Loy Yang Marketing Management Company Pty. Ltd.

AGL Southern Hydro Pty. Ltd.

International Power (Hazelwood, Synergen, Pelican Point, Loy Yang B and Valley Power)

TRUenergy Pty. Ltd.

NRG Flinders Pty. Ltd.

Hydro Tasmania

24 March 2006

Dr John Tamblyn
Chairman
AEMC
Level 16, 1 Margaret St,
SYDNEY NSW 2000

By email: submissions@aemc.gov.au

Dear John

Southern Generators Response to Requests for Making of a Rule –

- **Snowy Region Boundary by Snowy Hydro Ltd; and**
- **Alternative Snowy Region by Macquarie Generation Ltd.**

The above group of participants "Southern Generators" (who represent the bulk of the generation capacity south of the Snowy region) are pleased to comment on these rule changes. Please accept this single submission in response to both proposals.

Summary

The Southern Generators recognise that where significant congestion occurs intra-regionally in the NEM, such as that between Murray and Tumut, inefficient market

outcomes may result. Therefore we are supportive of attempts to more accurately price such congestion. Each proposal has complex technical and commercial advantages and disadvantages over the current arrangements. Some of these are briefly discussed below, but properly examining each of these against the single market objective ("SMO") will be a challenging task.

We cannot support the AEMC authorising these proposals without such a thorough examination. Nor do we think it is a sensible use of AEMC resources to undertake such an effort in response to multiple ad-hoc proposals at this time.

Instead we suggest considering these proposals within the congestion management review. We hope that that review can propose a sensible and co-ordinated regime for managing NEM congestion that will propose, if necessary, a single optimal change. We also hope that that regime resolves the frustrations that provoked these participant proposals.

Further Technical Information

Some of our members are attempting to collate some technical data that may prove useful to the AEMC regarding the exact location and severity of specific historical constraints in Victoria and NSW. This was not available at the submission due date, however we hope to provide it within two weeks.

Background to group

The Southern Generators formed in 2005 to propose, along with NEMMCO, a rule change to better manage negative settlement residue in the Snowy Region. We share a common concern regarding problems caused by the existing management of negative residues that has the unintended effect of severely limiting our ability to sell competitively priced electricity to customers north of the Snowy region.

Our involvement in that issue provides experience in these matters. We approach these new proposals with a desire to further the SMO by maximising the ability of all participants to trade across the existing transmission network. Changing regional boundaries does not change the underlying physical capacity of the transmission system- it simply alters the pricing of congestion, which if done more accurately will lead to more efficient dispatch, and in turn, more efficient transmission utilisation.

In our opinion, the SMO can be furthered in this regard if:

- The regional boundaries and reference nodes, as much as reasonably possible, reflect the true position of constraints where they exist between large generating centres;
- As a result of the above, the transmission system is able to run up to its maximum secure capacity in order to achieve optimal dispatch;

- As a result of the above, the settlement residue stream is allowed to accurately reflect the capacity of the transmission system, underpinning inter-regional contracting.

We conclude that the most competitive conditions for generators are actually achieved when the regional boundaries are as **right** as possible, not necessarily as **large** as possible.

Whilst we have named ourselves "Southern Generators", our members also have extensive retailing activities that total roughly half of the Victorian and South Australian customer base.

We reject any suggestion that the matters raised here represent any desire to limit competitive access by other generators into the markets south of the Snowy region.

Process Relationship to Southern Generator & NEMMCO proposal

Snowy Hydro has suggested its regional boundary definition be considered in parallel with:

1. NEMMCO's Recovery of negative inter-regional settlement residues;
2. Macquarie Generation's Proposal regarding the Snowy Region; and
3. Our proposal regarding negative residues associated with loop flows in the existing Snowy Region.

We believe there is no connection to either (1) or (3).

- The NEMMCO proposal relates to an administrative matter regarding what source: auction fees or proceeds should fund sporadic instances of negative residue. There is no intention to alter dispatch processes or regional boundaries and the matter would remain in whatever regional form applied.

- The Southern Generator & NEMMCO proposal (3) holds no linkage to any of the other rule change proposals-either in substance or temporally. This proposal seeks only to manage a specific and expected source of negative residue that accumulates within the existing regional boundaries and for which the current management method creates serious distortions. It automatically sunsets at the earlier of July 2007 or a Snowy region boundary change. Therefore by definition it cannot interfere with the consideration or operation of either (2) or the Snowy Hydro proposal.

However we recognise it is not sensible to consider the Snowy Hydro proposal separately to the Macquarie Generation proposal, as the two are mutually exclusive.

Timing with respect to Congestion Management Review

The AEMC have begun a comprehensive review into the pricing of congestion in the NEM. The AEMC is also considering a rule change proposed by the MCE to create a new regime for altering regional boundaries. We believe that neither the MCE proposal, the Snowy Hydro proposal nor the Macquarie Generation proposal should be allowed to pre-empt the conclusions of the broad congestion management review. Now that the review is underway, any alteration to regions should be consistent with any new arrangements recommended by that review. Macquarie Generation also promotes that approach in their covering letter.

Consider some hypothetical recommendations of the congestion review:

- The review may recommend widespread use of the CSC/CSP technique to accurately price generation whilst implementing very large and stable regions for load. This would tend to promote simplistic regional boundaries of the type recommended by Snowy Hydro with possibly congestion management regimes on all Snowy Region generators.[1]
- Alternatively, the review may conclude that the CSC/CSP implementation is problematic. In that case it would have to recommend the continued use of regional boundaries as the primary means of pricing congestion. This would tend to promote smaller and more complex regions for generation and load, similar to that proposed by Macquarie Generation and possibly more so.

Clearly there remain unanswered questions and it would be unnecessarily disruptive for a boundary change to be implemented now that later proved inconsistent with the outcomes of that review.

However, the matters raised by each of the three parties are worthy of exploration within the congestion management review. We suggest using the two region proposals as examples to be considered, after the review has proposed some assessment criteria.

Participant Sponsored Changes

The original NEM design placed NEMMCO as originator of regional boundary change. These rule proposals threaten to introduce a new paradigm of participants sponsoring detailed regional boundary re-alignments. That its first example involves two competitors simultaneously sponsoring contradictory proposals suggests such a paradigm will be problematic!

Note that when a regional boundary change occurs it will involve:

- NEMMCO's reformulation of hundreds of constraint equations, as new "hubs and spokes" are derived;
- Substantial review of transmission limit advices by TNSPs;
- Major work by NEMMCO on recalculation of interconnector loss models and intra-regional marginal loss factors;

[1] A more detailed discussion of this scenario is provided at the end of this submission.

- Alteration of IT systems for dispatch and settlements by NEMMCO and participants;
- If looped regions are created, a fundamental change to the "hub & spoke" dispatch model will be required[2];
- Where load is re-assigned, re-assessment of retailer trading strategies and risk mitigation and prudential exposures;
- Adjustment of hedging contracts between participants.

Thus, a regional boundary change should not be taken lightly! The market needs confidence that what is being proposed truly represents the optimal boundaries in the universe of potential options, both technically and in terms of the SMO. We believe it is unlikely that a participant has the technical skill to independently promote that outcome.

Given the economic significance of these proposals, a proper assessment would require a very substantial electrical analysis and economic modelling exercise undertaken by the AEMC, effectively from scratch. It would be of concern if participants could, at no cost to themselves, force the AEMC to undertake multiple and conflicting analyses.

The Southern Generators envisage a more practical mechanism for regional boundary change. We suggest instead that the annual ANTS review would naturally be a source of technical data regarding points of major congestion. This could have a chapter dedicated to preliminary regional boundary assessments, and might automatically trigger regional boundary change proposals to be passed to the AEMC. Participants could also have a role in requesting that the ANTS regional boundary chapter review particular points of congestion concerning them, providing clear opportunities for consultation.

Such a formal and structured regime should be considered within the congestion management review. We raise it here to point out that better means of proposing boundary change may come about than through uncontrolled participant proposals such as these.

Our conclusion is that the AEMC should not undertake a detailed assessment of the technical and economic merits of these proposals at this time and instead focus its efforts on the development of a practical mechanism for managing regional boundary changes consistently. Even if market efficiency were incrementally increased by one of these proposals, we feel that over the long-term the SMO would still be best achieved by not considering them incrementally and on an ad hoc basis, but instead instituting a periodic review process.

AEMC Assessment technique

Should the AEMC choose to undertake a detailed assessment of the proposals, we offer the following discussion as background for the technical and economic analysis.

[2] This is a feature of the Macquarie Generation proposal. This is discussed later in the submission.

- The Southern Generators acknowledge that the Snowy region fails to recognise a very significant constraint: the Murray-Tumut cutset, that can lead to poor market outcomes, e.g. those issues that lead to Snowy Hydro proposing the CSC/CSP trial for Tumut. We also note that the trial has been a prima facie success at resolving this matter without regional boundary change. The trial appears to have resolved concerns raised by Macquarie Generation[3] regarding altered dispatch incentives caused by the mispricing of Tumut during Northerly and Southerly flows.

- The present occurrence of negative residues due to loop flows is not symptomatic of any "problem" in the regional definition itself. These negative residues are the natural mathematical outcome of accurate pricing within a constrained network loop[4]. The NEM requires a means of managing them rather than avoiding them. We suggest that the removal of negative residue due to loop flow not be counted as a "benefit".

- The Murray-Tumut constraint is only one of many significant network constraints that are not represented via an existing regional boundary. One could attempt to recognise each with a boundary[5] but MCE policy has rejected that approach-driven by a desire for regional stability. In line with that policy, any new regions must deliver significant economic benefits and we must accept that many of the NEM's constraints will never be represented by an exact boundary.

- The MCE policy was aimed at stability and avoiding, if possible, the multiple subdivision of existing regions. There is no express policy regarding the reducing the existing number of regions. Clearly there is no "stability benefit" gained by elimination of a region. Before contemplating elimination, it is essential to carefully consider if it may cause any new mispricing. I.e. If a region's elimination results in any incremental step backwards in dispatch efficiency, it should be rejected.

- When considering the potential for points of congestion, ideally the AEMC should be forward looking. However it should also learn from history. Over the last decade we have seen many constraints rise and fall in prominence. For example, the Murray to Dederang constraint was historically the most critical determinant of southwards capacity into Victoria, yet in recent years has rarely bound. This is more an outcome of dynamic market conditions affecting dispatch patterns rather than network augmentation. The AEMC needs to be cautious that the permanent elimination of a regional boundary is justified by the enduring resolution of the constraint that originally justified it.

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[3] Macquarie Generation proposal, page 3.
[4] For explanation, see Southern Generator and NEMMCO rule change proposal "Managing negative settlement residues in the Snowy region" and also AER submission to this proposal.
[5] This was effectively recommended by the COAG "Parer" report.

- Due to its price insensitivity, inefficiencies from the marginal mispricing of load are of a much lower magnitude than those that can come about from the mispricing of generation. Large, flexible generators that compete for transmission capacity with others and whose output depends critically on incentives to generate should be priced accurately considering their location and effect upon the capacity of the network. Regional Reference Node locations are critical: better dispatch efficiency can be achieved by placing them at key generators rather than load centres.

- Thus, when considering new Snowy regions, the AEMC must give greatest focus to the resulting price signals for the two most critical generators: Tumut and Murray Power Stations. The benefits in more accurate pricing of some rural load and the smaller Victorian hydro stations are of a lower order of magnitude.

Some Comments on the Technical Structure of the proposed boundaries

As generators we are not experts on the technical merits of either proposal and defer to the TNSP's and NEMMCO. We note some issues from our anecdotal understanding.

Snowy Hydro proposal

This proposal eliminates the Snowy region and shifts the NSW-Vic boundary across the Tumut-Murray cutset. In the case of a northerly binding Murray-Tumut constraint, this would more accurately price Tumut than the current regions (in the absence of the CSC/CSP trial). However in the case of numerous other potentially binding constraints between Sydney and Melbourne, the proposal would result in either similar or regressive outcomes.

1. The Dederang-Murray southwards constraint has historically been the primary limitation of transmission capacity into Victoria, particularly in consideration of Vic/SA reliability and during extreme Victorian prices. This constraint is presently accurately represented as inter-regional but would become intra-regional in the Snowy Hydro proposal. When this constraint binds Murray would be over-rewarded with a Victorian price whereas it should compete on equal terms with generators North of the Snowy region for access.
2. Constraints between the Snowy Region and NSW have bound less frequently in recent years, but historically were critical in value terms. This inter-regional constraint would also become intra-regional.
3. When the Murray-Tumut constraint binds in the northern flow, the proposal would result in Murray receiving the Victorian price, adjusted for loss factors. This is incorrect as it forms part of a loop flow, and its efficient price is in fact neither the Victorian nor NSW price. NEMMCO considered implementing this form of pricing in 2005 as a means of resolving negative residues and concluded that it may lead to inefficient bidding incentives and dispatch outcomes and rejected it. See Appendix 1 for some key extracts of that consultation.

4. The South-Morang Transformer thermal and Latrobe to Melbourne transient stability "export" constraints that are presently represented as northerly inter-regional constraint would become intra-regional[6]. We understand that these bind for hundreds of hours per year.

Snowy Hydro has claimed that it will be the only participant affected by these changes. However the sub-optimal dispatch outcomes listed above will in fact have very widespread impacts. The matter raised in point 3 could result in the enduring elimination of trade between generators south of the Snowy region to customers north of it.

Snowy Hydro has claimed that despite accurate locational pricing of Tumut through the CSC/CSP trial, they are still denied fair competitive access to NSW load viz generators on the NSW Western Ring. Note the same limitation applies to all generators south of the Western ring, including ourselves. We fail to understand why the AEMC would want to resolve that perceived unfairness in favour of only one of the many generators disadvantaged.

Macquarie Generation proposal

Our criticisms of the Snowy Hydro proposal in points 1 & 3 above apply equally to the Macquarie proposal, hence we will not repeat them here. Aside from this, point 4 appears better addressed than the current boundaries, whilst we are uncertain regarding point 2.

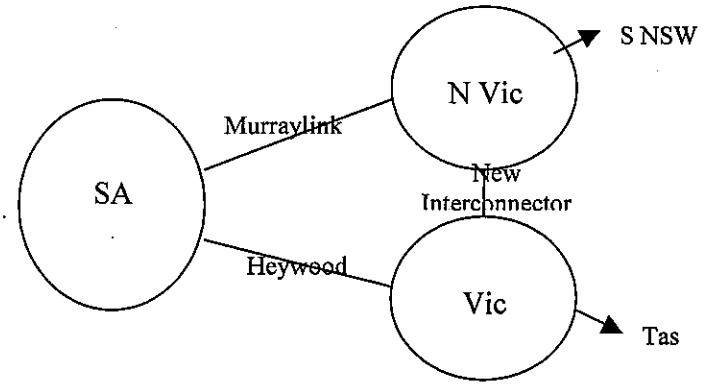
Our concerns regarding point 3 would be addressed by placing the Northern Victorian Regional Reference Node at Murray. However, this in turn would materially misprice all other parts of that region in the presence of Murray to Tumut constraints or Dederang to Murray constraints.

With respect to the pricing of Victorian Hydro generators, we agree that the current arrangements have in some cases mispriced their generation but we believe this is no longer material. We understand the two situations described on page 3 of the Macquarie Generation proposal are unlikely to recur since a recent augmentation of the Dederang Terminal Station that greatly relieved constraints associated with 330/220kV transformation at Dederang.

Looped Regional Network

Macquarie Generation's Northern Victoria region creates a new concept in the NEM: a regional "loop".

[6] This constraint's inter-regional representation appears to mis-price generation in Victorian Hydro (~500MW), however this would be amplified to 2000MW as Murray is also be downstream of it.



Although many network loops exist in the NEM, there has never been 3 regional reference nodes jointly interconnected in this manner. An advantage of the proposal is that it more explicitly recognises the accurate pricing of this loop.

Unfortunately this presents a challenge for the current design of the NEMDE which is unable to handle regional loops because of its simplified "hub & spoke" network representation. It is generally accepted that if and when a regional loop appears in the NEM it will be necessary for NEMMCO to move to a Network Model representation.

A Network Model would have some advantages for NEMMCO and participants, however a recent NEMMCO investigation found the task would be similar to the construction of the dispatch engine at market start. In the absence of regional loops, NEMMCO believes this cost outweigh the benefits. It would also take at least 2 years to complete so Macquarie's recommended implementation of July 2007 appears unrealistic.

As in every situation where 3 points of a loop are explicitly priced, negative residues will accumulate against one of the interconnectors when another is constrained[7]. Again we welcome this outcome as a natural outcome of efficient dispatch but it will need to be appropriately funded, probably with a scheme such as that proposed in our recent rule change request for the Snowy region.

Whilst the Southern Generators are unconcerned by this creation of efficient negative residues, given the above impact, it contradicts Macquarie Generation's claims of benefits caused by the reduction of negative residues in their proposal:

> "*the revised structure would minimise loop flows in and around the Snowy network*" [8]
>
> {We presume this is intended to mean "would minimise *the explicit pricing of* loop flows".}

Macquarie Generation go on to say that:

[7] Although the total residue will always be net positive.
[8] Macquarie Generation Proposal, pg6

"by reducing the likely (sic) of counter-price flows in this part of the NEM, the proposal would increase the 'firmness' of settlement residue auctions units...At the same time it would reduce the need for the (sic) NEMMCO to devise artificial solutions to minimise the incidence of negative residues,"[9]

Relationship to ANTS "regions"

NEMMCO has developed cutsets to assist it in recognising points of congestion in the NEM national flow-paths for the creation of the Annual National Transmission Statement. We understand these have been thoughtfully developed by technical experts at the locations of the most economically significant congestion. The Macquarie Generation and Snowy Hydro proposals have each removed regional boundaries that are listed as ANTS cutsets, and both have proposed new boundaries, none of which reflect the official ANTS cutsets. Even Macquarie's boundary between North Victoria and Victoria is inconsistent in its details in comparison with the ANTS boundary between "MEL" and "CVIC".

This is surprising, and requires an explanation of why the ANTS processes have recognised very different points of congestion to what Macquarie Generation and Snowy Hydro believe to be most critical. Consideration of the two proposals would benefit from the rationale used to create the ANTS cutsets.

Contracting

Much of the discussion regarding regions relates to the perceived increases in depth and liquidity of contract markets in larger regions. A better way to assist liquidity everywhere is to facilitate trading between regions. It is disappointing that Snowy Hydro believes it needs to become part of the load regions to be able to fairly compete within them, as this implies a failure of the original regional design.

In our opinion the platform for increased inter-regional trade is best achieved by representing regional boundaries as accurately as reasonably possible as that will, in turn, provide a platform for the inter-regional instrument that best reflects the transmission system capacity.

Timeframe

The Southern Generators recognise that regional boundary change may be necessary, but note that it also involves significant business disruption. The Macquarie proposal will have major impacts upon retailers with customers in the new regions and upon affected generators (most notably AGL-Southern Hydro), therefore a reasonable lead time is necessary for the commercial transition and renegotiation process. The proposal of 1 July 2007 is likely to be less than 12 months notice from the final decision of the AEMC. We suggest a lead-time of 2 years is preferable, but 4 full quarters would be the absolute minimum for participant preparation.

[9] Macquarie Generation Proposal, page 6

We expect NEMMCO would have similar implementation timeframe requirements, and at least 2 years if a Network Model must be constructed.

Alternative to Snowy Hydro Proposal

All our criticisms regarding the Snowy Hydro proposal's step backwards in terms of failing to appropriately price constraints may be addressed by the permanent application of a CSC/CSP arrangement to both the Tumut and Murray power stations, presuming a CSP can be formulated to create an accurate locational price at each.

The benefits of correctly pricing these power stations far outweigh the benefits of more accurately pricing any other loads or generators North of Melbourne and South of the Western Ring generators. A CSC/CSP could provide a correct marginal pricing signal to them and thus ensure that the network is optimised, maximising transfer capacity, whilst also allowing the elimination of the Snowy region. If this were implemented, the resulting NSW to Victoria transfer capacity would become relatively firm at around 1300MW, assisting inter-regional trade. It also inherently avoids negative residue, but not by intentionally mispricing generation or artificially limiting flows.

The proposal could also allow the allocation of some degree of congestion support contract to each of these power stations, possibly following a similar logic to that used in the allocation of CSC's for the Tumut trial.

Snowy Hydro's claim that the impact of its proposal would be only upon itself would then be mostly accurate. Holders of both NSW-Snowy Region and Snowy-Vic settlement residue instruments and any other participants contracted upon the Snowy node would also be affected. An appropriate lead-time of at least 4 clear quarters would again be appropriate.

Snowy Hydro claim that despite accurate locational pricing of Tumut through the CSC/CSP trial, they are still denied fair competitive access to NSW load viz the NSW Western Ring. We are unqualified to comment on its materiality, but we expect a good congestion management regime would in time also address the Western Ring issue if it is significant.

Despite the prima facie success of the Tumut CSC/CSP trial, we are not yet convinced that the regime is technically feasible in all situations including this alternative. The congestion management review needs to fully examine this question and thus we suggest also considering this alternative within that review. Again the existence of such potentially attractive alternatives highlights the importance of considering these boundary proposals in that broader context.

Yours faithfully

(signed)

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Appendix 1: Problems caused by mis-pricing Murray Generation to the Victorian price

As noted above, the effect of moving Murray power station into a region where the reference node is at Dederang or in Melbourne is similar to the "Constraint Re-orientation" proposal suggested by NEMMCO in 2005 to avoid negative residues in the Snowy region during northwards flow. This is a feature of both proposals and is claimed as a "benefit" by both proponents.

We draw your attention to the following quotes regarding the consultation that concluded against the Constraint Re-orientation proposal:

> *"Regarding the issue of the gate closure effect, NEMMCO agrees that increased Murray generation at the expense of transfers from Victoria to Snowy would result in reduced flow into NSW-Tumut, ...The effect under the proposed change* (re-orientation), *however, could be more pronounced than under the current arrangement since flow from Victoria to Snowy could become negative under the proposed change, which would not be the case under the current arrangements."*[10]

> *"Having re-examined the position in the light of these submissions, NEMMCO concludes that the proposed reorientation approach could create under a range of likely scenarios incentives to maximise Murray output. This could then result within a short space of time in dispatch outcomes similar to, or more pronounced, than those arising through the current method of managing negative residues by constraining flow from Victoria to Snowy."*[11]

> *"Even though NEMMCO does not intervene directly in the market under this approach* (re-orientation) *there still arises an inefficiency in dispatch. This inefficiency in dispatch arises due to the mis-match between pricing and dispatch at the Murray node. Under this approach Murray is paid the VIC price even though the efficient price for Murray output is significantly lower than the VIC price (in the case of northerly flows). Murray has an incentive to respond by reducing its bids to the point where it is dispatched to the level it would like to be dispatched at the VIC price."*[12]

> *"However, because this approach introduces a new mis-match between pricing and dispatch at the nodes in the Snowy region,*

[10] NEMMCO: Revision to procedures for Management of Negative Residues-Final Determination: 20 Sep 2005, page 11.
[11] Ibid
[12] Darryl Biggar (ACCC Consultant) submission to NEMMCO: Procedure for Management of negative residues, May 2005 Pg 11

> *generators in the Snowy region will not have an incentive to truthfully bid their true costs. This has the potential to introduce just as significant a distortion in dispatch as if NEMMCO intervened directly to control flows as in the first alternative above. In fact, it is theoretically possible for the distortion in dispatch to be more significant than in the alternative above.*[13]

Each of these comments related to the severity of problems caused by settling Murray power station at a price outside the loop, i.e. at Dederang. NEMMCO concluded that although the present practice of managing negative residues-reducing interconnector flows to zero-was a serious distortion, it is probably less distortionary than mis-pricing Murray.

[13] Ibid, pg 12