23rd March 2006

Dr John Tamblyn
Chairman
Australian Energy Market Commission
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Letter sent electronically to: submissions@aemc.gov.au

Dear John

Consultation: National Electricity Amendment (Snowy Region Boundary) Rule 2006

Snowy Hydro Limited (Snowy Hydro) has written this submission to our own Rule change proposal for a number of reasons. These being:

- To respond to the questions and comments from discussions with the AEMC;
- To respond to the Macquarie Generation (Mac Gen) Snowy Region change proposal; and
- To respond to other submissions in related consultations (ie. LYMMCO's Rule proposal, and MCE region boundary change process Rule proposal).

As a result of analysing these numerous Rule change proposals related to the problems in the Snowy Region it has become clear that a holistic perspective of the problems in the Snowy Region has to be taken in order to achieve a sensible outcome that fixes the root cause of the problems instead of merely addressing a symptom. Each of the following Rule change proposals,

- LYMMCO, management of settlement negative residues in the Snowy region;
- Mac Gen, Snowy Region change;
- MCE, region change process proposal;
- MCE, congestion management review;
- MCE, regulated test principles.

possess merit in their own right, but arguably if they are not applied in the context of the broader problems associated with the Snowy Region boundary then the piecemeal implementation of each Rule change proposal (or a combination of the proposals) will only result in consequential problems.

Snowy Hydro strongly advocates the implementation of the Snowy Hydro Snowy Region rule change proposal as a first and primary step to resolving the problems associated with the Snowy Region. We recommend that the new Snowy boundary definition applies from the 1 July 2007. Following this step the fore mentioned Rule change proposals either become obsolete (ie. LYMMCO & Mac Gen proposals) or have a logical and sound basis for which to begin (ie. MCE proposals).

Introduction

From our discussions with the AEMC and from the available literature on numerous related consultations, it has become clear that there are a number of miss understandings as to what a Snowy region boundary change may lead to and the implications for generation competition in general.

In this submission we aim to alleviate these miss understandings by addressing four key issues associated with our Rule change proposal.

1. Addressing misconceptions related to market power (generator competition);
2. A comparison of the Macquarie Generation proposal versus our Snowy Region change proposal;
3. Observations from other related submissions; and
4. Evidence to substantiate our assertions on the net economic benefit of our Rule change proposal.

In addressing each of these it was clear that the problems associated with the Snowy region must be viewed from a holistic perspective and analysed in the context of its impact on market dynamics both north and south of the Snowy Region. These issues also need to be compared to similar situations in the other NEM locations to draw relevant conclusions.

1 Misconceptions Related to Market Power (generator competition)

From Snowy Hydro's perspective assertions about increased market power for Snowy Hydro as a consequence of implementing our Rule change proposal are unwarranted. Snowy Hydro will address the market power concerns from a number of perspectives.

Please note that in referring to "market power" we are referring to market power in a technical sense (that is for a generator, an ability to set a market price unilaterally). We are not referring to abuse of market power (as defined in the Trade Practices Act).

For example with the current Snowy Region boundary definition, Snowy Hydro has significant "market power" with respect to Murray generation in a technical sense under certain market conditions.

1.1 Maximising the transmission capability

There has been miss understanding on the affect of generators located on either side of a constraint. The diagram 1 shows a stylistic view of generators on either side of a constraint.

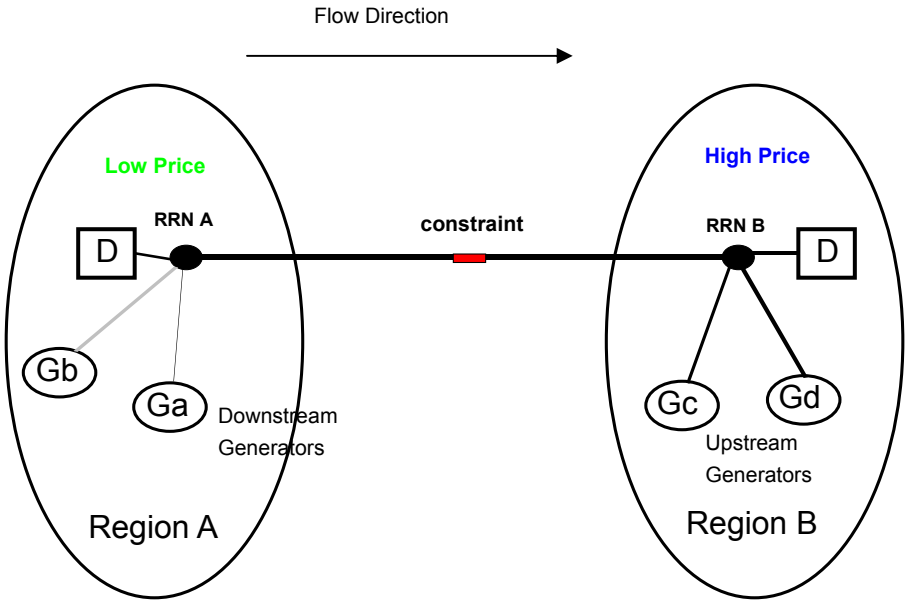

Diagram 1: Simple constraint diagram

Snowy Hydro asserts that maximising generation output by the downstream generators on the downstream side (low price region) of the constraint is in the best interest of customers both in the exporting (low price) region and the importing (high price) region. That is, by generators (Ga & Gb) maximising generation output, competition in the exporting region is increased. Similarly, by generators (Ga & Gb) generating all available MWs, the importing region is receiving the maximum amount of MWs that the transmission element can sustain and thus this will help to also increase competition in the importing region. This dispels the myth that constraining the interconnector is bad or inefficient.

In the context of the Snowy Hydro Snowy Region boundary proposal, it can be hypothesised that the concentration of generation capability (owned by the same Corporation) on either side of the interconnector is a cause market power concerns. In the next section we show this is not an issue of concern in relation to the Snowy Hydro proposal.

1.2 Generation on either side of the Interconnector

The key issue here is not whether having generation on either side of the constraint is possession of market power but what is the level of concentration of generation on each side of the transmission constraint that would constituent market power.

With the upstream generators (Gc & Gd) the degree of market power is dependent on the each generators capacity relative to other available generation in the importing region. The proceeding tables show the level of Tumut and Murray generation relative to the NSW region and Victoria region generators.

Company	Registered Capacity (MW)	Market Share (%)
Mac Gen	4690	27.5%
Delta	4240	24.8%
Eraring	2934	17.2%
Tumut	2165	12.7%
VIC to NSW flow	1300	7.6%
QNI & Directlink	1180	6.9%
Miscellaneous NSW	570	3.3%
Total	17079	100.0%

Table 1: NSW Market Share

Company	Registered Capacity (MW)	Market Share (%)
China Light & Power	3692	26.9%
International Power	2960	21.6%
Loy Yang A	2220	16.2%
Murray	1500	10.9%
NSW to VIC flow	1300	9.5%
AGL (Southern & Somerton)	684	5.0%
Basslink	600	4.4%
SA-VIC AC & DC links	420	3.1%
Miscellaneous VIC	355	2.6%
Total	13731	100.0%

Table 2: Vic Market Share

With Murray to Tumut constrained, Tumut generation only represents 12.7% of available generation NSW/QLD(QNI). Similarly with Murray in Victoria, Murray's generation capacity only represents 10.9% of the available generation in Victoria. These levels of generation concentration on either side of the constraint are by no means large. Indeed both Tumut and Murray should be considered minnows in each Region. Hence we believe neither of these percentages on either side of the interconnector would indicate market power.

Another important observation is that the situation in the Snowy Region with generation owned by the same Corporation on either side of a major transmission constraint is by no means unique in the NEM. For instance:

- Delta Generation with Wallerawang (in SW-NSW) and Munmorah and Vales Point (in NSW);
- Mac Gen with Liddell (in QLD/QNI) and Bayswater (in SW-NSW);
- CLP with generation plant in both Victoria and South Australia and a much smaller interconnector between these Regions; and
- AGL with generation plant in both Victoria and South Australia and a much smaller interconnector between these Regions.

In conclusion, we believe that possessing generation on either side of the Murray-Tumut constraint is not a major issue in light of the relative percentage of available generation on each side of the constraint. We believe that this would be an invalid argument to stall the proposed region boundary

change. As we have demonstrated, there are other locations in the NEM where the same Corporation owns generation on either side of the constraint and these locations arguably may trigger more serious competition concerns than in comparison to the situation in the Snowy Region.

1.3 Ramp Rates

A generators ramp rate determines the maximum rate of output change from one dispatch interval to the next dispatch interval. Typically, thermal generators have a ramp rate of 5 to 10/MW per minute. With a ramp rate of 10 MW/minute, if a generator's output was 500MW at the beginning of a 5 minute dispatch interval, the maximum output for the generator at the end of the dispatch interval (ie. in 5 minutes time) would be 500MW + 6 × 10MW/minute = 560MW.

Ramp rates (similar to available capacity) are re-biddable and this enables a generator to adjust and re-offer their plants physical capability to the market depending on circumstances that may place limitations on the physical output of the generation plant (ie. such as plant outages of auxiliary equipment).

In effect because ramp rates can be used to adjust the output of generation plant, they have been conjectured as a source of market power in times of rationing generation access across a constrained transmission element.

There are 4 possible states with respect to the generator output and ramp rates.

1. Rising output, high ramp rate

   This state is fine from a market power perspective since the generator would be more responsive to changes in market demand. Hence, a generator in this state has the ability to rapidly increase its output in response to a signal from NEMMCO to ramp up output due to a change in market conditions such as a trip in another generator or a sudden increase in demand. A generator in this state can therefore not be accused on possessing market power simply because it can rapidly respond to sudden changes in market demand. Quite contrary to this, generators in this state are maximising the available generation to the NEMCO dispatch engine and hence they are increasing the amount of available generation (supply) competition. This can only be a good outcome for consumers.

2. Rising output, low ramp rate

   A generator in this state can also increase its output but a lower rate. In a situation where there are no effective restrictions on rebidding, operating in this state is equivalent to re-bidding a generators available capacity to the market. Hence, operating in this state is also fine from a market power perspective.

3. Decreasing output, high ramp rate

   This state is similar to the rising output, high ramp rate state. Hence, this state is also fine from a market power perspective since the generator in this state would make available the maximum amount of capacity to the NEMMCO dispatch engine to respond to sudden changes in market conditions.

4. Decreasing output, low ramp rate

   Snowy Hydro believes that this state can and has been exploited to inappropriately affect market outcomes. For instance on the 31 October 2005, NSW Generators rebid ramp rates to low levels to maintain their existing level of generation output when faced by transmission constraints. This served the NSW generators well since they were able to maximise their access to constrained transmission elements. However, operating in this state affects NEMMCO's ability to effectively manage market operations to maintain system security and affects the overall level of competition to supply the constrained regions load.

   Snowy Hydro believes that this is the state that can be used to manipulate / exercise market power since the generator would in effect be unresponsive to NEMMCO's instructions to reduce output to a constrained transmission element. In effect, operating in this state is anti competitive. Separate to the subject matter of this consultation, Snowy Hydro believes that the AEMC/AER should review and recommend market guidance as to the minimum acceptable offered levels of ramp rates to the market (other than for genuine technical reasons).

Ramp rates are a mechanism that can be used to modify the output of a generator. It has been shown that high ramp rates is not an issue from a market power perspective since operating in these states allows rapid response to sudden market changes. This reinforces our belief that Snowy Hydro's generators with high ramp rates are:

- Responsive to sudden changes in market conditions;
- Provides the NEMMCO dispatch engine with the maximum amount of flexibility to clear changing supply and demand and in effect increases the level of generation competition; and
- Ultimately, benefits consumers of electricity.

Conversely, it was shown that when instructed to by the System Operator to reduce generation output the use of low ramp rates can be used to inappropriately maintain the existing level of access to a constrained transmission element. Operating in this state in times of system stress is an indicator of the use of market power and in effect is anti competitive.

In overall summary, with respect to ramp rates and market power, Snowy Hydro is in no different position than any other NEM generator.

2 Macquarie Generation Proposal versus Snowy Hydro Proposal

It is noted that the Macquarie Generation proposal is based on the same fundamental analysis as the Snowy Hydro Proposal. Mac Gen have identified that the constraint between Murray and Tumut is a known and material problem and that something needs to be done to stop this inefficiency. Where they deviate from Snowy Hydro's Rule proposal is in the implementation of the Snowy region boundary change. Snowy Hydro shows that:

- Technically, the Mac Gen proposed region change is incorrect;
- Pre-empts MCE congestion management policy;
- The Mac Gen proposal would result in significant market disruption and is contrary to minimising the number of market regions; and
- That the Snowy Hydro proposal is superior since it would result in net economic benefit, result in minimal market disruption, and minimises the number of Regions.

2.1 Technically Incorrect

The Mac Gen proposal will place Tumut in the South-West NSW region and we show that this is technically incorrect. The lines from Upper Tumut to Canberra and Yass (01 & 02) can supply an extra 118MW when the Lower Tumut to Yass and Canberra (03 & 07) lines are constrained. Please refer to the attached spreadsheet, "Calculations", under the worksheet, "02_02_06 01_02 headroom" which substantiates this fact.

This means that Upper Tumut is firmly connected to Canberra and Yass and hence it would be incorrect to place a boundary between these locations. This is precisely what the Mac Gen is proposing to do but without any congestion between these two locations, a boundary separating these two locations is incorrect.

2.2 Pre-empts MCE congestion management and transmission policy

The Mac Gen proposal would place Murray generation in a new northern Victoria region. This was justified on the basis that there are binding constraints from Dederang to South Morang.

However in suggesting this region boundary change the Mac Gen proposal is pre-empting that there isn't a network augmentation alternative to building out the constraint between Dederang and South Morang.

We believe that this goes against the MCE policy framework for congestion management where persistent and significant transmission congestion is firstly identified in the ANTS, the regulated transmission test can then be applied, and in the absence of a competitive market response to alleviate the congestion (such as new generation investment) the congestion is alleviated through transmission augmentation or a new region is established to provide clear pricing signals for the persistent and significant transmission congestion point.

Snowy Hydro believes that our proposal with Murray in Victoria is superior since it would allow a gestation period for the market to assess whether a transmission augmentation between Dederang and South Morang is viable. If subsequently this augmentation proves unviable then the AEMC could consider revising the Victoria region definition and create a new North Victoria region if this is deemed

appropriate. (Please note that if this augmentation (between Dederang and South Morang) is not viable, then it is simply not viable to increase the NSW to Victoria interconnector in the future).

2.3 Mac Gen Proposal results in Significant Market Disruption and does not minimise the number of Regions

The Mac Gen proposal would also result in significant market disruption as contractual clauses would be triggered (ie. triggering off AFMA market disruption clauses) on contracts that hedge the demand exposure on the Yass/Canberra/Wagga/North Victorian loads. These contractual clauses would result in making these contracts void and hence this may lead to significant market disruption as counter-parties need to re-hedge this exposure.

Further to this, there would also be market disruption (Snowy Hydro would envisage a very substantial volume of all longer term hedge cover) for contracts written on the NSW and Vic nodes, since these regions would be substantially affected by the Mac Gen proposal which will have the effect of cutting out load of the NSW and Vic regions. The net affect would be volatility in the contracts market as Participants are forced to re-negotiate contracts and would create substantial risks for all market Participants.

In comparison, the Snowy Hydro proposal would result in minimal market disruption as Snowy Hydro is the only substantial directly affected Participant.

By creating two new regions and abolishing the Snowy Region, the Mac Gen proposal is also contrary to aim of minimising the number of regions.

In comparison, the Snowy Hydro proposal would result in the abolishment of the Snowy Region, and hence result in minimising the number of Regions.

2.4 Superior Snowy Hydro Rule Change Proposal

It has already been established that the Snowy Hydro Snowy Region Rule change proposal would result in minimal market disruption and would also lead to a minimum number of regions.

Our analysis and calculations show that the Snowy Hydro proposal would also result in substantial net economic benefits. The Snowy Hydro proposal with Tumut in NSW can result in additional MWs being dispatched into NSW. The following calculations show the Net Benefit that could have occurred with Tumut being in the NSW region. The calculation period is from the 31/10/05 (the big event day with the 76 & 77 lines out) that transparently showed the inefficiencies in the current region boundary definition for the Snowy Region.

For the period from 31/10/05 to 15/11/05

$$\text{Net Benefit (in 5 minute dispatch)} = \frac{\text{Headroom on 08/16} \times (\text{NSW price} - \$100/\text{MWh})}{12} \quad \text{Eq 1.}$$

For the period from 15/11/05 to 22/03/06

$$\text{Net Benefit (in 5 minute dispatch)} = \frac{\text{Headroom on 03/07} \times (\text{NSW price} - \$100/\text{MWh})}{12} \quad \text{Eq 2.}$$

The headroom on the relevant lines is basically the difference between what the lines could carry in flow in the event the other line tripped minus the actual flow on the line.

For the period between 31/10/05 to 15/11/05, the headroom on the 08 & 16 lines was the primary consideration since these lines were the limiting elements to getting more physical flow into NSW.

After the event on the 31/10/05, Transgrid subsequently increased the available limits on these lines and hence for the period between 15/11/05 to the present, the headroom on the 03 & 07 lines was the primary consideration since these lines were the limiting elements to getting more physical flow into NSW.

Irrespective of what prices are used in the Net Benefit calculations, we firmly believe a Net Benefit would result from increased generation from Tumut into NSW. We believe this is factual and undisputable as with Tumut in the NSW region there is no incentive for Tumut generation to unconstrain the lines between Tumut and NSW. Contrary to this, Tumut's incentive would be to fully maximise generation to NSW. In our calculations we show that with high prices in NSW (indicating a tight supply/demand situation the additional MWs through increased physical flow to NSW goes up to 200 MWs. These additional MWs serve to increase competition in the NSW region and hence is ultimately a desirable outcome for consumers in NSW.

In analysing the Net Benefit calculation in equations 1 and 2, an opportunity cost for Lower Tumut of $100/MWh was used because it most appropriately represents the cost of energy at Tumut when there is an intra-regional constraint between Tumut and NSW.

Please note that this Net Benefit is not visible in the current Snowy Region boundary definition because Lower Tumut has incentives to withhold generation to align the Tumut price with the NSW price. That is, the marginal bid price of Lower Tumut is high since Tumut has incentives to withhold generation to unbind the intra-regional constraints between Lower Tumut and NSW and in doing so achieve and alignment in prices between Tumut and NSW.

Applying the above formulas it was calculated that the Net Benefit that could be achieved with a Region Boundary change to put Tumut in NSW is in the order of **$3.34 million**. This is made up of:

Period	Net Benefit ($ millions)
31/10/05 to 15/11/05	$0.24
15/11/05 to 22/03/06	$3.10
Total	**$3.34 million**

Table 3. Net Benefit Amounts

Details of the calculations as shown in Table 3 are contained in Appendix 1.

In summary, the net benefit calculation of $3.34 million far exceeds the region change threshold recommended by CRA of $1 million. These calculations were only applied to a 4.5 month period and would be of greater magnitude if applied over 1 full year. Hence our calculations on net benefit are conservative. This clearly signals that there is a strong and sound economic basis to amend the Snowy Region boundary.

Additionally, as a consequence of Tumut being incentivised to unconstrain transmission access between Tumut and NSW, pricing and network upgrade signals are not visible to Transgrid. Hence, this reduces the TNSP's ability to assess that there is a transmission capability problem with the 03 and 07 lines and that these lines need to be subsequently upgraded. Please refer to section 4.1 for further analysis of this issue.

3 Observations from Other Related Consultations

Snowy Hydro sees that implementation of our Rule change proposal as the essential first step to rectifying the problems associated with the Snowy Region. By doing this there will be a solid foundation to establish and implement a new constraint management framework that will deliver long term economic benefits for consumers.

We have analysed submissions to other consultations that relate directly to the Snowy Region problem, or congestion management in the general. The following sub-sections highlight our main inferences and observations from these consultations.

3.1 MCE Amendment to Regional Boundaries Rule Change Proposal

The implementation of the Snowy Hydro proposal is entirely consistent with the MCE policy of a minimum load of regions, and it has been established that the change will deliver net economic benefits.

Snowy Hydro believes that the MCE amendment to Region Boundaries Rule change proposal is a sound process for region boundary changes provided that existing and known problems such as the Snowy Region are corrected prior to entering the new arrangements.

With respect to rectifying the existing region boundary problems associated with the Snowy region, this view is consistent with that of the National Generator Forum (NGF) who states in their submission[1] to the AEMC:

On page 1:

> *As a consequence of the moratorium the NEM ministers placed on boundary changes in the NEM there are significant congestion issues in the Snowy region which it has not been possible to address by constraint management or transmission investment.*
>
> *A number of proposals have emerged to address the problems arising from the Murray to Tumut constraint in the Snowy region:*
> - *Snowy Hydro CSP/CSC Trial*
> - *Snowy Hydro Regional Boundary Rule Change Proposal*
> - *Macquarie Generation Regional Boundary Rule Change proposal*
> - *Management of Negative Residues (Vic – Snowy)*
>
> *The materiality and persistent nature of this existing problem warrants progressing assessment of these proposals* ***prior to*** *the implementation of an extended boundary change process* (emphasis added).

On page 4:

> *The existing congestion problem in the Snowy Region caused by existing regional boundaries needs to be resolved and a permanent solution implemented as soon as practicable.*

[1] NGF submission to AEMC Consultation on National Electricity Amendment (Regional Boundaries) Rule 2006, pages 1 and 4.

3.2 MCE Congestion Management Review

We note that consistent with the MCE constraint management framework it is anticipated that some constraint management regime (such as the CSP/CSC) is needed in the long-term to resolve intra-regional constraints within a region. In the short term coefficients can be used to ration transmission access.

3.3 LYMMCO proposal to deal with negative residues in the Snowy Region

The LYMMCO proposal is not needed with the implementation of the Snowy Hydro Snowy Region boundary change Rule proposal. This fact is recognised by LYMMCO who state in their submission[2] to the AEMC,

> *If the Snowy region ceases to exist, or if a Snowy regional boundary change were approved, our proposal would no longer be necessary at this location.*

We have shown in our submission to the AEMC on the LYMMCO proposal that if the LYMMCO proposal was approved by the AEMC and applied for the interim period up to the commencement of a Snowy Region boundary change, the LYMMCO proposal would in fact create other material problems. We re-iterate our view that the best transitional solution in the interim up to the commencement of a Snowy Region boundary change is re-orientation to Dederang for both northerly and southerly flow direction. As noted in our submissions on this issue, re-orientation for southerly flow is currently in existence and has been proven to work effectively and seamlessly with no complaints from any market Participant.

[2] LYMMCO, submission to the AEMC on the first round consultation to the "Management of negative Settlement Residues in the Snowy Region", page 8.

4 Further Evidence of Economic Benefits

This section provides further evidence of our assertions that the Snowy Hydro Snowy Region change Rule proposal will provide net economic benefits to consumers of electricity.

4.1 Transmission Investments

A fundamental component of the MCE policy regarding regional boundaries is to consideration of transmission investment in overall framework for efficient market investments. With regards to the Snowy region definition, if Tumut was redefined into NSW then it would be commercially incentivised not to withhold the headroom on the Snowy1 interconnector.

We demonstrate in the attached file, “Calculations” that the constraint value of $241 million would have been accumulated for the period of 31 October 05 to 22 March 06. These calculations are shown in the worksheets, “08_16 headroom VALUE”, “M_T Binding Value” and “M_T Non Binding Value”. This constraint cost (part of which is a real economic loss to NSW customers) could be simply relieved by investment in transmission that is estimated to be significantly less than $20M (and add 300 to 500MWs of additional real supply into NSW).

Under the current arrangements these transmission constraint costs are simply not visible as Tumut generation is commercially forced to maintain head room on the Snowy1 interconnector, and the constraints simply don’t bind. Hence the TNSP cannot justify any capital expenditure.

Accordingly the Snowy Region definition problem needs to be addressed expediently to enable the MCE policy framework to work effectively.

4.2 Bidding Incentives

The events on the 31st October 2005 highlight some very perverse incentives within an inappropriately defined regional boundary structure.

On this day, due to transmission outages of the 76/77 lines Tumut generation had no other choice but to bid low to attempt to drive additional transmission flow on the Snowy to NSW interconnector. Normally the Western Ring generators don’t need to bid negative to access NSW as they rely on significant commercial incentives on Tumut generation to not constrain the Snowy-NSW interconnector (ie. by maintaining the headroom in the lines the Snowy-NSW lines).

On this occasion with Tumut forced to bid low and make available the full output of Tumut capacity, the Western Ring generators bid down to -$1000/MWh to maximise access to NSW when normally they were reliant on Tumut generation backing off (withholding generation) and hence they didn’t need to resort to this bidding behaviour to gain transmission access. For instance, at 09:48 Mount Piper, and Wallerawang moved a total of 2280MW to -$1000 and decreased the Rate of Change (ramp rate) down. This analysis is shown in the attached “Calculations” file, under the worksheet “Delta rebidding 31_10_05”. The resulting outcome of the bidding behaviour from the Western Ring generators and was low prices in Snowy and high prices in NSW.

Had Tumut being assigned to the NSW region, the Western Ring generators and Tumut generation would have competed for access on bid price, and the applicable constraint equation and coefficients.

Had Tumut been in the NSW Region the resulting outcome would have been approximately an additional 800MW of psychical supply to NSW. With this additional supply the resulting NSW pool

price would have been approximately $39/MWh instead of the actual NSW price outcome of up to $10,000/MWh.

Additionally, as a result of these perverse market outcomes, power was being supplied from the Greater Sydney area to the Canberra area (ie. Counter-price flows).

Our analysis shows that the net economic cost to NSW customers on this day can be calculated from the following equation:

> Net Economic Cost = (Western Ring generation output) * (NSW price – Snowy price)
>
> This net economic cost was calculated to be **$99.7 million**.
>
> The methodology behind this calculation is shown in Appendix 2.

The net economic cost to consumers was calculated to be $99.7 million. With Tumut assigned to the NSW region this cost would not have eventuated and hence is a net economic benefit resulting from our proposed Snowy Region boundary change. This Net Benefit figure is significantly above the CRA recommended region change threshold of $1 million and adds further justification to the economic case to amend the Snowy Region boundary.

These results demonstrate the net economic benefit that can be achieved with Tumut competing on equal footing (getting the same price) as Western Ring generators. The results also show that the incentives are on Western Ring generators to bid -$1000/MWh to maximise transmission access but this has the perverse outcome of reducing the available capacity that could be exported to the Greater Sydney load centre. As a result the NSW region spot prices are unnecessarily high and ultimately NSW customers lose out since there is less then a fully competitive supply of available generation.

Conclusion

The problems associated with the Snowy Region have persisted for too long. These problems have been apparent and well debated by all Participants. Overwhelmingly there is a view from the majority of market Participants that something needs to be done to correct this problem.

Snowy Hydro is firmly opposed to the Mac Gen rule change proposal. Snowy hydro considers the proposal to be simply a move to further nodal pricing (which contrary to MCE policy direction) and the Mac Gen proposal is:

- Technically incorrect;
- Pre-empts MCE transmission policy;
- Would create significant market disruption; and
- Inferior to the Snowy Hydro proposal.

There are a number of other Rule change proposals that are related to the Snowy region. Each needs to be assessed from a broader perspective to ensure that:

- Their implementation does not merely address the symptoms of the problem as opposed to addressing the root cause; and

- The proposal needs to be considered from a timing perspective so that known problems in the Snowy Region are not unnecessarily endured for a further extended period.

With the above points in mind, we strongly advocate fixing the Snowy Region boundary by implementing our proposed Rule change proposal prior to implementation of the proposed MCE region boundary change process.

We have shown calculations of the net economic benefit to consumers of electricity under our proposed Rule change was well in excess of $100 million. This is significantly above the CRA recommended region change threshold of $1 million per annum and justifies implementing our Rule change proposal. Any delay in fixing the Snowy Region would only serve to embed these inefficiencies for another 5 years.

Snowy Hydro appreciates the opportunity to comment on our Rule change proposal. To discuss this submission further, I can be contacted on (02) 9278 1885.

Yours sincerely,

Roger Whitby
Executive Officer, Trading

Appendix 1 – Net Benefit Calculation Methodology for the Headroom on 08/16 and 03/07 lines

Calculation Methodology for the period **01/11/05 to 15/11/05** headroom on 08/16 lines

i) Find all 5 minute periods in date range, for which NSW 5 minute price was over $300 and flow was going north. *When the price is over $300 Tumut generation would want to generate as much as we can at Tumut, to hedge contracts.*

ii) Capture the 5 minute flows on 08/16 and 65/66 lines from NEMMCO SPD input files. Calculate the headroom on the 08/16 lines based on the N>>N-NIL_28 constraint. Likewise on the 65/66 lines based on the H>>H-64_B constraint.

iii) When the headroom on 65/66 was less than zero, truncate this flow to zero as the constraint should set it to zero and no lower. If it were left at negative values it would be added to the northern line constraints headroom which isn't realistic.

iv) Subtract the headroom on the 65/66 from the headroom on the 08/16 to get the MWs (available capacity) Lower Tumut is unable to generate. *We assume Murray-Tumut will constrain so only consider the net headroom on 08/16*. *If there's 80MW headroom on 08/16 and 20MW on 65/66, Lower Tumut is only responsible for 60MW of the headroom on 08/16, and Murray/VIC the other 20MW.*

v) When the net headroom was greater than 150MW, set it to zero (to make void), as can assume Tumut wasn't withholding generation to keep sufficient headroom on 08/16 if it was larger than 150MW.

vi) Multiply this net 08/16 headroom by the difference in NSW price and $100, $100 being the price Tumut would generate its extra MWs at to fully constrain the 08/16 lines, i.e generated the headroom. Divide the value by 12 as it is a 5 minute dispatch period.

vii) Sum and get a total.

Refer to the attached "Calculations" file, worksheet "08_16 Headroom Value" for the actual calculations.

Calculation Methodology for the period **16/11/05 to 22/03/06** headroom on 03/07 lines

We separated the periods into those where 65/66 lines were constrained and those where they were not.

Constrained 65/66 case

For all 5 minute data in the time period, selected those 5 minute periods where flow was northerly, NSW price was over $300 and 65/66 was binding (as given by marginal value greater than zero on the H>>H-64_B constraint).

i) Calculate the headroom using the actual flows on the 03/07 lines. Where the headroom was greater than 150MW set to zero, so the relevant 5 minute period was void. Headroom more than 150MW suggests Tumut3 wasn't holding back generation for constraint reasons.

ii) Multiply this headroom by the difference in NSW price and $100, the price Tumut would bid in at if it wasn't maintaining the headroom on 03/07. Divided this value by 12 as it is 5 minute data.

iii) Sum to get a total for all 5 minute periods.

Refer to the attached “Calculations” file, worksheet “M_T Binding VALUE” for the actual calculations.

Unconstrained 65/66 case

Did the same as in "constrained 65/66 case" except chose periods where the marginal value on H>>H-64_B is zero, and thus 65/66 was unconstrained. Also calculated 65/66 headroom and subtracted from the 03/07 headroom when it was positive for the same reason as in the 08/16 example.

Refer to the attached “Calculations” file, worksheet “M_T Non Binding VALUE” for the actual calculations.

Appendix 2 – Calculation Methodology for the event on 31/10/05

i) Identified periods during the day when there was a large price divergence between NSW and Snowy price nodes.

ii) The Initial MWs for the Western Ring generators were recorded. The Western Ring generators were Liddell, Bayswater, Mt Piper, and Wallerwang.

iii) Add the combined output of the Western Ring generators and multiplied by the difference in NSW and Snowy price to calculate the Net Cost to NSW customers.

Refer to the attached “Calculations” file, worksheet “M_T Non Binding VALUE” for the actual calculations.

Also refer to the attached “Calculations” file, worksheet “Delta rebidding 31_10_05” for an example of the Western Ring generators rebidding to approximately -$1000/MWh to maximise access to constrained transmission elements.