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30 June 2006

The Reliability Panel  
Australian Energy Market Commission  
PO Box H166  
AUSTRALIA SQUARE NSW 1215

[panel@aemc.gov.au](mailto:panel@aemc.gov.au)

Dear Panel,

### **AEMC Reliability Panel Comprehensive Reliability Review - Issues Paper May 2006**

Please find attached EnergyAustralia's submission to the Australian Energy Market Commission's Issues Paper which represents the first stage in the Reliability Panel's comprehensive review (the Review) of the National Electricity Market (NEM) reliability settings.

The Review is important for EnergyAustralia as any change to the reliability settings will affect the financial risks associated with participating in the spot market, and may impact on the other dimensions of electricity supply such as security of the power system.

From a review of international reliability mechanisms EnergyAustralia believes the NEM is performing satisfactorily, and at least no worse than other comparable markets. However, EnergyAustralia believes a range of opportunities exist for further improving the current settings to ensure adequate investment in the future. The basis of EnergyAustralia's submission is as follows:

- To date the NEM has largely delivered sufficient supply to cover demand at the current VoLL and CPT settings, implying there is little need for significant change.
- We do not believe that the current level of VoLL should be increased. If there is any serious contemplation of increasing the current level of VoLL there must be detailed analysis to determine what are the real drivers behind investment and the risks, costs and benefits of making such a decision.
- There may be an inherent problem with a fully contestable energy only market delivering timely price signals for the development of new supply. A capacity payment mechanism similar to that proposed in the WA market could be a suitable alternative in providing a more certain investment environment for new capacity in the market.



**Partner**

- A market floor price significantly less than \$0/MWh is not supported.
- The current reliability standard for generation and bulk transmission of 0.002% unserved energy (USE) seems to be a reasonable target, however it could be more precise if the timeframe in which the percentage is applied is quantified, for example as an average over 10 years, rather than a 1 in 10 year event.
- Removing or relaxing current intra and inter-regional transmission constraints through prudent network development would maximise flows and significantly increase the benefits of competition. Events in NSW on 30 November and 1 December 2004 highlighted the importance of addressing intra-regional transmission constraints to achieve supply reliability and appropriate price signals for new investment.
- Regulatory uncertainty is a major barrier to long term investment in the market (in particular investment in base load generation). Price mechanism reviews should be less frequent and triggered by certain events such as creation of new regions or an apparent failure of the current reliability settings.
- Intervention by the National Electricity Market Management Company (NEMMCO) should be seen as market failure. Intervention by NEMMCO in the South Australia (SA) and Victorian (Vic) markets last summer through its reserve trader activities should be investigated to understand why this occurred and whether or not there are sufficient forward signals to ensure that constraints are ameliorated in a timely manner and at minimum cost.
- The scope of the Review should be broadened to consider ancillary services (including the level of these services, market design and the relationship between ancillary services and the energy market).
- To ensure that energy market system security is adequately managed, full and transparent information disclosure between the electricity and gas market operators is required.

EnergyAustralia notes that the timetable to consider these important issues is ambitious. EnergyAustralia recommends that there should be a one month period between each of steps 6 (draft decision), 7 (public hearing) and 8 (closing date for submissions on draft decisions) to allow due consideration by market participants. Should you have any questions in relation to this submission please contact me on (02) 9269 4911 or Philip Dixon-Flint, Regulatory Strategy Manager, on (02) 9269 2317.

Yours sincerely



Tim O'Grady  
General Manager Retail

EnergyAustralia's Submission  
to the

Australian Energy Market Commission

AEMC Reliability Review  
Comprehensive Reliability Review  
Issues Paper

30 June 2006



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## Key Overarching Questions (Questions 1 - 9)

To date the NEM has largely delivered sufficient supply to cover demand at the current Value of Lost Load (VoLL) and cumulative price threshold (CPT) settings implying there is little need for a substantial change. However these levels will need to be reviewed if they are demonstrated to be holding back new capacity from being delivered. The current market is still developing as new jurisdictions (for example Tasmania) join, and any issues should be considered in this context.

Since the price cap was increased from \$5,000 to \$10,000/MWh in April 2002 a myriad of new peaking plants have been announced, built and committed, whilst we have also observed some marginal increases in levels of customer demand-side response. Given the current price cap level of \$10,000/MWh seems to be sending sufficiently strong price signals to facilitate new generation, to increase this level higher would only increase the risks faced by retailers and is likely to translate into generally higher prices to end-use customers in order to manage this additional exposure.

We do not believe sufficient analysis has been undertaken to warrant any further increases in the current level of VoLL. It is our opinion that the analysis to date on VoLL has been relatively narrow and incomplete. We contend that the starting point of this analysis should be an assessment to determine what are the real drivers behind investment. If it can be established that the sole reason is the market cap, then it needs to be determined what is the minimum or reasonable amount for a market cap that would deliver this new investment.

EnergyAustralia recommends that the scope of the Review be broadened to consider ancillary services (including the level of these services, market design and the relationship between ancillary services and the energy market). The number and provision of ancillary services markets interrelate extensively with the energy market.

Reliability settings are backward looking and, accordingly, of limited utility. Problems are not seen until it is too late. There have been some issues with supply reliability in the NEM. Load shedding events have occurred as a result of system failures (for example in South Australia). Removing or relaxing current intra and inter-regional transmission constraints through prudent network development would maximise flows and significantly increase the benefits of competition. Arguably this is better than increasing generation capacity in one jurisdiction.

The current reliability standard for generation and bulk transmission of 0.002% unserved energy (USE) seems to be a reasonable target, however it could be more precise if the timeframe in which the percentage is applied is quantified, for example as an average over 10 years, rather than a 1 in 10 year event. EnergyAustralia is of the view that the cost of investment to build sufficient reserves to meet a 1 in 10 year event is uneconomical and exceeds the value of customer reliability.

The current level of CPT cuts in too late and therefore the threshold does not remain faithful to its principle of offering protection in extreme system stress. Despite the existence of episodes of extreme market events, since its introduction, the CPT has remained well below the threshold trigger<sup>1</sup>. We believe there is now sufficient evidence and history to justify a reduction in the cumulative price threshold (CPT) from \$150k to approximately \$100 to \$120k.

A market floor price significantly less than \$0/MWh is not supported as negative price periods in principle could be seen as sending a perverse message to customers to use more energy. In various circumstances in the NEM, negative prices have arisen due to a binding transmission interconnection and/or constraint where for a relatively short duration one regional price moved

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<sup>1</sup> As noted in the AEMC Annual Electricity Market Performance Review Reliability & Security 2005 Final Report the weekly cumulative price period in NSW late November, early December 2004 reached its highest ever level of \$125,000, which in our opinion is still some way (17%) off administered pricing commencing.

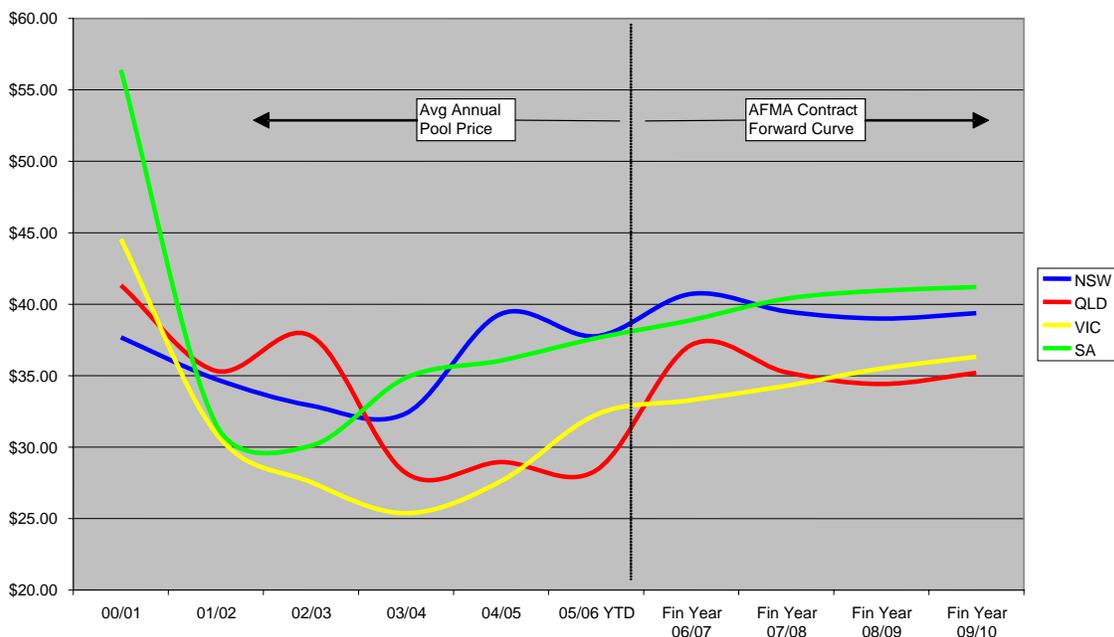
towards the market cap price and an adjacent region moved towards the market floor price while participants and NEMMCO investigated the causes. It is EnergyAustralia's belief that a pool price significantly less than zero is no more effective than one that is set at or slightly below zero. Negative bids below the market floor price could still be allowed and submitted by generators. If the dispatch price was below the floor price then generators would compensate each other through a fund arrangement. Equal bids would be resolved in accordance with current market rules.

EnergyAustralia believes the Panel should approach the Review in a manner which looks at the incentives and risks that each stakeholder group faces in responding to the operation of the reliability settings. In framing our response to the numerous questions raised in the Issues Paper we have suggested that further analysis is required in a number of specific areas.

EnergyAustralia believes there may be an inherent problem with a fully contestable energy only market delivering timely price signals for the development of new supply. This is due to the long lead times involved and the long term nature of generation and transmission assets (30 – 50+ years) versus the short term nature of the bulk of the retail contracts in the market ( $\leq 3$  years). A capacity payment mechanism similar to that proposed in the WA market could be a suitable alternative in providing a more certain investment environment for new capacity in the market. In combination with the introduction of any capacity mechanism, the level of VoLL would need to be reviewed to ensure it is set at an appropriate level. This would be a significant change in market design which would only be worth considering if the current market design showed clear signs of failure. The WA experience should be monitored but it is too early to draw any lessons from that market as yet.

The following graph (graph 1) shows historical time weighted pool prices by region versus forward contract prices. It would seem that the realised pool prices sent the message of pending supply shortfalls too late in SA and Queensland (Qld), with extremely high pool prices then followed by a number of years of extremely low prices due to the belated construction of significant new local generation.

*Graph 1 – EA Pool Prices vs AFMA as at 31 May 2006*



It would therefore appear that the variation in amplitude of price signals seen is unnecessarily extreme and has not, for a range reasons, provided a good forward contract market to underpin an appropriate mix of generation in a timely/orderly manner. This criticism of the NEM seems to apply particularly to intermediate and base load generation which has significantly longer construction lead times of between 3 and 7 years.

Settlement surpluses arise due to intra and inter-regional transmission constraints. We believe that surpluses currently distributed to transmission businesses (then onto customers through lower network charges) would be better invested in removing these transmission constraints. Events in NSW on 30 November and 1 December 2004 highlighted the importance of addressing intra-regional transmission constraints to achieve supply reliability and appropriate price signals for new investment. Any alteration to the existing distribution of SRA surpluses may need to be managed through transitional arrangements to minimise any resulting dramatic rate increases to customers network charges.

EnergyAustralia believes it is important that any assessment of system reliability and security ensures that there are full and transparent provisions of relevant information disclosure between the electricity and gas market operators to ensure that energy market systems security is adequately managed. For example, disruptions to gas supplies at Moomba and Longford under particular conditions (for example winter or summer) could have a significant impact on electricity system security; particularly as the level of gas fired generation increases.

Accordingly, it is important that, when assessing plant availability over various time horizons, any concerns regarding upstream fuel supplies are factored into NEMMCO's assessment of electricity system security. Presently, with the separation of wholesale electricity and gas markets, this information flow should be more structured and formalised. This is particularly important given the growing relationships between wholesale gas and electricity markets, particularly through the increasing proliferation of gas-fired thermal generating plants in the NEM. New reforms as proposed by the MCE should assist with increasing transparency during times of compromised system security.

## **The NEM Reliability Standard (Questions 10 - 24)**

### *Question 10 - Appropriate form of the reliability standard*

EnergyAustralia supports the current reliability standard measure (USE). However, given the long lead times in generation and transmission investment, it needs to be implemented looking forward with reserve levels set and compliance with these levels locked in well ahead of time of dispatch (for example 2 years ahead to match minimum development and construction times). The NEM commenced with a general oversupply of generation and reliability has been very good. As this oversupply has been reduced through demand growth, this situation of having adequate reliability levels cannot be assumed to continue necessitating a more active approach to managing reserve levels ahead of time.

### *Question 13 - Determination of the standard*

The standard should be determined on a NEM-wide basis and not separately for each region. Having different reliability standards for each region would require different levels of VoLL to achieve the regional targets, which from an operational perspective would be impractical. Furthermore it would not promote consistency in the development of the national grid and could potentially undermine the purpose of having such a standard in the first place.

*Question 14 - Level of the current NEM reliability standard*

EnergyAustralia believes the current reliability standard is appropriate and recognises that any improvement will ultimately reduce the costs to customers associated with periods of insufficient generation. However, such improvement would raise the prices customers must pay and have an implication on the reliability price and intervention mechanisms.

The reliability of the bulk supply system should be considered in the context of the entire electricity supply chain. Improvements in the reliability of the bulk supply system on its own would unlikely be noticed by most consumers due to the much more significant contribution the distribution network makes to the reliability of end-user supply.

*Question 17 - Defining the standard more precisely*

Yes, the current reliability standard could be more transparent if the timeframe in which the percentage is applied were to be explicitly quantified. Defining the reliability standard as an average over 10 years rather than a 1 in 10 year event would be supported by EnergyAustralia. EnergyAustralia is of the view that the cost of investment to build sufficient reserves to meet a 1 in 10 year event is uneconomical and exceeds the value of customer reliability.

*Question 18 - Triggers for reviewing the reliability standard*

EnergyAustralia believes a general major review of reliability and/or market design should be undertaken every three to five years, unless there are fundamental market flaws identified that require more urgent attention. Post review, any major changes should have a minimum grace period for implementation of two to three years in order to allow participants the opportunity to adjust their positions, systems and processes. Ultimately this however should be determined by the type of change required.

EnergyAustralia believes setting specific triggers for initiating a review outside the normal cycle (such as a certain number of breaches, entrant of new regions, significant load shedding events etc) has merit and may help in making the reliability provisions more efficient and effective.

*Question 19 - Clarity in terms of the definition of bulk transmission*

EnergyAustralia believes the existing Rules definition of the transmission network to be satisfactory and not in need of alteration. It encompasses the assets which form part of the meshed network and for which a change in generation or load at any location alters the flow in every element. By design, the bulk transmission network corresponds with the settlement boundary of the wholesale market.

In relation to the regulation of networks, EnergyAustralia has both transmission and distribution assets which are currently regulated separately (transmission by the AER and distribution by IPART in NSW). These networks are operated as a single business and for efficiency and consistency reasons it would be highly desirable to combine these regulatory processes and regulate EA's network as a single business.

Within the transmission network, a distinction currently exists for planning purposes between those assets that affect market outcomes (inter-regional) and those that are unlikely to do so (intra-regional). This process is also considered to yield appropriate outcomes.

*Question 20 - Additional considerations in the standard to reflect regional concerns.*

NSW has introduced planning standards and reliability standards which will take effect from 1 July 2006. These standards are a licence requirement for NSW distribution network businesses (including transmission in the case of EnergyAustralia). The requirements are designed to deliver more consistent levels of network reliability and higher standards in densely populated areas like CBDs. Therefore EnergyAustralia does not see any need to alter the NEM standard in high load areas.

Generation unavailability is a minor component of the customer's experience and transmission unavailability even less significant – distribution network unavailability almost always dominates.

EnergyAustralia considers that a reliability standard intended to limit generation unavailability should only be applied on a market wide basis. It is believed that differing regional standards could cause unintended consequences which would have social and political implications. Consider two interconnected regions with low and high reliability standards. In the event of generation shortfall, interconnector flows would constrain as energy in the low reliability region was exported to the high reliability region at the same time as load was shed in the low reliability region. EnergyAustralia suggests that extensive modelling of the impact of differing regional reliability levels would be required before jurisdictions and market participants would accept such an arrangement.

Generation shortfall, when it occurs, is currently managed using load shedding which takes place in accordance with jurisdictional priorities. These priorities take into account, in a broad sense, the cost to customer classes of their interruption.

*Question 22 - Extension of the scope of the standard*

Without further cost benefit analysis EnergyAustralia is unable to support extending the reliability standard to encompass multiple contingency events.

*Question 24 - Inclusion of 'exogenous' matters in the reliability standard*

Any exogenous events should be noted, included or discounted to the extent that they are relevant in an assessment of forward reliability.

## **Price Mechanisms (Questions 25 - 37)**

*25. Do the current price mechanisms encourage appropriate investment?*

See comments under questions 1 - 9.

*Question 28 - The current price mechanisms as tools for limiting the exposure to extreme price outcomes*

In addition to comments under questions 1-9. The current \$10,000/MWh price cap creates significant risks that need to be carefully managed. To increase the level of VoLL would increase the risks faced by retailers and likely translate into generally higher prices to end-use customers in order to manage this additional exposure. Also, it is arguable whether regulators would permit retailers to factor this risk into future pricing determinations.

EnergyAustralia is concerned that by increasing VoLL a generator's ability and motivation to provide hedge cover will be reduced, since this places the generator under heightened pressure to safeguard against unit outages. This poses a greater threat to retailers – that these risks will be passed through in the form of Force Majeure or non-firm provisions in hedge contracts.

EnergyAustralia is of the view that the current level of VoLL is allowing generators to earn a fair return on investment, promoting liquid financial markets, and limiting exposure of market participants to high spot prices.

*Question 30 - Impact of changing generation mix on reliability outcomes*

EnergyAustralia believes the stability and reliability of the NEM may be compromised if significant wind generation becomes operational in certain regions, depending upon the generation mix. EnergyAustralia believes it will make forecasts of the requirement for scheduled generation less reliable and increase the need for frequency control ancillary services to manage the generation/load balance in real time. A comprehensive planning program to successfully integrate wind generation into the NEM while managing the reliability-related impact and associated risks is needed. A similar situation in the future could also potentially arise in the event of an upstream supply disruption for gas-fired power stations which are constructed in close vicinity of one another without access to alternative fuel sources.

*Question 31 - Forward market mechanism contribution to reliability outcomes*

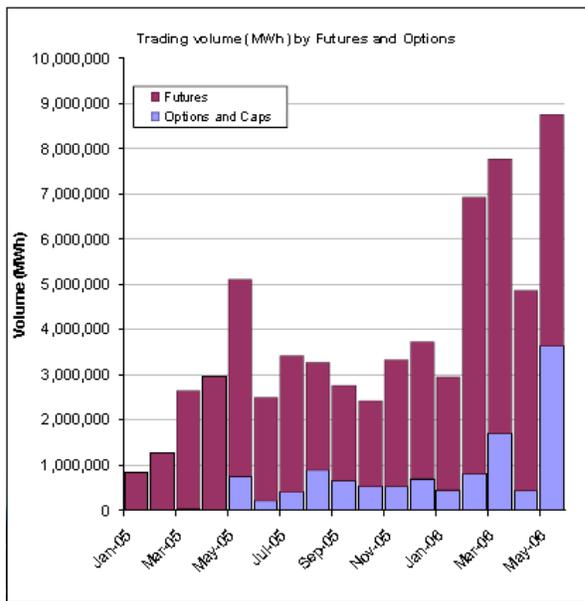
The NEM already has an active trading market and there is little to be gained in attempting to improve the forward market. Over the counter (OTC) and Sydney Futures Exchange (SFE) trading volumes have been increasing at a large rate over the last few years.

**Table 1 – Performance Summary d-cypha Trade**

Performance Summary 		
	Yr Ending Feb 2005	Yr Ending Feb 2006
> Total Contracts	11,528	22,846 (+98%)
> Average Daily Volume	45	90
> % of physical energy	11%	22%
> Total MWh (Approx)	20.7 million	42 million
> Face Value (Approx)	\$870 million	\$1.764 billion
> Open Interest (COB 31/12)	8,833	16,963 (+92%)
> Open Interest in MWh	16 million	30.2 million
> Since listing in September 2002, 49,351 Futures & Options Contracts have traded which is the equivalent of 87,521,000 MWh, and has a face value of approximately \$3.676 billion (as at Feb 2006).		
<a href="http://www.d-cyphaTrade.com.au">www.d-cyphaTrade.com.au</a> 1800 330 101      4		

Table 1 was provided in a recent presentation by d-cyphaTrade and describes the increasing SFE electricity futures trades during 2005-2006 (e.g. 22,846 total contracts for a volume of 42TWh or 22% of physical energy).

*Graph 2 – d-cyphaTrade Trading Volumes by Futures and Options (Jan 2005 to May 2006)*



In May 2006 d-cyphaTrade saw a record monthly volume of 8.6 million MWh of Futures and Options Contracts Traded (see graph 2). The total traded MWh during this period represents over 39% of the underlying NEM system demand (NSW, Qld, Vic and SA), which is an increase of 240% on the equivalent period during 2005.

*Question 32 - Improvements to NEMMCO's forecasting*

There have been instances where NEMMCO's forecasting of low reserve periods has been too conservative. We understand that NEMMCO is looking at how it can improve its forecasts, which amongst other things, may assist in enhancing reliability outcomes.

EnergyAustralia recognises that forecasting will be a continuing challenge for NEMMCO. This is likely to become even more complex as non-scheduled generation such as wind farms continue to grow. NEMMCO should strive to continually improve its short, medium and long term load forecasting as the mix of generation develops within the NEM.

*Question 33 - Consumer signalling reliability-related prices to the wholesale market*

Cost reflective pricing is EnergyAustralia's major demand management initiative. Consequently EnergyAustralia is a strong supporter of cost reflective pricing. EnergyAustralia is the first utility in the world to establish Time of Use (ToU) pricing for all new and upgraded connections to its network. In addition, a roll out program to establish ToU prices for all customers with consumption >15 MWh is underway and slated for completion by 2009. Currently 80% of the interval meters in the NEM are on EnergyAustralia's network and 50,000 mostly larger customers are on ToU prices.

Cost reflective pricing directly influences customer consumption patterns and also supports economic demand management investment. Initial indications from the roll out of ToU to 40+ MWh businesses are that peak period prices are effective – a reduction of 7% in peak period consumption was observed in the first year. Cost reflective distribution pricing therefore has a large part to play in modifying customer consumption patterns and by reducing peak period consumption would reduce the likelihood of generation shortfall taking place.

A program to assess the effectiveness of dynamic peak price signals that can be used to signal high market price events to end use customers is currently underway – and initial indications are very encouraging. EnergyAustralia’s Strategic Pricing Study is the largest outside California, involving 1300 customers equipped with meters having communications. The Study is designed to take place over two years and will refine estimates of customer price elasticity, thereby defining the potential network and market benefits of peak reduction.

This Study forms part of a broad strategy for the introduction of Advanced Metering Infrastructure (AMI). A second AMI pilot study is set to explore the operating cost advantages of remote meter reading and connect/disconnect, as well as the cost of large scale meter installation. This facility will permit both price signalling to, and direct control of, end use customers’ installations.

EnergyAustralia’s objective is to put a comprehensive business case for the deployment of AMI to the AER as part of its 2009 distribution determination.

*Question 34 - Role of DSR in terms of supply reliability outcomes*

Cost reflective pricing works directly to influence customers’ consumption patterns. It also provides the platform from which economic Demand Management activities can be developed. For instance, the presence of a cost reflective kVA charge in the customer’s price will render an appropriate level of power factor correction attractive for the customer. Pricing has the potential to “flatten” the load duration curve and thereby reduce the need for capital investment in not just network, but generation assets.

Dynamic peak prices (available with the addition of communications to customers) can target short run market events (high pool price/generation shortage) and localised network constraints.

With the presence of an additional channel to the customers’ premises, the direct control of appliances and processes would be possible with AMI and could be offered as choices to the customer.

*Question 35 - Improvements to the effectiveness of the price mechanisms in terms of their impact on supply reliability outcomes*

The impact on the setting of the NEM spot price in a region during times of network constraints when there is significant capacity not dispatched results in unnecessary financial risk for market participants. Such occurrences also results in inappropriate signalling for the need to invest in generation within a region which would benefit from additional network investment. Efficient investment in and operation of the transmission network would improve the reliability of the bulk supply system and will enhance competition within the NEM.

EnergyAustralia supports the current work being undertaken by the Panel on the NEMMCO guidelines for increasing the accuracy of the system operating incidents classification and investigation mechanisms, along with the AEMC’s work on the compliance and enforcement of technical standards. EnergyAustralia would also like to see the AEMC investigate options which may help reduce the impact of network constraints on the distortion of the spot price.

*Question 36 - When to review the price mechanism settings*

Regulatory uncertainty is a major barrier to long term investment in the market (in particular investment in base load generation). Price mechanism reviews should be less frequent and triggered by certain events such as creation of new regions or apparent failure of the current

reliability settings. Lead times for major changes should generally be 2-3 years, however this should be determined by the nature, its urgency or the impact the change has on the market.

### Intervention Mechanisms (Questions 38 - 47)

*Questions 38, 39 & 40 - NEMMCO's intervention in the market and extending the reliability safety net*

Intervention by NEMMCO should be seen as market failure. The nature and extent of intervention can affect participant financial risks and stakeholder perceptions of market performance. Intervention by NEMMCO in the South Australian (SA) and Victorian (Vic) markets last summer through its reserve trader activities should be investigated to understand why this occurred and whether or not there are sufficient forward signals to ensure that constraints are ameliorated in a timely manner and at minimum cost.

Given that both Vic and SA set new record demands last summer EnergyAustralia believes this may indicate that NEMMCO's intervention threshold or minimum reserve levels may have or are set too low and is subsequently resulted in additional costs to consumers.

EnergyAustralia would not support the extension of the intervention mechanisms in their current form beyond 30 June 2008 unless the unnecessary procurement and intervention through the reserve trader over the last two summers in Vic and SA were investigated. The aim of the investigation would be to establish the appropriate threshold for NEMMCO intervention in the market to address potential shortfalls against the NEM reliability standard.

EnergyAustralia believes the statement made on page 42 of the Issues Paper that NEMMCO has not issued any direction for reliability reasons for the 18 months to December 2005 is perhaps not entirely accurate. From EnergyAustralia's recollection (supported by market notices issued by NEMMCO) there were a significant number of occasions during that period where NEMMCO's intervention mechanism were used in NSW, SA and Tasmania to ensure that the supply reliability and system security had not been compromised (for example directions of Directlink last summer). Compensation is or has been assessed or paid to these participants which would seem to indicate that something in either the energy and /or ancillary service markets is not working all that effectively.

*Question 43 - Approval of NEMMCO's reserve margin calculations*

The Panel should explicitly approve NEMMCO's calculation of reserve margin and publish material supporting their decision. This would increase transparency in the process and provide greater confidence in the system.

*Question 46 - The Panel next review the effectiveness of the reliability settings as a whole*

See comments under questions 18 and 36.

*Question 47 - Implementing transitional arrangements if the current reliability settings are adjusted or changed.*

The timing of any changes, and any transitional arrangements which may be needed, should be considered once the changes have been determined.