should be assessed differently, this is just a construct and extreme care needs to apply to how these "different" aspects are addressed.

It is virtually impossible for a consumer to assess the benefit of very high reliability/security in one element of the supply chain, when the reliability/security in another section is very low. However, the consumer pays for the cost of getting the high reliability/security in that element.

This is clearly demonstrated by assessing the actual levels of reliability in different elements. From a consumer viewpoint it is impossible to recognize the benefit of high reliability in the generation element of the supply chain (where currently the average expected time off supply is ~10 minutes each year with USE = 0.002%) when the average time off supply in the distribution element is measured in amounts of 100s of minutes off supply which is 10 times or more than generation supply reliability. Already the generation reliability standard is at a very high level, and further improvements are likely to be very expensive. Because there is already very high generation supply reliability, it is probable that the Reliability Standard could be eased, releasing significant financial benefits to consumers, at very little impact to the reliability of supply at the consumer's end of the distribution network.

This means that increasing or decreasing reliability at the generation end of the supply chain will result in minimal benefits to reliability at the end of the supply chain.

4.1.2 Investment incentives

Investment to improve reliability in the transmission and distribution networks is determined by regulatory fiat. In theory, the regulator has the ability to vary the reliability of transport by its decisions on opex and capex allowances for each NSP. In practice, it is the NSP that effectively determines its needs and challenges the AER to reduce the allowances stated as needed to meet the reliability in the networks. Thus investment to meet transport reliability elements can only be incentivized within the pricing rules for networks. These incentives are implicit in chapters 6 and 6A of the NER.

In most cases the reliability standards for distribution networks are set by each regional government, in the absence of the cost considerations to implement these levels, but the regulator sets the reliability standards for transmission as part of the regulatory bargain.

This means that both the costs and incentives to invest in the transport elements of the electricity supply arrangements are embedded in the Rules and regional government decisions. The fact is that since the recent revision of chapters 6 and 6A of the Rules, the regulator has approved very large increases in revenue to the NSPs in order to meet reliability and security requirements. The cost to consumers has been very high for these incentives to be implemented, although there is a high degree of certainty that the investment will occur as a result of these changes.

In the case of generation supply, the notional incentive is the market price cap (MPC) which is to increase by 25% from 1 July 2010, as an incentive to invest in generation. There is discussion that in two years time the MPC should be increased by a further 30% in order to increase the incentives to invest in new generation. This would result in a total 60% increase in the incentive to invest in generation supply in a two year period, with potential further increases in another 2 years.

These generation supply incentives will increase costs of power supply to consumers, yet there is no certainty that the incentives will achieve the desired outcome, as the incentive is very indirect[8].

4.1.3 Interaction between generation and transmission

It is accepted that the NEM is in fact a series of regions with interconnections – the NEM in this regard cannot be regarded as homogeneous. Constraints in interconnection capacity regularly result in uncoupling of regional prices, allowing generation in an isolated region significantly reduced competition and ultimately the ability to exercise market power. This means that regional generation supply reliability is inextricably linked to interconnection capacity and availability.

The incentives to invest in intra-regional transmission are quite strong, as noted above. However, the incentive to invest in inter-regional transmission is much lower, yet it is inter-regional transmission that provides the ability for maximizing competition between generators.

[8] The incentive to invest in generation in a capacity market is very direct, as is the incentive to invest in networks. In an energy only market the only incentive is the market price cap, but once a minimum level of MPC is reached below which there is a clear dis-incentive to invest. The assumption made is that increasing MPC will further increase the incentive yet empirical data suggests that this might not apply (eg Origin Energy advice to the Reliability Panel February 2010.

There have been attempts to link spot market prices between regions to be considered as a part of the assessment to demonstrate an increase in inter-regional transmission meets the investment test. These attempts have been rejected by the AEMC and ACCC, as inappropriate when assessed under a public benefit test – the argument being that there is little net benefit from reducing inter-regional differentials in prices, as this is "just a transfer of wealth from consumers to generators" and therefore there is no net benefit.

However, the purpose of increasing MPC is to encourage more generation investment in one region, even though there might be available capacity in an adjacent region but which is constrained from being available due to congestion on the interconnector. The test for augmenting the interconnector does not look at reliability of supply in the two adjoining regions or the costs that will be caused as a result of an MPC increase.

For example, in SA it has been identified that there is a need for an additional 50-70 MW to provide reliability of supply in SA[9]. The potential cost to the market of increasing MPC from $12.5k to $16k has been estimated by ROAM as some $1 Bn pa. There is available capacity in Victoria to provide the needed additional generation in SA but congestion on the interconnectors prevents its use.

What has not been considered in the MPC assessment is that it may be more economically efficient to augment the interconnectors rather than build new generation. This would occur if the test for augmenting interconnection included the price differential between adjacent regions.

This clearly highlights that the current practice of examining reliability purely in terms of regional generation and existing interconnection, is insufficient. As part of any assessment of reliability there is a need to assess the costs of alternatives to new generation, including the availability of interconnection and the cost benefit of augmentation of interconnection being balanced against the costs of increasing MPC – a purely generation incentive.

4.1.4 Conclusions

The MEU considers that the incentives for investment for reliability in the transmission and distribution elements are reasonably well defined and developed, although separation of setting reliability standards for distribution (by the regional government) from identifying the cost (by the AER) is not good practice. The incentive regime for network investment is extremely direct and the outcomes are relatively certain.

The process to incentivize investment for generation supply by increasing the MPC is extremely indirect and does not provide any certainty that

[9] ESoO 2009

investment will occur. In comparison, incentives in other forms of electricity markets (eg capacity markets) provide much greater certainty. The fact that those businesses actually investing in new generation advise that they are currently investing because the MPC has exceeded a minimum level (below which they would not invest) and their decisions to invest now relate to the firmness of the contracts they can secure, rather than being influenced by increases in the MPC. Additionally, they advise, empirical evidence shows that increasing the MPC increases risk and volatility in the market, resulting in perverse outcomes.

On this market evidence, the MEU considers that the current assumption that generation supply reliability will be driven by adjusting the MPC is a flawed approach, and alternatives have to be developed.

The MEU also considers that an integrated approach is needed to assess reliability as seen by the consumer, but this view musty be assessed in conjunction with the cost associated.

For example, it would be economically inefficient to:

- Increase reliability in one supply chain element where the impact would not be noticeable by consumers. In such a case the cost of increasing reliability would be borne by consumers but with little benefit.

- Increase MPC and cause consumers to pay more for new generation, when an augmentation of an interconnector could be provided at a lower cost.

Because of this the MEU considers that a holistic approach is required to reliability (based on what the consumer sees) and the cost to achieve that level of reliability must be an integral aspect as part of the overall assessment of the change.

4.2 Do you consider setting the MPC as a ten year trajectory as more appropriate to provide investment certainty in the future?

4.2.1 The relationship between USE and MPC

There is an assumption that there is a direct and mathematical relationship between MPC and reliability as measured by USE. The MEU comments above (and in appendix 1) that this assumption is not accurate. Empirical evidence from the NEM tends to support the MEU contention and highlights that once MPC has exceeded a certain point, further increases in reliability do not result from increases in MPC, as other aspects have a greater impact.

The AEMC consultant paper posits that the MPC needs to be set based on the assumption that the MPC reflects the number of hours each year the

"marginal generator" will run. On this basis the Reliability Panel has consistently examined MPC in terms of reliability aspects only, and assumes that the marginal generator will only receive revenue from operating to provide for reliability issues.

The consultation paper also posits that stakeholders need to differentiate between reliability and security aspects of the market, yet from a practical viewpoint, the marginal generator will always operate when there is a need, regardless of the cause. Thus the marginal generator will receive funding from a number of sources (reliability and security driven) so that to assume the marginal generator only receives a return from reliability caused issues, is patently so conservative as to be unrealistic.

At the current level of MPC of $10k and current generator costing, the marginal generator would have to operate for 9-10 hours each year. At the planned level for MPC of $12.k, the marginal generator needs to operate for 7-8 hours per year.

To this, needs to be imposed on the assumption for the amount of extreme weather likely to occur each year. As the AEMC clearly identifies in its second interim report, the number of hours of extreme weather that have occurred in the past 10 years of the NEM where there has been unserved energy, is extremely low, and well below the number of hours the marginal generator would need to operate.

Based on the empirical evidence from the market, there is little need to require increased generation investment beyond that which is occurring now, in order to accommodate expected extreme weather events. Thus there is little need, based on the market evidence, to provide increased incentives to invest in new generation to accommodate extreme weather occurrences.

4.2.2 USE is averaged on a 10 year basis

Already USE is assessed over a 10 year rolling average, with a target of the average being set for each year. In its second interim report the AEMC proposes that USE be assessed on a shorter period rolling average, so that short term variations are better accommodated

The AEMC posits that the amount of unserved energy (USE) and MPC are linked, although there is evidence that such a linkage is related primarily to low levels of MPC.

If USE is averaged over a 10 year period, then this provides some support for a 10 year level of MPC, but this support is relatively tenuous.

4.2.3 Why set MPC for 10 years?

The main benefit for setting a value for MPC for a 10 year period is certainty for all stakeholders, although the AEMC views that setting MPC for a longer period would provide greater certainty for generation investment.

The current level of MPB of $10k was introduced in 2002, and as the nest change is to increase it to $12.5k in 2010, the current level has applied for an eight year period. Prior this, for the seven years of NEM1 and NEM which commenced in 1995, the value of MPC at $5k applied. During these two [periods there was adequate generation investment to meet the needs of the market. Therefore the market itself has provided a clear indication that longer periods of stability are preferable.

It is only the recent review by the Reliability Panel that indicates the MPC level of $12.5k should be increased after only two years of the market using the new value. The MEU considers that two years is clearly inadequate to assess whether the new setting will achieve the aim for achieving the reliability standard.

At the same time, the market has seen significant detriment from the higher levels of MPC, showing increases in risk, volatility, prudential requirements, aggregation and exercises of market power, decreases in competition, and as a result of these, increased prices for power. There is a real risk that increases in MPC will further exacerbate the negative aspects from MPC increases and not increase generation investment.

There is a clear indication from the historic and forecast movements in MPC that MPC will only increase and never decrease. Of concern is that in setting an MPC for a 10 year period is that especially for the early years of the period, the value will be set at a higher value than deemed needed, to accommodate the level considered to be needed at the end of the period (ie that MPC will be set at the level considered to be needed for year 10, and therefore be unnecessarily high for earlier years.

The reason the AEMC proposes a 10 year period, is that it would provide a known level of incentive for generation investment for a longer period and therefore greater certainty. However as has been identified, MPC will always increase, never decrease, so already investors in generation are aware that the current level of MPC will apply in the short term and is most likely to increase over time. This therefore tends to take the need for a longer known period of the level of MPC out of contention, but imposes the excessive risks already seen from high levels of MPC.

The MEU and other stakeholders who are investors in new generation have already indicated that the current level of MPC (at $10k) has provided sufficient generation to more than meet the targeted level of USE. There is already in place a 25% increase of MPC to apply for at least 2 years. On the

basis that MPC of $10k has achieved the target level of investment, the new level of $12.5k should be in place for a time sufficient to identify if it will achieve the aims resulting from the setting. As generation takes time to decide to invest and then to implement, the new setting should be in place for at least three years (the minimum time needed to commit to and build a new peaking generator) and probably for five years which would be sufficient to commit and build a new base/mid merit generator.

4.2.3 Conclusion

The MEU is not convinced that at the high levels for MPC used since 2002, that there is any empirical evidence that the current level (and higher levels) of MPC will increase generation investment. In fact the empirical evidence is to the contrary. What the empirical evidence shows is that there are a number of perverse outcomes from having high levels of MPC.

The MEU therefore considers that MPC should be set for a period of 5 years, but with a clear proviso that any review to change the setting, should recognize the market evidence of what has occurred under the setting (such as new generation, increased demand side responsiveness and market outcomes of competition and prudential requirements) that has occurred over time.

4.3 Do you consider the current two year reviews of the MPC as appropriate or would less frequent reviews provide greater investment certainty?

As noted above, the MEU considers the MPC should apply for a period of 5 years which provides sufficient time to identify what the setting has achieved.

However, regular reviews are required to assess the outcomes of what the new setting has encouraged. Included in such reviews, would be whether the reliability standard is being met and what market trends are occurring. The outcomes from such reviews could provide an indication as to the future movements of MPC, which would provide guidance to all stakeholders.

In addition to assessing the outcomes of any setting of MPC, there should be an assessment of other options which should be considered to achieve the goals of reliability of the supply chain as a whole. In particular these goals should be properly assessed cost and benefit assessments of possible changes, including market structure and rule changes needed to achieve reliability standards as seen by consumers.

Such reviews should also include:

- Assessments of new options presented to the market to assist in achieving the reliability standard, and how such options can be introduced into the market, especially those which could assist in addressing the impacts of extreme weather, which by definition, will occur occasionally.

- Measuring the increase in demand side involvement resulting from any change in MPC

4.4 What do you consider are the wider non-reliability impacts to the NEM of raising the MPC as a mechanism to achieve reliability, in a future of more frequent extreme weather events?

The AEMC implies by its question, that it considers an increase in MPC is needed to address the impact of increasing numbers of extreme weather events. It seems to have taken this cue from the MCE ToR which asks the AEMC to examine the price/reliability trade off for an MPC set at $20k.

As the AEMC points out clearly in its second interim report in Table 2.1, the 10 year average performance of the NEM in terms of USE shows that the actual USE has been 0.0002%, which is a tenth of the long term average expectation. On this basis alone, there could be 10 times the past 10 year average outage time and still meet the current target value for the standard. This clearly provides an indication that for some time onwards, there is an historic basis to assume there is no need to reflect extreme weather in the reliability standard.

Further, as discussed above, a slight easing of the reliability standard could be readily accommodated as this impact as seen by consumers would be negligible Thus, if anything, the reliability standard could be allowed to drift away from the current level to accommodate extreme weather impacts.

4.4.1 Demand side responses due to increases in MPC

There are already demand side responses being introduced into the NEM (by either agreed load reductions on demand of the retailer or load shedding due to high spot prices) which are providing an impact on demand levels, but which are being ignored by the AEMC and others. Additionally there are commercially available products which provide for voluntary load shedding when spot prices are high, or involuntary load shedding is likely. Neither of these demand side response approaches have been included in reviews or allowed to be used in the NEM. These voluntary load shedding approaches are not included in the calculation of the reliability standard, yet are real options.

The increase in consumers moving to spot pricing, and load shedding as a risk mitigation measure is becoming increasingly implemented by large electricity users. Whilst these actions are seen as appropriate actions to make the electricity market it's most efficient, the electricity market is only a part of the national economy. Every time a large business sheds load, it becomes less efficient and cost of its products increase.

The outcome of increasing MPC to encourage a more efficient electricity market is to move the inefficiency to another sector of the national economy.

Because electricity is an essential element of every aspect of the national economy, what might be considered to be a benefit to the electricity market is in fact a detriment to the national economy.

4.4.2 Other impacts of increasing MPC

The first impact of increasing MPC is that volatility in the NEM increases in what is already one of the most volatile markets in the world. Increasing volatility has a number of side effects, viz:

- **Increasing MPC increases costs**. There is no doubt that an increase in MPC will increase the revenue in the NEM. Modeling by ROAM for the Reliability Panel indicates that the revenue in the NEM will increase by some $1 Bn pa to increase MPC from $12.5k to $16k. This is a cost that has to be carried by consumers as it is passed through by retailers. Presentations for the Reliability Panel forum in February 2010, clearly showed that these costs were unrelated to the amount of new generation needed to maintain reliability. For example the $1 Bn pa cost resulting from the increase in MPC from $12.5k to $16k, would fund an increase in generation assets of some 10,000 MW of new generation[10]. Currently the actual peak demand in the NEM has been 35 GW and the forecast P10 estimate for demand is 44 GW in 2013/14. The NEM already has installed some 46 GW of dispatchable generation to which can be added a large amount of interruptible generation exceeding 2 GW. This means that overall the installed dispatchable capacity of the NEM currently exceeds the P10 2014 forecast. At the same time the increase in cost of the MPC increase would provide an increase in generation of some 10 GW or 25% more generation. This seems to indicate that the costs to the market for the increases in MPC far exceed the needs of new generation.

  Coupled to this there is no certainty that the increased cost will actually result in more generation (this point is made in point 4.1 above).

- **Increasing risk to all market participants**. Increasing risk increases the cost of doing business in the market, whether this is for generation or for retailing.

- **Increasing risk reduces the competition**. Competition is reduced as those participants, unable or unwilling to accept the increased risk, vacate the market. Already this has been observed in SA where the market risks are the highest. More than half the retailers licenced in SA are no longer active.

[10] This is based on the cost of $100,000/MW used by ROAM in its calculations.

- **Increasing risks causes more failures and RoLR events**. As risks and prudential requirements increase, the potential for market participant failures increases (eg Jackgreen exit). These failures reduce competition and increase the risk to the larger retailers who are required to provide RoLR services

- **Increasing risk results in costs to participants**. Increasing the risk in the NEM has resulted in significant increases in costs to participants, and these are being passed onto consumers. Managing the risk inherent in a risky market is not inexpensive, and already retailers have to pay higher costs for the risk management tools needed.

- **Increasing risk increases retailer capital requirements**. The increased risk leads to a need for greater capital requirements by retailers to accept and manage the increase risk. This need for more capital reduces the ability for new entrant retailers, reducing competition.

- **Increased MPC provides greater rewards for exercising market power**. Already generators with market power have the ability to exercise this at critical times, by economic withdrawal of capacity. Increasing MPC will make this practice more profitable and encourage the practice of “strategic bidding”. Strategic bidding encourages generators with market power to contract less capacity.

- **Increasing volatility reduces the generation contracted.** As the risk of high prices occurs when there is a shortfall in generation, generators tend to retain some capacity in reserve, for dispatch when another generation unit fails. As MPC has increased and the potential risks increase, consumers and retailers have noted there is less generation available to be contracted forcing consumers to either operate in the spot market or pay higher prices.

- **Prudential requirements increase**. As the cost of operating in the NEM increase and as the risk of high prices increase, the prudential requirements increase, with associated costs. Increased prudential costs increase costs consumers incur, and reduce competition as smaller retailers are unable to carry the increased costs to match the prudential requirements and the increased capital exposure the prudential requirements carry.

- **Small generation proposals face too much risk**. As the market becomes more risky, financiers see there is greater potential for the new entrant generator to be non-viable. Therefore to manage this risk the cost of financing increases or alternatively the new entrant cannot access finance.

There is no doubt that increasing MPC will increase the volatility in the NEM, as this was observed with the increase of MPC to $10k in 2002. An increase in volatility, caused by increasing MPC, results in many detriments to consumers that can be avoided.

4.5 Do you consider the current reliability standard as appropriate in the context of more frequent extreme weather events in the future?

The current reliability standard of USE = 0.002% is probably more aggressive than might be needed when considering the multiplier effect of USE*transmission reliability*distribution reliability. USE could be relaxed from the current level with little detriment to consumers, but in doing so would generate some cost savings for the benefit of consumers.

Bearing this in mind, even it extreme weather events do cause an increased loss of generation supply from the current 10 year average of USE = 0.0002% (ie $1/10^{th}$ of the long term average), then there would be little impact on consumers. The fact that a USE level of $1/10^{th}$ the long term average was achieved with an MPC of $10k (for most of the time) supports a view that MPC does not need to be increased.

AS USE is a measure of the loss of generation supply, it does not matter what the cause is of the loss. This means that the Reliability Standard is independent of extreme weather events – all it is, is a measure of what was not supplied, regardless whether the cause was from extreme weather or not.

The MEU considers that the measure can be the same despite concerns of more extreme weather events. The only consideration is whether the standard could be relaxed to accommodate more extreme weather events than have occurred to date.

4.6 Do you have any specific issues which you consider should be reviewed in a review of technical and performance standards in the NEM

It is accepted that more extreme weather events are more likely to impact the transport of electricity rather than the generation element. Generation will be impacted by lower outputs than the generator rating due to high ambient temperatures, and as occurred in 2007, drought can impact the cooling requirements for water cooled generators. In comparison to the impact on transport impacts, these generation impacts are considered to have a lesser impact.

However, as the impact on generation of extreme weather occurrences is likely to be relatively short lived (in the case of high ambient temperatures the peak demands and the high ambient temperatures last for only a few hours each day) there are likely to be more cost effective solutions to any shortage of generation supply. Such alternatives would include voluntary load shedding from the demand

side, which could be provided for the still relatively few hours each year, at a much lower cost than providing generation for such limited times.

This means that the market rules would have to be modified so that AEMO can contract voluntary load shedding in a longer term arrangement than that needed for next summer.

In the case of drought impacts, such loss of generation supply is specifically applicable to water cooled generation and hydro schemes. It is expected that as contracting of generation is the main driver for generation investment[11] then it would be expected that generation providers would either develop less water demanding generation, or install air cooled generation so that they will be able to contract for supplies of generation needed to underwrite their investments.

Overall, the MEU considers that the pricing reviews for transmission and distribution will provide adequately for transport investment. In the case of generation supply, if USE could be relaxed a little and AEMO provided with the ability to contract for a number of years for demand side voluntary load shedding, then reliability could be met with more episodes of extreme weather.

4.7 Do you consider that it is appropriate for the MCE to provide a statement of policy principles regarding the community's expectations and valuation of reliability? If so, what should be the form and level of that guidance?

The MEU considers that the MCE should provide policy direction on more issues than just reliability expectations and valuation of reliability. These additional elements are:

- Advice on the relative weighting between the competing elements of the NEO, especially the price/reliability trade off

- How reliability of the elements of the supply chain is to be integrated on a holistic basis to reflect the expectations of reliability as the consumer sees electricity supply.

Currently regional governments set the distribution reliability standards, transmission availability is set by the AER and level of generation supply reliability (USE) is set by the AEMC through the Reliability Panel. Different approaches to re4laibility are used in each of the supply chain elements – USE for generation, availability for transmission and SAIDI for distribution. A common measure must be developed so that reliability can be set holistically for the entire supply chain.

Other than the AER in setting the transmission availability, no other element is currently considered on a cost/reliability trade off, and up to now the values are set based on historic performance. This means that the MCE must provide direction

[11] For example, see Origin Energy response to the RP review, February 2010

as to what the overall reliability standard should be at the consumer's end of the supply chain, and how this is to be measured.

The valuation of reliability is a vexed issue, and unlikely to be agreed by all. As noted earlier, reliability even for the same customer has different values depending on the time of an outage (time of day, time of year), the frequency of occurrences and the duration of an outage[12]. To set a single value to address reliability is therefore very difficult.

Table 4: Un-weighted sector values of annual USE ($/kWh of unserved energy)

	Sector			
Interruption Duration	Residential	Agricultural	Commercial	Industrial
20 minutes	Not assessed	$87.07	$213.76	$86.47
1 hour	$24.48	$47.10	$130.92	$40.41
2 hours	Not assessed	$203.98	$46.98	$28.95
4 hours	$12.38	$128.59	$44.51	$25.01

Source: CRA report to VENCorp, 2007

Values for VCR vary between $1000/MWh or lower (this is the value used by some consumers as the electricity price they will shed some load) to as high as$47,850/MWh used by VENCorp to assess the price/reliability trade off for transmission augmentation.

The MEU considers that there is a need for policy direction from MCE to enable the development of values of lost load, but this should be measured at the consumer end of the supply chain and not developed for each supply chain element.

4.8 Do you consider it more appropriate for the AEMC to make NEM reliability parameter decisions given the energy market framework governance arrangements established through the AEMA and NEL?

The MCE is a policy decision maker, and now that regional governments have handed over responsibility of the electricity market to federal bodies (MCE, AEMC, AER and AEMO) regional governments should not be involved in setting reliability standards, as they do not have the ability to carry out detailed price/reliability trade-offs. Further, the MCE is not fitted nor resourced for this task. AEMO is responsible for operating the system and equally inappropriate to set reliability standards.

[12] For example see the CRA report for VENCorp, Assessment of the value of customer reliability (VCR) 12 August 2008

AEMC has the ability to carry out the trade off between price and reliability in the generation supply but until recently has not done so, but AER has this responsibility for electricity transmission, and should have it for distribution as well. As reliability should be measured holistically (ie for the entire supply chain so that it reflects the impact of all elements) it would seem logical for the AER to carry out the price/reliability assessment for the entire supply chain as it only has to increase its reviews to include the generation supply element.

The MEU considers that the issue or reliability needs to be addressed at the highest level possible so that decisions are made by representatives of all consumers in the NEM. When electricity supplies were vertically integrated government owned entities, governments had to make decisions between reliability and price. Such a decision on reliability still should be made at this same level. Under the new NEM structure, this therefore means that the decision should be made by MCE whose representative members can assess the overall impact of the decision on consumers and the nation as a whole.

Following this logic it is recommended that the AER develop the tools to carry out the assessment of supply chain reliability, the price/reliability assessment, and for it to recommend to MCE a range of solutions for the MCE to consider.

4.9 Do you consider that the current tools regarding demand and capacity forecasting/information as appropriate and useful in informing investment and outage timing decisions. Please explain your view including reasoning for any suggested improvements.

The feedback MEU has from its members and from market participants, indicates that the current arrangements for forecasting are adequate for their needs. However, there are significant uncertainties in the NEM and in demand, largely stemming from policy changes and proposals from Federal and state governments that are creating more pressing concerns.

4.10 Do you consider that there are any other measures that could be implemented to improve reliability and security in the NEM with respect to more frequent extreme weather events in the future?

There are a number of improvements that can be made and they are detailed in the above commentary. They include:

- RIT-T for interconnectors
- Recognising demand side responsiveness
- Being able to accept demand side reductions from commercial aggregators of DSR for years ahead rather than the current practice of looking only at the next summer.

APPENDIX 1

MEU Views on the Relationship between USE and MPC

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.

[Analysis of] 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[13]:

> "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.

A1.1 A hypothetical view

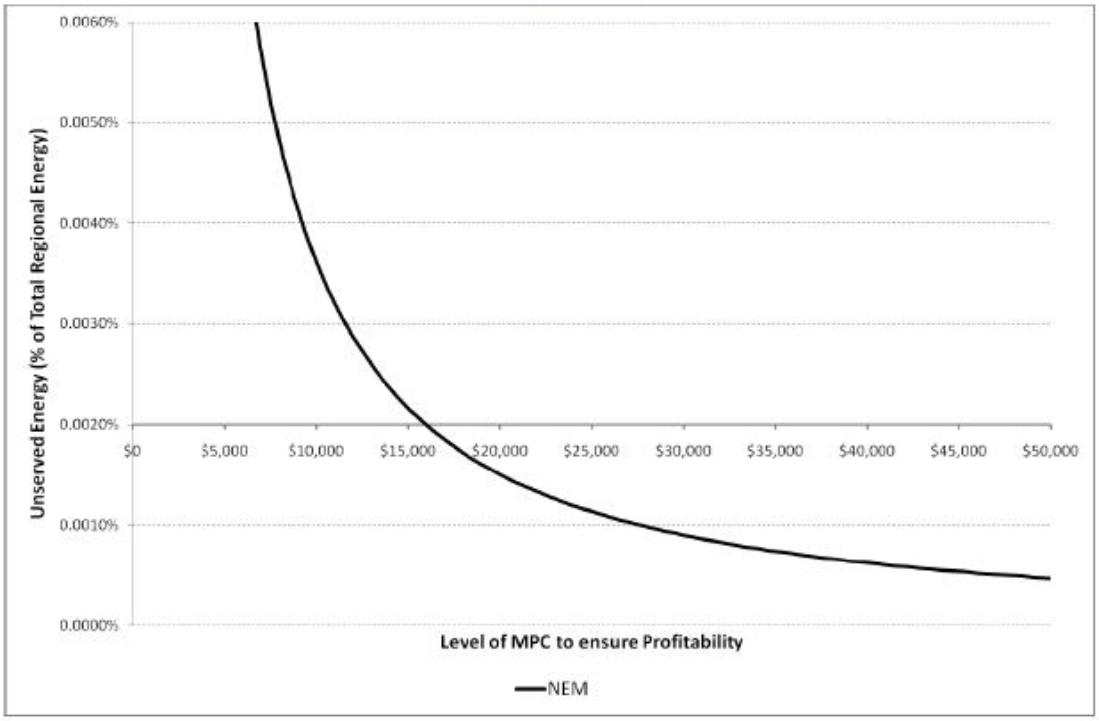
In market structures other than the NEM (eg a capacity market) reliability can be achieved by direct means, such as paying for new generation to be provided. In the energy-only market that the NEM uses, reliability must be incentivised by indirect means, such as by increasing the market price cap allowed. 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.

[13] 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.

A1.2 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"[14].

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

[14] (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[15]. 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.

A1.3 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

[15] It is clearly intellectually inconsistent to exclude use of such tools

- 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.