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Dear John

## CONGESTION MANAGEMENT REVIEW

Macquarie Generation has prepared the attached response to the Australian Energy Market Commission's Issues Paper, Congestion Management Review, released on 3 March 2006.

Macquarie Generation has sought to provide comment on each of the 40 issues canvassed in the paper. As a general statement, Macquarie Generation is of the view that the current market rules provide a reasonable framework for promoting transmission investment to alleviate significant constraints in the NEM. Apart from resolving the ongoing problems with the current Snowy Region boundary, Macquarie Generation considers there may be scope for incremental improvements to the rules but there is no evidence of any fundamental failure that would justify the introduction of radical reforms.

Macquarie Generation has also participated in the drafting and finalisation of a separate submission to the Commission as part of the Newcastle Group of market participants. The Group's submission focuses on some of the key issues in the review and proposes a framework for considering the materiality of congestion problems and a package of possible measures for further consideration by the Commission.

Macquarie Generation also supports the submission lodged by the National Generators' Forum to the review.

Macquarie Generation looks forward to providing further input to the Commission's review of congestion management arrangements during the next round of industry consultation.

Yours faithfully



RUSSELL SKELTON  
MANAGER MARKETING & TRADING

17 April 2006

***1. Do existing constraints have a material effect on the efficiency of the NEM? What is the nature and materiality of these constraints? Why is it that these constraints have not been addressed to date? Are there specific points of congestion that should be addressed in advance of the establishment of a new congestion management regime?***

Other than the obvious problems with constraints that occur in the Snowy region it does not appear that the existing constraints have had a material effect on the efficiency of the NEM.

The data provided by NEMMCO and shown in Table 1 in the Issues Paper indicate that there have been periodic episodes of congestion in certain parts of the network and while they may have potentially created efficiency impacts at the time these problems have not been enduring. Given the relatively small cost differences between the generators affected by these episodes of congestion it is unlikely that any efficiency impact that did occur was material.

It is worth noting that the areas of congestion that have existed have generally been removed by investment by TNSP's responding to their reliability obligations. Also the data indicates that there is no clear trend of increasing frequency of congestion in the NEM.

As indicated above there is clearly a problem with constraints associated with the Snowy region. This is demonstrated by the fact that the Commission is currently dealing with three rules changes seeking to address this issue. Macquarie Generation is strongly of the view that this problem area must be addressed prior to the introduction of any new congestion management regime. In fact Macquarie Generation considers that with the Snowy region issue resolved that it is likely that a review of the available data, and expected future trends in the levels of congestion in the NEM will lead to the conclusion that the costs and complexity of introducing a new congestion management regime will not be warranted given the limited expected future benefits.

***2. Given the development of the NEM and the recommendations of reviews undertaken to date, what are the significant priority issues for this Review?***

The priority issues for this review are:

- Appropriate resolution of the Snowy region issues
- Whether in the future any material level of intra-regional congestion is likely
- If a material level of intra-regional congestion is likely whether the costs and complexity of introducing an additional congestion management regime will be warranted given the expected benefits
- Whether there would be benefits to the efficiency of the market by reducing the level of discretion available to NEMMCO and increasing their transparency obligations with respect to their formulation of constraint equations and the use of system security powers.

***3. What are the key questions the Commission should seek to examine quantitatively as part of the Review? What key factors should the Commission take into account in this modeling analysis?***

The key questions that the Commission should examine quantitatively are:

- What has been the historical level of congestion per network element or related groups of network elements rather than considering this question on a regional basis as currently. This

will require NEMMCO to provide disaggregated data that is summarized in Table 1 in the Issues paper. This analysis will indicate if there is any underlying trend in the level of network congestion and therefore whether the current investment incentives for both generators and TNSP's are resulting in material levels of congestion.

- Based on the Commission's view of the expected revenue regulation regime for TNSP's and the resulting investment programs resulting from this regime whether material levels of congestion are likely to emerge in the future assuming that the Snowy region boundary is appropriately re-defined.

The key factors that should be taken into account in this modeling are:

- TNSP investment programs
- Existing and commitment generation projects
- Expected demand growth
- Incentives for generators and how this may effect their bidding behaviour

***4. Are there any material problems with the 'option 4' approach to constraint formulation to managing system security and reliability? How might such problems be addressed while continuing to maintain system security and reliability?***

Prior to the introduction of the use of 'option 4' as the preferred constraint equation formulation NEMMCO argued that there was a number of advantages of 'option 4' over 'option 1'. The key benefits identified by NEMMCO were:

- Increased network utilization resulting from the reduced need for safety margins in the constraint equations
- Reduced levels of manual intervention by NEMMCO resulting in a reduced risk of system security being comprised as a result of an error arising from the manual intervention

Recently Macquarie Generation wrote to NEMMCO outlining the results of a review of the impact of the implementation to date of the use of the 'option 4' formulation. In Macquarie Generation's view neither of these benefits has been realized. A copy of this letter is attached for your reference.

Also in addition to the lack of apparent benefit from the introduction of 'option 4' there are other issues that have arisen from the use of this formulation. These are:

- In re-formulating existing constraint equations to the 'option 4' form NEMMCO has exercised its discretion to place generation with small impacts on network congestion on the left hand side of the equation where previously they were on the right hand side of the equation. As a result there has been an increased likelihood of generation being constrained on or constrained off by the constraint equation and therefore not participating in the price setting process. This has resulted in generators being dispatched at a particular level of output but not receiving at least the price they offered for producing at this level.
- As a result of this the price setting process is becoming less transparent that it was previously and this is likely to have a negative impact on the long term efficiency of the market, including the hedge markets.

It appears that in the implementation of 'option 4' NEMMCO is acting both as rule making in terms of defining policies for the development of constraint equations and also as rule applier by

implementing these policies. A consequence of this appears to be an increasing likelihood of generation being dispatched not in accordance with its bid price but by being constrained on.

Also NEMMCO appears to be reformulating inter-regional constraints as ‘option 4’ constraints and the rationale for this is unclear.

It may be valuable to develop some clear principles for the development of constraint equations that could be incorporated in the rules to balance the potential short term productive efficiency gains against the longer term efficiency detriment created by the reduced transparency of the price setting processes in the market.

***5. Are there any other problems, other than constraint formulation, with the management of system security in the context of the current congestion management regime? How might any such problems be addressed?***

The definition of system security and system reliability in the Rules is not clear and consequently NEMMCO’s responsibilities with respect to system security and reliability are not clearly defined.

Given NEMMCO’s incentive to reduce their risks this create the potential for NEMMCO to use their discretion to intervene in the market to manage system security in a non transparent and unpredictable manner.

A good example of this was NEMMCO’s introduction of the use of ‘option 4’ in the Snowy region. The primary reason for this was NEMMCO’s concerns with system security but at no stage did NEMMCO provide any data to demonstrate the basis for this concern.

In order to achieve a particular level of system security or to improve the current level of system security at any point in time costs will be incurred. The level of system security that is desired should not be viewed as some form of absolute that must be achieved at any cost but the trade-offs in terms of increased costs for the increased benefit of a higher level of system security should be identified and these trade-off more explicitly considered.

In Macquarie Generation’s view this problem could be addressed by:

- Requiring NEMMCO to develop a simple measure of the state of system security of the system at any time. This could then be used to indicate to the market in a transparent manner when action would be required to restore the system to an acceptable level of system security.
- More clearly defining system security and NEMMCO’s obligations with respect to system security in the Rules

***6. How material are reductions in the dispatch and pricing efficiencies due to binding intraregional constraints under the current arrangements? How can they be quantified?***

On the basis of the available evidence, with the exception of the Snowy region, the reductions in efficiency do not appear to be material.

The level of congestion could be quantified by examining the historical levels of congestion in more detail, on a network element basis, and then modeling what changes in dispatch would have been

likely if the congestion had not been present. This modeling must take into account changes in generator incentives that may occur as a result of changes in the levels of congestion.

***7. How material are the reductions in dispatch and pricing efficiencies due to the management of negative settlements residues under the current arrangements? How can they be quantified?***

Using the available data it is difficult to assess the materiality of inefficiencies created by the management of negative settlements residues under the current arrangement.

The only way that they could be quantified would be by modeling the outcomes that could occur with a range of ways of managing the negative settlements residues – at least comparing the current arrangements with no management of negative settlements residues. It is important however that any modeling take into account the changes in incentives that would occur for market participants as this is likely to change how they bid and this will have a material impact on the outcomes.

***8. Have the existing arrangements resulted in materially inefficient investments? Could the existing arrangements result in materially inefficient investments in the future? What kind of inefficiencies may result?***

This issue was examined in the report “*Undertaking A Review Of The Regional Structure Of The NEM*” prepared for the Newcastle Group in May 2004. A copy of this report has been previously provided to the AEMC for reference.

***9. How well do existing arrangements provide signals for efficient investment over time and locationally using the least-cost technology—generation, network demand side management or non-electricity alternatives?***

Refer to review by Newcastle Group.

***10. Does the potential to be constrained-off or constrained-on relative to the regional reference price result in material risks for market participants? How are those risks managed?***

As outlined above in response to Question 4 this does result in a material risk for generators and more importantly this risk appears likely to increase as NEMMCO continue to reformulate constraint equations.

There are limited options available to generators to manage these risks.

***11. Do market participants face problems in managing risk due to the nature of the instruments available, or the liquidity of market for those instruments? If so, how are those problems related to the current approach to congestion management?***

There are no problems for market participants in terms of managing risks using the OTC contract market. This market appears to be very healthy with a number of brokers active in this market who continue to develop products and services in response to market needs.

***12. Are there problems in accessing information to support effective risk management in the context of congestion in the NEM? Is the lack of exchange based trading a problem in this context?***

The levels of congestion in the NEM do not create any material issues in terms of being able to access information to support effective risk management. The perceived lack of exchange based trading is not a problem as risks can be effectively managed in the OTC market and in any case there are strong indications that the level of trade through the SFE will continue to grow.

***13. Does the current design of IRSR units impact the ability of participants to efficiently manage inter-regional price risk?***

No, Macquarie Generation is strongly of the view that the current design of the IRSR arrangements are as good as a solution as is available internationally for managing inter-regional price risk. There is no evidence that the current design can be improved.

***14. Has the uncertainty regarding regulatory process and decisions created material risks for participants?***

The uncertainty associated with future direction on regional boundary changes and in particular with respect to the Snowy region has created material risks for market participants.

The wealth transfers that have occurred as a result of the CSC/CSP trial which was the outcome of a somewhat flawed regulatory process are significant.

***15. Do market participants face problems in managing risk due to a lack of transparency associated with the current approach to congestion management? If so, what are the nature and materiality of these problems?***

As outlined in response to Question 4 above Macquarie Generation is concerned that the approach being adopted by NEMMCO in reformulating constraint equations to the 'option 4' form is resulting in an increasing risk of generation being constrained on.

This creates a real and material risk for generators as a result of not being able to effectively manage dispatch levels at various price levels. In our view this violates a fundamental design principle of the NEM that generators should be able to self commit and then manage output levels of plant by selecting the price at which they offer to produce at various production levels.

The increasing likelihood of being constrained on increases the difficulties and risks of managing dispatch levels as it is possible that a generator will be required to produce at prices well below their opportunity cost with no effective mechanism for managing this.

There can be limited transparency on how this constrained on generation is likely to occur ex ante as a result of differences between pre-dispatch and actual constraint equations.

***16. Are there any additional issues with the current congestion management regime that should be considered as part of the Review? How can the materiality of these concerns be quantified?***

No

***17. Is this an appropriate characterisation of the current arrangements in the NEM for the purposes of assessing potential improvements to the congestion management regime?***

Yes

***18. Is the proposed ‘staged approach’ to congestion management an appropriate framework? Is it the most effective response to those problems? Is it technically and commercially feasible?***

No – the proposed ‘staged approach’ makes the assumption that there is likely to be intra-regional congestion that will material enough to warrant the costs and complexities associated with the introduction of a short term congestion management regime such as the proposed CSC/CSP arrangements.

As indicated in response to Question 2 above Macquarie Generation considers that this is a question that should be examined by the AEMC and this ‘staged approach’ only be adopted if in fact it is likely that there will be a material level of intra-regional congestion such that the benefits of introducing the CSC/CSP regime will be greater than the costs.

***19. Has the NEM had material congestion problems which have not been enduring? Is it likely to do so in future?***

Yes there have been a number of instances of material intra-regional congestion that have not been enduring. A good example is the so called Tarong constraint.

The likelihood of these problems occurring in the future is a question for examination by the AEMC – refer to our response to Question 3 above.

***20. Are the costs of an interim congestion regime (discussed in greater detail below) clearly lower than the costs associated with region boundary change?***

It is not clear that the costs of an interim congestion regime will be lower than the costs of a region boundary change.

The proposed interim congestion regime, CSC/CSP, will require the introduction of institutional arrangements to undertake on an ongoing basis the very difficult task of allocating CSC’s amongst competing market participants. Given that this process will create winners and losers with potentially significant commercial implications it is likely that this will create high levels of disputation.

Consequently it is likely that the costs associated with creating and maintaining this regime will be significant and it is not at all clear this will be a lower cost alternative than the implementation of a region boundary change on an as needs basis.

The proposed CSC/CSP regime is in effect temporary nodal pricing for generators. Consequently this regime will increase risks for generators and is likely to reduce their willingness to participate in the hedge market with the potential for increased costs to the entire market.

**21. What triggers should be considered for the introduction of various congestion management tools under a staged approach? Which institutions should be responsible for recommending and approving the introduction of congestion management tools at each stage?**

If it is assumed that the ‘staged approach’ is warranted the triggers should be based on the costs of introducing the next stage of congestion management compared to the economic benefits created by the improved economic efficiency of the market.

The AEMC should define rules which will clearly define the criteria and processes for introducing the use of various congestion management tools at each stage by NEMMCO with the AER reviewing the compliance of NEMMCO with the rules.

**22. What role should region boundary changes play in managing congestion, particularly in a staged response? How much emphasis should be placed on that role?**

The introduction of a regional boundary is an alternative to investment in transmission to remove congestion. Therefore both these options for dealing with congestion should be evaluated on the same basis. This should be on the basis of the current provisions of the regulatory test – either to ensure reliability of supply is maintained or to provide economic benefits to the market.

In general it would be expected that regional boundaries should only be modified if it becomes clear that investment in transmission to remove the congestion is not likely to occur.

**23. Is the economic boundary change criterion proposed in the MCE region boundary Rule change proposal consistent with the staged approach to congestion management? What further efficiency gains would be realised from region boundary change, after the introduction of an interim congestion management tool?**

The use of an economic boundary change criterion in our view is the most appropriate as outlined in our response to Question 22 above.

A full regional boundary change may improve generator incentives and therefore result in improved efficiency as compared to an intermediate congestion management solution.

**24. To what extent will firming-up IRSRs facilitate inter-regional trade? What is the best approach to firming up IRSRs and how would this work?**

In our view based on international experience the current arrangements with regard to IRSRs are as effective as it is possible to achieve. Consequently no further action by regulators is required.

If market participants wish to improve the usability of the current IRSRs they can do that within the current framework in a manner of their choosing and therefore intervention by regulators could potentially be counter productive.

One area where action could be taken to increase the “firmness” of IRSRs would be to review the use of constraint equations for inter-connectors. In some instances the choice of constraint equation has resulted in an effective reduction in the capability of the inter-connector and therefore the firmness of the IRSRs.

**25. Is there a need to review the case for the ‘option 4’ constraint formulation approach in the context of this Review? If so, what would be advantages and disadvantages of moving away from an ‘option 4’ approach to constraint formulation?**

Give our response to Question 4 we believe some re-examination of the merits of the continued use of ‘option 4’ may be warranted.

The preference for ‘option 4’ is largely based on the view that this will maximize productive efficiency while giving NEMMCO the best solution with respect to managing system security.

However there are significant dynamic efficiency effects created by the use of ‘option 4’ and these need to be also considered. These are illustrated in the “Case Study On The Inter-Action Of Regulatory Regimes” that Macquarie Generation provided to the AEMC on 6 March 2006.

**26. What would be the effect of ceasing NEMMCO intervention to manage counter price flows? To what degree does this depend on other factors such as the region boundary criteria and process?**

This could result in less efficient dispatch where high cost generation in a high priced region would displace low cost generation flowing into that region over the inter-connector. However this effect should be able to be eliminated with the appropriate choice of regional boundary.

**27. How should negative settlements residues be funded? Should the current process of offsetting negative residues with positive residues within the current billing week be continued or changed?**

Negative settlements residues should be funded from the auction proceeds and the current practice of offsetting negative residues with positive residues within the current billing week should cease as this reduces the value of the IRSR units.

**28. Are constrained-on payments an appropriate solution to generators being paid regional reference prices less than what they offer? If so, what principles should apply for determining the size of payments, who should apply them and how should they be funded?**

Constrained-on payments for generators are a potential solution where they are being paid less than they offer. However it would be preferable to eliminate the need for these payments by either:

- Including in the Rules principles that must be applied by NEMMCO in formulating constraint equations to limit the likelihood of generators being constrained on, or
- Re-examining the price setting mechanism in the market to eliminate the need for constrained-on payments

These alternatives are preferable as it is much easier for market participants to hedge the spot price than some form of uplift charge which is allocated to customers on a less certain basis.

**29. *Would the funding of constrained on payments be likely to introduce a material financial risk for participants making the payments? How could this risk be managed?***

As indicated in response to Question 28 the funding of constrained-on generation payments may create a material financial risk for participants due to the expected difficulties in hedging this payment.

**30. *Would there be merit in extending the existing NSAs as a congestion management tool in the NEM? If so, how should such arrangements be implemented?***

Yes – the current arrangements in North Queensland, managed by Powerlink provide a cost effective alternative to transmission investment and should be extended to other circumstances where this is the case.

**31. *Should NCAS support contracts be used to enhance transmission network capability? If so, who should offer these contracts?***

Yes – any market participant in a position to provide this service should be given the opportunity to do so.

**32. *Is there merit in having TNSPs responsible for procurement of NCAS, rather than NEMMCO, so that NCAS forms a part of the Network Services? If so, how should this be arranged?***

Currently there may be some sub-optimal network utilization as a result of unaligned incentives between NEMMCO and the TNSP's. If ways could be found to improve the alignment of these incentives by changing how NCAS services are procured this should be explored.

TNSP's would in a much better position to comment on this issue than Macquarie Generation.

**33. *What would be the best way of funding NCAS payments and how should this be implemented?***

NCAS services should be funded by customers.

**34. *Is the allocation of CSCs a necessary element of a CSP/CSC regime, or would it be practical to introduce CSPs without simultaneously allocating CSCs?***

It would be preferred to have CSC's allocated in some way in order to manage the financial risks for generators exposed to CSPs.

**35. *If CSCs are a necessary component, what is the optimal way to allocate CSCs? What effect will this have on the ability to introduce CSPs rapidly and flexibly?***

The allocation of CSC's is the threshold issue for his regime. Clearly incumbents will be seeking to have their current access rights protected by grandfathering while new entrants will be arguing for some allocation in order to enter the market to provide needed additional supply.

This is likely to be a very difficult issue to resolve and as indicated in our response to Question 20 will create significant costs to the market.

***36. Is it important to the design of a congestion management regime whether or not CSCs are firm? If so, what issues should the AEMC consider in reaching a view on the appropriate nature of CSCs?***

To the extent that CSC's are not firm their value as a risk management tool will be reduced as is the case for IRSR's units. Seeking to improve the firmness however creates similar issues to those associated with increasing the firmness of IRSR's and may be best left to the market.

***37. How should the process of region boundary change be coordinated with the allocation of CSCs under a staged approach to congestion management?***

Given our response to Question 18 we have not formed a view.

***38. How can the Commission best draw on the partial Snowy CSP/CSC trial to evaluate the costs and benefits of the use of CSP/CSCs? How can the Commission best draw on the Snowy CSP/CSC trial to consider modifications to the proposed design of CSPs and CSCs?***

Other than demonstrating that the settlements processes can be modified to accommodate this trial the trial demonstrates nothing of generalized value to the market.

***39. Are there any additional congestion management tools that should be considered as part of this Review? How would these tools be implemented? How would they interact with other aspects of the congestion management regime? What would be the effect of such tools on participant behaviour and market outcomes?***

No

***40. Which, if any, of the congestion management issues identified in this paper could be considered on a stand-alone basis? Which issues need to be considered together to ensure a comprehensive and consistent congestion management regime?***

The long standing problems in the Snowy region should be resolved as a single issue as rapidly as possible.

Then all other matters related to congestion management should be examined holistically based on an examination of the available data.

As indicated in our responses the regulatory regime that TNSP's operate in influences their investment behavior which in turn has a material impact on the expected level of congestion in the network. Therefore it is crucial that congestion management issues being examined in the light of the expected regulatory regime for transmission.