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# The National Electricity Market

## Reliability Settings

Reliability panel Review

12 February 2010

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on behalf of MEU Chairman Trevor Baldock

# About the Major Energy Users, Inc

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- ❑ The MEU comprises over 20 large energy using companies across the NEM and in WA and NT
  
- ❑ Industries represented include:
  - Iron and steel
  - Cement
  - Paper, pulp and cardboard
  - Aluminium
  - Tourism & accommodation
  - Mining
  
- ❑ The MEU focuses 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
  
- ❑ MEU members have a major presence in regional centres throughout Australia, e.g. Western Sydney, Newcastle, Gladstone, Port Kembla, Mount Gambier, Westernport, Geelong, Launceston, Port Pirie, Kwinana and Darwin.

# MEU Perspectives on the Issues/Review (1)

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- ❑ An MCE letter to AEMC 14 August 2009 observed:
  - Setting of MPC is to achieve the NEO, especially the balance between price, quality, safety, cost, reliability and security
  - Potential for conflict between the competing goals of the NEO
  - MCE has not provided any policy advice on how such conflict is to be managed
- ❑ The MCE noted a number of energy policy matters require consideration, especially:
  - Industry's concerns about the economic cost of volatility
  - Whether the NEM reliability standard meets contemporary public expectations
  - The need for MCE to provide advice on the weightings of the price and reliability objectives in the NEO
  - Varying the ToR for the extreme weather review by AEMC to assess whether changes to the NEL/NER are needed to strengthen the process for determining reliability settings and MPC
- ❑ The MEU considers that there are many policy questions in the current NEM design raised by the MCE and which need to be considered by the RP.

# MEU Perspectives on the Issues/Review (2)

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## The Reliability Panel Objectives:

- It will consider the form and level of the Reliability Standard resulting from consultation (p2)
- Retaining ROAM Consulting to provide modelling which is to provide an analytical basis to support the RP recommendations (p3)
  
- The MEU supports the RP approach and notes the decision to use modelling to support the RP recommendations.
- The MEU emphasises that modelling cannot address all the variables and is based on many assumptions.
- Assumptions need to be carefully tested.

# ROAM MODELLING: QUESTIONS AND ISSUES (1)

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There is no Demand Side consideration, and all modelling carried out is based on supply side solutions

- ❑ ROAM states that the risks associated with the demand and supply sides of the NEM must be carefully considered before reaching a final recommendation (p26).
    - But where is the demand side modelling? Already in SA, MEU members have commenced operating on the spot market and reducing demand when there are high prices. Between them they use some 8% of the maximum SA demand.
  - ❑ ROAM states that it has not considered the impact that the change in MPC may have on the level of demand side participation” (p.23).
    - Yet, ROAM notes “Concept Economics has reported that changes to the MPC may increase the incentives for aggressive trading strategies by generators, which would serve to increase the spot price of energy” (p.23).
    - MEU members in SA have seen the spot price double as a result of a very few (0.5% of the time) high price events
    - In its 2009 State of the Energy Market Report, the AER comments “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.” This is consistent with the MEU view that the NEM is continuing to be exposed to exercise of market power leading to increased volatility and higher risks and prices.
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# ROAM MODELLING: QUESTIONS AND ISSUES (2)

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The impact of Demand Side Responsiveness is not well understood

- ❑ There is an erroneous assumption implied (pp 25,26) to the effect that as MPC rises, more consumers will contract to reduce risk and this will reduce demand side participation.
- ❑ In fact, as retail contract prices have risen to reflect increased pool risks, more and more large users are taking spot exposure combined with curtailment arrangements.
- ❑ There has been significant demand responsiveness in some regions e.g. a number of MEU members have rejected contract offers and taken spot exposure. They use curtailment arrangements to address the spot price risk – and have done so under the current level of MPC. One company has reduced its demand by >85% at high priced times.
- ❑ There are commercial enterprises which have aggregated a number of smaller demand side responses to high prices, and have offered these demand reductions to the NEM. Unfortunately the NER does not permit AEMO to use these even when load shedding is the only remaining alternative.

# ROAM MODELLING: QUESTIONS AND ISSUES (3)

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There are assumptions made regarding generator bidding which affect the outcomes of the modelling

- ❑ On p 23 ROAM observes that using historic generator bidding will provide a model of "...the real market behaviour for the majority of the time and ensures generators offer their available capacity into the market at or below the MPC."
  - ❑ ROAM also observes on p 22 "Analysis of bidding behaviour shows that the majority of generating capacity is offered at prices which are in a reasonably tight range around the level of short run marginal costs of generators. Only a small percentage of capacity is withheld to prices that are near the level of the MPC"
  - ❑ The ROAM assumption does not recognise that with a very high MPC, the Cournot principle (maximise revenue even at lower outputs) only has to operate occasionally (eg in SA in 2008, 39 hours – 0.5% of the time – of high prices contributed to 57% of the annual average regional price of \$93/MWh, whereas the SRMC in SA is \$40-50/MWh).
  - ❑ But, as noted earlier, a high proportion of revenues is earned from the very few price spikes and a generator only has to exercise its market power to spike the prices occasionally because the rewards are so high (a multiple of 250 times the SRMC when MPC is at \$12,500).
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# ROAM MODELLING: QUESTIONS AND ISSUES (4)

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Forced outage rates (FOR) used in the modelling need to be better addressed (see ROAM table A3), and ROAM has assumed the MPC price setting generator (MPC generator) will only operate for a 6 hours each year, meaning its down time is massive

- ❑ CCGT (with its GT and ST) FOR is 4.24%, OCGT FOR (using the same GT technology) is 27.88% except for the MPC generator which ROAM models with FOR of 3%
- ❑ New generation based on GT technology is funded based on availability of 92-94% (which includes scheduled outages as well as FOR). Forced outages reduce profitability and so are required to be small.
- ❑ ROAM has allowed the MPC generator to have 3% FOR yet its equivalents which operate more frequently have FOR of 28% (or miss 1 in 4 opportunities of making money)
- ❑ ROAM implies that ~50% of new generation is peaking only (p vii). With the FOR used for OCGT, this means that about half of new entrant generation is not available for nearly 30% of the time – this is questionable
- ❑ If the MPC generator is considered new and therefore has FOR of 3%, why is the balance for the same plant built at the same time assumed to have FOR of 28%?

# ROAM MODELLING: QUESTIONS AND ISSUES (5)

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The MPC generator is assumed to run only for the MPC times and gets no other revenue

- ❑ ROAM states (p 4) that objective in setting MPC is to provide sufficient revenue in the very few running hours which the last generator will be dispatched (ie the MPC generator) to ... recover its ... costs and ... return”.
- ❑ At an MPC of \$16k/MWh this is 6 hours operation based on the costing data used by ROAM. At an MPC of \$12.5k/MWh this is 8 hours operation and at \$20k/MWh it is 5 hours
- ❑ There are some key aspects that are not addressed:
  - Actual market performance shows that base and mid merit generators, when they have market power, bid at or near MPC, forcing the peakers into operation (including the MPC generator). This is the outcome of the Cournot principle.
  - The MPC calculation effectively assumes that dispatch of generation is based on SRMC ranking, leaving the MPC generator to be the last dispatched. In reality this does not occur
  - Would the owner of a fully viable OCGT not seek revenue from other sources, such as fast start, regional islanding, intra-regional constraints, voltage support? A review of the market shows that OCGT owners do get revenue from other sources, and to assume otherwise is a courageous assumption.

## ROAM MODELLING: QUESTIONS AND ISSUES (5)

- The pricing used by ROAM for the new generator costs (based on ACIL) assumes an exchange rate of  $\$A = \$US 0.75$ . The ACIL assessment of the  $\$A/\$US$  is for a 20 year average, the ROAM assessment is for a much shorter period. Should the ROAM assumptions be changed to reflect a higher value of the  $\$A$  likely because of a “super” China driven commodities boom?



- ❖ The MEU considers a higher value for the  $\$A$  should be used
- ❖ Increasing  $\$A$  by 10-12% would reduce the MPC by a similar amount

# The market is meant to be efficient (1)

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The RP has a responsibility to ensure that the recommendations it makes are efficient.

- ❑ The ROAM addenda supplied showing spot prices in the four regions for the next 4 years from an increase in MPC from \$12,500 to \$16,000 implies that the NEM spot price will increase on average by some \$2.70/MWh

	Average spot price increase \$/MWh over the 4 years	Volume of power used pa in 2008 MWh x million	\$m pa increase
Qld	4.5	52.2	235
NSW	2.6	78.4	204
Vic	1.5	52.3	79
SA	1.4	13.5	19
<b>Total</b>	<b>2.7</b>	<b>196.7</b>	<b>538</b>

- ❑ In year 13/14, the 2009 ESoO indicates the high consumption estimate is 230,000 GWh and the high10% PoE peak demand will be 44,000 MW to clear the market
  - ❑ Using this data gives a concerning outcome regarding efficient outcomes.
  - ❑ The \$2.70/MWh premium from an increased MPC will cost consumers \$620m in 13/14
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## The market is meant to be efficient (2)

- ❑ The cost to provide the MPC generation is \$100k/MW pa.
- ❑ Therefore the \$620m premium could provide 6,200 MW of MPC generation, yet this is nearly 15% of the total generation of 44 GW needed in 13/14

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

- ❑ Over the 11 years of the NEM, the greatest need for power for the peak 6 hours has been 1919 MW (or 5.5% of maximum demand) in 2008, and that for the 8 hour period has been 2005 (or 5.8% of maximum demand) in 2008. This is effectively 10%PoE
- ❑ So at worst, we could assume that the greatest amount of MPC generation needed is <6% of maximum demand, but will be usually <3%

## The market is meant to be efficient (3)

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- ❑ To provide 2000 MW of MPC generation would cost \$200m pa (at an annual cost of \$100k/MW pa) yet the ROAM modelling indicates increasing MPC to \$16k will cost \$620m - three time the cost of the generation needed.
- ❑ In fact over three years at \$16k/MWh consumers would have paid the full capital cost of the 2000 MW of MPC generation needed.
- ❑ Looking at it another way, the data indicates that the highest amount of generation needed between the 6 and 8 hour periods is 199 MW. The cost for the added generation needed to serve the last 6 hours (MPC = \$16k) rather than last 8 hours (MPC = \$12.5k) of generation needed is only \$20m pa, compared to the \$620m consumers will pay for increasing the MPC from \$12.5k/MWh to \$16k/MWh
- ❑ Comparatively, ROAM (p 20) implies that the saving to reduce the Reliability Standard from 0.002% to 0.003% might be ~\$70m pa
- ❑ It is clear that ROAM has not examined the impacts of its recommendations with respect to the actual MPC generation needs or the efficient cost to provide it.

# Summary

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- ❑ Already we have exceeded our time allowance and there is still insufficient time available to go over other issues in our presentation.
  - ❑ The modelling intended to provide “an analytical basis to support the Reliability Panel recommendations” is clearly:
    - inadequate as it totally excludes the impact of demand side actions,
    - incomplete as it has not addressed the implications of its implied recommendations and
    - unrealistic as it is distorted by some key assumptions.
  - ❑ A cost/benefit analysis is required, addressing the costs for alternative approaches rather than just increasing MPC, complete with appropriate sensitivity testing of key variables other than just dispatch pricing.
  - ❑ The MEU views with concern that the draft report purports to be a Reliability Panel draft, whereas we understand some Panel members have:
    - Sought further information and modelling to better inform their views
    - Not been able to formulate their complete view prior to it being published
  - ❑ The current review and the published draft documents are having a chilling effect on industrial investment by MEU members and other consumers.
  - ❑ The MEU and, we expect, the RP require further modelling taking account of stakeholder comments before any confident decision can be taken on MPC
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